Agenda
Tolland Planning & Zoning Commission
21 Tolland Green, Tolland, Connecticut
Monday, April 25, 2022 at 7:00 p.m., 6th floor – Council Chambers

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1. **Call to Order**
2. **Pledge of Allegiance**
3. **Seating of Alternate(s)**
4. **Additions to Agenda**
5. **Public Comment** - Any person wishing to ask a question, make a comment or put forward a suggestion for any item or matter other than a public hearing item.
6. **Public Hearing(s)**
   - 6.1. **PZC #22-3 – 10 Fieldstone Commons –** Special Permit and Site Plan per section 10-3.B to allow for a multi-family development at 10 Fieldstone Commons. Zone: Gateway Design District (GDD). Applicant: Fieldstone Ridge, LLC.
7. **Old Business**
8. **New Business**
9. **Reports**
   - 9.1. Town Council Liaison
   - 9.2. Economic Development Liaison
   - 9.3. Capitol Region Council of Governments
   - 9.4. Zoning Enforcement Report
   - 9.5. Planning Update
10. **Other Business**
11. **Correspondence**
12. **Public Participation**
13. **Approval of Minutes** – April 11, 2022 Regular Meeting
14. **Adjournment**

To join the Zoom meeting, either click:
https://us06web.zoom.us/j/4325402030?pwd=NG43ZHcyOXBQOGJldzZVTmQxNmhZZz09
Or call: 1-646-876-9923 and input:
Meeting ID: 432 540 2030
Passcode: 444555

All public business will be conducted by 11:00 p.m. unless waived by a vote of the Commission.
Any party needing an accommodation contact the Planning & Development Department at (860) 871-3601.
The Town of Tolland is an Affirmative Action/Equal Opportunity Employer.

Legal Notice
Public Hearing

Tolland Planning & Zoning Commission

The Tolland Planning & Zoning Commission will hold a Public Hearing on Monday, April 25, 2022, commencing at 7:00 p.m., to hear and discuss the following:

PZC #22-3 – 10 Fieldstone Commons – Special Permit and Site Plan per section 10-3.B to allow for a multi-family development at 10 Fieldstone Commons. Zone: Gateway Design District (GDD). Applicant: Fieldstone Ridge, LLC.

Copies of these applications are available on file and available for review in the Planning and Building Department at 21 Tolland Green.

To be advertised twice in the Journal Inquirer: Monday, April 11, 2022 and
Thursday, April 21, 2022

KAHAN KERENSKY CAPOSSELA, LLP

ATTORNEYS

45 Hartford Tpke
Vernon, CT 06066
ph: 860-646-1974
fax: 860-647-8302
kkc-law.com

22 Professional Park Road
Storrs, CT 06268
ph: 860-487-1842

February 16, 2022

Via Hand Delivery
Tolland Planning and Zoning Commission
c/o David Corcoran
21 Tolland Green
Tolland, CT 06084

Re: Fieldstone Ridge, LLC – Zoning Application

Dear David:

Enclosed herewith please find the application of Fieldstone Ridge, LLC for a Special Permit and associated Site Plan Approval in connection with its proposed multi-family residential apartment development at 10 Fieldstone Commons. Also included with the application is the following:

a. 3 full size sets of the site plan;
b. 3 11x17 size sets of the site plan;
c. 3 full size sets of the building elevations;
d. 3 11x17 size sets of the building elevations;
e. 3 copies of the Traffic Report prepared by Bubaris Traffic Associates;
f. A list of abutting property owners within 500 feet of the property; and
g. A check in the amount of $12,060.00, representing the application fee.

Please note that 3 copies of the Stormwater Management Report prepared by Gardner & Peterson Associates, LLC were submitted with the associated Wetlands Application.

It is the Applicant's expectation that the Commission will receive this application at its next regularly scheduled meeting on February 28, 2022 and will likely schedule it for a public hearing on March 28, 2022. Please confirm the date for the public hearing so that my client and I, as well as my client's other consultants, may attend that hearing to make a full presentation of the applications at that time. In addition, please provide the legal notice for that hearing so that I may send the necessary notification to abutters. My clients will coordinate posting the public hearing sign.

If you have any questions or need any additional information, please do not hesitate to contact me. Thank you.

Sincerely,

Dorian R. Famiglietti

Enclosures
cc: Kevin Santini (w/encl)
Eric Santini (w/encl)
Eric Peterson (w/encl)
Jim Bubaris (w/encl)

TOWN OF TOLLAND
PLANNING AND ZONING COMMISSION
APPLICATION FOR SITE PLAN OR SPECIAL PERMIT APPROVAL

PZC #_____

What are you applying for? (check one):

- [x] Site Plan (new)
- [ ] Site Plan Modification
- [x] Special Permit (new)*
- [ ] Special Permit Modification*

**Most special permit applications require submittal of a site plan, with no additional fee for site plan required.*

Property Information

Property Address: 10 Fieldstone Commons
Property Owner: Fieldstone Ridge, LLC
Zone: GDD **Map/Block/Lot:** 28/C/002; 28/C/002.02; 28/C/025

Applicant Information

Applicant Name: Fieldstone Ridge, LLC
Mailing Address: c/o Dorian R. Famiglietti, Kahan, Kerensky, Capossela LLP 45 Hartford Tnpk, Vernon, CT 06066
Phone Number: 8608121765 **Email Address:** dfamiglietti@kkc-law.com

Applicable Section of the Zoning Regulations which pertains to the proposed activity:

Section 10-3.C.25 (Special Permit for multifamily development, providing water and sewer, in acordance with the requirements of Section 10-4)

Describe proposed buildings, site work, and use:

See attached Narrative

FEE SCHEDULE FOR SPECIAL PERMITS AND SITE PLANS

Special Permits & Site Plans*

Site Plan or Special Permit
Fee for a new building or addition:
- 1,000 gross square feet or less: $300
- 1001 to 10,000 gross square feet: $500
- 10,001 or greater gross square feet: $750 + $25 for each additional 1,000 gross square feet

No new building nor building addition:
$300 plus $0.005 (half cent) per square foot of newly disturbed land area.
Plus State Fee: $60

Revision of an Approved Site Plan
Fee: $150
Plus State Fee: $60

Multi-Family Special Permit and Site Plan
Fee: Whichever is greater: $50 per unit OR $1,000
Plus State Fee: $60

Golf Course Special Permit and Site Plan
Fee: $750 plus $10 per acre
Plus State Fee: $60

Removal of Earth Products
Fee:
- Less than 1,000 cubic yards (cy): $250
- 1,001 to 50,000 cy: $500
- 50,001 – 100,000 cy: $1,000
- More than 100,001 cubic yards: $2,000

Plus State Fee: $60

Removal of Earth Products - Post Approval
Annual Map Fee: $50

Campground
Fee: $250 plus $10 per campsite
Plus State Fee: $60

Campground – Post Approval
Annual Fee: $2 per campsite

Please submit the following with this form:

1. The fee must be submitted to be considered a complete application.
2. 7 paper copies and a pdf of the full plans, including all items required on the plans pursuant to Zoning Regulations.
3. The check list contained in Section 20-10 of the Zoning Regulations with an explanation of any submittal requirements for which the applicant seeks a waiver.

All of the above statements and the statements contained in any documents and plans submitted herewith are true to the best of my knowledge:

Applicant Signature: Adrian B. Fanzilli, attorney for applicant + owner **Date:** 7/16/2022

Property Owner Signature*: _____ **Date:** _____

*Or submit signed letter authorizing applicant to submit application on property owner's behalf.

OFFICE USE ONLY

P&Z #_____

Administration	
Town Fee:	
State DEEP Fee:	
Engineering Rev Fee:	
Form of Payment:	
Date Submitted:	
Date of Receipt:	
Legal Notice Dates:	
Date of Decision:	
Legal Notice of Decision:	
Extensions: (if any)	

Stamp:

Description:

NARRATIVE OF APPLICATION

Applicant: Fieldstone Ridge, LLC

Application: 10 Fieldstone Commons – Zoning Application

Date: February 16, 2022

Fieldstone Ridge, LLC (the "Applicant") seeks approval from the Tolland Planning and Zoning Commission for a Special Permit, and associated site plan, for a Multi-Family Development at property located at 10 Fieldstone Commons, Tolland, CT (the "Property"). The Property is located in the GDD Zone and contains approximately 51 acres. Multi-Family Development is an allowable Special Permit use per Section 10-3.C. 25 of the Zoning Regulations.

Wetlands have been field delineated upon the Property and the locations of the wetlands are shown on the attached plans. An application for a Wetlands Permit is being submitted to the Tolland Inlands Wetlands Commission simultaneously with this Zoning Application.

The Applicant proposes to develop 240 multi-family residential apartment units upon the Property. The units will be contained within 21 townhouse-style buildings. The development will also include a maintenance building, clubhouse, pool, sidewalks, walking trail and supporting infrastructure. Access to the development will be via the existing Fieldstone Commons driveway. The development will be serviced by public sewer and water.

A full traffic study, as required by Section 20-8.A.6 of the Zoning Regulations has been conducted, as detailed in the Site Traffic Evaluation Study, dated January 24, 2022, prepared by Bubaris Traffic Associates, and is submitted with the application (the "Traffic Report"). The Traffic Report concludes that the proposed development will not adversely impact traffic operations on the roadways surrounding the Property.

The details of the proposed stormwater management facilities are described in the Stormwater Management Report, dated February 4, 2022, prepared by Gardner & Peterson and submitted with this application (the "Drainage Report"). The Drainage Report describes the LID best management practices (in conformance with the Tolland Low Impact Development Design Manual) that will be implemented to preserve existing drainage patterns and address post-development quality and quantity of storm water runoff. The proposed stormwater management system has been designed to comply with the 2004 Connecticut Stormwater Quality Manual.

Details of the erosion and sediment controls are shown on the attached plans and are designed to minimize erosion and sedimentation during construction, stabilize the Property upon completion of construction and prevent any offsite erosion and/or sedimentation. The Erosion and Sediment Control Plan complies with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

Abutters Within 500 Feet of the Parcel

Name:	Street Address & APN:	Mailing Address:
G & G Service Inc.	128 Merrow Rd APN 28//C/001	P.O. Box 832 Tolland, CT 06084
Whitfield Park Bench, LLC	6 Fieldstone Commons APN 28/C/002.01	2600 Dixwell Ave. Hamden, CT 06514
Capitol Venture, LLC	33 Fieldstone Commons APN 28/C/002.03	231 Farmington Ave Farmington, CT 06032
Tolland Meeting House Commons, LLC	200 Merrow Rd APN 28/C/005	74 West Park Place Stamford, CT 06901
Simul, LLC	12 Goose Lane APN 28/C/007&007.01	194 Holly Hill Rd Greenwich, CT 06830
Peter Daniel Martin & Sharon Jenson	38 Goose Lane APN 28/C/008	same
Dean A. & Dawn M. Villanova	48 Goose Lane APN 28/C/009	same
Kevin Martin	44 Goose Lane APN 28/C/009	same
Robert M. & Ivy L. Morrison	66 Goose Lane APN 28/C/12	same

Richard A. Crabb	82 Goose Lane APN 28/C/014	same
Anna M. Zanghi	94 Goose Lane APN 28/C/015	same
Adam R. & Shelley L. Grossman	Anthony Rd APN 28/C/025	9 Metcalf Rd Tolland, CT 06084

TOWN of TOLLAND/ 21 Tolland Green, Tolland, Connecticut 06084

MEMO

TO:	Planning and Zoning Commission
FROM:	David Corcoran, AICP, Director of Planning & Development
DATE:	April 21, 2022
RE:	PZC # 22-3 10 Fieldstone Commons – Special Permit and Site Plan per section 10-3.B to allow for a multi-family development at 10 Fieldstone Commons. Zone: Gateway Design District (GDD). Applicant: Fieldstone Ridge, LLC.

The applicant is proposing to construct 240 multi-family residential apartment units within 21 townhouse-style buildings on 51 acres in the Gateway Design District.

General Concepts/Design Guidelines
The proposed application appears to meet the requirements of Section 10-2 of the Tolland Zoning Regulations. The site design makes use of a large "green" common area and is proposed to support pedestrian access to adjacent commercial uses through the construction of sidewalks. The buildings are designed with varying materials and architectural design from all angles consistent with the requirement that "All building facades that are visible from a public street, including I-84 and its ramps, should be attractively designed with windows and other architectural elements so that no visible elevations looks like the back of a building."

The Tolland Design Advisory Board reviewed the application on March 3rd 2022 and April 7th 2022 and provided a letter which is in the packet that notes that the design is satisfactory.

The Tolland Inland Wetlands and Watercourses Commission approved this application on April 7th 2022 with conditions.

The Tolland Fire Marshal provided preliminary sign-off on the Site Plan as shown on March 15, 2022. Detailed Site Plan review at the Fire Marshal level will come prior to building permit issuance.

Dimensional Requirements
The proposed Site Plan and building elevations are in conformance with all dimensional requirements.

GDD Requirement	Required	Proposed
Lot Area	5 Acres	50.7 Acres
Lot Frontage on a Public Street	200 Feet	Approx. 550 feet
Front Setback	50 Feet	75 Feet
Lot Coverage	50%	31%

Side Setback	50 Feet	51 Feet
Rear Setback	35 Feet	44 Feet
Building Separation	20 Feet	Approx. 26 feet between Buildings 12 and 14
Distance from RDD/VCZ	100 Feet	>100 Feet
Minimum Building Floor Area	1000 Square Feet	>1000 square feet
Maximum Building Height	35 feet or 40 feet to ridge	38 feet to ridge
Maximum Dwelling Units per Building	12 Units	12 Units
Minimum Green Space	20%	69%
Parking Requirements	1 to 2.5 per unit (Principal Multi-family use) 2 to 10 per 1000 square feet (Accessory Clubhouse)	594 spaces (600 allowed) 47 spaces (84 allowed)

Other Considerations
Per Section 10-4-C.6 of the Zoning Regulations, the proposed dumpster pad for recycling, trash collection, and compaction will need to be fully screened from view of Fieldstone Commons with privacy landscaping as shown on the Site Plan.

The luminaires on the edge of the parking lot along Fieldstone Commons cause a small amount of light spillage onto adjoining commercial properties. This minor spillage appears to be in compliance with the Zoning Regulations without the granting of a waiver.

Comments from the Town Engineer are included for reference and further discussion.

Driveway Waiver Request
The Applicant is requesting a waiver for the width of the access driveway. The proposed Site Plan identifies a total driveway width of 30' which is in excess of Section 19-1.D.4.a of the Zoning Regulations which states: "The maximum width of driveways, measured at the point of tangency shall not exceed 25 feet for multi-family, commercial, industrial and other non-residential uses."

The Commission has the authority to grant a waiver for this portion of the site design as part of Section 19-1.C of the Zoning Regulations. A 30' wide access driveway would be consistent with the entrance to Fieldstone Commons across the street.

Recommended Conditions of Approval
1. All work and all regulated activities conducted pursuant to this Special Permit shall be consistent with the terms and conditions of this permit. Any structures, excavation, fill, obstructions, or encroachments not specifically identified in the Site Plan shall constitute a violation of this permit.
2. All improvements and operational plans identified through the application process must be followed by future property owners and/or managers.
3. In evaluation of this application, the Commission has relied on information provided by the applicant and, if such information subsequently proves to be false, deceptive, incomplete, and/or inaccurate, this permit may be modified, suspended, or revoked.
4. The applicant will need to return to the Planning and Zoning Commission as necessary for any sign permits.

5. An Erosion & Sedimentation control bond, subject to review by the Town Engineer shall be provided prior to the commencement of site work.
6. A Certificate of Zoning Compliance required for the issuance of a Certificate of Occupancy for an individual building may be issued upon completion provided that the following improvements are made in accordance with the "Fieldstone Ridge Construction Phasing Plan" submitted by the applicant:
    a. All required drainage structures for each building will be constructed and certified prior to building occupancy.
    b. All streets necessary for access to the building requested to be occupied will be paved.
    c. All exterior site lighting in the immediate vicinity of each building requested to be occupied will be completed including building mounted lights and free-standing lights.
    d. All street lighting in the immediate vicinity of each building proposed to be occupied will be completed.
    e. All grading and landscaping in the immediate vicinity of each building proposed to be occupied will be installed per the landscape plans. If a Certificate of Occupancy is granted during the winter season, the appropriate portion of the Erosion and Sediment Control bond will not be released until landscaping is in place.
    f. All sidewalk areas in the immediate vicinity of each building requested to be occupied are completed.
    g. The mailbox pavilion and dumpster area located within each Phase will be complete.
    h. Prior to the issuance of the final Certificate of Zoning Compliance for each phase, all streets will be paved, the walking trail will be complete and all landscaping in common areas will be complete and satisfactorily established in the area of each phase.
    i. The applicant may change the order of construction of the buildings identified in the Phasing Plan provided that all buildings identified in Phase I are constructed in Phase I and all buildings in Phase II are constructed in Phase II.
7. Revise the Site Plan to reflect any changes identified by the Town Engineer in his April 6, 2022 memo.

Engineering Review

April 6, 2022

Town of Tolland Planning & Zoning Commission
c/o David Corcoran, Director of Planning & Development
21 Tolland Green
Tolland, CT 06084
via email dcorcoran@tolland.org

Re: **Fieldstone Ridge, 10 Fieldstone Commons**
Site Plan Review

Commission Members:

As requested, CHA Consulting, Inc. (CHA) reviewed the following materials received on March 25, 2022:

Item 1 Twenty-four (24) sheet plan set entitled "Improvement Location Survey, Site Plan of Development, Fieldstone Ridge, 10 Fieldstone Commons, Tolland, Connecticut", prepared by Gardner & Peterson Associates, LLC, dated February 7, 2022, revised March 24, 2022

Item 2 Stormwater Management Report, Fieldstone Ridge, 10 Fieldstone Commons, Tolland, Connecticut, prepared for Fieldstone Ridge, LLC, prepared by Gardner & Peterson Associates, LLC, dated February 4, 2022, revised March 23, 2022

Item 3 Fieldstone Ridge Response to Comment Letter, prepared by Eric Peterson, P.E., Gardner & Peterson Associates, LLC, dated March 25, 2022

Item 4 Site Traffic Evaluation Response to Comment Letter, prepared by Bubaris Traffic Associates, dated March 20, 2022

CHA's March 14, 2022 review comments are included below in normal text. Updates to those comments are included in **bold** text.

CHA offers the following comments based on the Tolland LID and Stormwater Management Design Manual, the Tolland Zoning Regulations, 2004 Connecticut Stormwater Quality Manual, and general engineering practice:

1. The Commission and the Applicant should discuss the amount of parking provided on the proposed plan. Although the number of parking spaces provided is within the range prescribed by the Zoning Regulations, it could be reduced. The Applicant should discuss if studies were conducted to determine the proposed

parking spaces. Reducing the parking spaces will also reduce impervious area and associated stormwater runoff.
The Applicant requests to use 2.5 parking spaces per unit (as shown on the plan). The Commission should discuss this with the Applicant.

2. The Applicant should discuss with the Commission how loading and unloading during resident moving will be accomplished.
The Applicant will discuss this with the Commission at the hearing.

3. It appears the main access from Fieldstone Commons is 30-feet wide. Pursuant to 19-1.D.4.a., driveway widths shall not exceed 25-feet.
The Applicant requests a waiver to increase the access width to 30-feet. The 25-foot regulation is in place to safely control vehicle traffic. If large moving vehicles cannot negotiate the entrance to the site, it is better to determine this at the entrance rather than becoming stuck inside the site where they cannot maneuver. If large vehicles are required to enter the site, a mountable island or other object to designate the traffic lanes should be provided. A turning diagram for the type of proposed truck would be useful to further discuss the proposed entrance.

4. The proposed dumpsters call for a screening fence; however, this must be further detailed and described on the plan set.
The Commission should discuss if the proposed dumpster enclosure should include a screened gate.

5. The Applicant must discuss with the Commission how recycling bins will be accommodated within the dumpster locations. (19-5.A.4.)
The Applicant will discuss this with the Commission at the hearing.

6. CHA suggests that the proposed gravel access driveway to the northerly stormwater basin be superelevated (cross sloped) to direct runoff to the proposed catch basins.
Provided.

7. Several of the proposed retaining walls are above 4-feet high. These walls will require a fence per building code. No wall details were provided on the plan set. The Commission may wish to discuss the type and aesthetics of these proposed walls.
Photos of proposed walls were provided with the Design Engineer's response letter. Based on determinations from discussions between the Commission and the Applicant the wall and fencing type should be documented on the plan set.

8. The detail for the stormwater basin berm indicates a top width of 8-feet. It appears the width of the divider berm in the northerly basin must be widened.
Provided.

9. The Design Engineer should review the drainage system at the eastern side of the Big-Y plaza to determine if modifications are required due to the concentration of stormwater from the proposed gated access driveway.

The Design Engineer added existing spot grades to this area to indicate direction of flow.

10. The location of proposed inspection ports for underground infiltration systems must be shown on the plan set.
    Inspection ports have been depicted for the underground infiltration systems except the system southwest of Building 12. Inspection ports must be added to this system.

11. In many locations, the stone dust paths will concentrate stormwater runoff. The Design Engineer should review the path system and determine if grading or drainage systems need to be revised to prevent concentrated runoff and the associated erosion that will occur with it.
    The proposed path will be reinforced with a geoweb to prevent erosion. CHA suggests additional erosion controls for grading adjacent to the path around the steeper sections to prevent erosion during stabilization, especially at the northeastern corner of the site where runoff is directed onto the path from both sides.

12. A proposed catch basin is located between building No. 18 and No. 19 at the proposed dumpster. This drainage system discharges north of the wetlands and does not receive water quality treatment. Due to the location at the dumpster, this catch basin may receive higher than normal pollutant runoff. Water quality must be provided prior to discharge.
    The proposed grading of this location was raised to eliminate the discharge point. The proposed on-site stormwater systems will provide water quality treatment for this area.

13. As part of the project, the Town's hydrodynamic separator will be removed and replaced with a forebay and infiltration basin. This structure must be returned to the Town. The Design Engineer must coordinate this with Tolland DPW.
    This comment has been coordinated with Tolland DPW and a note regarding the separator added to the plan.

14. Pursuant the 2004 Connecticut Stormwater Quality Manual (SQW), test pits must be conducted at all proposed infiltration systems.
    Provided.

15. It appears the southern stormwater basin does not meet the SQM separation distances for high groundwater. The Design Engineer must review the design and address the separation.
    The drainage report has been revised to reflect this basin as a wet extended detention basin. The separation distance is no longer an issue.

16. The site plan elevations for infiltration chamber 11-16-17 do not appear to match those within the drainage calculations. The Design Engineer must review these calculations.
    The plans have been revised to elevations matching the calculations.

17. Infiltration chambers 19 and 19-20 are depicted as separate systems on the plan set and are at different elevations. The drainage calculations model these chambers as one unit. These calculations must be broken out and set at the correct elevations.

The plans and calculations have been revised and updated to match.

18. Pursuant to the SQW, 1-foot of freeboard must be provided within the stormwater basins for the 100-year storm event.
    Provided.

19. The Maintenance Schedule for underground stormwater chambers must be revised to include checking for system overflow and possible erosion at the overflow outlet.
    Provided.

20. The current design plan utilizes the proposed stormwater basins as sediment traps during construction. CHA and the Tolland LID manual recommend not using stormwater basins as sediment traps during construction. Although an attempt has been made to not fully excavate the proposed stormwater basins until the site is stabilized, the Design Engineer should review the plans to see if a sediment trap upgradient of the proposed basins can be installed.
    Based on discussion with the Design Engineer, the plan will be revised to incorporate a standalone sediment trap instead of using the northern stormwater infiltration basin as a sediment trap. The southern stormwater basin is designed as a wet basin without infiltration; therefore, can be used as a sediment trap during construction.

21. Maintenance access for the southern stormwater basin must be depicted on the site plans.
    The southern stormwater basin has been revised to a wet basin requiring minimal maintenance to the bottom of the basin. Per discussion with the Design Engineer, the Owner's equipment can reach the basin to clean the forebay and perform required maintenance with the proposed grades.

22. The Design Engineer must review the overflow outlets of the infiltration chambers to determine if outlet protection is needed to prevent erosion during overflow discharge.
    Provided.

23. The proposed catch basin sump depth must be specified on the plan set.
    The Design Engineer will adjust the catch basin depths based on revised pollutant renovation calculations and the addition of a second hydrodynamic separator.

24. Pursuant to the Tolland LID Manual, the sides of the infiltration chambers must be lined with a non-woven filter fabric to prevent soil piping. The infiltration galley detail must be updated to reflect this.
    Provided.

25. The Tolland LID Manual states infiltration chambers shall be installed on slopes less than 15%. The Design Engineer must address excessive seepage and slope stability for systems installed on slopes at or greater than 15%.
    The Design Engineer will specify a slope stability system for the slopes at the infiltration chambers in a subsequent revision.

26. The basic drainage design meets the intent of water quality, recharge, and pre-post flow attenuation; however, this is accomplished by conveying stormwater to the perimeter of the development where recharge and infiltration occur. The Tolland LID Manual recommends using an LID approach where water has the ability to recharge or infiltrate throughout the site. The Applicant and the Commission should discuss if LID techniques could be added to the project.
    This should be discussed by the Applicant and the Commission.

27. Typically, sanitary sewer services do not connect to sewer mains through a manhole. The plan indicates some services connecting through manholes and others through wyes in the main. Service connections should be consistently shown as wyes to the main. This should be further coordinated with WPCA and the DPW Director.
    This shall be coordinated with the DPW Director and the Applicant.

28. The proposed sanitary pump station must be labeled on the plan set.
    Provided.

29. Sediment barrier must be extended from contour 550 to 560 west of the proposed mail pavilion to prevent a gap in sediment protection.
    Provided.

30. CHA recommends the use of engineered loam within the stormwater basins to ensure that infiltration rates will be maintained through the soil profile.
    Provided.

31. Sediment barrier must be provided at the toe of slopes in the stormwater basins to prevent sediment from the impacting the bottom of the basin while the slopes become vegetated and stable.
    Provided.

32. The Design Engineer must provide a temporary diversion at the top of the gated emergency access driveway to prevent concentrated flows from eroding the driveway during construction.
    Provided.

33. The Applicant and the Commission should discuss the proposed lighting along Fieldstone Commons. A minor amount of light spillage occurs in this location.
    This must be discussed further with the Commission.

CHA offers the following comments on the Traffic Assessment:

34. The existing traffic volumes on Merrow Road between the Oyama Restaurant Plaza and Goose Lane/Rhodes Road do not balance (volumes are off by approximately 100 vehicles or more) in the northbound and southbound directions. This is then carried through the analysis conditions. The Traffic Engineer must confirm the baseline volumes.
    A revised traffic report will be submitted by the Designer to address this comment.

35. Traffic volume adjustments to account for the Covid pandemic were provided by CTDOT. As raw traffic data was not provided with the traffic report, the Traffic Engineer must provide additional information on what adjustments were made for the weekday and weekend volume and confirm if traffic volumes generated by abutting businesses were adjusted to assume typical capacity per the Institute of Transportation Engineers (ITE) guidelines. The baseline turning volumes appear low along the commercial corridor.
    A revised traffic count will be conducted to provide post-COVID trip generation volumes.

36. The Synchro analysis has thru volumes on the eastbound and westbound approaches at the intersection of Merrow Road at the Oyama Plaza and the Fire Department Training Center; however, no lane assignments were provided in the model. The figures indicate there are no through movements. The model should be corrected to ensure the results are calculating correctly.
    A revised traffic report will be submitted by the Designer to address this comment.

37. The Synchro analysis only shows one lane on the eastbound Rhodes Road approach to Merrow Road. The narrative and aerial imagery indicate there should be two lanes on this approach. The Traffic Engineer should review the model and update it as needed.
    A revised traffic report will be submitted by the Designer to address this comment.

38. There is a small discrepancy between the Saturday Build Condition figure and the Synchro model. The figure shows 776 vehicles making a right-turn from the eastbound off-ramp but there are only 766 vehicles in the model. The Traffic Engineer should review the model and update it as needed.
    A revised traffic report will be submitted by the Designer to address this comment.

39. Trip distribution was based on journey-to-work data. This distribution is appropriate for weekday commuting patterns; however, weekend patterns may differ significantly. Using adjacent street network patterns may be more appropriate for weekend trips in this area. The Traffic Engineer must provide an explanation as to why journey-to-work patterns were used on a weekend as well during the week.
    A revised traffic report will be submitted by the Designer to address this comment.

40. The study area provides sidewalks and crosswalks. No pedestrian or bicycle volumes were presented. The Traffic Engineer should document if any pedestrians or bicycles were counted in the study area. If so, these should be accounted for in the Synchro model.
    No pedestrians or bicycles were observed during the counting periods; therefore, the analyses do not include them. A revised traffic report will be submitted by the Designer to address this comment.

Please contact me if you have any questions.

Sincerely,

Chuck Eaton, P.E., LEEP-AP

Tolland Town Engineer

cc: Mike D'Amato, Tolland Inland Wetlands and Watercourses Commission Agent
Eric Peterson, PE, LS, Gardner & Peterson Assoc

Engineering Review

April 20, 2022

Town of Tolland Planning & Zoning Commission
c/o David Corcoran, Director of Planning & Development
21 Tolland Green
Tolland, CT 06084
via email dcorcoran@tolland.org

Re: **Fieldstone Ridge, 10 Fieldstone Commons**
Site Plan Review

Commission Members:

As requested, CHA Consulting, Inc. (CHA) reviewed the following materials received on April 18, 2022:

Item 1 Revised Traffic Study Evaluation and Appendix A, Proposed Fieldstone Ridge Multi-Family Housing, prepared by Bubaris Traffic Associates, dated April 1, 2022

CHA's March 14, 2022 review comments are included below in normal text. Updates to those comments are included in *italics*. Any new comments, based on the revised application materials, are included in **bold** text. Only the traffic comments are contained in this letter. Comment number remains the same for clarity.

CHA offers the following comments on the Traffic Assessment:

34. The existing traffic volumes on Merrow Road between the Oyama Restaurant Plaza and Goose Lane/Rhodes Road do not balance (volumes are off by approximately 100 vehicles or more) in the northbound and southbound directions. This is then carried through the analysis conditions. The Traffic Engineer must confirm the baseline volumes.
A revised traffic report will be submitted by the Designer to address this comment.
The updated traffic model and the revised Traffic Study have addressed this discrepancy.

35. Traffic volume adjustments to account for the Covid pandemic were provided by CTDOT. As raw traffic data was not provided with the traffic report, the Traffic Engineer must provide additional information on what adjustments were made for the weekday and weekend volume and confirm if traffic volumes generated by abutting businesses were adjusted to assume typical capacity per the Institute of Transportation Engineers (ITE) guidelines. The baseline turning volumes appear low along the commercial corridor.
A revised traffic count will be conducted to provide post-COVID trip generation volumes.
Updated traffic volumes were conducted in the Spring 2022 at the commercial site driveways and are included in the revised Traffic Study. The revised analysis is satisfactory.

36. The Synchro analysis has thru volumes on the eastbound and westbound approaches at the intersection of Merrow Road at the Oyama Plaza and the Fire Department Training Center; however, no lane assignments were provided in the model. The figures indicate there are no through movements. The model should be corrected to ensure the results are calculating correctly.
    A revised traffic report will be submitted by the Designer to address this comment.
    This comment has been addressed in the updated traffic model and the revised Traffic Study. It should be noted that the Oyama Restaurant Plaza driveway experiences a drop in level of service (LOS) from a LOS C during the AM peak hour during the No-Build Condition to a LOS F with the Project's Build Condition. The PM and Saturday peak hours are also anticipated to operate at a LOS F during the future No-Build and Build conditions due to high volumes on Merrow Road (1800-2000 vph).

37. The Synchro analysis only shows one lane on the eastbound Rhodes Road approach to Merrow Road. The narrative and aerial imagery indicate there should be two lanes on this approach. The Traffic Engineer should review the model and update it as needed.
    A revised traffic report will be submitted by the Designer to address this comment.
    The revised Traffic Study clarified that there is a short right-turn lane as Rhodes Road approaches the intersection; however, to be conservative, this approach was evaluated as one lane. CHA agrees this conservative approach is satisfactory.

38. There is a small discrepancy between the Saturday Build Condition figure and the Synchro model. The figure shows 776 vehicles making a right-turn from the eastbound off-ramp but there are only 766 vehicles in the model. The Traffic Engineer should review the model and update it as needed.
    A revised traffic report will be submitted by the Designer to address this comment.
    The volumes were updated in the traffic model in the revised Traffic Study.

39. Trip distribution was based on journey-to-work data. This distribution is appropriate for weekday commuting patterns; however, weekend patterns may differ significantly. Using adjacent street network patterns may be more appropriate for weekend trips in this area. The Traffic Engineer must provide an explanation as to why journey-to-work patterns were used on a weekend as well during the week.
    A revised traffic report will be submitted by the Designer to address this comment.
    The revised Traffic Study addresses this comment and includes a revised Saturday traffic analysis.

40. The study area provides sidewalks and crosswalks. No pedestrian or bicycle volumes were presented. The Traffic Engineer should document if any pedestrians or bicycles were counted in the study area. If so, these should be accounted for in the Synchro model.
    No pedestrians or bicycles were observed during the counting periods; therefore, the analyses do not include them. A revised traffic report will be submitted by the Designer to address this comment.
    The Designer clarified that there were no pedestrians or bicycles counted in the study area.

Please contact me if you have any questions.

Sincerely,

Chuck Eaton, P.E., LEEP-AP

Tolland Town Engineer

cc: Mike D'Amato, Tolland Inland Wetlands and Watercourses Commission Agent
Eric Peterson, PE, LS, Gardner & Peterson Assoc

DESIGN ADVISORY BOARD

TOWN OF TOLLAND, CT 06084

MEMORANDUM

TO: **Planning & Zoning Commission, Town of Tolland**

FROM: **Tolland Design Advisory Board**

Date: March 10, 2022

RE: 10 FIELDSTONE COMMONS **Meeting Date: March 3, 2022, 7:00 PM**

Present: *Sudhakar Nagardeolekar, chair; Vikas Nagardeolekar, Vice Chair; William Byers; Kimberly Rogers; David Corcoran (Town Planner).*

On March 3, 2022, a meeting was held by The Design Advisory Board, as directed by Planning and Zoning staff, to review one application: 10 FIELDSTONE COMMONS.

10 FIELDSTONE COMMONS application was discussed. Applicant Fieldstone Ridge, LLC for the 10Fieldstone project made detail presentation. The Drawings presented for review at this meeting met the criteria set by the Design Advisory Board. Design Advisory Board Member's received a meeting notice on February 24, 2022, for a meeting to be held on March 3, 2022. This time line did not allow DAB Members to review the drawing in detail for their comments. In general, the project design as presented to DAB, is satisfactory. DAB needs to review in detail following items.

1) Detail review of proposed landscaping.

2) Review of proposed Building material samples and color co-ordination.

Design Advisory Board is also concerned about the secondary means of egress from the project site, for providing proper turning radius for firefighting equipment

The Design Advisory Board is pleased to forward this application to Planning and Zoning Commission, for Commission's review. Any questions please contact DAB. Thanks.

Sudhakar Nagardeolekar, Chairman
Design Advisory Board

DESIGN ADVISORY BOARD

TOWN OF TOLLAND, CT 06084

MEMORANDUM

TO: **Planning & Zoning Commission, Town of Tolland**

FROM: **Tolland Design Advisory Board**

Date: April 12, 2022

RE: 10 FIELDSTONE COMMONS **Meeting Date: April 7, 2022, 6:30 PM**

Present: *Sudhakar Nagardeolekar, chair; Vikas Nagardeolekar, Vice Chair; William Byers; Kimberly Rogers; Cheryl Nicholas, David Corcoran (Town Planner).*

On April 7, 2022, a meeting was held by The Design Advisory Board, as directed by Planning and Zoning staff, to review one application: 10 FIELDSTONE COMMONS.

10 FIELDSTONE COMMONS application was discussed. Applicant Fieldstone Ridge, LLC for the 10 Fieldstone project made detail presentation. The Drawings presented for review at this meeting met the criteria set by the Design Advisory Board. In general, the project design as presented to DAB, is satisfactory. DAB reviewed in detail following additional items.

1) Detail review of proposed landscaping.

2) Review of proposed Building material samples and color co-ordination.

The Design Advisory Board is pleased to forward this application to Planning and Zoning Commission, for Commission's review. Any questions please contact DAB. Thanks.

Sudhakar Nagardeolekar

Sudhakar Nagardeolekar, Chairman
Design Advisory Board

Fieldstone Ridge Construction Phasing Plan

Refer to Page 21 of the Application Packet for Step-by-Step Construction Schedule and Erosion and Sediment Control Checklist

Phase I

1- The area where buildings 1-15 are located will be rough graded after stumping is completed.
2- The clubhouse, maintenance garage and Building 1 foundations will be excavated first after these areas have been filled from the cuts on the site. Building 3 will also be excavated in this phase.
3- Buildings 4-15 will be excavated thereafter with Buildings 2, 12 and 14 compromising the buildings that require fill while the remainder are in cuts.
4- Once excavated, the projected sequence of foundation installations will be as follows:
    a. Maintenance Garage
    b. Building 1
    c. Building 3
    d. Clubhouse
    e. Buildings 4-15
5- Once the foundations are waterproofed and backfilled, we will begin excavating and installing drainage, sewer, water and conduit for electrical and cable/phone.
6- Once the utilities, drainage, sewer, water and electrical conduit are complete we will begin preparing the roadways and parking areas with subbase. If in the paving season, we will install a binder coat around buildings that we will be framing.
7- The projected order of building completion in this phase will be as follows:
    a. Maintenance Garage
    b. Building 1
    c. Buildings 2 and 3
    d. Clubhouse
    e. Buildings 4-15
    f. Building 13

g. Building 12
h. Building 15
i. Building 14

8- Prior to the issuance of a certificate of occupancy, the following sitework will be done in the immediate vicinity of the completed building:
   a. Finish coat of pavement (if the certificate of occupancy is issued during paving season – if the CO is issued during the winter months, we will finish coat the pavement area as early in the paving season as possible.
   b. All exterior site lighting around the building will be completed including building mounted lights and free-standing lights
   c. All streetlights in the immediate vicinity of the building will be completed
   d. All landscaping will be installed per the landscape plans (if the CO is granted during the planting season – if it is not, the planting will be done as soon as the planting season starts)
   e. All sidewalk areas around the building will be completed
   f. The mailbox pavilion for the entire complex and the northerly dumpster area will be complete prior to the completion of the maintenance garage building
   g. Apartment buildings will be completed approximately 2 months apart. This will be subject to weather, material availability and market conditions.
   h. By the end of Phase I construction, all streets in the area will have finished paving, the walking trail in this area will be complete and all landscaping in common areas within the vicinity of these areas will be completed. If this phase of construction is completed during the winter months, the aforementioned will be completed in the spring. The sidewalks and street lighting will be completed as buildings are completed.

Phase II

1- The area where buildings 16-21 are located will be rough graded after stumping is completed.
2- Buildings 16 and 17 will be excavated first followed by Buildings 18-21.

3- Once excavated, the projected foundation installations will be as follows:
    a. Building 21
    b. Buildings 20 and 19
    c. Building 18
    d. Building 16 and 17
4- Once the foundations are waterproofed and backfilled, we will begin excavating and installing drainage, sewer, water and conduit for electrical and cable/phone.
5- Once the utilities, drainage, sewer, water and electrical conduit are complete we will begin preparing the roadways and parking areas with subbase. If in paving season, we will install a binder coat on all of these areas prior to framing the buildings.
6- The projected order of the building completion in this phase will be as follows:
    a. Building 18
    b. Building 19 and 20
    c. Building 21
    d. Buildings 16 and 17
7- Prior to the issuance of a certificate of occupancy, the following sitework will be done in the immediate vicinity of the completed building:
    a. Finish coat of pavement (if the certificate of occupancy is issued during paving season – if the CO is issued during the winter months, we will finish coat the pavement area as early in the paving season as possible.
    b. All exterior site lighting around the building will be completed including building mounted lights and free-standing lights
    c. All streetlights in the immediate vicinity of the building will be completed
    d. All landscaping will be installed per the landscape plans (if the CO is granted during the planting season – if it is not, the planting will be done as soon as the planting season starts in the spring)
    e. All sidewalk areas around the building will be completed
    f. The southerly dumpster area will be complete

g. Apartment buildings will be completed approximately 2 months apart. This will be subject to weather, material availability and market conditions.

i. By the end of Phase II construction, all streets will have finished paving, the walking trail will be complete and all landscaping in common areas will be complete. The sidewalks and street lighting will be completed as buildings are completed. If this phase of construction is completed during the winter months, the aforementioned will be completed in the spring. The sidewalks and street lighting will be completed as buildings are completed.

PROJECT DESIGN TEAM:

CIVIL ENGINEER / LAND SURVEYOR: GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT

LANDSCAPE ARCHITECT: JOHN ALEXOPOULOS, L.A.
16 STORRS HEIGHTS ROAD
MANSFIELD, CONNECTICUT

TRAFFIC ENGINEER: BUBARIS TRAFFIC ASSOCIATES
405 MAIN STREET
WALLINGFORD, CONNECTICUT

WETLAND SCIENTIST / ECOLOGIST: REMA ECOLOGICAL SERVICES,LLC.
164 EAST CENTER ST. SUITE 2
MANCHESTER, CONNECTICUT

UNIT BEDROOM & GARAGE MIX:

1–BEDROOM UNITS:

24 Units:	1,423 Finished Square Feet	1–Car Garage
8 Units:	980 Finished Square Feet	1–Car Garage
8 Units:	1,520 Finished Square Feet	2–Car Garage
72 Units:	1,287 Finished Square Feet	1–Car Garage

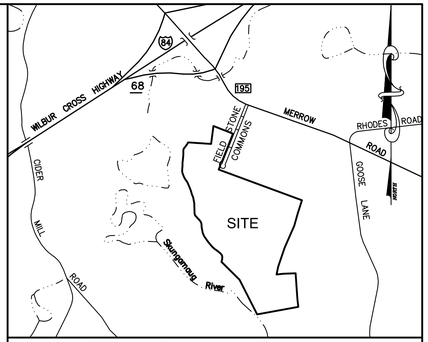
2–BEDROOM UNITS:

12 Units:	1,836 Finished square feet	1–Car Garage
24 Units:	1,580 Finished square feet	1–Car Garage
14 Units:	1,729 Finished square feet	2–Car Garage
18 Units:	1,287 Finished square feet	1–Car Garage
60 Units:	1,432 Finished square feet	1–Car Garage

TOTAL: 368 Bedrooms in 240 Units 262 Garage Spaces

ZONING TABLE:
ZONE: GATEWAY DESIGN DISTRICT (GDD)

Criteria	Requirements	Provided
Lot Area (Multi–family)	5 Acre	50.7± Acres
Max. Density	9 br/dev. acre	8.75 br/dev. acre
Max. Units Per Building	12	12
Min. Green Space	20%	69%
Lot Frontage	200 Feet	621.67'
Front Yard Setback	50'	75'
Side Yard Setback	50'	51'
Rear Yard Setback	35'	44'
Setback to RDD Zone	100'	100'+
Max. Lot Coverage	50%	31%
Parking: Multi–Family	1.0 to 2.5 Spaces/Unit or 240 to 600 Spaces	332 Exterior + 262 Garages or 594 Spaces Provided
Clubhouse	2.0 to 10.0 Spaces/1000sf or 17 to 84 Spaces	47 Spaces Provided



KEY MAP SCALE: 1"=1000'

THIS PROPOSAL IS APPROVED BY THE TOLLAND PLANNING & ZONING COMMISSION:

Signature _____

Date of Approval _____

The Site Plan Expires On: _____

THIS PROPOSAL IS APPROVED BY THE TOLLAND INLAND WETLANDS COMMISSION:

Signature _____

Date of Approval _____

Any work or improvements, in addition to or different from that set forth on these maps, may require review and approval by the Tolland Inland Wetlands Commission,

NOTES:

1. THIS MAP AND SURVEY HAVE BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20–300b–1 THROUGH 20–300b–20, "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT". THIS IS AN IMPROVEMENT LOCATION SURVEY BASED ON A RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A–2 AND TOPOGRAPHIC ACCURACY CLASS T–3.
2. BEARINGS DEPICTED ON THIS PLAN ARE BASED ON THE NAD 27 DATUM AS DEPICTED ON THE MAP REFERENCED IN NOTE 3.A. ELEVATIONS DEPICTED ON THIS PLAN ARE BASED ON THE PLAN REFERENCED IN NOTE 3.D.
3. MAP REFERENCES:
   A. "PROPERTY SURVEY REVISION TO PROPERTY LINE LAND OF FIELDSTONE RIDGE, LLC & KEVIN MARTIN 10 FIELDSTONE COMMONS & 44 GOOSE LANE TOLLAND, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES, LLC DATE: 06–23–2021. MAP NO 9607R.
   B. "SUBVISION PLAN PREPARED FOR CAPITAL VENTURES, LLC CONN. ROUTE 195 (152 MERROW RD.) TOLLAND, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES" DATED: 7–31–2003. REVISED THROUGH 7–12–2004. SCALE: 1"=100'. MAP NO: 9607B.
   C. "PROPERTY SURVEY PORTION OF LAND OF JILL HATCH TO BE CONVEYED TO TOLLAND TOWNHOMES, LLC APN: 28/C/025 TOLLAND, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES, LLC. DATE: 10–15–2020. MAP NO: 9607H.
   D. "ALTA/ACSM LAND TITLE SURVEY PREPARED FOR CAPITOL VENTURES, LLC 33 FIELDSTONE COMMONS TOLLAND, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES, LLC. DATE: 9/12/06. REVISED: 08/20/13. MAP NO: 9607ALTA.
4. THIS PARCEL IS LOCATED IN GATEWAY DESIGN DISTRICT. ADJACENT PARCELS ARE IN THE GATEWAY DESIGN DISTRICT & RDD (RESIDENTIAL DESIGN DISTRICT).
5. THIS PARCEL IS NOT LOCATED WITHIN THE LEVEL A OR LEVEL B AQUIFER PROTECTION AREA, AND IS NOT LOCATED WITHIN THE SHENIPSIT LAKE WATERSHED.
6. THIS PARCEL IS LOCATED IN FLOOD HAZARD ZONE "C" (AREAS OF MINIMAL FLOODING) PER FIRM FLOOD INSURANCE RATE MAP, TOWN OF TOLLAND, CONNECTICUT TOLLAND COUNTY PANEL 16. COMMUNITY PANEL NUMBER 090171 0016 (PANEL NOT PRINTED) APRIL 1,1982.
7. THIS PARCEL IS TO BE SERVED BY PUBLIC WATER AND PUBLIC SEWER.
8. ALL PUBLIC UTILITIES WITHIN THIS PROJECT ARE TO BE PLACED UNDERGROUND. PROPOSED LOCATIONS OF ELECTRIC, CATV, AND TELEPHONE TO BE DETERMINED BY THE APPROPRIATE UTILITY COMPANY.
9. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING AND OTHER DATA SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES, GOVERNMENTAL AGENCIES AND/OR OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO GARDNER & PETERSON ASSOCIATES. THE EXISTENCE, SIZE AND LOCATION OF ALL SUCH FEATURES MUST BE DETERMINED AND VERIFIED IN THE FIELD BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1–800–922–4455.
10. THE SITE DISTURBANCE DEPICTED TOTALS 34.5 ACRES OR 68% OF THE ENTIRE PARCEL

GDD ZONE
RDD ZONE

RHODES ROAD

GOOSE LANE

N/F SIMUL, LLC 12 GOOSE LANE APN: 28/C/007

N/F SIMUL, LLC 12 GOOSE LANE APN: 28/C/007.01

N/F DEAN A. DAWN M. VILLANOVA 48 GOOSE LA APN: 28/C/009

N/F TOLLAND MEETINGHOUSE COMMONS, LLC 200 MERROW ROAD APN: 28/C/005

N/F PETER DANIEL MARTIN & SHARON JENSON 38 GOOSE LANE APN: 28/C/008

N/F KEVIN MARTIN 44 GOOSE LANE APN: 28/C/012.01

N/F ROBERT M. & IVY L. MORRISON 66 GOOSE LANE APN: 28/C/012

N/F RICHARD A. CRABB 82 GOOSE LANE APN: 28/C/014

N/F ANNA M. ZANGHI 94 GOOSE LANE APN: 28/C/015

ANDERSON ROAD

ROUTE 195 - MERROW ROAD

EMERGENCY ACCESS EASEMENT OVER 33 FIELDSTONE COMMONS IN FAVOR OF FIELDSTONE RIDGE, LLC

ACCESS EASEMENT OVER 33 FIELDSTONE COMMONS IN FAVOR OF FIELDSTONE RIDGE, LLC

N/F CAPITOL VENTURES, LLC 33 FIELDSTONE COMMONS APN: 28/C/002.03

FIELDSTONE COMMONS

N/F WHITFIELD PARK BENCH LLC SHERMAN PARKWAY LLC FARMINGTON PROPERTIES LLC 6 FIELDSTONE COMMONS APN: 28/C/002.01

LAND OF FIELDSTONE RIDGE, LLC 10 FIELDSTONE COMMONS APN: 28/C/002.02 50.7± Acres

417.00' CLASS GO EASEMENT

500'

DRAINAGE EASEMENT IN FAVOR OF THE TOWN OF TOLLAND

DRAINAGE EASEMENT IN FAVOR OF 33 FIELDSTONE COMMONS

PROPERTY BOUNDARY IS EDGE OF MARSH

N/F STATE OF CONNECTICUT

N/F G & G SERVICE INC. 128 MERROW ROAD APN: 28/C/001

"TOLLAND MARSH"

N/F ADAM R. & SHELLEY L. GROSSMAN 175 CIDER MILL ROAD APN: 28/C/027

N/F ADAM R. & SHELLEY L. GROSSMAN APN: 28/C/025

SKUNGAMAUG RIVER

INTERSTATE 84

TVA ZONE
RDD ZONE

WEIGOLD ROAD

CIDER MILL ROAD

LEGEND

PROPERTY LINE
ZONE BOUNDARY
EDGE WATER
EASEMENT

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

Eric R. Peterson
ERIC R. PETERSON L.S. 23430 REGISTRATION NO.

STATE OF CONNECTICUT ERIC R. PETERSON No. 23430 LICENSED LAND SURVEYOR

STATE OF CONNECTICUT ERIC R. PETERSON No. 23430 LICENSED PROFESSIONAL ENGINEER

OWNER/APPLICANT:
FIELDSTONE RIDGE, LLC
1031 HARTFORD TPKE
VERNON, CT 06066

200 100 0 200 400 600
GRAPHIC SCALE 1"=200'

REVISIONS
03/24/2022

IMPROVEMENT LOCATION SURVEY
SITE PLAN OF DEVELOPMENT
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=200'	02–07–2022	1 OF 24	9607A

C:\1Plot\9607S\SitePlan\03–24–2022\9607–4.pdf
9607S\dwg\9607A.dwg

IMPROVEMENT LOCATION SURVEY
EXISTING CONDITIONS PLAN
FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS — LAND SURVEYORS

REVISIONS
03/24/2022

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=100'	02-07-2022	2 OF 24	9607A

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72-155 AS AMENDED BY P.A. 73-571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

9607S\dwg\9607A.dwg

MERROW ROAD – CONN. ROUTE 195

FIELDSTONE COMMONS

N/F
WHITFIELD PARK BENCH LLC
SHERMAN PARKWAY LLC
FARMINGTON PROPERTIES LLC
6 FIELDSTONE COMMONS
APN: 28/C/002.01

N/F
CAPITOL VENTURES, LLC
33 FIELDSTONE COMMONS
APN: 28/C/002.03

N/F
G & G SERVICE INC.
128 MERROW ROAD
APN: 28/C/001

N/F
KEVIN MARTIN
44 GOOSE LANE
APN: 28/C/012.01

N/F
ROBERT M. & IVY L. MORRISON
66 GOOSE LANE
APN: 28/C/012

N/F
RICHARD A. CRABB
82 GOOSE LANE
APN: 28/C/014

N/F
ANNA M. ZANGHI
94 GOOSE LANE
APN: 28/C/015

N/F
ADAM R. & SHELLEY L. GROSSMAN
APN: 28/C/025

N/F
ADAM R. & SHELLEY L.
GROSSMAN
175 CIDER MILL ROAD
APN: 28/C/027

LAND OF
FIELDSTONE RIDGE, LLC
10 FIELDSTONE COMMONS
50.73 ACRES

#1: TYPE 'A'
FF=572.80

#2: TYPE 'A'
FF=578.05

#3: TYPE 'B'
FF=582.40

#4: TYPE 'B'
FF=584.50

#5: TYPE 'B'
FF=584.50

#6: TYPE 'D'
FF=582.08

#7: TYPE 'B'
FF=587.00

#8: TYPE 'B'
FF=594.13

#9: TYPE 'D'
FF=590.58

#10: TYPE 'A'
FF=596.08

#11: TYPE 'A'
FF=594.50

#12: TYPE 'C'
FF=598.37

#13: TYPE 'C'
FF=598.37

#14: TYPE 'A'
FF=586.37

#15: TYPE 'C'
FF=586.37

#16: TYPE 'D'
FF=553.38

#17: TYPE 'D'
FF=553.38

#18: TYPE 'D'
FF=539.38

#19: TYPE 'C'
FF=599.90

#20: TYPE 'C'
FF=599.90

#21: TYPE 'D'
FF=537.18

CLUBHOUSE
FF=569.33

POOL

MAINTENANCE
FF=564.05

PROPOSED WALKING PATH

PROPOSED DRAINAGE EASEMENT IN FAVOR OF 33 FIELDSTONE COMMONS

PROPOSED DRAINAGE EASEMENT IN FAVOR OF THE TOWN OF TOLLAND

EXISTING WALKING PATH

"TOLLAND MARSH"

SKUNGAMAUG RIVER

LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING ZETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- EXISTING PATH
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- EX. CONTOUR
- PROPOSED CURB
- PROPOSED DRAINAGE
- PROPOSED PATH
- PROPOSED TREELINE

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

Eric R. Peterson
ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72-155 AS AMENDED BY P.A. 73-571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

George T. Logan
GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

100 50 0 100 200 300
GRAPHIC SCALE 1"=100'

9607S.dwg\9607A.dwg

IMPROVEMENT LOCATION SURVEY
OVERALL SITE PLAN

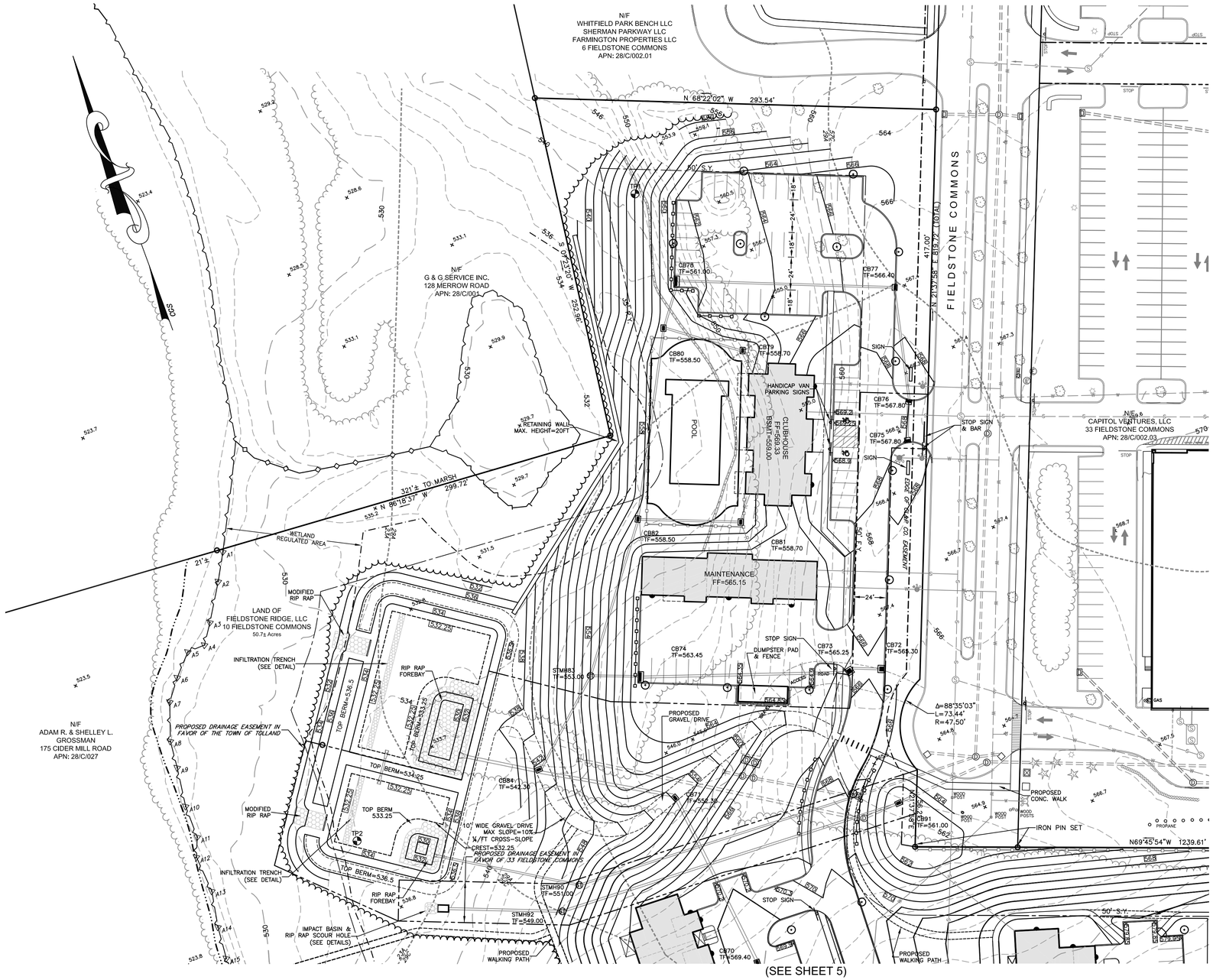
FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

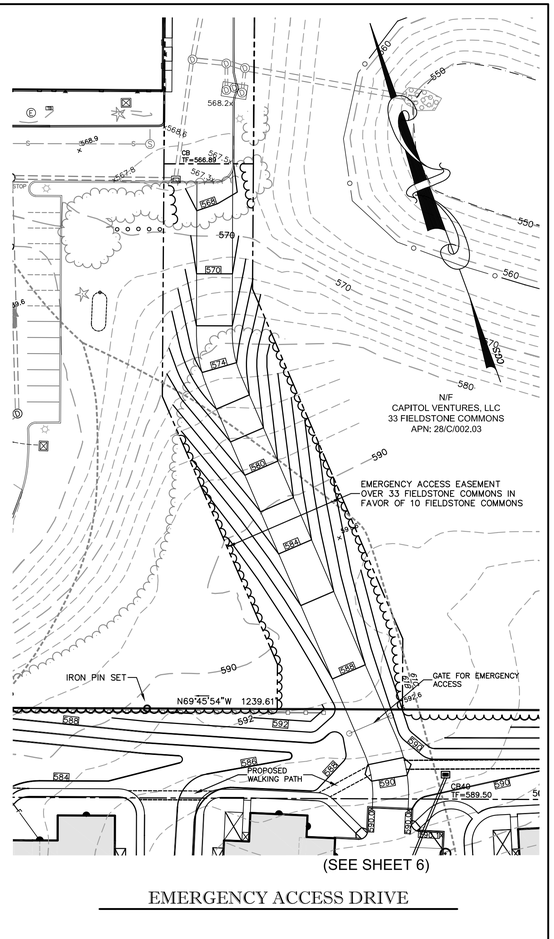
GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=100'	02-07-2022	3 OF 24	9607A



LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING SETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- EXISTING PATH
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- TEST PIT
- EX. CONTOUR
- EX. ELEVATION
- SOIL CLASSIFICATION
- PROPOSED CURB
- PROPOSED CONTOUR
- PROPOSED ELEVATION
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED PRESSURE SEWER
- PROPOSED WATER
- PROPOSED LIGHT POLE
- PROPOSED GUARDRAIL
- PROPOSED FENCE
- PROPOSED PATH
- PROPOSED TREELINE



EMERGENCY ACCESS DRIVE

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

Eric R. Peterson

L.S. 23430
ERIC R. PETERSON — REGISTRATION NO.

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72-155 AS AMENDED BY P.A. 73-571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

George T. Logan

GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

GRAPHIC SCALE 1"= 40'
40 20 0 40 80 120

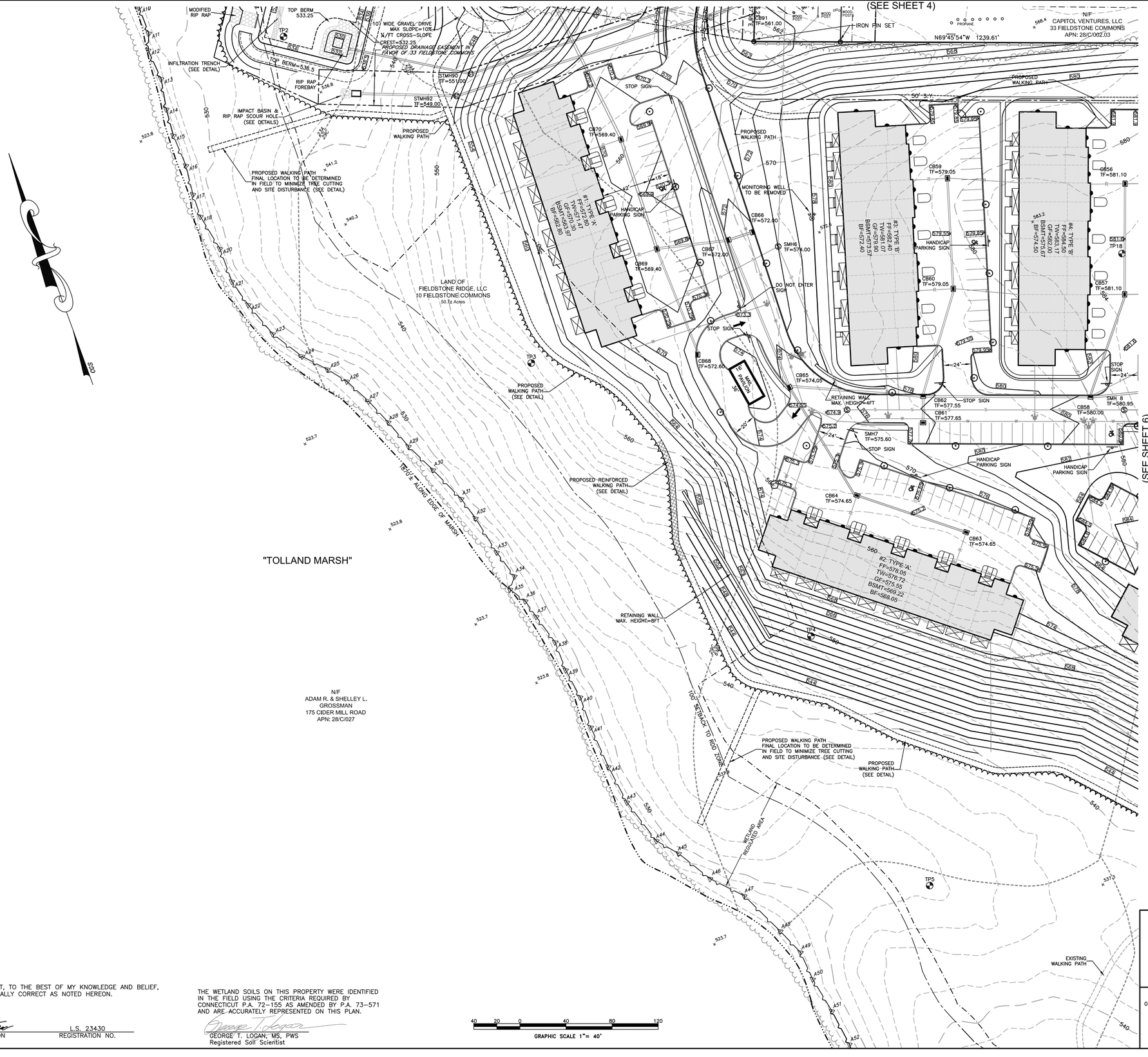
B607S.dwg\B607A.dwg

IMPROVEMENT LOCATION SURVEY
GRADING PLAN
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	4 OF 24	9607A



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George T. Logan

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IMPROVEMENT LOCATION SURVEY
GRADING PLAN

FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	5 OF 24	9607A

P:\9075\dwg\9607A.dwg

LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING SETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- EXISTING PATH
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- TP — TEST PIT
- 500 — EX. CONTOUR
- ×570.5 — EX. ELEVATION
- 108 / 61C — SOIL CLASSIFICATION
- PROPOSED CURB
- 584 — PROPOSED CONTOUR
- 589.2× — PROPOSED ELEVATION
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED PRESSURE SEWER
- PROPOSED WATER
- PROPOSED LIGHT POLE
- PROPOSED GUARDRAIL
- PROPOSED FENCE
- PROPOSED PATH

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Registered Soil Scientist

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40 20 0 40 80 120
GRAPHIC SCALE 1"= 40'

ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

REVISIONS
03/24/2022

IMPROVEMENT LOCATION SURVEY
GRADING PLAN
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	6 OF 24	9607A

9607S.dwg\9607A.dwg

(SEE SHEET 6)

WETLAND REGULATED AREA

LAND OF
FIELDSTONE RIDGE, LLC
10 FIELDSTONE COMMONS
50.7± Acres

EXISTING WALKING PATH

WETLAND REGULATED AREA

100' SETBACK TO RDD ZONE

N/F
ADAM R. & SHELLEY L.
GROSSMAN
175 CIDER MILL ROAD
APN: 28/C/027

IRON PIN SET

336.31'
S42°17'54"E
355'± TO MARSH

TP8

19'±

RETAINING WALL
MAX. HEIGHT=3FT

#18: TYPE 'D'
FF=539.38
TW=538.05
GF=530.80
BSMT=530.55
BF=529.38

#16: TYPE 'D'
FF=553.38
TW=552.05
GF=552.80
BSMT=552.55
BF=543.38

#17: TYPE 'D'
FF=553.38
TW=552.05
GF=552.80
BSMT=552.55
BF=543.38

CB23
TF=556.70

CB22
TF=556.70

STOP SIGN
& BAR

CB2
TF=551.95

CB1
TF=551.95

CB25
TF=537.90

HANDICAP
PARKING SIGN

CB24
TF=542.70

CB26
TF=537.90

STOP SIGN
& BAR

CB27
TF=538.95

CB28
TF=539.00

STOP
SIGN

SMH3
TF=542.70

CB29
TF=536.00

SMH2
TF=536.55

CB33
TF=535.90

#20: TYPE 'C'
FF=539.90
TW=539.57
GF=537.40
BSMT=531.07
BF=529.90

HANDICAP
PARKING SIGN

CB34
TF=535.90

STOP
BAR

SMH1
TF=539.00

CB30
TF=537.80

STOP
SIGN

DUMPSTER PAD
& FENCE

SEWER PUMP
STATION

HANDICAP
PARKING SIGN

CB31
TF=536.50

#19: TYPE 'C'
FF=539.90
TW=538.57
GF=537.40
BSMT=531.07
BF=529.90

CB32
TF=536.50

SMH4
TF=537.00

HANDICAP
PARKING SIGN

CB35
TF=535.70

SMH5
TF=536.40

#21: TYPE 'D'
FF=539.38
TW=538.05
GF=536.80
BSMT=528.38
BF=527.18

CB36
TF=535.70

STMH37
TF=536.00

TP21

TP22

TP23

TP24

TP19

TP18

PROPOSED
WALKING PATH

RIP RAP
FOREBAY

TOP BERM
528.5

TOP BERM=532.8

MODIFIED
RIP RAP

RIP RAP APRON
(SEE DETAIL)

PROPOSED
WALKING PATH
(SEE DETAIL)

INSTALL EROSION CONTROL
BLANKET ON SLOPES
GREATER THAN 3:1

226.20'
N18°45'49"E

IRON PIPE
FOUND

N/F
KEVIN MARTIN
44 GOOSE LANE
APN: 28/C/012.01

WETLAND REGULATED AREA

N1°27'29"E
114.48'

S88°06'25"W
166.76'

S82°56'45"W
100.10'

IRON PIPE
FOUND

N/F
ROBERT M. & IVY L. MORRISON
66 GOOSE LANE
APN: 28/C/012

IRON PIPE
FOUND

N04°02'45"W
369.53'

N/F
RICHARD A. CRABB
82 GOOSE LANE
APN: 28/C/014

IRON PIPE
FOUND

N08°40'32"W
100.07'

IRON PIN
SET

226.09'

N/F
ADAM R. & SHELLEY L.
GROSSMAN
APN: 28/C/025

544.19'
S26°59'10"E

584.50'
N79°36'40"E

IRON PIN SET

IRON PIN SET

SKUNGAMAUG RIVER

LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING ZETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- EXISTING PATH
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- TEST PIT
- EX. CONTOUR
- EX. ELEVATION
- SOIL CLASSIFICATION
- PROPOSED CURB
- PROPOSED CONTOUR
- PROPOSED ELEVATION
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
- PROPOSED SANITARY SEWER
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- PROPOSED WATER
- PROPOSED LIGHT POLE
- PROPOSED GUARDRAIL
- PROPOSED FENCE
- PROPOSED PATH

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GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

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ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

GRAPHIC SCALE 1"= 40'

IMPROVEMENT LOCATION SURVEY
GRADING PLAN
FIELDSTONE RIDGE

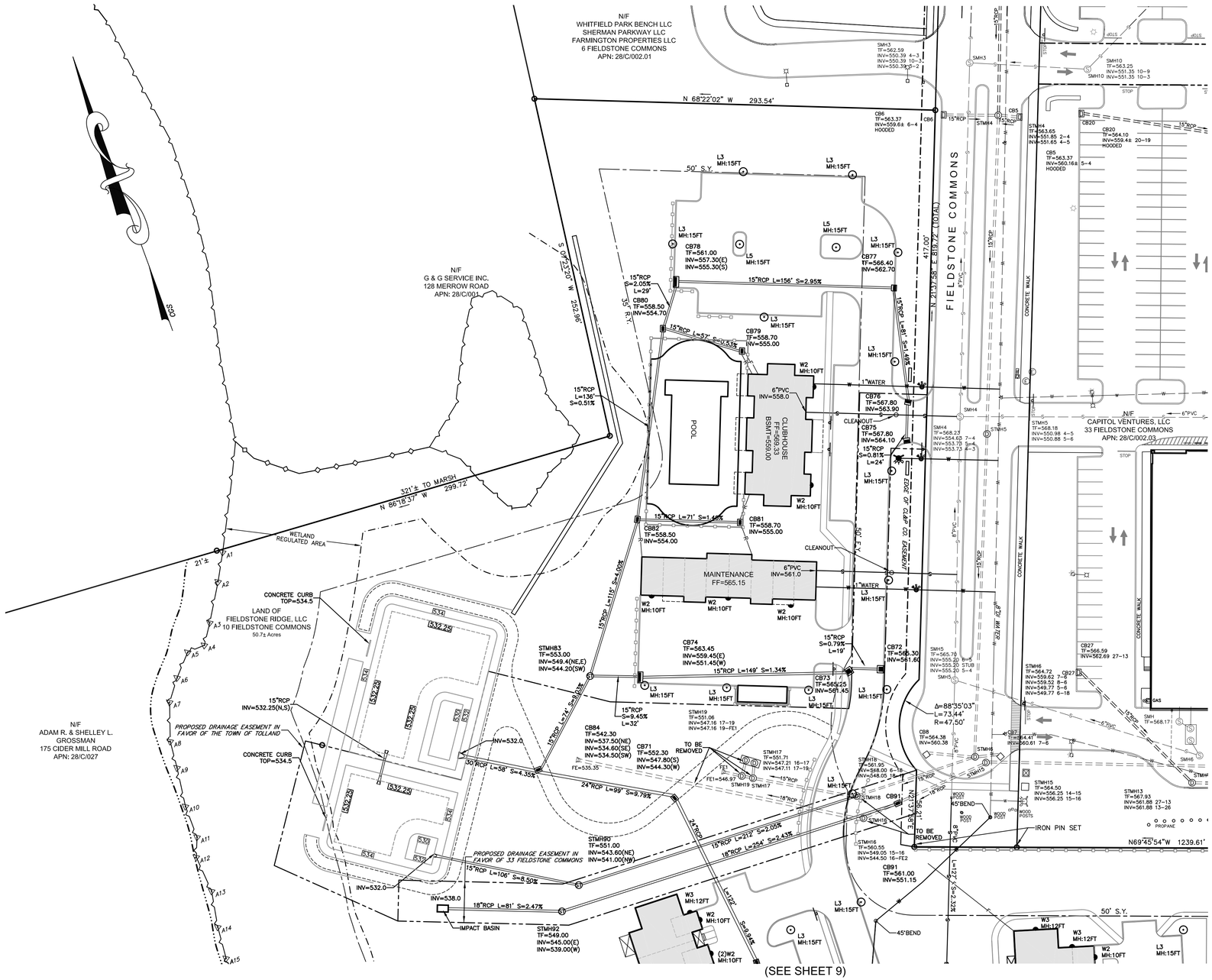
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	7 OF 24	9607A

9607S.dwg\9607A.dwg



LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING ZETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- PROPOSED CURB
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED PRESSURE SEWER
- PROPOSED WATER
- PROPOSED WATER
- PROPOSED GUARDRAIL
- PROPOSED FENCE

Luminaire Schedule			
Symbol	Label	Qty	Description
⊙	L3	95	Lumca # CP9424-72-LED05-120W-40-L3FL-120
⊙	L5	21	Lumca # CP9424-72-LED05-120W-40-L5S-120
◠	W2	279	Paraflex # DC150-90-24W-40K-TBD-TBD
◠	W3	56	Paraflex # DC150-90-48W-40K-TBD-TBD

Exterior lighting design from plan entitled "FIELDSTONE RIDGE APARTMENTS Photometric Layout Calculations and Schedules" by SK & Associates and Connecticut Lighting Centers. Date: 2/11/2022. Sheet No.: SL1.

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Eric R. Peterson
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George T. Logan
GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

40 20 0 40 80 120
GRAPHIC SCALE 1"= 40'

IMPROVEMENT LOCATION SURVEY
UTILITY PLAN
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
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BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	8 OF 24	9607A

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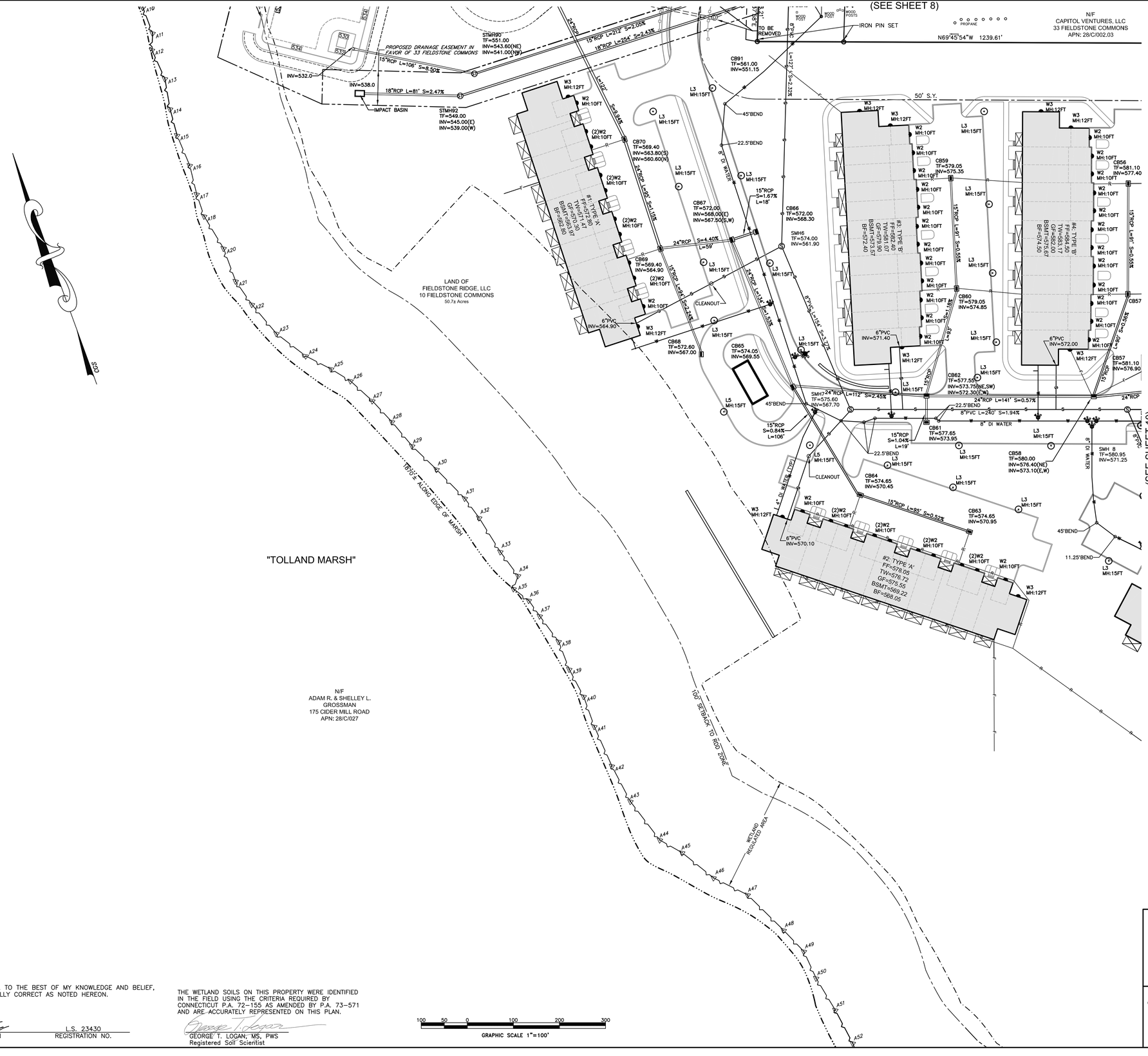

LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING SETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- PROPOSED CURB
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
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- PROPOSED PRESSURE SEWER
- PROPOSED WATER
- PROPOSED LIGHT POLE
- PROPOSED GUARDRAIL
- PROPOSED FENCE

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IMPROVEMENT LOCATION SURVEY
UTILITY PLAN
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
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GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	9 OF 24	9607A

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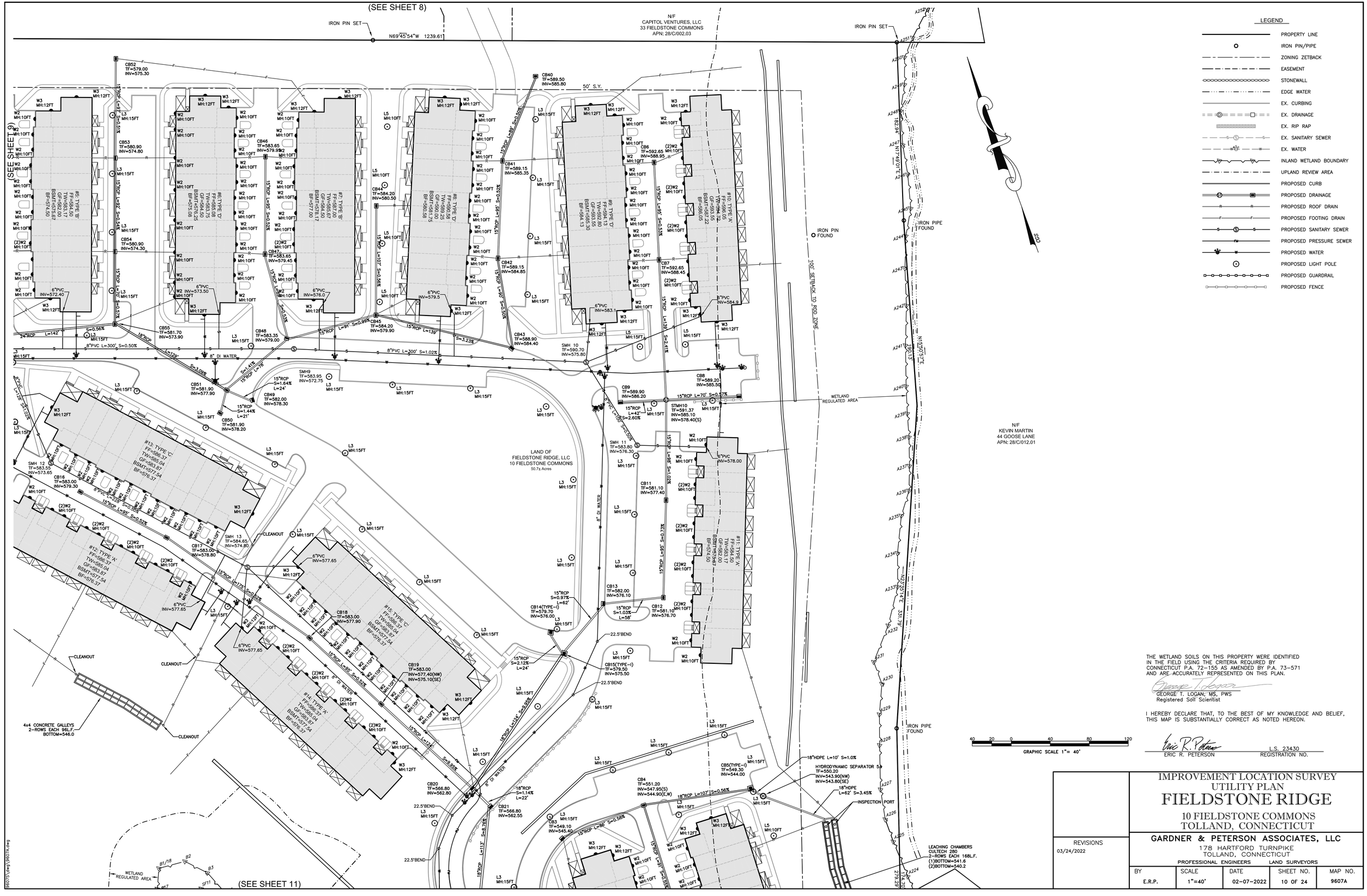

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GRAPHIC SCALE 1"= 40'

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178 HARTFORD TURNPIKE
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BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	10 OF 24	9607A

9607S\dwg\9607A.dwg

(SEE SHEET 10)

WETLAND REGULATED AREA

LAND OF
FIELDSTONE RIDGE, LLC
10 FIELDSTONE COMMONS
50.7± Acres

N/F
ADAM R. & SHELLEY L.
GROSSMAN
175 CIDER MILL ROAD
APN: 28/C/027

IRON PIN SET

336.31'
S45°13'54"E
355'± TO MARSH

N/F
KEVIN MARTIN
44 GOOSE LANE
APN: 28/C/012.01

N/F
ROBERT M. & IVY L. MORRISON
66 GOOSE LANE
APN: 28/C/012

IRON PIPE FOUND

N/F
RICHARD A. CRABB
82 GOOSE LANE
APN: 28/C/014

N/F
ADAM R. & SHELLEY L.
GROSSMAN
APN: 28/C/025

100' SETBACK TO RDD ZONE

544.19'
S26°39'10"E

SKUNGAMAUG RIVER

LEACHING CHAMBERS
CULTECH 280
2-ROWS EACH 168L.F.
(1)BOTTOM=541.6
(2)BOTTOM=540.2

INSPECTION PORT

6"PVC OVERFLOW
INV=542.4

N12°27'29"E
114.48'

S88°06'25" W
166.76'

S82°58'48"W
100.10'

N04°02'45"W
369.53'

N08°40'32"W
100.87'

N19°36'40"E
584.50'

CB23 TF=556.70 INV=552.70
CB22 TF=556.70 INV=553.00
CB25 TF=537.90 INV=534.20
CB26 TF=537.90 INV=533.70
CB27 TF=538.95 INV=533.45
CB28 TF=539.00 INV=533.30
CB29 TF=536.00 INV=532.30
CB30 TF=537.80 INV=531.70
CB31 TF=536.50 INV=531.10
CB32 TF=536.50 INV=530.60
CB33 TF=535.90 INV=532.20
CB34 TF=535.90 INV=531.70
CB35 TF=535.70 INV=531.00
CB36 TF=535.70 INV=530.50(NE) INV=529.80(NW,S)
CB1 TF=551.95 INV=548.25
CB2 TF=551.95 INV=548.45
CB39 TF=531.80 INV=528.50(15"x24") INV=528.00(6") INV=527.50(18")
SMH1 TF=539.00 INV=527.00
SMH2 TF=536.55 INV=529.95
SMH3 TF=542.70 INV=536.70 INV=532.70(W)
SMH4 TF=537.00 INV=528.40
SMH5 TF=536.40 INV=529.10
STMH37 TF=536.00 INV=529.30

#16: TYPE 'D' FF=552.05 TW=552.05 GF=552.55 BSMT=542.55 BF=542.38

#17: TYPE 'D' FF=552.38 TW=552.40 GF=552.90 BSMT=542.38 BF=542.38

#18: TYPE 'D' FF=552.38 TW=552.40 GF=552.90 BSMT=542.38 BF=542.38

#19: TYPE 'C' FF=539.90 TW=539.57 GF=537.40 BSMT=531.07 BF=529.90

#20: TYPE 'C' FF=539.90 TW=539.57 GF=537.40 BSMT=531.07 BF=529.90

#21: TYPE 'D' FF=537.18 TW=536.80 GF=536.60 BSMT=528.35 BF=527.18

15"RCP L=191' S=3.55%
15"RCP L=176' S=0.51%
15"RCP L=97' S=3.55%
18"RCP L=197' S=2.43%
18"RCP L=96' S=5.63%
15"RCP L=46' S=0.54%
15"RCP L=22' S=0.68%
15"RCP L=108' S=0.56%
15"RCP L=95' S=0.52%
15"RCP L=125' S=0.56%
15"RCP L=95' S=0.52%
15"RCP L=181' S=0.33%
24"RCP L=106' S=0.56%
24"RCP L=95' S=0.52%
24"RCP L=65' S=0.78%
24"RCP L=130' S=1.38%
18"RCP L=48' S=1.05%
6"PVC L=275' S=0.51%
6"PVC L=140' S=0.50%
8"PVC L=78' S=3.50%
8" DI WATER
4" DI WATER (TYP)
6"PVC INV=542.70
6"PVC INV=531.2
6"PVC INV=528.8
6"PVC INV=528.3
6"PVC INV=531.2
6"PVC INV=529.40
6"PVC OVERFLOW INV=531.7
6"PVC OVERFLOW INV=529.0
8"x4" REDUCER
45°BEND
22.5°BEND
FRENCH DRAIN
SEWER PUMP STATION
INV=534.6
LEACHING CHAMBERS CULTECH 280 1-ROW 120L.F. BOTTOM=529.0
LEACHING CHAMBERS CULTECH 280 2-ROWS EACH 56L.F. BOTTOM=529.5
PROVIDE HIGH LEVEL OVERFLOW TO GRADE
CPF BERM=532.8
INV=527.0
INV=527.5
IRON PIPE FOUND
IRON PIN SET

LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING ZETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- PROPOSED CURB
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
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- PROPOSED WATER
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- PROPOSED GUARDRAIL
- PROPOSED FENCE

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ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

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GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

GRAPHIC SCALE 1"= 40'

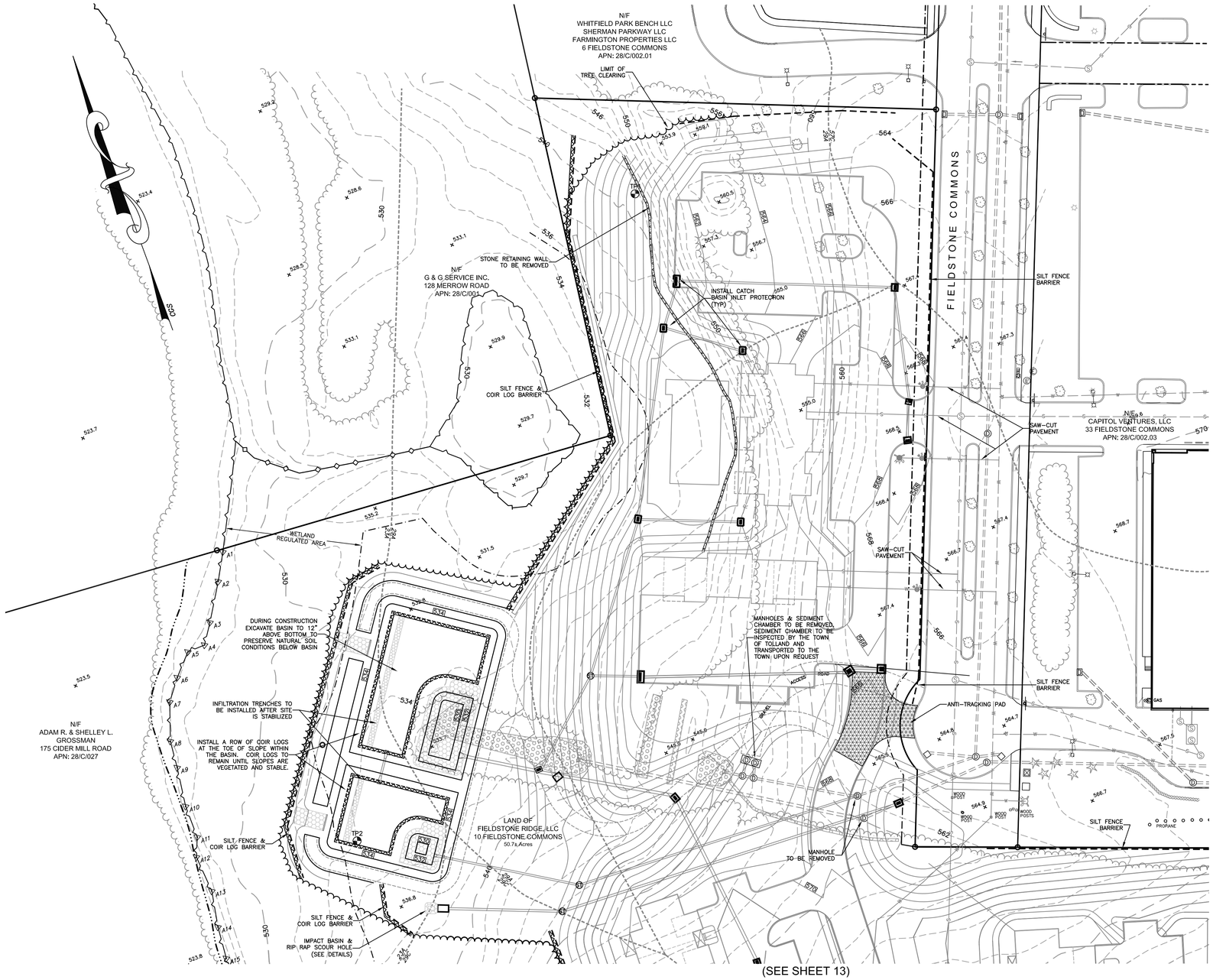
9607S.dwg\9607A.dwg

IMPROVEMENT LOCATION SURVEY
UTILITY PLAN
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	11 OF 24	9607A



LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING SETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
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- EX. DRAINAGE
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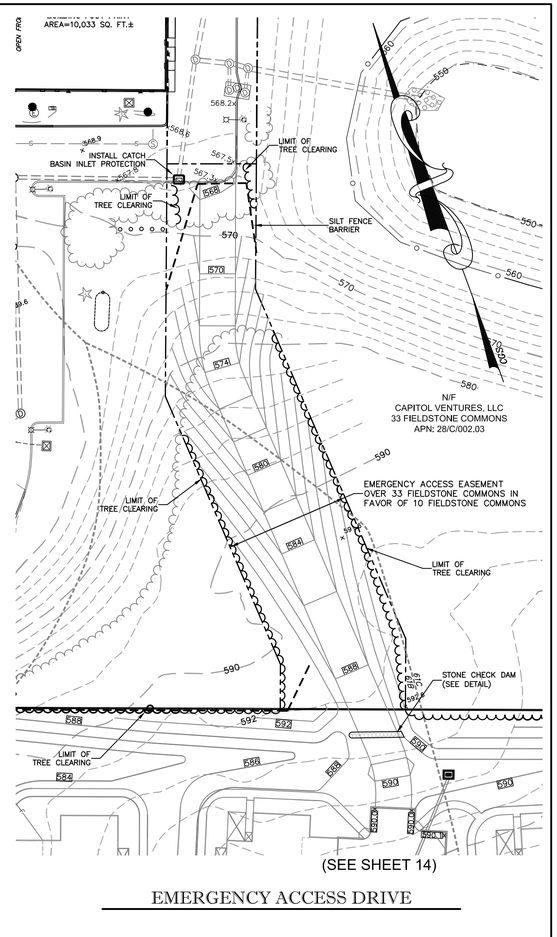
- UPLAND REVIEW AREA
- TP — TEST PIT
- 500 — EX. CONTOUR
- ×570.5 — EX. ELEVATION
- 306 61C — SOIL CLASSIFICATION
- PROPOSED CURB
- 584 — PROPOSED CONTOUR
- 582.8× — PROPOSED ELEVATION
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED PRESSURE SEWER
- PROPOSED WATER



EMERGENCY ACCESS DRIVE

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72-155 AS AMENDED BY P.A. 73-571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

GEORGE T. LOGAN; MS, PWS
Registered Soil Scientist

GRAPHIC SCALE 1"= 40'

REVISIONS
03/24/2022

IMPROVEMENT LOCATION SURVEY
EROSION & SEDIMENT CONTROL PLAN
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	12 OF 24	9607A

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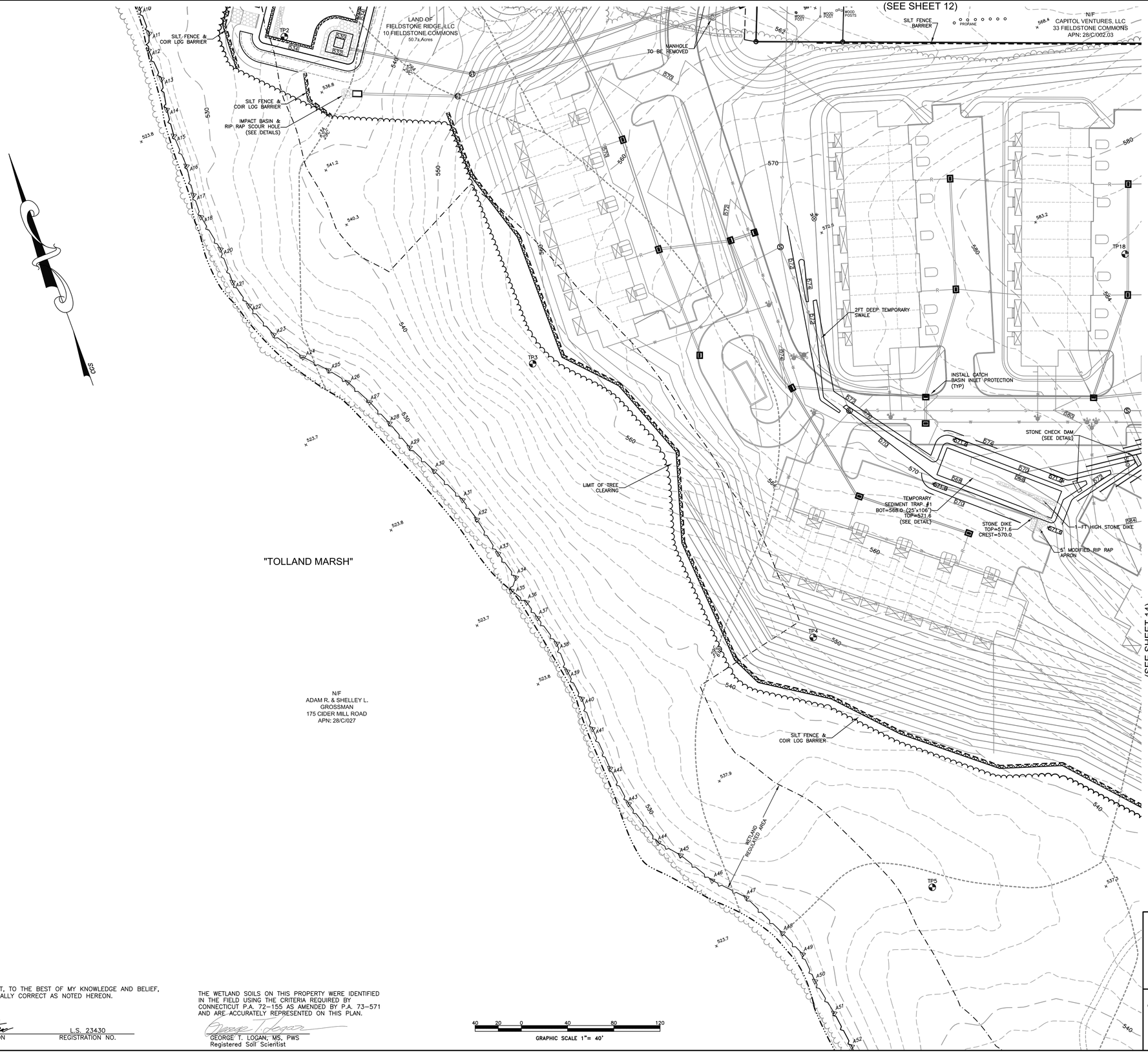

LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING SETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- EXISTING PATH
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- TEST PIT
- EX. CONTOUR
- EX. ELEVATION
- SOIL CLASSIFICATION
- PROPOSED CURB
- PROPOSED CONTOUR
- PROPOSED ELEVATION
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED PRESSURE SEWER
- PROPOSED WATER

GRAPHIC SCALE 1"= 40'

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REVISIONS
03/24/2022

IMPROVEMENT LOCATION SURVEY
EROSION & SEDIMENT CONTROL PLAN

FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	13 OF 24	9607A

(SEE SHEET 12)

(SEE SHEET 13)

(SEE SHEET 15)

SILT FENCE BARRIER

LIMIT OF TREE CLEARING

STONE CHECK DAM (SEE DETAIL)

N/F
CAPITOL VENTURES, LLC
33 FIELDSTONE COMMONS
APN: 28/C/002.03

LIMIT OF TREE CLEARING

STONE CHECK DAM (SEE DETAIL)

2FT DEEP TEMPORARY SWALES

LAND OF
FIELDSTONE RIDGE, LLC
10 FIELDSTONE COMMONS
50.7± Acres

SILT FENCE BARRIER FOR SOIL STOCKPILE

TEMPORARY SEDIMENT TRAP #2
BOT=577.8 (32'x107')
TOP=581.7
(SEE DETAIL)

1-FT HIGH STONE DIKE

STONE DIKE
TOP=581.7
CREST=580.0

5' MODIFIED RIP-RAP APRON

ROADWAY CHECK DAM (SEE DETAIL)

INSTALL CATCH BASIN INLET PROTECTION (TYP)

ROADWAY CHECK DAM (SEE DETAIL)

WETLAND REGULATED AREA

SILT FENCE & COIR LOG BARRIER

LIMIT OF TREE CLEARING

FENCE OFF AREA AND PROTECT FROM CONSTRUCTION TRAFFIC

SILT FENCE & COIR LOG BARRIER

WETLAND REGULATED AREA

FENCE OFF AREA AND PROTECT FROM CONSTRUCTION TRAFFIC

INSTALL EROSION CONTROL BLANKET ON SLOPES GREATER THAN 3:1

N/F
KEVIN MARTIN
44 GOOSE LANE
APN: 28/C/012.01

TP6 TP7 TP8 TP12 TP13 TP14 TP15 TP16 TP17

LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING ZETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- EXISTING PATH
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- TP — TEST PIT
- 500 — EX. CONTOUR
- ×570.5 — EX. ELEVATION
- 102 61C — SOIL CLASSIFICATION
- PROPOSED CURB
- 584 — PROPOSED CONTOUR
- 589.2BK — PROPOSED ELEVATION
- PROPOSED DRAINAGE
- PROPOSED ROOF DRAIN
- PROPOSED FOOTING DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED PRESSURE SEWER
- PROPOSED WATER

GRAPHIC SCALE 1"= 40'
40 20 0 40 80 120

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IMPROVEMENT LOCATION SURVEY
EROSION & SEDIMENT CONTROL PLAN
FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	14 OF 24	9607A

9607S \dwg\9607A.dwg

(SEE SHEET 14)

WETLAND REGULATED AREA

LAND OF
FIELDSTONE RIDGE, LLC
10 FIELDSTONE COMMONS
50.7± Acres

ROADWAY CHECK DAM (SEE DETAIL)

SILT FENCE & COIR LOG BARRIER

LIMIT OF TREE CLEARING

ROADWAY CHECK DAM (SEE DETAIL)

INSTALL EROSION CONTROL BLANKET ON SLOPES GREATER THAN 3:1

SILT FENCE & COIR LOG BARRIER

FENCE OFF AREA AND PROTECT FROM CONSTRUCTION TRAFFIC

WETLAND REGULATED AREA

LIMIT OF TREE CLEARING

INSTALL CATCH BASIN INLET PROTECTION (TYP.)

TP11

TEMPORARY SEDIMENT TRAP #3
BOT=531.5 (33'x106')
TOP=535.5
(SEE DETAIL)

1-FT HIGH STONE DIKE

STONE DIKE
TOP=535.5
CREST=533.75

5' LONG MODIFIED RIP RAP APRON

2FT DEEP TEMPORARY SWALE

FENCE OFF AREA AND PROTECT FROM CONSTRUCTION TRAFFIC

SILT FENCE & COIR LOG BARRIER

FENCE OFF AREA AND PROTECT FROM CONSTRUCTION TRAFFIC

WETLAND REGULATED AREA

SILT FENCE & COIR LOG BARRIER

DURING CONSTRUCTION EXCAVATE BASIN TO 12" ABOVE BOTTOM TO PRESERVE NATURAL SOIL CONDITIONS BELOW BASIN

TP8

TP21

TP22

TP9

TP23

TP10

N/F
ADAM R, & SHELLEY L,
GROSSMAN
175 CIDER MILL ROAD
APN: 28/C/027

N/F
ADAM R. & SHELLEY L.
GROSSMAN
APN: 28/C/025

N/F
KEVIN MARTIN
44 GOOSE LANE
APN: 28/C/012.01

N/F
ROBERT M. & IVY L. MORRISON
66 GOOSE LANE
APN: 28/C/012

N/F
RICHARD A. CRABB
82 GOOSE LANE
APN: 28/C/014

N/F
ADAM R. & SHELLEY L.
GROSSMAN
APN: 28/C/025

LEGEND

- PROPERTY LINE
- IRON PIN/PIPE
- ZONING ZETBACK
- EASEMENT
- STONEWALL
- EDGE WATER
- EX. CURBING
- EX. DRAINAGE
- EX. RIP RAP
- EX. SANITARY SEWER
- EX. WATER
- EXISTING PATH
- INLAND WETLAND BOUNDARY
- UPLAND REVIEW AREA
- TP — TEST PIT
- 500 — EX. CONTOUR
- ×570.5 — EX. ELEVATION
- 308 61C — SOIL CLASSIFICATION
- PROPOSED CURB
- 534 — PROPOSED CONTOUR
- 589.8× — PROPOSED ELEVATION
- PROPOSED DRAINAGE
- R — R — PROPOSED ROOF DRAIN
- F — F — PROPOSED FOOTING DRAIN
- S — S — PROPOSED SANITARY SEWER
- PROPOSED PRESSURE SEWER
- W — W — PROPOSED WATER

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ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

40 20 0 40 80 120
GRAPHIC SCALE 1"= 40'

IMPROVEMENT LOCATION SURVEY
EROSION & SEDIMENT CONTROL PLAN
FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=40'	02-07-2022	15 OF 24	9607A

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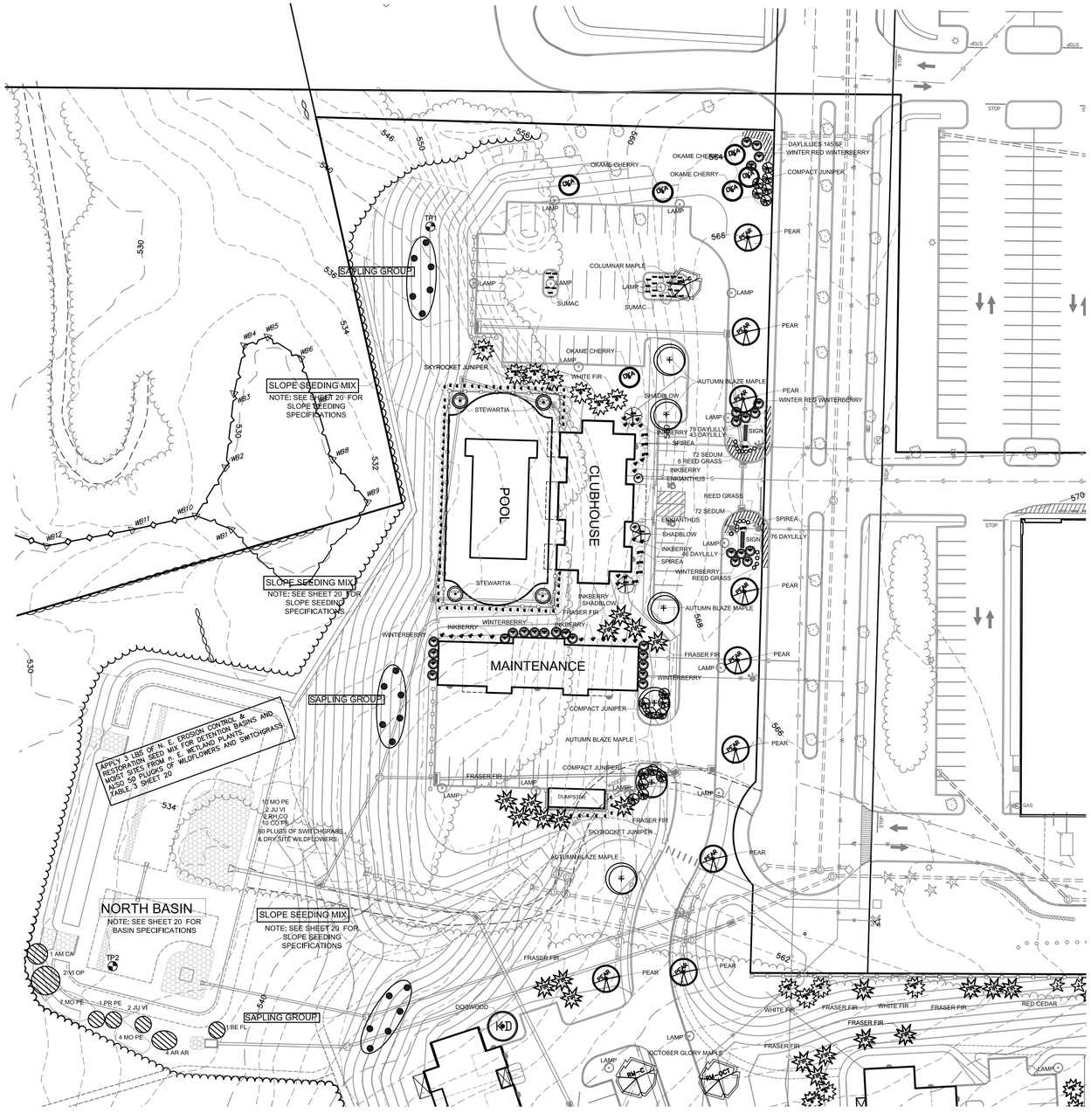


PLANTING SCHEDULE -- AWAY FROM BUILDINGS

SYMBOL		SCIENTIFIC NAME/ COMMON NAME	SIZE	QUANTITY
TREES: DECIDUOUS	AR	ACER RUBRUM COLUMNARIS/ COLUMNAR RED MAPLE	3 - 3 1/2" CAL.	17
	AR	ACER X FREEMANII 'JEFFERSRED'/ AUTUMN BLAZE MAPLE	3 - 3 1/2" CAL.	28
	AR	ACER RUBRUM 'OCTOBER GLORY'/ RED MAPLE	3 - 3 1/2" CAL.	4
	QR	QUERCUS ROBUR/ RED OAK	3 - 3 1/2" CAL.	4
	AC	AMELANCHIER CANADENSIS/ SHADBLOW	2 1/2" - 3" CAL.	7
	BP	BETULA PAPYRIFERA/ PAPER BIRCH	2 1/2" - 3" CAL.	11
	CC	CERCIS CANADENSIS/ EASTERN REDBUD	2 1/2" - 3" CAL.	3
	CKO	CORNUS KOUSA/ KOUSA DOGWOOD	2 1/2" - 3" CAL.	19
	CO	CARYA OVATA/ SHAGBARK HICKORY	2 1/2" - 3" CAL.	1
	MBA	MALUS BACCATA SIBIRICA/ COLUMNAR SIBERIAN CRABAPPLE	2 1/2" - 3" CAL.	16
	NS	NYSSA SYLVATICA/ BLACK GUM	2 1/2" - 3" CAL.	10
	OKA	PRUNUS 'OKAME'/ OKAME CHERRY	2 1/2" - 3" CAL.	22
	CAL	PYRUS CALLERYANA 'CLEVELAND SELECT'/ FLOWERING PEAR	2 1/2" - 3" CAL.	24
	ST	STEWARTIA PSEUDOCAMILLIA/ STEWARTIA	2 1/2" - 3" CAL.	4
TREES: EVERGREEN	ABC	ABIES CONCOLOR/ WHITE FIR	4 - 5'	67
	ABF	ABIES FRASERI/ FRASER FIR	4 - 5'	69
	JV	JUNIPERUS VIRGINIANA/ RED CEDAR	4 - 5'	28
	PRI	PINUS RIGIDA/ PITCH PINE	4 - 5'	5
SHRUBS:	EAK	ENKIANTHUS CAMPANULATUS/ REDVEIN ENKIANTHUS	18 - 24"	2
	IGK	ILEX GLABRA 'SHAMROCK'/ SHAMROCK HOLLY	18 - 24"	25
	IVC	ILEX VERTICILLATA 'WINTER RED'/ WINTER RED WINTERBERRY	18 - 24"	40
	JCP	JUNIPERUS CHIN. PFITZ. COMPACTUM/ COMPACT PFITZER JUNIPER	18 - 24"	26
	JSK	JUNIPERUS SCOPULORUM 'SKYROCKET'/ SKYROCKET JUNIPER	18 - 24"	84
	RAS	RHUS AROMATICA 'GRO-LOW'/ FRAGRANT SUMAC	18 - 24"	25
	SAW	SPIRAEA BUMALDA 'ANTHONY WATERER'/ SPIREA	18 - 24"	9
HERBACEOUS PLANTS:	HDD	HEMEROCALLIS SPP./ DAYLILLY YELLOW VARIETY	1 GAL.	389
	CAG	CALAMAGROSTIS / REED GRASS	1 GAL.	19
	SED	SEDUM 'BRILLIANT'/ SEDUM	1 GAL.	144

NOTE: STEEP SLOPES TO BE SEEDED WITH NEW ENGLAND ROADSIDE MATRIX UPLAND SEED MIX SPECIFIED BY NEW ENGLAND WETLAND PLANTS, INC. NEWP.COM

NOTE: ALL PLANT BEDS TO BE MULCHED WITH SHREDDED BARK TO A MAXIMUM DEPTH OF 3"

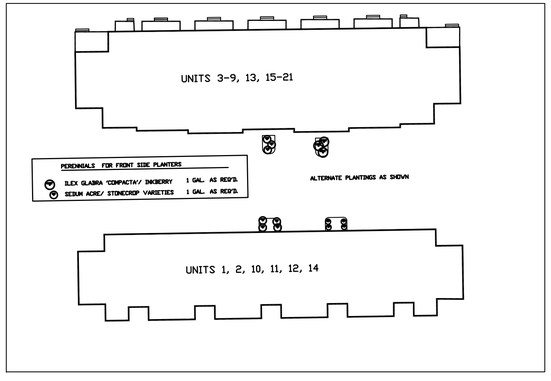
SAPLING GROUP

3' - 4' SAPLING SIZE

GROUPS OF SIX SAPLING TREES 11 GROUPS, 66 SAPLINGS

NOTE: ALTERNATE SPECIES GROUP TO GROUP
MAINTAIN SAPLING DISTANCE 15' - 18' ADJUST ON SITE

AR	ACER RUBRUM/ RED MAPLE
PP	PINUS RIGIDA/ PITCH PINE
BP	BETULA PAPYRIFERA/ PAPER BIRCH
QI	QUERCUS ILICIFOLIA/ BEAR OR SCRUB OAK
PT	POPULUS TREMULOIDES/ QUAKING ASPEN



LANDSCAPE PLAN
SHEET 16 OF 24

FIELDSTONE RIDGE

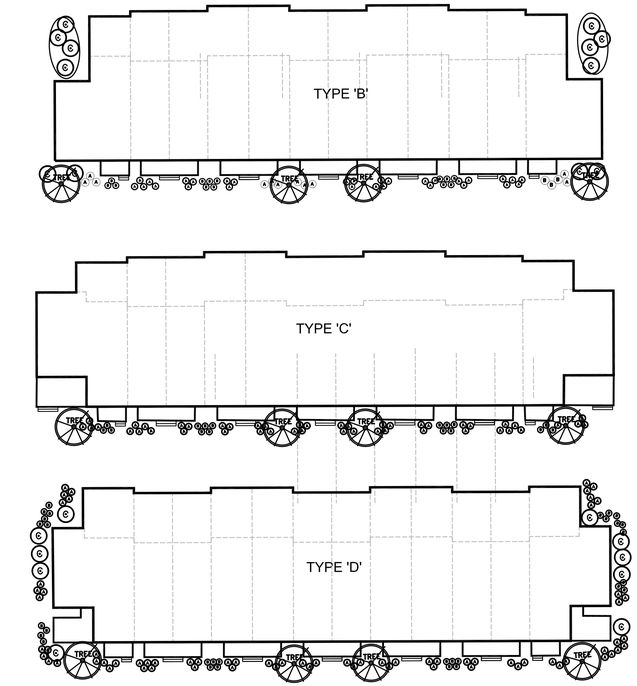
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
ALEXOPOULOS	1"=40'	02-07-2022	16 OF 24	9607A

NORTH BASIN PLANTING PLAN
SCALE: 1" = 20'



SMALL TREES FOR BLDG. FRONT SIDES - FOUR EACH

BUILDINGS 1,2,3,4,5,7,10,11,12,14
AMELANCHIER LAEVIS 'BALLERINA'/ SHADBLOW 6-8' QUANT. 40

BUILDING 6,8,9,13,15,16,17,18,19,20,21
MALUS 'ADIRONDACK'/ ADIRONDACK CRABAPPLE 6-8' QUANT. 44

SHRUB CHOICES 'A' (A)
POTENTILLA FRUTICOSA 'ABBOTTSWOOD'/ POTENTILLA
SPIRAEA X BUMALDA ANTHONY WATERERI/ SPIREA

SHRUB CHOICES 'B' (B)
CLETHRA ALNIFOLIA 'HUMMINGBIRD'/ HUMMINGBIRD CLETHRA
VIBURNUM DENTATUM 'BLUE MUFFIN'/ BLUE MUFFIN VIBURNUM
BUXUS 'GREEN GEM'/ GREEN GEM BOXWOOD
ILEX GLABRA 'COMPACTA'/ INKBERRY

SHRUB CHOICES 'C' (C)
SYRINGA PATULA 'MISS KIM' / MISS KIM LILAC
HYDRANGEA PANICULATA 'UNIQUE'/ PANICLED HYDRANGEA
ILEX GLABRA/ INKBERRY
EUONYMUS FORTUNEI 'EMERALD GAIETY'/ EMERALD GAIETY EUONYMUS

PLANTING SIZE: 18 - 21"

LANDSCAPE PLAN
SHEET 17 OF 24

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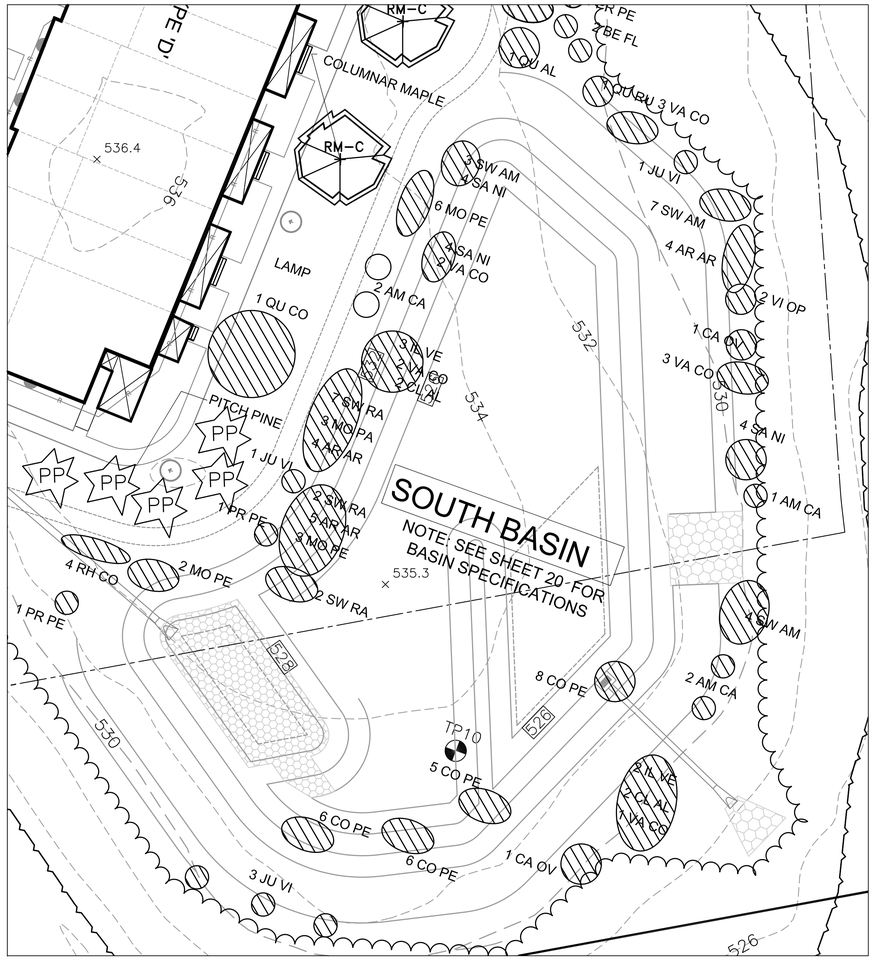
ALEXOPOULOS	1"=40'	02-07-2022	17 OF 24	9607A



SOUTH BASIN PLANTING PLAN
SCALE: 1" = 20'

LANDSCAPE PLAN
SHEET 18 OF 24

FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

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03/24/2022

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BY	SCALE	DATE	SHEET NO.	MAP NO.
ALEXOPOULOS	1"=40'	02-07-2022	18 OF 24	9607A

VERNAL POOL BUFFER PLANTINGS

BUFFER GROUP 1 SAPLINGS

2 PRUNUS PENNSYLVANICA
PIN CHERRY
2 BETULA POPULIFOLIA
GRAY BIRCH
1 AMELANCHIER CANADENSIS
SHADBUSH
1 LARIX LARACINA
LARCH

BUFFER GROUP 2 SAPLINGS

1 LARIX LARACINA
LARCH
1 FLOWERING DOGWOOD
GRAY BIRCH
2 AMELANCHIER CANADENSIS
SHADBUSH

BUFFER GROUP 3 SAPLINGS

1 PRUNUS PENNSYLVANICA
PIN CHERRY
2 BETULA POPULIFOLIA
GRAY BIRCH
2 AMELANCHIER CANADENSIS
SHADBUSH
1 LARIX LARACINA
LARCH

BUFFER SHRUBS 1

20 MORELLA PENSYLVANICA
NORTHERN BAYBERRY
15 COMPTONIA PEREGRINA
SWEETFERN

BUFFER SHRUBS 2

8 SWIDA RACEMOSA
GRAY DOGWOOD
5 ARONIA ARBUTIFOLIA
RED CHOKEBERRY

BUFFER SHRUBS 3

10 MORELLA PENSYLVANICA
NORTHERN BAYBERRY
15 COMPTONIA PEREGRINA
SWEETFERN
4 ARONIA ARBUTIFOLIA
RED CHOKEBERRY

BUFFER SHRUBS 4

6 SWIDA RACEMOSA
GRAY DOGWOOD
10 COMPTONIA PEREGRINA
SWEETFERN

SEE SHEET 18 FOR LOCATIONS
FOR PLANTING SPECIFICATIONS SEE SHEET 20

FOR PLANT LOCATIONS CONSULT
ECOLOGIST OR CLIENT REPRESENTATIVE
BEFORE INSTALLATION

SAPLING GROUP

SLOPE SEEDING MIX
NOTE: SEE SHEET 20 FOR SLOPE SEEDING SPECIFICATIONS

SLOPE SEEDING MIX
NOTE: SEE SHEET 20 FOR SLOPE SEEDING SPECIFICATIONS

SOUTH BASIN
NOTE: SEE SHEET 20 FOR BASIN SPECIFICATIONS

#16 TYPE 'D'
#17 TYPE 'D'
#20: TYPE 'C'
#19: TYPE 'C'
#21: TYPE 'D'

LANDSCAPE PLAN
SHEET 19 OF 24

FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
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03/24/2022

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BY	SCALE	DATE	SHEET NO.	MAP NO.
ALEXOPOULOS	1"=40'	02-07-2022	19 OF 24	9607A

FOR DETENTION BASIN SLOPES AND BOTTOMS, EXCEPT FOR SUNNY SOUTH AND WEST FACING UPPER SLOPES AND OTHER MOIST DISTURBED AREAS

New England Erosion Control/Restoration Mix For Detention Basins and Moist Sites

The New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites contains a selection of native grasses and wildflowers designed to colonize generally moist, recently disturbed sites where quick growth of vegetation is desired to stabilize the soil surface. It is an appropriate seed mix for ecologically sensitive restorations that require stabilization as well as long-term establishment of native vegetation.

This mix is particularly appropriate for detention basins that do not hold standing water. Many of the plants in this mix can tolerate infrequent inundation, but not constant flooding. The mix may be applied by hand, by mechanical spreader, or by hydro-seeder. After sowing, lightly rake, roll or cultipack to insure good seed to soil contact. Best results are obtained with a Spring or late Summer seeding. Late Fall and Winter dormant seeding requires an increase in the application rate. A light mulching of clean, weed-free straw is recommended.

APPLICATION RATE: 35 lbs/acre | 1250 sq ft/lb

SPECIES: Riverbank Wild Rye (Elymus riparius), Creeping Red Fescue (Festuca rubra), Little Bluestem (Schizachyrium scoparium), Big Bluestem (Andropogon gerardii), Switch Grass (Panicum virgatum), Upland Bentgrass (Agrostis perennans), Nodding Bur Marigold (Bidens cernua), Hollow-Stem Joe Pye Weed (Eupatorium fistulosum/Eutrochium fistulosum), New England Aster (Aster novae-angliae), Boneset (Eupatorium perfoliatum), Blue Vervain (Verbena hastata), Soft Rush (Juncus effusus), Wool Grass (Scirpus cyperinus).

FOR UPLAND SLOPES WITH SANDY, DROUGHTY, DISTURBED SOIL, ESPECIALLY ON SOUTH AND WEST-FACING SLOPES
New England Conservation/Wildlife Mix

The New England Conservation/Wildlife Mix provides a permanent cover of grasses, wildflowers, and legumes. For both good erosion control and wildlife habitat value. The mix is designed to be a no maintenance seeding, and is appropriate for cut and fill slopes, detention basin side slopes, and disturbed areas adjacent to commercial and residential projects.

APPLICATION RATE: 25lbs/acre | 1750 sq ft/lb

SPECIES: Virginia Wild Rye (Elymus virginicus), Little Bluestem (Schizachyrium scoparium), Big Bluestem (Andropogon gerardii), Red Fescue (Festuca rubra), Switch Grass (Panicum virgatum), Partridge Pea (Chamaecrista fasciculata), Panicledleaf Tick Trefoil (Desmodium paniculatum), Indian Grass (Sorghastrum nutans), Blue Vervain (Verbena hastata), Butterfly Milkweed (Asclepias tuberosa), Black Eyed Susan (Rudbeckia hirta), Common Sneezeweed (Helenium autunale), Heath Aster (Asterpilosus/Symphyotrichum pilosum), Early Goldenrod (Solidago juncea), Upland Bentgrass (Agrostis perennans) (Helenium autumnale), (Aste/Symphiotrichum pilosus).

New England Roadside Matrix Upland Seed Mix

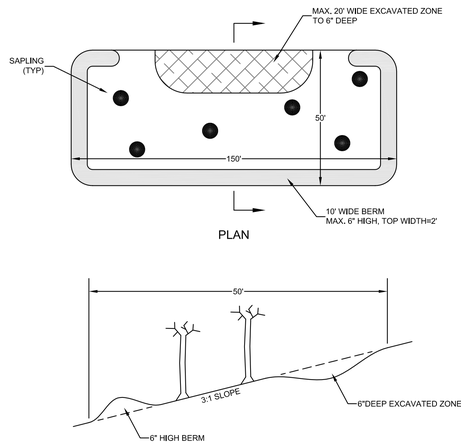
APPLICATION RATE: 35LBS/ACRE | 1250 sq ft/lb

SPECIES:
Grasses
Virginia Wild Rye (Elymus virginicus), Little Bluestem (Schizachyrium scoparium), Red Fescue (Festuca rubra), Big Bluestem (Andropogon gerardii), Indian Grass (Sorghastrum nutans), Switch Grass (Panicum virgatum)

Wildflowers
Partridge Pea (Chamaecrista fasciculata), Butterfly Milkweed (Asclepias tuberosa), Panicledleaf Tick Trefoil (Desmodium paniculatum), Beard Tongue (Penstemon digitalis), Black Eyed Susan (Rudbeckia hirta), Hollow-Stem Joe Pye Weed (Eupatorium fistulosum/Eutrochium fistulosum)

Shrubs
Grey Dogwood (Cornus racemosa), Silky Dogwood (Cornus amomum), Staghorn Sumac (Rhus typhina)

The New England Roadside Matrix Mixes are designed for use along roads and highways. These mixes are unusual in that they contain native grasses, wildflowers, and shrubs that are blended together as a native matrix seed mix. In areas that receive frequent mowing, the cold season grasses will dominate, such as those areas closet to the roadway shoulder. In areas farther from the road, which may be mown only once each year, or in hard to mow areas, such as around sign posts, the wildflower component will become dominant. Along cuts and side slopes which may never be mown, the shrub component will add diversity and beauty to the roadside plantings.it is a particularly appropriate seed mix for roadsides, industrial sites, or cut and fill slopes. These mixes may be applied by hydroseeding, or by mechanical spreader. Always apply on a clean, wed-free seed bed. After sowing, lightly rake or roll the site to improve seed-to-soil contact. Best results are obtained with a mid-late spring seeding.summer seeding will benefit from a light mulching of clean, weed-free straw to conserve soil moisture



NOTES:
1. SALVAGE 4" OF TOPSOIL BEFORE GRADING.
2. INCORPORATE LEAF COMPOST TO DEPTH OF 12".
3. APPLY 4" LAYER AND INCORPORATE TO A DEPTH OF 12".
4. TOP DRESS WITH SALVAGED TOPSOIL.
5. OVER EXCAVATE WHEN GRADING TO ALLOW SPACE FOR LEAF COMPOST AND TOPSOIL.

SAPLING GROUPS ON SLOPES

TABLES OF PLANTING MATERIALS FOR SOUTHWESTERLY FACING SLOPES
FIELDSTONE RIDGE, TOLLAND, CONNECTICUT

Table 1. Trees
Hydrologic Zones: Zone C: moderately well drained, usually moist; Zone D: well-drained to excessively well drained

Scientific Name	ID	Zone	Common Name	Size	Shade Tolerant?		Sapling Clusters S.C.1	S.C.2.	S.C.3	Else-where	Totals
TABLE 1a. FULL SIZE TREES											
Carya ovata	Ca-ov	C,D,E	Shagbark hickory	4'-6'	Y	mod. columnar	0	0	0	1	1
Quercus rubra	Qu-ru	C,D,E	Red oak	4'-6'	Y	very tall, broad	0	0	0	1	1
Larix laricina	La-La	C,D,E	Western larch	4'-6'	N	deciduous	1	1	1	0	3
Total:							1	1	1	2	5
TABLE 1b. SMALL SIZE TREES											
Amelanchier canadensis	Am-ca	C,D,E	Shadblow	4'-6'	N		1	2	2		5
Benthamidea florida	Be-fl	D, E	Flowering dogwood	4'-6'	Y		0	1	2		3
Betula populifolia	Be-po	B,C,D,E	Gray birch	2'-3'	N		0	2	2		4
Prunus pensylvanica	Pr-Vi	D,E	Pin cherry	4'-6'	N		2	0	1		3
Total:							3	5	7		15

Table 2. Shrubs

Scientific Name	ID	Zone	Common Name	Size	Shade Tolerant?		Buffer Shrubs B.S.1	B.S.2	B.S.3	B.S.4	Totals
Aronia arbutifolia	Ar-ar	B,C,D,E	Chokeberry	2'-3'	N		0	5	4	0	9
Comptonia peregrina	Co-pe	D,E	Sweetfern	1'-2'	N		15	0	10	10	35
Morella pensylvanica	Mo-pe	C,D,E	Bayberry	2'-3'	N		20	0	20	0	40
Rhus typhiina	Rh-ty	D,E	Staghorn sumac		N	Y=in seed mix	Y	Y	Y	Y	Y
Swida racemosum	Sw-ra	B,C,D,E	Gray dogwood	2'-3'	Y	Y=in seed mix	Y	2	Y	6	8
Totals:							35	7	34	16	92

Table 3. Herbs
Hydrologic Zones: Zone C: moderately well drained; Zone D: well-drained; Zone E: excessively drained. If exposure is southern/western: "D" or "E" zone

Two seed mixes to be used in this area: upland roadside matrix in sapling a shrub clusters. Areas between clusters plant the NEWP conservation wildlife mix, with warm season grasses. In addition to the grass and wildflower species listed in the seed mix specifications Symphiotrichum (Aster) laevis (smooth aster) has been introduced to the site, in the slope plantings for the stormwater facilities and should spread if conditions are suitable.

Seed Mixes to be applied: (See Plan Sheet for Location)
Zones C, D, E: New England Upland Roadside Matrix Mix
Zones C, D, E : New England Conservation Mix with warm season grasses & dry site wildflowers

TABLES OF PLANTING MATERIALS FOR STORMWATER BASINS
FIELDSTONE RIDGE, TOLLAND, CONNECTICUT

Table 1. Trees

Hydrologic Zones: Zone A: Saturated/Shallow inundation; Zone B: seasonally saturated, moist
Zone C: moderately well drained, usually moist; Zone D: well-drained to excessively well drained

Scientific Name	ID	Zone	Common Name	Size	Shade Tolerant?	Northwesterly Basin	Southern Basin
TABLE 1a. FULL SIZE TREES							
Carya ovata	Ca-ov	C,D,E	Shagbark hickory	4'-6'	Y	0	2
Quercus alba	Qu-al	C,D,E	White oak	4'-6'	Y	0	1
Quercus coccinea	Qu-co	C,D, E	Scarlet oak	4'-6'	Y	0	1
Quercus rubra	Qu-ru	B,C	Red oak	4'-6'	Y	0	1
Pinus rigida	Pi-ri	C,D,E	Pitch Pine	4'-6'	N	0	5
Total:						0	10
TABLE 1b. SMALL SIZE TREES							
Amelanchier canadensis	Am-ca	C,D,E	Shadblow	4'-6'	N	1	5
Benthamidea florida	Be-fl	C,D	Flowering dogwood	4'-6'	Y	1	2
Juniperus virginiana	Ju-vi	C,D,E	Eastern red cedar	4'-6'	Y	4	4
Prunus pensylvanica	Pr-Vi	D,E	Pin cherry	4'-6'	N	1	3
Total:						7	14

Table 2. Shrubs

Scientific Name	ID	Zone	Common Name	Size	Shade Tolerant?	Northwesterly Basin	Southern Basin	Totals
Aronia arbutifolia	Ar-ar	C,D,E	Chokeberry	2'-3'	N	4	13	17
Clethra alnifolia	Cl- al	B,C	Sweet pepperbush	2'-3'	Y	0	4	4
Comptonia peregrina	Co-pe	D,E	Sweet fern	6"-18"	N	10	25	35
Ilex verticillata	Il-ve	A,B,C	Winterberry	2'-3'	Y	17	5	22
Morella pensylvanica	Mo-pe	C,D,E	Bayberry	2'-3'	N	21	14	35
Rhus copallina	Rh-co	C, D,E	Winged sumac	2'-3'	N	3	4	7
Sambucus nigra	Sa-ni	B	Common elderberry	2'-3'	N	0	8	8
Swida amomum	Sw-am	B,C,D	Silky dogwood	2'-3'	N	0	14	14
Swida racemosum	Sw-ra	B,C,D, E	Gray dogwood	2'-3'	Y	0	11	11
Vaccinium corymbosum	Va-co	B,C	Highbush blueberry	2'-3'	Y	0	11	11
Viburnum opulus	Vi-op	B,C,D	Cranberry viburnum	2'-3'	Y	2	2	4
Totals:						57	111	168

Table 3. Herbs
Hydrologic Zones: Zone A: Saturated/Shallow inundation; Zone B:temporary saturation/flooding;
Zone C: moist, poorly to moderately well drained; Zone D: well-drained; Zone E: excessively drained
NW Basin: Sump is "A" zone; basin floor is "B" zone, lower foot of basin slope is "C zone"
S Basin: Basin floor is "A" to "B" zone, mid to upper slopes are "C" and "D" zone, unshaded portions with southern/western exposure are "D" and "E" zone

Scientific Name	Zone	Common Name	Form	NWI*	Spacing	Northwesterly Basin	Southern Basin	Totals
Asclepias incarnata	B, C	Swamp milkweed	2"plug	OBL	2'OC	0	50	50
Asclepias tuberosa	D, E	Butterfly milkweed	2"plug	OBL	2'OC	40	10	50
Carex crinita	A, B	Fringed sedge	2"plug	OBL	2'OC	5	45	50
Carex lurida	B, C	Lurid sedge	2" plug	OBL	2'OC	5	45	50
Carex stipata	B, C	Wrinkle-sheath sedge	2" plug	OBL	2'OC	5	45	50
Eutrochium maculatum	B	Spotted Joe Pye weed	2" plug	FACW	1.5'OC	10	40	50
Euthamia graminifolia	B	Grassleaf goldenrod	2" plug	FACW	1.5'OC	10	40	50
Juncus effusus	A, B	Soft Rush	2" plug	OBL	2'OC	10	90	100
Panicum virgatum	B,C,D,E	Switch grass	2" plug	FACW	3'OC	60	40	100
Sagittaria latifolia	A,B	Arrowhead	2" plug	FACW	3'OC	0	50	50
Scirpus cyperinus	A	Wool grass	2" plug	OBL	2'OC	5	95	100
Schoenoplectus validus	A	Softstem bulrush	2" plug	OBL	3'OC	0	50	50
Symphiotrichum laevis	D	Smooth aster (purple)	2" plug	FACW	3'OC	40	10	50
Vernonia noveborecensis	B	New York Ironweed	2" plug	FACW	1.5'OC	10	40	50
Total:						200	650	850

Seed Mixes to be applied:
Zones B, C: New England Erosion Control/Restoration Mix For Detention Basins and Moist Sites
Zones D, E : New England Conservation Mix with warm season grasses & dry site wildflowers

INFORMATION DEPICTED ON THIS SHEET WAS PROVIDED BY:

REMA ECOLOGICAL SERVICES,LLC.
164 EAST CENTER ST, SUITE 2
MANCHESTER, CT 06040

REVISIONS
03/24/2022

PLANTINGS AND SEEDING FOR
STORMWATER BASINS & SLOPES
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	N.T.S.	02-07-2022	20 OF 24	9607A

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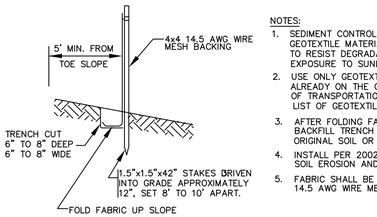
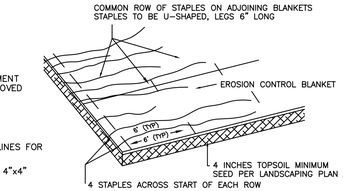


NOTES:
1. SEDIMENT CONTROL FABRIC TO BE A GEOTEXTILE MATERIAL TREATED TO RESIST DEGRADATION FROM EXPOSURE TO SUNLIGHT.
2. USE ONLY GEOTEXTILES WHICH ARE ALREADY ON THE CONNECTICUT DEPARTMENT OF TRANSPORTATION'S GEOTEXTILE APPROVED LIST OF GEOTEXTILES.
3. AFTER FOLDING FABRIC EDGE, BACKFILL TRENCH WITH TAMPED ORIGINAL SOIL OR AGGREGATE.
4. INSTALL PER 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
5. FABRIC SHALL BE PREFABRICATED WITH 4"x4" 14.5 AWG WIRE MESH BACKING.

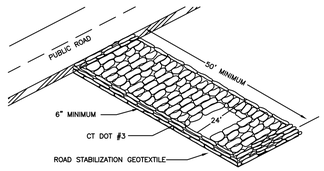
SILT FENCE INSTALLATION

NOT TO SCALE

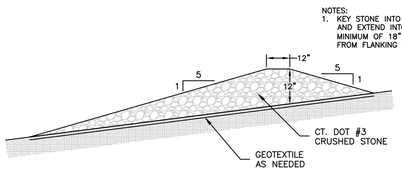


NOTES:
1. APPLY ON SLOPES STEEPER THAN 3:1.
2. EROSION CONTROL BLANKET TO BE NORTH AMERICAN GREEN S 150 DOUBLE NET STRAW BLANKET OR EQUAL.
3. INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

EROSION CONTROL BLANKET

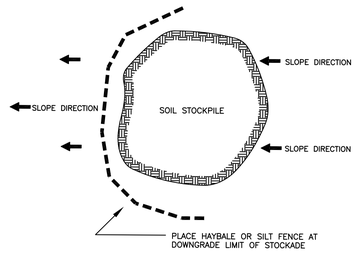


CONSTRUCTION ENTRANCE

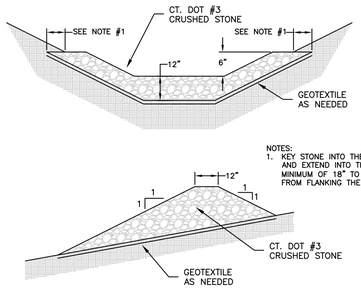


NOTES:
1. KEY STONE INTO THE DITCH BANKS AND EXTEND INTO THE ABUTMENTS A MINIMUM OF 18" TO PREVENT FLOW FROM FLANKING THE CHECK DAM.

ROADWAY CHECK DAM DETAIL



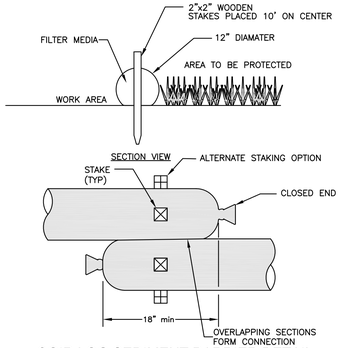
STOCKPILE EROSION PROTECTION DETAIL



NOTES:
1. KEY STONE INTO THE DITCH BANKS AND EXTEND INTO THE ABUTMENTS A MINIMUM OF 18" TO PREVENT FLOW FROM FLANKING THE CHECK DAM.

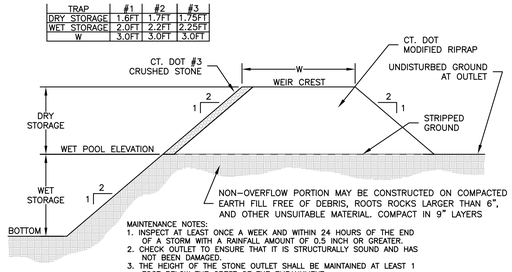
STONE CHECK DAM DETAIL

INSTALLATION INSTRUCTIONS:
1. CLEAR THE INSTALLATION AREA OF ANY DEBRIS, TREES, ROCKS OR LARGE OBSTRUCTIONS. SOCKS ARE DESIGNED TO COME IN CONTACT WITH THE SOIL, SO ANY STUMPS OR POTENTIAL OBSTRUCTIONS SHOULD BE REMOVED.
2. DIG A SHALLOW TRENCH IN THE LOCATION WHERE THE LOGS NEED TO BE PLACED.
3. PLACE THE LOGS IN THE TRENCH AND BACKFILL WITH SOIL SO THAT THE LOGS ARE TIGHTLY PACKED AGAINST THE SLOPE. ADJACENT LOGS SHOULD BE EITHER POSITIONED SO THAT THE ENDS FIT TIGHTLY AGAINST EACH OTHER AND ENDS SHOULD BE JOINED/SECURED TOGETHER WITH COIR TWINE OR OTHER SUITABLE TIES OR OVERLAPPED AS DESCRIBED BELOW.
4. FILTER MEDIA TO BE A COARSE COMPOSTED MATERIAL SPECIFICALLY DESIGNED FOR REMOVAL OF SOLIDS AND SOLUBLE POLLUTANTS FROM STORMWATER RUNOFF.
5. 10 L.F. ON EACH END SHALL BE PLACE AT A 30° ANGLE UP-SLOPE TO PREVENT END-AROUND FLOW.



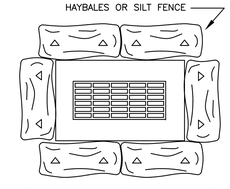
COIR LOG SEDIMENT BARRIER DETAIL

TRAP	#1	#2	#3
DRY STORAGE	1.6FT	1.7FT	1.75FT
WET STORAGE	2.0FT	2.2FT	2.25FT
W	3.0FT	3.0FT	3.0FT



MAINTENANCE NOTES:
1. INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCH OR GREATER.
2. CHECK OUTLET TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED.
3. THE HEIGHT OF THE STONE OUTLET SHALL BE MAINTAINED AT LEAST 1 FOOT BELOW THE CREST OF THE EMBANKMENT.
4. ONCE SEDIMENT HAS ACCUMULATED TO ONE-HALF OF THE WET STORAGE; DE-WATER TRAP, REMOVE SEDIMENT, AND RESTORE TO ORIGINAL DIMENSIONS.

TEMPORARY SEDIMENT TRAP DETAIL



CATCH BASIN AT LOW POINT

Maintenance Schedule

Maintenance Item	Frequency	Maintenance
Underground Stormwater Chambers	Visual Inspection Semi- Annually	• Remove inspection port caps to verify that runoff has infiltrated & leaves/debris are not collecting in system. • Check sediment depth and vacuum when 6" of sediment has accumulated. • Check system overflow and repair any erosion at overflow outlet.
Catch Basins	Monthly Annually	• Inspect grates for litter and debris and remove as needed • Remove sediment in sumps immediately after spring snowmelt
Sediment Forebay	Semi-Annually Every 5-years	• Maintain Stability of embankment • Mowing as needed • Remove sediment every 5 years or before sediment is within one-foot of the top of the forebay
Stormwater Basin	Semi-Annually 3-4 Times per Year	• Remove invasive vegetation. • Inspect embankment and inlet/outlet structures. • Monitor sediment accumulation. • Repair eroded areas. • Clean/remove sediment and debris. • Monitor sediment accumulation and remove when pool volume is reduced significantly. • Mow side slopes
Hydrodynamic Separator	Inspect Quarterly During Construction and Inspect Annually for Stabilized Site	• Remove Oil if there is an appreciable depth of oil in the unit (more than a sheen) • Remove Floatables when floatables other than oil cover over 50% of the open water surface on the inlet side of the outlet baffle wall. • Remove TSS/sediment when depths are greater than 30" in the inner chamber during construction or greater than 14" post-construction
South Facing Slopes	Annually	• Brush hog slopes. Set blade at highest setting (14" +/-) to preserve low lying shrubbery.

PROJECT NARRATIVE

The purpose of this project is to construct 21 new multi-family buildings, a maintenance garage and clubhouse along with the driveways, parking and utilities to service the buildings. The proposed buildings are to be serviced by public water and sanitary sewer. Access to the site will be from new curb cut off of Fieldstone Commons road immediately across from the entrance to the shopping center parking lot.

Construction activities shall be conducted to minimize unstabilized area at one time. Construction shall commence with the installation of the construction entrance followed by tree cutting as shown on these plans. Sedimentation barriers shall be installed prior to stumping. The infiltration chamber areas shall be protected from construction activities and compaction prior to rough grading. Inspect condition of sedimentation barriers prior to rough grading.

Rough grading shall commence in areas where earth is to be excavated and placed as described in the construction schedule. Sediment basins and temporary sediment traps are to be excavated prior to rough grading of the watershed to each. Fill slopes are to be topsoiled and seeded after rough grading. Installation of the drainage structures, and piping shall proceed as the construction schedule allows. Leave grade 6" below catch basin tops to prevent silt laden runoff from entering the drainage system. Excavation of any building foundation can commence once the area is rough graded. Once fill has been placed in stumped area and slopes have been seeded for stabilization, further stumping and grading can commence as described in the construction schedule.

Completion of storm drainage and utility installation is to be followed by placing processed gravel, and final grading of the paved areas. The first coat of paved site drives can be installed once the foundations in that area have been poured and utilities have been installed. Infiltration chambers shall be installed once the watershed to each has been stabilized.

Once the watershed to each stormwater basin is stabilized, sediment shall be removed from the basin and catch basin sumps. Infiltration trenches with the basin (as applicable) can be installed, and the basin shall be seeded and/or planted as described on these plans.

All erosion control measures shall be maintained and upgraded as needed until stable vegetative growth has been established. At all times erosion of exposed and stockpiled materials shall be prevented using measures specified in these plans. Once the site is stabilized, sediment within the basin will be removed and the sediment will be seeded as depicted on these plans.

Proposed soil erosion and sediment control measures were designed using criteria set forth by the "Connecticut Guidelines for Soil Erosion and Sediment Control", revised to 2002.

TEMPORARY SEEDING SCHEDULE:

SPECIES	LBS/ACRE	LBS/1000SF	SEEDING DATES
ANNUAL RYEGRASS	40	1.0	3/1-6/15, 8/1-10/15
WINTER RYE	120	3.0	4/15-7/1, 8/15-10/15
SUDANGRASS	30	0.7	5/15-8/1

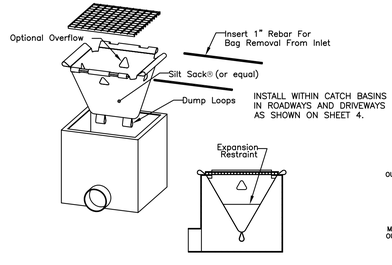
TEMPORARY SEEDING IS NOT LIMITED TO THE SPECIES SHOWN. OTHER SPECIES RECOMMENDED BY THE SCS OR AS LIMITED BY SITE CONDITIONS MAY BE USED.

STRAW MULCH IS TO BE APPLIED TO SEEDED AREA AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE, 70 TO 90 LBS. PER 1000 SQ. FT.

FINAL SEEDING SCHEDULE:

PROVIDE 4 INCHES OF TOPSOIL MINIMUM, FREE OF ROOTS, LARGE STONES, AND OTHER OBJECTS.

SPECIES	LBS/ACRE	LBS/1000SF	SEEDING DATES
KENTUCKY BLUEGRASS	20	0.45	4/1-6/15, 8/15-10/1
CREEPING RED FESCUE	20	0.45	4/1-6/15, 8/15-10/1
PERENNIAL RYEGRASS	5	0.10	4/1-6/15, 8/15-10/1
TOTAL	45	1.00	



CATCH BASIN INLET PROTECTION

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE "GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" BY THE CONNECTICUT COUNCIL ON SOIL AND WATER CONSERVATION.
2. ALL SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN.
3. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN THE AMOUNT NECESSARY TO COMPLETE THE FINISHED GRADING OF ALL EXPOSED AREAS.
4. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
5. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO MINIMIZE EROSION, SLIPPAGE, AND SETTLEMENT. FILL INTENDED TO SUPPORT STRUCTURES, DRAINAGE, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH THE APPROPRIATE STATE AND/OR LOCAL SPECIFICATIONS.
6. FILL MATERIAL SHALL BE FREE OF BRUSH, RUBBISH, LARGE ROCKS, LOGS, STUMPS, BUILDING MATERIAL, COMPRESSIBLE MATERIAL, AND OTHER MATERIALS WHICH MAY INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
7. FROZEN MATERIAL OR SOFT MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
8. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION.
9. ALL BENCHES SHALL BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT.
10. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH SOUND CONSTRUCTION PRACTICE.
11. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISH GRADING. IF FINISH GRADING IS TO BE DELAYED FOR MORE THAN 30 DAYS AFTER DISTURBANCE IS COMPLETE, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED. AREAS LEFT OVER 30 DAYS SHALL BE CONSIDERED "LONG TERM" AND SHALL RECEIVE TEMPORARY SEEDING WITHIN THE FIRST 15 DAYS.
12. SITE IS TO BE GRADED TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCHING, AND MAINTENANCE UNLESS OTHERWISE SPECIFIED IN THE PLANS.
13. CUT AND FILL SLOPES SHALL NOT BE STEEPER THAN 2:1. TOPSOIL SHALL BE SPREAD TO A MINIMUM DEPTH OF 4". ADDITIONAL TOPSOIL MAY BE REQUIRED TO MEET MINIMUM DEPTHS. NO TOPSOIL SHALL BE REMOVED FROM THIS SITE.
14. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL CULTIPACKER TYPE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/4" TO 1/2" INCH. HYDROSEEDING WHICH IS MULCHED MAY BE LEFT ON THE SOIL SURFACE.
15. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPACKER TYPE SEEDER OR HYDROSEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING WITH A ROLLER OR LIGHT DRAG.
16. FERTILIZER AND LIME ARE TO BE WORKED INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISC OPERATION SHOULD BE ALONG THE CONTOUR.
17. REMOVE FROM THE SURFACE ALL STONES TWO INCHES OR LARGER. REMOVE ALL OTHER DEBRIS SUCH AS WIRE, TREE ROOTS, PIECES OF CONCRETE, OR OTHER UNSUITABLE MATERIALS.
18. INSPECT SEEDBED BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED BEFORE SEEDING, THEN FIRMED AS DESCRIBED ABOVE.
19. WHERE GRASSES PREDOMINATE, FERTILIZE ACCORDING TO SOIL ANALYSIS, OR SPREAD 300 POUNDS OF 10-10-10 OR EQUIVALENT PER ACRE (7.5 POUNDS PER 1000 S.F.).
20. CALCIUM CHLORIDE WILL BE AVAILABLE FOR DUST CONTROL ON GRAVEL TRAVEL SURFACES.

TURF MANAGEMENT PLAN

1. Soil Testing
A composite soil sample from the subject property will be collected and delivered to a University of Connecticut Cooperative Extension office for testing of soil nutrient levels (i.e., pH, nitrogen, phosphorus, calcium, magnesium, potassium) prior to a fertilizer application. The Extension office will recommend a fertilizer application rate based upon these test results. The actual fertilizer application rate will follow this recommendation. This will ensure against an excessive fertilizer application, which could lead to chemical leaching or export.

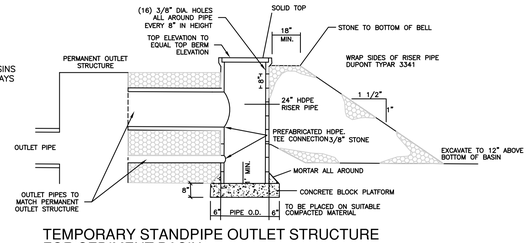
2. Slow-Release Fertilizers
Slow-release fertilizers will be applied to lawns, planted trees and shrubs. These can include, but are not limited to, organic-based fertilizers. A variety of commercial slow-release nitrogen fertilizer products are available (e.g., Milorganite, isobutylidene diurea, coated ureas, etc.). Advantages of slow-release fertilizers include the supply of a steady nitrogen source, and reduced nitrogen leaching. By combining small amounts of soluble nitrogen sources with slow release nitrogen products, nitrogen availability can be extended without a threat of leaching.

3. Fertilizer Application Schedule
Fertilizer will be applied three times annually to the subject property: early to late May (after the threat of cool, wet weather has passed), late August to early September, and mid-September to mid-October. If the soil test indicates a need for lime, it will be applied at the last fertilization date.

4. Integrated Pest Management (IPM)
IPM is an integrated, preventative approach to maintaining healthy turf and landscape plants. IPM recognizes that, although chemicals are an important component of a turf management plan, other strategies are available to maintain a healthy lawn. A central premise of IPM is to treat pest problems as they arise on an as-needed basis only, using a variety of biological (e.g., natural predators), chemical and cultural (e.g., disease-resistant seed) practices.

To be successful, IPM requires periodic monitoring by an experienced practitioner to detect pest problems at an early stage and develop an effective, environmentally responsible action plan. It is recommended that the contractor that is hired to maintain the grounds have training and experience in the practice of IPM.

TEMPORARY STAND PIPE OUTLET SHALL NOT BE REMOVED UNTIL ALL SITE IMPROVEMENTS WITHIN THE DRAINAGE AREA TO THE CORRESPONDING BASIN ARE CONSTRUCTED AND THE SITE IS STABILIZED. INSPECT STRUCTURE BYWEEKLY AND MAINTAIN AS NEEDED.



TEMPORARY STANDPIPE OUTLET STRUCTURE FOR SEDIMENT BASIN

CONSTRUCTION SCHEDULE & EROSION & SEDIMENT CONTROL CHECKLIST

PROJECT NAME: FIELDSTONE RIDGE

LOCATION: 10 FIELDSTONE COMMONS - TOLLAND, CT

PROJECT DESCRIPTION: MULTI-FAMILY HOUSING DEVELOPMENT

PARCEL AREA: 50.7 AC.

RESPONSIBLE PERSONNEL: KEVIN SANTINI, 1031 HARTFORD TPKE, VERNON, CT 860-871-0516

WORK DESCRIPTION	EROSION & SEDIMENT CONTROL MEASURES	DATE INSTALLED	INITIALS
CLEAR ALL TREES AND BRUSH AS DEPICTED ON PLANS	INSTALL ANTI-TRACKING PAD		
REMOVE STUMPS ON NORTHERLY PORTION OF SITE IN VICINITY OF NORTHERLY STORMWATER BASIN, CLUBHOUSE, MAINTENANCE BUILDING, AND BUILDING #1 FOR FILLING.	INSTALL SEDIMENT BARRIERS DOWNGRADE OF CONSTRUCTION ACTIVITY AS SHOWN PRIOR TO STUMPING		
REMOVE STUMPS IN AREA TO BE EXCAVATED IN VICINITY OF BUILDINGS #3 THROUGH #11 & #13.	INSTALL INLET PROTECTION IN EXISTING CATCH BASINS		
ROUGH GRADE NORTHERLY PORTION OF SITE	PROTECT INFILTRATION CHAMBER AREAS FROM DISTURBANCE AND COMPACTION		
CONSTRUCT NEW DRAINAGE FROM FIELDSTONE COMMONS AND BIG Y.	CONSTRUCT TEMPORARY SEDIMENT TRAPS #1 & #2, SWALES AND NORTHERLY SEDIMENT BASIN. EXCAVATE BASIN TO 12" ABOVE BOTTOM		
EXCAVATE FOR FOUNDATIONS OF CLUBHOUSE, MAINTENANCE BUILDING, AND BUILDINGS #1 & #3.	PROTECT STOCKPILE AREAS WITH SILT FENCE		
ONCE FILL HAS BEEN PLACED IN PREVIOUSLY STUMPED AREA, STUMP FILL AREA IN VICINITY OF BUILDINGS #2, #12, #14 & #15.	INSPECT AND MAINTAIN SEDIMENT BARRIERS WEEKLY AND AFTER RAIN EVENTS OVER 0.5-INCH.		
	TOPSOIL, SEED AND MULCH SLOPES		
ROUGH GRADE STUMPED PORTION OF SITE	INSTALL SEDIMENT BARRIERS DOWNGRADE OF CONSTRUCTION ACTIVITY AS SHOWN PRIOR TO STUMPING		
EXCAVATE FOR FOUNDATIONS OF BUILDINGS #2 & #4 THROUGH #15	PROTECT INFILTRATION CHAMBER AREAS FROM DISTURBANCE AND COMPACTION		
INSTALL SEWER, DRAINAGE AND UTILITIES	PROTECT STOCKPILE AREAS WITH SILT FENCE		
INSTALL PAVEMENT BINDER COAT IN AREAS WHERE FOUNDATIONS AND UTILITIES ARE COMPLETE	INSPECT AND MAINTAIN SEDIMENT BARRIERS WEEKLY AND AFTER RAIN EVENTS OVER 0.5-INCH.		
REMOVE STUMPS ON SOUTHERLY PORTION OF SITE	INSTALL HAYBALES AROUND NEW CATCH BASINS INLETS ONCE INSTALLED		
ROUGH GRADE SOUTHERLY PORTION OF SITE	TOPSOIL, SEED AND MULCH AREA ADJACENT TO EACH BUILDING AS IT IS COMPLETED		
	INSTALL SEDIMENT BARRIERS DOWNGRADE OF CONSTRUCTION ACTIVITY AS SHOWN PRIOR TO STUMPING		
	CONSTRUCT TEMPORARY SEDIMENT TRAP#3 AND SOUTHERLY SEDIMENT BASIN. EXCAVATE BASIN TO 12" ABOVE BOTTOM		
	PROTECT INFILTRATION CHAMBER AREAS FROM DISTURBANCE AND COMPACTION		
	PROTECT STOCKPILE AREAS WITH SILT FENCE		
	INSPECT AND MAINTAIN SEDIMENT BARRIERS WEEKLY AND AFTER RAIN EVENTS OVER 0.5-INCH.		
	INSTALL CHECK DAMS WHERE SHOWN ONCE ROADWAY IS EXCAVATED		
EXCAVATE FOR REMAINING FOUNDATIONS	TOPSOIL, SEED AND MULCH SLOPES		
	INSTALL EROSION BLANKET ON SLOPES STEEPER THAN 3:1		
INSTALL SEWER, DRAINAGE AND UTILITIES	TOPSOIL, SEED AND MULCH AREA ADJACENT TO EACH BUILDING AS IT IS COMPLETED		
INSTALL PAVEMENT BINDER COAT IN AREAS WHERE FOUNDATIONS AND UTILITIES ARE COMPLETE			
INSTALL INFILTRATION CHAMBERS ONCE WATERSHED TO EACH CHAMBER IS STABILIZED			
FINAL GRADE AND FINAL PAVE	TOPSOIL, SEED AND MULCH DISTURBED AREAS		
ONCE WATERSHED TO EACH STORMWATER BASIN IS STABILIZED, FINALIZE BASIN CONSTRUCTION	REMOVE SEDIMENT FROM DRAINAGE STRUCTURES AND BASINS. INSTALL INFILTRATION TRENCHES WITHIN NORTHERLY BASIN. SEED AND PLANT BASINS PER PLANS.		
	REMOVE EROSION CONTROLS WHEN SITE IS STABILIZED		

PROJECT DATES:
DATE OF CONSTRUCTION START JUNE 1, 2022
DATE OF CONSTRUCTION COMPLETION MAY 31, 2025

EROSION AND SEDIMENT CONTROL PROCEDURES SHALL ESSENTIALLY BE IN ACCORDANCE WITH THESE PLANS, AS REQUIRED BY TOWN REGULATIONS, AND THE MANUAL, "GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" FOR CONNECTICUT, BY THE COUNCIL ON SOIL AND WATER CONSERVATION, 1985, REVISED TO 2002.

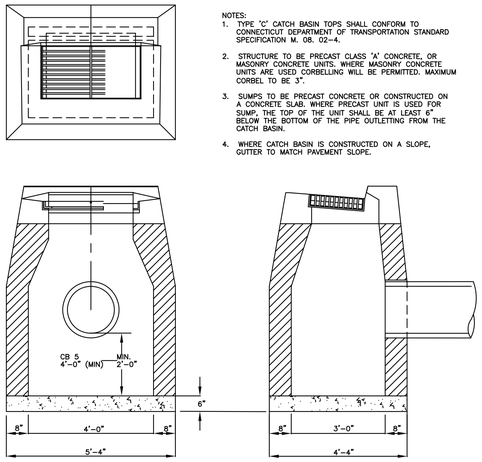
REVISIONS
03/24/2022

EROSION & SEDIMENT CONTROL NOTES & DETAILS
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

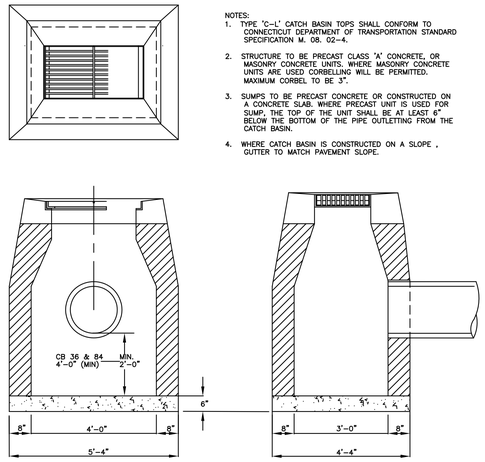
BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	N.T.S.	02-07-2022	21 OF 24	9607A

9607S\dwg\9607-DET.dwg



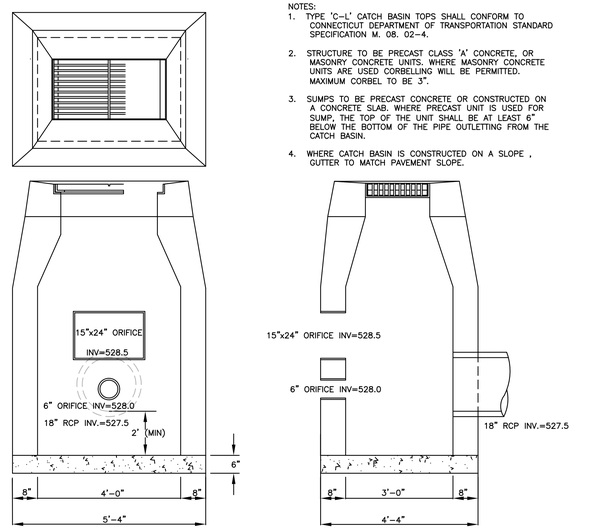
NOTES:
1. TYPE 'C' CATCH BASIN TOPS SHALL CONFORM TO CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION M. 08. 02-4.
2. STRUCTURE TO BE PRECAST CLASS 'A' CONCRETE, OR MASONRY CONCRETE UNITS. WHERE MASONRY CONCRETE UNITS ARE USED CORBELLING WILL BE PERMITTED. MAXIMUM CORBEL TO BE 3".
3. SUMPS TO BE PRECAST CONCRETE OR CONSTRUCTED ON A CONCRETE SLAB. WHERE PRECAST UNIT IS USED FOR SUMP, THE TOP OF THE UNIT SHALL BE AT LEAST 6" BELOW THE BOTTOM OF THE PIPE OUTLETTING FROM THE CATCH BASIN.
4. WHERE CATCH BASIN IS CONSTRUCTED ON A SLOPE, GUTTER TO MATCH PAVEMENT SLOPE.

TYPE "C" CATCH BASIN



NOTES:
1. TYPE 'C-L' CATCH BASIN TOPS SHALL CONFORM TO CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION M. 08. 02-4.
2. STRUCTURE TO BE PRECAST CLASS 'A' CONCRETE, OR MASONRY CONCRETE UNITS. WHERE MASONRY CONCRETE UNITS ARE USED CORBELLING WILL BE PERMITTED. MAXIMUM CORBEL TO BE 3".
3. SUMPS TO BE PRECAST CONCRETE OR CONSTRUCTED ON A CONCRETE SLAB. WHERE PRECAST UNIT IS USED FOR SUMP, THE TOP OF THE UNIT SHALL BE AT LEAST 6" BELOW THE BOTTOM OF THE PIPE OUTLETTING FROM THE CATCH BASIN.
4. WHERE CATCH BASIN IS CONSTRUCTED ON A SLOPE , GUTTER TO MATCH PAVEMENT SLOPE.

TYPE "C-L" CATCH BASIN



NOTES:
1. TYPE 'C-L' CATCH BASIN TOPS SHALL CONFORM TO CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION M. 08. 02-4.
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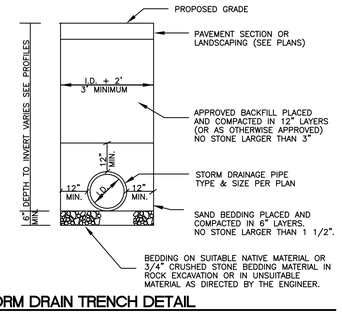
3. SUMPS TO BE PRECAST CONCRETE OR CONSTRUCTED ON A CONCRETE SLAB. WHERE PRECAST UNIT IS USED FOR SUMP, THE TOP OF THE UNIT SHALL BE AT LEAST 6" BELOW THE BOTTOM OF THE PIPE OUTLETTING FROM THE CATCH BASIN.
4. WHERE CATCH BASIN IS CONSTRUCTED ON A SLOPE , GUTTER TO MATCH PAVEMENT SLOPE.

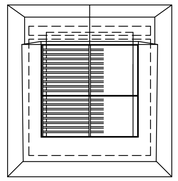
OUTLET STRUCTURE #39

HYDRODYNAMIC SEPARATOR REQUIREMENTS:
The hydrodynamic separator located at HS 5A must be designed to remove a minimum of 80% of the total suspended solids from the water quality flow of 1.15 cfs with an internal bypass of the 10-year design storm flow of 7.3 cfs. The system must first be approved by the design engineer then submitted to the town for review prior to fabrication. Shop drawing submittals must include:

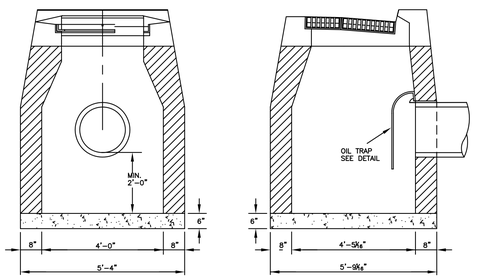
- "treated" flow for the specified system and model, which must be equal or exceed the water quality flow
- "conveyed" flow for the specified system and model, which must be equal or greater that the design storm flow
- calculations or documentation verifying that 80% (min.) of the average annual total suspended solids will be removed from the water quality flow
- calculations of the hydraulic grade line elevations for the design storm event in the first structure located upstream of the system and any other critical locations
- orientation of the system in plan view with respect to the approved site plan (if different than shown on the approved plans)
- proposed size and elevation of critical weir, orifice, pipe invert elevations, and other design elements that correspond to the hydraulic characteristics of the system



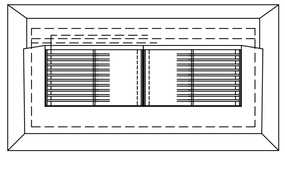
STORM DRAIN TRENCH DETAIL



NOTES:
1. TYPE 'C' CATCH BASIN TOPS SHALL CONFORM TO CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION M. 08. 02-4.
2. STRUCTURE TO BE PRECAST CLASS 'F' CONCRETE, OR MASONRY CONCRETE UNITS. WHERE MASONRY CONCRETE UNITS ARE USED CORBELLING WILL BE PERMITTED. MAXIMUM CORBEL TO BE 3".
3. SUMPS TO BE PRECAST CONCRETE OR CONSTRUCTED ON A CONCRETE SLAB. WHERE PRECAST UNIT IS USED FOR SUMP, THE TOP OF THE UNIT SHALL BE AT LEAST 6" BELOW THE BOTTOM OF THE PIPE OUTLETTING FROM THE CATCH BASIN.
4. WHERE CATCH BASIN IS CONSTRUCTED ON A SLOPE , GUTTER TO MATCH PAVEMENT SLOPE.



DOUBLE CATCH BASIN "C" TYPE I (CB 5, 14, 15, 72 & 73)



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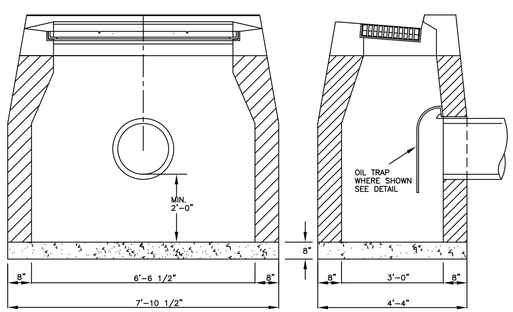
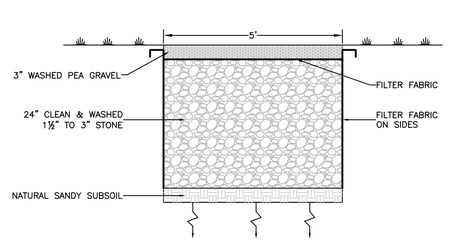
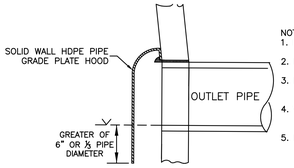
4. WHERE CATCH BASIN IS CONSTRUCTED ON A SLOPE, GUTTER TO MATCH PAVEMENT SLOPE.



DOUBLE TYPE "C" CATCH BASIN TYPE II (CB 74 & 78)

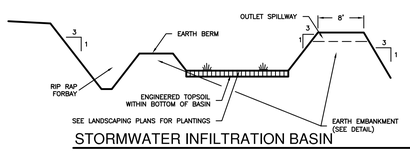


INFILTRATION TRENCH LOCATED WITHIN INFILTRATION BASIN



NOTES:
1. HOOD SHALL BE E.J. PRESCOTT, INC. HDPE CATCH BASIN HOOD OR EQUAL.
2. HOOD SHALL BE FABRICATED TO FIT SHAPE OF THE STRUCTURE.
3. HOOD SHALL BE SEALED TO THE STRUCTURE WITH AN OIL RESISTANT FOAM GASKET.
4. VENT HOLES SHALL BE INSTALLED ON THE TOP OF THE HOOD TO PROVIDE AIR FLOW INTO PIPE.
5. HOOD SHALL BE INSTALLED TO THE STRUCTURE WITH STAINLESS STEEL ANCHOR STUDS AND NUTS AN AS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

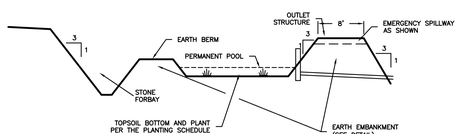
CATCH BASIN HOOD DETAIL (CB 5, 36, 38 & 84)



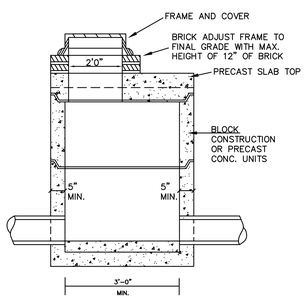
STORMWATER INFILTRATION BASIN

ENGINEERED TOPSOIL SPECIFICATIONS:
1. REMOVE SEDIMENT IN BOTTOM OF BASIN PRIOR TO PLACING TOPSOIL.
2. DO NOT OVER EXCAVATE OR COMPACT BOTTOM OF INFILTRATION BASIN.
3. MIX SHALL BE PLACED OVER UNCOMPACTED IN-SITU NATIVE SAND/GRAVEL MATERIAL.
3. SPREAD LOAMY SAND TOPSOIL IN BOTTOM OF NORTH INFILTRATION BASIN TO A DEPTH OF 4".
4. GRAIN SIZE DISTRIBUTION:
   80-85 PERCENT SAND (CT DOT FORM 818) AND LESS THAN 5 PERCENT CLAY (THEREFORE 10 TO 20 PERCENT SILT) BY WEIGHT.

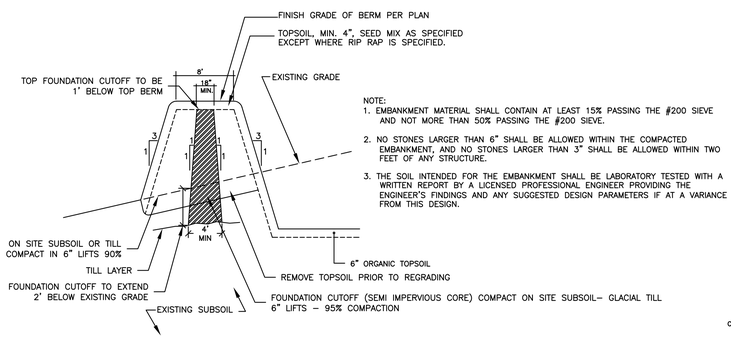
   ADD 15-20 PERCENT COMPOST (CT DOT FORM 818) BY WEIGHT
5. LOAMY SAND TOPSOIL SHALL BE LOOSE, FRIABLE, AND FREE FROM REFUSE, STUMPS, ROOTS, BRUSH, WEEDS, ROCKS AND STONES 2" IN DIAMETER. IN ADDITION, THE MATERIAL SHALL BE FREE FROM ANY MATERIAL THAT WILL PREVENT PROPER DEVELOPMENT AND PLANT GROWTH.



STORMWATER WETLAND

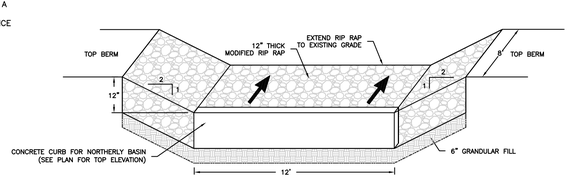


STORM MANHOLE



NOTE:
1. EMBANKMENT MATERIAL SHALL CONTAIN AT LEAST 15% PASSING THE #200 SIEVE AND NOT MORE THAN 50% PASSING THE #200 SIEVE.
2. NO STONES LARGER THAN 6" SHALL BE ALLOWED WITHIN THE COMPACTED EMBANKMENT, AND NO STONES LARGER THAN 3" SHALL BE ALLOWED WITHIN TWO FEET OF ANY STRUCTURE.
3. THE SOIL INTENDED FOR THE EMBANKMENT SHALL BE LABORATORY TESTED WITH A WRITTEN REPORT BY A LICENSED PROFESSIONAL ENGINEER PROVIDING THE ENGINEER'S FINDINGS AND ANY SUGGESTED DESIGN PARAMETERS IF AT A VARIANCE FROM THIS DESIGN.

STORMWATER BASIN EMBANKMENT DETAIL



BASIN SPILLWAY

CONSTRUCTION DETAILS

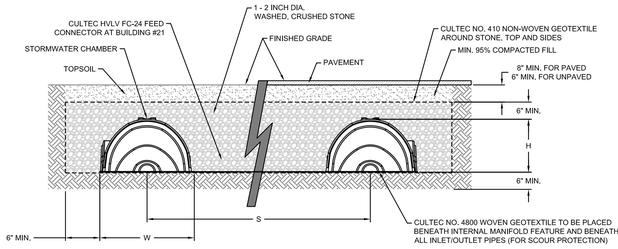
FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	N.T.S.	02-07-2022	22 OF 24	9607A

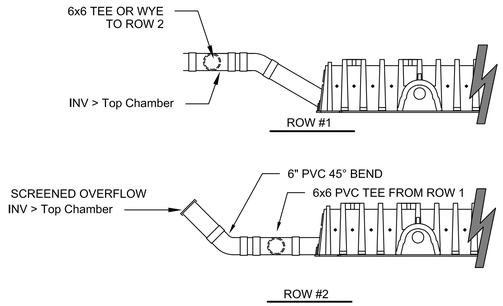


GENERAL NOTES
1. BOTTOM OF CHAMBERS TO BE 3' ABOVE SHGW AND BEDROCK.
2. ALL CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

CONSTRUCTION AND MAINTENANCE REQUIREMENTS:
1. INFILTRATION CHAMBERS SHALL NEVER BE USED FOR SEDIMENT CONTROL DURING AN ACTIVE CONSTRUCTION PERIOD.
2. THE AREA OF THE INFILTRATION TRENCH MUST BE MARKED OFF BY APPROPRIATE FENCING TO PREVENT THE MOVEMENT OF CONSTRUCTION VEHICLES OVER AND THE POSSIBLE COMPACTION OF THE NATURAL SOILS.
3. THE EROSION CONTROL PLAN FOR THE PROJECT MUST CLEARLY DEFINE HOW SEDIMENT WILL BE PREVENTED FROM ENTERING THE AREA OF THE INFILTRATION CHAMBERS.
4. THE DESIGN ENGINEER SHALL OVERSEE THE PREPARATION OF THE AREA AND THE INSTALLATION OF THE INFILTRATION CHAMBERS. CONTRACTOR SHALL PROVIDE ENGINEER THE INSTALLATION SCHEDULE TO PROVIDE TIMELY INSPECTIONS.
5. THE DESIGN ENGINEER SHALL PROVIDE A CERTIFICATION THAT THE SYSTEM WAS DESIGNED IN ACCORDANCE WITH THE SPECIFICATIONS FOUND IN THE DESIGN MANUAL AND INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.

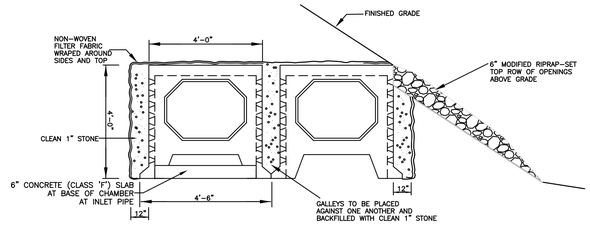
LOCATION	CHAMBER	H	W	S
BUILDING #17	CULTEC RECHARGER 280HD	26½"	47"	112"
BUILDING #18/19	CULTEC RECHARGER 280HD	26½"	47"	N/A
BUILDING #19/21	CULTEC RECHARGER 280HD	26½"	47"	52"

CULTEC STORMWATER CHAMBER CROSS SECTION
(OR EQUAL)

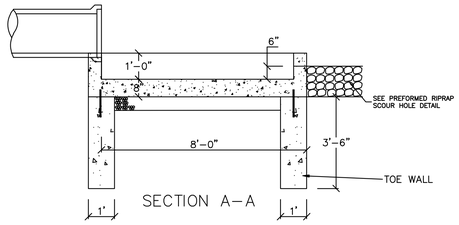


INFILTRATION CHAMBER DISTRIBUTION (Building #17)

NOTES:
1. DURING CONSTRUCTION, CARE MUST BE TAKEN NOT TO COMPACT THE UNDERLYING NATURAL SOILS. HEAVY VEHICLES SHALL NOT ENTER THE EXCAVATION OF THE INFILTRATION GALLEYS. THIS AREA SHALL BE FENCED OFF TO PREVENT COMPACTION AT THE INITIATION OF SITE CONSTRUCTION.
2. PLACE NON-WOVEN FILTER OVER INFILTRATION GALLEY AND CLEAN 1" STONE.
3. INFILTRATION GALLEY TO BE CONSTRUCTED TO WITHSTAND H-20 LOADS.

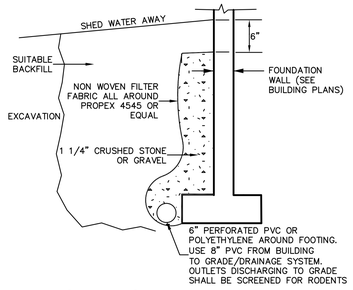


INFILTRATION GALLEY (Buildings 12, 13, 14 & 15)

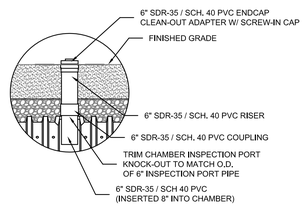


FRONT ELEVATION

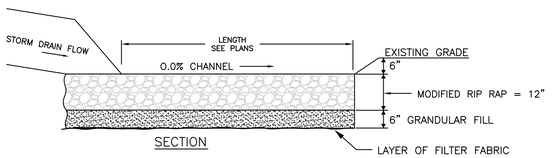
IMPACT BASIN DETAIL

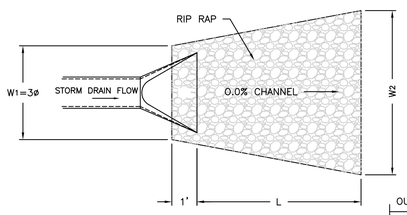


FOUNDATION DRAIN DETAIL



INSPECTION PORT DETAIL

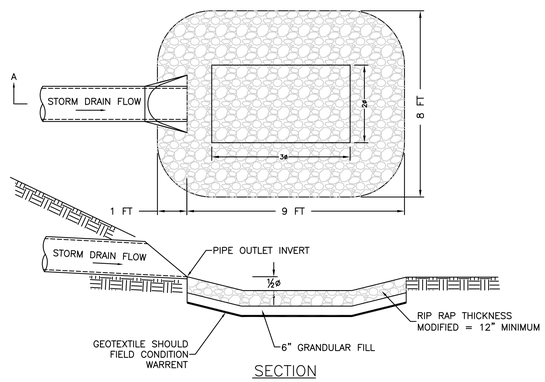




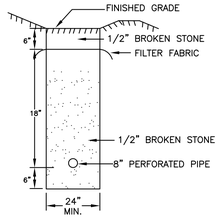
NOTES:
1. WHERE POSSIBLE LEVEL SPREADER TO BE CONSTRUCTED ON UNDISTURBED SOIL.
2. SHAPE THE ENTRANCE TO THE SPREADER IN SUCH A MANNER AS TO INSURE THAT RUNOFF ENTERS DIRECTLY ONTO THE 0.0% CHANNEL.
3. LIP TO BE CONSTRUCTED LEVEL AT 0.0% GRADE TO INSURE UNIFORM SPREADING OF STORM WATER RUNOFF.

OUTLET	L	W1	W2
CB 38	10FT	3FT	6FT
S'LY BASIN	14FT	6FT	15FT

LEVEL SPREADER DETAIL



PREFORMED RIPRAP SCOUR HOLE



FRENCH DRAIN

CONSTRUCTION DETAILS

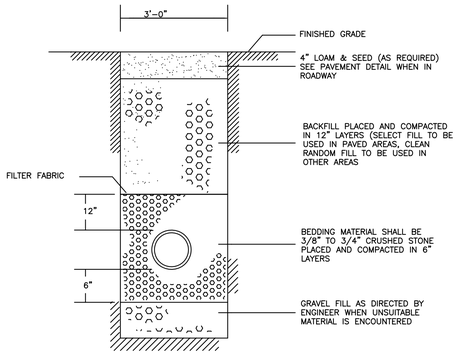
FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

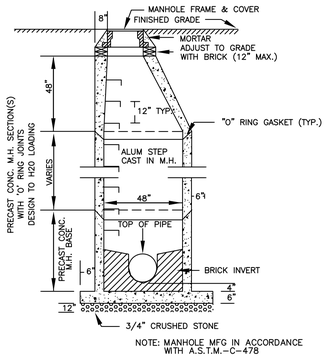
REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	N.T.S.	02-07-2022	23 OF 24	9607A

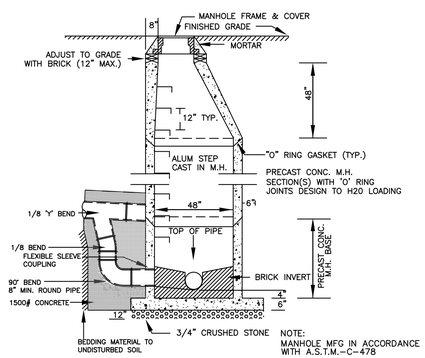


SANITARY SEWER TRENCH DETAIL



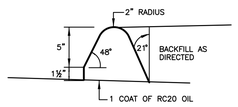
NOTE: MANHOLE MFG IN ACCORDANCE WITH A.S.T.M.-C-478

TYPICAL PRECAST MANHOLE DETAIL

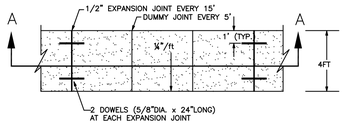


NOTE: MANHOLE MFG IN ACCORDANCE WITH A.S.T.M.-C-478

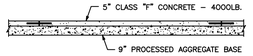
TYPICAL PRECAST DROP MANHOLE DETAIL



BIT. CONC. CURB



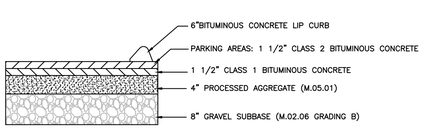
PLAN VIEW



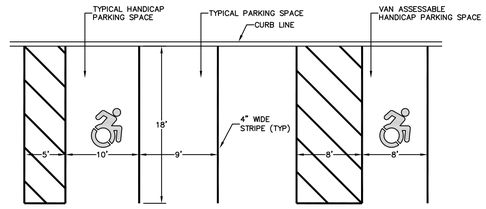
SECTION "A-A"

NOTE:
PROVIDE TACTILE WARNGING STRIP CONFORMING WITH SECTION 705 OF THE ADA STANDARDS FOR ACCESSIBLE DESIGN AT ALL RAMPS, CHANGES IN SURFACE MATERIAL AND AS REQUIRED BY SAID STANDARDS.

4' CONCRETE SIDEWALK

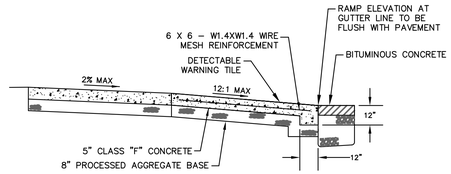


BITUMINOUS PAVEMENT CROSS SECTION

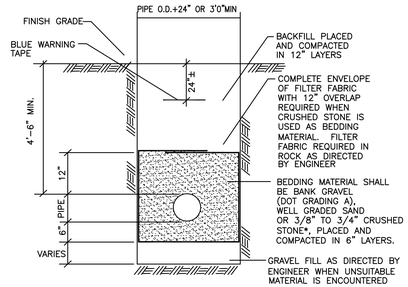


PAVEMENT MARKING NOTES:
1. All work to conform to Form 816, Section 12.09 and the manufacturer's instructions and recommendations for application.
2. Lines shall be four (4) inches wide, except as noted, and 15 mils thick, colored white, except as noted.
3. Paint shall be either white or tinted ready-mixed paint conforming to AASHTO M70, Type 1.
4. Epoxy Resins shall conform to Form 816 and project requirements for layout of crosswalks. Install glass beads by free fall method.
5. Prior to painting, sweep pavement with power broom supplemented with hand brooms to eliminate loose material and dust.
6. After applying paint, erect suitable barriers to prevent tracking of paint before drying. Retouch and paint all markings which become smeared, discolored, worn, or otherwise marred before final acceptance of the project. Remove any evidence of smearing of paint.

PAINTED PARKING STALL DETAIL



SIDEWALK RAMP DETAIL



CONNECTICUT WATER COMPANY NOTES:
1. FIELD-LOK GASKETS ARE REQUIRED ON THE (2) PIPE JOINTS BEFORE AND AFTER ALL FITTINGS.
2. MEGALUG RESTRAINTS ARE REQUIRED AT ALL FITTINGS.
3. ALL BENDS, TEES, OFFSETS, HYDRANTS, AND DEAD ENDS REQUIRE THRUST BLOCKS.

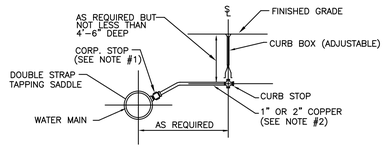
*CRUSHED STONE SHALL ONLY BE USED IN HIGH GROUNDWATER CONDITIONS AS DIRECTED BY THE ENGINEER

WATER TRENCH DETAIL

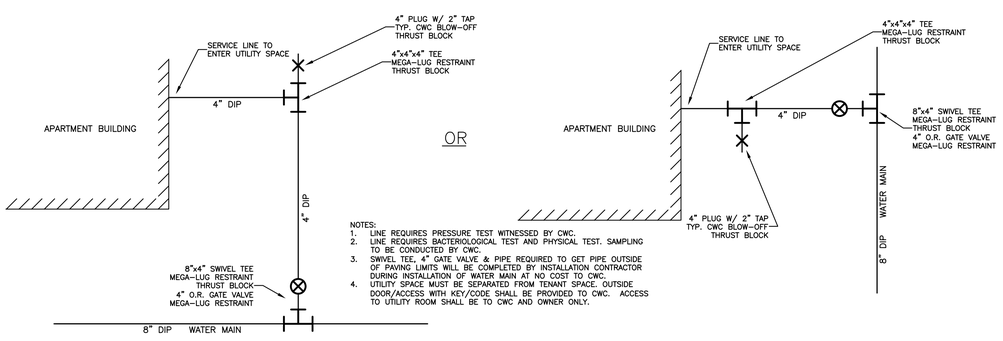
NOTES:

1. THE TOP OF THE CORPORATION AND THE FIRST THREE (3) FEET OF COPPER TUBING SHALL BE INSTALLED NO HIGHER THAN THE TOP OF THE WATER MAIN.

2. NO INTERMEDIATE SIZES (i.e. 3/4", 1-1/2", 1-3/4") ARE ALLOWED FOR COPPER SERVICES. ANY SERVICE REQUIREMENT GREATER THAN 2" COPPER SHALL BE CLDIP (4"MIN.) WITH THE SHUT-OFF LOCATED AT THE MAIN. COPPER TUBING SHALL BE CONTINUOUS BETWEEN THE CORPORATION STOP AND THE CURB STOP.

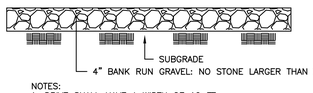


WATER SERVICE CONNECTION (MAINTENANCE & CLUBHOUSE)



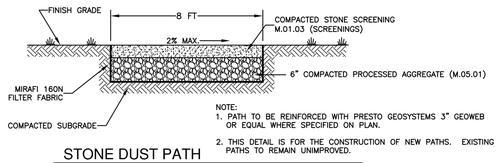
NOTES:
1. LINE REQUIRES PRESSURE TEST WITNESSED BY CWC.
2. LINE REQUIRES BACTERIOLOGICAL TEST AND PHYSICAL TEST. SAMPLING TO BE CONDUCTED BY CWC.
3. SWIVEL TEE, 4" GATE VALVE & PIPE REQUIRED TO GET PIPE OUTSIDE OF PAVING LIMITS WILL BE COMPLETED BY INSTALLATION CONTRACTOR DURING INSTALLATION OF WATER MAIN AT NO COST TO CWC.
4. UTILITY SPACE MUST BE SEPARATED FROM TENANT SPACE. OUTSIDE DOOR/ACCESS WITH KEY/CODE SHALL BE PROVIDED TO CWC. ACCESS TO UTILITY ROOM SHALL BE TO CWC AND OWNER ONLY.

TYPICAL WATER SERVICE CONNECTION



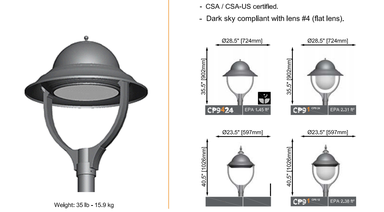
NOTES:
1. DRIVE SHALL HAVE A WIDTH OF 10 FT.
2. SIDE SLOPES SHALL NOT EXCEED 3:1.
3. DRIVE SHALL NOT EXCEED 10%.
4. DRIVE SHALL BE SUPERELEVATED TOWARDS THE SOUTH WITH A ¼"/FT CROSS SLOPE.

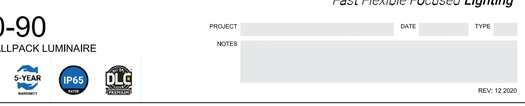
GRAVEL ACCESS DRIVEWAY DETAIL



NOTE:
1. PATH TO BE REINFORCED WITH PRESTO GEOSYSTEMS 3" GEOWEB OR EQUAL WHERE SPECIFIED ON PLAN.
2. THIS DETAIL IS FOR THE CONSTRUCTION OF NEW PATHS. EXISTING PATHS TO REMAIN UNIMPROVED.

STONE DUST PATH





FULL CUT-OFF, HEAVY-DUTY HOUSING
The DC150-90 is a Medium 14" Wallpack with a Die Cast Aluminum Body and Impact Resistant Glass Lens

WET LOCATION, IP-65 RATED
Engineered and Constructed for Exterior Environments

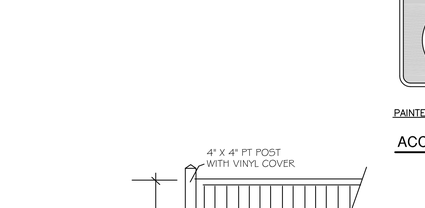
EASY TO INSTALL MOUNTING
The DC150-90 can be Surface Mounted over an Existing 4" Outlet Box or Surface Wired through a 1/2" Conduit Entry. Additional Conduit entries Available for Photocells & other Components

120-277V STANDARD **TYPE VS DISTRIBUTION**

OPERATING TEMPERATURE -20C TO 40C
0C - 40C with EM Pack Option

PRODUCT APPLICATIONS

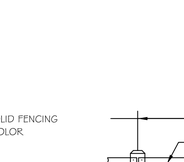
Building Entrances	Bridges
Walkways	Catwalks
Tunnels	Stairwells
Loading Docks	



PAVEMENT REPAIR DETAIL

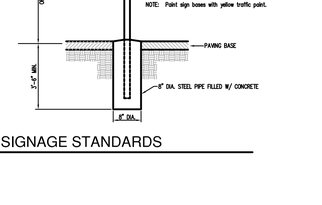
HANDICAP SIGN

NOTE: ALL STRIPES TO BE 4" PAINTED WHITE

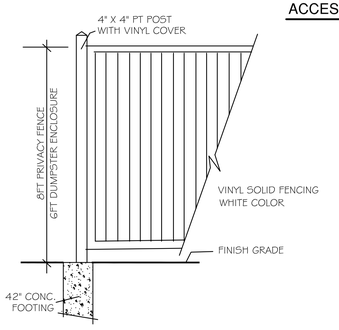


PAINTED HANDICAP SYMBOL

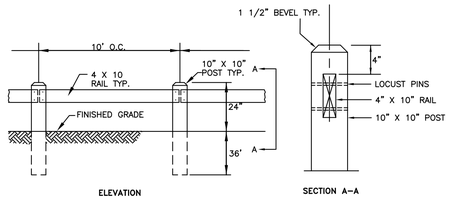
NOTES:
1. PROVIDE DETECTABLE WARNING FOR CURB RAMPS. DETECTABLE WARNING SHALL CONSIST OF TRUNCATED DOME SURFACE ON RIGID TACTILE PAVING TILES. TILES SHALL BE 2'x3' FOR 4' WIDE RAMPS AND 2'x4' FOR 5' WIDE RAMPS. TILE COLOR SHALL CONTRAST WITH THAT OF THE SURROUNDING SURFACE.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSTRUCT HANDICAP SPACING, GRADING SIGNAGE AND APPURTENANCE IN ACCORDANCE WITH CURRENT FEDERAL, STATE OR LOCAL CODES. THE CONTRACTOR SHALL CONSULT WITH THE LOCAL BUILDING OFFICIAL TO OBTAIN CURRENT INFORMATION



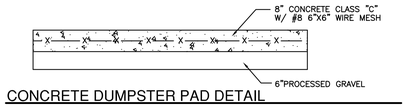
ACCESSIBLE PARKING AND SIGNAGE STANDARDS



SCREEN FENCING DETAIL



PRESSURE TREATED GUIDE RAIL



CONCRETE DUMPSTER PAD DETAIL

CONSTRUCTION DETAILS

FIELDSTONE RIDGE

10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT

REVISIONS
03/24/2022

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	N.T.S.	02-07-2022	24 OF 24	9607A

9607S\dwg\9607-DET.dwg

1 Photometric Layout and Calculations
SCALE: 1:20

30' 0 30' 60' 120'

Luminaire Schedule						
Symbol	Label	Qty	Description	LLF	Lum. Watts	Lum. Lumens
	L3	95	Lumca # CP9424-72-LED05-120W-40-L3FL-120	0.900	121.2	12646
	L5	21	Lumca # CP9424-72-LED05-120W-40-L5S-120	0.900	121.17	14987
	W2	279	Paraflex # DC150-90-24W-40K-TBD-TBD	0.590	23.68	4892
	W3	56	Paraflex # DC150-90-48W-40K-TBD-TBD	0.783	46.6	7336

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
SITE CALCS	Illuminance	Fc	0.85	25.9	0.0	N.A.	N.A.
CLUB HOUSE LOT	Illuminance	Fc	2.94	10.5	0.3	9.80	35.00
COURT YARD 1	Illuminance	Fc	3.69	12.0	0.3	12.30	40.00
COURT YARD 2	Illuminance	Fc	3.65	12.0	0.3	12.17	40.00
COURT YARD 3	Illuminance	Fc	3.55	12.8	0.3	11.83	42.67
COURT YARD 4	Illuminance	Fc	3.96	12.9	0.3	13.20	43.00
COURT YARD 5	Illuminance	Fc	3.89	12.7	0.3	12.97	42.33
DRIVE	Illuminance	Fc	2.31	10.3	0.3	7.70	34.33
DRIVE 2	Illuminance	Fc	1.72	9.4	0.3	5.73	31.33
LOT 1	Illuminance	Fc	2.99	12.3	0.6	4.98	20.50
LOT 10	Illuminance	Fc	2.16	9.7	0.3	7.20	32.33
LOT 11	Illuminance	Fc	3.18	13.1	0.3	10.60	43.67
LOT 12	Illuminance	Fc	3.06	8.8	0.3	10.20	29.33
LOT 13	Illuminance	Fc	2.94	9.9	0.7	4.20	14.14
LOT 14	Illuminance	Fc	3.07	9.7	0.9	3.41	10.78
LOT 15	Illuminance	Fc	3.60	12.8	0.4	9.00	32.00
LOT 16	Illuminance	Fc	3.16	9.7	0.9	3.51	10.78
LOT 17	Illuminance	Fc	3.99	13.1	0.6	6.65	21.83
LOT 2	Illuminance	Fc	3.22	11.9	0.6	5.37	19.83
LOT 3	Illuminance	Fc	3.19	12.9	0.4	7.98	32.25
LOT 4	Illuminance	Fc	2.44	10.1	0.4	6.10	25.25
LOT 5	Illuminance	Fc	3.47	13.2	0.5	6.94	26.40
LOT 6	Illuminance	Fc	1.79	7.6	0.3	5.97	25.33
LOT 7	Illuminance	Fc	2.14	10.3	0.4	5.35	25.75
LOT 8	Illuminance	Fc	2.02	8.1	0.4	5.05	20.25
LOT 9	Illuminance	Fc	3.25	13.0	0.3	10.83	43.33

NOTES:

A. A LIGHT LOSS FACTOR OF 0.900 HAS BEEN APPLIED TO FIXTURES UNLESS OTHERWISE NOTED. REFER TO LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR AND LUMEN INFORMATION.

B. SEE "MH" ON LIGHTING FIXTURE TAG LOCATED ON PLAN FOR MOUNTING HEIGHT INFORMATION.

C. CALCULATION POINTS ARE TAKEN AT GRADE.

D. CALCULATION RESULTS ARE BASED ON IES STANDARDS UNLESS OTHERWISE REQUESTED.

SL1

REVISIONS	DESCRIPTION	DATE
1		
2		
3		
4		
5		
6		
7		

DATE: 2/11/2022
PROJECT NUMBER: 22005
DRAWN BY: AM
CHECKED BY:TJ
APPROVED BY:DW
SCALE: SCALE

Fieldstone Ridge Apartments

Photometric Layout Calculations and Schedules

160 Brainard Road
Hartford, CT. 06114

CONNECTICUT LIGHTING CENTERS

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Canton, MA 02021
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www.skandassociates.com

Bubaris Traffic
ASSOCIATES
Planning • Engineering • Design

James G. Bubaris, P.E.
Principal

January 24, 2022

Mr. Kevin W. Santini, Member
Fieldstone Ridge, LLC
1031 Hartford Turnpike
Vernon, CT 06066

Re: Site Traffic Evaluation Study
Proposed Fieldstone Ridge Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

Dear Mr. Santini:

Reference is made to the proposal to develop a 240-unit apartment complex consisting of 112 one-bedroom and 128 two-bedroom units, on the parcel of land located to the west and behind the Fieldstone Commons shopping center (which contains the Big Y World Class Market, Women's Health CT, Fenton River Veterinary Hospital, Camille's Wood Fired Pizza, and People's United Bank), to share and be served by the Fieldstone Commons site drive at Merrow Road (CT Route 195), in the Town of Tolland, Connecticut.

Please refer to Exhibit 1 of the Appendix which locates this site with respect to the surrounding roadway network.

Introduction

The proposed apartment complex will consist of 240 dwelling units housed in 21 separate buildings, with full occupancy expected by the end of 2026. Access and egress for this development will be provided via one full access/egress site drive intersecting the north side of the western terminus of the site drive serving Fieldstone Commons. The development will be served by 642 parking spaces, of which 380 spaces will be located on surface lots throughout the complex, and 262 interior spaces will be located in the garages within the buildings. Additionally, there will be a maintenance building, a clubhouse, and an outdoor pool located in the vicinity of the entrance to the site. An emergency access is proposed at the southern end of the site.

Please refer to Exhibit 2 of the Appendix which provides a copy of the site plan for the proposed development.

Please refer to Table A on the next page of this study which summarizes the development parameters for the subject project.

Table A

Development Parameters

Proposed Fieldstone Ridge Multi-Family Housing

10 Fieldstone Commons (Route 195)

Tolland, Connecticut

Number of Units:	240	112 one-bedroom 128 two-bedroom
Parking Spaces:	642	262 indoor spaces 380 outdoor spaces

Bubaris Traffic Associates
January 2022

Study Approach

Given that the subject residential development will share the site drive which serves the abutting Fieldstone Commons retail development, that the subject development will exceed both the building area and parking space thresholds which trigger the need for a review and approval by the Office of State Traffic Administration (OSTA), and that there are currently reduced traffic volumes on highways and streets throughout Connecticut due to the COVID pandemic which has significantly curtailed traffic activity:

1. The selected study periods include a weekday am commuter peak and weekday pm commuter peak, as well as a coincident weekday pm retail peak and a Saturday midday retail peak, to account for both the exiting retail and proposed residential uses;

2. As suggested by the Connecticut Department of Transportation (CTDOT) Policy and Planning Division, manual turning movement counts were conducted throughout the study area in April 2021, and the results of these counts were forwarded to CTDOT Policy and Planning for them to adjust these findings upward based on their comparison with their historical data to account for the impact of the COVID experience; and

3. These traffic volumes were then projected five years forward to 2026 (the projected full occupancy year) assuming a 1 percent per year growth, to which site-generated traffic volume estimates for approved-but-yet-not-built developments were added (i.e., Dunkin Donuts drive-thru addition on Merrow Road north of Interstate 84, and the Gottier mixed-use development on Merrow Road to the south in the vicinity of Anthony Road).

Background Conditions

Given the nature of this development and the manner in which it will interface with the surrounding roadway network, the selected study area for the proposed development consists of the following intersections along Merrow Road (Route 195) which serves this study area as shown in the location maps contained in Exhibit 1 of the Appendix:

Merrow Road (Route 195) at Interstate 84 Westbound Ramps

This is a signalized four-way intersection with Merrow Road (Route 195) running north-south, the west leg as the Interstate 84 Westbound On Ramp, and the east leg as the Interstate 84 Westbound Off Ramp. The Merrow Road northbound approach is two lanes wide with one dedicated left-turn lane, and one dedicated though lane. The Merrow Road southbound approach is two lanes wide with one dedicated through lane and one dedicated right-turn lane. The Interstate 84 Westbound On Ramp is one lane wide moving one-way away from the intersection. The Interstate 84 Westbound Off Ramp is one lane wide for combination left/through/right movements. The traffic signal at this location is part

of a closed loop system which includes this and the other signalized intersections within this study area. The traffic signal at this intersection provides three vehicular phases: the first phase is an advance phase to move northbound movements only to allow for a protected left-turn onto the westbound on ramp, the second phase moves all northbound and southbound movements, and the third phase moves all the westbound off ramp movements.

Merrow Road (Route 195) at Interstate 84 Eastbound Ramps

This is a signalized four-way intersection with Merrow Road (Route 195) running north-south, the west leg as the Interstate 84 Eastbound Off Ramp, and the east leg as the Interstate 84 Westbound On Ramp. The Merrow Road northbound approach is three lanes wide with two dedicated through lanes, and one dedicated right-turn lane. The Merrow Road southbound approach is three lanes wide with one dedicated left-turn lane, and two dedicated through lanes. The Interstate 84 Eastbound Off Ramp is three lanes wide with one combination left/through lane, and two dedicated right-turn lanes. The Interstate 84 Eastbound On Ramp is one lane wide moving one-way away from the intersection. The traffic signal at this location is part of a closed loop system which includes this and the other signalized intersections within this study area. The traffic signal at this intersection provides four vehicular phases: the first phase moves the northbound approach concurrently with the eastbound right-turn movements, the second phase moves all northbound and southbound movements, the third phase is a lagging phase to move southbound movements only to allow for a protected left-turn onto the eastbound on ramp, and the fourth phase moves all eastbound off ramp movements.

Merrow Road (Route 195) at Fieldstone Commons and Savings Institute

This is a signalized four-way intersection with Merrow Road (Route 195) running north-south, the west leg as Fieldstone Commons, and the east leg as the drive serving the Savings Institute. The Merrow Road northbound approach is three lanes wide with one dedicated left-turn lane, one dedicated through lane, and one combination through/right lane. The Merrow Road southbound approach is three lanes wide with one dedicated left-turn lane, one dedicated through lane, and one combination through/right lane. The Fieldstone Commons eastbound approach is two lanes wide with one combination left/through lane, and one dedicated right-turn lane. The Savings Institute westbound approach is one lane wide for combination left/through/right movements. The traffic signal at this location is part of a closed loop system which includes this and the other signalized intersections within this study area. The traffic signal at this intersection provides four vehicular phases: the first phase moves the northbound and/or southbound left-turn lanes exclusively, the second phase moves either all northbound or southbound movements as an advance phase depending on which left-turn has the highest demand, the third phase moves all northbound and southbound movements, and the fourth phase moves all eastbound and westbound movements.

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Merrow Road (Route 195) at Oyama Restaurant and Fire Department Training Center

This is an unsignalized four-way intersection with Merrow Road (Route 195) running north-south, the west leg serving the Oyama Restaurant Plaza, and the east leg as the drive serving the Tolland Fire Department Training Center. The Merrow Road northbound approach is three lanes wide with one dedicated left-turn lane, one dedicated through lane, and one combination through/right lane. The Merrow Road southbound approach is two lanes wide with one combination left/through lane, and one combination through/right lane. The Oyama Restaurant Plaza eastbound approach is two lanes wide with one left-turn lane, and one right-run lane. The Fire Department Training Center westbound approach is two lanes wide with one left-turn lane, and one right-turn lane. The eastbound and westbound approaches are controlled by Stop signs.

Merrow Road (Route 195) at Goose Lane and Rhodes Road

This is a signalized four-way intersection with Merrow Road (Route 195) running north-south, the west leg as Goose Lane, and the east leg as Rhodes Road. The Merrow Road northbound approach is three lanes wide with one dedicated left-turn lane, one dedicated through lane, and one combination through/right lane. The Merrow Road southbound approach is three lanes wide with one dedicated left-turn lane, one dedicated through lane, and one combination through/right lane. The Goose Lane eastbound approach is one lane wide for combination left/through/right movements. The Rhodes Road westbound approach is two lanes wide with one combination left/through lane, and one dedicated right-turn lane. The traffic signal at this location is part of a closed loop system which includes this and the other signalized intersections within this study area. The traffic signal at this intersection provides five vehicular phases: the first phase moves the northbound and/or southbound left-turn lanes exclusively, the second phase moves either all northbound or southbound movements as an advance phase depending on which left-turn has the highest demand, the third phase moves all northbound and southbound movements, the fourth phase moves all eastbound movements, and the fifth phase moves all the westbound movements.

Background Traffic Volumes

For the purposes of establishing background traffic volumes for the subject study area, weekday am, weekday pm, and Saturday midday peak period manual turning movement counts were conducted in April 2021 at all five of the study intersections identified above. These counts were conducted from 7:00 and 9:00 am in the morning on a weekday, between 4:00 and 6:00 pm in the late afternoon on a weekday, and again between 11:00 am and 1:00 pm on a Saturday.

Please refer to Exhibits 3 thru 5 of the Appendix that represent the existing 2021 weekday am and pm commuter peaks, and Saturday midday retail peak hour traffic volumes derived from the foregoing traffic counting exercise, which were then adjusted to reflect pre-COVID conditions by CTDOT Policy and Planning and returned to us for further adjustment.

Please refer to Exhibits 6 thru 8 of the Appendix that represent the background (no-build) 2026 weekday commuter am and pm peak hour, and Saturday midday retail peak hour, traffic volumes when it is anticipated that the subject development will be fully occupied. Exhibits 6 through 8 were developed by applying a 1 percent per year expansion factor to the existing traffic volumes shown in Exhibits 3 thru 5 for each of five years (i.e., between the 2021 counts and the anticipated 2026 full occupancy date), or expanded by a factor of 1.05, to represent normal growth trends for this study area from information provided by CTDOT's Division of Policy and Planning.

Please refer to Exhibits 9 thru 11 of the Appendix that represent the estimated site-generated traffic volumes associated with approved-but-not-yet-built developments that will impact the subject study area, including the Dunkin Donuts modification to the north and the Gottier mixed-use development to the south.

Please refer to Exhibits 12 thru 14 of the Appendix that represent the background (no-build) 2026 weekday commuter am and pm peak hour, and Saturday midday retail peak hour, traffic volumes with the addition of the "other" developments represented by the foregoing site-generated traffic volumes from Exhibits 9 thru 11. Exhibits 12 thru 14 were developed by adding the "other" site generated peak hour volumes from Exhibits 9 thru11 to the corresponding background volumes from Exhibits 6 thru 8.

Site-Generated Traffic Volumes and Distributions

For the purpose of estimating site-generated traffic volumes associated with the subject development, we utilized the data made available for this purpose and published in the latest 2018 10th edition of the Trip Generation Manual prepared by the Institute of Transportation Engineers (ITE). This data source compiles information from throughout the nation for actual trip generation measurements at various land uses. In the case of apartment dwelling uses comparable to the proposed use, trip generation estimates are based on the number of dwelling units proposed, which in this case would be 240 units.

Please refer to Table B on the next page of this study which summarizes the trip generation estimates for the subject proposal based on the ITE trip generation calculations shown in Exhibit 15 of the Appendix. A trip is defined as a one-way vehicular movement traveling either to or from the site. A review of Table B shows that the proposed 240-unit apartment complex will generate from 110 to 134 trips per hour during the weekday commuter am and pm peaks, and about 168 trips per hour during the Saturday midday retail peak.

Table B
Trip Generation Estimates
Proposed Fieldstone Ridge
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

Average Weekday

Inbound	879
Outbound	879
Total	1758

Weekday AM Peak

Inbound	25
Outbound	85
Total	110

Weekday PM Peak

Inbound	84
Outbound	50
Total	134

Average Saturday

Inbound	977
Outbound	977
Total	1954

Saturday Peak Hour

Inbound	84
Outbound	84
Total	168

Bubaris Traffic Associates
January 2022

For the purpose of estimating the likely distribution of site-generated traffic on the surrounding roadway network for the proposed development, we relied on information provided by the Connecticut Economic Resource Center (CERC) from census data for the Town of Tolland for journey-to-work trips (i.e., the majority of trips made during the weekday am and pm peak periods by residents in a given town) undertaken by the existing town population, as summarized in Exhibit 16 of the Appendix.

Please refer to Table C on the next page for journey-to-work information published in Town Profiles by the Connecticut Data Collaborative, where it has been assumed that those residing in the subject development will generally follow the same journey-to-work patterns as does the remainder of the population of the Town of Tolland.

A review of Table C shows the likely trip distribution patterns for residents of the subject development as follows:

- To and from the west via Route I-84: 70 percent
- To and from the east via Route I-84: 5 percent
- To and from the north via Route 195: 15 percent
- To and from the south via Route 195: 10 percent

Please refer to Table D on the page following the next page which summarizes the results of the foregoing trip generation and distribution estimation exercises.

Please refer to Exhibits 17 thru 19 of the Appendix for graphical representations of the estimated 2026 site-generated weekday am, weekday pm, and Saturday midday peak hour traffic volumes for the subject development, derived by multiplying the estimated trip generation volumes from Table B by the trip distribution estimates shown in Exhibit C, and summarized in Table D.

Operations Analysis

2021 existing weekday am and pm commuter peak analyses, and Saturday midday retail peak analyses, representing existing conditions, are based on the peak hour traffic volumes shown as Exhibits 3 thru 5 of the Appendix.

2026 background (no-build) weekday am and pm commuter peak analyses, and Saturday midday retail peak analyses, with "other" developments, representing no-build conditions in the year when the proposed development is anticipated will be fully occupied, but without the development's traffic, are based on the peak hour traffic volumes shown as Exhibits 12 thru 14 of the Appendix.

2026 combined (build) weekday am and pm commuter peak analyses, and Saturday midday retail peak analyses, representing conditions when the proposed development is expected to be open for use, are based on the peak hour traffic volumes shown as Exhibits 20 thru 22 of the Appendix.

Table C
Distribution of Town Residents Commuting for Employment FROM Town of Tolland
Source: CERC Town Profiles, October 2019

Tolland Resident Commuters To	Number	Percent of Total	Likely Routes to be Traveled: To/From West via Route I-84	To/From East via Route I-84	To/From North via Route 195	To/From South via Route 195
Hartford	1,124	28.0%	28.0%			
Tolland	776	19.4%			19.4%	
Manchester	537	13.4%	13.4%			
Vernon	481	12.0%	12.0%			
East Hartford	455	11.3%	11.3%			
Mansfield	326	8.1%				8.1%
South Windsor	310	7.7%	7.7%			
Total:	4,009	100.0%	72.5%	0.0%	19.4%	8.1%
		Call:	**70%**	**5%**	**15%**	**10%**

Bubaris Traffic Associates
January 2022

Table D
Estimated Trip Distribution
Proposed Fieldstone Ridge Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

		Trip Distribution			
		To/From WEST via Route I-84	To/From EAST via Route I-84	To/From NORTH via Route 195	To/From SOUTH via Route 195
Trip Generation	**Total**	**70%**	**5%**	**15%**	**10%**
Weekday AM Peak					
In	**25**	18	1	4	3
Out	**85**	60	4	13	9
Total	**110**	77	6	17	11
Weekday PM Peak					
In	**84**	59	4	13	8
Out	**50**	35	3	8	5
Total	**134**	94	7	20	13
Saturday Midday Peak					
In	**84**	59	4	13	8
Out	**84**	59	4	13	8
Total	**168**	118	8	26	16

Bubaris Traffic Associates
January 2022

Exhibits 20 thru 22 were developed by combining the background (no-build) with "others" peak hour traffic volumes from 12 thru 14 with the site-generated traffic volumes for the subject development from Exhibits 17 thru 19.

Intersection operational analyses were performed for the defined study intersections utilizing the methodology described in the latest edition of Highway Capacity Manual, Special Report 209, Transportation Research Board, 1985, updated to 2016. Application of this methodology was facilitated by use of Synchro Analysis Software, developed by the Trafficware Corporation, Version 10, 2018. Operational analyses are utilized to determine a Level of Service (LOS) for a given intersection operating under either signalized or unsignalized control.

In the case of signalized intersections similar to the signalized intersections along Merrow Road, Level of Service (LOS) is defined in terms of control delay, which is a measure of driver discomfort, frustration, increased fuel consumption, and lost of travel time. The delay experienced by a motorist is comprised of several factors that relate to control, geometric, traffic, and incidents. Total delay is the difference between the travel time experienced and the reference travel time that would result during base conditions in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-minute analysis period. Delay is a complex measure and depends on several variables, including the quality of progression, the cycle length, the green ratio, and the volume-to-capacity (v/c) ratio for the lane group. In the case of signalized intersections, the Level of Service for each approach is computed, and an overall Level of Service for the entire intersection is determined. In today's environment, Levels of Service C to D are considered acceptable, and Levels of Service A to B are seldom achieved at signalized intersections.

Please refer to Exhibit 23 in the Appendix, which provides details on the definitions of Levels of Service for signalized intersections.

In the case of unsignalized intersections similar to the intersection of Merrow Road at the Oyama Restaurant/Training Center intersection, Level of Service (LOS) is defined in terms of the average control delay for the approach or movement evaluated. Control delay involves movements at slower speeds and stops on intersection approaches as vehicles move up in the queue or slow down upstream of an intersection. The delay experienced by a motorist is comprised of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference time that would result during base conditions in the absence of incident, control, traffic, or geometric delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. At two-way stop-controlled and all-way stop-controlled intersections, control delay is the total elapsed time from a vehicle joining the queue until its departure from the stopped position at the head of the queue. The control delay also includes the time required to decelerate to a stop and to accelerate to the free-flow speed. Level of Service for a one-way or two-way stop-controlled intersection is determined by

the computed or measured control delay and is defined for each minor movement. LOS for a one-way or two-way stop-controlled intersection is **not defined** for the intersection as a whole. In today's environment, Levels of Service D to F are common and are often experienced on minor street approaches to major streets carrying relatively high traffic volumes.

Please refer to Exhibit 24 in the Appendix, which provides details on the definitions of Levels of Service for unsignalized intersections.

The results of the operational analyses, which compare 2021 existing, 2026 background (no-build), and 2026 combined (build) conditions, are summarized in Table E on the next two pages of this study.

The computer-generated worksheets for these operational analyses are included as Exhibits 25 thru 33 of the Appendix A under separate cover as follows:

- Exhibit 25 – 2021 Existing AM Peak
- Exhibit 26 – 2021 Existing PM Peak
- Exhibit 27 – 2021 Saturday Midday Peak
- Exhibit 28 – 2026 Background (no-build) with "Others" AM Peak
- Exhibit 29 – 2026 Background (no-build) with "Others" PM Peak
- Exhibit 30 – 2026 Background (no-build) with "Others" Saturday Peak
- Exhibit 31 – 2026 Combined (build) AM Peak
- Exhibit 32 – 2026 Combined (build) PM Peak
- Exhibit 33 – 2026 Combined (build) Saturday Peak

A review of Table E shows that overall levels of service for all the signalized intersections within the subject study area will continue to operate at very good levels of service B to good levels of service C with the introduction of the proposed development in the year 2026 when the subject development is expected to be in place. Furthermore, all approaches will also experience from excellent (LOS A) to good (LOS C) levels of service.

The exception would be the signalized intersection of Merrow Road at Fieldstone Commons/Savings Institute which will experience overall level of service B (considered very good) to overall level of service C (considered good), with levels of service for the Fieldstone Commons eastbound (outbound) approach changing from LOS C (considered good) and LOS D (considered fair), to LOS D (considered fair) and LOS E (considered poor), although overall levels of service will remain satisfactory (i.e., LOS B and LOS C).

Table E
Levels of Service
Summary of Traffic Operations Analyses
Proposed Fieldstone Ridge Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

	2021 Existing (No-Build)			2026 Background (No-Build)			2026 Combined (Build)			2026 Combined (Build IMPROVED)		
	AM Peak	PM Peak	SAT Peak	AM Peak	PM Peak	SAT Peak	AM Peak	PM Peak	SAT Peak	AM Peak	PM Peak	SAT Peak
Merrow Road at I-84 Westbound Ramps												
	(Traffic Signal)			*(Traffic Signal)*			*(Traffic Signal)*					
Merrow Road northbound approach	LOS A	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B			
Merrow Road southbound approach	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS C			
Interstate 84 westbound approach	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C			
- Overall -	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS C -**	**- LOS C -**			
Average Delay (seconds per vehicle)	11.1	13.8	14.8	14.1	17.5	17.7	15.9	20.1	21.2			
Volume-to-Capacity Ratio	0.66	0.69	0.70	0.77	0.77	0.76	0.80	0.80	0.80			
Merrow Road at I-84 Eastbound Ramps												
	(Traffic Signal)			*(Traffic Signal)*			*(Traffic Signal)*					
Merrow Road northbound approach	LOS A	LOS B	LOS A	LOS A	LOS B	LOS A	LOS A	LOS B	LOS B			
Merrow Road southbound approach	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C			
Interstate 84 eastbound approach	LOS A	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B			
- Overall -	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**			
Average Delay (seconds per vehicle)	11.8	15.6	13.5	13.1	16.1	14.0	13.1	16.2	14.6			
Volume-to-Capacity Ratio	0.66	0.69	0.70	0.77	0.77	0.76	0.80	0.80	0.80			
Merrow Road at Fieldstone Commons/Savings Institute												
	(Traffic Signal)			*(Traffic Signal)*			*(Traffic Signal)*			*(Traffic Signal)*		
Merrow Road northbound approach	LOS A	LOS A	LOS A	LOS A	LOS A	LOS A	LOS A	LOS A	LOS A	LOS A	LOS B	LOS B
Merrow Road southbound approach	LOS A	LOS B	LOS B	LOS A	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS C	LOS C
Fieldstone Commons eastbound approach	LOS C	LOS D	LOS D	LOS C	LOS D	LOS D	LOS D	LOS E	LOS E	LOS D	LOS D	LOS D
Savings Institute westbound approach	LOS A	LOS A	LOS B	LOS A	LOS C	LOS B	LOS A	LOS C	LOS B	LOS A	LOS B	LOS B
- Overall -	**- LOS A -**	**- LOS B -**	**- LOS B -**	**- LOS A -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS C -**	**- LOS C -**	**- LOS B -**	**- LOS C -**	**- LOS C -**
Average Delay (seconds per vehicle)	7.1	18.0	17.1	7.2	19.1	17.9	12.2	24.4	25.8	11.4	22.5	24.5
Volume-to-Capacity Ratio	0.49	0.67	0.66	0.52	0.71	0.70	0.57	0.76	0.77	0.57	0.76	0.77

(continued)

Table E (continued)
Levels of Service

	2021 Existing (No-Build)			2026 Background (No-Build)			2026 Combined (Build)			2026 Combined (Build IMPROVED)		
	AM Peak	PM Peak	SAT Peak	AM Peak	PM Peak	SAT Peak	AM Peak	PM Peak	SAT Peak	AM Peak	PM Peak	SAT Peak
Merrow Road at Oyama Restaurant/Training Center												
	(Stop Minor Approaches)			*(Stop Minor Approaches)*			*(Stop Minor Approaches)*					
Merrow Road northbound left	LOS A	LOS B	LOS B	LOS A	LOS B	LOS B	LOS A	LOS B	LOS B			
Average Delay (seconds per vehicle)	9.1	10.3	10.1	9.4	10.8	10.6	9.5	10.8	10.7			
Volume-to-Capacity Ratio	0.002	0.008	0.002	0.003	0.009	0.002	0.003	0.009	0.002			
Merrow Road southbound left	LOS A	LOS A	LOS A	LOS A	LOS B	LOS A	LOS A	LOS B	LOS A			
Average Delay (seconds per vehicle)	8.8	9.7	9.5	9.1	10.3	9.8	9.1	10.4	9.8			
Volume-to-Capacity Ratio	0.011	0.001	0.001	0.013	0.002	0.001	0.013	0.002	0.001			
Oyama eastbound approach	LOS C	LOS E	LOS E	LOS C	LOS F	LOS F	LOS C	LOS F	LOS F			
Average Delay (seconds per vehicle)	19.2	37.3	41.9	22.8	51.8	54.7	29.1	52.6	56.2			
Volume-to-Capacity Ratio	0.024	0.133	0.108	0.031	0.195	0.151	0.032	0.198	0.155			
Training Center westbound approach	LOS B	LOS D	LOS C	LOS B	LOS D	LOS C	LOS B	LOS D	LOS C			
Average Delay (seconds per vehicle)	11.6	26.4	19.5	12.2	33.9	22.5	12.2	34.3	22.8			
Volume-to-Capacity Ratio	0.006	0.011	0.009	0.007	0.015	0.012	0.007	0.015	0.012			
Merrow Road at Goose Lane/Rhodes Road												
	(Traffic Signal)			*(Traffic Signal)*			*(Traffic Signal)*					
Merrow Road northbound approach	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B	LOS B			
Merrow Road southbound approach	LOS A	LOS A	LOS A	LOS A	LOS B	LOS A	LOS A	LOS B	LOS A			
Goose Lane eastbound approach	LOS B	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C	LOS C			
Rhodes Road westbound approach	LOS A	LOS B	LOS A	LOS A	LOS B	LOS A	LOS A	LOS B	LOS A			
- Overall -	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**	**- LOS B -**			
Average Delay (seconds per vehicle)	10.5	11.5	11.1	10.9	12.8	11.4	10.9	12.9	11.4			
Volume-to-Capacity Ratio	0.57	0.62	0.55	0.60	0.65	0.57	0.60	0.65	0.58			

Please refer to the last columns of Table E, labelled "Build IMPROVED", which show that operations for the Fieldstone Commons intersection eastbound (outbound) approach can be improved from LOS D and E, to LOS D, while maintaining overall levels of service B to C, by implementing some minor traffic signal timing changes. The corresponding "IMPROVED" operational analyses for this intersection are contained in Exhibit 34 of the Appendix for all three peak periods.

Finally, the unsignalized intersection of Merrow Road at Oyama Restaurant and Training Center will continue to experience poor levels of service (i.e., LOS F) for the side-street eastbound approach, as would be expected, until such time that a traffic signal is warranted and installed, although Merrow Road operations remain satisfactory at LOS A (considered excellent) to LOS B (considered very good).

Queuing Analyses

Please refer to Table F on the next page which summarizes the results of the 95th percentile queuing analyses.

A review of Table F shows that all the provided turning lanes throughout the study area are of adequate length to accommodate the projected combined (build) peak hour volumes.

Additionally, for the intersection of Merrow Road at Fieldstone Commons/Savings Institute, significant reductions in the resultant 95th queue lengths on the Fieldstone Commons eastbound (outbound) approach can be realized through implementation of minor traffic signal timing changes as described in the foregoing section and evaluated in the traffic operations analyses contained in Exhibit 34 of the Appendix.

Traffic Crash Experience

A review was made of the most recent available three-year traffic crash experience summary for the subject study area as compiled by the UConn Traffic Crash Depository from information provided by the Connecticut Department of Transportation and the town's Police Department for the most recent three-year summary period for each of the evaluated intersections.

A review of Table G on the page following the next page which summarizes these traffic crash data shows that all the study intersections in the immediate area of the subject development experienced favorable traffic crash experiences, with no recurring problems requiring correction, or that may be exacerbated by the proposed development.

Table F
Summary of Queuing Analyses
95th Percentile Queues
Proposed Fieldstone Ridge Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

	Intersection Control	Available Storage	2026 Combined AS IS / IMPROVED AM Peak	2026 Combined AS IS / IMPROVED PM Peak	2026 Combined AS IS / IMPROVED Sat Peak	Status	Provide
Merrow Road at I-84 Westbound Ramps							
Merrow Road northbound left turn lane	Signalized	750 feet	503 feet	432 feet	430 feet	OK	As Is
Merrow Road southbound right turn lane		130 feet	96 feet	68 feet	75 feet	OK	As Is
Interstate 84 westbound left/thru/right lane		1000 feet	84 feet	111 feet	119 feet	OK	As Is
Merrow Road at I-84 Eastbound Ramps							
Merrow Road northbound right turn lane	Signalized	200 feet	0 feet	8 feet	14 feet	OK	As Is
Merrow Road southbound left turn lane		125 feet	39 feet	47 feet	50 feet	OK	As Is
Interstate 84 eastbound left/thru lane		350 feet	104 feet	215 feet	152 feet	OK	As Is
Merrow Road at Fieldstone Commons/Savings Institute							
Merrow Road northbound left turn lane	Signalized	400 feet	23 feet / 24 feet	67 feet / 118 feet	52 feet / 99 feet	OK	Revise signal timing
Merrow Road southbound left turn lane		130 feet	8 feet / 6 feet	2 feet / 2 feet	10 feet / 11 feet	OK	Revise signal timing
Fieldstone Commons eastbound left/thru lane		400 feet	122 feet / 119 feet	329 feet / 267 feet	348 feet / 289 feet	OK	Revise signal timing
Savings Institute westbound left/thru/right lane		100 feet	0 feet / 0 feet	10 feet / 9 feet	38 feet / 31 feet	OK	Revise signal timing
Merrow Road at Oyama Restaurant/Training Center							
Merrow Road northbound left turn lane	Stop-Controlled	50 feet	0 feet	0 feet	0 feet	OK	As Is
Oyama Restaurant eastbound left turn lane		150 feet	0 feet	18 feet	13 feet	OK	As Is
Oyama Restaurant eastbund right turn lane		150 feet	0 feet	0 feet	0 feet	OK	As Is
Training Center left turn lane		100 feet	0 feet	0 feet	0 feet	OK	As Is
Training Center right turn lane		100 feet	0 feet	0 feet	0 feet	OK	As Is
Merrow Road at Goose Lane/Rhodes Road							
Merrow Road northbound left turn lane	Signalized	125 feet	9 feet	12 feet	10 feet	OK	As Is
Merrow Road southbound left turn lane		250 feet	44 feet	41 feet	38 feet	OK	As Is
Rhodes Road westbound right turn lane		75 feet	47 feet	69 feet	39 feet	OK	As Is

Table G
Summary of Traffic Crash Experience
Most Recent Three Years' Experience
Immediate Fieldstone Ridge Study Area
Tolland, Connecticut
Source: UConn Traffic Crash Data Depository

Intersection	Rear End Crashes					Right Angle Crashes					Head-On/Side-Swipe Crashes			Fixed Object					GRAND TOTAL
	NB / NB	SB / SB	EB / EB	WB / WB	Total	NB / EB	SB / EB	NB / WB	SB / WB	Total	NB / SB	EB / WB	Total	NB	SB	EB	WB	Total	
Merrow Road (Route 195) at Interstate 84 Westbound Ramps	4				4			1		1	1		1					0	6
Merrow Road (Route 195) at Interstate 84 Eastbound Ramps	3	1	2		6	1				1	1		1					0	8
Merrow Road (Route 195) at Fieldstone Commons/Savings Institute		1			1	1	1			2	2		2					0	5
Merrow Road (Route 195) at Oyama Restaurant/TFD Training Center					0					0			0					0	0
Merrow Road (Route 195) atGoose Lane/Rhodes Road	4	2			6		1			1			0					0	7
Totals:	11	4	2	0	17	2	2	1	0	5	4	0	4	0	0	0	0	0	26

Bubaris Traffic Associates
January 2022

Conclusions

It is the professional opinion of Bubaris Traffic Associates that the proposed Fieldstone Ridge multi-family housing development, to be located west of the existing Fieldstone Commons shopping center, with immediate access to / egress from the surrounding roadway network via a connection to the site drive serving Fieldstone Commons, should not adversely impact traffic operations on the surrounding roadway network in the year 2026 when full occupancy of the 240 dwelling units and 642 parking spaces is expected.

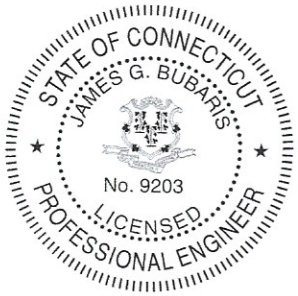
The proposed full-build development is expected to be fully occupied by late-2026 when it will generate from 110 to 134 trips per hour during the weekday am and pm commuter peak hours, and about 168 trips per hour during the Saturday midday retail peak hour.

Operational analyses indicate that the full-build development should not have an adverse impact on the traffic operations that would otherwise exist without this development.

The traffic crash experience for the subject study area is satisfactory, with no recurring problems that need to be corrected, or that may be exacerbated by the proposed partial development.

Other than the possible minor traffic signal timing revisions (if allowed by CTDOT) at the intersection of Merrow Road (Route 195) at Fieldstone Commons, there are no other traffic control and/or geometric improvements deemed necessary at this time to either correct existing traffic concerns and/or to mitigate potential traffic impacts.

The proposed development will require review and approval by the Office of State Traffic Administration as a major traffic generator. It is anticipated that only an Administrative Decision Request to OSTA will be required to obtain approval, and as such, a modification of the existing Certificate of Operations for the existing Fieldstone Commons development, of which, the proposed development will share the same access/egress to/from the surrounding roadway network.



Very truly yours,
Bubaris Traffic Associates

James G. Bubaris

James G. Bubaris, P.E.
Conn. Reg. No. 9203
Principal

cc: Mr. Eric Peterson, P.E., P.L.S.
Gardner & Peterson Associates, LLC
178 Hartford Turnpike
Tolland, CT 06084

APPENDIX

Site Traffic Evaluation
Fieldstone Ridge
Proposed Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

Appendix

Table of Contents

(continued)

(continued)

(continued)

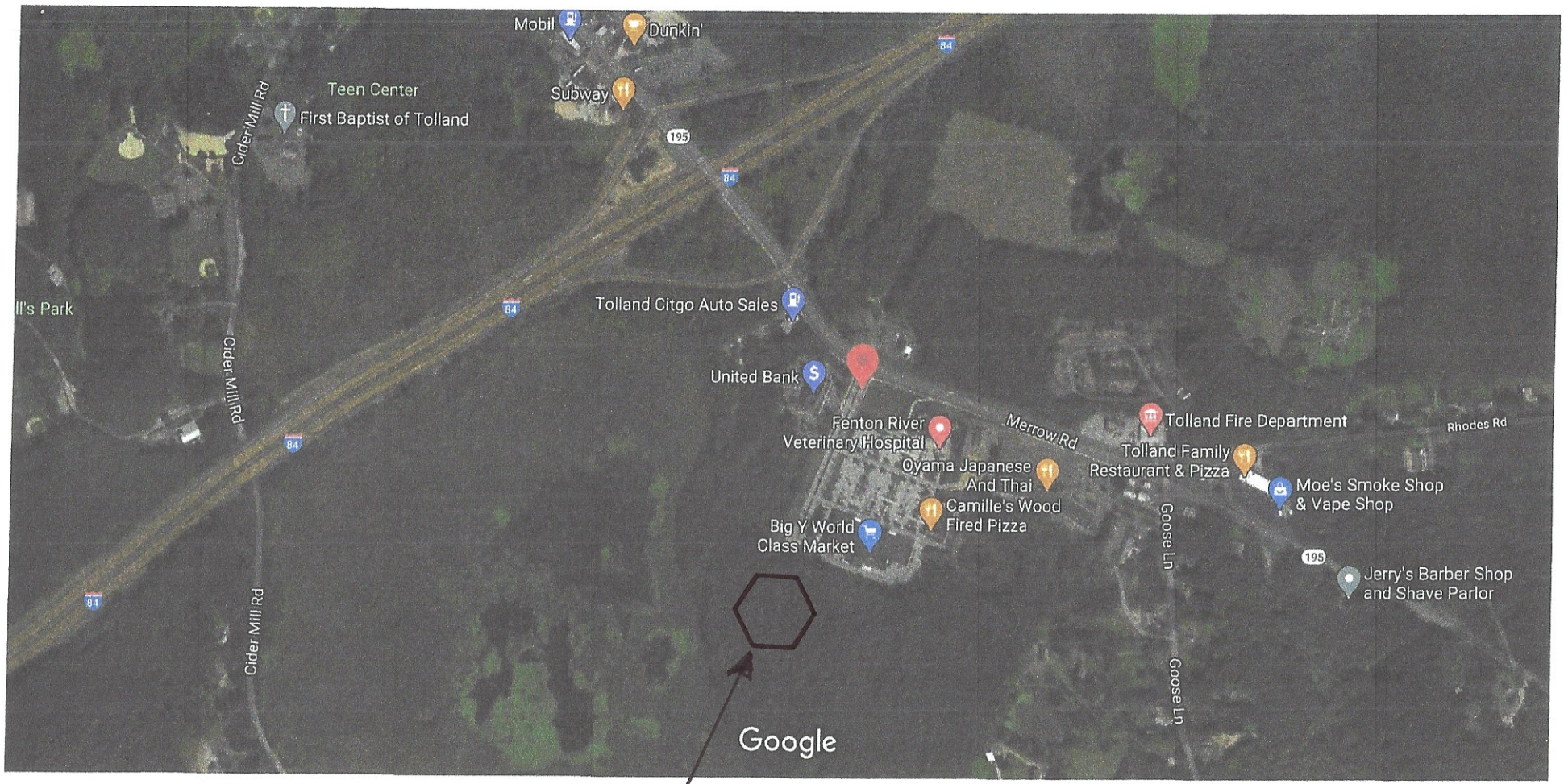
Site Traffic Evaluation
Fieldstone Ridge
Proposed Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

Appendix A
(under separate cover)

Table of Contents

Exhibit 1
Location Map
Fieldstone Ridge
Proposed Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

10 Fieldstone Commons

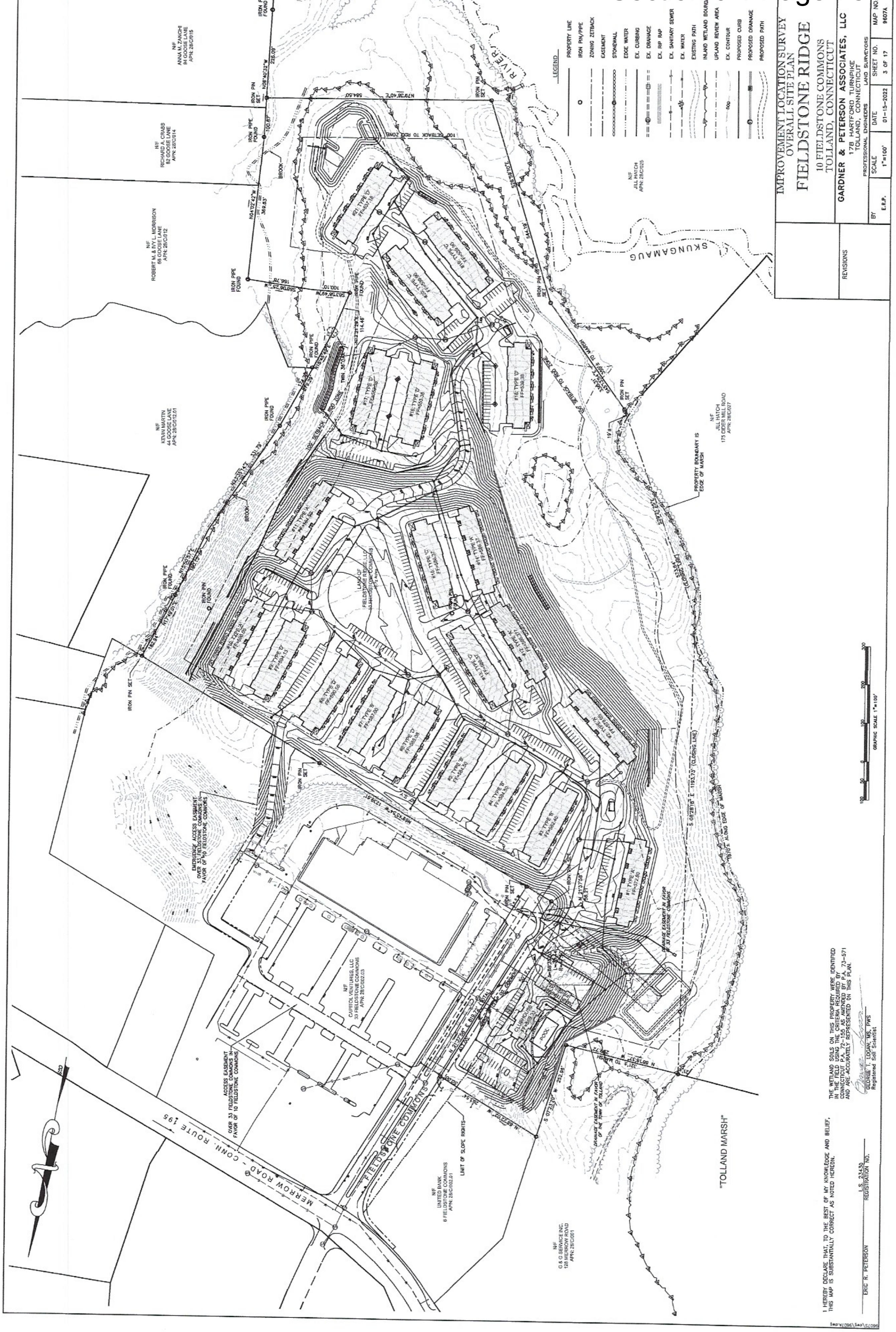


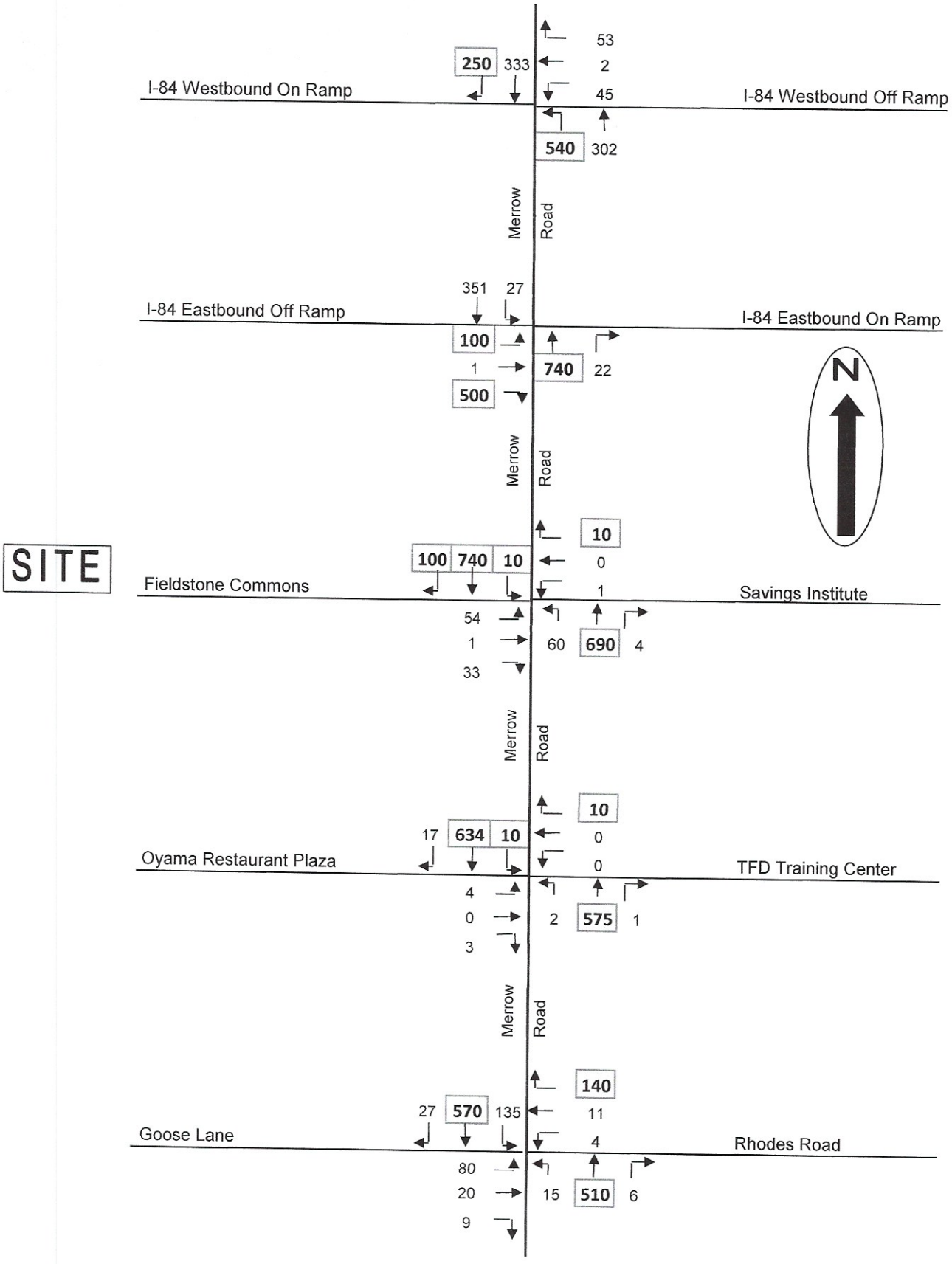
Imagery ©2021 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 500 ft

Site

N

Exhibit 2
Site Plan
Fieldstone Ridge
Proposed Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut


IMPROVEMENT LOCATION SURVEY
OVERALL SITE PLAN
FIELDSTONE RIDGE
10 FIELDSTONE COMMONS
TOLLAND, CONNECTICUT
GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS
BY E.R.P.
SCALE 1"=100'
DATE 01-15-2022
SHEET NO. 3 OF 17
MAP NO. 9607A
REVISIONS
LEGEND
PROPERTY LINE
IRON PIN/PIPE
ZONING ZETBACK
EASEMENT
STONEWALL
EDGE WATER
EX. CURBING
EX. DRAINAGE
EX. RIP RAP
EX. SANITARY SEWER
EX. WATER
EXISTING PATH
INLAND WETLAND BOUNDARY
UPLAND REVIEW AREA
EX. CONTOUR
PROPOSED CURB
PROPOSED DRAINAGE
PROPOSED PATH
N/F JILL HATCH APN: 28/C/025
N/F JILL HATCH 173 CIDER MILL ROAD
SKUNGAMAUG RIVER
"TOLLAND MARSH"
MERROW ROAD CONN. ROUTE 195
FIELDSTONE COMMONS
I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.
ERIC R. PETERSON
L.S. 23430
REGISTRATION NO.
THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72-155 AS AMENDED BY P.A. 73-571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.
GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist


I-84 Westbound On Ramp
I-84 Westbound Off Ramp
I-84 Eastbound Off Ramp
I-84 Eastbound On Ramp
Merrow Road
SITE
Fieldstone Commons
Savings Institute
Oyama Restaurant Plaza
TFD Training Center
Goose Lane
Rhodes Road
N
250
333
53
2
45
540
302
351
27
100
1
500
740
22
10
0
1
100
740
10
54
1
33
60
690
4
10
0
0
17
634
10
4
0
3
2
575
1
140
11
4
27
570
135
80
20
9
15
510
6

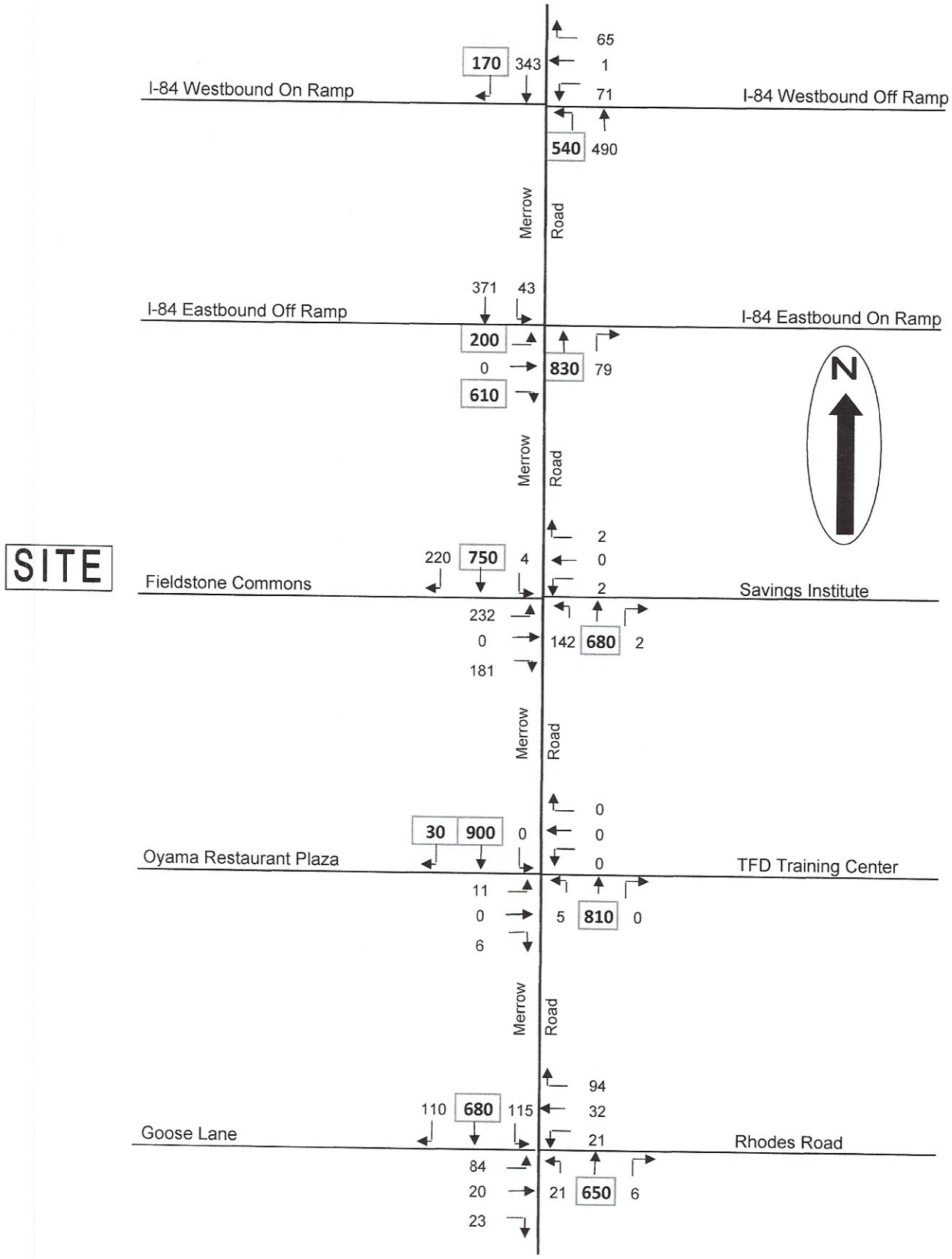


Exhibit 4
2021 Existing Weekday PM
Peak Hour Traffic Volumes

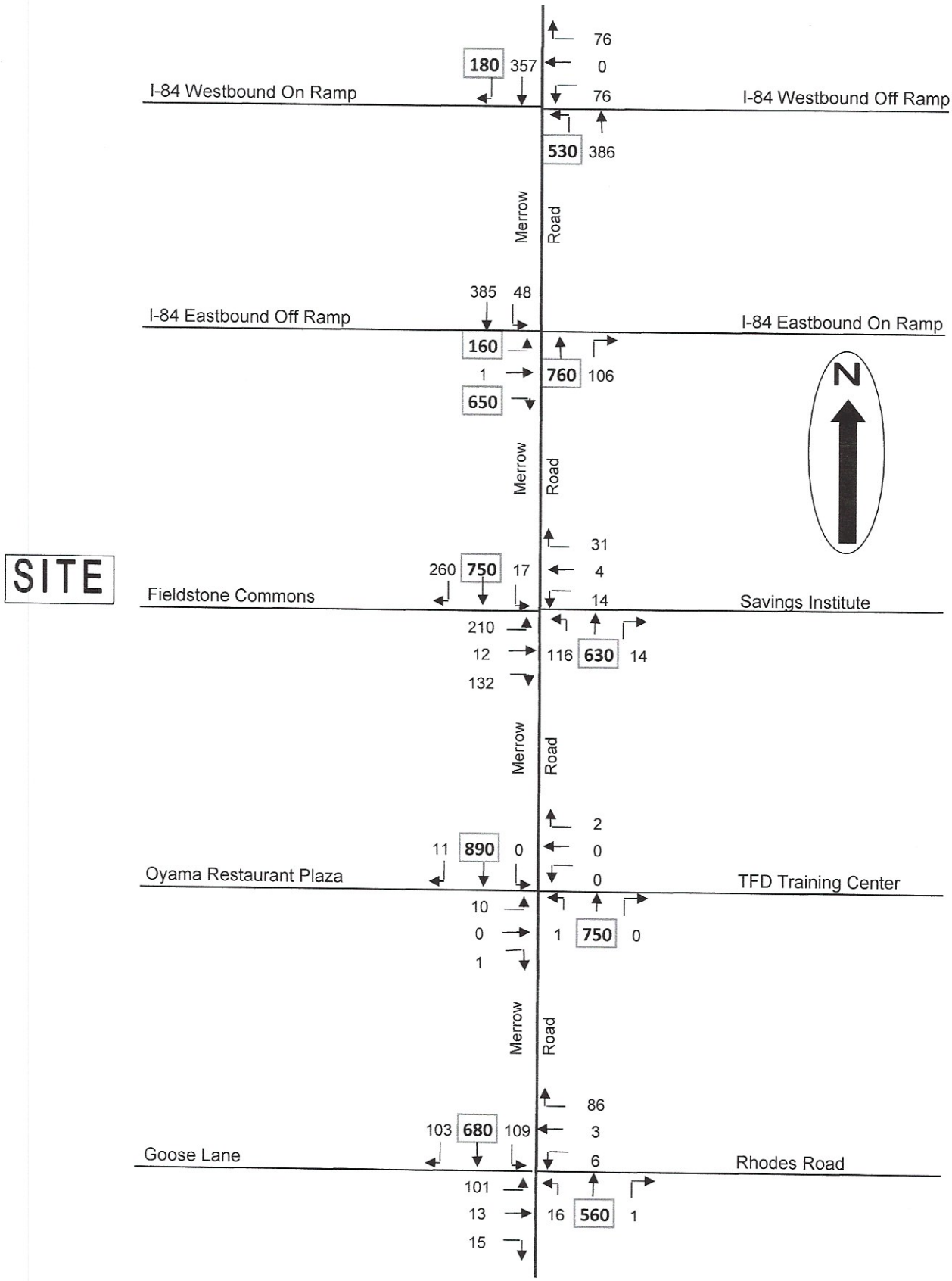
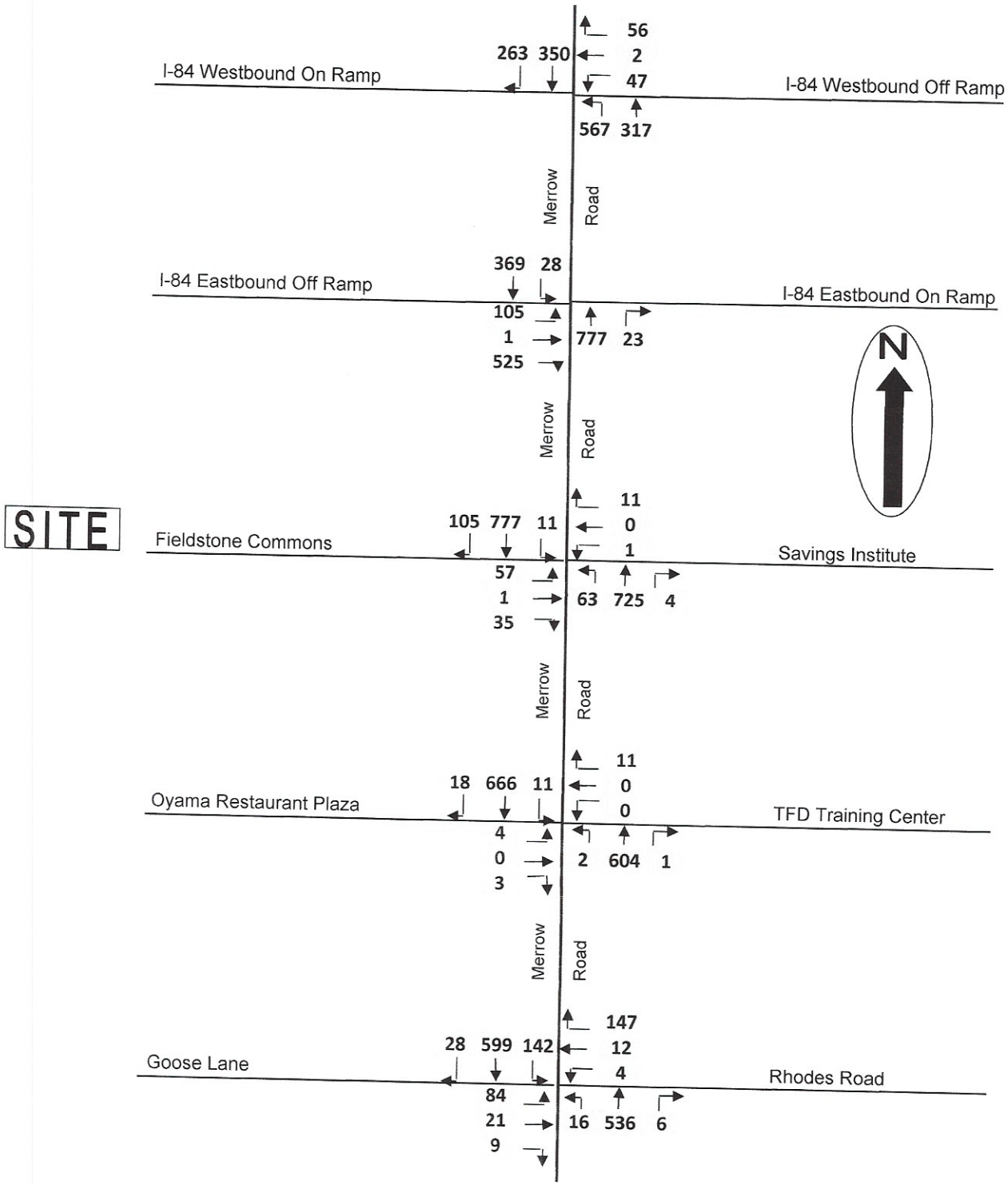
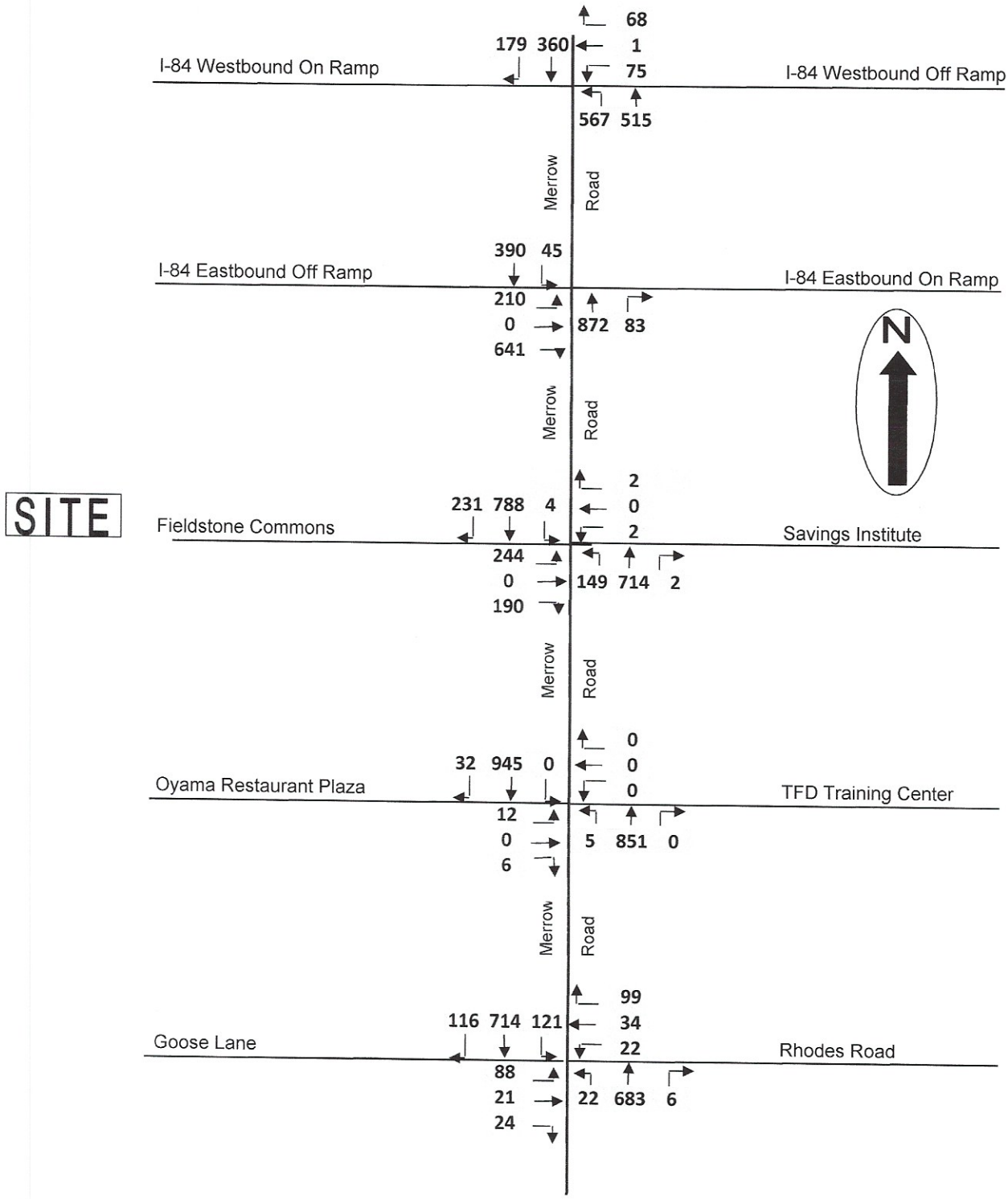


Exhibit 5
2021 Existing Saturday Midday
Peak Hour Traffic Volumes


I-84 Westbound On Ramp
263 350
56
2
47
I-84 Westbound Off Ramp
567 317
Merrow Road
I-84 Eastbound Off Ramp
369 28
105
1
525
I-84 Eastbound On Ramp
777 23
N
SITE
Fieldstone Commons
105 777 11
57
1
35
11
0
1
Savings Institute
63 725 4
Merrow Road
Oyama Restaurant Plaza
18 666 11
4
0
3
11
0
0
TFD Training Center
2 604 1
Merrow Road
Goose Lane
28 599 142
84
21
9
147
12
4
Rhodes Road
16 536 6


I-84 Westbound On Ramp
179 360
68
1
75
I-84 Westbound Off Ramp
567 515
Merrow Road
I-84 Eastbound Off Ramp
390 45
210
0
641
872 83
I-84 Eastbound On Ramp
N
SITE
Fieldstone Commons
231 788 4
2
0
2
244
0
190
149 714 2
Savings Institute
Merrow Road
Oyama Restaurant Plaza
32 945 0
0
0
0
12
0
6
5 851 0
TFD Training Center
Merrow Road
Goose Lane
116 714 121
99
34
22
88
21
24
22 683 6
Rhodes Road
Merrow Road

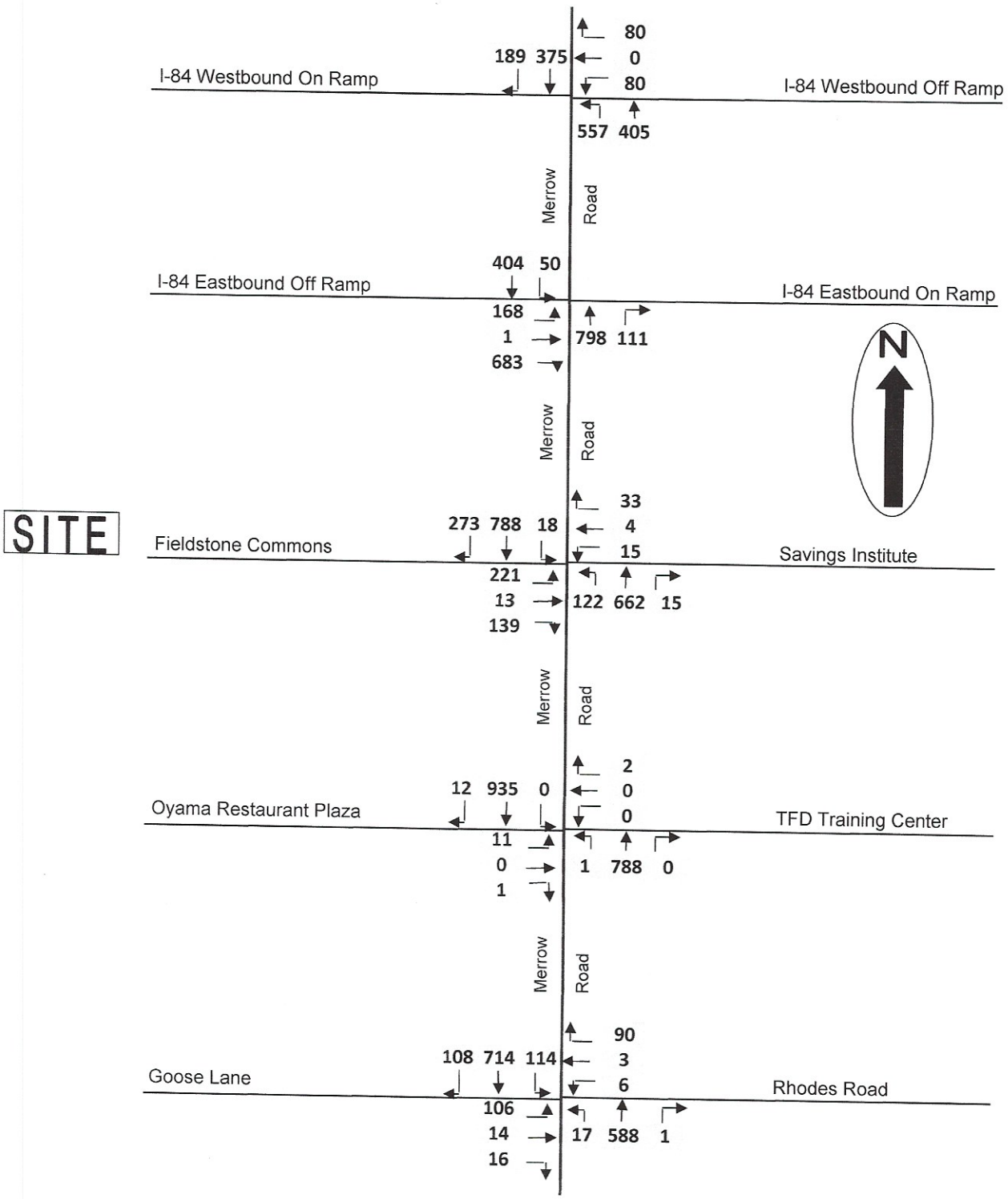
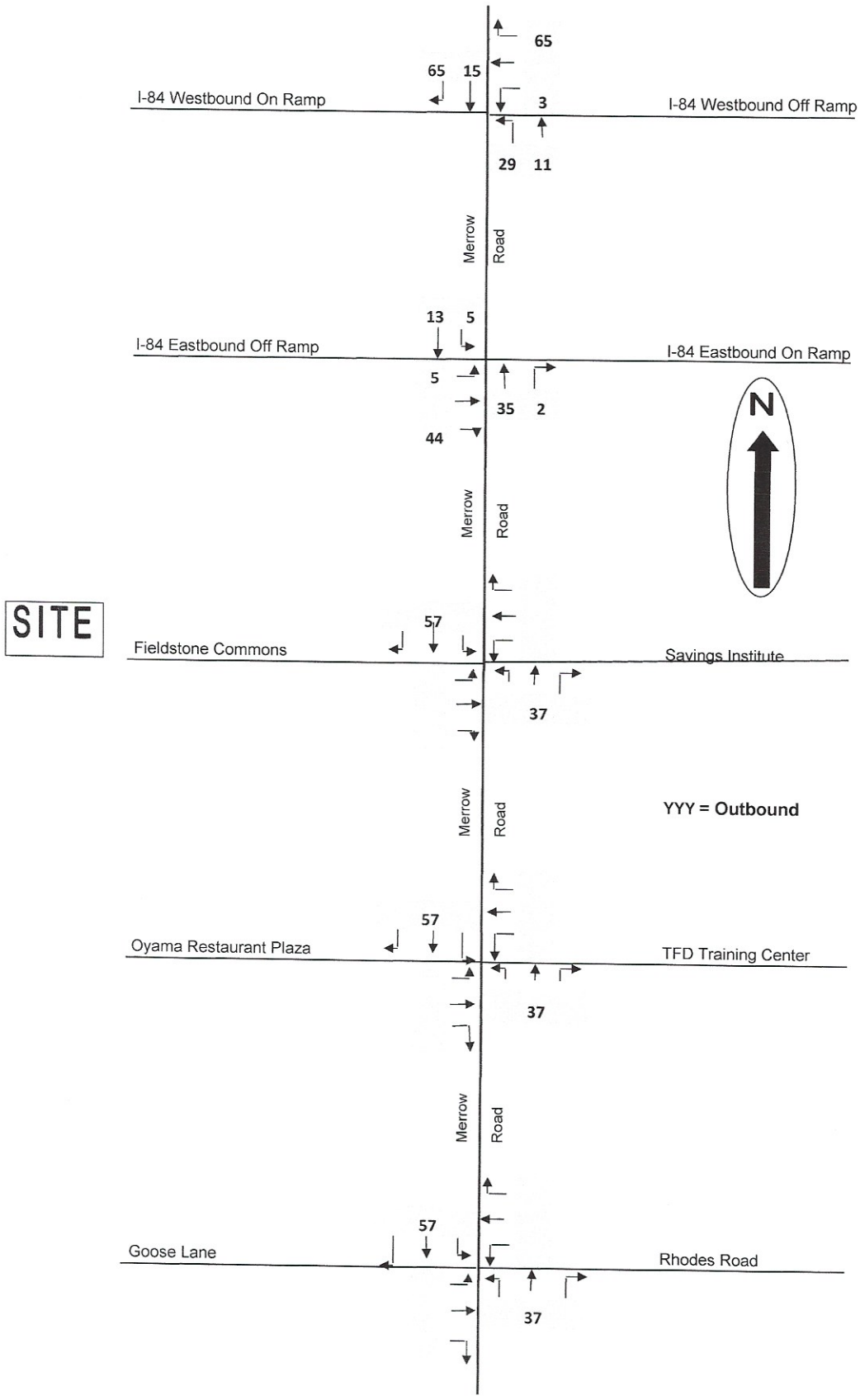


Exhibit 8
2026 Background Saturday Midday
Peak Hour Traffic Volumes


65
65
15
I-84 Westbound On Ramp
3
I-84 Westbound Off Ramp
29
11
Merrow Road
13
5
I-84 Eastbound Off Ramp
I-84 Eastbound On Ramp
5
35
2
44
N
Merrow Road
SITE
57
Fieldstone Commons
Savings Institute
37
YYY = Outbound
Merrow Road
57
Oyama Restaurant Plaza
TFD Training Center
37
Merrow Road
57
Goose Lane
Rhodes Road
37

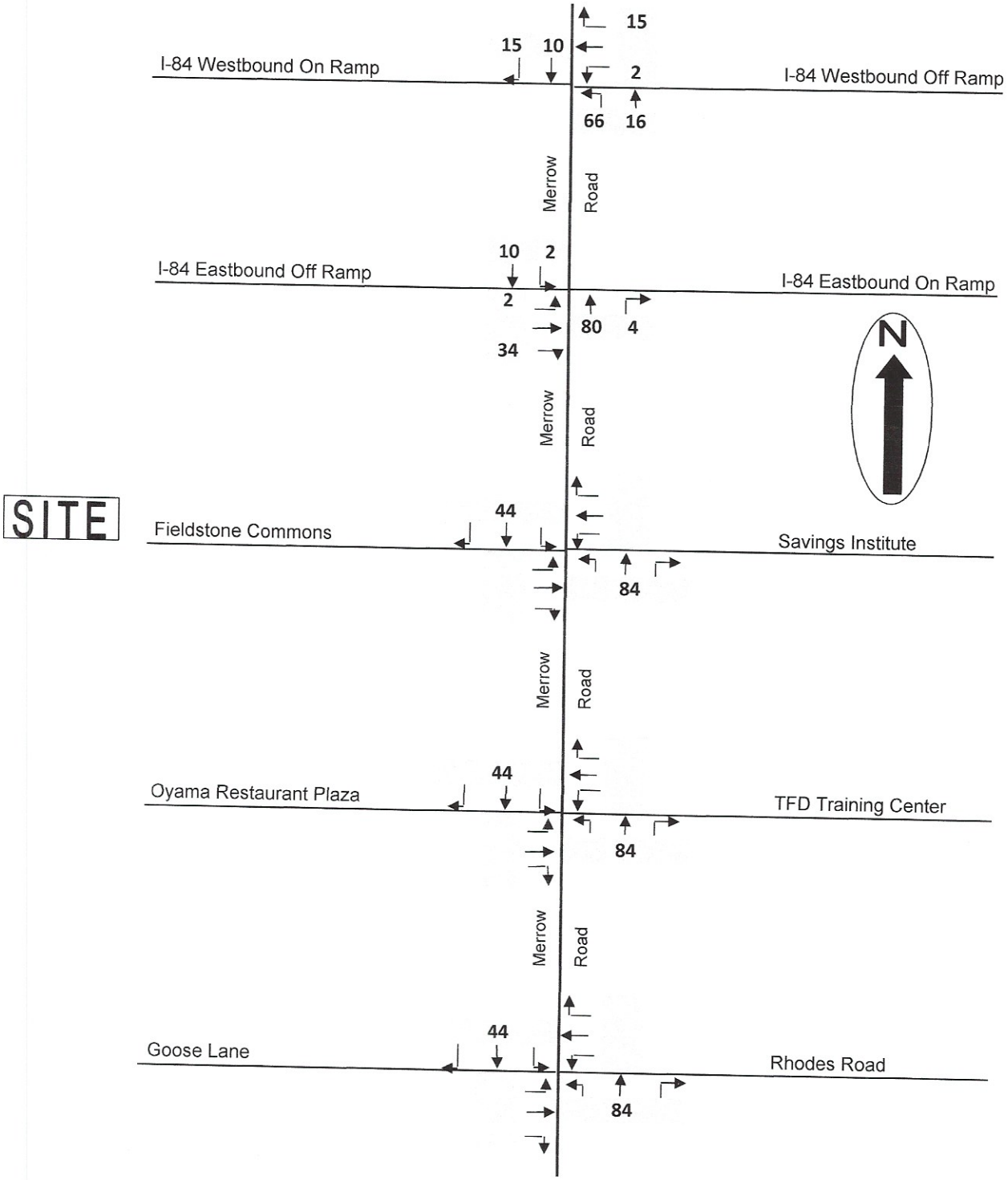


Exhibit 10
Other Developments
Site Generated Weekday PM
Peak Hour Traffic Volumes

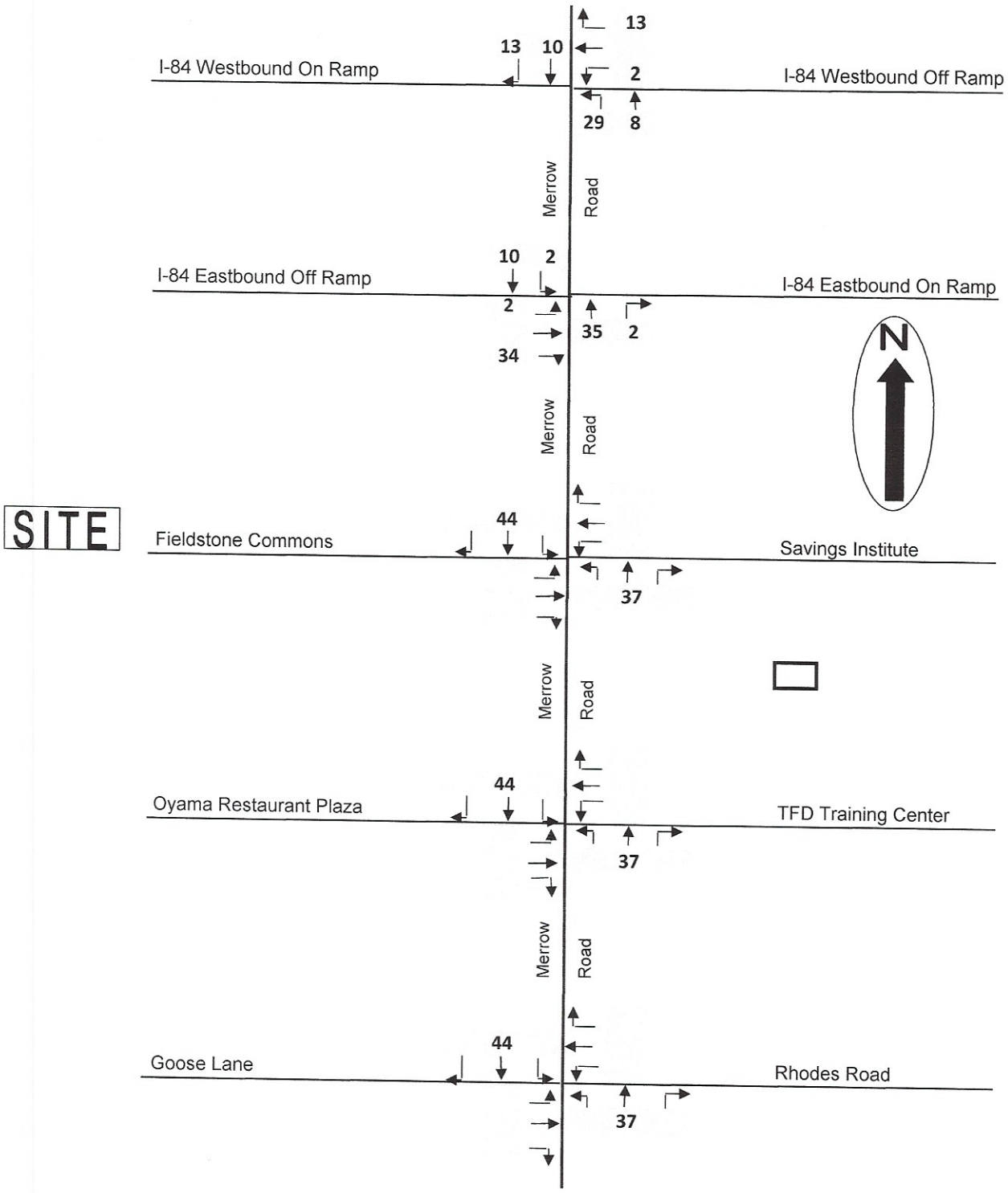


Exhibit 11
Other Developments
Site Generated Saturday Midday
Peak Hour Traffic Volumes

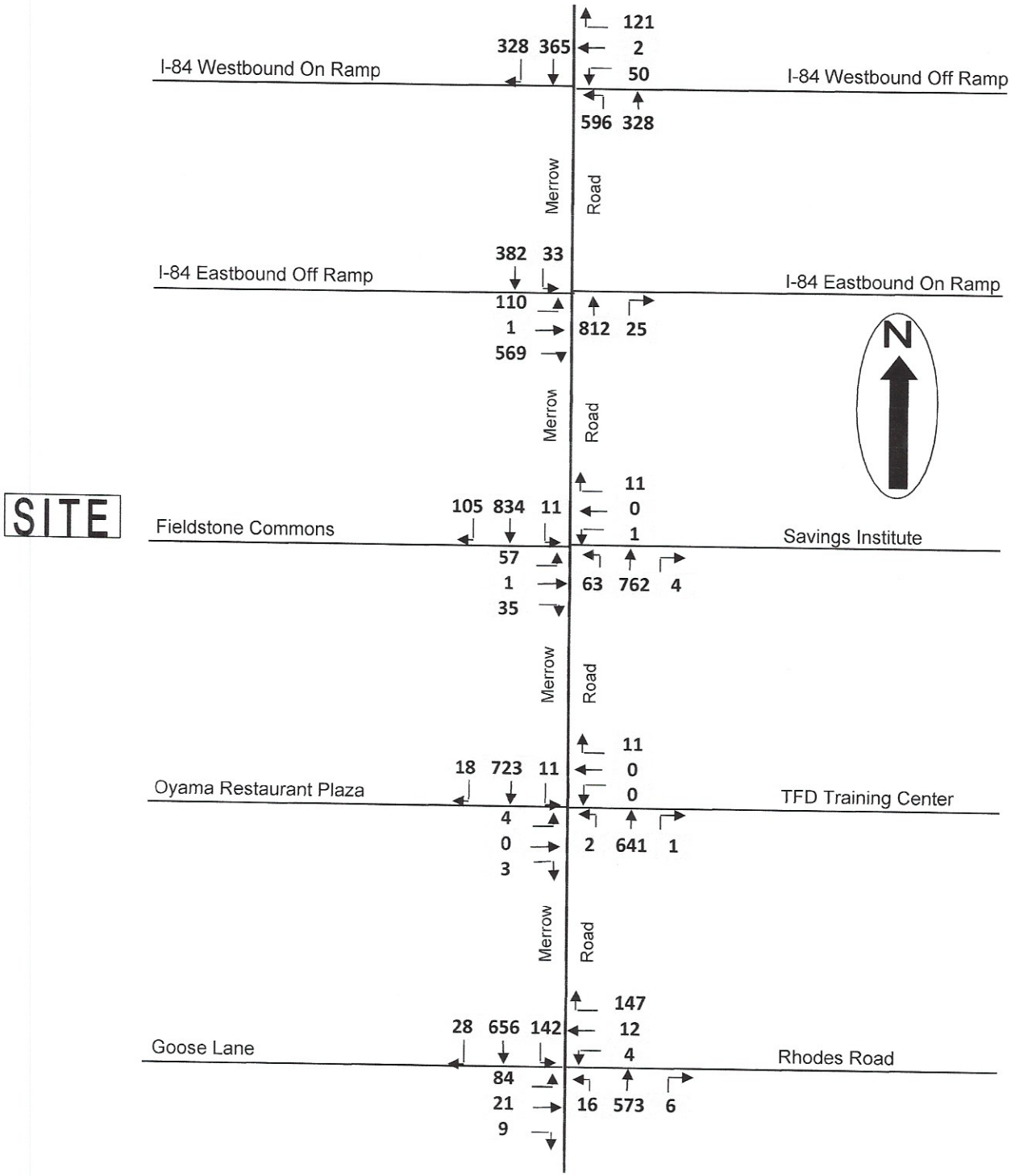


Exhibit 12
2026 Background with OTHERS
Weekday AM
Peak Hour Traffic Volumes

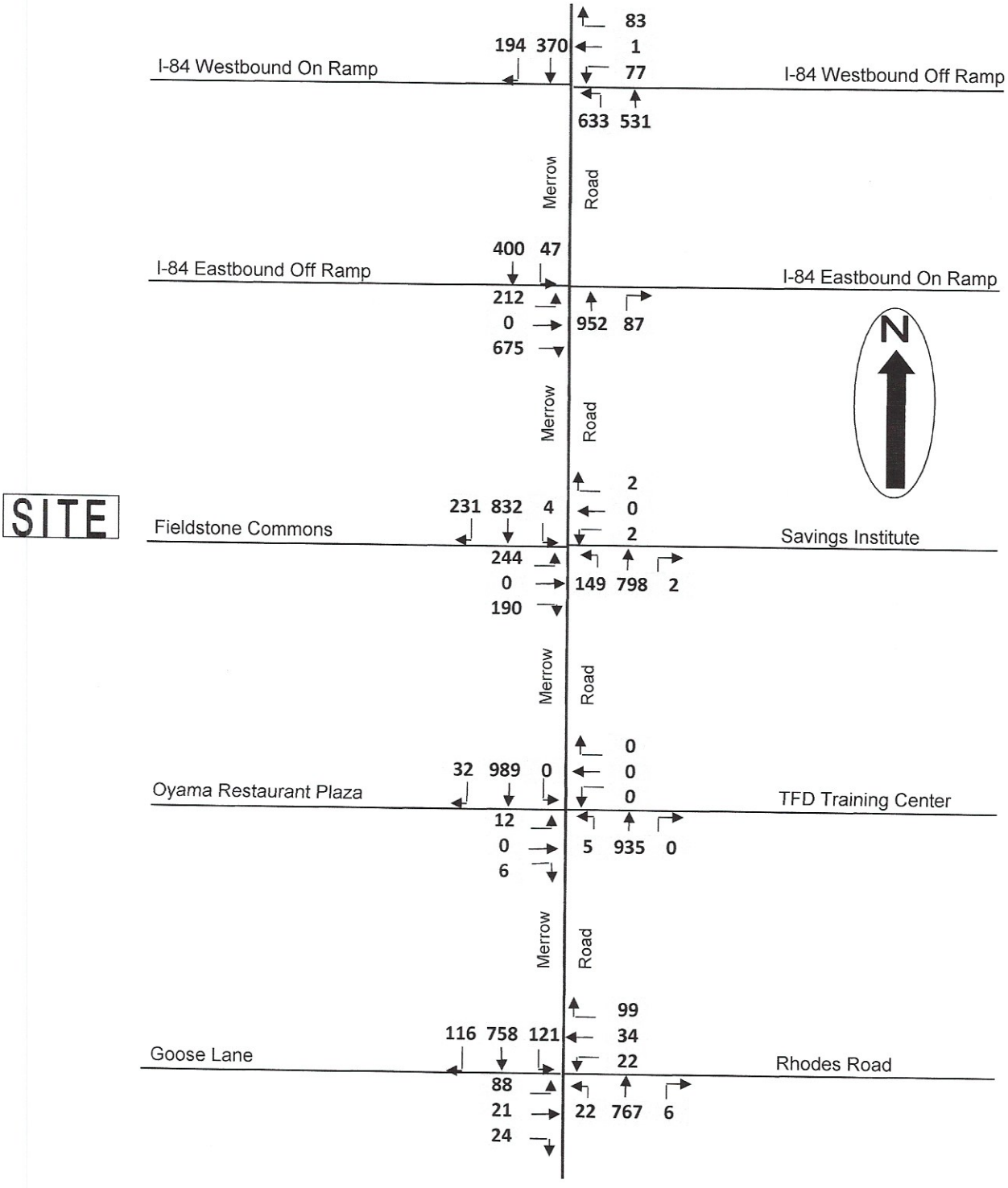


Exhibit 13
2026 Background with OTHERS
Weekday PM
Peak Hour Traffic Volumes

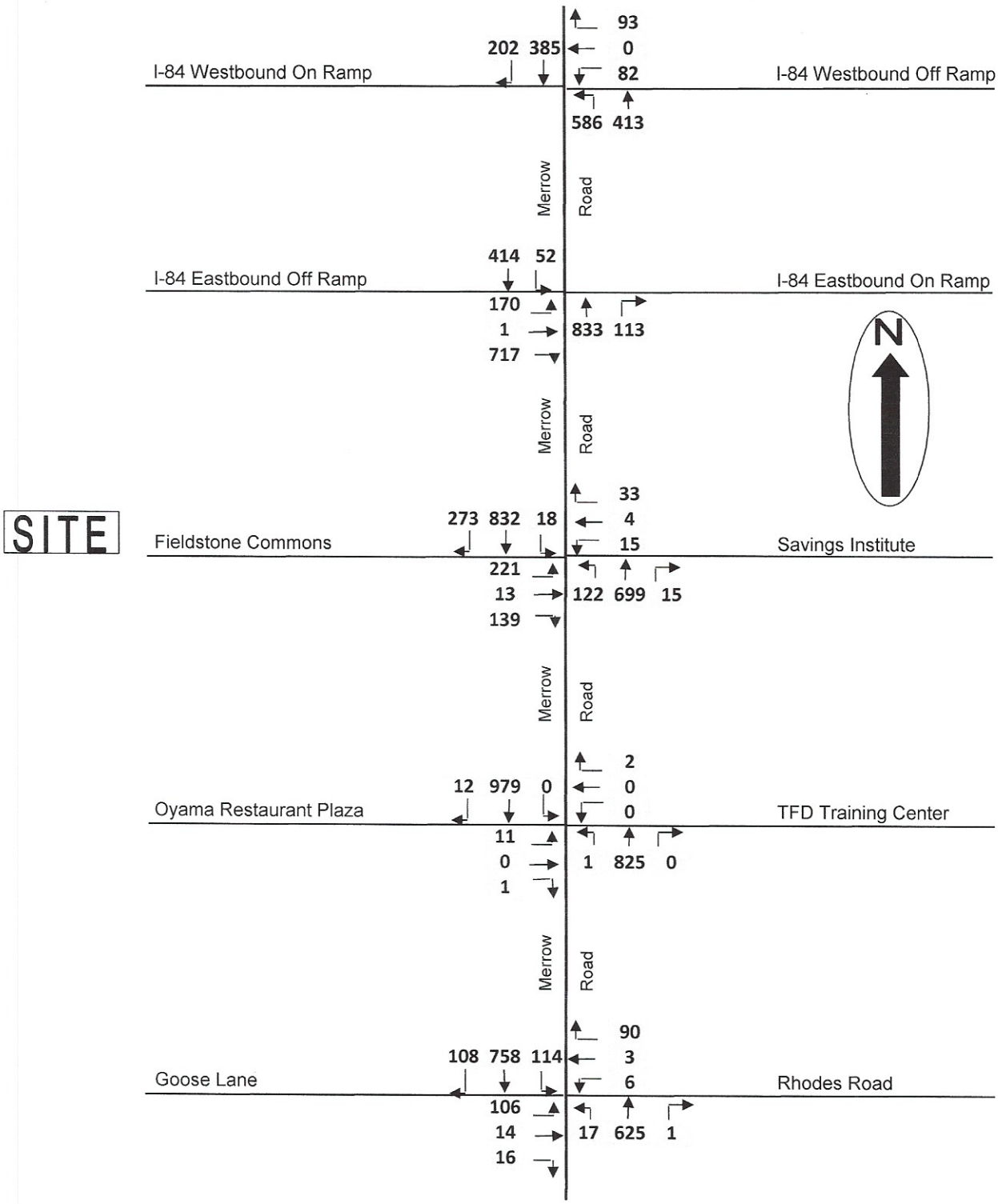


Exhibit 14
2026 Background with OTHERS
Saturday Midday
Peak Hour Traffic Volumes

Exhibit 15
Trip Generation Calculations
Multi-Family Housing
240 Low-Rise Units (ITE Land Use Code #220)

Detailed Land Use Data

For 240 Dwelling Units of LOW-RISE 1

(220) Multifamily Housing (Low-Rise)

Project: Fieldstone Commons, Tolland, CT

Open Date: 5/11/2021

Analysis Date: 5/11/2021

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	R2
Weekday Average Daily Trips Source : Trip Generation Manual 10th Edition	1757	0	7.32	4.45	10.97	1.31	168	50	50	False	T = 7.56(X) - 40.86	0.96
Weekday AM Peak Hour of Generator Source : Trip Generation Manual 10th Edition	134	0	0.56	0.34	0.97	0.15	161	28	72	False	Ln(T) = 0.94 Ln(X) - 0.29	0.91
Weekday AM Peak Hour of Adjacent Street Traffic Source : Trip Generation Manual 10th Edition	110	0	0.46	0.18	0.74	0.12	199	23	77	False	Ln(T) = 0.95 Ln(X) - 0.51	0.9
Weekday PM Peak Hour of Generator Source : Trip Generation Manual 10th Edition	161	0	0.67	0.41	1.25	0.14	146	59	41	False	T = 0.66(X) + 1.41	0.94
Weekday PM Peak Hour of Adjacent Street Traffic Source : Trip Generation Manual 10th Edition	134	0	0.56	0.18	1.25	0.16	187	63	37	False	Ln(T) = 0.89 Ln(X) - 0.02	0.86
Saturday Average Daily Trips Source : Trip Generation Manual 10th Edition	1954	0	8.14	3.36	11.4	2.94	89	50	50	False	T = 14.01(X) - 521.69	0.93
Saturday Peak Hour of Generator Source : Trip Generation Manual 10th Edition	168	0	0.7	0.41	0.93	0.2	89			False	T = 1.08(X) - 33.24	0.92
Sunday Average Daily Trips Source : Trip Generation Manual 10th Edition	1507	0	6.28	2.61	8.22	1.96	89	50	50	False	T = 10.13(X) - 341.89	0.96
Sunday Peak Hour of Generator Source : Trip Generation Manual 10th Edition	161	0	0.67	0.36	0.93	0.22	89			False	T = 1.12(X) - 40.41	0.93

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

TRIP GENERATION 10, TRAFFICWARE, LLC

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: Fieldstone Commons, Tolland, CT

Open Date: 5/11/2021
Analysis Date: 5/11/2021

ITE	Land Use	Weekday Average Daily Trips *	Enter	Exit	Total	Weekday AM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Weekday PM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Saturday Peak Hour of Generator *	Enter	Exit	Total
220	LOW-RISE 1		879	878	1757		25	85	110		84	50	134				168
	240 Dwelling Units																
Unadjusted Volume			879	878	1757		25	85	110		84	50	134		0	0	0
Internal Capture Trips			0	0	0		0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			879	878	1757		25	85	110		84	50	134		0	0	0

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Saturday Peak Hour of Generator Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

TRIP GENERATION 10, TRAFFICWARE, LLC

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: Fieldstone Ridge

Open Date: 12/21/2021
Analysis Date: 12/21/2021

ITE	Land Use	Weekday AM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Weekday PM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Saturday Peak Hour of Generator *	Enter	Exit	Total
220	LOW-RISE 1		25	85	110		84	50	134				168
	240 Dwelling Units												
Unadjusted Volume			25	85	110		84	50	134		0	0	0
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			25	85	110		84	50	134		0	0	0

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Saturday Peak Hour of Generator Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition
TRIP GENERATION 10, TRAFFICWARE, LLC

Exhibit 16
CREC Town Profile Data 2019
Town of Tolland, Connecticut

Tolland, Connecticut

CERC Town Profile 2019

Produced by Connecticut Data Collaborative

Town Hall
21 Tolland Green
Tolland, CT 06084
(860) 871-3600

Belongs To
Tolland County
LMA Hartford
Capitol Region Planning Area

Incorporated in 1715

Demographics

Population

	Town	County	State
2000	13,146	136,364	3,405,565
2010	15,052	152,691	3,574,097
2013-2017	14,838	151,596	3,594,478
2020	15,037	158,606	3,604,591
'17 - '20 Growth / Yr	0.4%	1.5%	0.1%

	Town	County	State
Land Area (sq. miles)	40	410	4,842
Pop./Sq. Mile (2013-2017)	374	370	742
Median Age (2013-2017)	42	38	41
Households (2013-2017)	5,092	54,878	1,361,755
Med. HH Inc. (2013-2017)	$112,740	$81,312	$73,781

	Town	State
Veterans (2013-2017)	941	180,111

Age Distribution (2013-2017)

	0-4		5-14		15-24		25-44		45-64		65+		Total	
Town	455	3%	2,273	15%	2,276	15%	2,950	20%	4,832	33%	2,052	14%	14,838	100%
County	6,081	4%	15,785	10%	34,051	22%	31,593	21%	42,335	28%	21,751	14%	151,596	100%
State	186,188	5%	432,367	12%	495,626	14%	872,640	24%	1,031,900	29%	575,757	16%	3,594,478	100%

Race/Ethnicity (2013-2017)

	Town	County	State
White Non-Hisp	13,430	129,519	2,446,049
Black Non-Hisp	116	4,425	350,820
Asian Non-Hisp	455	6,690	154,910
Native American Non-Hisp	0	38	5,201
Other/Multi-Race Non-Hisp	295	3,059	84,917
Hispanic or Latino	542	7,860	551,916

	Town	County	State
Poverty Rate (2013-2017)	2.3%	6.5%	10.1%

Educational Attainment (2013-2017)

	Town		State	
High School Graduate	2,325	24%	673,582	27%
Associates Degree	909	9%	188,481	8%
Bachelors or Higher	4,442	45%	953,199	38%

Economics

Business Profile (2018)

Sector	Units	Employment
Total - All Industries	358	3,676
23 - Construction	42	119
31-33 - Manufacturing	16	464
42 - Wholesale Trade	42	289
44-45 - Retail Trade	30	278
62 - Health Care and Social Assistance	40	669
Total Government	18	735

Top Five Grand List (2018)

	Amount
Eversource	$15,595,270
Capitol Ventures	$13,848,900
Gerber Internatonal	$8,397,870
JM Associates	$7,128,040
MRT of Tolland(Woodlake)	$6,483,960
Net Grand List (SFY 2016-2017)	$1,264,756,967

Major Employers (2018)

Town	Gerber Scientific
Woodlake at Tolland	Big Y supermarket
CNC Software	

Education

2018-2019 School Year

	Grades	Enrollment
Tolland School District	PK-12	2392

Pre-K Enrollment (PSIS)

	2018-2019
Tolland School District	50

4-Year Cohort Graduation Rate (2017-2018)

	All	Female	Male
Connecticut	88.3%	91.8%	85.1%
Tolland School District	94.1%	99.1%	88.9%

Smarter Balanced Test Percent Above Goal (2017-2018)

	Grade 3		Grade 4		Grade 8	
	Town	State	Town	State	Town	State
Math	66.5%	53.8%	63.9%	51.3%	56.0%	43.0%
ELA	70.4%	53.1%	69.4%	54.9%	72.2%	56.1%

Rate of Chronic Absenteeism (2017-2018)

	All
Connecticut	10.7%
Tolland School District	4.5%

Public vs Private Enrollment (2013-2017)

	Town	County	State
Public	94.9%	91.3%	86.8%
Private	5.1%	8.7%	13.2%

Tolland, Connecticut

CERC Town Profile 2019

Connecticut Economic Resource Center

Government

Government Form: Council - Manager

Total Revenue (2017)	$64,133,352
Tax Revenue	$43,606,051
Non-tax Revenue	$20,527,301
Intergovernmental	$19,708,750
Per Capita Tax (2017)	$2,950
As % of State Average	100.6%

Total Expenditures (2017)	$62,875,613
Education	$46,732,919
Other	$16,142,694
Total Indebtedness (2017)	$42,406,999
As % of Expenditures	67.4%
Per Capita	$2,881
As % of State Average	114.6%

Annual Debt Service (2017)	$5,205,587
As % of Expenditures	8.3%
Eq. Net Grand List (2017)	$1,815,100,661
Per Capita	$123,292
As % of State Average	81.7%
Moody's Bond Rating (2017)	Aa2
Actual Mill Rate (2017)	34.19
Equalized Mill Rate (2017)	23.93
% of Net Grand List Com/Ind (2017)	7.1%

Housing/Real Estate

Housing Stock (2013-2017)

	Town	County	State
Total Units	5,405	59,099	1,507,711
% Single Unit (2013-2017)	93.8%	69.2%	59.2%
New Permits Auth (2017)	13	313	4,547
As % Existing Units	0.2%	0.5%	0.3%
Demolitions (2017)	0	36	1,403
Home Sales (2017)	151	1,321	21,880
Median Price	$286,600	$247,500	$270,100
Built Pre-1950 share	7.1%	17.9%	29.3%
Owner Occupied Dwellings	4,726	39,710	906,798
As % Total Dwellings	92.8%	72.4%	66.6%
Subsidized Housing (2018)	177	4,505	167,879

Distribution of House Sales (2017)

	Town	County	State
Less than $100,000	1	37	536
$100,000-$199,999	38	392	5,237
$200,000-$299,999	56	514	6,681
$300,000-$399,999	39	259	3,863
$400,000 or More	17	119	5,563

Rental (2013-2017)

	Town	County	State
Median Rent	$1,571	$1,093	$1,123
Cost-burdened Renters	61.3%	51.0%	52.3%

Labor Force

	Town	County	State
Residents Employed	8,381	83,402	1,827,070
Residents Unemployed	262	3,097	78,242
Unemployment Rate	3.0%	3.6%	4.1%
Self-Employed Rate	7.5%	8.2%	10.0%
Total Employers	358	3,323	122,067
Total Employed	3,676	41,068	1,673,867

Connecticut Commuters (2015)

Commuters Into Town From:		Town Residents Commuting To:	
Tolland, CT	776	Hartford, CT	1,124
Vernon, CT	323	Tolland, CT	776
Manchester, CT	216	Manchester, CT	537
Stafford, CT	200	Vernon, CT	481
Ellington, CT	181	East Hartford, CT	455
Coventry, CT	150	Mansfield, CT	326
South Windsor, CT	149	South Windsor, CT	310

Quality of Life

Crime Rates (per 100,000 residents) (2017)

	Town	State
Property	742	1,777
Violent	57	228

Disengaged Youth (2013-2017)

	Town	State
Female	0.0%	4.2%
Male	4.4%	5.6%

	Town
Library circulation per capita	7.19

Distance to Major Cities

	Miles
Hartford	18
Providence	49
Boston	76
New York City	117
Montreal	261

Residential Utilities

Electric Provider
Eversource Energy
(800) 286-2000

Gas Provider
Eversource Energy
(800) 989-0900

Water Provider
Connecticut Water Company
(800) 286-5700

Cable Provider
Charter Communications of Northeastern CT
(800) 827-8288

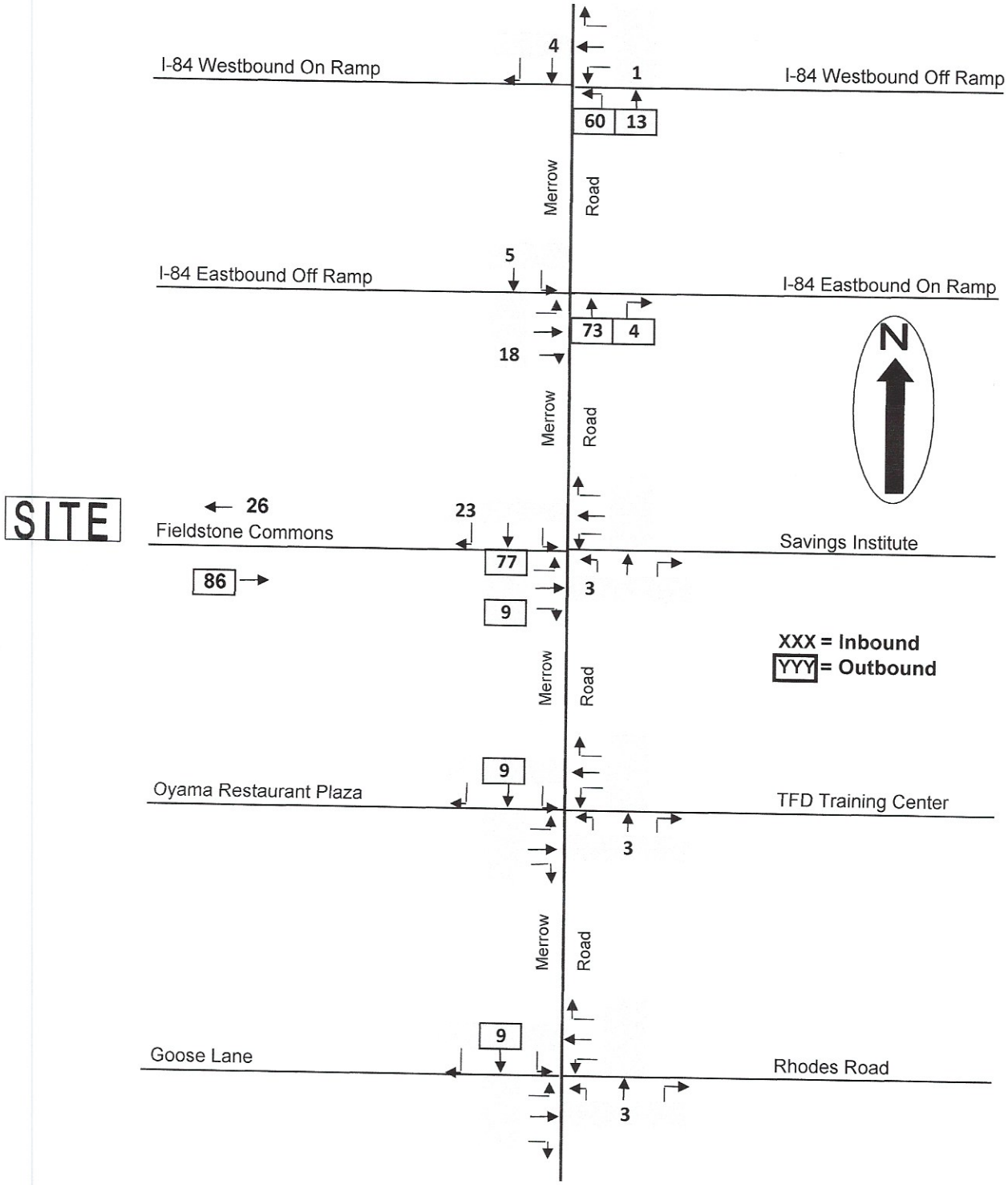


Exhibit 17
2026 Site Generated Weekday AM
Peak Hour Traffic Volumes

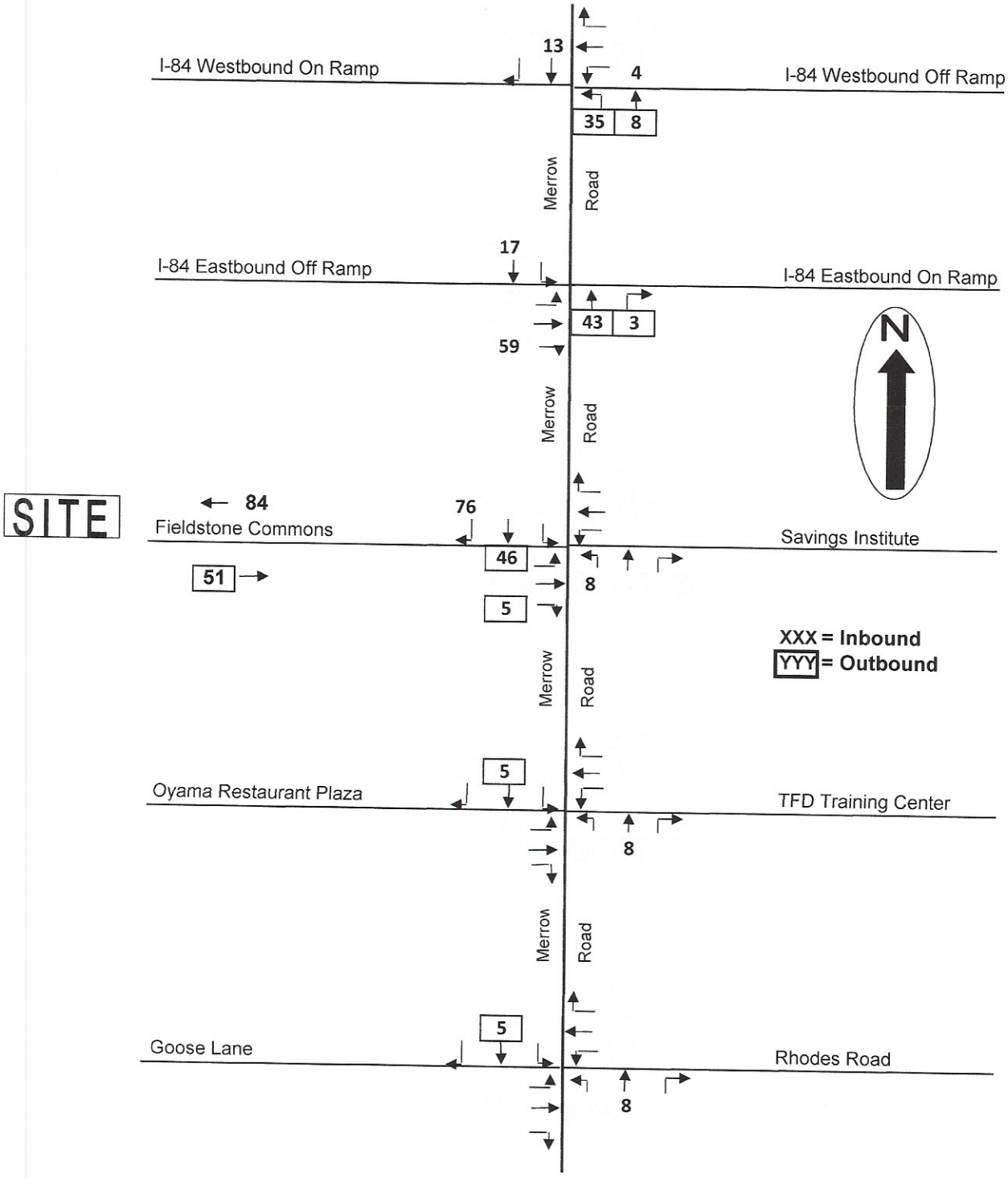


Exhibit 18
2026 Site Generated Weekday PM
Peak Hour Traffic Volumes

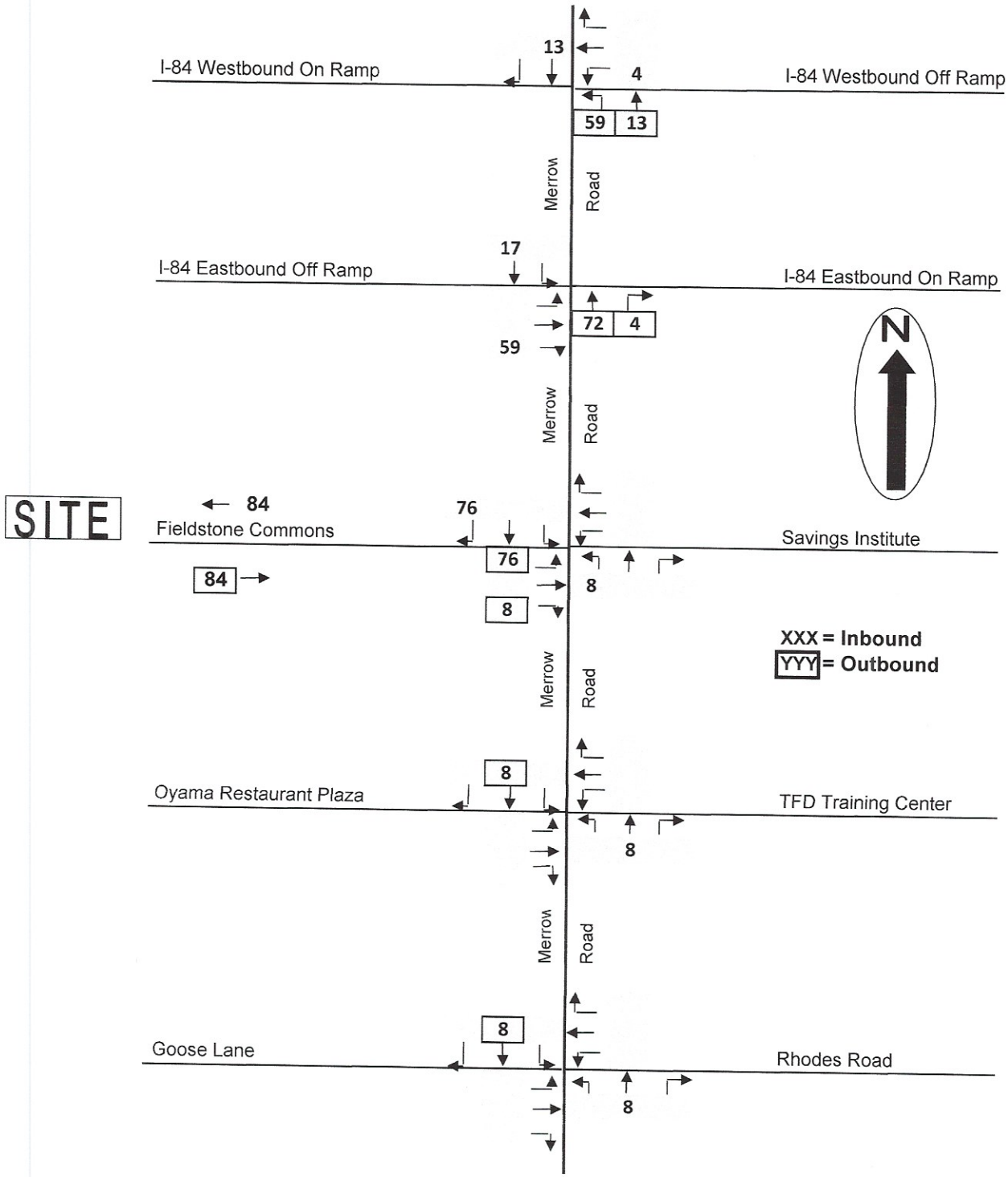


Exhibit 19
2026 Site Generated Saturday Midday
Peak Hour Traffic Volumes

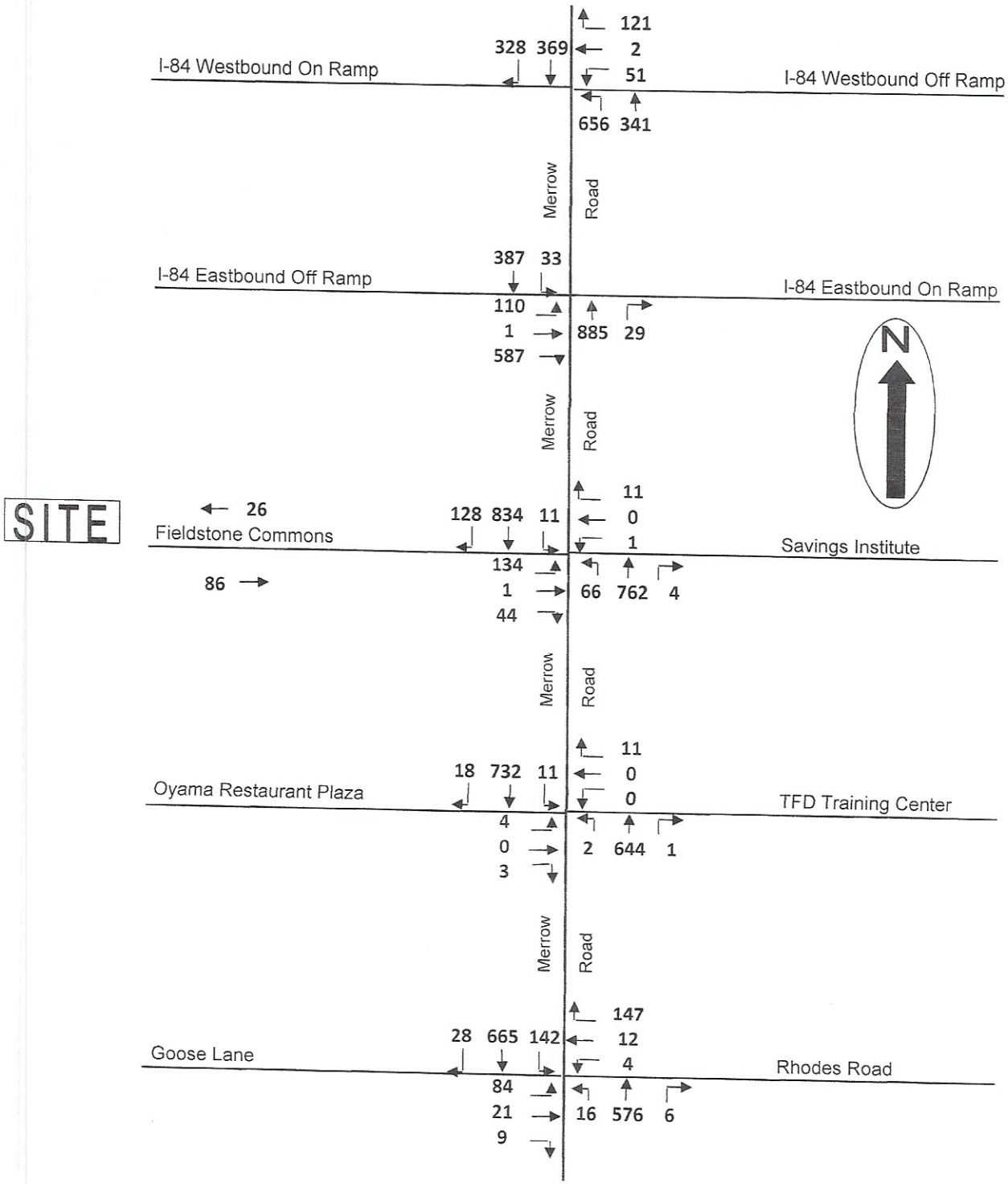
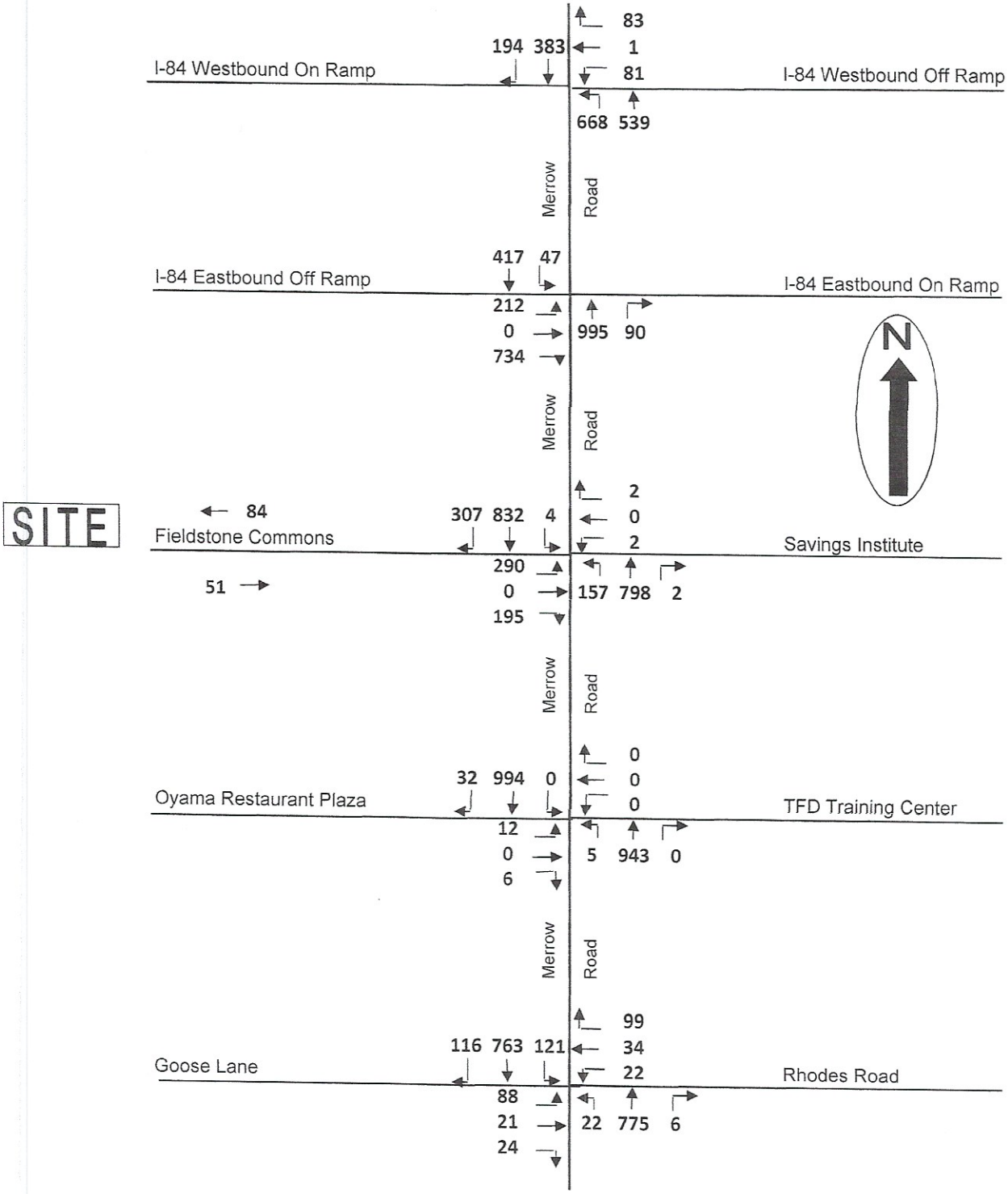


Exhibit 20
2026 Combined (Build) Weekday AM
Peak Hour Traffic Volumes


I-84 Westbound On Ramp
194 383
83
1
81
I-84 Westbound Off Ramp
668 539
Merrow Road
I-84 Eastbound Off Ramp
417 47
I-84 Eastbound On Ramp
212
0
734
995 90
N
Merrow Road
SITE
84
307 832 4
2
0
2
Fieldstone Commons
Savings Institute
290
51
0
195
157 798 2
Merrow Road
0
0
0
32 994 0
Oyama Restaurant Plaza
TFD Training Center
12
0
6
5 943 0
Merrow Road
99
34
22
116 763 121
Goose Lane
Rhodes Road
88
21
24
22 775 6

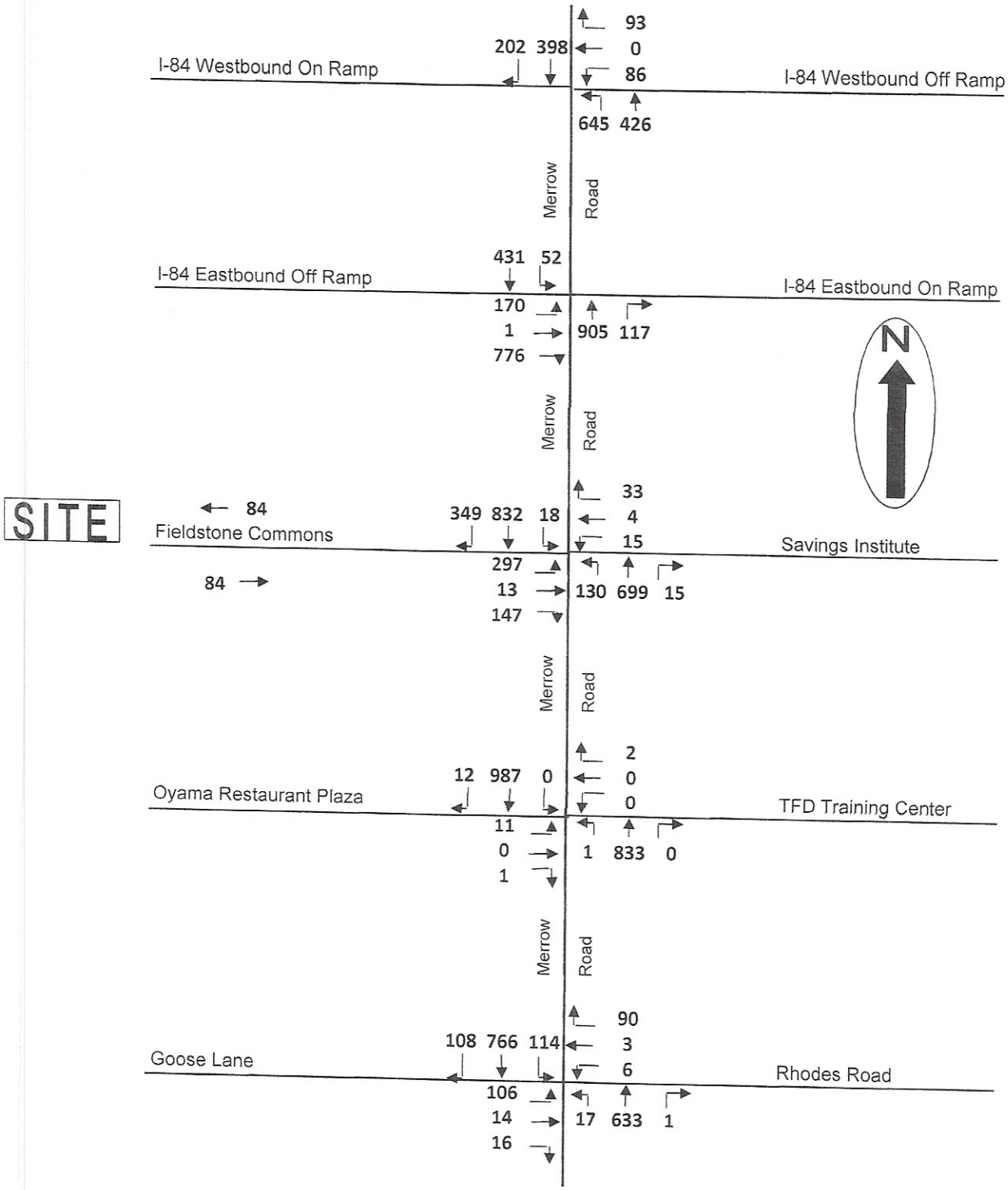

I-84 Westbound On Ramp
202 398
93
0
86
I-84 Westbound Off Ramp
645 426
Merrow Road
I-84 Eastbound Off Ramp
431 52
I-84 Eastbound On Ramp
170
1
776
905 117
N
SITE
84
Fieldstone Commons
349 832 18
33
4
15
Savings Institute
84
297
13
147
130 699 15
Merrow Road
Oyama Restaurant Plaza
12 987 0
2
0
0
TFD Training Center
11
0
1
1 833 0
Merrow Road
Goose Lane
108 766 114
90
3
6
Rhodes Road
106
14
16
17 633 1

EXHIBIT 23
LEVEL OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS

SOURCE: HIGHWAY CAPACITY MANUAL (HCM), 2010
TRANSPORTATION RESEARCH BOARD (1)

Level of Service for **signalized intersections** is defined in terms of control delay, which is a measure of driver discomfort, frustration, increased fuel consumption, and lost travel time. The delay experienced by a motorist is comprised of a number of factors that relate to control, geometric, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-minute analysis period. Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the green ratio, and the volume-to-capacity (v/c) ratio for the lane group.

In the case of **signalized intersections**, the Level of Service for each approach is computed, and an overall Level of Service for the entire intersection is determined.

Levels of Service (LOS) for **signalized intersections** are defined as follows:

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SECONDS)	CONDITION
LOS A	≤ 10	LOW DELAY
LOS B	> 10 TO 20	SHORT DELAY
LOS C	> 20 TO 35	AVERAGE DELAY
LOS D	> 35 TO 55	CONGESTION NOTICEABLE
LOS E	> 55 TO 80	LIMIT OF ACCEPTABLE DELAY
LOS F	> 80	UNACCEPTABLE

In today's environment, Levels of Service C to D are considered acceptable, and Levels of Service A to B are seldomly achieved at signalized intersections.

(1) **HCM**, Exhibit 16-2.

EXHIBIT 24
LEVEL OF SERVICE CRITERIA
UNSIGNALIZED INTERSECTIONS

SOURCE: HIGHWAY CAPACITY MANUAL (HCM), 2010 TRANSPORTATION RESEARCH BOARD (1)

Level of Service for **unsignalized intersections** similar to the study intersections is defined in terms of the average control delay for the approach or movement evaluated. Control delay involves movements at slower speeds and stops on intersection approaches as vehicles move up in the queue or slow down upstream of an intersection.

The delay experienced by a motorist is comprised of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference time that would result during base conditions in the absence of incident, control, traffic, or geometric delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

At two-way stop-controlled and all-way stop-controlled intersections, control delay is the total elapsed time from a vehicle joining the queue until its departure from the stopped position at the head of the queue. The control delay also includes the time required to decelerate to a stop and to accelerate to the free-flow speed.

Level of Service (LOS) for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS is **not defined** for the intersection as a whole.

Level of Service (LOS) for an all-way stop-controlled intersection is determined by the computed or measured control delay and is defined for all movements. A LOS **is then defined** for the intersection as a whole.

Levels of Service (LOS) for **unsignalized intersections** are defined as follows:

LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	CONDITION
LOS A	0 TO 10	LITTLE OR NO DELAY
LOS B	> 10 TO 15	SHORT DELAY
LOS C	> 15 TO 25	AVERAGE DELAY
LOS D	> 25 TO 35	LONG DELAY
LOS E	> 35 TO 50	VERY LONG DELAY
LOS F	> 50	EXTREME DELAY

In today's environment, Levels of Service D to F are common and are often experienced on minor street approaches to major streets carrying relatively high traffic volumes.

(1) **HCM**, Exhibits 17-2 and 17-22.

APPENDIX A

Site Traffic Evaluation
Fieldstone Ridge
Proposed Multi-Family Housing
10 Fieldstone Commons (Route 195)
Tolland, Connecticut

Appendix A

Table of Contents

Exhibit 25
Traffic Operations Analysis Worksheets
Existing 2021 Weekday AM Peak

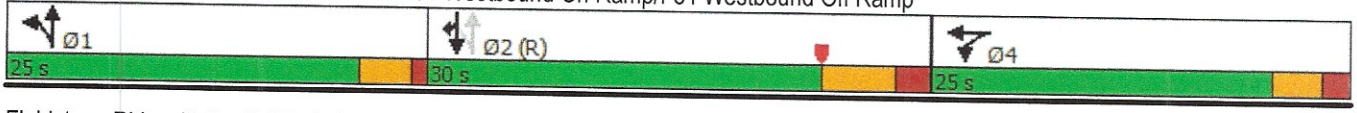
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	45	2	53	540	302	0	0	333	250
Future Volume (vph)	0	0	0	45	2	53	540	302	0	0	333	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		90
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.928							0.850
Flt Protected					0.978		0.950					
Satd. Flow (prot)	0	0	0	0	1691	0	1770	1863	0	0	1863	1583
Flt Permitted					0.978		0.489					
Satd. Flow (perm)	0	0	0	0	1691	0	911	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					58							220
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		3817			4042			1010			2234	
Travel Time (s)		74.4			78.7			17.2			38.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	49	2	58	587	328	0	0	362	272
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	109	0	587	328	0	0	362	272
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2			2	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				20	100		20	100			100	20
Trailing Detector (ft)				0	0		0	0			0	0
Detector 1 Position(ft)				0	0		0	0			0	0
Detector 1 Size(ft)				20	6		20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				custom	NA		custom	NA			NA	custom
Protected Phases				4	4		1	1			2	2
Permitted Phases				4	4		1 2	1 2			2	2

Lanes, Volumes, Timings
Fieldstone Ridge, Tolland, CT
5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp 2021 Existing Weekday AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				4	4		1	1			2	2
Switch Phase												
Minimum Initial (s)				5.0	5.0		4.0	4.0			15.0	15.0
Minimum Split (s)				9.8	9.8		8.0	8.0			21.6	21.6
Total Split (s)				25.0	25.0		25.0	25.0			30.0	30.0
Total Split (%)				31.3%	31.3%		31.3%	31.3%			37.5%	37.5%
Maximum Green (s)				20.2	20.2		21.0	21.0			23.4	23.4
Yellow Time (s)				3.0	3.0		3.0	3.0			4.5	4.5
All-Red Time (s)				1.8	1.8		1.0	1.0			2.1	2.1
Lost Time Adjust (s)					0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)					4.8		4.0	4.0			6.6	6.6
Lead/Lag							Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	2.0
Recall Mode				None	None		None	None			C-Min	C-Min
Act Effct Green (s)					7.4		61.8	66.6			39.0	39.0
Actuated g/C Ratio					0.09		0.77	0.83			0.49	0.49
v/c Ratio					0.52		0.64	0.21			0.40	0.31
Control Delay					26.9		11.3	4.5			16.5	4.8
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					26.9		11.3	4.5			16.5	4.8
LOS					C		B	A			B	A
Approach Delay					26.9			8.9			11.5	
Approach LOS					C			A			B	
Queue Length 50th (ft)					24		148	7			117	14
Queue Length 95th (ft)					69		351	189			206	62
Internal Link Dist (ft)		3737			3962			930			2154	
Turn Bay Length (ft)												90
Base Capacity (vph)					470		937	1550			908	884
Starvation Cap Reductn					0		0	0			0	0
Spillback Cap Reductn					0		0	0			0	0
Storage Cap Reductn					0		0	0			0	0
Reduced v/c Ratio					0.23		0.63	0.21			0.40	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 42 (53%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp



Lanes, Volumes, Timings
7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp

Fieldstone Ridge, Tolland, CT 2021 Existing Weekday AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	1	500	0	0	0	0	740	22	27	351	0
Future Volume (vph)	100	1	500	0	0	0	0	740	22	27	351	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		200	110		0
Storage Lanes	0		2	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected		0.953								0.950		
Satd. Flow (prot)	0	1775	2787	0	0	0	0	3539	1583	1770	3539	0
Flt Permitted		0.953								0.348		
Satd. Flow (perm)	0	1775	2787	0	0	0	0	3539	1583	648	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			414						97			
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		3795			4001			600			1010	
Travel Time (s)		73.9			77.9			13.6			23.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1	543	0	0	0	0	804	24	29	382	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	543	0	0	0	0	804	24	29	382	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	custom	NA	custom					NA	custom	Perm	NA	
Protected Phases	4	4	1 4					1	1		2 3	
Permitted Phases	4	4	1 4					1 2	1 2	2 3	2 3	

Lanes, Volumes, Timings
Fieldstone Ridge, Tolland, CT

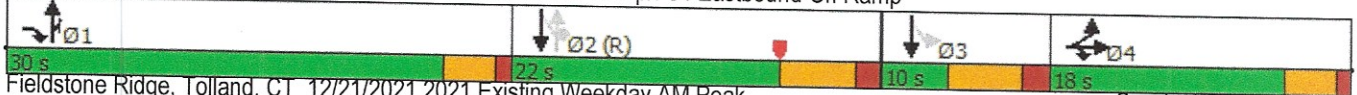
7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp 2021 Existing Weekday AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	14					1	1	23	23	
Switch Phase												
Minimum Initial (s)	9.0	9.0						5.0	5.0			
Minimum Split (s)	13.0	13.0						9.0	9.0			
Total Split (s)	18.0	18.0						30.0	30.0			
Total Split (%)	22.5%	22.5%						37.5%	37.5%			
Maximum Green (s)	14.0	14.0						26.0	26.0			
Yellow Time (s)	3.0	3.0						3.0	3.0			
All-Red Time (s)	1.0	1.0						1.0	1.0			
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		4.0						4.0	4.0			
Lead/Lag	Lag	Lag						Lead	Lead			
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	2.0	2.0						2.0	2.0			
Recall Mode	None	None						None	None			
Act Effct Green (s)		10.8	33.6					51.2	51.2	36.4	36.4	
Actuated g/C Ratio		0.14	0.42					0.64	0.64	0.46	0.46	
v/c Ratio		0.46	0.38					0.36	0.02	0.10	0.24	
Control Delay		37.8	3.8					9.0	1.6	22.0	21.3	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		37.8	3.8					9.0	1.6	22.0	21.3	
LOS		D	A					A	A	C	C	
Approach Delay		9.6						8.8			21.4	
Approach LOS		A						A			C	
Queue Length 50th (ft)		52	22					76	0	14	99	
Queue Length 95th (ft)		96	40					192	6	m37	143	
Internal Link Dist (ft)		3715			3921			520			930	
Turn Bay Length (ft)									200	110		
Base Capacity (vph)		310	1612					2257	1045	294	1608	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.35	0.34					0.36	0.02	0.10	0.24	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.46
Intersection Signal Delay: 11.8 Intersection LOS: B
Intersection Capacity Utilization 66.1% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp



Lanes, Volumes, Timings
9: Merrow Road & Fieldstone Commons/Savings Institute

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	1	33	1	0	10	60	690	4	10	740	100
Future Volume (vph)	54	1	33	1	0	10	60	690	4	10	740	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	400		0	170		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.876			0.999			0.982	
Flt Protected		0.953			0.996		0.950			0.950		
Satd. Flow (prot)	0	1775	1583	0	1625	0	1770	3536	0	1770	3476	0
Flt Permitted		0.721			0.974		0.276			0.366		
Satd. Flow (perm)	0	1343	1583	0	1589	0	514	3536	0	682	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			37		91			1			25	
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		3784			3904			990			600	
Travel Time (s)		103.2			106.5			16.9			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	1	36	1	0	11	65	750	4	11	804	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	36	0	12	0	65	754	0	11	913	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	custom	NA	custom	custom	NA		custom	NA		custom	NA	
Protected Phases			5				5	2		1	6	
Permitted Phases	4	4	4 5	4	4		2 5	2		1 6	6	

Lanes, Volumes, Timings
9: Merrow Road & Fieldstone Commons/Savings Institute

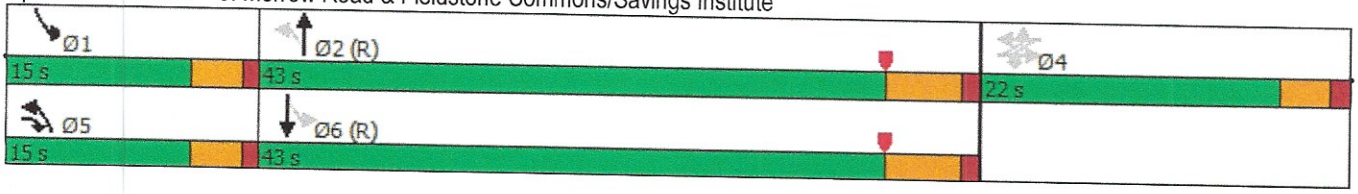
Fieldstone Ridge, Tolland, CT
2021 Existing Weekday AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	6.0	6.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	10.3	10.3	9.0	10.3	10.3		9.0	20.7		9.0	20.7	
Total Split (s)	22.0	22.0	15.0	22.0	22.0		15.0	43.0		15.0	43.0	
Total Split (%)	27.5%	27.5%	18.8%	27.5%	27.5%		18.8%	53.8%		18.8%	53.8%	
Maximum Green (s)	17.7	17.7	11.0	17.7	17.7		11.0	37.3		11.0	37.3	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5		3.0	4.5	
All-Red Time (s)	1.3	1.3	1.0	1.3	1.3		1.0	1.2		1.0	1.2	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.3	4.0		4.3		4.0	5.7		4.0	5.7	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		8.2	15.8		8.2		65.0	63.2		62.0	57.5	
Actuated g/C Ratio		0.10	0.20		0.10		0.81	0.79		0.78	0.72	
v/c Ratio		0.44	0.11		0.05		0.13	0.27		0.02	0.36	
Control Delay		43.1	8.7		0.4		2.7	3.9		1.9	7.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		43.1	8.7		0.4		2.7	3.9		1.9	7.8	
LOS		D	A		A		A	A		A	A	
Approach Delay		30.2			0.4			3.8			7.8	
Approach LOS		C			A			A			A	
Queue Length 50th (ft)		29	0		0		5	41		1	163	
Queue Length 95th (ft)		63	21		0		15	116		m2	207	
Internal Link Dist (ft)		3704			3824			910			520	
Turn Bay Length (ft)							400			170		
Base Capacity (vph)		297	451		422		593	2793		708	2504	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.20	0.08		0.03		0.11	0.27		0.02	0.36	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 66 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 7.1 Intersection LOS: A
Intersection Capacity Utilization 49.2% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Merrow Road & Fieldstone Commons/Savings Institute



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	1	3	1	1	10	2	575	1	10	634	17
Future Vol, veh/h	4	1	3	1	1	10	2	575	1	10	634	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	0	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1	3	1	1	11	2	625	1	11	689	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1037	1350	354	997	1359	313	707	0	0	626	0	0
Stage 1	720	720	-	630	630	-	-	-	-	-	-	-
Stage 2	317	630	-	367	729	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	185	149	642	198	147	683	887	-	-	952	-	-
Stage 1	385	430	-	436	473	-	-	-	-	-	-	-
Stage 2	669	473	-	625	426	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	178	146	642	193	144	683	887	-	-	952	-	-
Mov Cap-2 Maneuver	178	146	-	193	144	-	-	-	-	-	-	-
Stage 1	384	422	-	435	472	-	-	-	-	-	-	-
Stage 2	655	472	-	608	418	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.2	11.6	0	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	887	-	-	178	642	193	683	952	-	-
HCM Lane V/C Ratio	0.002	-	-	0.024	0.005	0.006	0.016	0.011	-	-
HCM Control Delay (s)	9.1	-	-	25.7	10.6	23.8	10.4	8.8	0.1	-
HCM Lane LOS	A	-	-	D	B	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	0	0	-	-

Lanes, Volumes, Timings
15: Merrow Road & Goose Lane/Rhodes Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	20	9	4	11	140	15	510	6	135	570	27
Future Volume (vph)	80	20	9	4	11	140	15	510	6	135	570	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	220		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.989			0.878			0.998			0.993	
Flt Protected		0.965			0.999		0.950			0.950		
Satd. Flow (prot)	0	1778	0	0	1634	0	1770	3532	0	1770	3514	0
Flt Permitted		0.741			0.989		0.405			0.396		
Satd. Flow (perm)	0	1365	0	0	1617	0	754	3532	0	738	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			152			2			7	
Link Speed (mph)		30			30			40			30	
Link Distance (ft)		3873			3977			4860			450	
Travel Time (s)		88.0			90.4			82.8			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	22	10	4	12	152	16	554	7	147	620	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	0	168	0	16	561	0	147	649	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4	4		8	8		2 5	2		1 6	6	

Lanes, Volumes, Timings
15: Merrow Road & Goose Lane/Rhodes Road

Fieldstone Ridge, Tolland, CT
2021 Existing Weekday AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	14.5	14.5		10.5	10.5		10.5	21.5		9.0	21.5	
Total Split (s)	28.0	28.0		28.0	28.0		13.0	40.0		12.0	39.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		16.3%	50.0%		15.0%	48.8%	
Maximum Green (s)	22.5	22.5		22.5	22.5		7.5	33.5		8.0	32.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.5		3.5	4.5	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.5	2.0		0.5	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5			5.5		5.5	6.5		4.0	6.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		10.7			9.3		22.8	20.4		28.0	26.4	
Actuated g/C Ratio		0.24			0.21		0.51	0.46		0.63	0.60	
v/c Ratio		0.36			0.37		0.03	0.35		0.24	0.31	
Control Delay		19.9			7.3		5.7	13.2		5.7	8.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		19.9			7.3		5.7	13.2		5.7	8.5	
LOS		B			A		A	B		A	A	
Approach Delay		19.9			7.3			13.0			8.0	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)		27			4		2	61		14	43	
Queue Length 95th (ft)		71			43		8	116		39	132	
Internal Link Dist (ft)		3793			3897			4780			370	
Turn Bay Length (ft)							100			220		
Base Capacity (vph)		755			959		604	2644		669	2574	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.16			0.18		0.03	0.21		0.22	0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 44.3			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 56.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: Merrow Road & Goose Lane/Rhodes Road

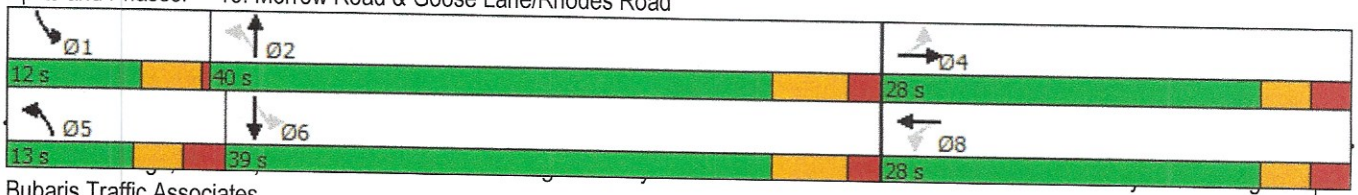


Exhibit 26
Traffic Operations Analysis Worksheets
Existing 2021 Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	71	1	65	540	490	0	0	343	170
Future Volume (vph)	0	0	0	71	1	65	540	490	0	0	343	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		90
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.936							0.850
Flt Protected					0.975		0.950					
Satd. Flow (prot)	0	0	0	0	1700	0	1770	1863	0	0	1863	1583
Flt Permitted					0.975		0.459					
Satd. Flow (perm)	0	0	0	0	1700	0	855	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					55							145
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		3817			4042			1010			2234	
Travel Time (s)		74.4			78.7			17.2			38.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	77	1	71	587	533	0	0	373	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	149	0	587	533	0	0	373	185
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2			2	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				20	100		20	100			100	20
Trailing Detector (ft)				0	0		0	0			0	0
Detector 1 Position(ft)				0	0		0	0			0	0
Detector 1 Size(ft)				20	6		20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				custom	NA		custom	NA			NA	custom
Protected Phases				4	4		1	1			2	2
Permitted Phases				4	4		1 2	1 2			2	2

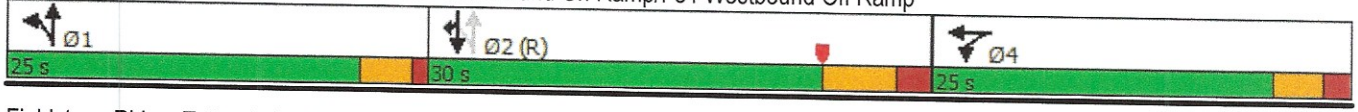
Lanes, Volumes, Timings
Fieldstone Ridge, Tolland, CT
5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp 2021 Existing Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				4	4		1	1			2	2
Switch Phase												
Minimum Initial (s)				5.0	5.0		4.0	4.0			15.0	15.0
Minimum Split (s)				9.8	9.8		8.0	8.0			21.6	21.6
Total Split (s)				25.0	25.0		25.0	25.0			30.0	30.0
Total Split (%)				31.3%	31.3%		31.3%	31.3%			37.5%	37.5%
Maximum Green (s)				20.2	20.2		21.0	21.0			23.4	23.4
Yellow Time (s)				3.0	3.0		3.0	3.0			4.5	4.5
All-Red Time (s)				1.8	1.8		1.0	1.0			2.1	2.1
Lost Time Adjust (s)					0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)					4.8		4.0	4.0			6.6	6.6
Lead/Lag							Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	2.0
Recall Mode				None	None		None	None			C-Min	C-Min
Act Effct Green (s)					9.2		58.0	62.0			34.9	34.9
Actuated g/C Ratio					0.12		0.72	0.78			0.44	0.44
v/c Ratio					0.61		0.69	0.37			0.46	0.24
Control Delay					31.8		13.5	7.9			19.4	5.7
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					31.8		13.5	7.9			19.4	5.7
LOS					C		B	A			B	A
Approach Delay					31.8			10.9			14.8	
Approach LOS					C			B			B	
Queue Length 50th (ft)					45		213	106			128	11
Queue Length 95th (ft)					96		345	305			226	54
Internal Link Dist (ft)		3737			3962			930			2154	
Turn Bay Length (ft)												90
Base Capacity (vph)					470		865	1437			813	772
Starvation Cap Reductn					0		0	0			0	0
Spillback Cap Reductn					0		0	0			0	0
Storage Cap Reductn					0		0	0			0	0
Reduced v/c Ratio					0.32		0.68	0.37			0.46	0.24

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 42 (53%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 13.8 Intersection LOS: B
Intersection Capacity Utilization 68.8% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp



Lanes, Volumes, Timings
Fieldstone Ridge, Tolland, CT
7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp 2021 Existing Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	1	610	0	0	0	0	830	79	43	371	0
Future Volume (vph)	200	1	610	0	0	0	0	830	79	43	371	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		200	110		0
Storage Lanes	0		2	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected		0.953								0.950		
Satd. Flow (prot)	0	1775	2787	0	0	0	0	3539	1583	1770	3539	0
Flt Permitted		0.953								0.316		
Satd. Flow (perm)	0	1775	2787	0	0	0	0	3539	1583	589	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			380						97			
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		3795			4001			600			1010	
Travel Time (s)		73.9			77.9			13.6			23.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1	663	0	0	0	0	902	86	47	403	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	218	663	0	0	0	0	902	86	47	403	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	custom	NA	custom					NA	custom	Perm	NA	
Protected Phases	4	4	1 4					1	1		2 3	
Permitted Phases	4	4	1 4					1 2	1 2	2 3	2 3	

Lanes, Volumes, Timings
Fieldstone Ridge, Tolland, CT

7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp

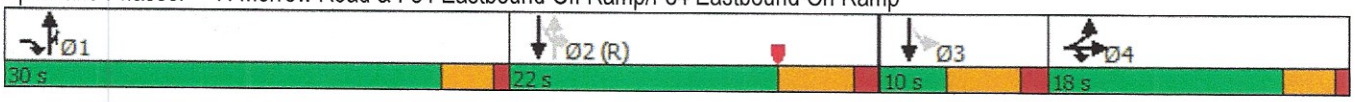
2021 Existing Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	14					1	1	23	23	
Switch Phase												
Minimum Initial (s)	9.0	9.0						5.0	5.0			
Minimum Split (s)	13.0	13.0						9.0	9.0			
Total Split (s)	18.0	18.0						30.0	30.0			
Total Split (%)	22.5%	22.5%						37.5%	37.5%			
Maximum Green (s)	14.0	14.0						26.0	26.0			
Yellow Time (s)	3.0	3.0						3.0	3.0			
All-Red Time (s)	1.0	1.0						1.0	1.0			
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		4.0						4.0	4.0			
Lead/Lag	Lag	Lag						Lead	Lead			
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	2.0	2.0						2.0	2.0			
Recall Mode	None	None						None	None			
Act Effct Green (s)		12.8	38.7					49.2	49.2	31.3	31.3	
Actuated g/C Ratio		0.16	0.48					0.62	0.62	0.39	0.39	
v/c Ratio		0.77	0.43					0.41	0.09	0.20	0.29	
Control Delay		50.9	5.5					11.4	2.9	24.9	24.0	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		50.9	5.5					11.4	2.9	24.9	24.0	
LOS		D	A					B	A	C	C	
Approach Delay		16.7						10.7			24.1	
Approach LOS		B						B			C	
Queue Length 50th (ft)		104	39					152	2	23	103	
Queue Length 95th (ft)		#198	67					m144	m7	m50	141	
Internal Link Dist (ft)		3715			3921			520			930	
Turn Bay Length (ft)									200	110		
Base Capacity (vph)		310	1649					2154	1001	230	1384	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.70	0.40					0.42	0.09	0.20	0.29	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 15.6 Intersection LOS: B
Intersection Capacity Utilization 68.8% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp



Lanes, Volumes, Timings
9: Merrow Road & Fieldstone Commons/Savings Institute

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	232	1	181	2	0	2	142	680	2	4	750	220
Future Volume (vph)	232	1	181	2	0	2	142	680	2	4	750	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	400		0	170		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.932						0.966	
Flt Protected		0.953			0.976		0.950			0.950		
Satd. Flow (prot)	0	1775	1583	0	1694	0	1770	3539	0	1770	3419	0
Flt Permitted		0.725			0.895		0.183			0.370		
Satd. Flow (perm)	0	1350	1583	0	1554	0	341	3539	0	689	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			108		91						64	
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		3784			3904			990			600	
Travel Time (s)		103.2			106.5			16.9			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	252	1	197	2	0	2	154	739	2	4	815	239
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	197	0	4	0	154	741	0	4	1054	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	custom	NA	custom	custom	NA		custom	NA		custom	NA	
Protected Phases			5				5	2		1	6	
Permitted Phases	4	4	4 5	4	4		2 5	2		1 6	6	

Lanes, Volumes, Timings
9: Merrow Road & Fieldstone Commons/Savings Institute

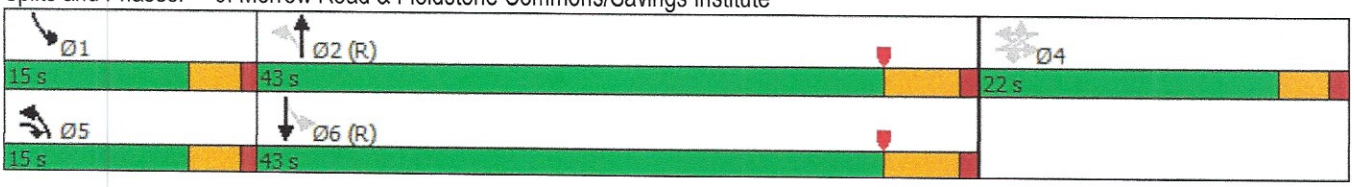
Fieldstone Ridge, Tolland, CT
2021 Existing Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	6.0	6.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	10.3	10.3	9.0	10.3	10.3		9.0	20.7		9.0	20.7	
Total Split (s)	22.0	22.0	15.0	22.0	22.0		15.0	43.0		15.0	43.0	
Total Split (%)	27.5%	27.5%	18.8%	27.5%	27.5%		18.8%	53.8%		18.8%	53.8%	
Maximum Green (s)	17.7	17.7	11.0	17.7	17.7		11.0	37.3		11.0	37.3	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5		3.0	4.5	
All-Red Time (s)	1.3	1.3	1.0	1.3	1.3		1.0	1.2		1.0	1.2	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.3	4.0		4.3		4.0	5.7		4.0	5.7	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		16.8	28.0		16.8		54.9	51.4		49.0	42.3	
Actuated g/C Ratio		0.21	0.35		0.21		0.69	0.64		0.61	0.53	
v/c Ratio		0.89	0.32		0.01		0.43	0.33		0.01	0.57	
Control Delay		64.9	9.8		0.0		8.4	7.6		5.2	17.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		64.9	9.8		0.0		8.4	7.6		5.2	17.1	
LOS		E	A		A		A	A		A	B	
Approach Delay		40.8						7.8			17.1	
Approach LOS		D						A			B	
Queue Length 50th (ft)		122	30		0		23	74		1	190	
Queue Length 95th (ft)		#250	73		0		43	143		m3	300	
Internal Link Dist (ft)		3704			3824			910			520	
Turn Bay Length (ft)							400			170		
Base Capacity (vph)		298	699		414		430	2273		616	1836	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.85	0.28		0.01		0.36	0.33		0.01	0.57	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 66 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 18.0 Intersection LOS: B
Intersection Capacity Utilization 66.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Merrow Road & Fieldstone Commons/Savings Institute



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	1	6	1	1	1	5	810	1	1	900	30
Future Vol, veh/h	11	1	6	1	1	1	5	810	1	1	900	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	0	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1	7	1	1	1	5	880	1	1	978	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1448	1888	506	1383	1904	441	1011	0	0	881	0	0
Stage 1	997	997	-	891	891	-	-	-	-	-	-	-
Stage 2	451	891	-	492	1013	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	92	70	512	103	68	564	681	-	-	763	-	-
Stage 1	262	320	-	304	359	-	-	-	-	-	-	-
Stage 2	557	359	-	527	315	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	90	69	512	100	67	564	681	-	-	763	-	-
Mov Cap-2 Maneuver	90	69	-	100	67	-	-	-	-	-	-	-
Stage 1	260	319	-	302	356	-	-	-	-	-	-	-
Stage 2	550	356	-	517	314	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	37.3	26.4	0.1	0
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	681	-	-	90	512	100	564	763	-	-
HCM Lane V/C Ratio	0.008	-	-	0.133	0.013	0.011	0.002	0.001	-	-
HCM Control Delay (s)	10.3	-	-	51	12.1	41.4	11.4	9.7	0	-
HCM Lane LOS	B	-	-	F	B	E	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0	0	0	0	-	-

Lanes, Volumes, Timings
15: Merrow Road & Goose Lane/Rhodes Road

Fieldstone Ridge, Tolland, CT
2021 Existing Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	20	23	21	32	94	21	650	6	115	680	110
Future Volume (vph)	84	20	23	21	32	94	21	650	6	115	680	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	220		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.976			0.914			0.999			0.979	
Flt Protected		0.968			0.993		0.950			0.950		
Satd. Flow (prot)	0	1760	0	0	1691	0	1770	3536	0	1770	3465	0
Flt Permitted		0.761			0.940		0.330			0.329		
Satd. Flow (perm)	0	1384	0	0	1600	0	615	3536	0	613	3465	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			102			1			27	
Link Speed (mph)		30			30			40			30	
Link Distance (ft)		3873			3977			4860			450	
Travel Time (s)		88.0			90.4			82.8			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	22	25	23	35	102	23	707	7	125	739	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	138	0	0	160	0	23	714	0	125	859	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4	4		8	8		2 5	2		1 6	6	

Lanes, Volumes, Timings
15: Merrow Road & Goose Lane/Rhodes Road

Fieldstone Ridge, Tolland, CT
2021 Existing Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	14.5	14.5		10.5	10.5		10.5	21.5		9.0	21.5	
Total Split (s)	28.0	28.0		28.0	28.0		13.0	40.0		12.0	39.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		16.3%	50.0%		15.0%	48.8%	
Maximum Green (s)	22.5	22.5		22.5	22.5		7.5	33.5		8.0	32.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.5		3.5	4.5	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.5	2.0		0.5	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5			5.5		5.5	6.5		4.0	6.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		11.5			10.0		25.1	22.5		30.1	28.6	
Actuated g/C Ratio		0.24			0.21		0.53	0.48		0.64	0.61	
v/c Ratio		0.40			0.38		0.05	0.42		0.23	0.41	
Control Delay		21.0			11.3		5.9	13.7		5.9	9.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		21.0			11.3		5.9	13.7		5.9	9.1	
LOS		C			B		A	B		A	A	
Approach Delay		21.0			11.3			13.5			8.7	
Approach LOS		C			B			B			A	
Queue Length 50th (ft)		29			13		2	82		12	60	
Queue Length 95th (ft)		89			63		11	158		37	190	
Internal Link Dist (ft)		3793			3897			4780			370	
Turn Bay Length (ft)							100			220		
Base Capacity (vph)		733			889		550	2556		606	2458	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.19			0.18		0.04	0.28		0.21	0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 47.2			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: Merrow Road & Goose Lane/Rhodes Road

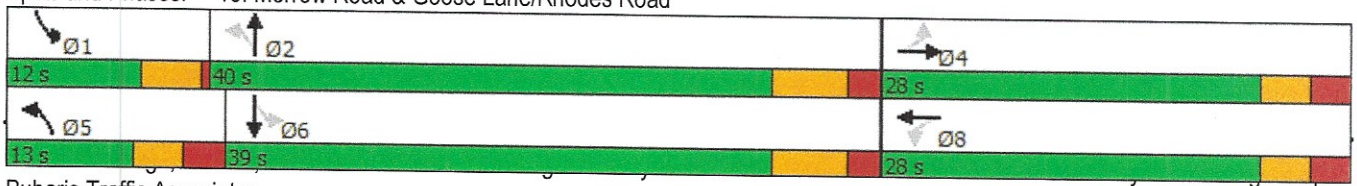


Exhibit 27
Traffic Operations Analysis Worksheets
Existing 2021 Saturday Midday Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	76	1	76	530	386	0	0	357	180
Future Volume (vph)	0	0	0	76	1	76	530	386	0	0	357	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		90
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.933							0.850
Flt Protected					0.976		0.950					
Satd. Flow (prot)	0	0	0	0	1696	0	1770	1863	0	0	1863	1583
Flt Permitted					0.976		0.441					
Satd. Flow (perm)	0	0	0	0	1696	0	821	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					59							148
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		3817			4042			1010			2234	
Travel Time (s)		74.4			78.7			17.2			38.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	83	1	83	576	420	0	0	388	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	167	0	576	420	0	0	388	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2			2	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				20	100		20	100			100	20
Trailing Detector (ft)				0	0		0	0			0	0
Detector 1 Position(ft)				0	0		0	0			0	0
Detector 1 Size(ft)				20	6		20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				custom	NA		custom	NA			NA	custom
Protected Phases				4	4		1	1			2	2
Permitted Phases				4	4		1 2	1 2			2	2

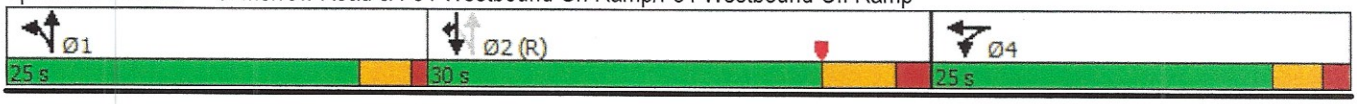
Lanes, Volumes, Timings
Fieldstone Ridge, Tolland, CT

5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp
2021 Existing Saturday Midday Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				4	4		1	1			2	2
Switch Phase												
Minimum Initial (s)				5.0	5.0		4.0	4.0			15.0	15.0
Minimum Split (s)				9.8	9.8		8.0	8.0			21.6	21.6
Total Split (s)				25.0	25.0		25.0	25.0			30.0	30.0
Total Split (%)				31.3%	31.3%		31.3%	31.3%			37.5%	37.5%
Maximum Green (s)				20.2	20.2		21.0	21.0			23.4	23.4
Yellow Time (s)				3.0	3.0		3.0	3.0			4.5	4.5
All-Red Time (s)				1.8	1.8		1.0	1.0			2.1	2.1
Lost Time Adjust (s)					0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)					4.8		4.0	4.0			6.6	6.6
Lead/Lag							Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	2.0
Recall Mode				None	None		None	None			C-Min	C-Min
Act Effct Green (s)					9.8		57.4	61.4			34.5	34.5
Actuated g/C Ratio					0.12		0.72	0.77			0.43	0.43
v/c Ratio					0.64		0.69	0.29			0.48	0.26
Control Delay					32.5		14.4	7.1			20.3	6.2
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					32.5		14.4	7.1			20.3	6.2
LOS					C		B	A			C	A
Approach Delay					32.5			11.3			15.6	
Approach LOS					C			B			B	
Queue Length 50th (ft)					52		200	52			136	14
Queue Length 95th (ft)					105		340	238			243	59
Internal Link Dist (ft)		3737			3962			930			2154	
Turn Bay Length (ft)												90
Base Capacity (vph)					472		845	1426			803	766
Starvation Cap Reductn					0		0	0			0	0
Spillback Cap Reductn					0		0	0			0	0
Storage Cap Reductn					0		0	0			0	0
Reduced v/c Ratio					0.35		0.68	0.29			0.48	0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 42 (53%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp

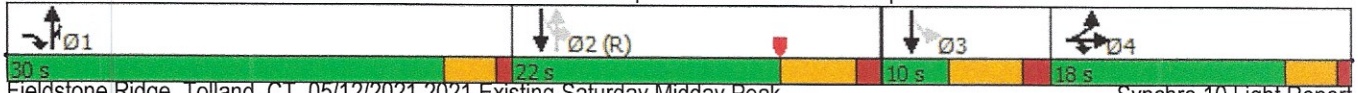


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	1	650	0	0	0	0	760	106	48	385	0
Future Volume (vph)	160	1	650	0	0	0	0	760	106	48	385	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		200	110		0
Storage Lanes	0		2	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected		0.953								0.950		
Satd. Flow (prot)	0	1775	2787	0	0	0	0	3539	1583	1770	3539	0
Flt Permitted		0.953								0.341		
Satd. Flow (perm)	0	1775	2787	0	0	0	0	3539	1583	635	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			357						115			
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		3795			4001			600			1010	
Travel Time (s)		73.9			77.9			13.6			23.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	1	707	0	0	0	0	826	115	52	418	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	175	707	0	0	0	0	826	115	52	418	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	custom	NA	custom					NA	custom	Perm	NA	
Protected Phases	4	4	1 4					1	1		2 3	
Permitted Phases	4	4	1 4					1 2	1 2	2 3	2 3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	1 4					1	1	2 3	2 3	
Switch Phase												
Minimum Initial (s)	9.0	9.0						5.0	5.0			
Minimum Split (s)	13.0	13.0						9.0	9.0			
Total Split (s)	18.0	18.0						30.0	30.0			
Total Split (%)	22.5%	22.5%						37.5%	37.5%			
Maximum Green (s)	14.0	14.0						26.0	26.0			
Yellow Time (s)	3.0	3.0						3.0	3.0			
All-Red Time (s)	1.0	1.0						1.0	1.0			
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		4.0						4.0	4.0			
Lead/Lag	Lag	Lag						Lead	Lead			
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	2.0	2.0						2.0	2.0			
Recall Mode	None	None						None	None			
Act Effct Green (s)		12.4	37.6					49.6	49.6	32.4	32.4	
Actuated g/C Ratio		0.16	0.47					0.62	0.62	0.40	0.40	
v/c Ratio		0.64	0.47					0.38	0.11	0.20	0.29	
Control Delay		42.4	6.9					9.5	2.6	22.8	22.1	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		42.4	6.9					9.5	2.6	22.8	22.1	
LOS		D	A					A	A	C	C	
Approach Delay		14.0						8.7			22.2	
Approach LOS		B						A			C	
Queue Length 50th (ft)		81	51					132	2	25	105	
Queue Length 95th (ft)		144	82					82	m12	m52	144	
Internal Link Dist (ft)		3715			3921			520			930	
Turn Bay Length (ft)									200	110		
Base Capacity (vph)		310	1638					2183	1020	257	1435	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.56	0.43					0.38	0.11	0.20	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 13.5		Intersection LOS: B	
Intersection Capacity Utilization 69.9%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	12	132	14	4	31	116	630	14	17	750	260
Future Volume (vph)	210	12	132	14	4	31	116	630	14	17	750	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	400		0	170		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.913			0.997			0.961	
Flt Protected		0.955			0.986		0.950			0.950		
Satd. Flow (prot)	0	1779	1583	0	1677	0	1770	3529	0	1770	3401	0
Flt Permitted		0.740			0.891		0.172			0.385		
Satd. Flow (perm)	0	1378	1583	0	1515	0	320	3529	0	717	3401	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			108		34			4			81	
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		3784			3904			990			600	
Travel Time (s)		103.2			106.5			16.9			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	13	143	15	4	34	126	685	15	18	815	283
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	241	143	0	53	0	126	700	0	18	1098	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	custom	NA	custom	custom	NA		custom	NA		custom	NA	
Protected Phases			5				5	2		1	6	
Permitted Phases	4	4	4 5	4	4		2 5	2		1 6	6	

Lanes, Volumes, Timings
9: Merrow Road & Fieldstone Commons/Savings Institute

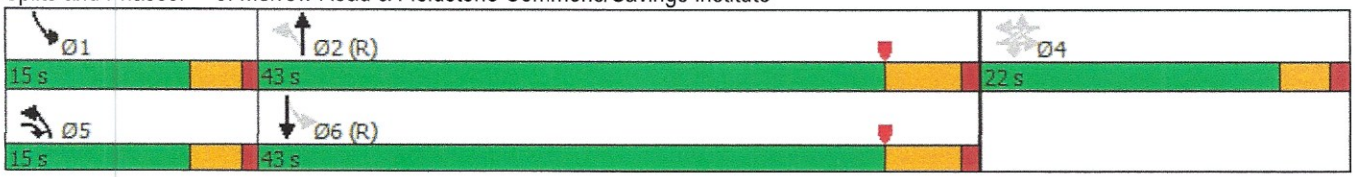
Fieldstone Ridge, Tolland, CT
2021 Existing Saturday Midday Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	6.0	6.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	10.3	10.3	9.0	10.3	10.3		9.0	20.7		9.0	20.7	
Total Split (s)	22.0	22.0	15.0	22.0	22.0		15.0	43.0		15.0	43.0	
Total Split (%)	27.5%	27.5%	18.8%	27.5%	27.5%		18.8%	53.8%		18.8%	53.8%	
Maximum Green (s)	17.7	17.7	11.0	17.7	17.7		11.0	37.3		11.0	37.3	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5		3.0	4.5	
All-Red Time (s)	1.3	1.3	1.0	1.3	1.3		1.0	1.2		1.0	1.2	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.3	4.0		4.3		4.0	5.7		4.0	5.7	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		16.7	27.5		16.7		54.4	49.6		49.6	42.8	
Actuated g/C Ratio		0.21	0.34		0.21		0.68	0.62		0.62	0.54	
v/c Ratio		0.84	0.23		0.15		0.38	0.32		0.04	0.59	
Control Delay		56.4	6.9		14.4		7.8	8.6		5.4	16.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		56.4	6.9		14.4		7.8	8.6		5.4	16.7	
LOS		E	A		B		A	A		A	B	
Approach Delay		38.0			14.4			8.4			16.5	
Approach LOS		D			B			A			B	
Queue Length 50th (ft)		114	11		8		19	68		3	186	
Queue Length 95th (ft)		#231	47		36		36	134		m11	309	
Internal Link Dist (ft)		3704			3824			910			520	
Turn Bay Length (ft)							400			170		
Base Capacity (vph)		304	698		361		419	2191		635	1857	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.79	0.20		0.15		0.30	0.32		0.03	0.59	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 66 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 17.1 Intersection LOS: B
Intersection Capacity Utilization 66.1% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Merrow Road & Fieldstone Commons/Savings Institute



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	1	1	1	2	1	750	1	1	890	11
Future Vol, veh/h	10	1	1	1	1	2	1	750	1	1	890	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	0	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1	1	1	1	2	1	815	1	1	967	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1385	1793	490	1304	1799	408	979	0	0	816	0	0
Stage 1	975	975	-	818	818	-	-	-	-	-	-	-
Stage 2	410	818	-	486	981	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	103	80	524	118	79	593	701	-	-	807	-	-
Stage 1	270	328	-	336	388	-	-	-	-	-	-	-
Stage 2	589	388	-	531	326	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	80	524	116	79	593	701	-	-	807	-	-
Mov Cap-2 Maneuver	101	80	-	116	79	-	-	-	-	-	-	-
Stage 1	270	327	-	336	388	-	-	-	-	-	-	-
Stage 2	584	388	-	527	325	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	41.9	19.5	0	0
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	701	-	-	101	524	116	593	807	-	-
HCM Lane V/C Ratio	0.002	-	-	0.108	0.002	0.009	0.004	0.001	-	-
HCM Control Delay (s)	10.1	-	-	44.9	11.9	36.3	11.1	9.5	0	-
HCM Lane LOS	B	-	-	E	B	E	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0	0	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	13	15	6	3	86	16	560	1	109	680	103
Future Volume (vph)	101	13	15	6	3	86	16	560	1	109	680	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	220		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.985			0.878						0.980	
Flt Protected		0.962			0.997		0.950			0.950		
Satd. Flow (prot)	0	1765	0	0	1631	0	1770	3539	0	1770	3468	0
Flt Permitted		0.782			0.972		0.332			0.381		
Satd. Flow (perm)	0	1435	0	0	1590	0	618	3539	0	710	3468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			93						25	
Link Speed (mph)		30			30			40			30	
Link Distance (ft)		3873			3977			4860			450	
Travel Time (s)		88.0			90.4			82.8			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	14	16	7	3	93	17	609	1	118	739	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	0	0	103	0	17	610	0	118	851	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4	4		8	8		2 5	2		1 6	6	

Lanes, Volumes, Timings
15: Merrow Road & Goose Lane/Rhodes Road

Fieldstone Ridge, Tolland, CT
2021 Existing Saturday Midday Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	14.5	14.5		10.5	10.5		10.5	21.5		9.0	21.5	
Total Split (s)	28.0	28.0		28.0	28.0		13.0	40.0		12.0	39.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		16.3%	50.0%		15.0%	48.8%	
Maximum Green (s)	22.5	22.5		22.5	22.5		7.5	33.5		8.0	32.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.5		3.5	4.5	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.5	2.0		0.5	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5			5.5		5.5	6.5		4.0	6.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		10.7			9.7		26.1	22.9		31.2	29.2	
Actuated g/C Ratio		0.22			0.20		0.54	0.47		0.64	0.60	
v/c Ratio		0.43			0.26		0.04	0.37		0.20	0.40	
Control Delay		22.1			7.9		5.8	13.2		5.6	9.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		22.1			7.9		5.8	13.2		5.6	9.0	
LOS		C			A		A	B		A	A	
Approach Delay		22.1			7.9			13.0			8.6	
Approach LOS		C			A			B			A	
Queue Length 50th (ft)		31			2		2	67		11	59	
Queue Length 95th (ft)		92			36		9	132		35	185	
Internal Link Dist (ft)		3793			3897			4780			370	
Turn Bay Length (ft)							100			220		
Base Capacity (vph)		696			815		541	2542		639	2424	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.20			0.13		0.03	0.24		0.18	0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 48.4			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Merrow Road & Goose Lane/Rhodes Road

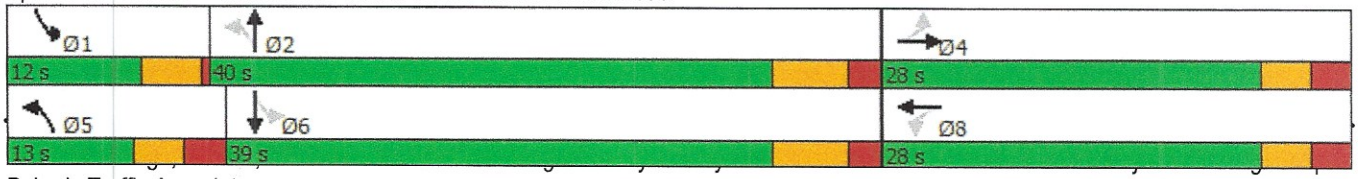
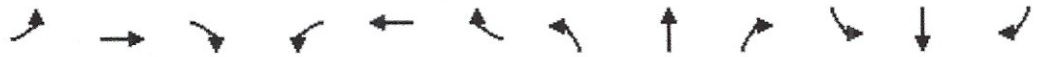


Exhibit 28
Traffic Operations Analysis Worksheets
Background 2026 (No-Build) with Others Weekday AM Peak

Lanes, Volumes, Timings
5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp

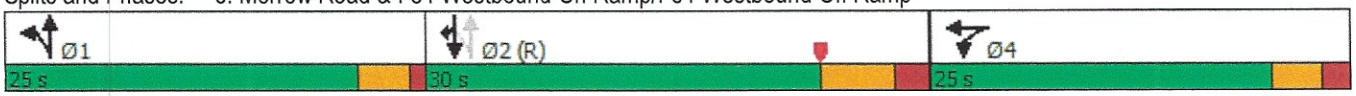
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	50	2	121	596	328	0	0	365	328
Future Volume (vph)	0	0	0	50	2	121	596	328	0	0	365	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		90
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.905							0.850
Flt Protected					0.986		0.950					
Satd. Flow (prot)	0	0	0	0	1662	0	1770	1863	0	0	1863	1583
Flt Permitted					0.986		0.439					
Satd. Flow (perm)	0	0	0	0	1662	0	818	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					132							263
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		3817			4042			1010			2234	
Travel Time (s)		74.4			78.7			17.2			38.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	54	2	132	648	357	0	0	397	357
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	188	0	648	357	0	0	397	357
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2			2	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				20	100		20	100			100	20
Trailing Detector (ft)				0	0		0	0			0	0
Detector 1 Position(ft)				0	0		0	0			0	0
Detector 1 Size(ft)				20	6		20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				custom	NA		custom	NA			NA	custom
Protected Phases				4	4		1	1			2	2
Permitted Phases				4	4		1 2	1 2			2	2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				4	4		1	1			2	2
Switch Phase												
Minimum Initial (s)				5.0	5.0		4.0	4.0			15.0	15.0
Minimum Split (s)				9.8	9.8		8.0	8.0			21.6	21.6
Total Split (s)				25.0	25.0		25.0	25.0			30.0	30.0
Total Split (%)				31.3%	31.3%		31.3%	31.3%			37.5%	37.5%
Maximum Green (s)				20.2	20.2		21.0	21.0			23.4	23.4
Yellow Time (s)				3.0	3.0		3.0	3.0			4.5	4.5
All-Red Time (s)				1.8	1.8		1.0	1.0			2.1	2.1
Lost Time Adjust (s)					0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)					4.8		4.0	4.0			6.6	6.6
Lead/Lag							Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	2.0
Recall Mode				None	None		None	None			C-Min	C-Min
Act Effct Green (s)					8.1		59.1	63.1			35.5	35.5
Actuated g/C Ratio					0.10		0.74	0.79			0.44	0.44
v/c Ratio					0.66		0.76	0.24			0.48	0.42
Control Delay					23.0		17.4	5.7			19.1	6.5
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					23.0		17.4	5.7			19.1	6.5
LOS					C		B	A			B	A
Approach Delay					23.0			13.2			13.1	
Approach LOS					C			B			B	
Queue Length 50th (ft)					27		205	47			132	26
Queue Length 95th (ft)					82		#399	205			241	94
Internal Link Dist (ft)		3737			3962			930			2154	
Turn Bay Length (ft)												90
Base Capacity (vph)					518		854	1469			826	848
Starvation Cap Reductn					0		0	0			0	0
Spillback Cap Reductn					0		0	0			0	0
Storage Cap Reductn					0		0	0			0	0
Reduced v/c Ratio					0.36		0.76	0.24			0.48	0.42

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 42 (53%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp

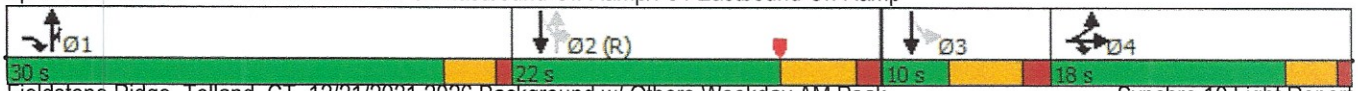


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1	569	0	0	0	0	812	25	33	382	0
Future Volume (vph)	110	1	569	0	0	0	0	812	25	33	382	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		200	110		0
Storage Lanes	0		2	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected		0.953								0.950		
Satd. Flow (prot)	0	1775	2787	0	0	0	0	3539	1583	1770	3539	0
Flt Permitted		0.953								0.322		
Satd. Flow (perm)	0	1775	2787	0	0	0	0	3539	1583	600	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			361						97			
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		3795			4001			600			1010	
Travel Time (s)		73.9			77.9			13.6			23.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	1	618	0	0	0	0	883	27	36	415	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	618	0	0	0	0	883	27	36	415	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	custom	NA	custom					NA	custom	Perm	NA	
Protected Phases	4	4	1 4					1	1		2 3	
Permitted Phases	4	4	1 4					1 2	1 2	2 3	2 3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	14					1	1	23	23	
Switch Phase												
Minimum Initial (s)	9.0	9.0						5.0	5.0			
Minimum Split (s)	13.0	13.0						9.0	9.0			
Total Split (s)	18.0	18.0						30.0	30.0			
Total Split (%)	22.5%	22.5%						37.5%	37.5%			
Maximum Green (s)	14.0	14.0						26.0	26.0			
Yellow Time (s)	3.0	3.0						3.0	3.0			
All-Red Time (s)	1.0	1.0						1.0	1.0			
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		4.0						4.0	4.0			
Lead/Lag	Lag	Lag						Lead	Lead			
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	2.0	2.0						2.0	2.0			
Recall Mode	None	None						None	None			
Act Effct Green (s)		11.0	35.7					51.0	51.0	34.3	34.3	
Actuated g/C Ratio		0.14	0.45					0.64	0.64	0.43	0.43	
v/c Ratio		0.50	0.43					0.39	0.03	0.14	0.27	
Control Delay		38.7	5.9					9.9	1.3	22.6	22.9	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		38.7	5.9					9.9	1.3	22.6	22.9	
LOS		D	A					A	A	C	C	
Approach Delay		11.3						9.6			22.9	
Approach LOS		B						A			C	
Queue Length 50th (ft)		57	42					114	0	17	111	
Queue Length 95th (ft)		104	62					202	8	m39	154	
Internal Link Dist (ft)		3715			3921			520			930	
Turn Bay Length (ft)									200	110		
Base Capacity (vph)		310	1586					2255	1043	257	1517	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.39	0.39					0.39	0.03	0.14	0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	1	35	1	0	11	63	762	4	11	834	105
Future Volume (vph)	57	1	35	1	0	11	63	762	4	11	834	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	400		0	170		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.875			0.999			0.983	
Flt Protected		0.953			0.996		0.950			0.950		
Satd. Flow (prot)	0	1775	1583	0	1623	0	1770	3536	0	1770	3479	0
Flt Permitted		0.720			0.976		0.239			0.339		
Satd. Flow (perm)	0	1341	1583	0	1591	0	445	3536	0	631	3479	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			38		91			1			23	
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		3784			3904			990			600	
Travel Time (s)		103.2			106.5			16.9			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	1	38	1	0	12	68	828	4	12	907	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	38	0	13	0	68	832	0	12	1021	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	custom	NA	custom	custom	NA		custom	NA		custom	NA	
Protected Phases			5				5	2		1	6	
Permitted Phases	4	4	4 5	4	4		2 5	2		1 6	6	

Lanes, Volumes, Timings
9: Merrow Road & Fieldstone Commons/Savings Institute

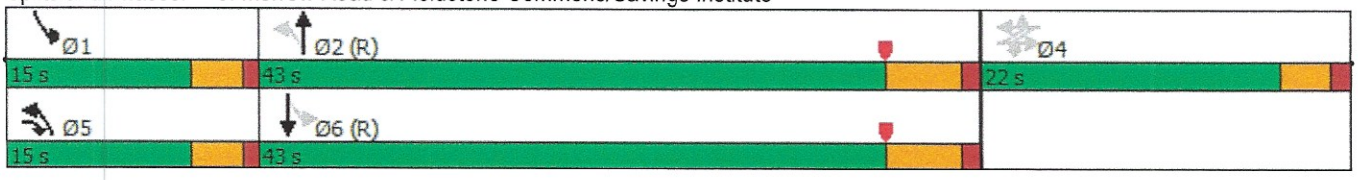
Fieldstone Ridge, Tolland, CT
2026 Background w/ Others Weekday AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	6.0	6.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	10.3	10.3	9.0	10.3	10.3		9.0	20.7		9.0	20.7	
Total Split (s)	22.0	22.0	15.0	22.0	22.0		15.0	43.0		15.0	43.0	
Total Split (%)	27.5%	27.5%	18.8%	27.5%	27.5%		18.8%	53.8%		18.8%	53.8%	
Maximum Green (s)	17.7	17.7	11.0	17.7	17.7		11.0	37.3		11.0	37.3	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5		3.0	4.5	
All-Red Time (s)	1.3	1.3	1.0	1.3	1.3		1.0	1.2		1.0	1.2	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.3	4.0		4.3		4.0	5.7		4.0	5.7	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		8.4	16.0		8.4		64.8	63.0		61.8	57.3	
Actuated g/C Ratio		0.10	0.20		0.10		0.81	0.79		0.77	0.72	
v/c Ratio		0.45	0.11		0.05		0.15	0.30		0.02	0.41	
Control Delay		43.3	8.7		0.4		3.0	4.1		2.0	7.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		43.3	8.7		0.4		3.0	4.1		2.0	7.9	
LOS		D	A		A		A	A		A	A	
Approach Delay		30.3			0.4			4.0			7.9	
Approach LOS		C			A			A			A	
Queue Length 50th (ft)		30	0		0		5	47		1	174	
Queue Length 95th (ft)		65	21		0		15	132		m2	215	
Internal Link Dist (ft)		3704			3824			910			520	
Turn Bay Length (ft)							400			170		
Base Capacity (vph)		296	455		422		545	2786		672	2497	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.21	0.08		0.03		0.12	0.30		0.02	0.41	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 66 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 7.2 Intersection LOS: A
Intersection Capacity Utilization 52.1% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Merrow Road & Fieldstone Commons/Savings Institute



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	1	3	1	1	11	2	641	1	11	723	18
Future Vol, veh/h	4	1	3	1	1	11	2	641	1	11	723	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	0	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1	3	1	1	12	2	697	1	12	786	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1173	1522	403	1120	1532	349	806	0	0	698	0	0
Stage 1	820	820	-	702	702	-	-	-	-	-	-	-
Stage 2	353	702	-	418	830	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	147	117	597	161	116	647	814	-	-	894	-	-
Stage 1	335	387	-	395	439	-	-	-	-	-	-	-
Stage 2	637	439	-	583	383	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	140	114	597	156	113	647	814	-	-	894	-	-
Mov Cap-2 Maneuver	140	114	-	156	113	-	-	-	-	-	-	-
Stage 1	334	378	-	394	438	-	-	-	-	-	-	-
Stage 2	622	438	-	564	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.8	12.2	0	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	814	-	-	140	597	156	647	894	-	-
HCM Lane V/C Ratio	0.003	-	-	0.031	0.005	0.007	0.018	0.013	-	-
HCM Control Delay (s)	9.4	-	-	31.5	11.1	28.2	10.7	9.1	0.1	-
HCM Lane LOS	A	-	-	D	B	D	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	0.1	0	-	-

Lanes, Volumes, Timings
15: Merrow Road & Goose Lane/Rhodes Road

Fieldstone Ridge, Tolland, CT
2026 Background w/ Others Weekday AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	21	9	4	12	147	16	573	6	142	656	28
Future Volume (vph)	84	21	9	4	12	147	16	573	6	142	656	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	220		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.989			0.878			0.998			0.994	
Flt Protected		0.965			0.999		0.950			0.950		
Satd. Flow (prot)	0	1778	0	0	1634	0	1770	3532	0	1770	3518	0
Flt Permitted		0.708			0.989		0.370			0.370		
Satd. Flow (perm)	0	1304	0	0	1617	0	689	3532	0	689	3518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			160			2			6	
Link Speed (mph)		30			30			40			30	
Link Distance (ft)		3873			3977			4860			450	
Travel Time (s)		88.0			90.4			82.8			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	23	10	4	13	160	17	623	7	154	713	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	124	0	0	177	0	17	630	0	154	743	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4	4		8	8		2 5	2		1 6	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	14.5	14.5		10.5	10.5		10.5	21.5		9.0	21.5	
Total Split (s)	28.0	28.0		28.0	28.0		13.0	40.0		12.0	39.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		16.3%	50.0%		15.0%	48.8%	
Maximum Green (s)	22.5	22.5		22.5	22.5		7.5	33.5		8.0	32.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.5		3.5	4.5	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.5	2.0		0.5	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5			5.5		5.5	6.5		4.0	6.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		11.4			9.8		23.4	21.2		28.7	27.4	
Actuated g/C Ratio		0.25			0.22		0.51	0.47		0.63	0.60	
v/c Ratio		0.37			0.37		0.03	0.38		0.26	0.35	
Control Delay		21.1			7.3		5.8	13.6		6.0	8.9	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		21.1			7.3		5.8	13.6		6.0	8.9	
LOS		C			A		A	B		A	A	
Approach Delay		21.1			7.3			13.4			8.4	
Approach LOS		C			A			B			A	
Queue Length 50th (ft)		29			4		2	71		15	51	
Queue Length 95th (ft)		80			47		9	137		44	160	
Internal Link Dist (ft)		3793			3897			4780			370	
Turn Bay Length (ft)							100			220		
Base Capacity (vph)		725			968		580	2587		648	2522	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.17			0.18		0.03	0.24		0.24	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 45.5			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: Merrow Road & Goose Lane/Rhodes Road

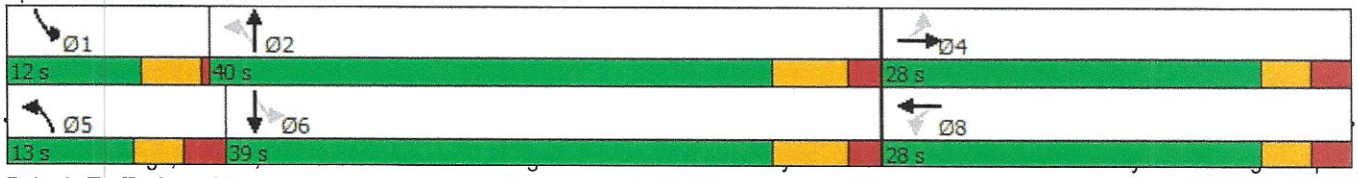
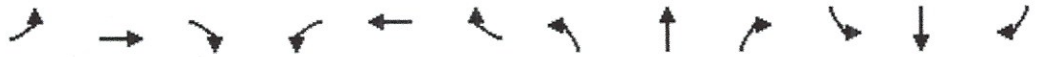


Exhibit 29
Traffic Operations Analysis Worksheets
Background 2026 (No-Build) with Others Weekday PM Peak

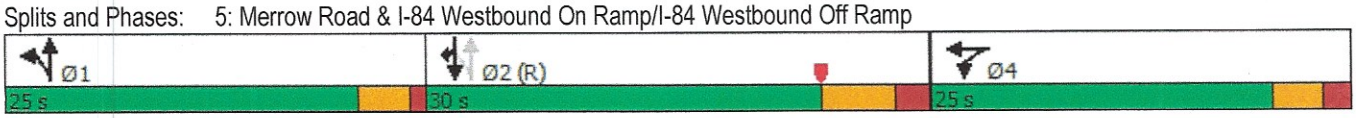
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	77	1	83	633	531	0	0	370	194
Future Volume (vph)	0	0	0	77	1	83	633	531	0	0	370	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		90
Storage Lanes	0		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.931							0.850
Flt Protected					0.977		0.950					
Satd. Flow (prot)	0	0	0	0	1694	0	1770	1863	0	0	1863	1583
Flt Permitted					0.977		0.420					
Satd. Flow (perm)	0	0	0	0	1694	0	782	1863	0	0	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					64							154
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		3817			4042			1010			2234	
Travel Time (s)		74.4			78.7			17.2			38.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	84	1	90	688	577	0	0	402	211
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	175	0	688	577	0	0	402	211
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2		1	2			2	1
Detector Template				Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)				20	100		20	100			100	20
Trailing Detector (ft)				0	0		0	0			0	0
Detector 1 Position(ft)				0	0		0	0			0	0
Detector 1 Size(ft)				20	6		20	6			6	20
Detector 1 Type				Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)				0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				custom	NA		custom	NA			NA	custom
Protected Phases				4	4		1	1			2	2
Permitted Phases				4	4		1 2	1 2			2	2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				4	4		1	1			2	2
Switch Phase												
Minimum Initial (s)				5.0	5.0		4.0	4.0			15.0	15.0
Minimum Split (s)				9.8	9.8		8.0	8.0			21.6	21.6
Total Split (s)				25.0	25.0		25.0	25.0			30.0	30.0
Total Split (%)				31.3%	31.3%		31.3%	31.3%			37.5%	37.5%
Maximum Green (s)				20.2	20.2		21.0	21.0			23.4	23.4
Yellow Time (s)				3.0	3.0		3.0	3.0			4.5	4.5
All-Red Time (s)				1.8	1.8		1.0	1.0			2.1	2.1
Lost Time Adjust (s)					0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)					4.8		4.0	4.0			6.6	6.6
Lead/Lag							Lead	Lead			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	2.0
Recall Mode				None	None		None	None			C-Min	C-Min
Act Effct Green (s)					10.0		57.2	61.2			33.6	33.6
Actuated g/C Ratio					0.12		0.72	0.76			0.42	0.42
v/c Ratio					0.66		0.84	0.40			0.51	0.28
Control Delay					32.3		22.3	8.8			21.2	6.7
Queue Delay					0.0		0.0	0.0			0.0	0.0
Total Delay					32.3		22.3	8.8			21.2	6.7
LOS					C		C	A			C	A
Approach Delay					32.3			16.1			16.2	
Approach LOS					C			B			B	
Queue Length 50th (ft)					53		282	214			143	17
Queue Length 95th (ft)					107		#490	331			256	65
Internal Link Dist (ft)		3737			3962			930			2154	
Turn Bay Length (ft)												90
Base Capacity (vph)					475		818	1426			783	754
Starvation Cap Reductn					0		0	0			0	0
Spillback Cap Reductn					0		0	0			0	0
Storage Cap Reductn					0		0	0			0	0
Reduced v/c Ratio					0.37		0.84	0.40			0.51	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 42 (53%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Merrow Road & I-84 Westbound On Ramp/I-84 Westbound Off Ramp



Lanes, Volumes, Timings
7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp

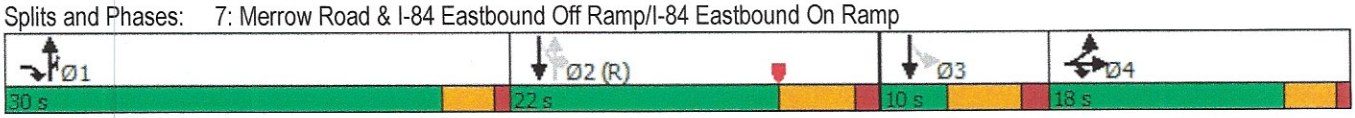
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	212	1	675	0	0	0	0	952	87	47	400	0
Future Volume (vph)	212	1	675	0	0	0	0	952	87	47	400	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		200	110		0
Storage Lanes	0		2	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected		0.953								0.950		
Satd. Flow (prot)	0	1775	2787	0	0	0	0	3539	1583	1770	3539	0
Flt Permitted		0.953								0.277		
Satd. Flow (perm)	0	1775	2787	0	0	0	0	3539	1583	516	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			332						97			
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		3795			4001			600			1010	
Travel Time (s)		73.9			77.9			13.6			23.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	1	734	0	0	0	0	1035	95	51	435	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	231	734	0	0	0	0	1035	95	51	435	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1					2	1	1	2	
Detector Template	Left	Thru	Right					Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20					100	20	20	100	
Trailing Detector (ft)	0	0	0					0	0	0	0	
Detector 1 Position(ft)	0	0	0					0	0	0	0	
Detector 1 Size(ft)	20	6	20					6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	custom	NA	custom					NA	custom	Perm	NA	
Protected Phases	4	4	1 4					1	1		2 3	
Permitted Phases	4	4	1 4					1 2	1 2	2 3	2 3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	14					1	1	23	23	
Switch Phase												
Minimum Initial (s)	9.0	9.0						5.0	5.0			
Minimum Split (s)	13.0	13.0						9.0	9.0			
Total Split (s)	18.0	18.0						30.0	30.0			
Total Split (%)	22.5%	22.5%						37.5%	37.5%			
Maximum Green (s)	14.0	14.0						26.0	26.0			
Yellow Time (s)	3.0	3.0						3.0	3.0			
All-Red Time (s)	1.0	1.0						1.0	1.0			
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		4.0						4.0	4.0			
Lead/Lag	Lag	Lag						Lead	Lead			
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	2.0	2.0						2.0	2.0			
Recall Mode	None	None						None	None			
Act Effct Green (s)		13.0	40.7					49.0	49.0	29.3	29.3	
Actuated g/C Ratio		0.16	0.51					0.61	0.61	0.37	0.37	
v/c Ratio		0.80	0.46					0.48	0.09	0.27	0.34	
Control Delay		53.8	7.0					11.6	2.6	25.9	24.0	
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		53.8	7.0					11.6	2.6	25.9	24.0	
LOS		D	A					B	A	C	C	
Approach Delay		18.2						10.8			24.2	
Approach LOS		B						B			C	
Queue Length 50th (ft)		111	55					195	5	25	112	
Queue Length 95th (ft)		#215	94					m84	m7	m49	150	
Internal Link Dist (ft)		3715			3921			520			930	
Turn Bay Length (ft)									200	110		
Base Capacity (vph)		310	1629					2152	1000	188	1295	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.75	0.45					0.48	0.10	0.27	0.34	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 16.1 Intersection LOS: B
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Merrow Road & I-84 Eastbound Off Ramp/I-84 Eastbound On Ramp



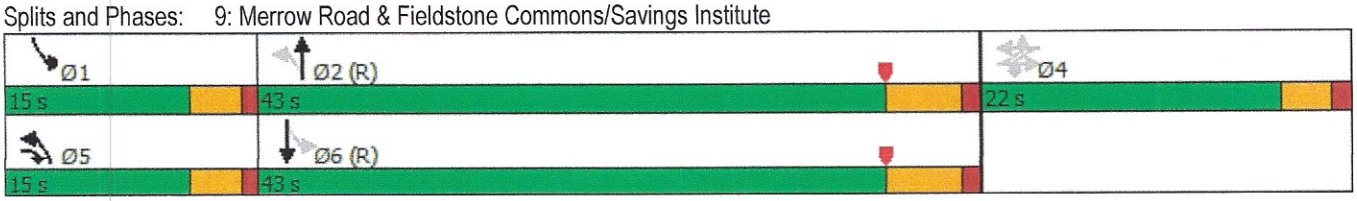
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	1	190	2	1	2	149	798	2	4	832	231
Future Volume (vph)	244	1	190	2	1	2	149	798	2	4	832	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	400		0	170		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.946						0.967	
Flt Protected		0.953			0.980		0.950			0.950		
Satd. Flow (prot)	0	1775	1583	0	1727	0	1770	3539	0	1770	3422	0
Flt Permitted		0.724			0.910		0.150			0.326		
Satd. Flow (perm)	0	1349	1583	0	1604	0	279	3539	0	607	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			83		2						59	
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		3784			3904			990			600	
Travel Time (s)		103.2			106.5			16.9			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	265	1	207	2	1	2	162	867	2	4	904	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	266	207	0	5	0	162	869	0	4	1155	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	custom	NA	custom	custom	NA		custom	NA		custom	NA	
Protected Phases			5				5	2		1	6	
Permitted Phases	4	4	4 5	4	4		2 5	2		1 6	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	6.0	6.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	10.3	10.3	9.0	10.3	10.3		9.0	20.7		9.0	20.7	
Total Split (s)	22.0	22.0	15.0	22.0	22.0		15.0	43.0		15.0	43.0	
Total Split (%)	27.5%	27.5%	18.8%	27.5%	27.5%		18.8%	53.8%		18.8%	53.8%	
Maximum Green (s)	17.7	17.7	11.0	17.7	17.7		11.0	37.3		11.0	37.3	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5		3.0	4.5	
All-Red Time (s)	1.3	1.3	1.0	1.3	1.3		1.0	1.2		1.0	1.2	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.3	4.0		4.3		4.0	5.7		4.0	5.7	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		17.1	28.6		17.1		54.6	51.1		48.4	41.7	
Actuated g/C Ratio		0.21	0.36		0.21		0.68	0.64		0.60	0.52	
v/c Ratio		0.92	0.33		0.01		0.50	0.38		0.01	0.64	
Control Delay		69.7	12.0		21.2		10.1	8.2		5.5	18.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		69.7	12.0		21.2		10.1	8.2		5.5	18.3	
LOS		E	B		C		B	A		A	B	
Approach Delay		44.5			21.2			8.5			18.2	
Approach LOS		D			C			A			B	
Queue Length 50th (ft)		130	42		1		25	91		1	196	
Queue Length 95th (ft)		#266	87		10		45	173		m2	337	
Internal Link Dist (ft)		3704			3824			910			520	
Turn Bay Length (ft)							400			170		
Base Capacity (vph)		298	690		356		395	2259		568	1810	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.89	0.30		0.01		0.41	0.38		0.01	0.64	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 66 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 19.1 Intersection LOS: B
Intersection Capacity Utilization 70.5% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Merrow Road & Fieldstone Commons/Savings Institute



Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	1	6	1	1	1	5	935	1	1	989	32
Future Vol, veh/h	12	1	6	1	1	1	5	935	1	1	989	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	0	-	0	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1	7	1	1	1	5	1016	1	1	1075	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1614	2122	555	1567	2139	509	1110	0	0	1017	0	0
Stage 1	1095	1095	-	1027	1027	-	-	-	-	-	-	-
Stage 2	519	1027	-	540	1112	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	69	50	475	75	48	509	625	-	-	678	-	-
Stage 1	228	288	-	251	310	-	-	-	-	-	-	-
Stage 2	508	310	-	494	282	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	67	49	475	72	47	509	625	-	-	678	-	-
Mov Cap-2 Maneuver	67	49	-	72	47	-	-	-	-	-	-	-
Stage 1	226	287	-	249	308	-	-	-	-	-	-	-
Stage 2	501	308	-	483	281	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	51.8	33.9	0.1	0
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	625	-	-	67	475	72	509	678	-	-
HCM Lane V/C Ratio	0.009	-	-	0.195	0.014	0.015	0.002	0.002	-	-
HCM Control Delay (s)	10.8	-	-	71.3	12.7	55.8	12.1	10.3	0	-
HCM Lane LOS	B	-	-	F	B	F	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0	0	0	0	-	-

Lanes, Volumes, Timings
15: Merrow Road & Goose Lane/Rhodes Road

Fieldstone Ridge, Tolland, CT
2026 Background w/ Others Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	21	24	22	34	99	22	767	6	121	758	116
Future Volume (vph)	88	21	24	22	34	99	22	767	6	121	758	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	220		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.976			0.914			0.999			0.980	
Flt Protected		0.968			0.993		0.950			0.950		
Satd. Flow (prot)	0	1760	0	0	1691	0	1770	3536	0	1770	3468	0
Flt Permitted		0.729			0.939		0.269			0.278		
Satd. Flow (perm)	0	1325	0	0	1599	0	501	3536	0	518	3468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			108			1			26	
Link Speed (mph)		30			30			40			30	
Link Distance (ft)		3873			3977			4860			450	
Travel Time (s)		88.0			90.4			82.8			10.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	23	26	24	37	108	24	834	7	132	824	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	0	169	0	24	841	0	132	950	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4	4		8	8		2 5	2		1 6	6	