HARTFORD ZONING BOARD OF ADJUSTMENT
September 4, 2024
Meeting Notice and Agenda

The Hartford Zoning Board of Adjustment will meet on Wednesday, September 4, 2024, beginning at 6:30 p.m. to consider the following Applications and Administrative Matters.

This meeting will be conducted in person at Hartford Town Hall, 171 Bridge Street, White River Junction, Vermont. In addition, you may join the meeting remotely as follows:

Microsoft Teams
Join the meeting now
Meeting ID: 233 671 455 317
Passcode: wTwETA

Dial in by phone
+1 802-377-3677,,74670192#
71 802 377 3677
Phone conference ID: 746 701 92#

If you cannot access this meeting notice electronically or if you are having difficulty connecting to the meeting, please email Jo-Ann Ells at jells@hartford-vt.org

A. Public Hearings, beginning at 6:30 p.m.

1. Application #07-24 by 12 Tremont Street, LLC (owner) and Tim Sidore (applicant) for Conditional Use Approval under section 260-16 and 260-25 of the Hartford Zoning Regulations to convert an existing structure into a multi-unit dwelling, lot 09-0072-000, 1200 Christian Street, Hartford, in a proposed Planned Development. (Continued from July 24, 2024)

B. Administrative matters: 1. Public Comment. 2. Minutes. 3. Administrative Permits. 4. Discuss starting Hearings later. 5. Availability for the next Public Hearing.

Application materials are available at the Hartford Town Hall, Department of Planning and Development Services, 171 Bridge Street, White River Junction, Vermont (802) 295-3075. Persons wishing to appear and be heard may do so in person, or be represented by another party and/or submit written testimony.

An interested person who has **participated** in a municipal regulatory proceeding may appeal a decision rendered in that proceeding to the Vermont Environmental Court. Participation in a local regulatory proceeding shall consist of offering, through oral or written testimony, evidence or a statement of concern related to the subject of the proceeding.

Steve Lagasse, Chair

Zoning Board of Adjustment
Administrative Agenda
September 4, 2024

1. Public Comment

2. Minutes

3. Administrative Permits

   None

4. Discuss starting Hearings later

5. Availability for the next Public Hearing (October 9th)

DRAFT
MINUTES
Zoning Board of Adjustment
July 24, 2024

Present: Steve Lagasse, Chair, Alice Maleski, Tom Franklin, and Jo-Ann Ells, Zoning Administrator

Absent: Chris Lowe, Vice Chair, Stephanie Gile, and Lannie Collins, Selectboard Liaison

Public Hearing

Steve Lagasse opened the Hearing.

Tom Franklin read the hybrid meeting script and took a roll call.

Steve Lagasse noted that people who participated in the Hearing, including oral and written testimony, will be given a copy of the Board's Decision.

Steve Lagasse reviewed the Hearing process and Interested Party Rule, explained that only a quorum of the Board was present and therefore a vote needed to be unanimous for action to be taken, and administered the oath.

The Board took a roll call.

Public Hearing

1. Application #07-24 by 12 Tremont Street, LLC (owner) and Tim Sidore (applicant) for Conditional Use Approval under section 260-16 and 260-25 of the Hartford Zoning Regulations to convert an existing structure into a multi-unit dwelling, lot 09-0072-000, 1200 Christian Street, Hartford, in a proposed Planned Development.

Tim Sidore, owner/applicant, Jim Wasser, Sudio Nexus, and Adam Morse, Engineering Ventures were present.

Tim Sidore explained that 12 Tremont Street, LLC is a sister company of Execusuite and reviewed several redevelopment projects they have done in the area. He noted that they purchased the property in the summer of 2023 and want to redevelop the former nursing home into 38 dwelling units.

Jim Wasser reviewed the history of the construction and use of the building. He noted that the projects keep the building intact and does not alter the footprint of the building. He explained that the application includes the creation of 38 dwelling units and that 40% of the units will be affordable. He acknowledged that the units are small and noted that the buildings construction lends itself to small units. He added that the project will provide housing for a demographic not well provided for in the Upper Valley.

Jim Wasser gave an overview of the landscaping plan, outdoor amenities, parking, gated access on Brookside Road, provision for a shared electric vehicle, and conduit that will be installed for future electric vehicle charging stations. He noted that the entrances to the building will be well lit, and a bike rack will be provided.

Adam Morse reviewed the civil plans including site circulation, drainage, snow storage, and lighting.

Tom Franklin remarked that the dwelling units are small, and noted that he understands the redevelopment is constrained by the construction of the building. He added that he is glad to see an application to redevelop the building.

Tom Franklin asked about the removal of parking spaces along Brookside Drive. Jo-Ann Ells noted that this was in response to concerns voiced by the DPW regarding vehicles backing up into the street.

Tom Franklin asked for confirmation that the access drive on Brookside Drive would be gated. Tim Sidore confirmed.

Tom Franklin noted that providing a public transit stop for the development could be difficult.

It was noted that the proposed shared electric vehicle would be parked in one of the proposed parking spaces near the accessible parking spaces to the rear of the building.

Tom Franklin asked for confirmation that the garage would remain. Jim Wasser confirmed and noted it would be used for maintenance.

Steve Lagasse asked about the need for directional signage. Adam Morse noted entrance/exit signage on the civil plans.

Steve Lagasse suggested additional pavement markings be added to the plans for help with the one-way circulation pattern.

Steve Lagasse noted that the applicant had not provided a traffic study. Tim Sidore stated that information he provided regarding traffic was based on on-line statistics and personal experience.

Alice Maleski asked about provisions for electric bikes. Tim Sidore offered that conduit could be run to the bike rack.

Steve Lagasse noted that the Board had received a letter from a number of neighbors. He reviewed the letter and explained items that were within the Board’s purview and those that were not.

Steve Lagasse asked the applicant to review the landscaping plan. Jim Wasser reviewed the

landscape plan.

Alice Maleski asked about the possibility of providing garden space for residents. Tim Sidore offered to consider the request.

Tom Franklin asked for confirmation that the applicant was not proposing any changes to the southern portion of the lot. Jim Wasser confirmed and noted that the area is wooded and contains a marsh.

Steve Lagasse asked for comment from interested Parties.

Hilde Ojibway expressed concern with the storage of electric bikes and potential for fires. She suggested the Board research the issue. Tim Sidore offered to prohibit the storage of electric bikes in the building in the leases.

Hilde Ojibway asked who would pay for the installation of the future electric vehicle charging stations and noted that this could affect the affordability of the unit if residents are required to pay.

Flank Klymn asked if the existing "pond" would be altered. Tim Sidore conformed no changes to the "pond" were proposed.

Frank Klymn expressed concern with the lack of a traffic study and noted that traffic has increased over the years since the nursing home closed. He asked the Board to conduct a site visit.

Hilde Ojibway echoed the request for a traffic study.

Hilde Ojibway asked about the impact on the riparian buffer. Jo-Ann Ells noted the Board had the authority to review this.

Jesse Klymn thanked the applicant for the improvements to the property that they have made. He expressed concern with the proposed number of units and the lack of a traffic study/increased traffic. Steve Lagasse suggested that he discuss density with the Planning Commission.

Audry Devost expressed concern with the placement of a dumpster pad in the riparian buffer and suggested the Board consider having an attorney review the document required for the applicant to demonstrate compliance with the affordable housing requirements as suggested in the draft Findings of Fact. She added with she was concerned with the number of parking spaces and the possibility that vehicles could end up parking in the street.

Jen Horn questioned the appropriateness of several proposed plants given that they are considered toxic to humans and pets. Steve Lagasse acknowledged this concern.

Steve Lagasse suggested that concerns regarding the number of parking spaces be directed to the Planning Commission.

Mark Detzer expressed concern with the lack of a bus stop and laundry facilities noting that many residents may not have a vehicle and the closest bus stop and laundromat (which may close soon) is approximately a mile away.

Ann Kerrigan asked if the applicant could enlarge the garage. Jo-Ann Ells noted a permit would be required.

Ann Kerrigan expressed concern with additional traffic in the neighborhood.

Tom Franklin asked if the proposed storage in the basement would be for tenants. Tim Sidore noted that use of the basement space was being reviewed. He noted that the space would be used for storage, maintenance, and/or mechanicals.

Hilde Ojibway asked that the Board understand that concerns expressed by the neighbors are not NIMBY, and noted that they are excited for new housing, but want it done right.

Steve Lagasse moved to close the Public Hearing. Alice Maleski seconded, and the Public Hearing was closed.

Steve Lagasse moved to enter deliberative session. Alice Maleski seconded, and the motion passed.

When the Board reconvened, Steve Lagasse explained that the Public Hearing would be reopened so the Board could continue the Hearing in order for the applicant to submit a traffic study. He added that in order for the applicant to be heard at the Board's Hearing on September 4th, the traffic study would need to be submitted to the Zoning Administrator by 5PM, Thursday, August 8th. He added that if the application is approved, the final plan would need to include additional pavement markings and the document demonstrating compliance with 24 V.S.A. § 4303 (2) would be required to be reviewed by the Town's attorney at the applicant's expense.

Steve Lagasse moved to re-open the Public Hearing, Alice Maleski seconded, and the Hearing was re-opened.

Steve Lagasse moved to continue the application to September 4, 2024 in order for the applicant to submit a traffic study as discussed. Tom Franklin seconded, and the motion passed unanimously.

Administrative Matters

1. Public Comment

None

2. Minutes

Steve Lagasse moved to approve the minutes of June 26, 2024. Alice Maleski seconded, and the motion passed unanimously.

3. Administrative Permits

None

4. Discuss starting Hearings later

Tabled.

5. Availability for the next Public Hearing

All Board members anticipated being available the September 4, 2024 Hearing.

Adjournment

At 910 p.m., Alice Maleski moved to adjourn. Tom Franklin seconded, and the motion passed.

Respectively Submitted,

Alice Maleski, Clerk

Zoning Board of Adjustment Members/Terms:

Stephanie Gile	11-15-24
Alice Maleski	03-07-25
Steve Lagasse	03-07-25
Chris Lowe	03-21-25
Tom Franklin	04-04-25

ADDITIONAL MATERIALS FOR APPLICATION #07-24

BY 12 TREMONT STREET, LLC/TIM SIDORE

CAN BE FOUND IN THE MATERIALS POSTED FOR THE JULY 24TH ZONING BOARD HEARING

Memorandum

To: Hartford Zoning Board of Adjustment

From: Jo-Ann Ells

Date: August 14, 2024

Re: Application #07-24

The Public Hearing on application #07-24 by 12 Tremont Street, LLC and Tim Sidore for a multi-unit dwelling was opened on July 24th and continued to September 4, 2024 in order for the applicant to submit a traffic study.

Enclosed please find:

- Traffic study from Corey Mack dated August 8, 2024. (Staff is reviewing the study.)
- Email from Tim Sidore dated August 6, 2024 regarding the ability of Advance Transit to add a bus stop near the project.
- Email from Tim Sidore dated August 8, 2024 regarding the car share program.
- Updated Draft Findings of Fact.

DRAFT
FINDINGS OF FACT
CONCLUSIONS OF LAW
AND DECISION

HARTFORD ZONING BOARD OF ADJUSTMENT

Application #07-24 by 12 Tremont Street, LLC and Tim Sidore
for Conditional Use Approval
to convert an existing structure into a multi-unit dwelling
lot 09-0072-000, 1200 Christian Street
Hartford, in a proposed Planned Development

This decision pertains to application #07-24 by 12 Tremont Street, LLC (owner) and Tim Sidore (applicant) for Conditional Use Approval under section 260-16 and 260-25 of the Hartford Zoning Regulations to convert an existing structure into a multi-unit dwelling, lot 09-0072-000, 1200 Christian Street, Hartford, in a proposed Planned Development.

FINDINGS OF FACT

Based upon the information contained in the exhibits for this application (see attached list) and the evidence adduced at the Zoning Board of Adjustment meeting of July 24, 2024 and September 4, 2024 the Zoning Board of Adjustment makes the following Findings of Fact:

General Information

1. The owner of record of lot 09-0072-000 is 12 Tremont Street, LLC, who acquired the lot on 08-17-23. The deed is recorded in volume 614, page 623 of the Hartford Land Records.

2. The lot is developed with the former "Brookside Nursing Home" including a garage.

3. The lot is approximately 3.95 acres.

4. The lot is located at 1200 Christian Street.

5. The lot abuts Christian Street on one side and Brookside Drive on two sides.

6. The lot is class one (1), municipal water and wastewater.

This Application

7. The applicant proposes to convert the existing building to 38 dwelling units comprised of 22 studio units and 16 one-bedroom units. The existing garage is proposed to be used for maintenance associated with the property.

   According to the applicant, "the building itself will feature generous 8' wide, skylit hallways; near the main south entry a small community lounge space looks out onto the courtyard. The apartments, though small, will be well appointed with quality materials and fixtures. The walls, with their concrete block structure, minimize sound transmission and will keep the apartments quiet. Laundry facilities will be provided in some apartments and in publicly accessed laundry rooms. The high-ceiling basement will provide additional tenant storage and depending on demand, could be repurposed to provide exercise and game room space." (See exhibit #6)

8. The lot is in an R-3 zoning district. Multi-unit dwellings are not allowed in the underlying R-3 zoning district.

   The Zoning Regulations allow the Planning Commission to approve multi-unit dwelling as a Planned Development.

   In May of 2024, the applicant obtained preliminary approval of a Planned Development. The applicant has applied for final approval of the Planned Development. The application is pending Planning Commission review.

   Multi-unit dwellings are a Conditional Use in the applicant's proposed Master Plan for the Planned Development.

   This application (#07-24) is conditioned on the approval of the Planned Development by the Planning Commission.

9. The *Planning Commission* has the authority to grant a density bonus under 260-47 (C) of the Zoning for Planned Developments so long as the total number of such dwelling units does not exceed one hundred twenty-five (125) percent of the permitted number of units.

   22 dwelling units are possible based on the density calculation in the R-3 zoning district (172,062/8,000= 21.5)[1]

   28 dwelling units are possible with a density bonus under 260-47 C. (22 X 1.25 = 27.5)

[1] Hartford Zoning Regulations, § 260-18, Dwelling unit density**.** In every case, the Administrative Officer shall determine the maximum number of dwelling units permitted on any lot by dividing the lot size, provided by a survey (furnished by the owner and sealed by a Vermont registered land surveyor), by the minimum area per dwelling unit. standards for the district in which the lot is located. In all cases such determination shall be rounded to the nearest whole number.

In 2023, the Vermont Legislature enacted Act 47 “An act relating to housing opportunities made for everyone.”

24 V.SA. 4412 (13) states:

In any area served by municipal sewer and water infrastructure that allows residential development, bylaws shall permit any Affordable Housing Development, as defined in subdivision 4303(2) of this title, including mixed-use development, to exceed density limitations for residential developments by an additional 40 percent, which shall include exceeding maximum height limitations by one floor, provided that the structure complies with the Vermont Fire and Building Safety Code.

24 V.S.A. § 4303 (2) defines Affordable Housing Development as a housing development of which at least 20 percent of the units or a minimum of five units, whichever is greater, are affordable housing units. Affordable units shall be subject to covenants or restrictions that preserve their affordability for a minimum of 15 years or longer as provided in municipal bylaws.

24 V.S.A. 4303 (B) defines Affordable Housing Units as:

Rental housing for which the total annual cost of renting, including rent, utilities, and condominium association fees, does not exceed 30 percent of the gross annual income of a household at 80 percent of the highest of the following:
(i) the county median income, as defined by the U.S. Department of Housing and Urban Development;
(ii) the standard metropolitan statistical area median income if the municipality is located in such an area, as defined by the U.S. Department of Housing and Urban Development; or
(iii) the statewide median income, as defined by the U.S. Department of Housing and Urban Development.

The applicant seeks to develop Affordable Housing Development, meeting the requirements outlined above. Therefore, 39 units are possible (28 x 0.40=11.2)
(28+11=39)

According to the applicant, they “pledge to designate 40% of the units as ‘affordable/workforce housing,’ based on 24 V.S.A. 4412 (13) , 24 V.S.A. § 4303 (2), and 24 V.S.A. 4303 (B).” Given this, 15 of the units will be “Affordable” as defined above. (38 x 0.40=15.2)

10. As outlined in the Master Plan for the Planned Development, “Greater than 50% of the development will remain in open space, as defined by Hartford Zoning Regulations for public and or common usage.”

11. Project Access

Christian Street

The applicant proposes to continue use of the curb cuts on Christian Street for access.

The applicant proposes to restrict use of the southern curb cut on Christian Street to an entrance only and restrict use of the northern curb cut on Christian Street to an exit only.

Brookside Drive

The applicant proposes to restrict use of the existing curb cut on the west side of the lot from Brookside Drive to maintenance and emergency vehicles. A gate will be installed to prevent access from this curb cut to the remainer of the lot.

The applicant will coordinate access to the gate with the Hartford Fire Department.

The applicant understands that the curb cuts/driveway entrances need to be improved to meet the Hartford Transportation Ordinance.

(See exhibit #2)

12. The applicant reached out to Advance Transit regarding adding a bus stop near the project. (see exhibit #8)

13. Section 260-25 B of the Zoning Regulations, Protection of Surface waters states:

> A riparian buffer shall be maintained for a minimum of 100 feet from the top of the bank of the Connecticut, Ottauquechee and White Rivers, or for a minimum of 30 feet from the edge of a stream or any other surface water identified on the most recent edition of the Hartford G.I.S. Natural Resources Map. The riparian buffer also includes the area between the river and the top of the bank. No development, excavation, filling, clearing or grading shall occur within the buffer without conditional use approval from the Zoning Board of Adjustment except as specified in Subsections D and E.

There is a stream on the lot is identified on the most recent edition of the Hartford G.I.S. Natural Resources Map.

The riparian buffer will be managed in accordance with sections 260-25 D and 260-25 E of the Zoning Regulations.

The applicant proposes to install a dumpster pad and stormwater management in the

riparian buffer.

According to the applicant, "the dumpster pad encroaches by approximately 280 sf +/-, all other disturbed areas within the riparian buffer are part of existing parking areas to be maintained as parking and minor disturbances for stormwater management, a VT ANR wetland permit will be required for this and other work in the wetland buffer.

The dumpster pad will be made of concrete and is sloped so that the run-off runs away from the wetlands to a stabilized outfall.

The location of the dumpster is the best possible location given the site constraints and proximity to existing parking areas. Other locations on the site would constrain emergency vehicle access and reduce parking. Disturbed areas will be replanted with dense native vegetation, steep slopes will be stabilized with riprap and or biodegradable erosion control netting and restored with native vegetation. The erosion prevention and sediment control plan will be followed during construction in accordance with the VTDEC EPSC Handbook."

14. There are wetlands on the property. The wetlands and a 50' wetland buffer as required the State are shown on the plans.

According to the applicant, they "are in discussion with the Department of Environmental Services and will be applying for a wetlands permit if the project is approved. We agree in that DES will likely want minimal management of the forest here because of the nature of wetlands on this property. We have included riparian native VT species to add around the perimeter of the developed portion of the landscape as a measure to go back toward a natural environment within the wetland buffer areas. An additional column on the LA plan set was added to the plant list to indicate the riparian varieties."

15. According to the applicant, site amenities include "the natural beauty of the site with its brook, a pond, generous lawn and thick woods, as well as a small courtyard with a gazebo and outdoor cooking facilities. Existing trees and shrubs will be selectively pruned; a wide variety of new trees and shrubs and 3,400 SF of wildflowers will be planted. We would like to add a small, fenced-in area at the south end of the property, near to the culvert, creating a dog friendly park. The dog park will have a pea stone surface and a 6" gravel base to filter and contain dog waste." (See exhibit #2, landscape detail on L3.2)

16. The applicant submitted a Traffic Impact Study. (See exhibit #7)

17. The Zoning Regulations require two parking spaces per unit, which results in a requirement of 76 parking spaces. (38 x 2 = 76)

The applicant is requesting that the *Planning Commission* approve a permanent reduction in the required parking spaces for the project from 76 to 46 including 3 accessible parking spaces.

Electrical conduit for future electric vehicle charging stations will be installed for forty parking spaces.

Section 260-24(9)(e) allows for modifications in the number of required parking spaces as follows to be approved by the *Planning Commission* as follows:

If, in site plan approval proceedings or at any time in the future after a duly warned hearing, the Planning Commission determines that unique usage or special conditions exist which warrant increasing or reducing the need for parking, it may require the provision of off-street parking spaces up to 50% more or less than the requirements in Subsection C(9)(a) above. In the Central Business District, the parking may be reduced beyond 50%. When approving an increase or reduction in any zoning district, the Planning Commission shall consider the following:

> [a] Is the site located on or within 1,000 feet of a transit route?
> [b] Are there shared parking facilities with abutting businesses which are sufficient to meet parking demand?
> [c] For mixed-use projects, do the proposed uses have staggered business hours with minimal overlap?
> [d] Does the type of business proposed generate substantial pedestrian traffic and are adequate pedestrian facilities present?
> [e] Does an employer-sponsored "transit pass" program, or vanpool, carpool or rideshare program exist, or can one be established (as a condition of the approval) to substantially reduce the need for on-site parking?
> [f] Is safe and adequate on-street parking available?
> [g] Is parking in municipal parking lots available?
> [h] Does the Institute of Traffic Engineers, American Planning Association or other professional source show parking demand requirements for the proposed use(s) that are different than the standards specified in these regulations?
> [i] Is there other information that justifies a change in the parking requirements?

According to the applicant, the reduction request is based on the following:

- The applicant will provide an electric vehicle for shared use by tenants.

- This project will include more than one parking space per unit. Lease agreements will limit the number of parking spaces to one space per unit, and one vehicle per unit will be allowed to park onsite.

- Each dwelling units will have an assigned parking space.

- 24 V.S.A. ss. 4414 (4) (effective December 2024), states

  Parking and loading facilities. A municipality may adopt provisions setting forth standards for permitted and required facilities for off-street parking and loading, which may vary by district and by uses within each district. In any district that is served by municipal sewer and water infrastructure that allows residential uses, a municipality shall not require more than one parking space per dwelling unit. However, a municipality may require 1.5 parking spaces for duplexes and multiunit dwellings in areas not served by sewer and water and in areas that are located more than one-quarter mile away from public parking rounded up to the nearest whole number when calculating the total number of spaces. These bylaws may also include provisions covering the location, size, design, access, landscaping, and screening of those facilities. In determining the number of parking spaces for nonresidential uses and size of parking spaces required under these regulations, the appropriate municipal panel may take into account the existence or availability of employer "transit pass" and rideshare programs, public transit routes, and public parking spaces in the vicinity of the development.

18. According to the applicant, "We are providing 3 accessible parking spaces (2 by the accessible entrance on the north side and 1 for the units at the basement level) directly adjacent to the entries they serve. A nearly continuous walk is provided around the north, west and east sides of the building, continuing into the courtyard/gazebo/BBQ/deck area. In addition, a 5' wide accessible pathway leads to the southernmost parking. A stonedust path leads to and around the dog park, the open and wooded areas to its south and the southeasternmost tip of the parking lot. As shown on the photometric plan, all seven building entries are well lit, including the primary entry on the south, and the courtyard on the east. Adequate but neighborhood sensitive lighting has been provided for the parking and drive aisles. There is parking for 6 bikes located adjacent to the north entry."

19. The applicant proposes to delineate a loading/unloading area for delivery vehicles adjacent to the primary entrance to the building.

20. The applicant proposes to install bike racks on the north side of the building to accommodate six bikes.

21. The applicant provided a landscape plan.

    According to the applicant, "the project plans include a 2-year guarantee on all proposed landscape plantings. In addition, all varieties specified are VT native and

hardy varieties that will thrive on their own once established. The owner has an in-house maintenance team that will provide regular landscape maintenance including mowing lawn areas, pruning, mulching beds annually, etc."

(See exhibit #2)

22. The applicant has provided a photometric plan.

According to the applicant, "all fixtures will be dark- sky compatible."

The applicant understands that lighting must not create excessive off-site or sky glow. If the Zoning Administrative Officer determines that lighting does not meet this condition, the applicant will be required to comply.

(See exhibit #2)

23. The applicant submitted turning movement plans. (See exhibit #2)

24. The applicant proposes to install a gate to restrict access from Brookside Drive to maintenance personnel and emergency vehicles.

25. According to the applicant, "a portion of stormwater runoff will be infiltrated into the ground and another portion will be treated in the grass swale with check dams along the south edge of the parking area. Along Brookside Drive in front of the building overall impervious surface has been reduced.

Overall site impervious is expected to be increased by approximately 2,600 sf. Stormwater attenuation will be provided with underground stormwater detention chambers and infiltration. A curb will be provided along the south edge of pavement at the upper driveway off Christian St. to collect and treat runoff in the underground detention system. In addition, a portion of rooftop surfaces will also be collected in the same underground chamber system. Post development stormwater runoff rates are expected to be reduced upon completion of the stormwater management plan."

26. Section 260-27 C of the Hartford Zoning Regulations states:

C. Grading and drainage. The following provisions shall apply to any changes which affect drainage of water to or from a property:

(1) Any changes in grading shall be made so that runoff is directed to established drainage courses and will not cause ponding or flooding of other properties, or exceed the capacity of downstream drainage facilities.
(2) When possible, drainage systems shall be designed so that water runoff existing prior to site development shall not be increased after development. When possible, drainage systems shall be designed so that water runoff existing prior to site development shall not be increased after development.

(3) All changes in grade shall be controlled so as not to cause a nuisance or damage to other properties or erosion of topsoil.

According to the applicant, "Pursuant to section 260-27, part C of the Town of Hartford Zoning Regulations, the site grading has been designed so that runoff is directed to established drainage swales and curbing and will not cause ponding or flooding of other properties or exceed the capacity of downstream drainage facilities. The drainage system will be designed so that water runoff existing prior to site development will not be increased after development. All changes in grade will be controlled so as not to cause a nuisance or damage to other properties or erosion of topsoil."

27. The applicant proposes to connect to municipal water and sewer in accordance with Hartford's Water and Wastewater Rules and Regulations.

28. Snow will be stored on site and will be removed as needed. Snow will not be stored in such a manner as to create a hazard.

29. The applicant proposes to install a fenced dumpster area.

30. The applicant will schedule a preconstruction meeting with the DPW to review project schedule, design, and construction issues at least two weeks before actual site work commences.

31. The applicant understands that a permit from the DPW must be obtained before any work is done within the Town ROW.

32. During construction of the proposed project erosion and sediment control measures as specified in the most current edition of the *Low-Risk Site Handbook for Erosion Prevention and Sediment Control* published by the Vermont Department of Environmental Conservation will be followed.

33. According to the applicant, the building will meet applicable Vermont Energy Code Standards. An Energy Code Certificate will be recorded in Hartford's Land Records before a Certificate of Occupancy will be issued.

34. Stockpiling of materials related to the construction of the project will be located twice the distance of the height of the stockpiled materials from any public or private right-of-way or property boundary.

35. Construction trailers may be used on the condition that they are placed a minimum of ten feet from any property line, are placed only when there is an effective zoning permit for the project, and are removed before a Certificate of Occupancy is requested. No construction trailer may be placed in such a way that it obstructs sight distance along the traveled way, at any intersection or driveway. Any construction trailer found to obstruct

sight distance will be required to be relocated immediately.

36. The applicant understands that no structure, signage, parking spaces or plantings may be placed in such a way that obstructs sight distance along the traveled way, at any intersection or driveway. Any signs, parking spaces or plantings found to obstruct sight distance will be required to be relocated.

37. Construction of the project will comply with Section 260-31 B of the Hartford Zoning Regulations, which states:

> *Earth moving and hauling, rock drilling or crushing, jack hammer and similar excessively loud equipment shall not be operated on Sundays or between the hours of 5:30 p.m. and 7:00 a.m. except in emergency situations.*

38. The applicant understands that they retain the obligation to identify, apply for, and obtain any relevant local and state permits for this project.

39. The applicant understands that all activities authorized by the issuance of the zoning permit shall be started within six (6) months and completed within two (2) years of its date of issue, or the zoning permit shall become null and void and reapplication to complete any activities shall be required. Any activities not completed within the above permit period shall be subject to any ordinance in effect at the time of reapplication. One six (6) month extension to both time periods may be granted by the Planning Commission.

40. The applicant understands that they must obtain a Certificate of Occupancy from the Zoning Administrative Officer upon completion of the project and before the site may be occupied. The applicant understands that a Certificate of Occupancy will not be issued if the project is not in compliance with these Findings, Plans and any conditions placed on the decision.

CONCLUSIONS OF LAW

The Hartford Zoning Board of Adjustment, based upon the forgoing Findings of Fact, concludes that the proposed project will not adversely affect:

260-16A (1) Community facilities.

(a) The capacity of planned or existing **community facilities**, including, but not limited to:

[1] Emergency services.
[2] Municipal water or sewer system.
[3] Recreational facilities.
[4] The school system.
[5] Solid waste disposal facilities.

260-16A (2) The **character** of the area, as defined by the objectives of the zoning district within which the project is located and specifically stated polices and standards of the municipal plan, including, but not limited to:

(a) Scenic or natural beauty, historic sites, or rare and irreplaceable natural areas.
(b) Compatibility with scale and design of structures existing in that area.

260-16A (3) The capacity of **roads and highways** in the vicinity to safely accommodate expected traffic flows. In making this determination, the Board may require submission of a traffic impact study made by a professional traffic engineer.

260-16A (4) Any Town of Hartford **bylaws** in effect.

260-16A (5) Utilization of **renewable energy resources**.

DECISION

The Hartford Zoning Board of Adjustment, based upon the forgoing Findings of Fact and Conclusions of Law, hereby approves application #07-24 by 12 Tremont Street, LLC (owner) and Tim Sidore (applicant) for Conditional Use Approval under section 260-16 and 260-25 of the Hartford Zoning Regulations to convert an existing structure into a multi-unit dwelling, lot 09-0072-000, 1200 Christian Street, Hartford, in a proposed Planned Development **on the condition that:**

1. **Before a zoning permit is issued:**

    - **The applicant obtains final approval of the Planned Development from the Planning Commission and obtains a Zoning Permit to finalize the approval.**

    - **The applicant submits covenants/restrictions outlining compliance with 24 V.S.A. § 4303 (2) for review and approval by the Chair. The information must include a process for the applicant to demonstrate compliance on an annual basis, and include any guidance on compliance provided by the State. Once approved, the applicant must record the document in Hartford's Land Records and provide a copy to the Zoning Administrator. The document must be reviewed and approved by the Town's Attorney and the applicant must reimburse the Town for the expense of the legal review.**

    - **The applicant submits information for review and approval by the Chair regarding how they are addressing the recommendations of the Traffic Impact Study.**

    - **The plans are amended for review and approval by the Chair as follows:**

        - **To include additional plantings between the parking spaces adjacent to Brookside Drive and the building.**

- **To include a defined access route from the parking spaces adjacent to Brookside Drive and the building's entrance.**

- **To clarify the location of the "mulch bed area" located on the western side of the building along Brookside Drive.**

- **To include additional pavements markings to clarify the circulation pattern.**

- **To include a cross hatched area to the north of the eastern three parking spaces along Brookside Drive.**

- **To include signage for visitor parking.**

- **To clarify that all underground tank will be removed on the demo plan.**

- **To identify the "concrete" rectangle on the survey and clarify on the demo plan if it is to be retained/removed.**

- **To include the location of the charging station for the shared electric vehicle.**

- **The applicant submits a copy of their water and wastewater Allocation from the DPW.**

- **A final set of plans is submitted to the Zoning Administrator accompanied by verification from the applicant's Engineer, Landscape Architect, and Architect confirming that changes to the plans approved were limited to those required by the Zoning Board of Adjustment.**

2. **Before a Certificate of Occupancy is issued, the applicant submits to the Zoning Administrator:**

    - **Written verification from the Fire Department that the applicant has coordinated access to the gate with the Department.**

    - **Written verification from a Professional Engineer licensed by the State of Vermont certifying that the project was constructed in compliance with the approved civil plans and Findings of Fact.**

    - **Written verification from their Landscape Architect certifying that the plantings and amenities were installed in compliance with the approved plans and Findings of Fact.**

    - **Written verification from their Architect certifying that the building was constructed in compliance with the approved architectural plans and Findings of Fact.**

- **Written documentation that the water and sewer have been approved by the DPW.**

- **Written verification from the DPW confirming that they have received acceptable record drawings.**

- **An electronic copy of the record drawings.**

- **A copy of the Energy Code Certificate as recorded in Hartford's Land Records.**

This decision is also subject to the condition that no modification or expansion shall be made to the project as described and limited in the above Findings of Fact and Conclusions of Law without the written approval of the Hartford Zoning Board of Adjustment and/or the Hartford Planning Commission. This decision may be revoked, and a new application or permit required if conditions and findings are violated or modified without written approval.

The applicant is responsible for insuring compliance with all applicable State and Federal regulations pertaining to this application.

Those in favor:

Those in opposition:

Those not participating:

Dated at Hartford, Vermont this ____ day of September 2024.

HARTFORD ZONING BOARD OF ADJUSTMENT

By:_____
Chairperson/Vice-Chairperson

Appeal Rights: An interested person who has participated in the proceeding related to this decision has the right to appeal this decision to the Vermont Environmental Court, pursuant to 24 V.S.A. s. 4471 and V.R.E.C.P.5, in writing, within 30 days of the date of this decision. If you fail to appeal this decision, your right to challenge this decision at some future time may be lost because you waited too long. You will be bound by this decision, pursuant to 24 V.S.A. s. 4472 (d) (exclusivity of remedy; finality).

EXHIBIT LIST

1. Application #13-23

2. Set of Plans including:

- Survey prepared by DiBernardo Associated, LLC

- Civil Plans prepared by Engineering Ventures including:

    - C1.0 Demolition Plan
    - C1.1 Erosion Prevention and Sediment Control plan
    - C1.2 Garbage Truck Turning Plan
    - C1.3 Fire Truck Turning Plan
    - C1.4 Fire Truck Turning Plan (2)
    - C2.0 Site Plan Overall
    - C2.1 Site grading and Drainage Plan
    - C3.0 Site Details
    - C3.1 Drainage Details
    - C3.2 Erosion Prevention and Sediment Control Details (1)
    - C3.3 Erosion Prevention and Sediment Control Details (2)
    - PH1 Site Photometrics Plan

- Landscape Plans prepared by Park Architecture including:

    - L1.0 Existing Conditions & Site Preparation Plan
    - L1.1 Existing Conditions
    - L2.0 Site Landscape Plan
    - L2.0 Site Landscape Plan (color version)
    - L3.0 Landscape Details
    - L3.1 Landscape Details
    - L3.2 Landscape Details

- Architectural Plans prepared by Studio Nexus including:

    - SD1 Existing Floor Plan
    - SD2 Proposed Floor Plans
    - SD3 Renderings

3. Letter from Jesse Klymn, Anika Gilbert, Frank Klymn, Jessica and Jay McDonough, Carey O'Neil, John O'Neil, Emily and Dillon Owens, Benjamin Davis, Susan Goodwin, Deborah Rodgers, Jeff Arnold, Hilde Ojibway, Michael and Dorothea Barton, Jenny Horn, Jeni and Jeff Frechette, Mark and Kathy Detzer, Marie Wesson, Ann Kerigan, Susan Loskutoff, and John and Kathy Wetzel dated July 8, 2024

4. Letter from Michael and LeeAnne Heeremans dated July 8, 2024

5. Memo from Jo-Ann Ells dated July 2, 2024 with applicant's response of July 8, 2024

6. Project Narrative dated June 24, 2024, updated July 7, 2024

7. Traffic Impact Study prepared by Corey Mack dated August 8, 2024

8. Email from Tim Sidore Dated August 6, 2024

9. Email from Tim Sidore dated August 8, 2024

WALL CONSULTANT GROUP

Date: 8 August 2024

To: Tim Sidore, 12 Tremont Street, LLC

From: Corey Mack, PE, PTOE, Consultant Transportation Engineer

Subject: Brookside Apartments – Transportation Impact Study

WCG has reviewed the proposed Brookside Apartments development in Hartford, Vermont. WCG has prepared the following assessment of the likely transportation impacts in accordance with the Town of Hartford Chapter 260 Zoning Regulations (ZR) adopted 4 October 2022, Transportation Impact Study Guidelines from the Vermont Agency of Transportation (VTrans), and standard engineering practices outlined by the Institute of Transportation Engineers (ITE) and other sources.

This TIS includes the following analysis:

1. Proposed Project Parameters, including the project description and trip generation estimates.
2. Existing Roadway Context, describing the existing road network and crash history.
3. Traffic Projections, including traffic adjustments, trip distribution, other development volumes, and documentation of estimated operating conditions.
4. Capacity Analyses, including definition of the capacity and performance measures and a summary of the capacity analysis results.
5. Bicycle, Pedestrian, and Transit Access to the site.
6. Recommendations and Mitigation, including the estimated transportation impact fee.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

- The Brookside Apartments project proposes to redevelop the former 68-bed nursing home site into a 38-unit multifamily residence.
- The proposed project is expected to generate 15 vehicle trip ends in the AM peak hour and 19 vehicle trip ends in the PM peak hour.
- Accounting for the former nursing home land use, the proposed project results in a net new trip generation of 5 vehicle trip ends in the AM peak hour and 9 vehicle trip ends in the PM peak hour.
- VTrans guidelines specify that a traffic study should be considered if the proposed development will generate 75 or more new peak hour trips.
- There is no pattern of crashes at or near the site that indicates a safety concern.

- Transportation capacity analyses of the build scenario in the 2031 planning year indicate that the proposed project will operate acceptably.
- Turn lanes from Christian Street into the project driveways are not warranted or recommended.
- There are two Act 145 fee-generating projects within 3 road miles of the proposed project, however the traffic generated by the proposed project is expected to distribute throughout the transportation network before encountering those projects. Thus, this project is not anticipated to incur a transportation impact fee.
- The following recommendations should be implemented to ensure safe and efficient transportation access to the site:
    - Remove the high-growing shrubs and maintain landscaping to improve the sight line to the south from the northern driveway site access at Christian Street.
    - Set a new stop sign and post, placed plumb and meeting the appropriate stop sign placement standards on the eastbound approach of Brookside Drive at the Christian Street & Brookside Drive / Chandler Road intersection.
    - Shift the parallel parking and / or trim the vegetation on the inside corner of Brookside Drive to provide 115 feet of stopping sight distance on approach to the on-street parallel parking spaces.
- The site design team should consider the following suggestions to improve transportation access to the site:
    - Avoid low growing shrubs, plantings, signs, or other features that may impact sight lines at the driveway and Brookside Drive intersections onto Christian Street.
    - Consider including interior secure bicycle storage space for resident use.
    - The striped pavement adjacent to the parallel parking spaces may need vertical elements to ensure proper parking alignment.

Based on the analysis conducted for this report, the proposed project is not expected to impact the condition or capacity of the affected roads and associated infrastructure. The proposed project will not cause or exacerbate any unreasonable congestion or unsafe conditions on the local roadway network and will not unnecessarily or unreasonably endanger the public's investment in any local roads, highways, or related infrastructure.

PROJECT PARAMETERS

The Brookside Apartments project is proposing to redevelop the former 68-bed Brookside Nursing Home into a 38-unit multifamily residential building. The former Brookside Nursing Home, located at 1200 Christian Drive, closed in November 2017. The proposed redevelopment of the property into 38 units of residential multifamily housing is within the footprint of the

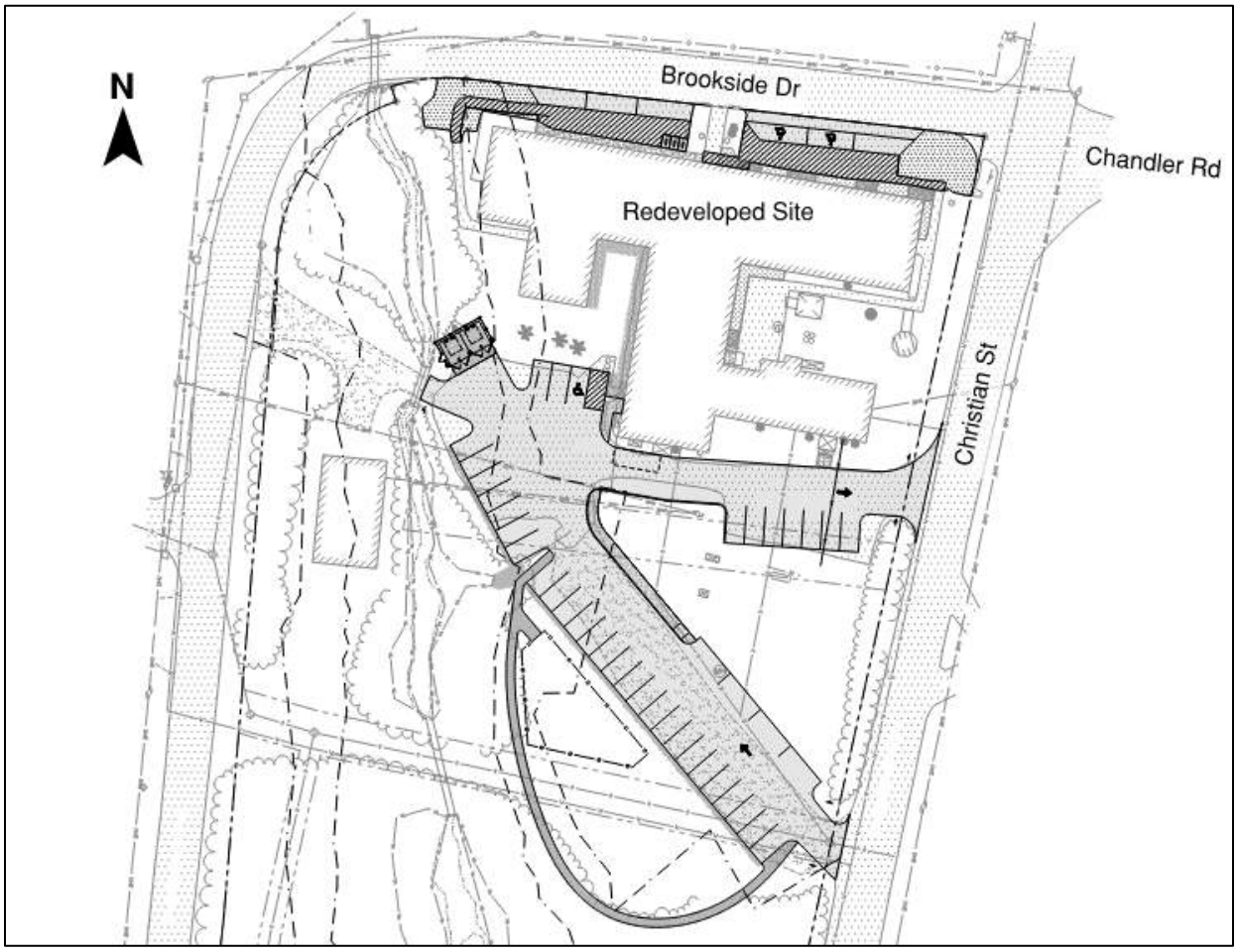
existing building. The proposed site includes 46 vehicle parking spaces, located primarily on the existing parking lot footprint to the south of the building.

The primary site parking lot contains 40 electric vehicle-ready parking spaces along the same general layout of the existing site off-street parking lot. The lot is accessed through a one-way loop with separated entering and exiting drives onto Christian Street.

The former site included approximately 24 head-in parking spaces along Brookside Drive on the northern property boundary. The current plan indicates these spaces will be redeveloped as six parallel parking vehicle spaces, and three U-style bicycle racks with a capacity for six bikes.

The existing site plan includes access through the site from Christian Street to Brookside Drive. The proposed site plan indicates this access is maintained in the proposed build condition.

FIGURE 1: PROPOSED SITE PLAN (ENGINEERING VENTURES DATED 7/8/24) WITH WCG NOTES



Estimated Trip Generation

Trip generation refers to the number of vehicle trips originating at or destined for a particular land use development. Data from the Institute of Transportation Engineers (ITE) can be applied

to estimate base vehicle trip generation associated with the existing and proposed land uses. Base vehicle trips are the total estimated vehicle trips prior to any reductions associated with internal capture, pass-by, or transportation demand management (TDM) practices. For this proposed project, adjustments to the base vehicle trip generation are not recommended.

The ITE Trip Generation Manual, 11th Edition, includes trip generation data for the former and proposed land use codes (LUC):

> **Former LUC 620: Nursing Home.** Description: *A nursing home is a facility whose primary function is to provide care for persons who are unable to care for themselves. Examples include rest homes, chronic care, and convalescent homes. Skilled nurses and nursing aides are present 24 hours a day at these sites. Residents often require treatment from a registered healthcare professional for ongoing medical issues. A nursing home resident is not capable of operating a vehicle. Traffic is entirely generated by employees, visitors, and deliveries.*
>
> **Proposed LUC 220: Multifamily Housing (Low-Rise).** Description: *Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels).*

The estimated base vehicle trip generation of the former site, the proposed site, and the net change in land use is detailed in Table 1.

TABLE 1: ESTIMATED TRIP GENERATION OF THE FORMER NURSING HOME SITE AND PROPOSED MULTIFAMILY RESIDENTIAL SITE

1200 Christian Street, Hartford				AM Peak Hour			PM Peak Hour			Weekday
Former Site: Nursing Home				Base			Base			Base
ITE LUC	Description	Size	Unit	Enter	Exit	Total	Enter	Exit	Total	Total
620	Nursing Home	68	Beds	7	3	10	3	7	10	208
Total Base Vehicle Trip Generation, Existing Site				7	3	10	3	7	10	208
Proposed Site: Multifmaily Residential										
ITE LUC	Description	Size	Unit	Enter	Exit	Total	Enter	Exit	Total	Total
220	Multifamily Housing (Low-Rise)	38	DU	4	11	15	12	7	19	256
Total Base Vehicle Trip Generation, Proposed Site				4	11	15	12	7	19	256
Net Change Base Veh. Trip Gen., Existing → Proposed:				-3	8	5	9	0	9	48

The proposed project is expected to generate 15 trip ends in the AM peak hour, and 19 trip ends in the PM peak hour. Compared to the former nursing home land use, the net change in trip generation is less than 10 trip ends in both AM and PM peak hours. VTrans guidelines specify that a traffic study should be considered if the proposed development will generate 75 or more new peak hour trips.[1] The proposed project is expected to generate well below the threshold meriting further transportation analysis.

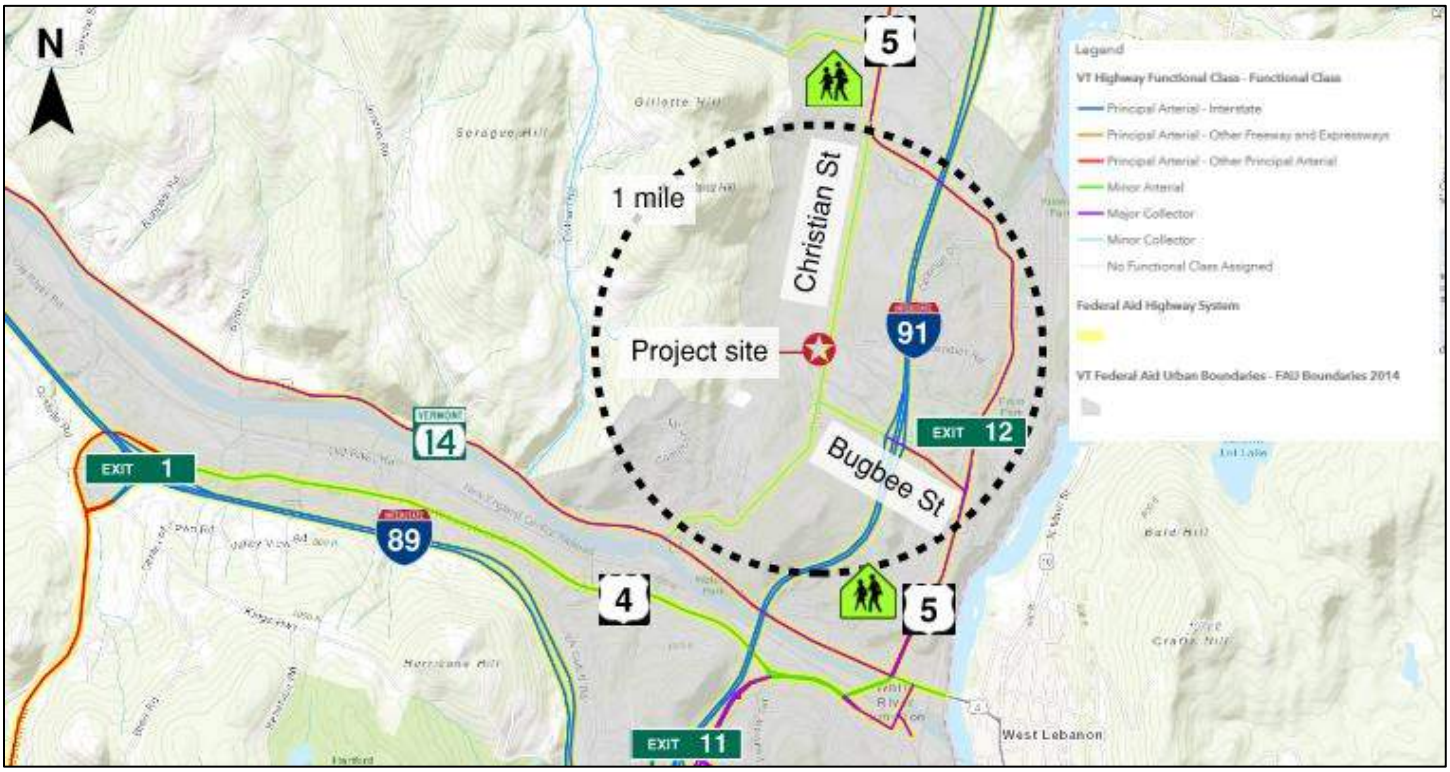
[1] Vermont Agency of Transportation, Policy and Planning Division, Development Review and Permitting Services, *Traffic Impact Study Guidelines* (April 2019).

EXISTING ROADWAY CONTEXT

The proposed project is located on a roughly 4-acre parcel in Hartford Vermont, on the southwest corner of Christian Street & Brookside Drive / Chandler Road. The site is bounded by Christian Street to the east, Brookside Drive to the north and west, and a private parcel to the south. The primary 40-space parking lot may be accessed by either Christian Street or Brookside Drive.

Figure 2 illustrates the location of the proposed site relative to the local roadway network.

FIGURE 2: PUBLIC ROAD NETWORK RELATIVE TO THE PROPOSED PROJECT SITE



The project is located within the R-3 Residential Three zoning district, with adjacent land uses primarily developed as low density residential or agricultural land. The purpose of the R-3 district is defined:

> *To encourage predominantly residential development at lower densities in established neighborhoods more distant from village centers.*

Existing Transportation Network

Access to the site is from Christian Street, either into the primary 40-space off-street parking lot or into the parallel parking spaces along Brookside Drive. Christian Street is a Class 2 Town Highway (TH-9) in the federal aid highway system, classified as an urban minor collector (MNC 0614). The existing primary parking lot entrance is near mile marker 1.192, the existing primary parking lot exit is near mile marker 1.227, and the Brookside Drive / Chandler Road intersection

is near mile marker 1.260. Christian Street is approximately 24-feet wide, with one travel lane and edge line markings in each direction. The roadway is uncurbed and there are no dedicated bicycle or pedestrian facilities. The posted speed limit of Christian Street is 35 MPH.

Proximate to the project area, Christian Street is relatively straight. South of the Brookside Drive / Chandler Road intersection, Christian Street descends a hill in the southbound direction with an approximate slope of 8%. North of the Chandler Road / Brookside Drive intersection, Christian Street is relatively level. There is a crest vertical curve roughly through the existing northern driveway access into the site from Christian Street.

Brookside Drive is a Class 3 town highway (TH-141) with two intersections with Christian Street: the southern terminus of Brookside Drive at Christian Street is opposite Bugbee Road, and the northern terminus of Brookside Drive at Christian Street is opposite Chandler Road, adjacent to the proposed project. Near both northern and southern intersections with Christian Street, Brookside Drive enters a nearly 90-degree turn with a roughly 75-foot radius to parallel Christian Street. The design speed of this horizontal curve is estimated to be 20 MPH. The posted speed limit of Brookside Drive is 25 MPH.

There is no automatic traffic recorder (ATR) site along Christian Street or Brookside Drive near the project area. ATR site Y320 along Christian Street south of Bugbee Road documented an 85th percentile speed of 42 MPH and estimated a 2023 average annual daily traffic (AADT) of 2,063 vehicles per day (vpd) based on seven days of counts from 2021.

Transit Service

There is no fixed route transit service along Christian Street. The nearest fixed route is the Advance Transit Green Route with service between White River Junction and Hanover along US-5. The nearest stops to the project site are at US-5 & Bugbee Road (approximately 1.0 miles / 23-minute walk), US-5 & Ravenswood Terrace (approximately 0.9 miles / 22-minute walk), or US-5 & Billings Farm Road / Dothan Brook School (approximately 1.1 miles / 25-minute walk). The Green Route offers 30-minute headways from 6 AM to 7 PM and reduced service on the weekend.

Future Road Network

The VA Cutoff Road bridge is currently closed and being reconstructed on a new alignment opposite Christian Street on VT-14. The VT-14 & Christian Street / VA Cutoff Road intersection will be all-way stop controlled. The bridge realignment is not expected to alter previous traffic patterns prior to the reconstruction of the bridge. Construction began in April 2023 and is expected to be completed in Winter 2024.

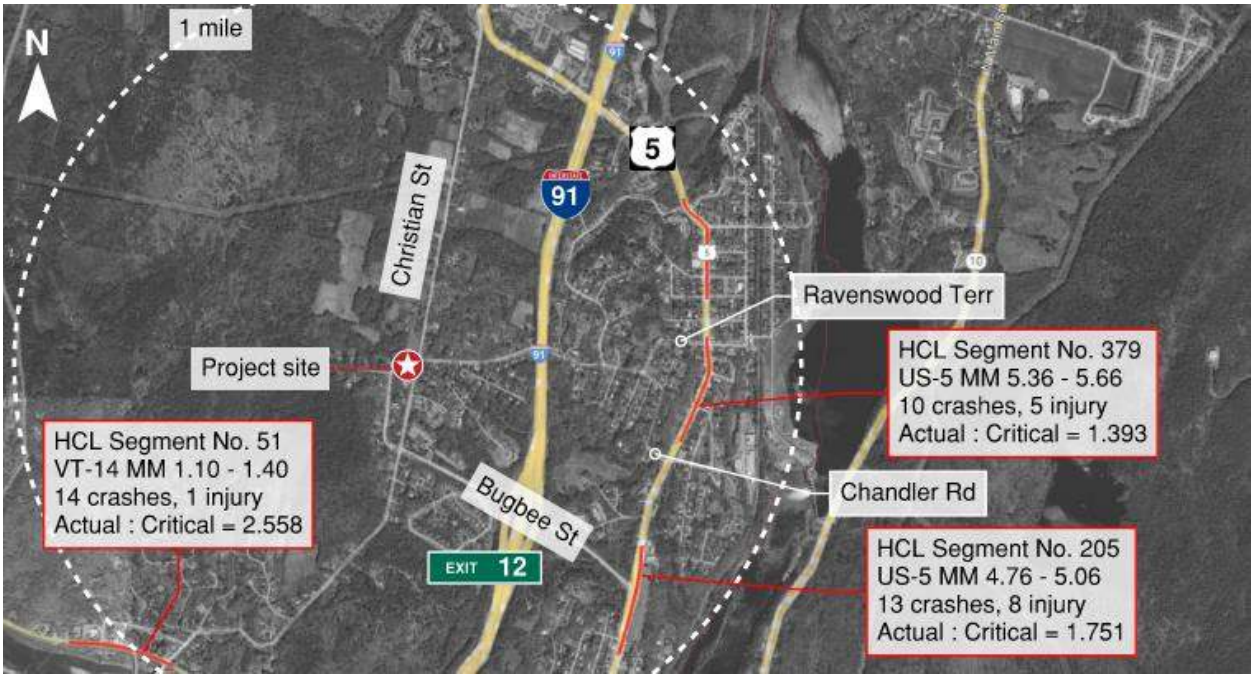
There are no other identified on-going or planned roadway projects that are expected to change the future capacity of the roadway network proximate to the project area.

Crash Review

WCG reviewed the most recent high crash location (HCL) report prepared by VTrans using 2012-2016 crash data. According to the HCL report, there are no HCL segments or intersections along Christian Street. Figure 3 illustrates the nearest HCLs to the study area:

- HCL segment number 51 along VT-14 through Christian Street,
- HCL segment number 205 along US-5 through Bugbee Road, and
- HCL segment number 379 along US-5 through Ravenswood Terrace.

FIGURE 3: NEAREST STATE DESIGNATED HIGH CRASH LOCATIONS RELATIVE TO THE PROJECT SITE



WCG reviewed reported crashes from 1 January 2019 through 31 December 2023 along Christian Street, Brookside Drive, and Chandler Road proximate to the project area. In this five-year period, there were no reported crashes along Brookside Drive or Chandler Road. There was one rear end crash along Christian Street near the Brookside Drive / Chandler Road intersection involving a heavy vehicle.

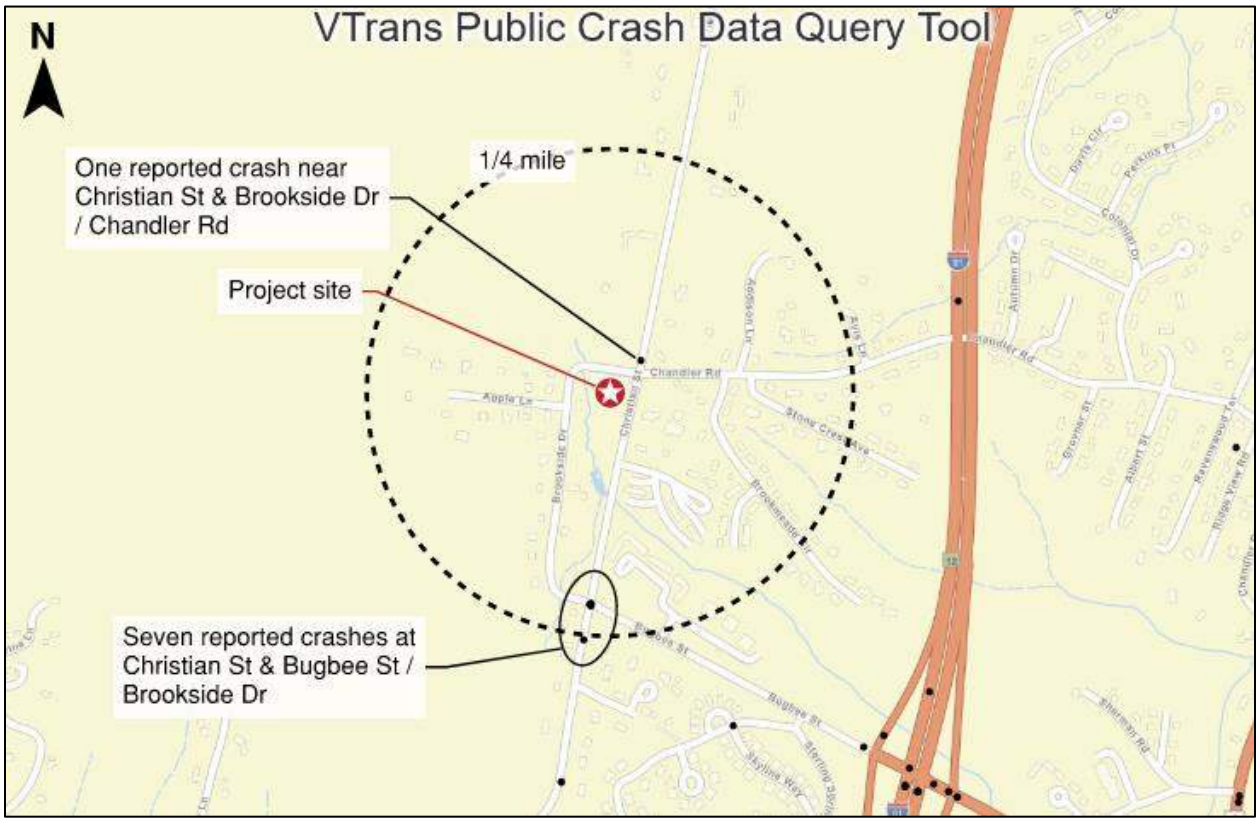
Other nearby reported crashes in this period included a cluster of seven crashes at the Christian Street & Bugbee Street intersection approximately 1/4-mile south of the project site:

- 2 crashes resulted in injury
- Crash types included:
  - 4 broadside crashes
  - 1 rear end crashes

- 1 single vehicle crash
- 1 “other” or unidentified crash type

The Christian Street & Bugbee Street / Brookside Drive intersection is outside of the influence area of the proposed project. The reported crashes do not indicate an unusual crash pattern or rate. The Manual of Uniform Traffic Control Devices[2] section 2B.13 cites five or more crashes per year, or six crashes in 3 years, which may be correctable with a stop sign as a warrant for implementation of all-way stop control. A formal warrant evaluation has not been prepared; however, the Christian Street & Bugbee Street intersection would likely not meet warrant 2B.13.

FIGURE 4: REPORTED CRASHES FROM 1/1/19 THROUGH 12/31/23



WCG reviewed reported crashes near the Christian Street & Brookside Drive / Chandler Road intersection from 1 January 2010 through 31 December 2017 to consider if the crash rate was higher during operation of the Brookside Nursing Home. In that period, there were three crashes near the project site:

[2] U.S. Department of Transportation Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways, 11th Edition*, December 2023 (Washington, D.C.: FHWA, 2023).

- One crash was incorrectly identified at this location, with details in the crash report referring to Bugbee Road,
- One crash was a single vehicle crash that occurred during a snow event, and
- One crash was a broadside crash involving an elderly resident of the nursing home.

There were no reported crashes related to the on-street parking along Brookside Drive.

Sight Distance

As defined in the 2018 publication *A Policy on Geometric Design of Highways and Streets*, from the American Association of State Highway and Transportation Officials (AASHTO), sight distance is the "the length of roadway ahead that is visible to the driver."[3] Sight distances of sufficient length are necessary at all points along a roadway to ensure vehicles can safely stop or avoid colliding with potential obstructions or other vehicles on the roadway.

Standard practice in assessing intersection safety and operations involves measuring two separate sight distances – **stopping sight distance** and **intersection sight distance**.

Stopping sight distance (SSD) is the visible distance along a roadway between an advancing motorist and a potential obstacle in the roadway. It is measured from a point representing the approaching driver's eye and a point representing an obstacle in the roadway.[4] Stopping sight distances of adequate length are needed along all roadways, both at and away from intersections, so that drivers travelling at design speeds can react to potential obstacles and safely brake to avoid collisions. Design minimum stopping sight distances are calculated based on factors such as design speed, response times, and grades as reported in the *2018 Policy on Geometric Design of Highways and Streets*.[5]

Intersection sight distance (ISD) is the distance available along the major road travelled way corresponding with the maximum visibility between an advancing motorist on the major road and an entering motorist on an intersecting minor road. It is measured between a point representing the advancing driver's eye above the major road and a point representing the entering driver's eye above the intersecting road.[6]

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[3] American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, Seventh Edition (Washington D.C.: American Association of State Highway and Transportation Officials, 2018). Page 3-2.

[4] As noted in the 2018 Policy on Geometric Design of Highways and Streets (page 3-15), the height of the driver's eye is assumed to be 3.5' above the road surface and the height of a potential obstacle is 2.0' above the road surface.

[5] American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, Seventh Edition (Washington D.C.: American Association of State Highway and Transportation Officials, 2018). Page 3-5 to 3-6.

[6] As noted in the 2018 Policy on Geometric Design of Highways and Streets (page 3-16), the height of the driver's eye of the approaching vehicle is assumed to be 3.5' above the road surface of the major road and the height of the driver's eye of the entering vehicle is assumed to 3.5' above the minor road surface.

The *2018 Policy on Geometric Design of Highways and Streets* states that the available intersection sight distance should be at least equal to the required stopping sight distance along the major road.

> *"Sight distance is also provided at intersections to allow the drivers of stopped vehicles a sufficient view of the intersecting highway to decide when to enter the intersecting highway or to cross it. If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions."*

However, when possible, it is desirable to have intersection sight distances that exceed the design minimum stopping sight distances to offer improved operations, such that major road traffic need not decelerate to accommodate entering traffic.

> *"However, in some cases a major-road vehicle may need to stop or slow to accommodate the maneuver by a minor road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road."*

Based on the posted speed limit of 35 MPH, the design minimum stopping sight distance is 250 feet in the southbound (level) approach, and 225 feet in the northbound (uphill) approach. Intersection sight distance requirements are unaffected by roadway grade. The target minimum intersection sight distance for turning traffic is 335 feet to the left and 390 feet to the right.

Sight distances at the existing site driveway were measured. The intersection sight distance views to the left and right at the site driveway are shown in the following figures, and the measured intersection and stopping sight distances are presented in the accompanying tables.

The decision point offset from the travel way varies with site conditions (page 9-38); in this case we assume the decision point is 15-feet from the traveled way.

FIGURE 5: DRIVER'S PERSPECTIVE 15-FEET FROM THE EDGE OF TRAVELED WAY AT THE EXISTING SITE DRIVEWAY TO THE NORTH (LEFT) AND SOUTH (RIGHT)

TABLE 2: MEASURED STOPPING SIGHT DISTANCE AND INTERSECTION SIGHT DISTANCE AT THE EXISTING NORTHERN SITE DRIVEWAY & CHRISTIAN STREET INTERSECTION

	Required Minimum	Design Target	Measured
Stopping Sight Distance	225’ NB 250’ SB	n/a	>500’ NB **(met)** >500’ SB **(met)**
Intersection Sight Distance	left, to north: 250’ right, to south: 225’	left, to north: 335’ right, to south: 390’	left, to north: >500’ **(met)** right, to south: 330’ **(met)**

Sight distances at the existing northern site driveway exceed the required minimum in all cases. The intersection sight distance to the south is restricted to below the design target by existing vegetation. As vehicles creep forward closer than 15 feet from the edge of travel way, the intersection sight distance exceeds the design target.

We recommend the project remove the high-growing shrubs and maintain landscaping to improve the intersection sight distance sight line to the south from the northern driveway site access.

Sight distances from the Brookside Drive approach to the existing Christian Street & Chandler Road were measured. The Brookside Drive approach intersection sight distance views to the right and northbound Christrian Street stopping sight line to Brookside Drive / Chandler Road is shown in the following figures, and the measured intersection and stopping sight distances are presented in the accompanying tables.

FIGURE 6: DRIVER'S PERSPECTIVE TO THE SOUTH 15-FEET FROM THE EDGE OF TRAVELED WAY AT THE BROOKSIDE DRIVE APPROACH TO CHRISTIAN STREET (LEFT) AND THE NORTHBOUND CHRISTIAN STREET STOPPING SIGHT DISTANCE SIGHT LINE ON APPROACH TO BROOKSIDE DRIVE / CHANDLER ROAD (RIGHT)

TABLE 3: MEASURED STOPPING SIGHT DISTANCE AND INTERSECTION SIGHT DISTANCE AT THE EXISTING CHRISTIAN STREET & BROOKSIDE DRIVE / CHANDLER ROAD INTERSECTION

	Required Minimum	Design Target	Measured
Stopping Sight Distance	225’ NB 250’ SB	n/a	300’ NB **(met)** >500’ SB **(met)**
Intersection Sight Distance	left, to north: 250’ right, to south: 225’	left, to north: 335’ right, to south: 390’	left, to north: >500’ **(met)** right, to south: 350’ **(met)**

Sight distances at the existing Christian Street & Brookside Drive / Chandler Road intersection exceed the required minimum in all cases. The intersection sight distance to the south is restricted to below the design target by the crest vertical curve south of the intersection, but not below safe operating standards.

The eastbound stop sign serving Brookside Drive appears to be significantly weathered. The proposed redevelopment of the lawn area adjacent to the project site should include setting a new stop sign and post, placed plumb and meeting the appropriate stop sign placement standards.

As the site plans develop, the site design team should avoid low growing shrubs, plantings, signs, or other features that may impact sight lines at the driveway and Brookside Drive intersections onto Christian Street.

Traffic approaching the on-street parking along Brookside Drive is expected to be traveling approximately 20 MPH around the corner in advance of the Christian Street intersection. The

stopping sight distance at 20 MPH is 115 feet. The sightline upon approach to the parallel parking aisle provides approximately 100 feet of stopping sight distance. The on-street parking should be placed to allow at least 115 feet of clear sightline upon approach.

TRAFFIC PROJECTIONS

This study relies upon design standards and analysis procedures documented in the Highway Capacity Manual 7th Edition,[7] Trip Generation,[8] A Policy on Geometric Design of Highways and Streets,[9] Manual on Uniform Traffic Control Devices (MUTCD),[10] and the Vermont Agency of Transportation Traffic Impact Study Guidelines,[11] which are the generally accepted traffic analysis references relied upon by traffic engineering professionals and VTrans for projects of this type in Vermont.

The study area includes the site access intersection to Christian Street. For modeling purposes, the site access will be considered as a single, two-way driveway rather than two separate one-way drives along Christian Street.

Traffic Volumes

Traffic volumes were obtained from the following sources:

- Vermont Agency of Transportation Route Log Diagram for Christian Street MNC 0614, indicating a 2022 average annual daily traffic (AADT) level of 2,047 vehicles per day.
- Turning Movement Count: Christian Street & Bugbee Road / Brookside Drive, July 19, 2018, with an observed PM peak hour of 385 vehicles per hour.
- Turning Movement Count: US-5 & Christian Street, July 19, 2018, with an observed PM peak hour of 319 vehicles per hour.

2031 Design Hour Volume Adjustment

Consistent with VTrans Guidelines, traffic analysis will be conducted with traffic volumes representing the 30th highest hour. From the VTrans TIS Guidelines:

> *Since it is impractical to design a highway for the highest volume encountered during the year, highway engineers have sought a compromise between capacity and cost. Thus, a*

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[7] National Academies of Sciences, Engineering, and Medicine. 2022. *Highway Capacity Manual 7th Edition: A Guide for Multimodal Mobility Analysis*. (Washington, DC: The National Academies Press, 2022).
[8] Institute of Transportation Engineers, *Trip Generation 11th Edition* (Washington, D.C.: Institute of Transportation Engineers, 2021).
[9] American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Edition (Washington DC: AASHTO, 2018).
[10] U.S. Department of Transportation Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways, 11th Edition*, December 2023 (Washington, D.C.: FHWA, 2023).
[11] Vermont Agency of Transportation *Traffic Impact Study Guidelines, Policy and Planning Division, Development Review and Permitting Services* (Revised April 2019)

highway is designed for the 30th highest hourly volume of the year, commonly known as the "Design Hour Volume" (DHV).

Consistent with VTrans Guidelines, traffic analyses should consider the base year (year in which the project is completed) and the planning year (base year plus five years). For this project, the base year is 2026 and the planning year is 2031. VTrans recommends a growth rate of 7% over 20 years at sites across the state, or roughly 0.35% per year.

WCG estimated the 2031 DHV from the three traffic data sources. The highest DHV, 385 vehicles per hour in the PM peak hour, was used in the analyses. DHV calculations are presented in the attachments.

Other Development Volumes

No other development volumes were identified as permitted or planned but not yet constructed traffic volumes to include in the analysis. The background growth projection is assumed to capture continued growth in traffic volumes regionally.

No Build Scenario Volumes

The 2031 adjusted design hour volumes are presented in the attachments. These figures represent the No Build scenario volumes.

Project Trip Distribution

The estimated trip generation documented in Table 1 was distributed proportionally to the existing traffic patterns. The trip distribution is illustrated in the attachments.

Build Scenario Volumes

The distributed trip generation volumes were added to the 2031 No Build Scenario volumes to represent the build condition traffic volumes, illustrated in the attachments.

CAPACITY ANALYSIS

Intersection capacity analyses were performed at the study area intersections. Analyses evaluated average control delay, level of service (LOS), and volume to capacity (v/c) ratios consistent with methodologies documented in the Highway Capacity Manual 7th Edition: A Guide for Multimodal Mobility Analysis (HCM7).

Level of Service Definition

Level of service (LOS) is a qualitative measure describing the operating conditions as perceived by motorists driving in a traffic stream. LOS is calculated using the procedures outlined in the HCM7. In addition to traffic volumes, key inputs include the number of lanes at each intersection, traffic control type (signalized or unsignalized), and the traffic signal timing plans, if applicable.

The HCM7 defines six qualitative grades to describe the level of service at an intersection. Level-of-service is based on the average control delay per vehicle; average control delay is a function of a gap acceptance model. Table 4 shows the various LOS grades and descriptions for unsignalized intersections. According to HCM procedures, an overall LOS cannot be calculated for two-way stop-controlled intersections because not all movements experience delay.

TABLE 4: LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

LOS	CHARACTERISTICS	UNSIGNALIZED AVG. CONTROL DELAY (SEC)
A	Little or no delay	≤ 10.0
B	Short delays	10.1-15.0
C	Average delays	15.1-25.0
D	Long delays	25.1-35.0
E	Very long delays	35.1-50.0
F	Extreme delays	> 50.0

The VTrans policy on level of service is:

- Overall LOS C should be maintained for state-maintained highways and other streets accessing the state's facilities.
- Reduced LOS may be acceptable on a case-by-case basis when considering, at a minimum, current and future traffic volumes, delays, volume to capacity ratios, crash rates, and negative impacts resulting from improvements necessary to achieve LOS C.
- LOS D should be maintained for side roads with volumes exceeding 100 vehicles/hour for a single lane approach (150 vehicles/hour for a two-lane approach) at two-way stop-controlled intersections.

Volume to Capacity Ratio Definition

The volume to capacity ratio (v/c) represents the sufficiency of an approach leg to accommodate the vehicular demand. According to FHWA:

> *"As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow is unstable and excessive delay and queuing is expected."*[12]

[12] Federal Highway Administration (FHWA), *Signalized Intersections: Informational Guide*, 2004

VTrans does not have a v/c policy. Typically, v/c is used as an alternative indicator of performance, with preferred values below 0.95.

Capacity and Performance Analysis

WCG built a traffic model using Synchro version 12 traffic analysis software for the 2031 adjusted intersection volumes in the AM and PM peak hours for the Build scenarios. All project generated traffic was conservatively modeled to enter and exit from a singular driveway.

Because the 2026 scenario year presents lower traffic volumes, 2031 analyses represent a conservative evaluation. Furthermore, because there are no conflicting traffic volumes in the No Build Scenario, there is no estimated delay at the driveway, and the analysis procedures are not applicable.

The resulting 2031 AM and PM peak hour performance measures in the Build condition are presented in Table 5

TABLE 5: RESULTS OF 2031 BUILD SCENARIO INTERSECTION CAPACITY ANALYSIS

	2031 Scenarios					
	AM Peak Hour			PM Peak Hour		
		Build			Build	
Intersections	LOS	Delay	v/c	LOS	Delay	v/c
Christian Street & Brookside Apartments Driveway						
NB Left, along Christian St	A	8	<0.01	A	8	<0.01
EB, exiting Brookside Apartments	A	10	0.01	B	10	0.01

"LOS" is the level of service; "Delay" is the average control delay in seconds per vehicle;
"v/c" is the volume to capacity ratio

The results of the traffic capacity and performance analysis indicate little delay at the project driveway intersection with a level of service of B or better at all approaches.

Turn Lane Analysis

WCG conducted left- and right-turn lane warrant evaluations for the 2031 No Build and Build scenarios in the AM and PM peak hours for the Christian Street & site driveway intersection. The warrant evaluations were conducted following standard practice outlined in the VTrans Transportation Impact Study Guidelines. The results of the 2031 turn lane warrant evaluation are summarized in Table 6.

TABLE 6: 2031 TURN LANE WARRANT EVALUATION AT CHRISTIAN STREET & SITE ACCESS

	2031 AM Build	2031 PM Build
Left Turn Lane Warrant Met?	No	No
Right Turn Lane Warrant Met?	No	No

The northbound left turn volume did not meet the minimum 15 vehicles in the peak hour threshold. Neither a southbound right turn lane nor a northbound left turn lane was warranted into the project driveway in the build condition.

WCG performed a sensitivity test of the warranting volume. The left turn lane is warranted by volume at 333 left turning vehicles, well above the proposed project estimated trip generation.

The warranting volume is one consideration when evaluating to install a left and or right turn lane at a particular site. Other considerations should include the potential impacts a turn lane may have on bicycle and pedestrian travel, transit operations, crash history, and roadway context. A turn lane results in a wider roadway which increases pedestrian crossing distances and may increase vehicle traveling speeds. There are no other turn lanes along Christian Street.

Given the results of the volume warrant, potential impacts to travel speed, and no reported crash history, turn lanes are not recommended at the proposed project driveway.

PEDESTRIAN, BICYCLE, AND TRANSIT ACCESS

The project proposes the construction of internal walkways from the rear entrance through the parking lot and a path around a multipurpose lawn area and dog run. The site plan maintains the existing landscaped buffer along the Christian Street roadway frontage. With no existing bicycle or pedestrian infrastructure along Christian Street or Brookside Drive, the proposed project does not include any external bicycle or pedestrian connections.

The site plan indicates three U-style bicycle racks at the north entrance. It is not clear if the building contains any interior storage space dedicated to secure bicycle parking.

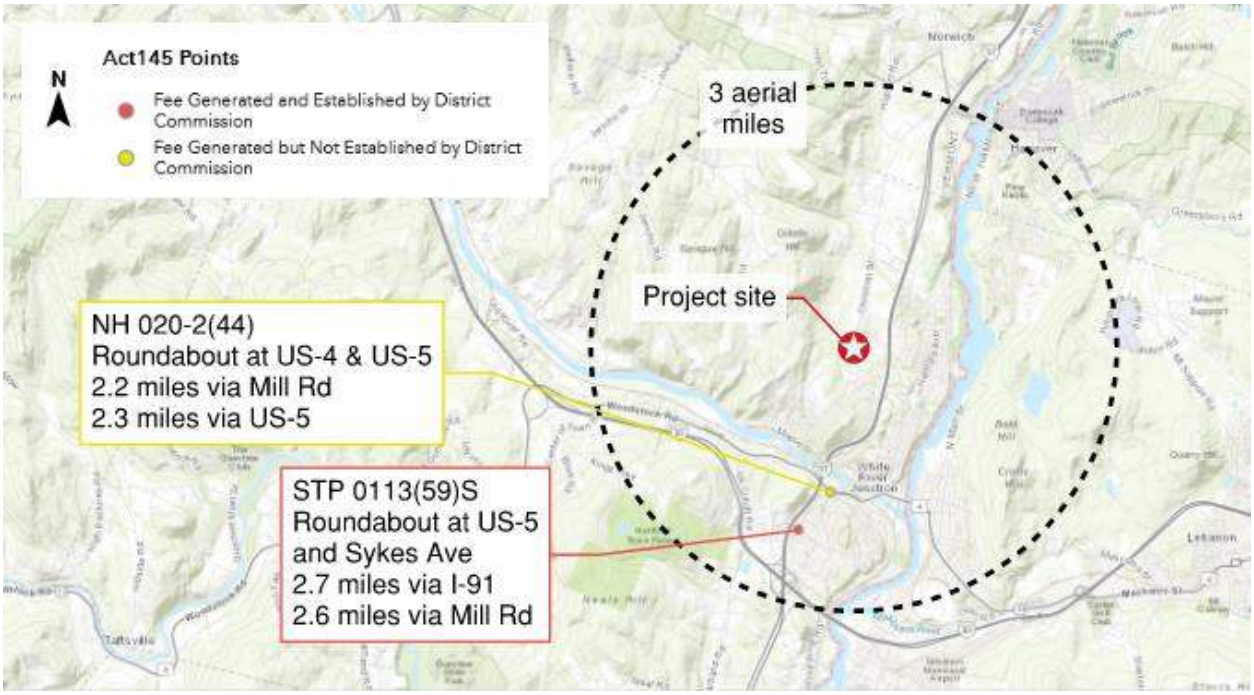
With no fixed route transit service along Christian Street, transit access to the proposed site is not feasible.

POTENTIAL MITIGATION CONSIDERATIONS

Act 145 Transportation Impact Fee

With less than 75 new peak hour trips, the project may be assessed Act 145 impact fees from established fees within three (3) road miles. There are two Act 145 Transportation Impact Fee generating projects within three road miles of the proposed project (Figure 7).

FIGURE 7: ACT 145 IMPACT FEE GENERATING PROJECTS WITHIN THREE MILES OF THE PROJECT SITE



The estimated trip ends generated by the proposed project are expected to distribute through the existing transportation network, resulting in a fraction of a trip being generated through the fee-generating projects. The estimated trip distribution is presented in the attachments. No Act 145 fee is expected.

Roadway Infrastructure Mitigation

As demonstrated in the capacity analysis, the proposed project is not expected to result in a significant change in the relative operating characteristics of the study area. Turn lanes into the site are not recommended.

As noted in the sight distance review, we recommend the project remove the high-growing shrubs and maintain landscaping to improve the intersection sight distance sight line to the south from the northern driveway site access.

The eastbound stop sign assembly serving Brookside Drive appears to be significantly weathered. The proposed redevelopment of the lawn area adjacent to the project site should include setting a new stop sign and post, placed plumb and meeting the appropriate stop sign placement standards.

Sight distance on approach to the parallel parking spaces should be 115-feet. We recommend the parallel parking spaces are shifted and / or the vegetation on the inside corner of Brookside Drive is trimmed to maximize the sight lines on approach to the on-street parallel parking spaces.

Site Plan Review

WCG reviewed the site plan and offers the following recommendations for consideration:

- As the site plans develop, the site design team should avoid low growing shrubs, plantings, signs, or other features that may impact sight lines at the driveway and Brookside Drive intersections onto Christian Street.
- Six exterior bicycle parking spaces may not be adequate for the proposed residential land use. We recommend the site design team consider including an interior bicycle storage room for resident use.
- The striped pavement adjacent to the parallel parking spaces may need vertical elements to ensure proper parking alignment. Elements may include signs, planters, curb stops, or other features.

ATTACHMENTS

Attachment A – Traffic Data Documentation

Attachment B – Crash Query Documentation

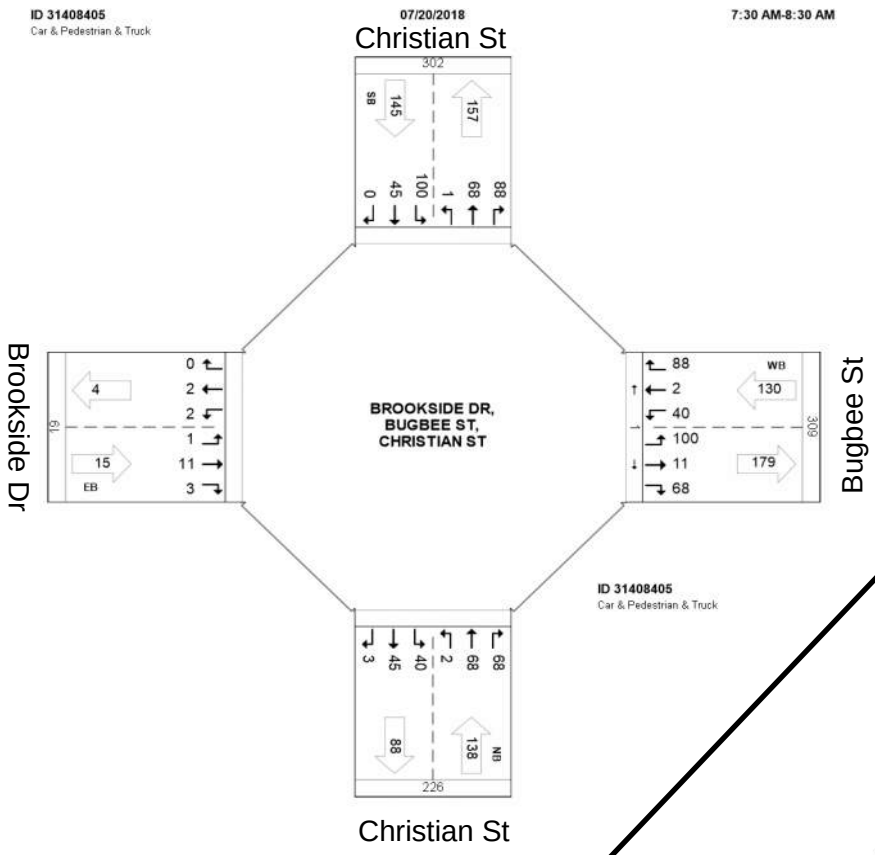
Attachment C – Traffic Volume Worksheets

Attachment D – Scenario Traffic Volumes

Attachment E – Synchro Capacity Analysis Worksheets

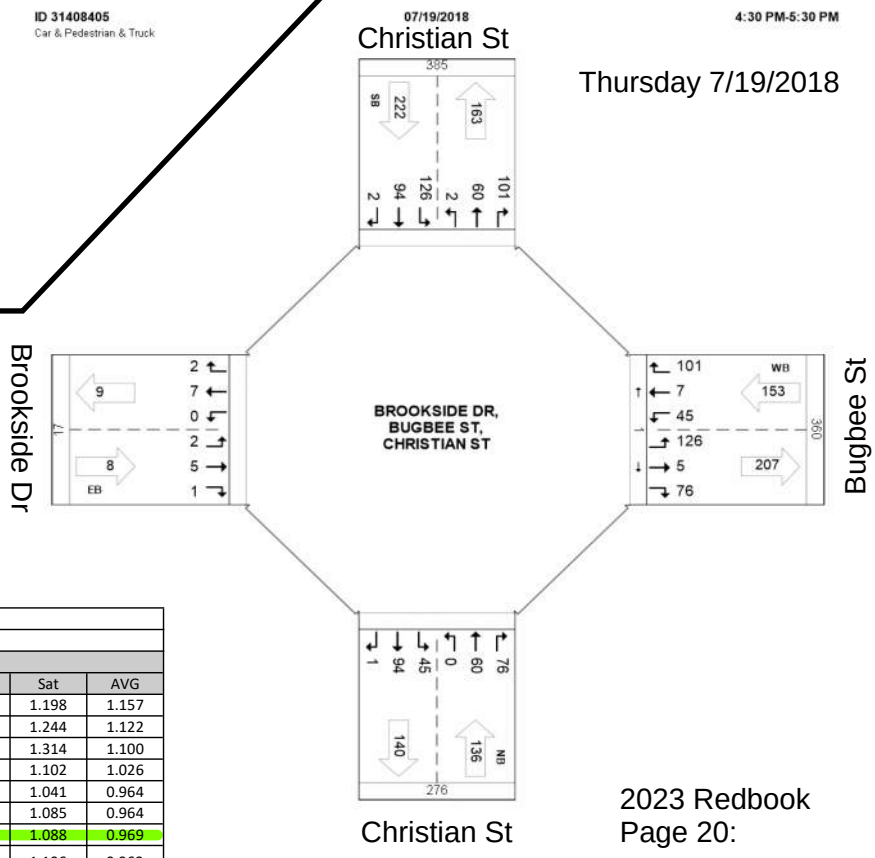
Attachment F – Turn Lane Warrant Worksheets

Attachment G – Impact Fee Trip Distribution



2023 Redbook
Page 21:

TO FUTURE YEAR	FROM CURRENT YEAR 2023	2024
2023	1.000	
2024	1.003	1.000
2025	1.007	1.003
2026	1.010	1.007
2027	1.013	1.010
2028	1.016	1.013
2029	1.020	1.016
2030	1.023	1.020
2031	1.026	1.023



Thursday 7/19/2018

Christian Street PM peak hour volume to project site = 385 vph

2023 Redbook Page 12:

Monthly DOW Factors								
Group:	3 Urban							
From Year:	2023			To Year:	2023			
	Sun	Mon	Tue	Wed	Thu	Fri	Sat	AVG
Jan	1.626	1.192	0.991	1.028	1.041	1.022	1.198	1.157
Feb	1.470	1.033	1.011	0.971	1.076	1.046	1.244	1.122
Mar	1.412	1.003	1.077	0.999	0.972	0.925	1.314	1.100
Apr	1.419	0.982	0.948	0.949	0.909	0.870	1.102	1.026
May	1.234	0.984	0.900	0.882	0.868	0.837	1.041	0.964
Jun	1.242	0.928	0.888	0.889	0.859	0.857	1.085	0.964
Jul	1.263	0.923	0.935	0.859	0.869	0.849	1.088	0.969
Aug	1.250	0.916	0.882	0.869	0.860	0.861	1.106	0.963
Sep	1.282	1.009	0.894	0.884	0.877	0.841	1.076	0.980
Oct	1.263	0.928	0.892	0.879	0.868	0.847	1.108	0.969
Nov	1.386	0.956	0.927	0.932	1.031	0.915	1.131	1.040
Dec	1.439	1.272	0.965	0.926	0.946	0.923	1.123	1.085

Total adjustment = 0.869 x 0.931 x 1.026 = 0.830
No adjustment recommended

2031 DHV = 385 vph → highest of the three DHV estimates, use this

2023 Redbook
Page 20:

Growth Factor Group 2: Urban
- For locations within a designated federal aid urban (FAU) area -

To \ From	2018	2019	2020	2021	2022
2019	0.992				
2020	0.817	0.823			
2021	0.915	0.923	1.121		
2022	0.923	0.931	1.131	1.009	
2023	0.931	0.938	1.140	1.017	1.008

Source: VTrans MS2 System
https://vtrans.ms2soft.com/tdms.ui/tmc/analysis/index?intersection=31408405

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Turning Movement Count - Christian St & Bugbee St

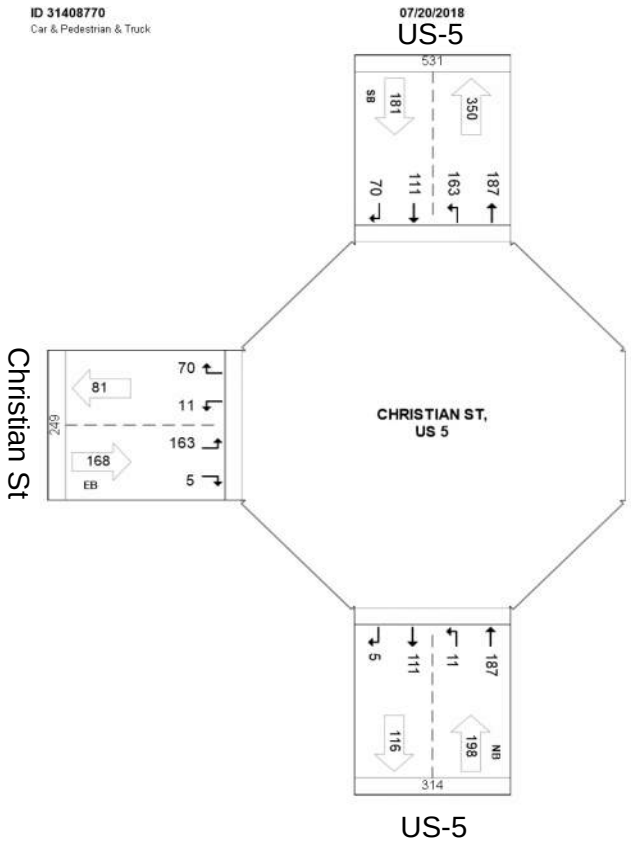
Brookside Apartments, Hartford VT

N

DATE: 08/05/24

PROJECT: 24-658

Figure A1



DHV estimate from 2022 AADT:
2022 AADT = 2,047 vpd
(from VTrans Route Log Diagram)

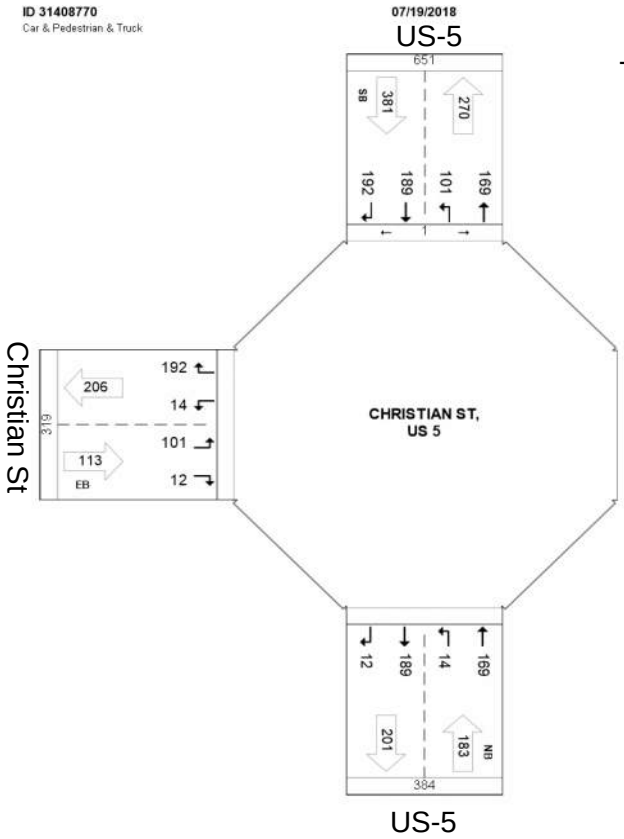
2023 Redbook page 25:

	Predicted DHV by Seasonal Fa		
AADT	Rural Interstate SF1	Rural Non-Interstate SF2	Urban SF3
	1	2	3
2000	246	228	213
2100	259	239	224
2200	271	250	235
2300	283	262	245
2400	296	273	256

2022 DHV = 218 vph (interpolated)
2022 → 2023 = 1.008
(2023 Redbook p.20)

2023 → 2031 = 1.026

2023 DHV = 218 x 1.008 x 1.026 = 225 vph (lower than Christian & Bugbee, don't use)



Thursday 7/19/2018

2018 peak hour volume = 319 vph

Total adjustment = 0.869 x 0.931 x 1.026 = 0.830

(See previous page)

No adjustment recommended

2031 DHV = 319 vph (lower than Christian & Bugbee, don't use)

Source: VTrans MS2 System
https://vtrans.ms2soft.com/tdms.ui/tmc/analysis/index?intersection=31408770

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Turning Movement Count - US-5 & Christian St

Brookside Apartments, Hartford VT

N

DATE: 08/05/24

PROJECT: 24-658

Figure A2

ObjectID	Mapped	Crash Date	City/Town	Address	AOT Route	Crash Type	Collision Direction	Weather	Road Group
6843463		November 7, 2022 at 1:50 PM	Hartford	1243-1445 Christian S	CHRISTIAN ST	Property Damage Only	Rear End	Clear	Unknown
4102293		July 14, 2019 at 1:36 PM	Hartford	951 Christian St	CHRISTIAN ST	Injury	Rear End	Clear	Minor Collector - Non Fed Aid Rural TH
4458529		October 2, 2019 at 4:44 PM	Hartford	CHRISTIAN STREET	CHRISTIAN ST	Property Damage Only	Left Turn and Thru, Angle Broadside -->v--	Clear	Minor Collector - Non Fed Aid Rural TH
6766353		July 15, 2022 at 4:19 PM	Hartford	Christen St.	CHRISTIAN ST	Property Damage Only	No Turns, Thru moves only, Broadside ^<	Clear	Minor Collector - Non Fed Aid Rural TH
3852457		January 9, 2019 at 5:27 AM	Hartford	981 Christian St	CHRISTIAN ST	Property Damage Only	Single Vehicle Crash	Freezing Precipitation	Minor Collector - Non Fed Aid Rural TH
5923347		October 21, 2020 at 4:09 AM	Hartford	981 Christian St	TOWN ROAD 0004	Property Damage Only	Other - Explain in Narrative	Rain	Minor Collector - Non Fed Aid Rural TH
6252473		January 15, 2022 at 2:19 PM	Hartford	143 Brookside Dr	BROOKSIDE DR	Injury	No Turns, Thru moves only, Broadside ^<	Clear	City, Village or Urban Compact Street not in FA
4952276		January 16, 2020 at 3:22 PM	Hartford	981 Christian St	WILDER STATE HIGHWAY	Property Damage Only	No Turns, Thru moves only, Broadside ^<	Clear	Federal Aid Urban System (Class 2 TH's and 3 T

Shaded cells at Christian & Bugbee

Shaded cells at Christian & Bugbee

ObjectID	Report Number	Reporting A	Road Grou	AOT Actual	Animal	Time of Da	Intersection With	Impairmen	Involving	Non Report	Reporting A	Road Characteristics	Road Cond	Street Address	Surface Co	AOT Rout	Coordinates	
6843463	22HF07551	Hartford PD	0	1.273	None/Othe	Day	Chandler Road	None	Heavy Truck		VT0140300	Not at a Junction	None	1243-1445 Christian St	Dry	0000	43.67249	-72.3332
4102293	19HF04389	Hartford PD	4	999.99	None/Othe	Day	Bugbee St.	None	None		VT0140300	Not at a Junction	None	951 Christian St		S0614	43.6684	-72.402
4458529	19HF06186	Hartford PD	4	999.99	None/Othe	Day	BUGBEE STREET	None	None		VT0140300	Four-way Intersection	None	CHRISTIAN STREET	Dry	S0612	43.66889	-72.3913
6766353	22HF04139	Hartford PD	4	1.02	None/Othe	Day	Bugbee St.	None	None		VT0140300	Four-way Intersection	None	Christen St.	Dry	S0614	43.66891	-72.3307
3852457	19HF00159	Hartford PD	4	999.99	None/Othe	Night	Bugbee St	None	Heavy Truck		VT0140300	T - Intersection	Road Surfa	981 Christian St	Snow	S0614	43.66891	-72.3228
5923347	20HF07298	Hartford PD	4	999.99	None/Othe	Night	Christian St	None	None		VT0140300	Four-way Intersection	None	981 Christian St	Wet	T0004	43.66892	-72.3429
6252473	22HF00267	Hartford PD	6	999.99	None/Othe	Day	BUGBEE ST	None	None		VT0140300	Four-way Intersection	None	143 Brookside Dr	Dry	0000	43.66892	-72.3177
4952276	20HF00328	Hartford PD	2	0	None/Othe	Day	Bugbee St	None	None		VT0140300	Four-way Intersection	None	981 Christian St	Dry	9870	43.66893	-72.3092

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Reported Crashes - Christian Street - 01/01/2019 through 12/31/2023

Brookside Apartments, Hartford VT

DATE: 08/06/2024

PROJECT: 24-658

Figure B1

AM

08/05/24 03:12 PM

Synchro Node

1 Christian Street & Site Drive
Hartford VT
DHV from Count

Raw Count Data

	EB	WB	NB	SB	
LT					
TH			157	145	
RT					302
Enter	0	0	157	145	302
Exit	0	0	157	145	302
% Trucks					
Peds					PHF
Peak Hour					

No Build 2031

	EB	WB	NB	SB	
L	0	0	0	0	
T	0	0	157	145	
R	0	0	0	0	302
Enter	0	0	157	145	302
Exit	0	0	157	145	302

Trip Generation (Passenger Cars)

	Enter	Exit	
Total	4	11	15

	EB	WB	NB	SB	
L	6		2		
T					
R	5			2	15
Enter	11	0	2	2	15
Exit	0	4	6	5	15

Build 2031

	EB	WB	NB	SB	
L	6	0	2	0	
T	0	0	157	145	
R	5	0	0	2	317
Enter	11	0	159	147	317
Exit	0	4	163	150	317

PM

08/05/24 03:11 PM

Synchro Node

1 Christian Street & Site Drive
Hartford VT
DHV from Count

Raw Count Data

PHF overriden to 1 for

	EB	WB	NB	SB	
L					
T			163	222	
R					385
Enter	0	0	163	222	385
Exit	0	0	163	222	385
% Trucks					
Peds					PHF
Peak Hour	4:30 PM - 5:30 PM Peak				0.88

No Build 2031

	EB	WB	NB	SB	
L	0	0	0	0	
T	0	0	163	222	
R	0	0	0	0	385
Enter	0	0	163	222	385
Exit	0	0	163	222	385

Trip Generation (Passenger Cars)

	Enter	Exit	
Total	12	7	19

	EB	WB	NB	SB	
L	3		5		
T					
R	4			7	19
Enter	7	0	5	7	19
Exit	0	12	3	4	19

Build 2031

	EB	WB	NB	SB	
L	3	0	5	0	
T	0	0	163	222	
R	4	0	0	7	404
Enter	7	0	168	229	404
Exit	0	12	166	226	404

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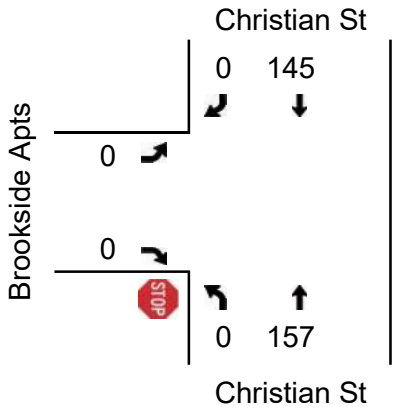
Traffic Volume Worksheet

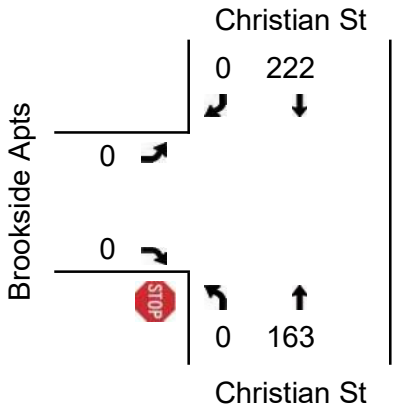
Brookside Apartments, Hartford VT

DATE: 08/06/2024
PROJECT: 24-658
Figure C1

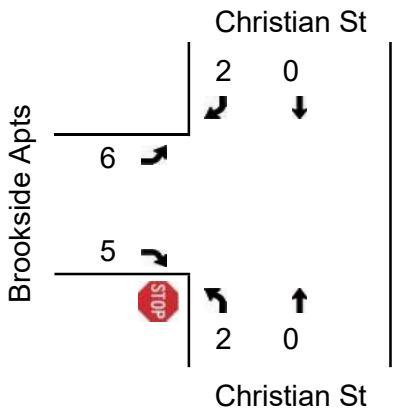
Midweek AM 2031 No Build



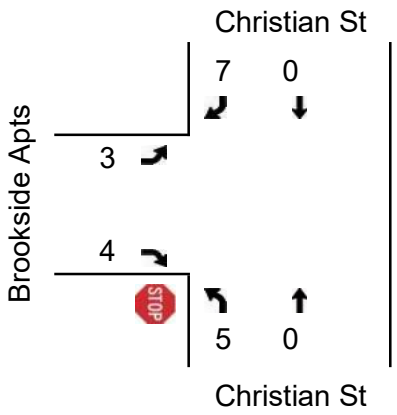
Midweek PM 2031 No Build



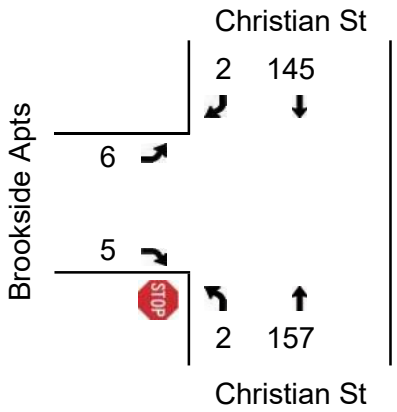
Midweek AM Trip Distribution



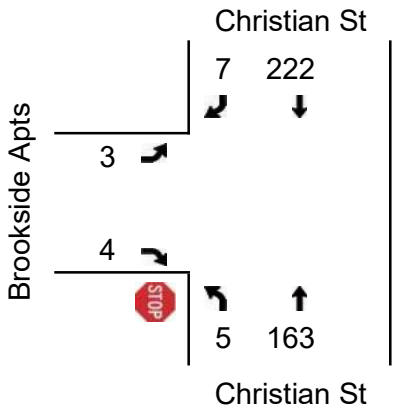
Midweek PM Trip Distribution



Midweek AM 2031 Build



Midweek PM 2031 Build



Schematic drawings - not to scale
Values rounded to nearest whole number

WALL CONSULTANT GROUP

2031 Intersection Turning Movements

Brookside Apartments, Hartford VT

N

DATE: 08/06/2024

PROJECT: 24-658

Figure D1

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	5	2	157	145	2
Future Vol, veh/h	6	5	2	157	145	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	5	2	157	145	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	307	146	147	0	-	0
Stage 1	146	-	-	-	-	-
Stage 2	161	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	685	901	1435	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	868	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	684	901	1435	-	-	-
Mov Cap-2 Maneuver	684	-	-	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	868	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.75	0.09	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	23	-	768	-	-
HCM Lane V/C Ratio	0.001	-	0.014	-	-
HCM Control Delay (s/veh)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	4	5	163	222	7
Future Vol, veh/h	3	4	5	163	222	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	4	5	163	222	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	399	226	229	0	-	0
Stage 1	226	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	607	814	1339	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	605	814	1339	-	-	-
Mov Cap-2 Maneuver	605	-	-	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	857	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.13	0.23	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	54	-	709	-	-
HCM Lane V/C Ratio	0.004	-	0.01	-	-
HCM Control Delay (s/veh)	7.7	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

TURN LANE WARRANT ANALYSIS

PROJECT: Brookside Apartments
LOCATION: Christian St & Site Driveway
Christian St MM 1.2
Hartford VT

BY: CDM
DATE: 6-Aug-24
SCENARIO: 2031 AM Build

Source: Kikuchi and Chakroborty's "Modified Harmelink/AASHTO Model" from Method for Prioritizing Intersection Improvements, Washington State Transportation Center Research Report, January 1997

YEAR: 2031
TIME: AM Build
SPEED: 35 mph

Exclusive right-turn lane in the Va direction (Y/N)? N
Exclusive left-turn lane in the Vo direction (Y/N)? N

AVERAGE HOUR ENTERING TRAFFIC VOLUMES (vph, 85% of DHV):

	Vadv.	Vopp.
Left-Turn =	2	0
Thru =	133	123
Right-Turn =	0	2

Va = 135 vph L = 1.3%
Vo = 125 vph

Left Turn Lane Warrant

Va = exp(6.9017-0.001151*Vo+(exp(0.383-0.118*L)-0.01816*SP)) (Eq. 3.3)

Warranting Va = 0 vph

Va = 0 => 0

THEREFORE, NB LEFT-TURN LANE NOT WARRANTED

Right Turn Lane Warrant

PEAK HOUR ENTERING TRAFFIC VOLUMES (vph, 100% of DHV):

Left-Turn =	2	0
Thru =	157	145
Right-Turn =	0	2

Va = 147 vph R = 1.4%

Va = 33 x squareroot ((80-S) / (R x (1-R)))

Warranting Va = 1898 vph

Va = 147 < 1,898

THEREFORE, SB RIGHT-TURN LANE NOT WARRANTED

TURN LANE WARRANT ANALYSIS

PROJECT: Brookside Apartments
LOCATION: Christian St & Site Driveway
Christian St MM 1.2
Hartford VT

BY: CDM
DATE: 6-Aug-24
SCENARIO: 2031 PM Build

Source: Kikuchi and Chakroborty's "Modified Harmelink/AASHTO Model" from Method for Prioritizing Intersection Improvements, Washington State Transportation Center Research Report, January 1997

YEAR: 2031
TIME: PM Build
SPEED: 35 mph

Exclusive right-turn lane in the Va direction (Y/N)? N
Exclusive left-turn lane in the Vo direction (Y/N)? N

AVERAGE HOUR ENTERING TRAFFIC VOLUMES (vph, 85% of DHV):

	Vadv.	Vopp.
Left-Turn =	4	0
Thru =	139	189
Right-Turn =	0	6

Va = 143 vph L = 3.0%
Vo = 195 vph

Left Turn Lane Warrant

Va = exp(6.9017-0.001151*Vo+(exp(0.383-0.118*L)-0.01816*SP)) (Eq. 3.3)

Warranting Va = 0 vph

Va = 0 => 0

THEREFORE, NB LEFT-TURN LANE NOT WARRANTED

Right Turn Lane Warrant

PEAK HOUR ENTERING TRAFFIC VOLUMES (vph, 100% of DHV):

Left-Turn =	5	0
Thru =	163	222
Right-Turn =	0	7

Va = 229 vph R = 3.2%

Va = 33 x squareroot ((80-S) / (R x (1-R)))

Warranting Va = 1267 vph

Va = 229 < 1,267

THEREFORE, SB RIGHT-TURN LANE NOT WARRANTED

TURN LANE WARRANT ANALYSIS

PROJECT: Brookside Apartments
LOCATION: Christian St & Site Driveway
Christian St MM 1.2
Hartford VT

BY: CDM
DATE: 6-Aug-24
SCENARIO: 2031 PM Build Min Warrant

Source: Kikuchi and Chakroborty's "Modified Harmelink/AASHTO Model" from Method for Prioritizing Intersection Improvements, Washington State Transportation Center Research Report, January 1997

YEAR: 2031
TIME: PM Build Min Warrant
SPEED: 35 mph

Exclusive right-turn lane in the Va direction (Y/N)? N
Exclusive left-turn lane in the Vo direction (Y/N)? N

AVERAGE HOUR ENTERING TRAFFIC VOLUMES (vph, 85% of DHV):

	Vadv.	Vopp.
Left-Turn =	283	0
Thru =	139	189
Right-Turn =	0	6

Va = 422 vph L = 67.1%
Vo = 195 vph

Left Turn Lane Warrant

Va = exp(6.9017-0.001151*Vo+(exp(0.383-0.118*L)-0.01816*SP)) (Eq. 3.3)

Warranting Va = 421 vph

Va = 422 => 421

THEREFORE, NB LEFT-TURN LANE IS WARRANTED

Right Turn Lane Warrant

PEAK HOUR ENTERING TRAFFIC VOLUMES (vph, 100% of DHV):

Left-Turn =	333	0
Thru =	163	222
Right-Turn =	0	7

Va = 229 vph R = 3.2%

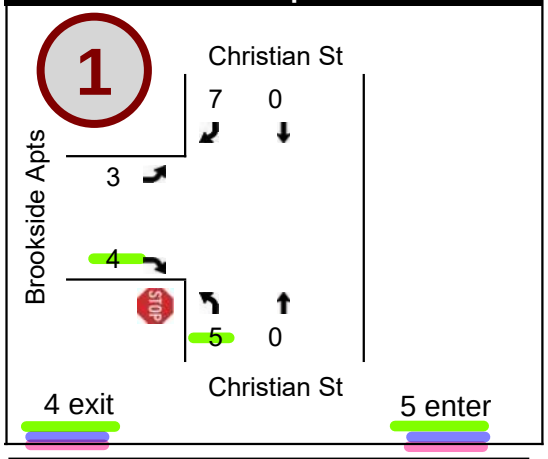
Va = 33 x squareroot ((80-S) / (R x (1-R)))

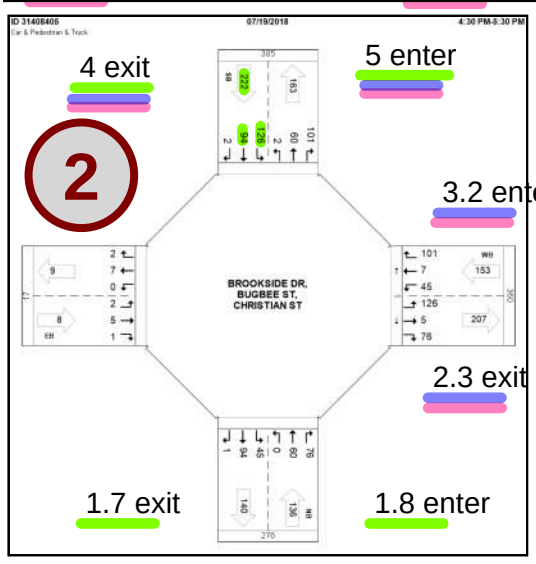
Warranting Va = 1267 vph

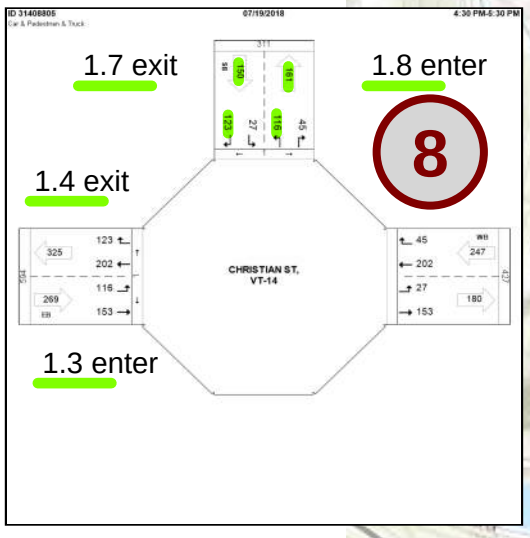
Va = 229 < 1,267

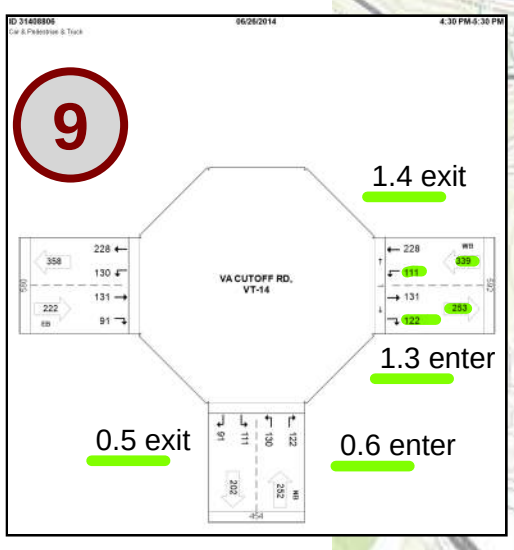
THEREFORE, SB RIGHT-TURN LANE NOT WARRANTED

Midwek PM Trip Distribution



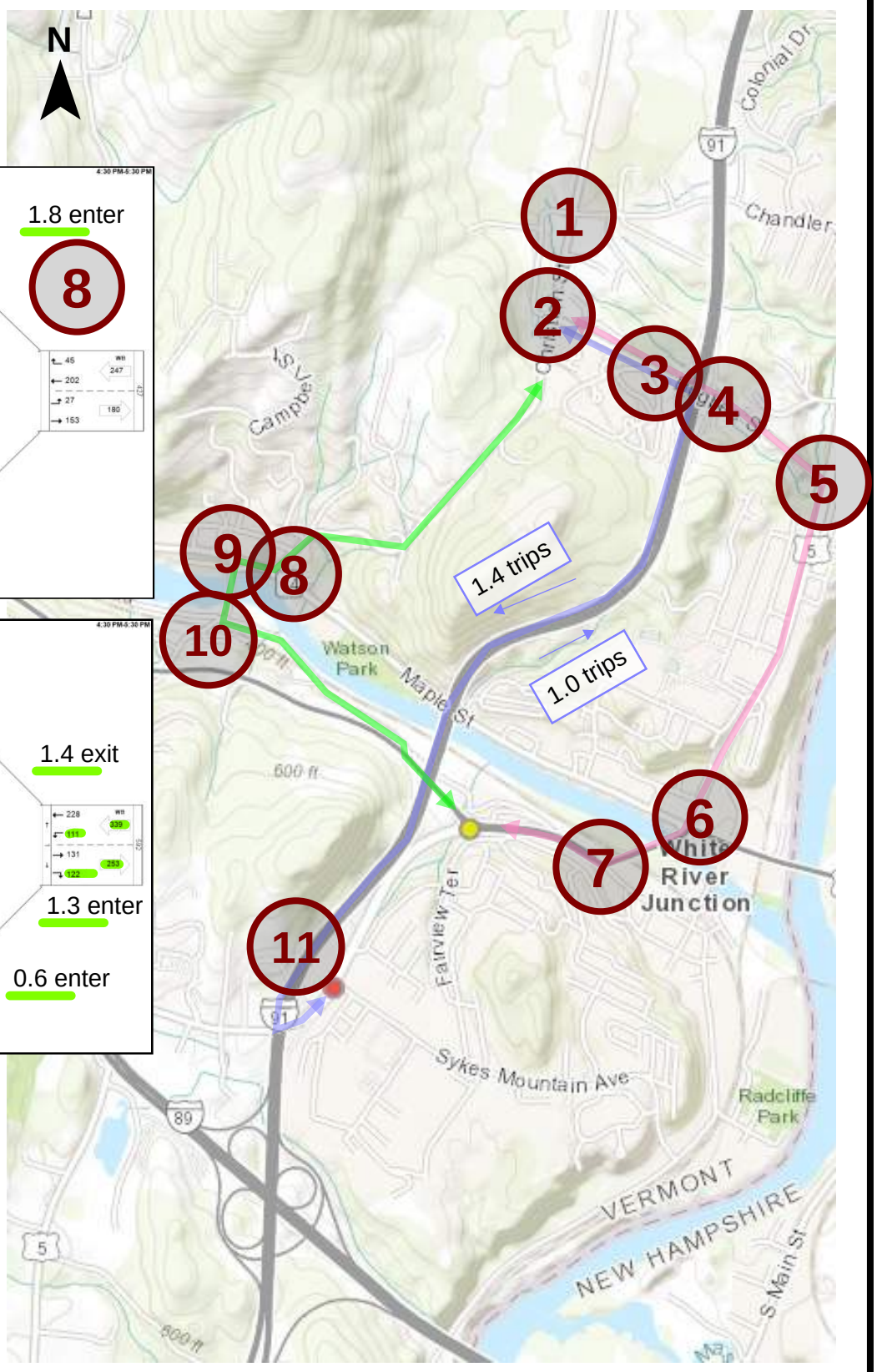






10

No count data
Assume 50% to US-4 via Mill Road EB = 0.3 exit trips and 0.3 enter trips; <0.5 in both directions END



11

1.4 exit — 1.0 enter

6/4/17 4 PM

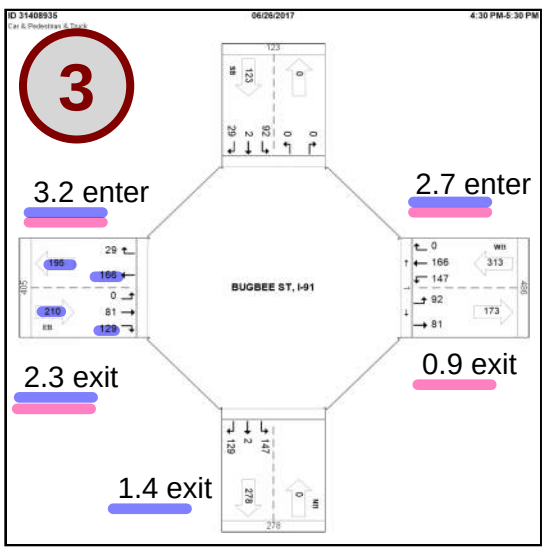
~~983~~ vph — ~~812~~ vph

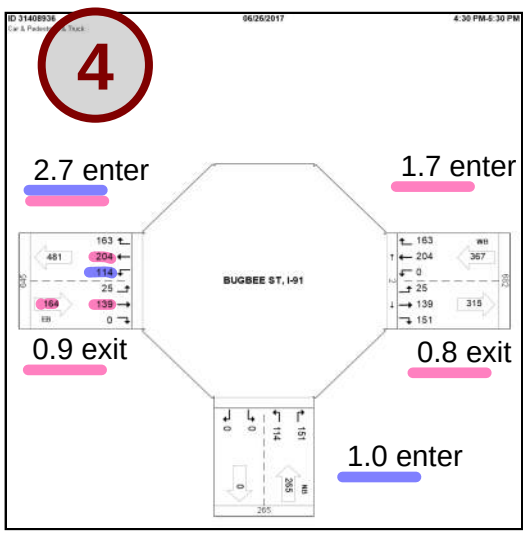
7/23/13 4 PM ~~132~~ vph

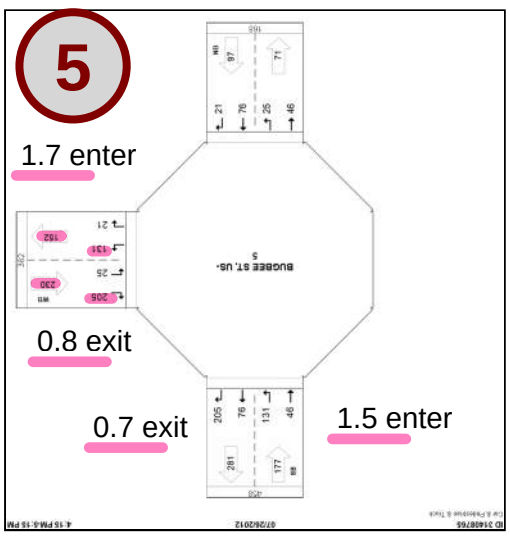
7/23/13 4 PM ~~215~~ vph

0.2 exit END

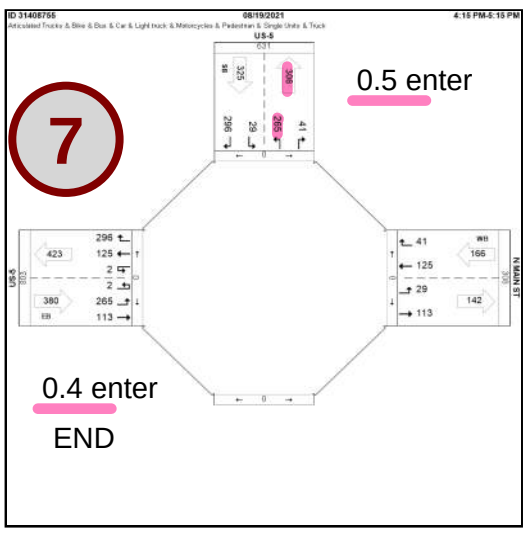
0.3 enter END

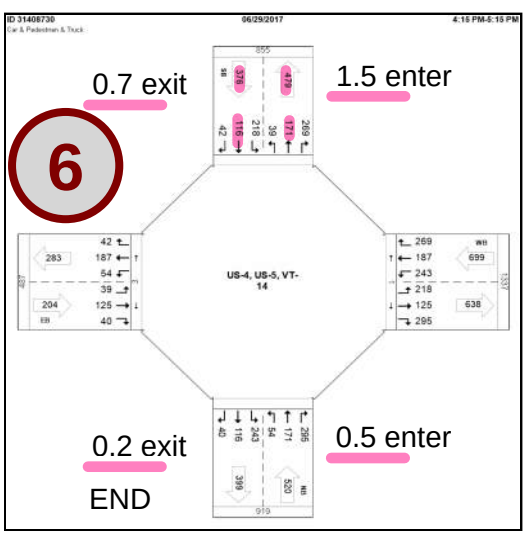






ASSUME ORIENTATION REVERSED





WALL CONSULTANT GROUP

Act 145 Trip Distribution

Brookside Apartments, Hartford VT

DATE: 08/05/2024

PROJECT: 24-658

Figure G1

Email received August 8, 2024

Jo-Ann,

Some additional information about the ZipCar program. Our tenants will have the ability to reserve and rent the car for variable periods of time (for a quick trip to the store or a longer trip for the weekend, for example). Tenants will have a phone app or webpage where they can check the schedule and reserve the car. These programs are proving to be more and more popular around the country, including the Upper Valley.

Thanks,

Tim Sidore, CAM, NALP
Chief of Operations
Ledgeworks, Inc.
(603) 727-9024 (O)
Option #2 for After-Hours Emergency Maintenance

Managing Agent for:

Execusuite, LLC
21 Agua Street, LLC
Michael Davidson Properties
O' Brothers, LLC
One NorthPark, LLC
Recreo, LLC
Chorro, LLC
Colburn Park, LLC

Jo-Ann Ells

From: Tim Sidore <tim@ledgeworks.com>
Sent: Tuesday, August 6, 2024 10:07 AM
To: Jo-Ann Ells; Jim Wasser; Adam Morse; Corey Mack; Paul Simon; Mike Davidson
Subject: Fwd: Brookside Nursing Home Redevelopment Project (1200 Christian Street, Wilder)

[**EXTERNAL EMAIL: DO NOT CLICK** on **links** or open **attachments** unless you are sure the content is safe.]

Jo-Ann,

Please see below from Adams Carroll at AT; they are unable to add a stop near Brookside.

Thanks,

Tim Sidore, CAM, NALP
Chief of Operations
Ledgeworks, Inc
(603) 727-9024 (O)
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Michael Davidson Properties
O' Brothers, LLC
One NorthPark, LLC
Chorro, LLC
Recreo, LLC
Colburn Park, LLC
12 Tremont Street, LLC

---------- Forwarded message ---------
From: **Tim Sidore** <tim@ledgeworks.com>
Date: Tue, Aug 6, 2024 at 10:05 AM
Subject: Re: Brookside Nursing Home Redevelopment Project (1200 Christian Street, Wilder)
To: Adams <ACarroll@advancetransit.com>

Adams,

Understood, please do keep Christian Street in mind for the future.

Best,

Tim

Tim Sidore, CAM, NALP
Chief of Operations
Ledgeworks, Inc
(603) 727-9024 (O)
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Chorro, LLC
Recreo, LLC
Colburn Park, LLC
12 Tremont Street, LLC

On Mon, Aug 5, 2024 at 4:31 PM Adams <ACarroll@advancetransit.com> wrote:

> Hi Tim, thanks for reaching out.
>
> It's exciting to hear about your project. Unfortunately, we do not have the ability to extend any of our current routes to this location. The bus network is designed as a pulse system, where buses from several different routes come together at transfer hubs every 30 minutes in a coordinated manner to facilitate seamless transfers. If we add additional time and miles to our green route, it would not be able to make it to the hub in time for the transfer. The loop to this site and back would take us about 5 additional minutes, which would mean a passenger would have to wait twenty-five minutes or so for their next transfer opportunity.
>
> We do offer an on-demand paratransit service called ACCESS-AT that would be able to pick up people at your location. Individuals who have a disability that prevents them from using our fixed route buses are eligible for that service.
>
> ---
>
> **From:** Tim Sidore <tim@ledgeworks.com>
> **Sent:** Thursday, August 1, 2024 1:59 PM
> **To:** Adams <ACarroll@advancetransit.com>
> **Subject:** Brookside Nursing Home Redevelopment Project (1200 Christian Street, Wilder)

Adams,

Jo-Ann Ells suggested I reach out to you; we are the owner and redevelopers of the Brookside Nursing Home in Wilder (1200 Christian Street). We have applied to convert the shuttered nursing home into 38 apartments (studios and one bedrooms), many of which will be rented at affordable/workforce housing rates.

Might AT consider adding a bus stop near Brookside (it's at the intersection of Christian Street, Chandler Road and Brookside Drive)? This project has the potential to attract a significant number of riders, and the nearest stop on Hartford Avenue is a ways away.

Happy to chat, (603) 322-3260.

Thanks!

Tim Sidore, CAM, NALP

Chief of Operations

Ledgeworks, Inc

(603) 727-9024 (O)

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