HARTFORD ZONING BOARD OF ADJUSTMENT
June 26, 2024
Meeting Notice and Agenda

The Hartford Zoning Board of Adjustment will meet on Wednesday, June 26, 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 Need help?
Join the meeting now
Meeting ID: 293 378 842 85
Passcode: hdGFBT
Dial in by phone
+1 802-377-3677,,536588093#
1 802 377 3677
Phone conference ID: 536 588 093#

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 #05-24 by the State of Vermont (owner/applicant) for Conditional Use Approval under section 260-16 of the Hartford Zoning Regulations for approval of additions and improvements to the Windsor District Court, lot 46-0024-001, 82 Railroad Row, White River Junction, in CB and Design Reivew zoning districts.

2. Application #02-24 by Guernsey Ruth Hall Revocable Trust (owner) and Summit Distributing (applicant) for Conditional Use Approval under section 260-16 of the Hartford Zoning Regulations for approval of a car wash, lot 44-0041-000, Sykes Mountain Avenue, White River Junction, in an IC zoning district. (Continued from May15, 2024)

B. Administrative matters: 1. Public Comment. 2. Minutes. 3. Administrative Permits. 4. 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
June 26, 2024

1. Public Comment

2. Minutes, May 15, 2024

3. Administrative Permits

    - U.V. Haven, 55 sq. ft addition to food shelf and shed

4. Availability for the next Public Hearing (July 24, 2024)

DRAFT
MINUTES
Zoning Board of Adjustment
May 15, 2024

Present: Steve Lagasse, Chair, Chris Lowe, Vice Chair, Tom Franklin, Stephanie Gile, and Jo-Ann Ells, Zoning Administrator

Absent: Alice Maleski and Lannie Collins, Selectboard Liaison

Public Hearing

Steve Lagasse reviewed the Hearing process and interested party rule, and noted that a motion needed three concurring votes to pass.

Chris Lowe opened the Hearing, read the hybrid meeting script, and took a roll call.

Administrative Matters

1. Request by Woody Rollins to occupy a travel trailer/recreational vehicle under §260-34 G 1 of the Zoning Regulations while restoring a historic dwelling located at 3398 Jericho Street.

Jo-Ann Ells explained that the Zoning Regulations permit the Zoning Board to allow a mobile home or travel trailer to be lived while a new home is being constructed and that Mr. Rollins is requesting to live on an RV while his historic home at 3398 Jericho Street is being completely renovated.

Tom Franklin asked if there was a time limit. Jo-Ann Ells noted the Board can approve the request for a one year period.

Steve Lagasse moved to approve the request for a one year period. Tom Franklin seconded, and the motion passed unanimously.

2. Public Comment

None

Public Hearing

1. Application #13-23 by Black Rock Investment LLC (owner /applicant) for Conditional Use Approval under section 260-16 of the Hartford Zoning Regulations for 192 dwelling units in four multi-unit buildings, proposed lot 45-0162-000, Sykes Mountain Avenue and Hickory Ridge, White River Junction, in a proposed Planned Development. (Continued from January 31, 2024)

Dennis Marquise, Earle Simpson, Irwin Perret Sr., Irwin Perret Jr., Paul Simon, and Kevin Worden, were present.

Steve Lagasse noted that since the Board had reviewed the application a number of times a full review was not necessary.

Dennis Marquise stated that in 2022 the search for consultants began and in 2023 the Planning Commission held a sketch plan review for the project before the application was submitted formally. He added that the applicant has worked with the Planning Commission, Zoning Board, and staff to address comments and concerns and the application is ready for the Board to act on. He added that the Planning Commission will review the application on May 20th and the Selctboard will need to approve the road realignment and utilities/booster station.

Dennis Marquise explained that in response to previous comments from Board members, the number of handicapped parking spaces have been increased from the required 8 spaces to 12 spaces, and the applicant will install solar panels on the roof and provide charging stations for electric vehicles and electric bikes.

Chris Lowe requested that the party conducting the third party review be identified in the Findings of Fact.

There was a brief discussion regarding the proposed stormwater design.

Kevin Worden explained that the gate at the end of Hickory Ridge has been reviewed with the DPW and Fire Marshal, and will require approval by the Selectboard.

There was a brief discussion about the design of the stormwater detention areas and plantings.

Steve Lagasse asked for testimony from Interested Parties.

Sylvia Provost thanked the applicant for preparing a ‘phenomenal’ project and for communicating with the neighbors.

Sylvia Provost asked that Hickory Ridge be closed to traffic when construction commences. It was agreed that Jo-Ann Ells would share this request with the DPW/Fire Marshal and the Findings would include a condition that the outcome be reviewed by the Chair of the Board.

Sylvia Provost asked where the proposed “string lights” would be located. Paul Simon noted the location in the outdoor seating area in Phase #1.

It was noted that the project’s lights would be on all night, but that there would be no off-site glow.

Paul Simon noted that there would be a 2 year guarantee for the landscaping to make sure it is well established.

It was agreed that the applicant’s landscape architect would review changing the White Pines around the perimeter of the lot for another species such as Norway Spruce to ensure continuous screening, with a condition that the outcome be reviewed by the Chair of the Board.

Chris Lowe asked about the retention and maintenance of the existing trees. Kevin Worden noted the limits of disturbance on the plans.

It was noted that before a Certificate of Occupancy is issued, the applicant needs to submit "A management plan for the open space in accordance with the Vermont Urban & Community Forestry Program for review and approval by the Chairs of the Zoning Board of Adjustment and Planning Commission."

The improvements to be installed during Phase #1 were reviewed.

Jo-Ann Ells noted that the Director of Planning and Development reviewed the traffic study and their comments had been addressed by the applicant.

Steve Lagasse moved to close the Public Hearing. Stephanie Gile seconded, and the Public Hearing was closed.

Jo-Ann Ells reviewed the changes to the draft Findings of Fact as discussed.

Steve Lagasse moved to approve the application with the noted changes. Stephanie Gile seconded, and the motion passed unanimously.

Administrative Matters Continued

1. Minutes

Steve Lagasse moved to approve the minutes of April 10, 2024. Chris Lowe seconded, and the motion passed unanimously.

2. Administrative Permits

None

3. Availability for the next Hearing

Stephanie Gile noted that she might not be available for the Hearings in June and July.

Adjournment

At 7:26 p.m., Chris Lowe moved to adjourn. Tom Franklin seconded, and the motion passed unanimously.

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

DRAFT
FINDINGS OF FACT
CONCLUSIONS OF LAW
AND
DECISION

HARTFORD PLANNING COMMISSION

Application #05-24 by the State of Vermont
for Conditional Use Approval
for approval of additions and improvements to the Windsor District Court
lot 46-0024-001, 82 Railroad Row, White River Junction
in CB and Design Reivew zoning districts

This decision pertains to application #05-24 by the State of Vermont (owner/applicant) for Conditional Use Approval under section 260-16 of the Hartford Zoning Regulations for approval of additions and improvements to the Windsor District Court, lot 46-0024-001, 82 Railroad Row, White River Junction, in CB and Design Reivew zoning districts.

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 June 26, 2024, the Hartford Zoning Board of Adjustment makes the following Findings of Fact:

General Information

1. The owner of record of lot 46-0024-001 is the State of Vermont who acquired the lot on 08-08-88. The deed is recorded in volume 144, page 111 of the Hartford Land Records.

2. The lot is approximately 2.89 acres.

3. The lot is located at 82 Railroad Row in Write River Junction.

4. The lot is developed with the Windsor District Court.

5. The lot is a class 1 lot, municipal water and sewer.

6. The lot is in CB and Design Review Districts.

This Application

7. The applicant provided the following description of the project:

- Energy improvements to comply with present day energy code: new roofs, windows, doors and replace the existing brick siding, with terracotta tile, to correct the water infiltration issues and increase the insulation value.
- Replace the heating, ventilation and air conditioning systems: replace the oil-fired boilers with wood pellet boilers, with an exterior silo on the rear of the building, replacement of the rooftop chiller and air handlers in the building.
- Construct two new entrances: The front entrance is being increased for additional security screening of the public. The side entrance creates a secure vestibule and additional office space.
- Site work: replace the existing sidewalks to improve accessibility, heated walks at the new entrances to limit the use of salt. The addition of three electric vehicle parking spaces. Correct stormwater issues for better draining of the parking lot.

8. 24 V.S.A. § 4413 limits municipal regulation of certain uses, including Emergency Shelters as follows:

LIMITATIONS ON MUNICIPAL BYLAWS

Section 4413 (a)(1) restricts regulation of Emergency Shelters only with respect to location, size, height, building bulk, yards, courts, setbacks, density of buildings, off-street parking, loading facilities, traffic, noise, lighting, landscaping, and screening requirements, and only to the extent that regulations do not have the effect of interfering with the intended functional use.

9. The application meets the criteria of §4413 (a)(1) as follows:

Location

The Court is a Public Facility which is a Conditional Use in the CB zoning district.

Size, Height, Building Bulk, Density of Buildings, & Setbacks

The proposed additions to the building result in minor changes to the existing building's overall size, bulk, and density.

The proposed additions do not exceed the allowed height of 50' in the CB zoning district.

There are no setbacks in the CB zoning district.

Yards & Courts

The proposed additions have an insignificant effect on the developed portion of the property.

Off-street Parking

Changes to parking are limited to the addition of three electric vehicle parking spaces and correcting stormwater issues for better draining of the parking lot.

Loading Facilities

No changes are proposed.

Traffic

Traffic will not increase as a result of the project.

Noise

The project will not create additional noise.

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

Lighting

Changes to lighting are limited to the relocation of two existing light poles.

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

Landscaping & Screening

Changes to landscaping are limited to the removal and replacement of an existing tree.

10. The Hartford Design Review Committee reviewed the project on May 30, 2024 and voted to recommend that the Planning Commission approve the project based on the Design Review Criteria (as limited by 24 V.S.A. § 4413).

11. Portions of the property are in the Special Flood Hazard Area.

    24 VSA 4413 (2) prohibits the Town from regulating the Court for compliance with Hartford's Special Flood Hazard Area Regulations.

    24 VSA 4413 (2) states:

    > Except for State-owned and -operated institutions and facilities, a municipality

may regulate each of the land uses listed in subdivision (1) of this subsection for compliance with the National Flood Insurance Program and for compliance with a municipal ordinance or bylaw regulating development in a flood hazard area or river corridor, consistent with the requirements of subdivision 2291(25) and section 4424 of this title. These regulations shall not have the effect of interfering with the intended functional use.

12. 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.

13. According to the applicant, "two existing catch basins are not functioning as they should, so the basins and associated piping are being demolished. New catch basins and piping are being installed in the southern (employee) parking lot to improve drainage in that parking lot. The project proposes 1,550 sf of new impervious surface. This increase falls well below the 5,000-sf expansion threshold in the state stormwater regulations that would require a state stormwater application."

14. 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.

15. The applicant understands that any stockpiling of materials related to the construction of the project must be located twice the distance of the height of the stockpiled materials from any public or private right-of-way or property boundary.

16. During construction of the 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.

17. The applicant understands that no structure, including construction/office trailers, 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.

18. The applicant retains the obligation to identify, apply for, and obtain relevant local and state permits for this project.

19. 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.

20. 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

Based upon the foregoing Findings of Fact, the Hartford Zoning Board of Adjustment concludes that the application meets the criteria of §4413 (a)(1) including location, size, height, building bulk, yards, courts, setbacks, density of buildings, off-street parking, loading facilities, traffic, noise, lighting, landscaping, and screening.

DECISION

The Hartford Zoning Board of Adjustment, based upon the forgoing Findings of Fact and Conclusions of Law, hereby approves application # application #05-24 by the State of Vermont (owner/applicant) for Conditional Use Approval under section 260-16 of the Hartford Zoning Regulations for approval of additions and improvements to the Windsor District Court, lot 46-0024-001, 82 Railroad Row, White River Junction, in CB and Design Reivew zoning districts **on the condition that before a Certificate of Occupancy is issued, the applicant submits to the Zoning Administrator:**

- **Written verification from their Engineer and Architect certifying that the project was constructed in compliance with the approved plans and Findings of Fact.**
- **A PDF of the record drawings.**
- **A copy of an 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 applicants are 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 June 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. The fee is $250.00. 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 #05-24
2. Civil plan set prepared by Engineering Ventures received May 30, 2024
3. Architectural plan set prepared by Wiemann Lamphere received May 30, 2024
4. Elevations set prepared by Wiemann Lamphere received May 30, 2024
5. Draft minutes from the May 30, 2024 Design Revie Committee Meeting
6. Letter from Sherilyn Lafley dated May 28, 2024
7. Memo from Jo-Ann Ells dated May 23, 2024
8. Letter from Sherilyn Lafley dated May 21, 2024
9. Letter from Sherilyn Lafley dated May 20, 2024

PLOTTED: 5/10/2024 4:34 PM

SURVEY NOTES

1. EXISTING PHYSICAL FEATURES AND TOPOGRAPHY SHOWN HERE ARE BASED ON A SURVEY PERFORMED BY LATITUDES LAND SURVEYING IN AUGUST 2023.
2. SITE FEATURES SHOWN SOUTH OF RAILROAD ROW EXTEND BEYOND TOPOGRAPHIC SURVEY.
3. PROPERTY LINES ARE APPROXIMATE AND BASED ON A PLAN TITLED "BOSTON AND MAINE CORPORATION TO BYRON HATHORN" BY BRUNO ASSOCIATES DATED 10/25/94.
4. NORTH ORIENTATION IS REFERENCED TO APPROXIMATE VERMONT GRID NORTH.

GENERAL NOTES

1. UTILITIES SHOWN MAY NOT FULLY REPRESENT ALL UTILITES OR THEIR LOCATIONS WITHIN THE WORK AREA. CONTRACTOR TO OBTAIN A VALID DIG-SAFE TICKET PRIOR TO BEGINNING EXCAVATION WORK AND ENGAGE A PRIVATE UTILITY LOCATOR TO MARK ANY UNDERGROUND UTILITIES NOT COVERED BY DIG-SAFE. REPORT ANY DISCREPANCIES PROMPTLY TO THE ENGINEER.
2. UTILITIES SHOWN DO NOT PURPORT TO CONSTITUTE OR REPRESENT ALL UTILITIES LOCATION UPON OR ADJACENT TO THE SURVEYED PREMISES. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITIES. ALL DISCREPANCIES SHALL BE REPORTED TO THE OWNER AND ENGINEER. SITE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AND UTILITY OWNERS 72 HOURS, EXCLUSIVE OF WEEKENDS AND HOLIDAYS, PRIOR TO ANY DIGGING, DRILLING, OR BLASTING.
   A. DIG SAFE (TEL: #811)
   B. NON DIG SAFE MEMBER FACILITIY OPERATORS IF KNOWN. A LIST OF DIG SAFE MEMBERS BY STATE CAN BE FOUND ON THE DIG SAFE WEB SITE WWW.DIGSAFE.COM
3. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL FROM THE ENGINEER.
4. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.
5. THE CONTRACTOR SHALL RESTORE LAWNS, DRIVEWAYS, CULVERTS, SIGNS AND OTHER PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO EXISTING CONDITIONS OR BETTER AS DETERMINED BY THE ENGINEER. ANY DAMAGED TREES, SHRUBS AND/OR HEDGES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE, UNLESS NOTED OTHERWISE.
6. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PERMITS.
7. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING, AND INCURRING THE COST OF ALL REQUIRED PERMITS, INSPECTIONS, AND CERTIFICATES UNLESS OTHERWISE INDICATED IN THE CONTRACT DOCUMENTS.
8. THE CONTRACTOR WILL PROTECT EXISTING PROPERTY LINE MONUMENTATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY THE ENGINEER OR OWNER SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A VERMONT STATE LICENSED LAND SURVEYOR.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND SPECIFICATIONS, AND COORDINATE WORK WITH ALL CONTRACTS FOR THE SITE.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT EXPLORATORY TEST PITS AS MAY BE REQUIRED TO DETERMINE UNDERGROUND CONDITIONS.
11. ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS FOR CONSTRUCTION.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK.
13. MAINTAIN FLOW FOR ALL EXISTING UTILITIES, UNLESS NOTED OTHERWISE.
14. ALL SITE FILL SHALL MEET SELECTED FILL STANDARDS UNLESS NOTED OTHERWISE ON THE DRAWINGS.
15. CONTRACTOR TO GRADE ALL AREAS ON THE SITE TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND IMPERVIOUS SURFACES.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT. THE CONTRACTOR SHALL PROVIDE MARKED-UP AS-BUILT PLANS FOR ALL UTILITIES SHOWING CONNECTIONS, BENDS, VALVES, LENGTHS OF LINES AND INVERTS. AS-BUILT PLANS SHALL BE REVIEWED BY THE OWNER AND HIS REPRESENTATIVES BEFORE UTILITIES WILL BE ACCEPTED.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER INSTALLATION, MONITORING, MAINTENANCE AND REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES AND TAKING PRECAUTIONARY STEPS TO AVOID ANY SEDIMENT TRANSFER TO NEIGHBORING SITES OR WATERS OF THE STATE.
18. ALL EXCAVATION WORK AND SOIL HANDLING MUST COMPLY WITH THE SOILS MANAGEMENT PLAN.

DEMOLITION NOTES

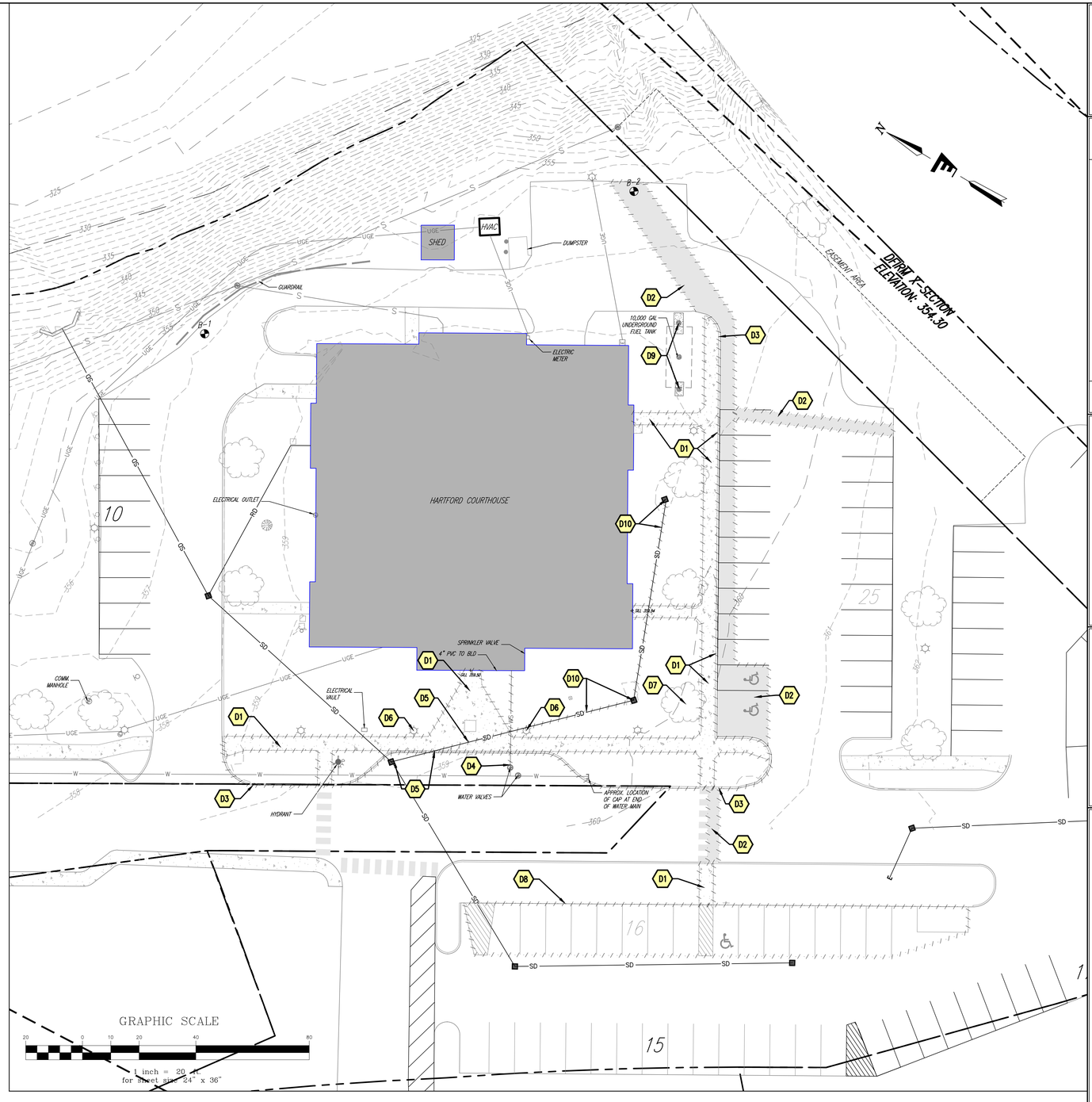
1. PRIOR TO DEMOLITION, THE CONTRACTOR SHALL CONVENE A MEETING WITH THE PROJECT OWNER, PROJECT ENGINEER, OWNER AND LESSEES, CONTRACTOR AND REPRESENTATIVES TO REVIEW LIMITS AND SCHEDULE OF DEMOLITION AND CONSTRUCTION AND TO ENSURE CONTINUED ACCESS AND UTILITY SERVICE TO ADJACENT RESIDENTS.
2. ALL DEMOLITION ITEMS FROM THE DEMOLITION, UNLESS NOTED BY THE OWNER TO BE STORED OR REUSED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROMPTLY REMOVED FROM THE SITE. EXCESS OR UNSUITABLE SOIL SHALL BE REMOVED FROM THE SITE. PROJECT CONTRACTOR TO PROVIDE LIST FOR OWNER'S REVIEW FOR SALVAGED EQUIPMENT ETC. FOR OWNER TO RECLAIM.
3. ALL ADJACENT FACILITIES AND STRUCTURES NOT INDICATED AS INCLUDED IN THE SCOPE OF WORK SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATELY REPAIRING OR REPLACING ALL ADJACENT FACILITIES OR STRUCTURES DAMAGED DURING CONSTRUCTION TO PRE-CONSTRUCTION CONDITION OR BETTER.
4. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK AREA NOT ONLY DURING DEMOLITION PROCEDURES, BUT FOR THE DURATION OF CONSTRUCTION.
5. PRIOR TO DEMOLITION, HAND EXCAVATE ANY UNDERGROUND UTILITIES. NOTIFY THE OWNER IF ANY OTHER UTILITIES NOT NOTED ON THE DRAWINGS ARE FOUND.
6. CARE SHALL BE TAKEN NOT TO DAMAGE OR DISTURB ANY TREES AND SITE LIGHTING NOT INDICATED FOR REMOVAL DURING CONSTRUCTION.
7. ALL EXISTING UTILITIES, FENCING AND SITE FEATURES SHOWN WITH CROSS HATCHING (– / / / / /–) ARE TO BE REMOVED (MH, CB, PIPE, ETC).
8. SEED AND MULCH ALL RESULTING DISTURBED AREAS IN ACCORDANCE WITH THE EROSION PREVENTION AND SEDIMENT CONTROL PLAN WHERE NO WORK IS ANTICIPATED WITHIN 48 HOURS.
9. REFER TO DEMOLITION SPECIFICATIONS AND BID INSTRUCTIONS FOR SALVAGE AND ADDITIONAL WORK ITEMS. CONTRACTOR SHALL COORDINATE PHASING AND DEMOLITION OF THOSE ITEMS WITH OTHER TRADES.
10. CONTRACTOR TO CONFIRM WATER VALVE FUNCTION WITH PUBLIC WORKS PRIOR TO BEGINNING EXCAVATION WORK.

DEMOLITION SCHEDULE

- D1 REMOVE EXISTING CONCRETE SIDEWALK AND ADJACENT CURBING WHERE PRESENT
- D2 SAWCUT ASPHALT PAVEMENT, REMOVE GRAVEL BASE MATERIAL
- D3 REMOVE EXISTING CONCRETE CURBING
- D4 REMOVE EXISTING 6" D.I. WATER LINE AT EXISTING GATE VALVE. NEW WATER LINE TO UTILIZE EXISTING GATE VALVE AT MAIN CONNECTION. SEE SHEET C2.1 FOR MORE DETAIL
- D5 CAP EXISTING STORMWATER PIPE WITHIN EXCAVATION AREA FOR NEW CURBING. FILL PIPE PENETRATIONS INSIDE CATCH BASIN WITH NON-SHRINK GROUT
- D6 REMOVE EXISTING LAMP POST AND SALVAGE FOR REINSTALLATION PER SHEET C2.1
- D7 REMOVE EXISTING TREE AND STUMP
- D8 EXISTING PARKING MARKINGS TO BE REMOVED AND REMARKED
- D9 FUEL TANK TO BE REMOVED – SEE NOTES BELOW
- D10 REMOVE EXISTING CATCH BASIN AND STORMWATER PIPE

FUEL TANK REMOVAL NOTES

1. FUEL TANK REMOVAL TO COMPLY WITH VERMONT UNDERGROUND STORAGE TANK RULES.
2. CONTRACTOR TO COORDINATE PLACEMENT OF TEMPORARY TANK AND TRANSFER OF REMAINING FUEL FROM EXISTING UNDERGROUND TANK TO TEMPORARY TANK WITH BGS STAFF.
3. CONTRACTOR TO HIRE ENVIRONMENTAL CONSULTANT TO OVERSEE REMOVAL OF EXISTING TANK AND PROVIDE TANK CLOSURE REPORT ACCEPTABLE TO THE VT ANR.
4. RELEASE OF HAZARDOUS MATERIALS, INCLUDING FROM SPILLS OR TANK OVERFLOWS, INTO SURFACE OR GROUNDWATER, OR ONTO LAND OF THE STATE IS PROHIBITED.
5. ANY RELEASE OF FUEL OR EVIDENCE OF PRIOR RELEASE IS TO BE REPORTED TO THE WASTE MANAGEMENT & PREVENTION DIVISION AT (802) 828-1138 (M-F 4:45 AM TO 4:30 PM) OR THE DEPARTMENT OF PUBLIC SAFETY EMERGENCY MANAGEMENT DIVISION (800) 641-5005, AND AS REQUIRED BY FEDERAL LAW.



LEGEND

EXISTING FEATURES		EXISTING FEATURES		EXISTING FEATURES		EXISTING FEATURES	
C/O	CLEAN OUT		WATER SHUT OFF	WATERCOURSE		W	WATER LINE
S	MANHOLE		LIGHT POLE	TREELINE		E	UNDERGROUND ELECTRIC
CB	CATCH BASIN		UTILITY POWER POLE	FENCE	X	OHW	OVERHEAD ELECTRIC
D	STORM MANHOLE		SIGN	CONTOUR	100	UT	UNDERGROUND TELEPHONE
WV	TAPPING SLEEVE AND VALVE	100.00	SPOT ELEVATION	PROPERTY LINE		RD	ROOF DRAIN
GV	GATE VALVE		TREE	EDGE OF PAVEMENT		FD	FOUNDATION DRAIN
	HYDRANT		SURVEY POINT	SANITARY SEWER LINE	S		RIGHT-OF-WAY LINE
			HANDICAP SYMBOL	STORM LINE	SD		SETBACK

STATE OF VERMONT
PAUL M. BOISVERT
NO. 9016
CIVIL
LICENSED
PROFESSIONAL ENGINEER
Stamp

No.	Description	Date

ENGINEERING VENTURES PC
208 Flynn Avenue, Suite 2A, Burlington, VT 05401 • 802-863-8225
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333
414 Union Street, Schenectady, NY 12305 • 518-630-9614
www.engineeringventures.com

Windsor District Court
82 Railroad Row
White River Junction, VT
802-295-8865

Sheet Title: Existing Conditions and Demolition Plan

Project Title: Windsor District Court Expansion Project
White River Junction, VT

EV Project #	22548
Drawn By:	TB
Checked By:	PB
Scale:	As Noted
Date:	5/10/24

C1.1

S:\PROJECTS\A-2022\2248 WINDSOR DISTRICT COURT ADDITION CIVIL\DWG\SHEET FILES\C1.1 EXISTING CONDITIONS PLAN.DWG

PLOTTED: 5/17/2024 10:27 AM

SITE SCHEDULE

- C1 — PROPOSED ADDITION – SEE ARCHITECTURAL DRAWINGS
- C2 — NEW CONCRETE SIDEWALK – SEE DETAIL 3 SHEET C3.1
  SIDEWALK TO BE 6' WIDE ALONG SECTION WITH ADA PARKING AND EV CHARGERS
- C3 — PAVEMENT TRENCH PATCH – SEE DETAIL 2 SHEET C3.1
- C4 — RELOCATED LAMP POSTS
- C5 — LEVEL 2 EV CHARGER TO BE INSTALLED IN SIDEWALK
- C6 — RELOCATED AND NEW ADA PARKING AND EV PARKING SIGNS (TYP)
- C7 — RESTORE CROSSWALK PATTERN AFTER CONSTRUCTION COMPLETION
- C8 — CONCRETE BASE FOR SALLYPORT CARD READER
- C9 — 3' X 3' CONCRETE PAD FOR MAILBOX INSTALLATION
- C10 — 11'x11' CONCRETE PAD FOR PELLET SILO, SEE STRUCTURAL PLANS FOR DETAILS,
  INSTALL BOLLARDS IN LOCATIONS SHOWN ON THIS SHEET
- C11 — CONCRETE CURBING
  SEE DETAIL 5 SHEET C3.2
- C12 — CONCRETE CURBING ALONG SIDEWALK TO BE INTEGRAL CURB AND WALK
  SEE DETAIL 6 SHEET C3.2
- C13 — MAPLE TREE SAPLING

STORMWATER SCHEDULE

- ST1 — 3' I.D. CATCH BASIN
  358.8612" INV OUT (ST6): 356.51
- ST2 — 31 LF OF 12" HDPE STORM PIPE
- ST3 — 4' I.D. CATCH BASIN
  RIM: 360.19
  12" INV IN (ST2): 355.90
  12" INV OUT (ST4): 355.80
- ST4 — 74 LF OF 12" HDPE STORM PIPE
- ST5 — 3' I.D. CATCH BASIN
  RIM: 358.82
  12" INV OUT (ST6): 355.98
- ST6 — 20 LF OF 12" HDPE STORM PIPE
- ST7 — 4' I.D. CATCH BASIN
  RIM: 359.60
  12" INV IN (ST4): 355.88
  12" INV IN (ST6): 355.88
  12" INV OUT (ST8): 355.78
- ST8 — 62 LF OF 12" HDPE STORM PIPE
- ST9 — 4' I.D. CATCH BASIN
  RIM: 358.47
  12" INV IN (ST8): 355.47
  12" INV OUT (ST10): 355.37
- ST10 — 83 LF OF 12" HDPE STORM PIPE
- ST11 — FLARED END SECTION AT DISCHARGE OF PIPE WITH STABILIZE OUTFALL
  APPROX. DISCHARGE ELEV: 354.51
  SEE DETAIL 3 SHEET C3.2

WATER SCHEDULE

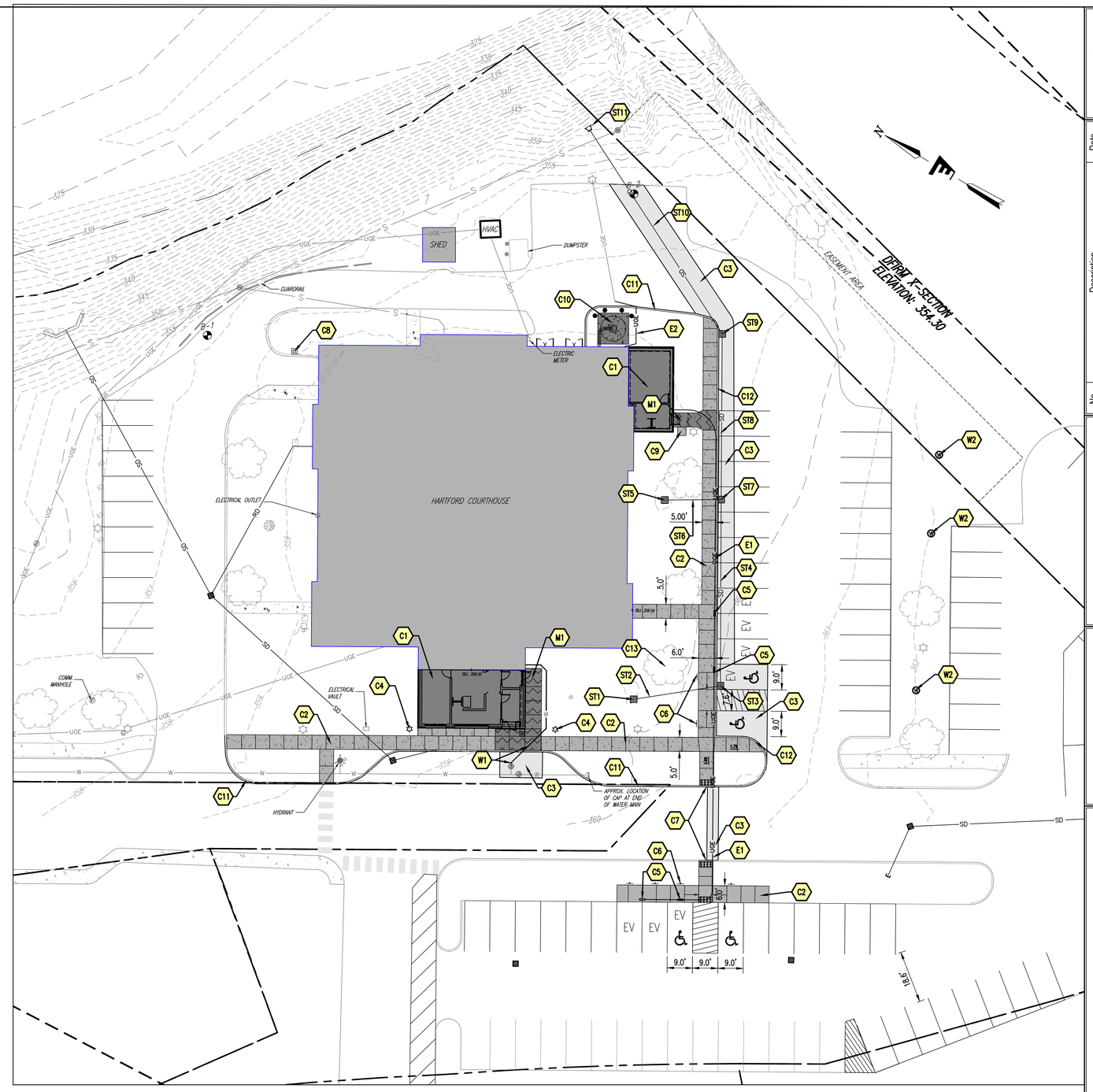
- W1 — 6" D.I. WATER LINE. CONNECT TO EXISTING GATE VALVE.
- W2 — GEOTHERMAL TEST WELLS, LOCATIONS APPROXIMATE

ELECTRIC SCHEDULE

- E1 — CONDUIT FOR 240V SERVICE TO EV CHARGERS
- E2 — REROUTE POWER SUPPLY AROUND SILO AND BOLLARDS

MECHANICAL SCHEDULE

- M1 — CONCRETE SNOWMELT SYSTEM TO BE INSTALLED IN CONCRETE SIDEWALK
  SEE MEP PLANS FOR DETAIL



GRAPHIC SCALE

20 0 10 20 40 80

1 inch = 20 ft.
for sheet size 24" x 36"

LEGEND

EXISTING FEATURES	PROPOSED FEATURES	EXISTING FEATURES	PROPOSED FEATURES	EXISTING FEATURES	PROPOSED FEATURES	EXISTING FEATURES	PROPOSED FEATURES
C/O CLEAN OUT	C/O	WATER SHUT OFF		WATERCOURSE		W WATER LINE	W
MANHOLE		LIGHT POLE		TREELINE		E UNDERGROUND ELECTRIC	E
CATCH BASIN		UTILITY POWER POLE		FENCE	X	OHW OVERHEAD ELECTRIC	OHE
STORM MANHOLE		SIGN		CONTOUR	100	UT UNDERGROUND TELEPHONE	UT
WV TAPPING SLEEVE AND VALVE	WV	SPOT ELEVATION	+100.5	PROPERTY LINE		RD ROOF DRAIN	RD
GV GATE VALVE	GV	TREE		EDGE OF PAVEMENT		FD FOUNDATION DRAIN	UD
HYDRANT		SURVEY POINT		SANITARY SEWER LINE	S	RIGHT-OF-WAY LINE	
		HANDICAP SYMBOL		STORM LINE	SD	SETBACK	

STATE OF VERMONT
PAUL M. BOISVERT
NO. 9016
Civil
5/10/24
PROFESSIONAL ENGINEER
Stamp

No.	Description	Date

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Windsor District Court
82 Railroad Row
White River Junction, VT
802-295-8865

Sheet Title: Site Utility and Layout Plan

Project Title: Windsor District Court Expansion Project
White River Junction, VT

EV Project #	22548
Drawn By:	TB
Checked By:	PB
Scale:	As Noted
Date:	5/10/24

C2.1

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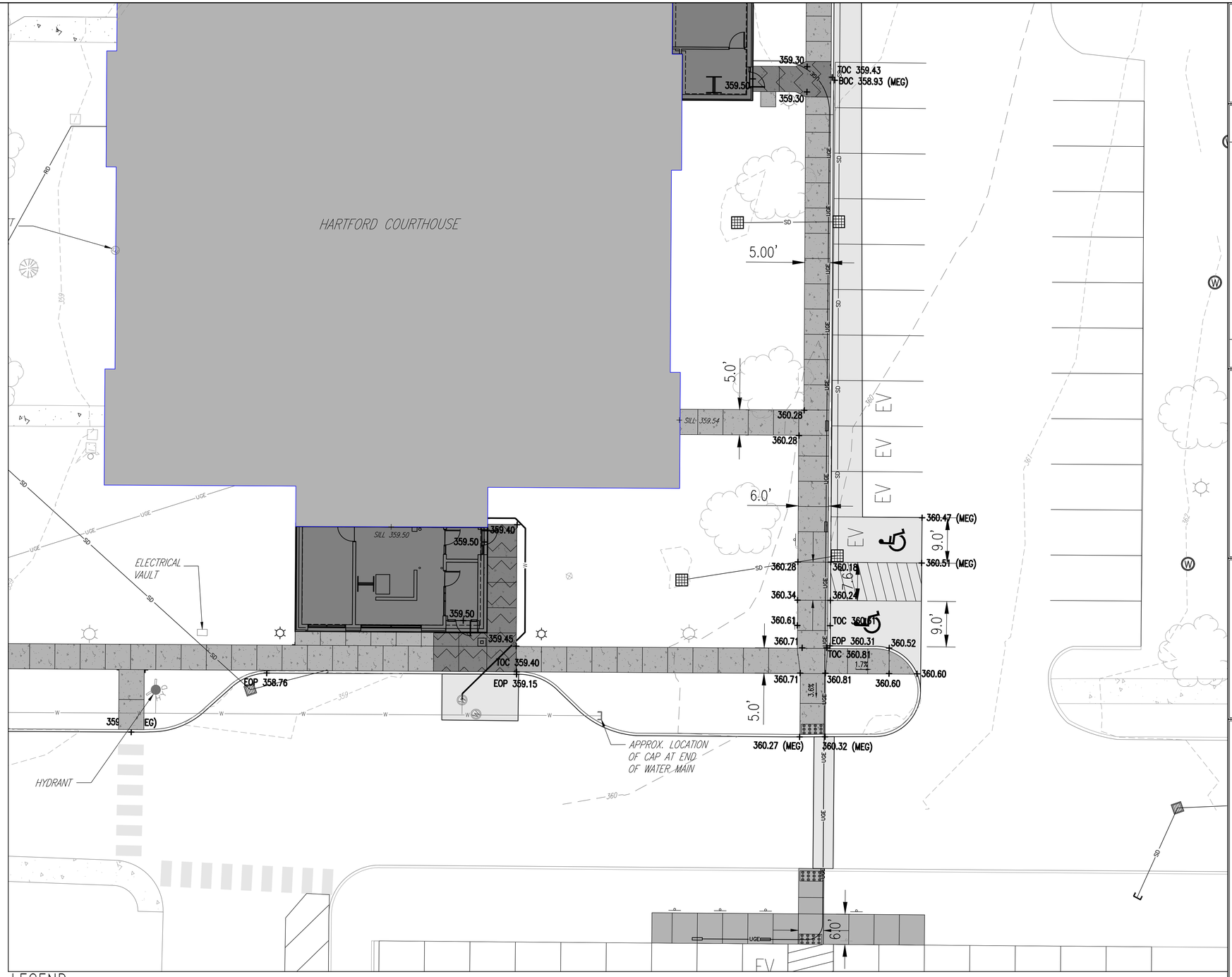

GRAPHIC SCALE

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1 inch = 10 ft.
for sheet size 24" x 36"

LEGEND

EXISTING FEATURES		PROPOSED FEATURES	EXISTING FEATURES		PROPOSED FEATURES	EXISTING FEATURES		PROPOSED FEATURES	EXISTING FEATURES		PROPOSED FEATURES
C/O	CLEAN OUT	C/O		WATER SHUT OFF			WATERCOURSE		W	WATER LINE	W
S	MANHOLE	S		LIGHT POLE			TREELINE		E	UNDERGROUND ELECTRIC	E
	CATCH BASIN			UTILITY POWER POLE		X	FENCE	X	OHW	OVERHEAD ELECTRIC	OHE
D	STORM MANHOLE	D		SIGN		100	CONTOUR	100	UT	UNDERGROUND TELEPHONE	UT
WV	TAPPING SLEEVE AND VALVE	WV	+ 100.00	SPOT ELEVATION	+100.5		PROPERTY LINE		RD	ROOF DRAIN	RD
GV	GATE VALVE	GV		TREE			EDGE OF PAVEMENT		FD	FOUNDATION DRAIN	UD
	HYDRANT			SURVEY POINT		S	SANITARY SEWER LINE	S		RIGHT-OF-WAY LINE	
				HANDICAP SYMBOL		SD	STORM LINE	SD		SETBACK	

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Windsor District Court
82 Railroad Row
White River Junction, VT
802-295-8865

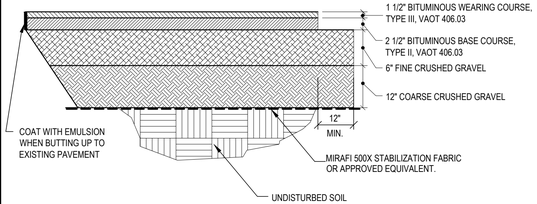
Sheet Title: Grading Plan

Project Title: Windsor District Court Expansion Project
White River Junction, VT

EV Project #	22548
Drawn By:	TB
Checked By:	PB
Scale:	As Noted
Date:	5/10/24

C2.2

S:\PROJECTS\5-2022\2548 WINDSOR DISTRICT COURT ADDITION\ DVD\WG\SHEET FILES\C2.X SITE PLANS.DWG

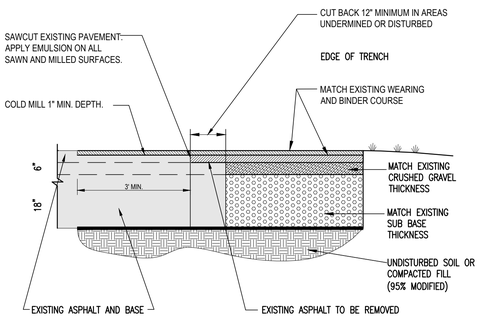


PAVEMENT PATCHING NOTES:

1. IN ALL PAVEMENT AREAS TO BE PATCHED, SAW CUT AND REMOVE EXISTING PAVEMENT.
2. EXCAVATE BASE MATERIAL AND SUB-BASE MATERIAL IF INADEQUATE.
3. COMPACT ALL FILL MATERIAL TO 95% MODIFIED PROCTOR

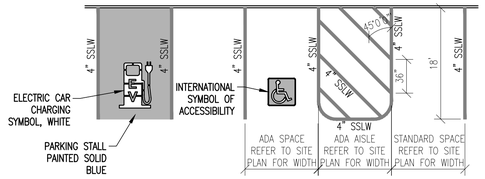
TYPICAL PAVEMENT DETAIL

SCALE: NONE (1)



ASPHALT PAVEMENT TRENCH PATCH DETAIL

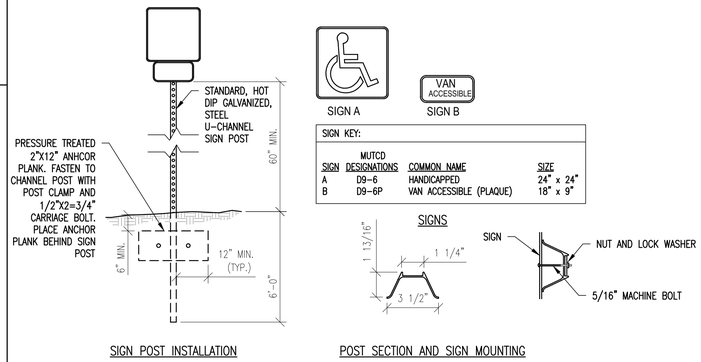
SCALE: NONE (2)



PARKING LOT STRIPING

PAVEMENT MARKINGS DETAIL

SCALE: NONE (3)

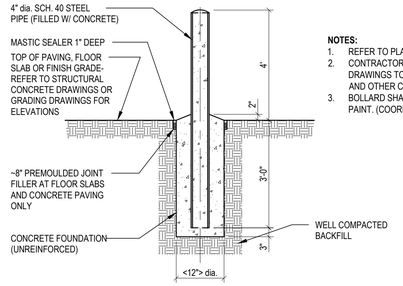


SIGN POST INSTALLATION

POST SECTION AND SIGN MOUNTING

SIGN AND POST DETAILS

SCALE: NONE (4)



NOTES:

1. REFER TO PLAN FOR LOCATIONS.
2. CONTRACTOR TO COORDINATE PLANS WITH CONCRETE DRAWINGS TO INSURE NO CONFLICT BETWEEN BOLLARDS AND OTHER CONCRETE WORK.
3. BOLLARD SHALL BE PAINTED WITH AN EXTERIOR GRADE PAINT. (COORDINATE COLOR WITH ARCHITECT/OWNER)

BOLLARD DETAIL

SCALE: NONE (5)

EARTHWORK NOTES

1. PRIOR TO THE START OF WORK, A PRE-CONSTRUCTION MEETING WILL BE HELD WITH THE CONTRACTOR, OWNER, PROJECT ENGINEER AND TOWN DPW TO REVIEW PROCEDURES AND IDENTIFY RESPONSIBILITIES. 4 WEEKS NOTICE SHALL BE GIVEN TO THE TOWN PRIOR TO START OF CONSTRUCTION. UNLESS STATED OTHERWISE STATED, ALL MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE VTRANS SPECIFICATIONS.

2. CLEARING AND GRUBBING- SITE TO BE RESTORED TO PRE-CONSTRUCTION CONDITIONS, INCLUDING DRIVEWAYS, STONE WALLS, AND GRASS AREAS. THE DRIVEWAY SUB-GRADE MATERIAL SHALL EXTEND ONE FOOT BEYOND THE EDGE OF PAVING.

3. COMPACTION OF ALL MATERIALS SHALL BE PERFORMED USING VIBRATORY ROLLERS AND WATER IN LIFTS OF NO GREATER THAN TWELVE INCHES. COMPACTION SHALL BE PERFORMED UNTIL THE REQUIRED DENSITY IS ACHIEVED. DENSITY SHALL BE DETERMINED BY ASTM D2922 AND SHALL NOT BE LESS THAN THE REQUIRED AMOUNT AS DETERMINED IN ACCORDANCE WITH ASTM D1557.

4. COMPACTION TESTING SHALL BE PERFORMED FOR EVERY LAYER OF MATERIAL PLACED AND FOR EVERY 2500 SQUARE FEET OF AREA.

5. PAVEMENT SHALL MEET THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AS PUBLISHED BY VTRANS.

6. PAVEMENT SHALL NOT BE INSTALLED WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT, NOR WHEN THE ROAD BASE TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT. PAVEMENT SHALL NOT FALL BELOW 185 DEGREES FAHRENHEIT PRIOR TO THE COMPLETION OF ROLLING. PAVEMENT SHALL NOT BE INSTALLED WHEN THE SUBGRADE IS FROZEN OR THE GRADES ARE INCORRECT.

7. ALL REMAINING DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH APPLICABLE STATE SPECIFICATIONS FOR EROSION CONTROL.

8. THE SEEDING OF 10% OR GREATER SLOPES SHALL REQUIRE THE USE OF EROSION CONTROL MATTING.

9. ALL EARTHWORK MATERIALS SHALL BE OBTAINED FROM APPROVED SOURCES. THEY SHALL CONSIST OF SATISFACTORILY GRADED, FREE DRAINING MATERIAL, REASONABLY FREE FROM LOAM, SILT, CLAY AND ORGANIC MATERIAL. EARTHWORK MATERIALS SHALL MEET THE REQUIREMENTS OF THE FOLLOWING TABLES:

A. SAND BLANKET/BEDDING:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
2 INCHES	100
1-1/2 INCHES	90 - 100
1/2 INCH	70 - 100
NO. 4	60 - 100
NO. 100	0 - 20
NO. 200	0 - 8

B. 3/4" CRUSHED STONE:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
1 INCH	100
3/4 INCHES	90 - 100
3/8 INCH	20 - 55
NO. 4	0 - 10
NO. 8	0 - 5

C. 1 1/2" CRUSHED STONE:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
1 3/4 INCH	100
1 1/2 INCH	90 - 100
1 INCH	20 - 55
3/4 INCH	0 - 15
3/8 INCH	0 - 5

D. COARSE CRUSHED GRAVEL:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
4 INCHES	95 - 100
NO. 4	25 - 50
NO. 100	0 - 12
NO. 200	0 - 6

E. FINE CRUSHED GRAVEL:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
2 INCHES	100
1~8 INCHES	90 - 100
NO. 4	30 - 60
NO. 100	0 - 12
NO. 200	0 - 6

F. GRANULAR BACKFILL:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
3 INCHES	100
2 1/2 INCHES	90 - 100
NO. 4	45 - 75
NO. 100	0 - 12
NO. 200	0 - 6

G. TYPE I STONE FOR STONE FILL

THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF FOUR INCHES.

H. TYPE II STONE FOR STONE FILL

THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM TWO INCHES TO 36 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 12 INCHES.

I. TOPSOIL SHALL MEET THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE SPECIFICALLY STATED IN THE CONTRACT DOCUMENTS:

1. THE pH OF THE MATERIAL SHALL BE BETWEEN 5.5 AND 7.6.
2. THE ORGANIC CONTENT SHALL BE NOT LESS THAN 2% NOR MORE THAN 20%.
3. GRADATION:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
2 INCHES	100
1 INCH	85 - 100
1/4 INCH	65 - 100
NO. 200	20 - 80

THE CONTRACTOR MAY AMEND NATURAL TOPSOIL WITH APPROVED MATERIALS AND BY APPROVED METHODS TO MEET THE ABOVE SPECIFICATIONS.

J. DRAINAGE AGGREGATE:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
1 INCH	100
3/4 INCH	90 - 100
3/8 INCH	20 - 55
NO. 4	60 - 100
NO. 100	0 - 10
NO. 200	0 -5

K. AGGREGATE FOR EROSION PREVENTION AND SEDIMENT CONTROL

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
4 INCH	80 - 100
3 INCH	40 - 60
2 INCH	0 - 20

L. DENSE GRADED CRUSHED STONE FOR SUBBASE

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
3 1/2 INCH	100
3 INCH	90 - 100
2 INCH	75 - 100
1 INCH	50 - 80
1/2" INCH	30 - 60
NO. 4	15 - 40
NO. 200	0 - 6

M. 2" CRUSHED STONE

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
3 INCH	100
2 INCH	75 - 100
1 INCH	0 - 10
1/4" INCH	0 - 5

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No.	Description	Date

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Windsor District Court
82 Railroad Row
White River Junction, VT
802-295-8865

Sheet Title: Site Details

Project Title: Windsor District Court Expansion Project
White River Junction, VT

EV Project #	22548
Drawn By:	TB
Checked By:	PB
Scale:	As Noted
Date:	5/10/24

C3.1

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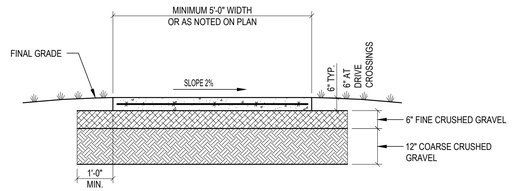


SIDEWALK DETAIL

CONCRETE SIDEWALK NOTES:

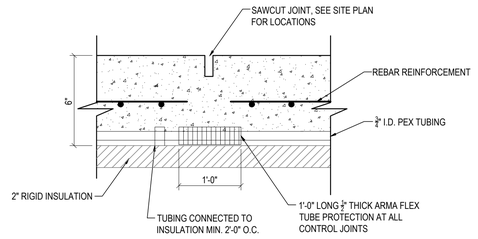
1. PLACE A TOOLED JOINT 1/8" WIDE AND AT LEAST 1/3 OF THE DEPTH, TYPICALLY AT INTERVALS MATCHING THE SIDEWALK WIDTH, OR AS NOTED ON PLANS (NOT TO EXCEED 10'-0").
2. PLACE EXPANSION JOINT AS INDICATED ON PLANS, NOT TO EXCEED 20'-0" MAX. ALL EXPANSION JOINTS SHALL BE DOWELED WITH A ½" DIAMETER SMOOTH DOWEL AT 12" O.C. DOWEL SHALL BE 15" IN LENGTH AND SHALL HAVE AN EXPANSION CAP INSTALLED AT THE END. SEE DETAIL ON THIS SHEET.
3. BROOM FINISH WITH SMOOTH TROWELED EDGES. TREAT WITH SILANE-SILOXANE OR EQUAL.
4. CAST-IN-PLACE CONCRETE TO BE 5000 psi CONCRETE, 5%-7% AIR ENTRAINMENT WITH #4 DEFORMED REBAR AT MINIMUM 12" O.C. IN EACH DIRECTION IN SIDEWALK.
5. WHERE SIDEWALK IS ADJACENT TO ENTRY/EXIT DOOR PADS WITH FROST WALL FOUNDATIONS, SIDEWALK SHALL BE DOWELED TO PAD WITH 24" LONG #4 DOWELS (CENTERED) AT 1'-6" oc (PORTION OF DOWEL IN SIDEWALK TO BE GREASED).
6. WHERE SIDEWALK IS ADJACENT TO CURB, BOLLARD OR OTHER HARD FEATURE, INSTALL 1/4" EXPANSION MATERIAL (FULL DEPTH OF SIDEWALK), BETWEEN FEATURE AND SIDEWALK.
7. COMPACT ALL FILL MATERIAL TO 95% MODIFIED PROCTOR.

SIDEWALK DETAIL

SCALE: NONE 1

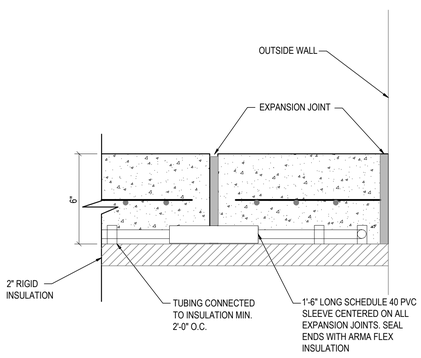
BUILDING/SIDEWALK DOWEL DETAIL

SCALE: NONE 2



SNOWMELT TUBING CONTROL JOINT DETAIL

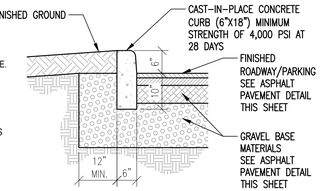
SCALE: NONE 3



SNOWMELT TUBING EXPANSION JOINT DETAIL

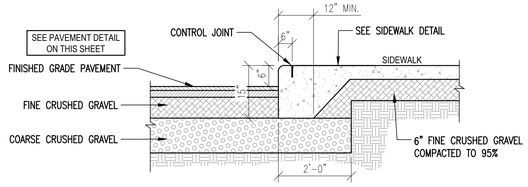
SCALE: NONE 4

NOTES:
1. CLASS B CONCRETE SHALL HAVE:
   - A. MIN. COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS
   - B. AIR ENTRAINMENT OF 5% TO 7% BY VOLUME.
   - C. MAXIMUM WATER:CEMENT RATIO= 0.60.
   - D. SLUMP: 2-4 INCHES BEFORE ADDITION OF WATER REDUCER, 6-8 INCHES AFTER THE ADDITION OF WATER REDUCER.
2. PROVIDE EQUALLY SPACED CONTROL JOINTS AT SPACING AND PATTERN INDICATED ON PLANS (NOT TO EXCEED 5'-0").
3. PROVIDE EXPANSION JOINT EVERY 20'-0" MAX.



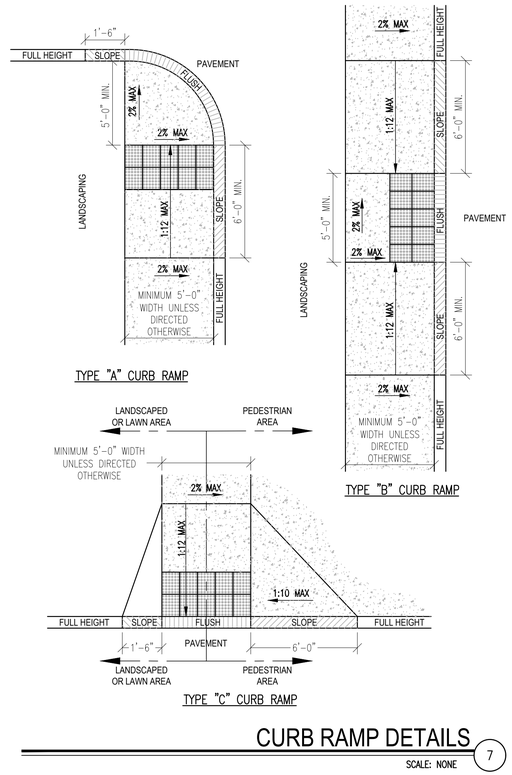
CONCRETE CURB DETAIL

SCALE: NONE 5



INTEGRAL CURB AND WALK DETAIL

SCALE: NONE 6



CURB RAMP DETAILS

SCALE: NONE 7

S:\PROJECTS\5-20222648 WINDSOR DISTRICT COURT ADDITION_CIVIL\DWG\SHEET FILES\C3.2 DETAILS.DWG

STATE OF VERMONT
PAUL M. BOISVERT
NO. 9016
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No.	Description	Date

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414 Union Street, Schenectady, NY 12305 • 518-630-9614
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Windsor District Court
82 Railroad Row
White River Junction, VT
802-295-8865

Sheet Title: Sidewalk and Curb Details

Project Title: Windsor District Court Expansion Project
White River Junction, VT

EV Project #	22548
Drawn By:	TB
Checked By:	PB
Scale:	As Noted
Date:	5/10/24

C3.2

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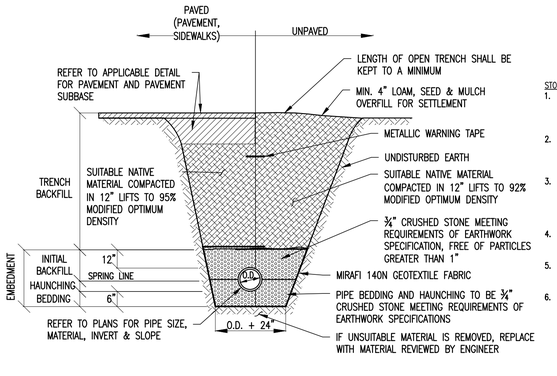


STORM TRENCH NOTES:
1. UNLESS OTHERWISE NOTED, ASSUME CLASS "C" SOILS. PERFORM ALL EXCAVATIONS TO OSHA REQUIREMENTS.
2. BEDDING TO PROVIDE A FIRM , STABLE, CONTINUOUS AND UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE.
3. WHEN APPLICABLE INSTALL PIPE WITH BELL ENDS DOWN SLOPE. PREVENT SEDIMENT FROM ENTERING NEW STORM DRAIN SYSTEM DURING CONSTRUCTION.
4. NO MECHANICAL TAMPERS SHALL BE USED DIRECTLY OVER PIPE TO INSURE PIPE IS NOT DAMAGED.
5. REFER TO INSULATION DETAIL FOR AREAS WHERE PROPER COVER CAN NOT BE ACHIEVED.
6. BACKFILL SHALL BE OF A SUITABLE NATIVE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. DEBRIS, FROZEN MATERIAL, LARGE CLODS OR STONES, ORGANIC MATTER OR OTHER UNSTABLE MATERIAL SHALL NOT BE USED FOR BACKFILL.

TYPICAL STORM DRAIN TRENCH

SCALE: NONE — 1

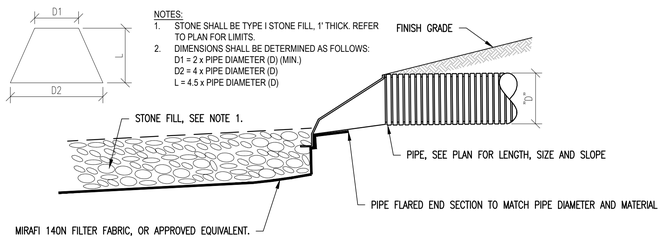
INSULATION IN PAVED AREAS:		
COVER	INSUL. WIDTH	INSUL. THICKNESS
0'–3'	LOWER DRAIN	
3'–4'	6'–0"	4"
4'–6'	NO INSUL. REQUIRED	

INSULATION IN UNPAVED AREAS:		
COVER	INSUL. WIDTH	INSUL. THICKNESS
0'–3'	LOWER DRAIN	
3'–4'	4'–0"	2"
> 4'	NO INSUL. REQUIRED	

STORM DRAIN INSULATION NOTES:
1. REFER TO APPLICABLE TRENCH DETAIL FOR SPECIFIC BACKFILL INFORMATION.
2. RIGID EXTRUDED POLYSTYRENE INSULATION SHALL CONFORM WITH ASTM C578 – STANDARD SPECIFICATION FOR RIGID CELLULAR POLYSTYRENE THERMAL INSULATION AND SHALL BE DOW STYROFOAM HIGH LOAD 40 OR EQUIVALENT.

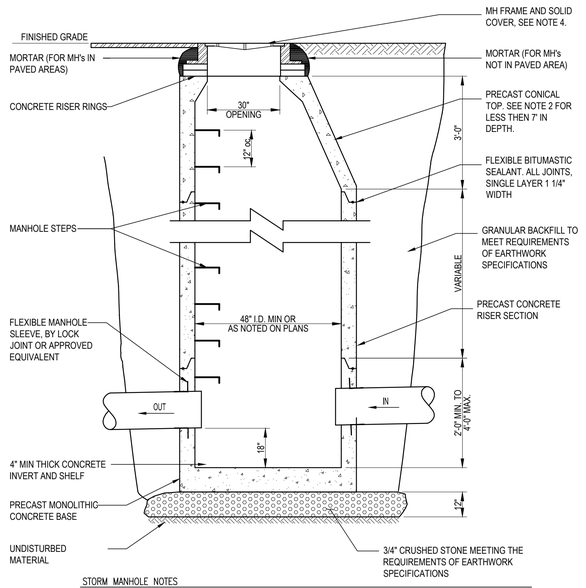
INSULATION OVER SHALLOW DRAIN DETAIL

SCALE: NONE — 2



FLARED END SECTION W/ STONE APRON

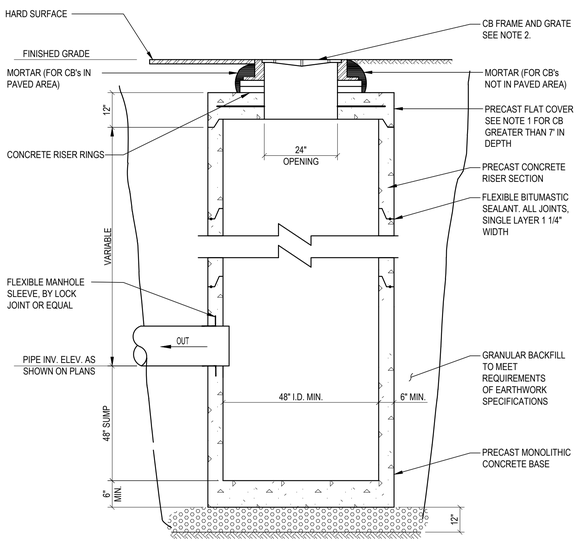
SCALE: NONE — 3



STORM MANHOLE NOTES
1. IF DEPTH OF MANHOLE IS 7 ft. OR LESS FROM RIM TO CENTERLINE INVERT, THEN A FLAT TOP WILL BE INSTALLED. IF DEPTH OF MANHOLE FROM RIM TO CENTERLINE INVERT IS MORE THAN 7 ft., THEN A CONICAL TOP WILL BE INSTALLED.
2. MANHOLE AND COVER SHALL BE DESIGNED FOR H20 LOADING.
3. PROVIDE A NEENAH FOUNDRY R-1564 OR APPROVED EQUIVALENT, CAST THE WORD "STORM" IN TOP COVER
4. MANHOLE SHALL BE PRECAST CONCRETE SUPPLIED BY AN APPROVED MANUFACTURER.

STORM MANHOLE DETAIL

SCALE: NONE — 4



CATCH BASIN NOTES
1. IF DEPTH OF CATCH BASIN IS 7 FEET OR LESS FROM RIM TO CENTERLINE INVERT THEN A FLAT TOP WILL BE INSTALLED. IF DEPTH OF CATCH BASIN FROM RIM TO CENTERLINE INVERT IS MORE THAN 7 FEET THEN A CONICAL TOP WILL BE INSTALLED.
2. PROVIDE A LEBARON 24"x24" TYPE E OR APPROVED EQUIVALENT, 3 FLANGE GRATE AND FRAME NEXT TO CURBS AND 4 FLANGE GRATE AND FRAME AT ALL OTHER LOCATIONS.
3. CATCH BASIN AND GRATE SHALL BE DESIGNED FOR H20 LOADING.
4. CATCH BASIN SHALL BE PRECAST CONCRETE AS MANUFACTURED BY S.T. GRISWOLD & CO., INC. OR APPROVED EQUIVALENT.

STORM CATCH BASIN DETAIL

SCALE: NONE — 5

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No.	Description	Date

Windsor District Court
82 Railroad Row
White River Junction, VT
802-295-8865

Sheet Title: Stormwater Details

Project Title: Windsor District Court Expansion Project
White River Junction, VT

EV Project #	22548
Drawn By:	TB
Checked By:	PB
Scale:	As Noted
Date:	5/10/24

C3.3

S:\PROJECTS\5/2022\22548 WINDSOR DISTRICT COURT ADDITION- DV\DWG\SHEET FILES\C3.3 DETAILS.DWG

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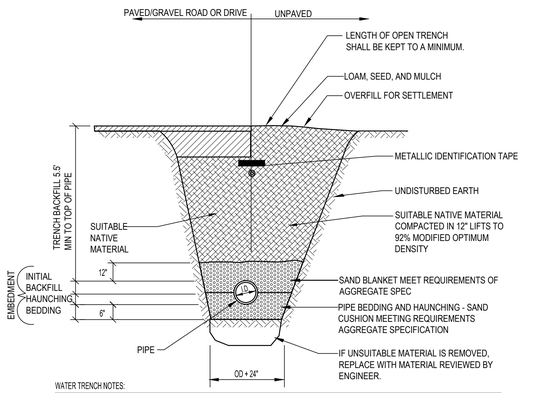


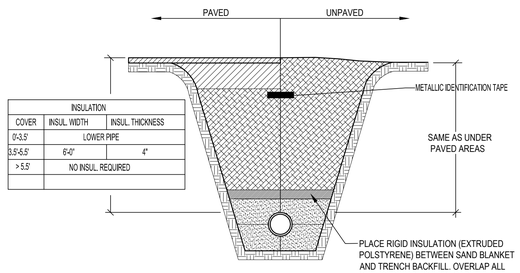
WATER TRENCH NOTES:

1. BEDDING TO PROVIDE A FIRM, STABLE, CONTINUOUS AND UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE.
2. PROVIDE 6' MINIMUM COVER OVER WATER PIPE.
3. INSTALL WATER PIPE IN ACCORDANCE WITH AWWA STANDARD C600.
4. COMPACT SOILS IN ACCORDANCE WITH SPECIFICATION
5. BACKFILL SHALL BE OF A SUITABLE NATIVE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. DEBRIS, FROZEN MATERIAL, LARGE CLODS OR STONES, ORGANIC MATTER OR OTHER UNSTABLE MATERIAL SHALL NOT BE USED FOR BACKFILL.

TYPICAL WATER TRENCH DETAIL

1

SCALE: NONE



INSULATION		
COVER	INSUL. WIDTH	INSUL. THICKNESS
0'-3.5'	LOWER PIPE	
3.5'-5.5'	6'-0"	4"
> 5.5'	NO INSUL. REQUIRED	

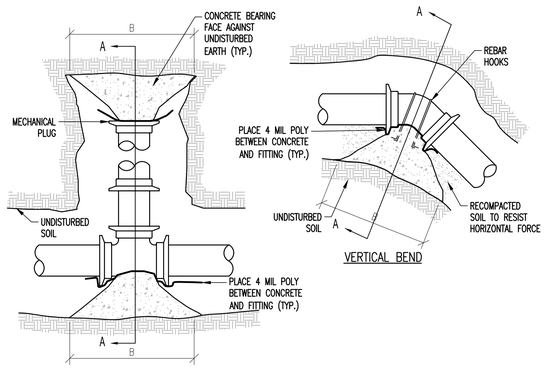
TRENCH NOTES:

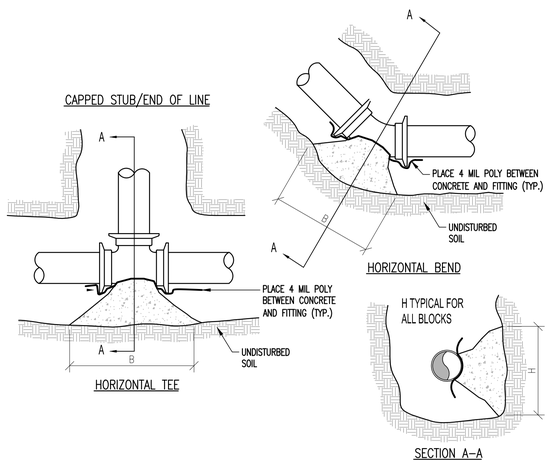
1. REFER TO APPLICABLE TRENCH DETAIL FOR SPECIFIC BACKFILL INFORMATION.

INSULATION OVER SHALLOW WATER LINE DETAIL

2

SCALE: NONE

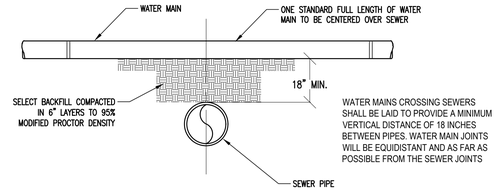




TYPICAL BEARING THRUST BLOCK

6

SCALE: NONE



WATER MAIN ABOVE SEWER

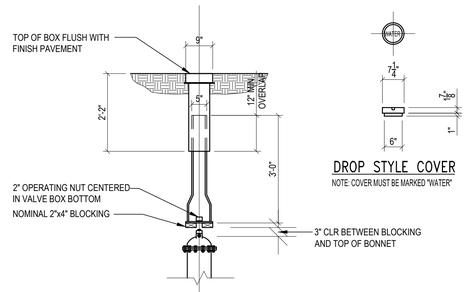
SEPARATION NOTES:

1. WATER MAIN RELATIONS TO SEWER SHALL BE IN ACCORDANCE WITH THE "RECOMMENDED STANDARDS FOR WATER WORKS" SO-CALLED TEN STATE STANDARDS.
2. WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IF THIS DISTANCE CANNOT BE OBTAINED, THEN THE PIPES SHALL BE INSTALLED IN A SEPARATE TRENCH AT AN ELEVATION SO THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.
3. WHEN IT IS IMPOSSIBLE TO MAINTAIN 18" VERTICAL SEPARATION OR WHERE THE SEWER MUST BE LAID ABOVE THE WATER MAIN; 1) THE CROSSING SHALL BE ARRANGED SO THAT ONE FULL LENGTH OF SEWER IS CENTERED ABOVE OR BELOW THE WATER LINE WITH SEWER JOINTS AS FAR AS POSSIBLE FROM WATER JOINTS; 2) THE SEWER PIPE MUST BE CONSTRUCTED TO WATER MAIN STANDARDS FOR A MINIMUM DISTANCE OF 20 FEET EITHER SIDE OF THE CROSSING OR A TOTAL OF THREE PIPE LENGTHS, WHICH EVER IS GREATER; 3) THE SECTION CONSTRUCTED TO WATER MAIN STANDARDS MUST BE PRESSURE TESTED TO MAINTAIN 50 psi FOR 15 MINUTES WITHOUT LEAKAGE PRIOR TO BACKFILLING BEYOND ONE FOOT ABOVE THE PIPE TO ASSURE WATER TIGHTNESS.

SANITARY SEWER/WATER LINE CROSSING

4

SCALE: NONE



VALVE BOX NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO TECHNICAL SPECIFICATIONS.
2. ALL PIPES SHOULD HAVE A MINIMUM DEPTH OF 5.5' FROM TOP OF PIPE TO FINISH GRADE.
3. ALL GATE VALVES SHALL BE OPEN RIGHT.

TYPICAL VALVE BOX DETAIL

5

SCALE: NONE

WATER NOTES

WATER MAINS
1. PERFORM A HYDROSTATIC AND LEAKAGE TEST ACCORDING TO AWWA C600(LATEST REVISION) ON EACH PIPE LINE.
2. THE ENGINEER SHALL BE GIVEN AT LEAST 48 HOURS NOTICE BEFORE THE TEST IS CONDUCTED. TEST MUST BE WITNESSED BY THE ENGINEER.
3. SPECIFIED TEST PRESSURE IS A MINIMUM OF 200 PSI OR 1.5X THE WORKING PRESSURE, WHICHEVER IS GREATER, AND PRESSURE DURING TEST SHALL NOT VARY BY MORE THAN 5 PSI. SEE THE CURRENT EDITION OF AWWA C600 FOR ALLOWABLE LEAKAGE.

EXISTING UTILITIES
1. LOCATION OF UTILITY INSTALLATIONS AND UNDERGROUND STRUCTURES ARE SHOWN AS APPROXIMATE ON THE CONTRACT DOCUMENTS SOME UTILITIES MAY NOT BE SHOWN.
2. ALL UTILITIES SHALL BE LOCATED BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION.
3. EXISTING UTILITIES SHALL BE PROTECTED AND SUPPORTED DURING CONSTRUCTION.
4. ALL WATER, GAS, CABLE, TELEPHONE, ELECTRIC, SEWER, AND OTHER UTILITIES FOUND TO INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE RELOCATED IN A MANNER ACCEPTABLE TO THE ENGINEER, PRIOR TO COMMENCING DEMOLITION.

PIPE BEDDING
1. SAND BLANKET/BEDDING SHALL MEET REQUIREMENTS OF EARTHWORK SPECIFICATIONS
2. TRENCH FINAL BACKFILL MATERIAL - MATERIAL WILL EXCLUDE PIECES OF PAVEMENT, ORGANIC MATTER, TOPSOIL, ALL WET OR SOFT MUCK, PEAT, CLAY, LARGE ROCKS(GREATER THAN 12" DIMENSION), OR ANY MATERIAL DETERMINED BY THE ENGINEER THAT WILL NOT BE SUITABLE.

PIPE TRENCH BACKFILL
1. MEET EARTHWORK SPECIFICATIONS FOR PLACEMENT AND COMPACTION.

DUCTILE IRON PIPE (WATER)
1. D.I. PIPE CONFORM TO AWWA/ANSI C151.
2. LININGS AND LINING REPAIR TO AWWA/ANSI C104.
3. JOINTS CONFORM TO AWWA/ANSI C 111 AND C115.
4. FITTINGS CONFORM TO AWWA/ANSI C110, C153, C105.
5. KEEP INSIDE OF PIPE CLEAN AND FREE OF DEBRIS.
6. REJECT ANY PIPE WHICH IS DROPPED DURING HANDLING.
7. MECHANICAL JOINT GLANDS SHALL BE "MEGA-LUG" RETAINER GLANDS.
8. DUCTILE IRON FITTINGS: ANSI A21.10, 350 PSI PRESSURE RATING.
9. JOINTS: MECHANICAL, PUSH-ON, AND FLANGED:
   A. RUBBER GASKET JOINT, ANSI A21.11
10. GASKETS:
   A: MECHANICAL AND PUSH-ON JOINTS: ANSI A21.11
   B. FLANGED JOINT: ⅛" THICK RING OR FULL FACED RUBBER, ANSI A21.15.
11. BOLTS/NUTS
   A. MECHANICAL JOINT: ANSI A21.11
   B. FLANGED JOINT: ANSI A21.15
12. LININGS:
   A. INTERIOR- CEMENT LINED, DOUBLE THICKNESS BITUMINOUS SEAL
   B. EXTERIOR-BITUMINOUS COATING APPROX. 1 MIL THICK, ANSI A21.51, ANSI A21.15, AND ANSI A21.10.
   C. FLANGE MACHINED FACE COATING: ANSI A21.15.
13. LAYING PIPE
   A. PIPE SHALL BE LAID WITH BELL ENDS FACING IN THE DIRECTION OF LAYING.
   B. WHERE PIPE IS LAID ON A SLOPE OF 5% OR MORE, THE LAYING SHALL START AT THE LOW END AND PROCEED UPHILL, WITH THE BELL ENDS UPGRADE.
   C. A WATERTIGHT PLUG SHALL BE PLACED IN THE OPEN ENDS OF INSTALLED PIPE WHEN PIPE LAYING IS NOT IN PROGRESS.
   D. MAX. PERMISSIBLE DEFLECTION IS 75% OF AWWA SPEC. C600.

CHLORINATION OF DOMESTIC WATER LINES
1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS IN ADVANCE OF BEGINNING ANY DISINFECTION OF WATER MAINS
2. CONTRACTOR SHALL BE RESPONSIBLE FOR BACTERIOLOGICAL TESTING AS REQUIRED BY THIS SPECIFICATION AND REFERENCE STANDARDS MENTIONED.
3. DISINFECT ALL NEW PIPELINE SYSTEMS IN ACCORDANCE WITH AWWA C651, INCLUDING:
   A. METHOD OF CHLORINE APPLICATION. USE CONTINUOUS FEED METHOD OR SLUG METHOD (TABLET METHOD IS NOT ACCEPTABLE).
   B. FORM OF CHLORINE UTILIZED.
   C. FINAL FLUSHING.
   D. BACTERIOLOGICAL TESTING
   E. REPETITION OF PROCEDURE

GATE VALVES:
1. RESILIENT SEAT GATE VALVES BY KENNEDY "KEN-SEAL" OR EQUAL.
2. IRON BODY GATE VALVES TO MEET AWWA C-509-87.
3. STEM CONSTRUCTION: NON-RISING.
4. STEM SEALS: DOUBLE O-RING.
5. GATE: CAST IRON RESILIENT WEDGE WITH SYNTHETIC ELASTOMER COATING, AND SHALL BE EPOXY COATED (FUSION BONDED) INSIDE AND OUT.
6. BONNET HARDWARE SHALL MEET ASTM A307, CADMIUM PLATED.
7. OUTLET CONNECTION: STANDARD MECHANICAL JOINT
8. OPERATION: OPEN COUNTERCLOCKWISE.

TAPPING SLEEVES AND VALVES

TAPPING VALVES
1. TAPPING VALVES TO MEET ANSI/AWWA C509-87, STANDARD FOR RESILIENT SEATED GATE VALVES.
2. VALVES SHALL HAVE A MINIMUM WORKING PRESSURE OF 150 PSI.
3. VALVES SHALL OPEN COUNTERCLOCKWISE.
4. INLET FLANGES SHALL BE CLASS 125, ANSI B16.1, OR ANSI/AWWA C110/A21.10.
5. OUTLET CONNECTION: STANDARDIZED MECHANICAL JOINT.
6. STEM SEALS: O RING.
7. STEM CONSTRUCTION: NON-RISING.
8. SEATING: PARALLEL SEAT
9. END CONNECTIONS: MECHANICAL ON RUN, FLANGED ON BRANCH.
10. BURIED TAPPING VALVES SHALL BE PROVIDED WITH A 2 INCH SQUARE WRENCH NUT AND CAST IRON VALVE BOX. IF DEPTH FROM GRADE TO TOP OF VALVE OPERATING NUT IS GREATER THAN 6'-0" , A VALVE STEM RISER MADE OF HIGH STRENGTH STEEL SHALL BE PROVIDED. DEPTH FROM VALVE STEM RISER NUT TO GRADE WILL BE 4 TO 6 FEET.

TAPPING SLEEVES
1. AWWA C509, LATEST REVISION.
2. AWWA C207, CLASS D, MAX. WORKING PRESSURE OF 150 PSI.
3. SLEEVES: SPLIT SLEEVES OF CAST IRON OR DUCTILE IRON.
4. MECHANICAL JOINT ENDS WITH END AND GASKET SEALS.
5. BOLTS AND NUTS, MECHANICAL JOINTS: HIGH STRENGTH CAST IRON OR HIGH STRENGTH LOW ALLOY STEEL, ANSI/AWWA C111/A21.11-90.
6. BOLTS AND NUTS, FLANGED JOINTS: HIGH STRENGTH, LOW CARBON STEEL CONFORMING TO ANSI/AWWA C110/A21.10-87, APPENDIX
7. COAT ALL NUTS AND BOLTS WITH A RUST RESISTANT LUBRICANT.
8. ALL BOLTS AND NUTS USED WITH PIPE SLEEVES SHALL BE BRUSH COATED HEAVILY AFTER FINAL TIGHTENING WITH BITUMASTIC COLD-APPLIED MATERIAL TO THOROUGHLY COVER ALL EXPOSED SURFACES OF BOLTS AND NUTS.

VALVE BOXES
1. ACCEPTABLE MANUFACTURERS: MUELLER, CLOW, OR EQUAL.
2. CLOW F-2452 SLIDING TYPE, TWO PIECE, OR EQUAL.
3. 5¼ INCH SHAFT.
4. SIZE 664-A (40-60 INCH OVERALL LENGTH).
5. CAST IRON.
6. CLOW F-2490 LIDS OR EQUAL.
7. THE WORD "WATER" TO BE CAST INTO TOP OF COVERS, AND ARROW SHOWING DIRECTION OF OPENING.

CONCRETE
1. CONCRETE SHALL HAVE:
   A. MIN. COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS
   B. AIR ENTRAINMENT OF 4% TO 6% BY VOLUME.
   C. WATER CEMENT RATIO OF 0.49 LBS. WATER/CEMENT.
   D. SLUMP OF 2 TO 4 INCHES.
2. CONCRETE SHALL NOT BE PLACED WHEN AMBIENT TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT OR MORE THAN 90 DEGREES FAHRENHEIT.
3. CONCRETE SHALL NOT BE DROPPED MORE THAN SIX FEET INSIDE A FORM.
4. MAINTAIN TEMPERATURE OF CONCRETE SURFACE AT MINIMUM 50 DEGREES FAHRENHEIT FOR 72 HOURS AFTER PLACING CONCRETE. PREHEAT ALL ENCLOSURES FOR A MINIMUM OF 2 HOURS TO PROVIDE A MIN. SURFACE TEMPERATURE OF 45 DEGREES FAHRENHEIT.
5. ALLOW TO SET AND CURE ALL THRUST BLOCKS, CONCRETE SUPPORTS, AND ANCHORS A MINIMUM OF 24 HOURS BEFORE BACKFILLING.
6. COMPLETELY CURE AND SET CONCRETE BEFORE ANY HYDROSTATIC OR LEAKAGE TESTING OF PIPELINE SYSTEMS.
7. NONSHRINK GROUT SHALL BE HALCO TRADEMARK, AS MANUFACTURED BY LEHN & FINK INDUSTRIAL PRODUCTS.
8. DO NOT PLACE ANY MORTAR OR GROUT WHEN AMBIENT TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT.
9. MORTAR FOR MANHOLES SHALL CONSIST OF THE FOLLOWING:
   A. CEMENT-TYPE II, ASTM C150.
   B. HYDRATED LIME-TYPE N, ASTM C207.
   C. SAND- ASTM C 33, FINE AGGREGATES FOR CONCRETE.
   D. WATER-CLEAN, SUITABLE FOR DRINKING.
10. MIX(BY VOLUME): 1 PART CEMENT, ½ PART LIME, 4½ PARTS SAND.

GENERAL
1. CONTRACTOR SHALL NOTIFY BURLINGTON DEPARTMENT OF PUBLIC WORKS AT LEAST 48 HOURS BEFORE BEGINNING WATER LINE WORK..
2. "AS BUILT" DRAWINGS SHALL BE PREPARED BY THE CONTRACTOR AT THE TIME OF COMPLETION OF THE SYSTEM.

TABLE 2 - THRUST DEVELOPED PER 100psi PRESSURE (lbs force)					
PIPE DIAMETER IN.	VALVES AND DEAD ENDS, TEES	90° BENDS	45° BENDS	22½° BENDS	11¼° BENDS
4	1810	2560	1390	635	320
6	3740	5290	2860	1370	690
8	6430	9100	4920	2320	1170
10	9680	13680	7410	3610	1820
12	13690	19350	10470	5080	2550
14	18380	25990	14100	6100	3080
16	23780	33630	18280	7960	4020

NOTES:
1. PERFORM HYDROSTATIC AND LEAKAGE TEST PRESSURE PER SPECIFICATIONS.
2. PLACE 4 MIL POLYETHYLENE BETWEEN FITTINGS AND THRUST BLOCKS.
3. CONCRETE SHALL BE CLASS B.
4. ON ALL THRUST BLOCKS, B SHALL BE THE GREATER DIMENSION, USE 1.5:1 TO 2:1 FOR B:H.

TABLE 1 - BEARING STRENGTH OF UNDISTURBED SOIL	
SOIL TYPE	BEARING STRENGTH
PEAT, ETC.	0 lb/ft²
SOFT CLAY	500 lb/ft²
SAND	1000 lb/ft²
SAND AND GRAVEL	1500 lb/ft²
SAND AND GRAVEL WITH CLAY	2000 lb/ft²
SAND AND GRAVEL CEMENTED WITH CLAY	4000 lb/ft²
HARD PAN	5000 lb/ft²

DETERMINING MINIMUM BEARING FACE AREA:
THE AREA (ft²=@) SHALL BE CALCULATED BY DETERMINING THE TOTAL THRUST GENERATED AT THE FITTING.
DIVIDE THE THRUST DEVELOPED (lbs force) (FROM TABLE 2) BY THE BEARING STRENGTH OF THE SOIL (FROM TABLE 1). THE RESULT IS THE AREA OF THE SOIL REQUIRED TO RESIST THE THRUST (A).
THE AREA CALCULATED WILL BE FOR THE AREA OF CONCRETE UP AGAINST THE TRENCH WALL (i.e. THE BACK SIDE OF THE BLOCK). USE THE TEST PRESSURE TO DETERMINE THE TOTAL THRUST.

AREA = THRUST DEVELOPED (lbs force) / BEARING STRENGTH OF SOIL

STATE OF VERMONT
PAUL M. BOISVERT
NO. 9016
CIVIL
LICENSED PROFESSIONAL ENGINEER
Stamp

No.	Description	Date

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Windsor District Court
82 Railroad Row
White River Junction, VT
802-295-8865

Sheet Title: Water Details

Project Title: Windsor District Court Expansion Project
White River Junction, VT

EV Project #	22548
Drawn By:	TB
Checked By:	PB
Scale:	As Noted
Date:	5/10/24

C3.4

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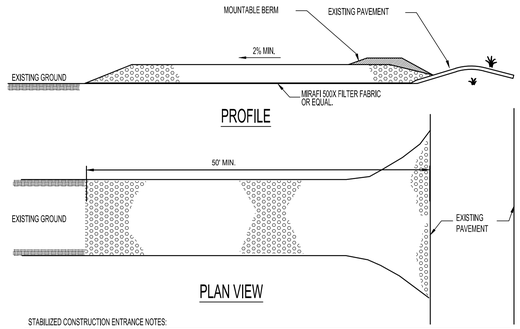
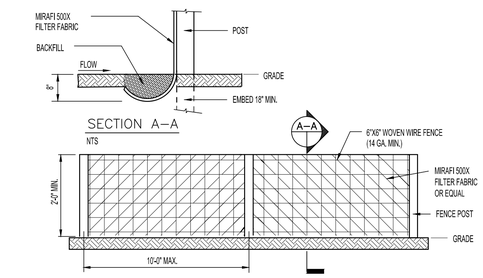


STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE: USE 1-1/2" CRUSHED STONE.
2. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCE SHALL BE PIPED ACROSS THE ENTRANCE.
3. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. REPAIR AND/OR CLEANOUT ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.
4. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
5. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

CONSTRUCTION ENTRANCE DETAIL

SCALE: NONE (1)

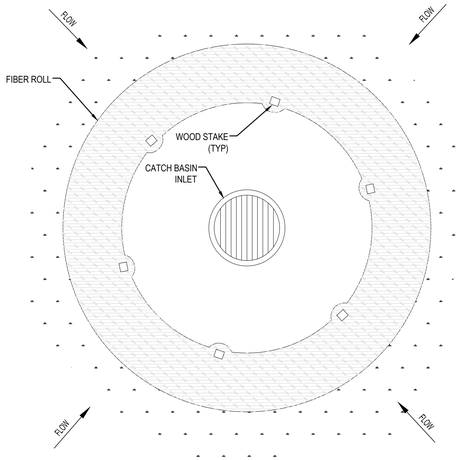


SILT FENCE NOTES:

1. SILT FENCE SHALL BE PRE-FABRICATED EROSION CONTROL FENCE BY MIRAFI OR EQUAL, OR CONSTRUCTED IN PLACE AS SPECIFIED HEREIN.
2. CONSTRUCTED IN PLACE SILT FENCE:
   - A. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
   - B. FILTER FABRIC TO BE FASTENED SECURELY TO WOVEN WIRE FENCE TIES SPACED EVERY 24" AT TOP OF MID SECTION.
   - C. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6", FOLDED AND STAPLED.
3. INSPECTION SHALL BE FREQUENT (MINIMUM ONCE A WEEK AND AFTER EVERY RAINFALL). MAINTENANCE SHALL BE PER-FORMED AS NEEDED, AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN SILT FENCE.

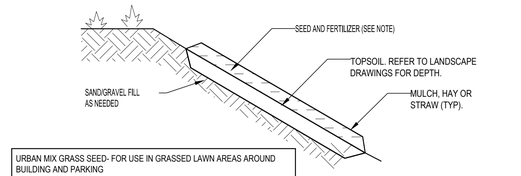
SILT FENCE DETAIL

SCALE: NONE (2)



FIBER ROLL INLET PROTECTION DETAIL

SCALE: NONE (3)



URBAN MIX GRASS SEED- FOR USE IN GRASSED LAWN AREAS AROUND BUILDING AND PARKING		
% BY WEIGHT	LBS. LIVE SEED BY ACRE	TYPE OF SEED
44.44	20.0	CREEPING RED FESCUE
44.44	20.0	KENTUCKY BLUEGRASS
11.11	5.0	RYEGRASS
100	45.0 # LIVE SEED/ ACRE	

CONSERVATION MIX GRASS SEED- FOR USE IN ALL OTHER AREAS		
% BY WEIGHT	LBS. LIVE SEED PER ACRE	TYPE OF SEED
50	15.0	SMOOTH BROMEGRASS
16.67	5.0	RYEGRASS
33.33	10.0	BIRDSFOOT TREFOIL
100	30.0 # LIVE SEED/ACRE	

FERTILIZER- 40 LBS. PER 1000S.F.
USE STANDARD 10-20-20 WHEN NO SOIL TEST DATA IS AVAILABLE
SPRING SEEDING
FALL SEEDING

LIME- 100 LBS. PER 1000S.F.
DOLOMITIC GROUND LIMESTONE
NOT LESS THAN 85% OF THE TOTAL CARBONATE

TOP SOIL
6" MINIMUM TOPSOIL

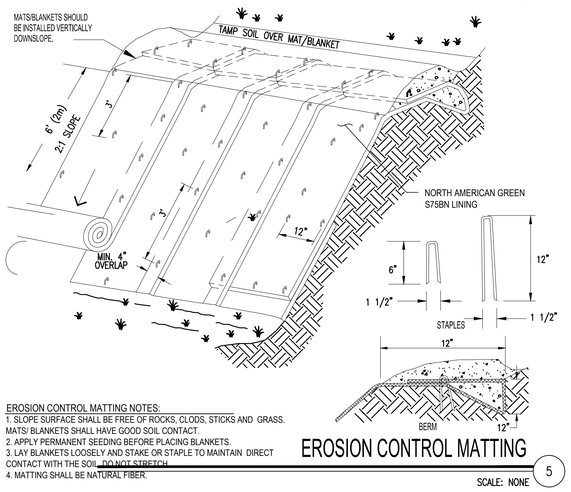
HAY OR STRAW MULCH- 90-100LBS PER 1000S.F.
APPLY BINDER OR NETTING AS NEEDED

NOTES FOR SEEDED AND MULCHED AREAS

1. ALL DISTURBED SURFACES SHALL BE TEMPORARILY OR PERMANENTLY SEEDED AND MULCHED WITHIN 7 DAYS OF DISTURBANCE.
2. SEEDING AND MULCHING OF DISTURBED AREAS SHALL TAKE PLACE WITHIN 48 HOURS OF FINAL GRADING.
3. MULCH: TYPICALLY HAY OR STRAW MAY BE UTILIZED AND SHALL BE APPLIED AT A RATE OF 90-100 LBS/1,000 SF. MULCH SHALL NOT BE PLACED ON SLOPES OF GREATER THAN 3:1. SEED IMPREGNATED EROSION CONTROL NETTING SHALL BE USED IN ITS PLACE.
4. SEED: SEEDING SHALL OCCUR AFTER APRIL 15 AND PRIOR TO SEPTEMBER 15TH IN ORDER TO ESTABLISH A STAND OF GRASS PRIOR TO GROUND FREEZING. SEED SHALL BE IN ACCORDANCE WITH SEED SPECIFICATION ON THIS SHEET.
5. COVER SEED WITH $\frac{1}{4}$ INCH SOIL UNLESS A HYDROSEEDER IS USED.
6. MULCH ANCHORING: SHALL BE ACCOMPLISHED BY DEGRADABLE MULCH NETTING. USE WHEN SLOPES ARE GREATER THAN 10%.
7. TOPSOIL AND MULCHING NOT TO BE APPLIED IN AREAS OF TRAVEL WAYS.

SEEDED AND MULCHED AREAS DETAIL

SCALE: NONE (4)



EROSION CONTROL MATTING NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS.
MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIl. DO NOT STRETCH.
4. MATTING SHALL BE NATURAL FIBER.

EROSION CONTROL MATTING

SCALE: NONE (5)

STATE OF VERMONT
PAUL M. BOISVERT
NO. 9016
CIVIL
LICENSED
PROFESSIONAL ENGINEER
Stamp

No.	Description	Date

ENGINEERING VENTURES PC
208 Flynn Avenue, Suite 2A, Burlington, VT 05401 • 802-863-6225
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333
414 Union Street, Schenectady, NY 12305 • 518-630-9614
www.engineeringventures.com

Windsor District Court
82 Railroad Row
White River Junction, VT
802-295-8865

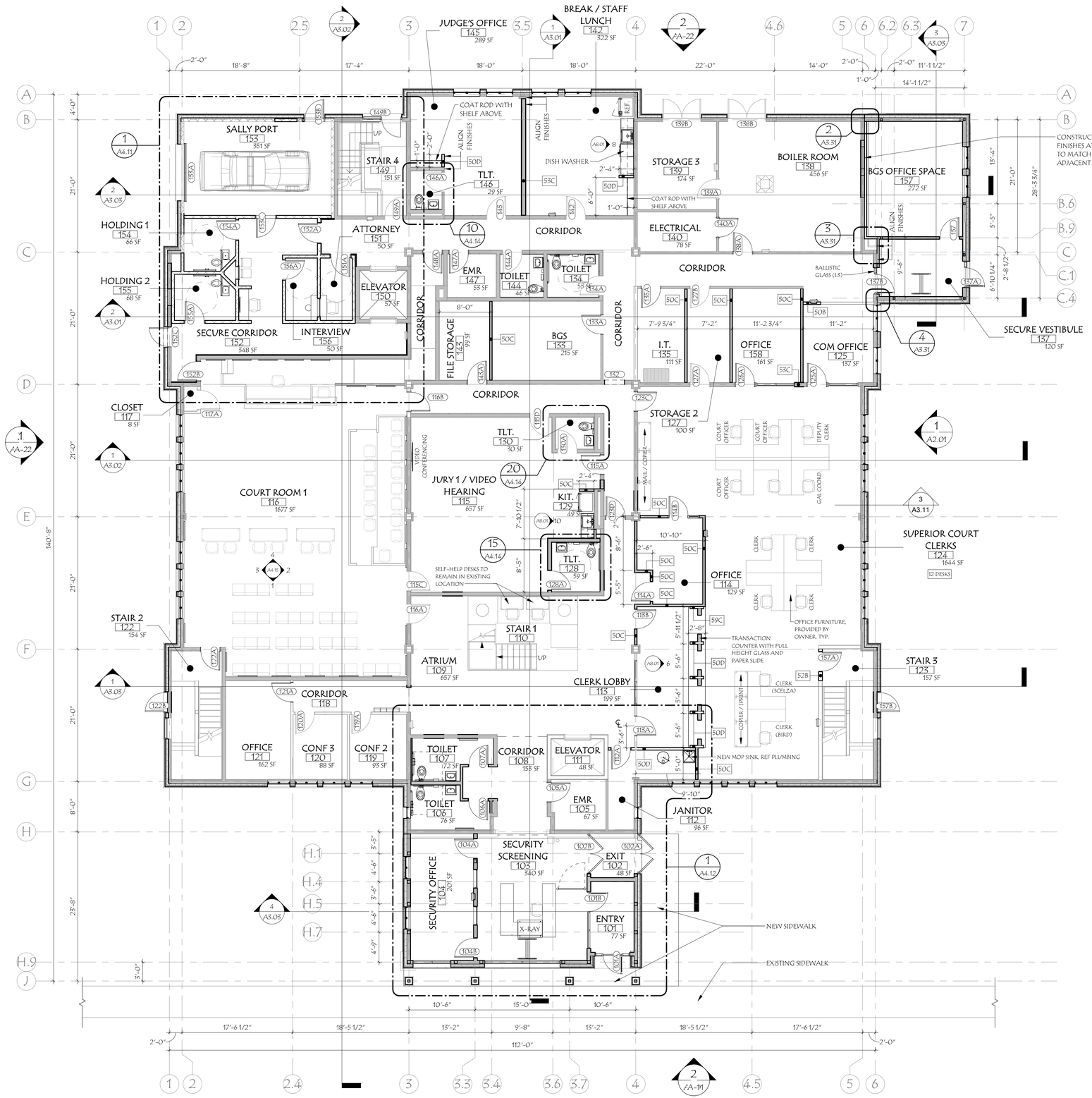
Sheet Title: EPSC Details

Project Title: Windsor District Court Expansion Project
White River Junction, VT

EV Project #	22548
Drawn By:	TB
Checked By:	PB
Scale:	As Noted
Date:	5/10/24

C3.5

S:\PROJECTS\0\22\22548 WINDSOR DISTRICT COURT ADDITION- CV\DWG\SHEET FILES\C3.X DETAILS.DWG



1 LEVEL 1 - NEW CONSTRUCTION
A1.01 1/8" = 1'-0"

Wiemann Lamphere ARCHITECTS
38 Eastwood Drive
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South Burlington, VT
05403
802.655.5020
802.622.6567
wiemannlamphere.com

WINDSOR COURTHOUSE RENOVATIONS

WHITE RIVER JUNCTION VERMONT

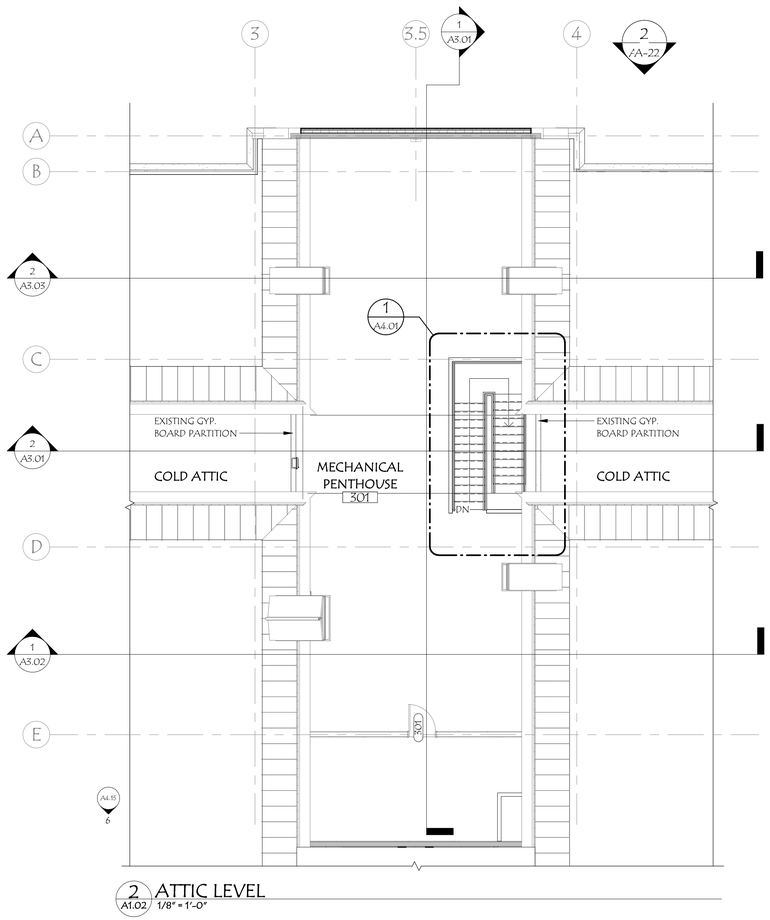
NO	DATE:	REVISION:
1	05.10.24	PROGRESS SET

DATE: 05/10/2024
SCALE: 1/8" = 1'-0"
PROJECT NO: 2016059
DRAWN BY: RJH
CHECKED BY: DPR

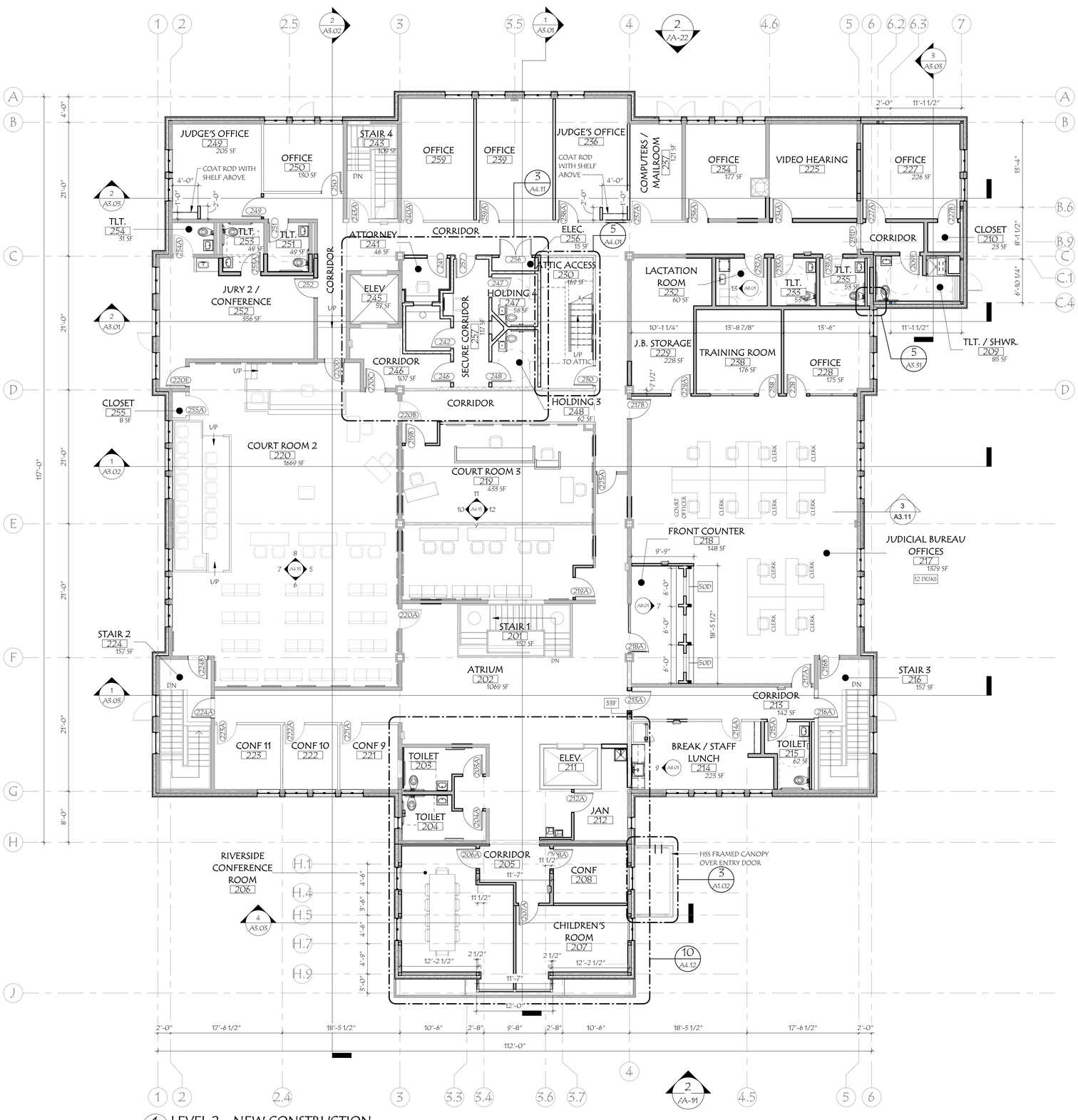
SHEET TITLE:
LEVEL 1 FLOOR PLAN

SHEET NUMBER:
A1.01

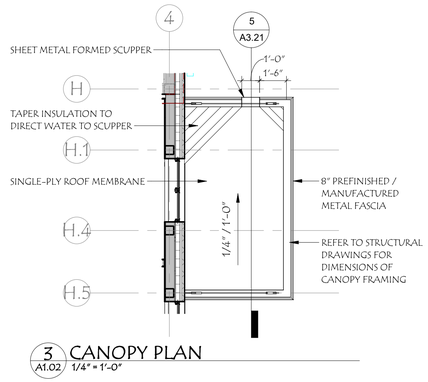
PRINTED: 5/10/2024 8:54:38 AM FILENAME:C:\Users\bhespe\Documents\2016059_Windsor Court-SD_R23_ARCH_bhespe.RVT



2 ATTIC LEVEL
A1.02 1/8" = 1'-0"



1 LEVEL 2 – NEW CONSTRUCTION
A1.02 1/8" = 1'-0"



3 CANOPY PLAN
A1.02 1/4" = 1'-0"

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WINDSOR COURTHOUSE RENOVATIONS
WHITE RIVER JUNCTION VERMONT

NO	DATE:	REVISION:
1	05.10.24	PROGRESS SET

DATE: 05/10/2024
SCALE: As indicated
PROJECT NO: 2016059
DRAWN BY: RJH
CHECKED BY: DPR

SHEET TITLE:
LEVEL 2 FLOOR PLAN

SHEET NUMBER:
A1.02

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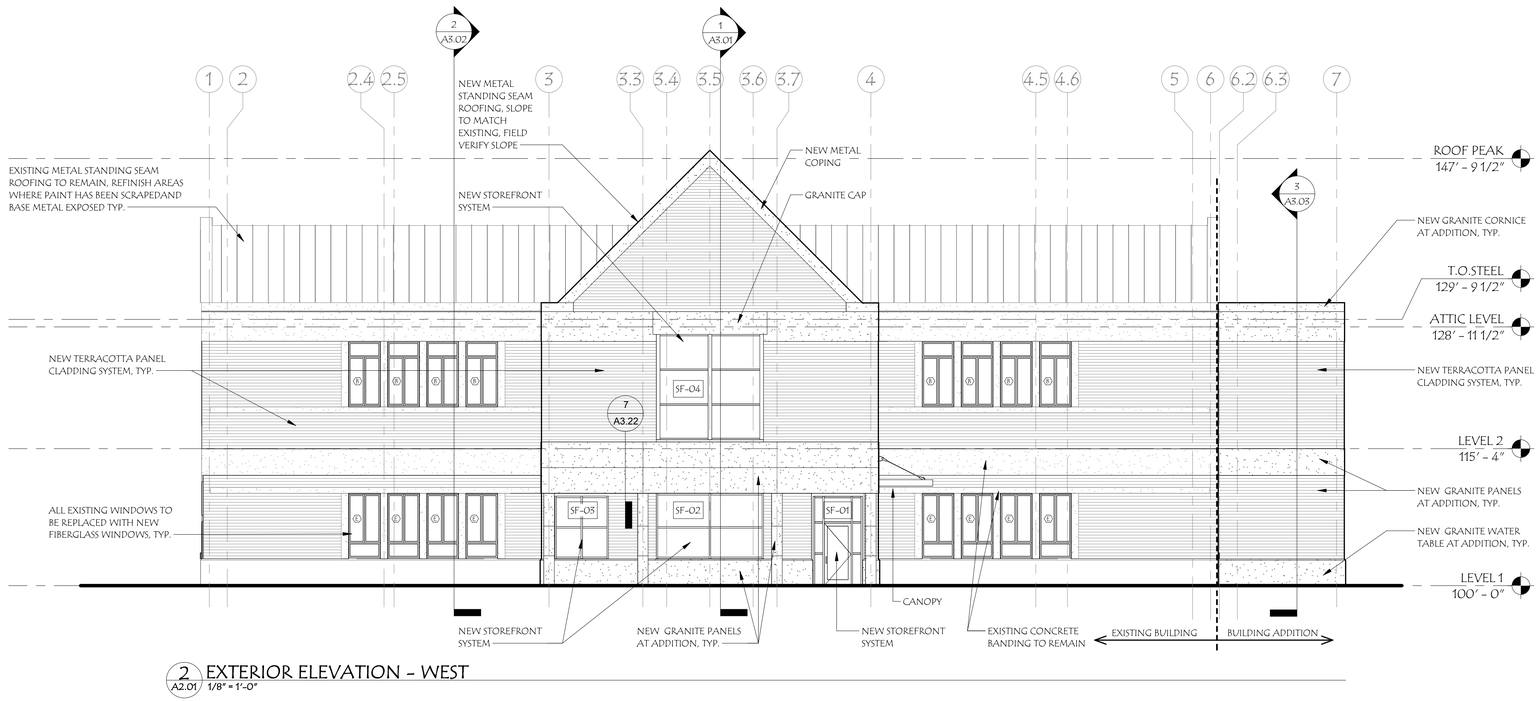

2 A2.01 EXTERIOR ELEVATION - WEST
1/8" = 1'-0"

1 A2.01 EXTERIOR ELEVATION - SOUTH
1/8" = 1'-0"

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WINDSOR COURTHOUSE RENOVATIONS
WHITE RIVER JUNCTION VERMONT

NO	DATE:	REVISION:
1	05.10.24	PROGRESS SET

DATE: 05/10/2024
SCALE: 1/8" = 1'-0"
PROJECT NO.: 2016059
DRAWN BY: RJH
CHECKED BY: DPR

SHEET TITLE: EXTERIOR ELEVATIONS

SHEET NUMBER: A2.01

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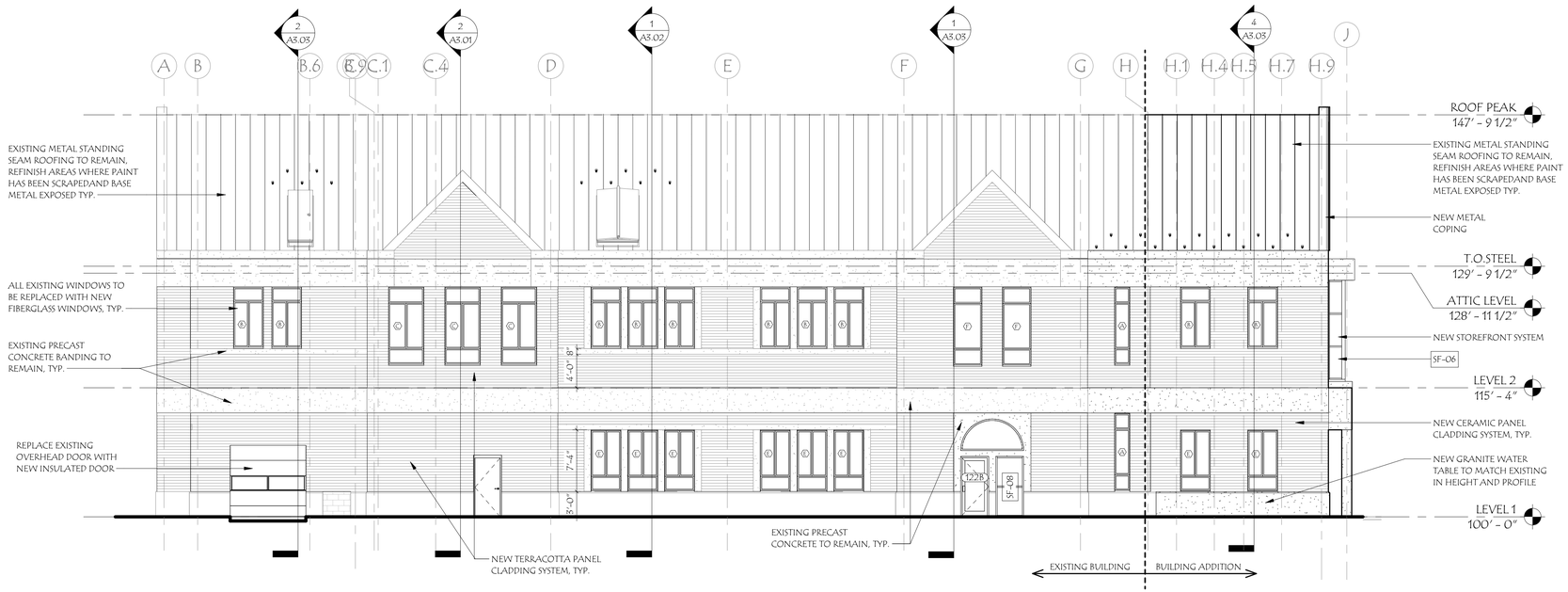

2 A2.02 EXTERIOR ELEVATION - NORTH
1/8" = 1'-0"

1 A2.02 EXTERIOR ELEVATION - EAST
1/8" = 1'-0"

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WINDSOR COURTHOUSE RENOVATIONS

VERMONT

WHITE RIVER JUNCTION

NO	DATE:	REVISION:
1	05.10.24	PROGRESS SET

DATE: 05/10/2024
SCALE: 1/8" = 1'-0"
PROJECT NO: 2016059
DRAWN BY: RJH
CHECKED BY: DPR

SHEET TITLE:

EXTERIOR ELEVATIONS

SHEET NUMBER:

A2.02

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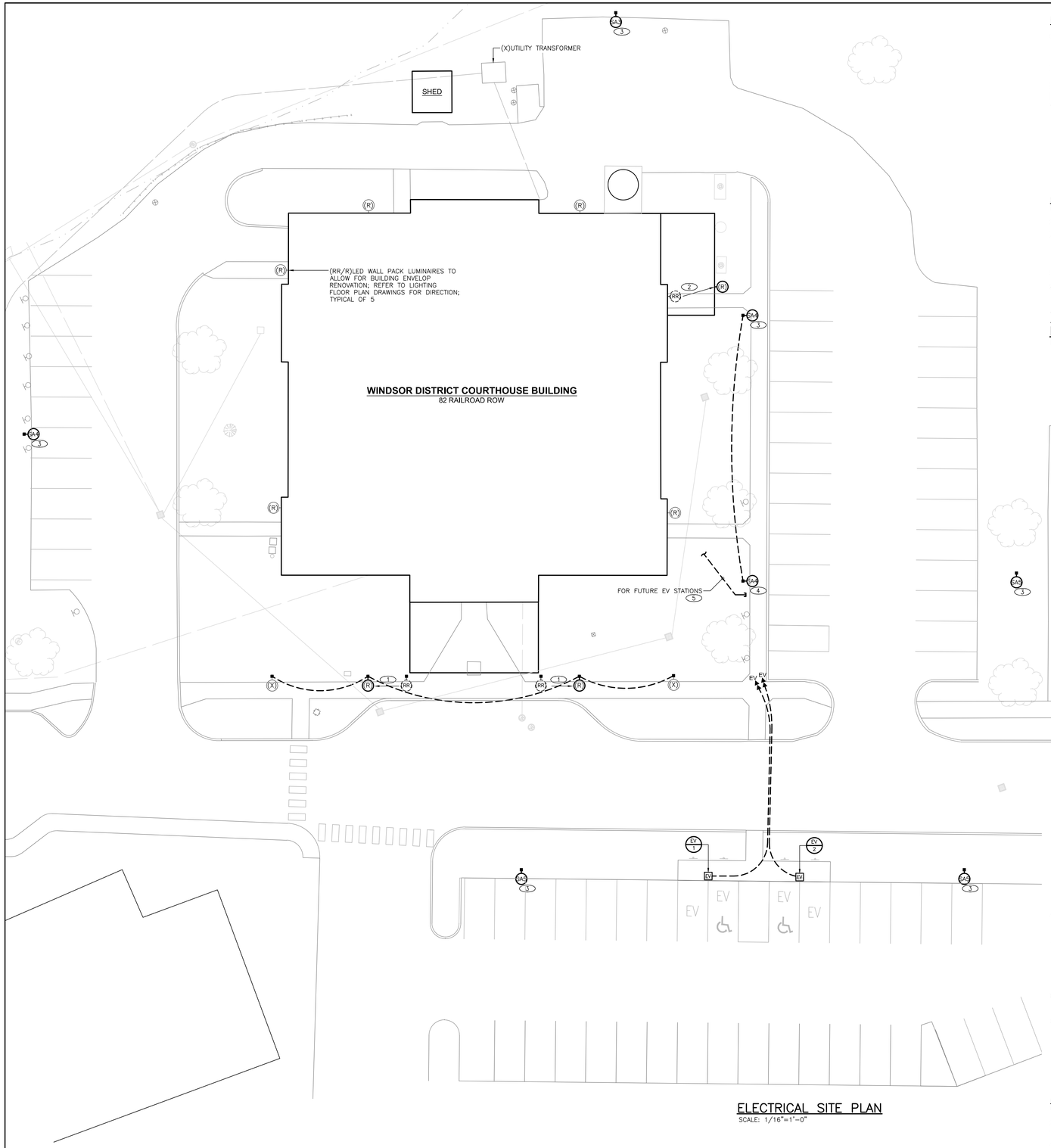
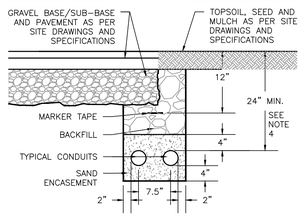


ELECTRICAL SITE PLAN
SCALE: 1/16"=1'-0"

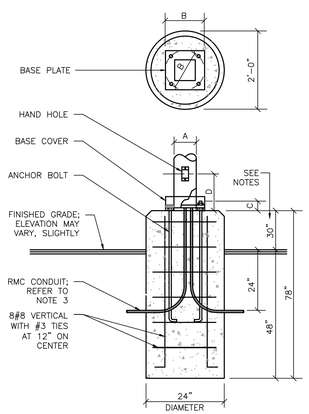
PAVED AREAS

LAWNED AREAS



NOTES:
1. DETAIL IS TYPICAL FOR ALL WIRING THAT IS NOT ELECTRICAL SERVICE POWER WIRING.
2. COMPLY WITH OSHA TRENCH PROTECTION REQUIREMENTS.
3. PROVIDE CONDUIT SPACERS/SADDLES EVERY 6 FEET.
4. BURIAL DEPTH IS SHOWN FOR DIRECT BURIAL PVC RIGID NON-METALLIC CONDUIT. WHERE SPECIFIED BURIAL DEPTH IS NOT POSSIBLE, UTILIZE GALVANIZED STEEL RIGID METALLIC CONDUIT. NOTIFY ENGINEER PRIOR TO ANY CHANGE OF WIRING METHODS.
5. CONDUIT DEPTH SHALL BE 36" TO TOP FOR CONDUITS FROM TRANSFORMER AND GENERATOR INTO THE BUILDING.
6. **DETAIL IS TYPICAL INSTALLATION; PROVIDE QUANTITY OF CONDUITS AS REQUIRED FOR THE INSTALLATION AND AS DIRECTED IN THE PLANS AND DETAILS.**

TYPICAL ELECTRICAL DUCTBANK DETAIL
NO SCALE



NOTES:
1. REFER TO LIGHT POLE MANUFACTURER FOR A, B, C AND D DIMENSIONS AND ANCHOR BOLT SIZE.
2. CONDUIT/SLEEVES IN BASE SHALL BE 1" SCHED 80 PVC.
3. PROVIDE RUBBED FINISH ON ALL EXPOSED CONCRETE SPACES.
4. CENTER BASE PLATE/ANCHOR BOLT PATTERN IN CENTER OF CONCRETE BASE.
5. CONTRACTORS OPTION TO PROVIDE PRECAST CONCRETE BASE OF SIMILAR PROPORTION IN LIEU OF SITE-BUILT CONCRETE BASE. IF PRECAST, **PROVIDE PRODUCT INFORMATION SUBMITTAL FOR APPROVAL.**

CONCRETE POLE BASE DETAIL
NOT TO SCALE

ELECTRICAL LEGEND:
REFER TO LUMINAIRE SCHEDULE FOR LUMINAIRE TYPES. REFER TO SECURITY DEVICE MATRIX ON DRAWING E5 FOR ACCESS, CONTROLS AND SECURITY SYMBOLS

PIR DT	OCCUPANCY SENSOR LIGHTING CONTROL DEVICE; REFER TO SCHEDULE
$	MANUAL SINGLE POLE LIGHTING SWITCH; 3 = 3 WAY; OC = OCCUPANCY SENSOR, PIR = PASSIVE INFRARED; DT = DUAL TECHNOLOGY; D = DIMMING, LV = LOW VOLTAGE, P = SWITCH WITH PILOT, K = KEYED SWITCH
P	PHOTOELECTRIC CONTROL SWITCH
TC	TIMECLOCK
	DUPLEX RECEPTACLE OUTLET
U	DUPLEX RECEPTACLE OUTLET WITH 2 USB PORTS
	DOUBLE-DUPLEX (QUAD) RECEPTACLE OUTLET
	GROUND FAULT PROTECTION RECEPTACLE OUTLET
	JUNCTION BOX
R	CONTROL RELAY
M	MOTOR SWITCH
	SAFETY/DISCONNECT SWITCH; PROVIDE RATINGS AND FUSES AS PER SCHEDULES
EP	EQUIPMENT CONTROL PACKAGE; FURNISHED INTEGRAL TO THE EQUIPMENT
	MOTOR
	HOMERUN TO PANEL INDICATED
	BRANCH CIRCUIT OR FEEDER WIRING
	UNDERGROUND WIRING
FACP	FIRE ALARM CONTROL PANEL
ANN	FIRE ALARM ANNUNCIATOR PANEL
K	FIRE FIGHTERS KEYBOX
	FIRE ALARM SYSTEM MANUAL PULLSTATION
M 30	FIRE ALARM SYSTEM AUDIO/VISUAL WITH CANDELA RATING INDICATED
30	FIRE ALARM SYSTEM VISUAL WITH CANDELA RATING INDICATED
FS	SPRINKLER SYSTEM FLOW SWITCH
TS	SPRINKLER SYSTEM TAMPER SWITCH
PS	SPRINKLER SYSTEM PRESSURE SWITCH
IM	FIRE ALARM SYSTEM INPUT MODULE
OM	FIRE ALARM SYSTEM OUTPUT MODULE
S	DUCT MOUNTED SMOKE DETECTOR
R	REMOTE SMOKE DETECTOR TEST SWITCH
S	PHOTOELECTRIC SMOKE DETECTOR
H	HEAT DETECTOR
CO	CARBON MONOXIDE DETECTOR
SCO	SMOKE/CARBON MONOXIDE COMBO DETECTOR
	DATA (LAN) DEVICE OUTLET, NUMBER INDICATES NUMBER OF CABLES
WAP	CEILING MOUNTED DATA (LAN) WIRELESS ACCESS POINT, NUMBER INDICATES NUMBER OF CABLES
DO	POWERED DOOR OPENER
HC	DOOR OPENER HANDICAP PUSH BUTTON
	SECURITY CAMERA
AFF, AFG, AFR	ABOVE FINISH FLOOR, GRADE, ROOF
WP	WEATHERPROOF WITH COVER "CLOSED" FOR RECEPTACLES; NEMA 3R FOR ENCLOSURES
AC	ABOVE COUNTER
CM	CEILING MOUNTED
TYP	TYPICAL
NTS	NOT TO SCALE
UON	UNLESS OTHERWISE NOTED
(X)	EXISTING, TO REMAIN
(RX)	REMOVE EXISTING
(RR)	REMOVE, RELOCATE
(R)	RELOCATED
(N)	NEW
(F)	FUTURE
HRU 1	MECHANICAL EQUIPMENT CONNECTION
EP 1	BUILDING EQUIPMENT CONNECTION

GENERAL NOTES:
THESE GENERAL NOTES APPLY TO ALL ELECTRICAL PLAN DRAWINGS.

1. FOLLOW ALL APPLICABLE CODES AND USE GOOD ELECTRICAL CONSTRUCTION PRACTICES WHEN DETERMINING TYPES OF WIRING METHODS AND SIZING OF CONDUCTORS AND CONDUIT. INSTALL ALL POWER, CONTROL AND SIGNAL WIRING USING METHODS AS FOLLOWS:

1.1. UNDERGROUND WIRING OR BENEATH CONCRETE SLAB: INDIVIDUAL CONDUCTORS IN SCHEDULE 40 PVC RIGID NON-METALLIC CONDUIT (RNC) FOR DIRECT BURIAL; TRANSITION TO GALVANIZED STEEL RIGID METALLIC CONDUIT (RMC) FOR SWEEPS AND WHERE CONDUIT RISES TO BE EXPOSED ABOVE GRADE OR CONCRETE SLAB, FROM A MINIMUM OF 24" BELOW FINISHED GRADE.

1.2. UNDERGROUND WIRING OR BENEATH ROAD WAY OR PARKING AREA: INDIVIDUAL CONDUCTORS IN SCHEDULE 80 PVC RIGID NON-METALLIC CONDUIT (RNC) FOR DIRECT BURIAL; TRANSITION TO GALVANIZED STEEL RIGID METALLIC CONDUIT (RMC) WHERE CONDUIT RISES TO BE EXPOSED ABOVE GRADE OR CONCRETE SLAB, FROM A MINIMUM OF 24" BELOW FINISHED GRADE.

1.3. EXPOSED EXTERIOR WIRING: INDIVIDUAL CONDUCTORS IN GALVANIZED STEEL RIGID METAL CONDUIT (RMC).

1.4. EXPOSED WIRING IN UTILITY AREAS (MECHANICAL, ELECTRICAL ROOMS, ETC.): INDIVIDUAL CONDUCTORS IN ELECTRICAL METALLIC TUBING (EMT) WITH SET SCREW FITTINGS.

1.5. CONCEALED WIRING ABOVE ACCESSIBLE CEILINGS: INDIVIDUAL CONDUCTORS IN ELECTRICAL METALLIC TUBING (EMT) WITH SET SCREW FITTINGS, METAL CLAD (TYPE MC) CABLE FIXTURE WHIPS (6' MAX).

1.6. CONCEALED WIRING IN INACCESSIBLE WALLS AND CEILINGS: INDIVIDUAL CONDUCTORS IN ELECTRICAL METALLIC TUBING (EMT) WITH SET SCREW FITTINGS AND METAL CLAD (TYPE MC) CABLE.

1.7. FINAL CONNECTIONS TO MECHANICAL/VIBRATING EQUIPMENT WILL BE MAXIMUM 4' FLEXIBLE METALLIC CONDUIT (FMC) IN DRY AREAS AND LIQUID TIGHT FLEXIBLE METALLIC CONDUIT (LFMC) IN DAMP/WET AREAS.

1.8. CONTRACTOR SHALL CONSULT WITH ENGINEER REGARDING QUESTIONS REGARDING WIRING METHODS PRIOR TO ROUGH-IN OF WIRING.

2. SERVICE AND FEEDER WIRING SHALL BE ALUMINUM CONDUCTORS, XHHW INSULATION. ALL BRANCH WIRING SHALL BE COPPER, THHN/THWN-2 INSULATION.
3. MINIMUM CONDUCTOR SIZE SHALL BE 12 AWG. PROVIDE AN INSULATED GROUND CONDUCTOR WITHIN ALL CABLES AND RACEWAYS. ALL CONDUCTORS SHALL BE COPPER, UNLESS OTHERWISE NOTED.
4. CIRCUITS SHALL BE 20A1P, (2#12, 1#12G) 1/2"C. OR CABLE, UNLESS INDICATED OTHERWISE.
4. MINIMUM 1" CONDUIT UNDERGROUND IN SITE.
5. PROVIDE AN INSULATED EQUIPMENT GROUND CONDUCTOR WITHIN ALL CABLES AND RACEWAYS.
6. ALL WIRING SHALL BE ROUTED CONCEALED AND DEVICES SHALL BE FLUSH/RECESSED MOUNTED TO THE GREATEST EXTENT POSSIBLE. WIRING IN THE UTILITY SPACES SHALL BE PERMITTED TO BE EXPOSED WHERE NO WALL FINISH EXISTS. WIRING ROUTED EXPOSED ON VERTICAL SURFACES SHALL BE ROUTED VERTICALLY; HORIZONTAL WIRING SHALL BE ROUTED AT THE CEILING LEVEL OF THESE SPACES, NOT ON THE WALLS.
7. LIFE SAFETY LUMINAIRES (EXIT SIGNS, EMERGENCY BATTERY UNITS) SHALL BE CONNECTED TO THE UNSWITCHED PORTION OF THE LIGHTING CIRCUIT SERVING THE AREA, AHEAD OF ANY SWITCHING OR AUTOMATIC CONTROLS.
8. ALL LIGHTING LAYOUTS SHALL BE COORDINATED WITH ARCHITECT'S REFLECTED CEILING PLANS AND EXACT LOCATION OF LUMINAIRES SHALL BE CHECKED AT CONSTRUCTION TIME AND PRIOR TO INSTALLATION WITH OTHER TRADE'S LATEST DRAWINGS AND EQUIPMENT LAYOUTS. COORDINATE LUMINAIRE TRIMS AND MOUNTING WITH CEILING CONSTRUCTION. FINAL LOCATION OF LUMINAIRES SHALL BE REASONABLY CONDUCIVE TO ACCESS BY THE OWNER FOR ROUTINE MAINTENANCE.
8. MOUNT RECEPTACLE DEVICES 18" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED. MOUNT RECEPTACLE DEVICES SUCH THAT THEY ARE ORIENTED SO THE GROUND IS IN THE "UP" POSITION. "AC" INDICATES MOUNTING 8" OVER COUNTER BACK SPLASH, APPROXIMATELY 44" ABOVE FINISHED FLOOR.

8.1. ALL RECEPTACLES SHALL BE TAMPER-RESISTANT TYPE.

9. ALL SWITCHES AND RECEPTACLE COVERS SHALL BE LABELED WITH PANEL NAME AND CIRCUIT NUMBER USING CLEAR STICK-ON LABELS WITH BLACK CHARACTERS. LABELS SHALL BE 1/2" MINIMUM SIZE CHARACTERS. PROVIDE THIS LABELING BOTH ON THE FRONT AND THE BACKSIDE OF ALL DEVICES.
10. LABEL ALL CIRCUITS IN PULL-BOXES, JUNCTION BOXES AND SIMILAR. LABEL ENCLOSURE COVER, WITH PHENOLIC TAG OR NEATLY HANDWRITTEN INDELIBLE MARKER.
11. WHERE MECHANICAL EQUIPMENT IS INDICATED ON PLAN WITHOUT LOCAL DISCONNECT, EITHER IT IS FURNISHED WITH THE EQUIPMENT OR IS INDICATED IN THE EQUIPMENT WIRING DIAGRAM AND EQUIPMENT SCHEDULE. REFER TO MECHANICAL EQUIPMENT SCHEDULE AND WIRING DIAGRAMS FOR CONNECTIONS TO CONTROL DEVICES. WHERE MECHANICAL EQUIPMENT IS SHOWN WITHOUT HOMERUN, REFER TO PANEL SCHEDULES.

DRAWING NOTES:
THESE DRAWING NOTES APPLY TO THIS DRAWING, ONLY.

1. RELOCATE EXISTING "ACORN" POLE TO STREET LIGHT LUMINAIRES. REWORK AND EXTEND EXISTING CONTROLLED CIRCUIT LIGHTING TO NEW LOCATIONS. (2#8, 1#10G) 1"C.
2. RELOCATE LED WALL PACK LUMINAIRE, REFER TO LIGHTING CONTROL SPECIFICATION FOR CONTROLS.
3. REPLACE EXISTING POLE TOP SHOE BOX LUMINAIRE ON EXISTING POLE. CONNECT TO EXISTING LIGHTING CIRCUIT. REFER TO LIGHTING CONTROL SPECIFICATION FOR CONTROLS.
4. PROVIDE NEW POLE LUMINAIRE. POLE HEIGHT WITH 30" EXPOSED CONCRETE BASE SHALL MATCH EXISTING. REWORK AND EXTEND EXISTING WIRING FROM ADJACENT POLE TO NEW, (2#10, 1#10G) 1"C.
5. PROVIDE CONDUIT WITH PULLWIRE FOR FUTURE EV STATION FROM PANEL EV. CAP CONDUIT UNDERGROUND AND PROVIDE TRIANGULATED LOCATION OF END OF CONDUIT ON AS-BUILT DOCUMENTS.

PROGRESS SET
NOT FOR CONSTRUCTION
05/10/2024

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WINDSOR COURTHOUSE RENOVATIONS
WHITE RIVER JUNCTION VERMONT

#	DATE	REVISION DESCRIPTION

DATE: 05.10.2024
PLAN NORTH
SCALE: As Indicated
PROJECT NO: ESVT No. 16130
DRAWN BY: ESVT
CHECKED BY: CPB

SHEET TITLE: ELECTRICAL SITE PLAN

SHEET NUMBER: E3

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Ownership of Instruments of Service
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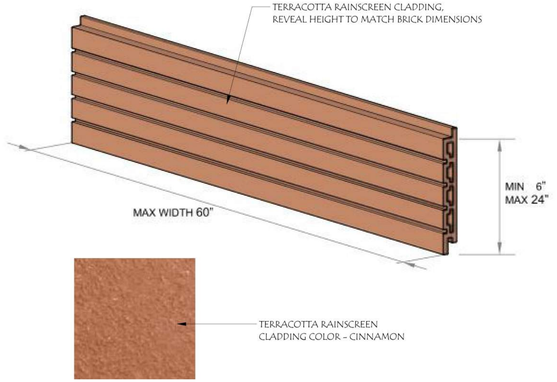
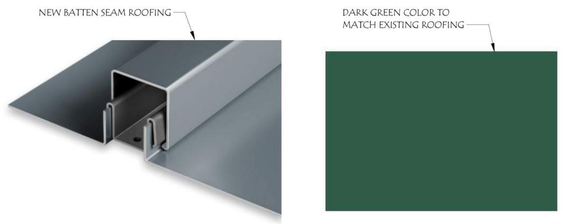
MATERIALS LEGEND

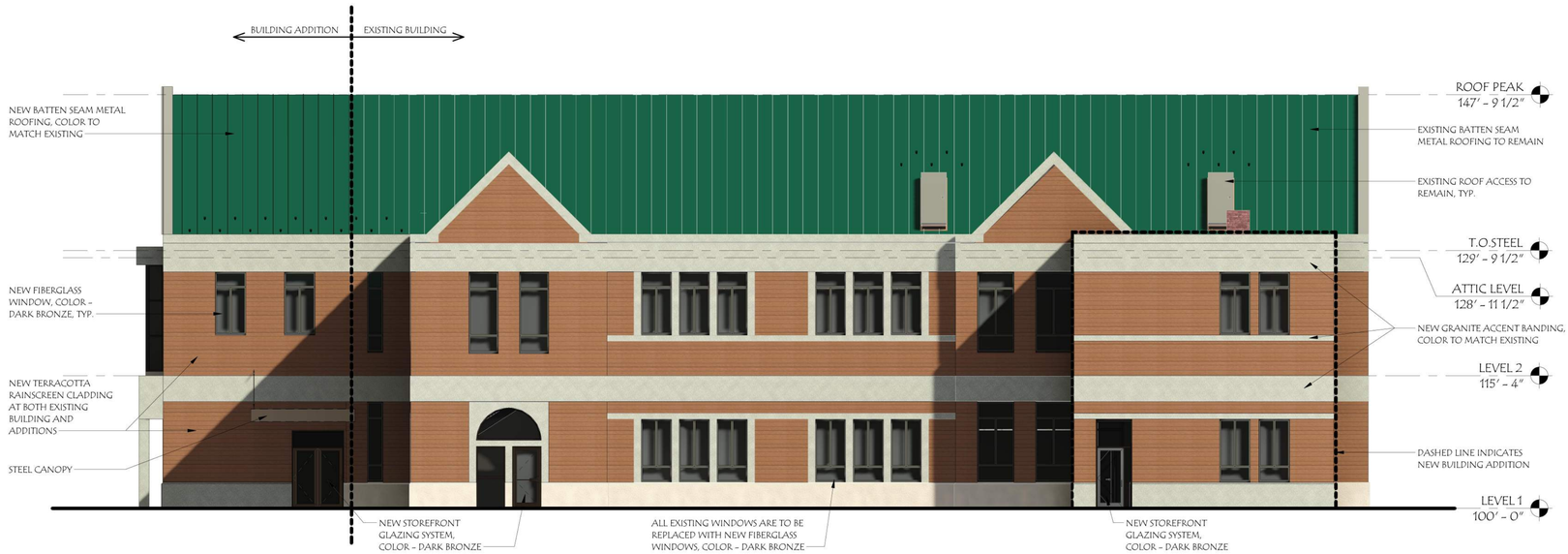
TERRACOTTA CLADDING



BATTEN SEAM ROOFING



STOREFRONT WINDOWS AND ENTRIES



1 A-1 ZONING ELEVATION - SOUTH
1/8" = 1'-0"

2 A-1 ZONING ELEVATION - WEST
1/8" = 1'-0"

WINDSOR COURTHOUSE RENOVATIONS

82 RAILROAD ROW
WHITE RIVER JUNCTION, VT

ZONING ELEVATIONS

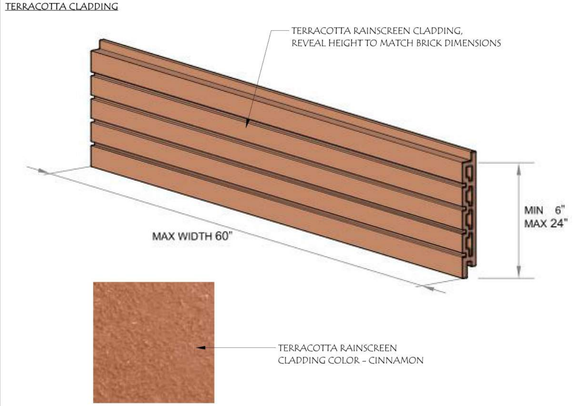
01/02/2023

Wiemann Lamphere ARCHITECTS

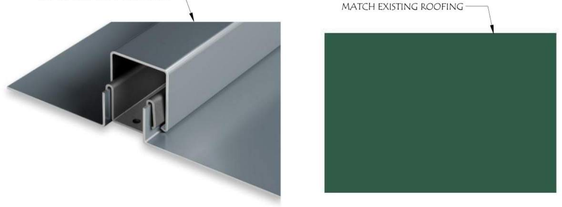
All reports, drawings, specifications, computer files, field data, notes and other documents and instruments prepared by the Consultant as instruments of service shall remain the property of the Consultant. The Consultant shall retain all common law, statutory and other reserved rights, including the copyright thereto.
Ownership of Instruments of Service
C:\Users\mhopper\Documents\20180828_Windsor Courthouse_R22_ARCH_mhopper1.rvt | Printed: 12/28/2022 11:04:18 PM

MATERIALS LEGEND

TERRACOTTA CLADDING



BATTEN SEAM ROOFING



STOREFRONT WINDOWS AND ENTRIES

1 A-2 ZONING ELEVATION - NORTH
1/8" = 1'-0"

2 A-2 ZONING ELEVATION - EAST
1/8" = 1'-0"

WINDSOR COURTHOUSE RENOVATIONS

82 RAILROAD ROW
WHITE RIVER JUNCTION, VT

ZONING ELEVATIONS

Wiemann Lamphere ARCHITECTS

01/02/2023

DocuSign Envelope ID: A1CD23E5-BCB7-44F1-87E9-08A644B86FA1

Town of Hartford

Planning Commission App # _____
Zoning Board of Adjustment App # _____

APPLICATION TO
PLANNING COMMISSION &/OR ZONING BOARD OF ADJUSTMENT

PLEASE COMPLETE ALL ITEMS APPLICABLE AND PROVIDE THE CORRECT NUMBER OF COPIES OF THIS APPLICATION AND THE SITE PLAN OR SUBDIVISION PLAT. ABUTTING LANDOWNERS WILL BE NOTIFIED BY THE PLANNING/ZONING OFFICE.

1. **NAME & ADDRESS OF RECORD OWNER(S)** Buildings and General Services, State of Vermont
   133 State Street, 5th Floor, Montpelier, VT 05633-5801
   Deed Recorded Book 144 Page 111-114 (Available at Town Clerk's Office)
   Telephone: Work _____ Cell 802-505-0681 Email Address: sherilyn.lafley@vermont.gov
2. **NAME & ADDRESS OF APPLICANTS(S)** Sherilyn Lafley, Buildings and General Services, State of Vermont
   133 State Street, 5th Floor, Montpelier, VT 05633-5801
   Telephone: Work _____ Cell 802-505-0681 Email Address: sherilyn.lafley@vermont.gov
3. **NAME & ADDRESS OF APPLICANTS' CONSULTANT** Wiemann Lamphere Architects / Engineering Ventures PC
   38 Eastwood Drive, Suite 301, South Burlington, VT 05403 / 208 Flynn Ave., Burlington, VT 05401
   Telephone: Work 802-655-5020 / 802-863-6225 Cell _____ Email Address: droy@wiemannlamphere.com / paulb@engineering
4. **PROJECT LOCATION** 82 Railroad Row
5. **PRESENT USE OF PROPERTY** Public Facility
6. **BRIEFLY DESCRIBE PROJECT** (in addition, a detailed narrative must be submitted)
   HVAC Replacement, two small additions, site work, and energy upgrades.
7. **PROJECT SIZE IN SQ. FT OR ACREAGE** 35,000
   Lot Width 360' Lot Depth 214
8. **IS PROJECT ON TOWN WATER/SEWER**? Yes X No X If Yes, estimated
   Water Consumption/day 1,215 Amount of Sewer Flow Projected 1,215
   Size of Closest Lines Above (water) 6" (sewer) 6"
9. **DESCRIBE LANDSCAPING PLAN** N/A
10. **IF A BUSINESS** - Present # of Employees _____
    Proposed Days & Hours of Operation _____
    Will you use the landfill & recycling center? Yes _____ No _____
    The main waste by-product of your business is: _____

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11. **IF A RESTAURANT** - Present seating _____ Proposed _____
12. **PARKING SPACES** - Number to be provided _____
13. **SIGNAGE** - Free Standing N/A Attached N/A
14. **FENCING** – Location N/A Height _____
15. **NEAREST WATER SUPPLY FOR FIRE PROTECTION** Existing fire hydrant located NW of the building
16. **ESTIMATED VALUE OF PROPOSED WORK** 7,500,000.00
17. **IS THERE AN EXISTING DRIVEWAY?** Yes
18. **IF A SUBDIVISION** - Number of New Lots to be Created _____

    Do you request that the Town consider taking over maintenance of – Roads _____

    Or Park/Open Space _____

I HEREBY CERTIFY THAT THE INFORMATION PROVIDED ON THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. (This certification must be signed by lot owners and applicants).

DocuSigned by: Sherilyn Lafley 5/17/2024
9A0474C03670463...
Applicant's Signature Date

DocuSigned by: Jennifer M. V. Fitch 5/17/2024
EC8F68F55FBC42C...
Lot Owner's Signature Date

_____ _____
Co-Applicant's Signature Date Co-Owner's Signature Date

The applicant retains the obligation to identify, apply for, and obtain any relevant local or state permits before any construction may commence. Please call 802-282-6488 to speak with the State Permit Specialist.

For Office Use Only		
Map/Lot #		
Fee Paid $:		Receipt #:
PC: Site Plan	Min. Sub.	Maj. Sub.
PD	PD Amend.	Other
ZBA: Conditional Use	Variance	Appeal
Other		
Zoning District (s)		Date Filed:
Official Submittal Date:		

VERMONT

Department of Buildings and General Services
Design and Construction Division
133 State Street, 5th Floor
Montpelier, VT 05633-5801

Agency of Administration

[phone] 802-828-3519

May 20, 2024

Town of Hartford
171 Bridge Street
White River Junction, VT 05001

Attn: Jo-Ann Ells, Zoning Administrator

Re: Windsor District Court Renovation, 82 Railroad Row

Dear Ms. Ells:

I appreciated your assistance at our meeting on May 6, 2024, which allowed our project team to introduce themselves and to discuss the proposed Windsor District Court Renovation project at 82 Railroad Row.

Wiemann Lamphere Architects is the firm under contract with the Department of Buildings and General Services and is assisting with the design, permitting, and construction of the project.

The Windsor District Court Renovation project will consist of the following:

1. Energy improvements to comply with present day energy code: new roofs, windows, doors and replace the existing brick siding, with terracotta tile, to correct the water infiltration issues and increase the insulation value.

2. Replace the heating, ventilation and air conditioning systems: replace the oil-fired boilers with wood pellet boilers, with an exterior silo on the rear of the building, replacement of the rooftop chiller and air handlers in the building.

3. Construct two new entrances: The front entrance is being increased for additional security screening of the public. The side entrance creates a secure vestibule and additional office space.

4. Site work: replace the existing sidewalks to improve accessibility, heated walks at the new entrances to limit the use of salt. The addition of three electric vehicle parking spaces. Correct stormwater issues for better draining of the parking lot.

For the Planning Commission meeting I have enclosed the following:

1. State of Vermont 895680 made out in the amount of $220.00 to the Hartford Town Treasurer
2. Planning Commission and Zoning Board of Adjustment application for the referenced project and property
3. Drawings
   A. C1.1 Existing Conditions and Demolition Plan
   B. C2.1 Site Utility and Layout Plan
   C. C2.2 Grading Plan
   D. C3.1 Site Details
   E. C3.2 Sidewalk and Curb Details
   F. C3.3 Stormwater Details
   G. C3.4 Water Details
   H. C3.5 EPSC Details
   I. A1.01 Level 1 Floor Plan
   J. A1.02 Level 2 Floor Plan
   K. A2.01 Exterior Elevations
   L. A2.02 Exterior Elevations
   M. E3 Electrical Site Plan

For your information and pursuant to State law, the Town's review of this project is limited to the specific aspects as set forth in 24 V.S.A. § 4413 (a)(1) which states:

> *" The following uses may only be regulated with respect to location, size, height, building, bulk, yards, courts, setbacks, density of buildings, off-street parking, loading facilities, traffic, noise, lighting, landscaping and screening requirements, and only to the extent that regulations do not have the effect of interfering with the intended functional use."*

The Vermont Department of Public Safety, Division of Fire Safety (DFS), has entered into cooperative inspection agreements with the Town of Hartford; however, this agreement does not apply to state owned buildings (for which DFS retains jurisdiction). DFS will perform all inspections and issue a Certificate of Occupancy.

That said, we encourage you to bring forward any urgent concerns you may have for discussion. The State of Vermont strives to be a good neighbor and we are committed to arriving at mutually agreeable solutions to any areas of difference.

While the State is not subject to local permitting fees, we are aware of permitting expenses incurred locally and have enclosed a $220.00 application fee. Please note that this payment does not constitute a waiver of the State's exemption from permitting fees and any remaining provision of the Town's fee schedule would be inapplicable.

I look forward to presenting this project to you and the Planning Commission. Should you have any questions or concerns before then, please do not hesitate to contact me at Sherilyn.lafley@vermont.gov or 802-505-0681.

Sincerely,

Sherilyn Lafley

Sherilyn Lafley,
Project Manager

Copy: Joe Aja, Director of Design and Construction Division
Lauren Washburn, Program Chief of Design and Construction Division

VERMONT

Department of Buildings and General Services
Design and Construction Division
133 State Street, 5th Floor
Montpelier, VT 05633-5801

Agency of Administration

[phone] 802-828-3519

May 28, 2024

Town of Hartford
171 Bridge Street
White River Junction, VT 05001

Attn: Jo-Ann Ells, Zoning Administrator

Re: Windsor District Court Renovation, 82 Railroad Row

Dear Ms. Ells,

Below is the information relating to your memorandum dated May 23, 2024, as requested for the proposed Windsor District Court Renovation project at 82 Railroad Row.

1. Please provide a narrative of the proposed stormwater improvements.

   Two existing catch basins are not functioning as they should, so the basins and associated piping are being demolished. New catch basins and piping are being installed in the southern (employee) parking lot to improve drainage in that parking lot. The project proposes 1,550 sf of new impervious surface. This increase falls well below the 5,000-sf expansion threshold in the state stormwater regulations that would require a state stormwater application. Please note that this narrative does not constitute a waiver of the State's exemption under 24 V.S.A. § 4413.

2. Please acknowledge that you understand that construction of the project must 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.

   Acknowledged

3. During initial meetings regarding this application, it was mentioned that you would be pursuing a geothermal heating system and I see that several geothermal test holes were dug. Can you share why you are proposing wood pellet boilers instead?

   Three geothermal test holes were dug and tested to determine the number of wells that would be needed to heat the building. The test results showed that more wells were

needed than the engineer predicted. The State performed a life cycle cost analysis that compared a pellet boiler with chiller and the geothermal system. The cost analysis determined after a 30-year period the pellet boiler with a chiller was less expensive than the geothermal system..

4. Please send me a single email with all application materials, including your response to this memo.

   Sent on May 29, 2024.

5. Please submit 14 copies of all application materials, including your response to this memo. Please staple and fold all of the plans. 11” x 17” plans are acceptable as long as they are legible.

   Provided

Sincerely,

Sherilyn Lafley

Sherilyn Lafley,
Project Manager

Copy: Joe Aja, Director of Design Construction Division
Lauren Washburn, Program Chief of Design and Construction Division

VERMONT

Department of Buildings and General Services
Design and Construction Division
133 State Street, 5th Floor
Montpelier, VT 05633-5801

Agency of Administration

[phone] 802-828-3519

May 21, 2024

Town of Hartford
171 Bridge Street
White River Junction, VT 05001

Attn: Jo-Ann Ells, Zoning Administrator

Re: Windsor District Court Renovation, 82 Railroad Row

Dear Ms. Ells,

Below is the information relating to section 260-46 Design Review District as requested for the proposed Windsor District Court Renovation project at 82 Railroad Row.

(9) **Application requirements**. In addition to the submittal requirements of § 260-45, any application for construction, reconstruction, alteration, or demolition of any building in the Downtown White River Junction Design Review District shall include the following:

(a) Narrative describing the project:

The Windsor District Court Renovation project will consist of the following:

1. Energy improvements to comply with present day energy code: new roofs, windows, doors, and replace the existing brick with ceramic tile to correct water infiltration issues and increase the insulation value.

2. Replace the heating, ventilation, and air conditioning systems: replace the oil-fired boilers with wood pellet boilers, with an exterior silo on the rear of the building, replacement of the rooftop chiller and air handlers in the building.

3. Construct two new entrances: The front entrance is being increased for additional security screening of the public. The side entrance creates a secure vestibule and additional office space.

4. Site work: replace the existing sidewalks to improve accessibility, heated walks at the new entrances to limit the use of salt. The addition of three electric vehicle parking spaces. Correct stormwater issues for better draining of the parking lot.

(b) Description of materials to be used on the exterior of the building;

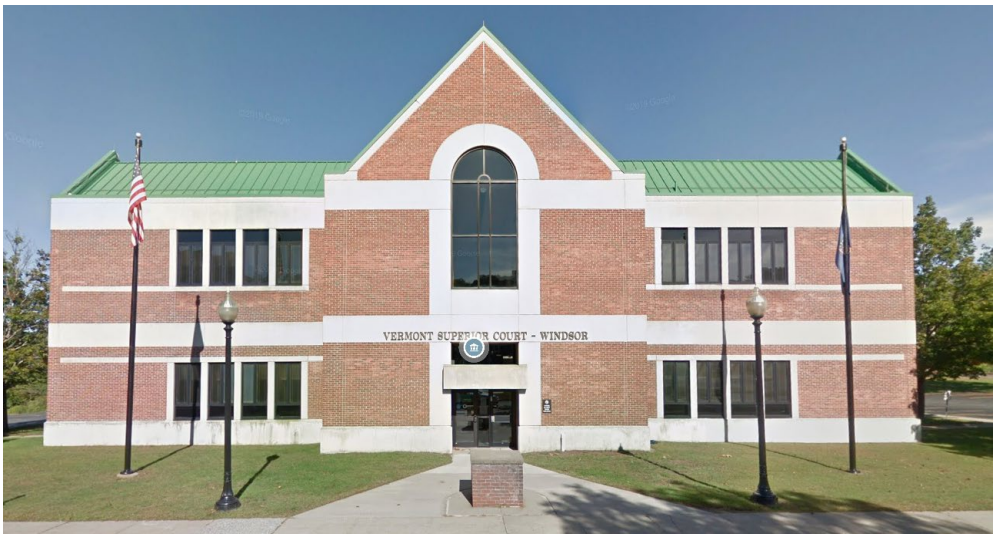
N/A under 24 V.S.A. § 4413

(c) Proposed architectural elevations (prepared by an architect registered in the State of Vermont) showing door and window types, shutters and other exterior details;

This was included in the application to planning commission &/or zoning board of adjustment.

(d) Color photographs of the subject building;

Existing Photos:



Renderings are attached separately.

(e) Color photographs of existing buildings on adjacent or nearby properties to illustrate the existing streetscape;

RSG
Google

NORWICH
SOLAR TECHNOLOGIES

(f) Site plan; and

This was included with the application to planning commission &/or zoning board of adjustment.

(g) Any additional information which may be requested by the DRC or the Planning Commission as necessary for a clear understanding of the proposal, including scale models or other three-dimensional analyses.

Nothing additional to include.

(10) **Diversity of design.** These regulations recognize the value of diversity in design solutions based on a wide variety of architectural styles and design philosophies, without imposing a particular aesthetic value or prohibiting the introduction of new forms into the built environment, provided these are consistent with the intent of this district.

N/A under 24 V.S.A. § 4413

(11) **Design criteria**. In making a determination on an application, the Design Review Committee and Planning Commission shall give consideration to the White River

Junction Design Plan and White River Junction Design Guidelines and the following criteria:

(a) The way in which the project preserves and/or enhances the integrity of the historic architecture of the downtown and the specific buildings.

N/A under 24 V.S.A. § 4413

(b) The way in which the project uses historically appropriate or compatible materials where possible in rehabilitation and new construction projects.

N/A under 24 V.S.A. § 4413

(c) The way in which the project respects existing setbacks, scale and massing when developing a new building or addition.

N/A under 24 V.S.A. § 4413

(d) The way in which the project employs appropriate lighting patterns and levels that reflect use, safety and security.

Minor changes in lighting due to realignment of the existing light poles to account for the addition.

(e) The way in which the project implements streetscape elements on a building-by-building basis.

N/A under 24 V.S.A. § 4413

(f) The way in which the project preserves the landscape, including existing terrain, trees and vegetation to the extent feasible.

No change, except for replacement of an invasive species with a non-invasive species.

(g) The way in which the project promotes accessibility and rear access from parking areas to commercial buildings.

No proposed changes.

(h) The way in which the project provides efficient and effective vehicular and pedestrian circulation.

No proposed changes.

(i) The way in which the details being proposed for the building, including window, door, and trim, are compatible with the existing and adjacent buildings' historic and design qualities.

N/A under 24 V.S.A. § 4413

Sincerely,

Sherilyn Lafley

Sherilyn Lafley,
Project Manager

Copy: Joe Aja, Director of Design Construction Division
Lauren Washburn, Program Chief of Design and Construction Division

DRAFT
Meeting Minutes
Hartford WRJ Design Review Committee
May 30, 2024

Present: Denise Welch-May, Jonathan Schechtman, Larson Burns, Sara Ferguson, and Jo-Ann Ells, Zoning Administrator

Denise opened the meeting by reading the hybrid meeting script and taking a roll call.

1. Application by the State of Vermont for Design Review Approval for additions and exterior improvements to the Windsor District Court lot 46-0024-001, 82 Railroad Row, White River Junction, in CB and Design Review Districts.

Joe Aja, Director, Design & Construction Division, Buildings & General Services and Sherilyn Lafley, Project Manager**,** Design & Construction Division were present.

Jo-Ann Ells explained that pursuant to State law, the Town's review of this project is limited by 24 V.S.A. § 4413 (a)(1) which states:

> *" The following uses may only be regulated with respect to location, size, height, building, bulk, yards, courts, setbacks, density of buildings, off-street parking, loading facilities, traffic, noise, lighting, landscaping and screening requirements, and only to the extent that regulations do not have the effect of interfering with the intended functional use."*

Sherilyn gave a general overview of the project.

Joe reviewed the proposed change to the face of the building from brick to terracotta tile and the changes to the heating system.

The elevation plans were reviewed.

Jonathan asked if the roof would be replaced. Joe confirmed it would.

Joe clarified that the existing granite on the building would be retained.

There was a discussion regarding the dimension of the additions.

Joe noted that the rooftop chiller would be replaced with a smaller unit.

Landscaping and EV parking spaces were reviewed.

Sara moved to recommend approval to the Planning Commission. Denise seconded, and the motion passed unanimously.

Administrative Matters

Denise moved to approve the minutes of October 26, 2023. Larson seconded, and the motion

passed.

At 5:35p.m., Larson moved to adjourn the meeting. Denise seconded, and the meeting was adjourned.

Members of the Design Review Committee are as follows:

Chair, Denise Welch-May 4/15/27
Vice Chair, Jonathan Schechtman 03-07-25
Sara Ferguson 10-04-24
Anita Hamalainen 11-15-24
Larson Burns 08-22-25

Memorandum

To: Joe Aja, Sherilyn Lefley, and Lauren Washburn

Cc: Dana Clawson, Hartford Environmental Sustainability Coordinator

From: Jo-Ann Ells, Hartford Zoning Administrator

Date: May 23, 2024

Re: Windsor District Court Additions/Improvements

Please submit a response to the following comments/questions on your application for improvements to the Windsor District Court before **9:00 a.m., Thursday, May 30, 2024.** If you are unable to meet this deadline, please contact me as soon as possible to discuss the deadline to have your application heard at the next round of Public Hearings.

Prior to the Planning Commission and Zoning Board of Adjustment Hearings, you will receive an agenda, draft Findings of Fact, and additional staff comments if there are any. Please feel free to contact me at any time during this process.

1. Please provide a narrative of the proposed stormwater improvements.

2. Please acknowledge that you understand that construction of the project must 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.

3. During initial meetings regarding this application it was mentioned that you would be pursuing a geothermal heating system and I see that several geothermal test holes were dug. Can you share why you are proposing wood pellet boilers instead?

4. Please send me a single email with all application materials, including your response to this memo.

5. Please submit 14 copies of all application materials, including your response to this memo. Please staple and fold all of the plans. 11” x 17” plans are acceptable as long as they are legible.

DRAFT
FINDINGS OF FACT
CONCLUSIONS OF LAW
AND
DECISION

HARTFORD ZONING BOARD OF ADJUSTMENT

Application #02-24 by Guernsey Ruth Hall Revocable Trust
and Summit Distributing
for Conditional Use Approval
for approval of a car wash, lot 44-0041-000
Sykes Mountain Avenue, White River Junction, in an IC zoning district

This decision pertains to application #02-24 by Guernsey Ruth Hall Revocable Trust (owner) and Summit Distributing (applicant) for Conditional Use Approval under section 260-16 of the Hartford Zoning Regulations for approval of a car wash, lot 44-0041-000, Sykes Mountain Avenue, White River Junction, in an IC zoning district.

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 meetings of April 10, 2024 and June 26, 2024 the Hartford Zoning Board of Adjustment makes the following Findings of Fact:

General Information

1. The owner of record of 44-0041-000 is the Guernsey Ruth Hall Revocable Trust who acquired the lot on 06-18-14. The deed is recorded in volume 502, page 124 of the Hartford Land Records.

2. The lot is approximately 1.165 acres.

3. The lot is developed with a parking lot.

4. The lot is a class 1 lot.

5. The lot is in an IC zoning district.

This Application

6. The applicant proposes to develop a car wash on the lot including a 100 ft long car wash tunnel with two prepaid stations and eleven (11) vacuum spaces.

7. The applicant submitted a Trip Generation and Site Access Study. The applicant will comply with the following as recommended in the study:

> Proposed plantings, vegetation, landscaping, and signing along the site frontage be kept low to the ground (no more than 3.0 feet above street level) or set back sufficiently from Sykes Mountain Avenue so as not to inhibit the available sight lines.

(See exhibit #11)

8. The applicant submit an Environmental Sound Study prepared by Aaron Farbo of Cavanaugh Tocci.

A review of this study was conducted by Edward Duncan of Paxwood Acoustics on behalf of the Town.

To mitigate noise, the applicant will:

- Install prototype silencers on the intake-side of the dryer blowers in the car wash.
- Install a wooden sound barrier.

(See exhibit #5)

9. The Zoning Regulations do not include a calculation for the number of parking spaces for a car wash. Therefore, the Planning Commission determines the number of required parking spaces.

The applicant proposes 12 parking spaces including one accessible parking space.

10. The applicant has provided a landscaping plan including a mixture of trees, shrubs and perennials. According to the applicant, approximately 50% of the existing treed area will remain.

To ensure landscaping is maintained in a healthy condition, the applicant will hire a property maintenance company to maintain the landscaping.

11. There is an existing 8’ high wooden stockade fence alongside a portion of the western boundary line installed by a previous owner of adjacent lot 44-0040-000.

As noted above, the applicant proposes to install an 8-foot high wooden sound barrier running along the north and west sides of the property.

According to the applicant, the barrier will block vehicular headlights because "Vehicular headlights must be between 2 ft to 4 ½ ft off the ground. The highest elevation of the pavement is 546 and the ground at the bottom of the fence adjacent to the pavement is 546; therefore, the top of the fence will be at elevation 554. Headlight height ranges would be between 548 and 550.5."

12. According to the applicant, the site will be accessed from adjacent Lot 44-0038-000 from either the retail motor fuel outlet or the driveway from Sykes Mountain Highway. The drive aisle in front of the site will maintain a two-way traffic flow to allow customers to access the vacuums, enter the car wash queue, or exit the car wash. There are two pay stations proposed for the car wash, paid car washes will most likely be recognized by license plates, so customers can leave the queue and use the vacuums to the rear of the site or continue to the car wash tunnel. The site has the capacity to queue 18 vehicles from the pay stations. The striped area to the rear of the site has been provided to allow trash trucks, maintenance trucks, and the Town's ladder truck to maneuver around the rear of the site. The one-way bypass is provided to allow these vehicles to leave the site.

Should the need arise, it is anticipated that available on-site staff will be able to facilitate with overall operational/traffic flow assistance.

If a customer decides to leave the wash queue after already being in line, that will occur after passing through the pay station, where there would be sufficient room to bypass.

There is sufficient room for a vehicle existing the vacuums in the front of the lot to complete a turning maneuver from those spots and exit the site with the proposed 24-foot wide drive aisle that is wide enough to accommodate two-way traffic.

Our general experience has demonstrated that this layout is fairly typical for the size and type of use that is proposed. In addition, there are no sight line restrictions between the front parking spaces, the exit from the car wash, or the full access/egress driveway.

Regarding merging of lanes/vehicles before the wash tunnel, this layout and operational component (two or more payment stations merging into a single-file line for service) is typical for the proposed use, and is intended to lessen the overall queue length, as it's spread out over multiple pay stations.

Regarding the ability of vehicles to merge back into the wash lane after using the rear vacuums, there is sufficient width to bypass vehicles in queue for the wash tunnel, and egress to the abutting property (Map 44/Lot 38) utilizing the northerly exit-only driveway. Should a customer decide to wash (or re-wash) their vehicle after utilizing

the rear vacuum stations, there are no prohibitions restricting re-entry to the site via the full- access southerly driveway.

13. The applicant submitted turning movement plans for a ladder truck and trash hauler. (See exhibit #2)

    According to the applicant, the site has been designed to allow for a fire apparatus around the building. In the case of an emergency, emergency vehicles can access the site through the outer pay station lane, through the proposed bypass lane, or park within the loading zone on the adjacent property.

14. The applicant submitted a photometric plan. (See exhibit #2)

    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.

15. The applicant proposes to install an enclosed dumpster at the rear of the site for use by the employees of car wash and the convenience store on adjacent lot 44-0038-000. In addition, trash receptacles will be available at the vacuum spaces for customers.

    The applicant will have trash removal restricted to daylight hours.

16. Hours of operation for the car wash are proposed to be 7:00 a.m. to 8:00 p.m., seven days a week.

    The 5 vacuums in the rear of the lot will turn off at 8:00 p.m. The applicant will install a sign with this information.

17. The applicant proposes 2-3 employees on site at any given time.

18. The applicant will display an 800 number for people to call with concerns.

19. The car wash will be connected to municipal water and sewer. Connections will be coordinated with the Hartford Department of Public Works (DPW).

20. Before construction commences, the applicant will schedule a preconstruction meeting with the DPW and will contact the DPW at least two weeks before they want to hold this meeting.

    The applicant understands that if the meeting with the DPW results in any revisions to the approved plans, they must contact the Zoning Administrator to discuss amending their permit.

21. According to the applicant, "stormwater runoff currently sheet flows over the existing pavement and flows toward Lot 44-55 and to the Right of Way of Sykes Mountain Avenue. As part of the redevelopment, a stormwater management system has been designed which includes deep sump catch basins with oil/water separator hoods, First Defense hydrodynamic separators and an underground stormwater detention system. Trench drains provided within the car wash tunnel will capture used car wash water and direct it to the reclamation system."

    In addition, "Concrete curbing is proposed throughout the site to direct runoff to a series of catch basins that ultimately drains to the existing municipal drainage network. Per the Stormwater Report, there is no increase in runoff to existing design points. There will be no damage to other properties or any erosion of topsoil."

    "The snow storage area to the north of the vacuum area has been depressed to collect snow storage melt. In addition the area between the fence and the pavement has been graded to flow toward the onsite closed drainage system."

22. According to the applicant, to prevent surface icing from vehicles exiting the wash, trench drains within the tunnel will capture wasted water from washings and direct the water to the reclaim system. The area adjacent to the tunnel exit has been graded to direct stormwater runoff to two proposed catch basin. In addition, the concrete aprons at the entrance and exit of the tunnel will be heated.

23. 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.

24. The applicant understands that any stockpiling of materials related to the construction of the project must be located twice the distance of the height of the stockpiled materials from any public or private right-of-way or property boundary.

25. During construction of the 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.

26. The applicant understands that construction of the project must comply with the following:

    > 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.

27. The applicant understands that no structure, including construction/office trailers, 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.

28. The applicant retains the obligation to identify, apply for, and obtain relevant local and state permits for this project.

29. 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.

28. 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 #02-24 by Guernsey Ruth Hall Revocable Trust (owner) and Summit Distributing (applicant) for Conditional Use Approval under section 260-16 of the Hartford Zoning Regulations for approval of a car wash, lot 44-0041-000, Sykes Mountain Avenue, White River Junction, in an IC zoning district **the condition that:**

1. **Before a Zoning Permit is issued:**

    - **The applicant reimburses the Town for the cost of the third party review.**
    - **The applicant submits written authorization from the abutting lot owner to install the sound barrier on their property.**
    - **The applicant submits copies of applicable access easement(s) to support the proposed traffic pattern.**
    - **The applicant submits written verification from the Fire Marshal confirming they have reviewed and approved the turning movement plan for the ladder truck.**
    - **The applicant submits a copy of their water and sewer allocation to the Zoning Administrator.**
    - **The applicant's Engineer certifies that no changes, other than those required by the Planning Commission/Zoning Board, were made to the final plans that are submitted for the Zoning Permit.**
    - **A copy of the final plans is emailed to the Zoning Administrator.**

2. Before a Certificate of Occupancy is issued, the applicant submits:

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

- **Written verification from Cavenaugh Tocci certifying that the blower prototype silencers were installed and are performing as specified in the sound study.**
- **Written verification from the DPW confirming that the water and sewer have been inspected and approved.**
- **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 applicants are 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 June 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. The fee is $250.00. 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 #02-24

2. Set of plans entitled "Site Development Plan, Proposed Car Wash for Assessors Map 44 Lot

41, Sykes Mountain Avenue, White River Junction, Vermont, prepared for Summit Distributing, 240 Mechanic Street, Lebanon, NH 03766" revised June 11, 2024 including:

- Title Sheet
- General Notes
- Existing Conditions Plan
- Demolition Plan
- Site Plan
- Grading & Drainage Plan
- Utility Plan
- Erosion & Sediment Control Plan
- Landscape Plan
- Four Detail Sheets
- Truck Turn Plan 1 (Fire)
- Truck Turn Plan 4 (Garbage)
- Photometric Plan
- Lighting cutsheets
- Elevations

3. Letter from Nicole Duquette dated June 11, 2024

4. Project Narrative

5. Environmental Sound Study including:

    - Memo from Aaron Farbo, Cavanaugh Tocci dated June 10, 2024
    - Letter from Edward Duncan of Paxwood Acoustics dated June 7, 2024
    - Memo from Aaron Farbo, Cavanaugh Tocci dated June 4, 2024
    - Sound Study from Aaron Farbo, Cavanaugh Tocci dated June 3, 2024
    - Letter from Edward Duncan of Paxwood Acoustics dated May 20, 2024
    - Sound Study from Aaron Farbo, Cavanaugh Tocci dated April 24, 2024

6. Hartford Noise Ordinance, Chapter 110

7. Letter from Robert Bollinger dated March 1, 2024

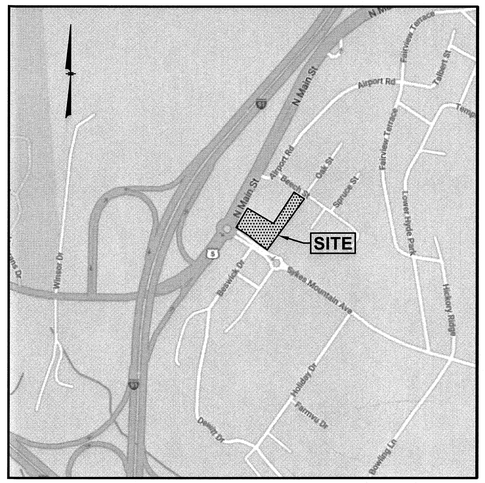
8. Email from Jo-Ann Ells dated February 21, 2024 regarding traffic

9. Letter from Nicole Duquette dated February 15, 2024

10. Memo from Jo-Ann Ells dated February 9, 2024

11. Trip Generation and Site Access Study dated January 29, 2024

SITE DEVELOPMENT PLANS
PROPOSED CAR WASH
for
ASSESSORS MAP 44 LOT 41
SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT
Prepared for:
SUMMIT DISTRIBUTING
240 MECHANIC STREET
LEBANON, NH 03766



LOCATION MAP
(NOT TO SCALE)

INDEX TO DRAWINGS

1.	TITLE SHEET
2.	GENERAL NOTES
3.	EXISTING CONDITIONS PLAN
4.	DEMOLITION PLAN
5.	SITE PLAN
6.	GRADING & DRAINAGE PLAN
7.	UTILITY PLAN
8.	EROSION & SEDIMENT CONTROL PLAN
9.	LANDSCAPE PLAN
10.	DETAIL SHEET
11.	DETAIL SHEET
12.	DETAIL SHEET
13.	DETAIL SHEET
1 OF 1.	TRUCK TURN PLAN 1
1 OF 1.	TRUCK TURN PLAN 2
1 OF 2.	LIGHTING PLAN (RL-9431-S1)
2 OF 2.	LIGHTING SPECIFICATIONS (RL-9431-S1)
1 OF 1.	BUILDING ELEVATIONS (A2.1)

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
SUMMIT DISTRIBUTING
240 MECHANIC STREET
LEBANON, NH 03766

ASSESSORS MAP 44 LOT 41
SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
DAVID R. JORDAN
NO. 135215
CIVIL
REGISTERED PROFESSIONAL ENGINEER
6/11/24

REVISIONS		
4.	REV. SHEET 5	6/11/24
3.	REV. SHEETS 2, 4-9	4/17/24
2.	REV. ALL SHEETS	2/15/24
1.	SHEETS 2, 7, & TTP	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

DRAWN/DESIGN BY	CHECKED BY
CCC	NID

TITLE SHEET

SCALE: AS SHOWN

NEX-2019181

1 OF 13

F:\Projects\MAX-2019181 - White River Junction, VT - Summit Distributing\CAD Files\2019181_CVR.dwg COVER 6/11/24 10:38am nduquette

LEGEND

SGC	SLOPED GRANITE CURB
VGC	VERTICAL GRANITE CURB
SCC	SLOPED CONCRETE CURB
VCC	VERTICAL CONCRETE CURB
CCB	CAPE COD BERM
DSLY	DOUBLE SOLID LINE YELLOW
DDLY	DOUBLE DASHED LINE YELLOW
SDLY	SINGLE DASHED LINE YELLOW
SSLY	SINGLE SOLID LINE YELLOW
SSLW	SINGLE SOLID LINE WHITE
SDLW	SINGLE DASHED LINE WHITE
G	GAS LINE
T	UNDERGROUND TELEPHONE
W	WATER LINE
E	UNDERGROUND ELECTRIC
	WOOD GUARDRAIL
	METAL GUARDRAIL
	CHAIN LINK FENCE
	STOCKADE FENCE
	POST & RAIL FENCE
X	WIRE FENCE
90	CONTOUR ELEVATION
	TREE
	UTILITY POLE
	GUY WIRE
	OVERHEAD WIRE
	TREELINE
PB	PULL BOX
	SIGN
98.56	SPOT ELEVATION
D	DRAIN MANHOLE
	CATCH BASIN
R	ROOF DRAIN
C	CLEANOUT
V	VENT
S	SEWER MANHOLE
T	TELEPHONE MANHOLE
E	ELECTRIC MANHOLE
W	WATER MANHOLE
MH	MANHOLE
	GAS VALVE
	GAS SHUT OFF
	WATER VALVE
	WATER SHUT OFF
	FIRE HYDRANT
	BOLLARD
GM	GAS METER
EM	ELECTRIC METER
	MONITORING WELL
	LIGHT POLE
	BORING
	WETLAND LINE
	WATER FEATURE
U/GW	UNDERGROUND COMM
	DITCH LINE
	EASEMENT LINE
	PROPERTY LINE
	ABUTTER PROPERTY LINE
	BUILDING SETBACK
	SOIL TYPE LINE
	ZONE LINE
	FLOOD ZONE LINE
TBR	TO BE REMOVED
- K K K K K K	TO BE REMOVED
1	NUMBER OF PARKING SPACES
T.D.	TIP DOWN CURB
	PROP. VERTICAL CONC. CURB (VCC)
	PROP. VERTICAL GRANITE CURB (VGC)
C.O.	PROP. CLEANOUT
CB-1	PROP. CATCH BASIN
DMH-1	PROP. DRAIN MANHOLE
MEG	MEET EXISTING GRADE
331.25	PROP. SPOT ELEVATION
300	PROP. CONTOUR ELEVATION
TW=	TOP OF WALL ELEV.
BW=	BOTTOM OF WALL ELEV.
G.B.	GRADE BREAK
TP	TEST PIT
	PROP. GATE VALVE
	PROP. SEDIMENT CONTROL FENCE

GENERAL NOTES:

1) EXISTING BOUNDARY AND PLANIMETRIC INFORMATION AS SHOWN IS THE RESULT OF AN ACTUAL FIELD SURVEY BY THIS OFFICE.
2) TAX MAP 44 LOT 41
3) ZONING DISTRICT: INDUSTRIAL COMMERCIAL (IC)
4) LOT AREA = 50,752 Sq.Ft.
   = 1.165 Ac.±
5) EXISTING USE: OVERFLOW PARKING LOT
   PROPOSED USE: CAR WASH FACILITY
6) ALL BUILDINGS AND SITE CONSTRUCTION SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990, AS AMENDED.
7) THE LOCATIONS OF EXISTING SUBSURFACE UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM AVAILABLE RECORD DRAWINGS AND ARE NOT WARRANTED TO BE CORRECT. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING SUBSURFACE UTILITIES PRIOR TO PERFORMING ANY WORK.
8) WRITTEN DIMENSIONS ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR.
9) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 811 PRIOR TO ANY EXCAVATION.
10) ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF WHITE RIVER JUNCTION AND THE STATE OF VERMONT.
11) THE SURVEY TRACT IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 50027C0389E, WITH AN EFFECTIVE DATE OF SEPTEMBER 28, 2007.
12) ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS AND THE STANDARD CONSTRUCTION DRAWINGS AS SUPPLIED BY THE DEVELOPER.
13) A SIGN PERMIT SHALL BE OBTAINED PRIOR TO INSTALLATION.
14) PROPOSED SNOW STORAGE AREAS AS SHOWN. ANY EXCESS SNOW TO BE TRUCKED OFF-SITE.
15) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY GREENMAN-PEDERSEN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR AND/OR ENGINEER AS INCLUDED IN THE PLAN SET DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
16) A CONDITIONAL USE PERMIT IS REQUESTED TO ALLOW A MOTOR VEHICLE CAR WASH WITHIN THE INDUSTRIAL COMMERCIAL DISTRICT.
17) CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING WITH THE HARTFORD DPW BEFORE COMMENCING WITH CONSTRUCTION. CONTRACTOR SHALL CONTACT DPW AT LEAST 2 WEEKS BEFORE THE INTENDED MEETING DATE.
18) EARTH MOVING AND HAULING, ROCK DRILLING OR CRUSHING, JACK HAMMER AND SIMILAR EXCESSIVELY LOUD EQUIPMENT SHALL NOT BE OPERATED IN SUNDAYS OR BETWEEN THE HOURS OF 5:30 PM AND 7:00 AM EXCEPT IN EMERGENCY SITUATIONS.
19) ANY STOCKPILING OF MATERIALS RELATED TO THE CONSTRUCTION OF THE PROJECT MUST BE LOCATED TWICE THE DISTANCE OF THE HEIGHT OF THE STOCKPILED MATERIALS FROM ANY PUBLIC OR PRIVATE RIGHT OF WAY OR PROPERTY BOUNDARY.
20) CONSTRUCTION TRAILERS MAY BE USED AT CONSTRUCTION SITES FOR OFFICE AND LABRATORY USE ON THE CONDITION THAT THEY ARE PLACED A MINIMUM OF TEN FEET FROM ANY PROPERTY LINE, ARE USED FOR A PROJECT WITH A VALID ZONING PERMIT AND ARE REMOVED BEFORE A CERTIFICATION OF OCCUPANY IS REQUESTED.
21) CAR WASH HOURS OF OPERATION WILL BE 7AM TO 8PM. VACUUMS WITHIN SPACES TO THE NORTH OF THE CAR WASH SHALL BE SHUT OFF AFTER 8PM.
22) CAR WASH WILL HAVE 2 TO 3 EMPLOYEES PER SHIFT.

DEMOLITION NOTES:

1) A DEMOLITION PERMIT MUST BE OBTAINED FROM THE TOWN OF WHITE RIVER JUNCTION PRIOR TO COMMENCEMENT OF WORK. ALL EXISTING UTILITY DISCONNECTIONS MUST BE COORDINATED WITH RESPECTIVE UTILITY COMPANIES.
2) ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN STRICT ADHERENCE TO ALL FEDERAL, STATE AND LOCAL REGULATIONS. CONTRACTOR TO INSTALL EROSION CONTROL DEVICES IN ACCORDANCE WITH EROSION AND SEDIMENT CONTROL PLAN PRIOR TO BEGINNING DEMOLITION ACTIVITIES.
3) PROCEED WITH DEMOLITION IN A SYSTEMATIC MANNER, FROM THE TOP OF THE STRUCTURE(S) TO THE GROUND.
4) DEMOLISH CONCRETE IN ALL SECTIONS.
5) BREAK UP CONCRETE SLABS-ON-GRADE, UNLESS OTHERWISE DIRECTED BY THE CONSTRUCTION MANAGER.
6) CONDUCT ALL DEMOLITION OPERATIONS IN A MANNER THAT WILL PREVENT INJURY, DAMAGE TO STRUCTURES, ADJACENT BUILDINGS AND ALL PERSONS.
7) REFRAIN FROM USING EXPLOSIVES WITHOUT PRIOR WRITTEN CONSENT OF THE DEVELOPER AND APPLICABLE GOVERNMENTAL AUTHORITIES.
8) CONDUCT DEMOLITION SERVICES IN SUCH A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS AND OTHER ADJACENT FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS OR OTHER OCCUPIED FACILITIES WITHOUT PRIOR WRITTEN PERMISSION OF THE DEVELOPER AND APPLICABLE GOVERNMENTAL AUTHORITIES. PROVIDE ALTERNATIVE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY APPLICABLE GOVERNMENTAL REGULATIONS.
9) USE WATERING, TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS, AS NECESSARY TO LIMIT THE AMOUNT OF DUST AND DIRT RISING AND SCATTERING IN THE AIR. CLEAN ADJACENT STRUCTURE AND IMPROVEMENTS OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. RETURN ALL ADJACENT AREAS TO THE CONDITIONS EXISTING PRIOR TO THE START OF WORK.
10) ACCOMPLISH AND PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE UNAUTHORIZED ENTRY OF PERSONS AT ANY TIME.
11) COMPLETELY FILL BELOW GRADE AREAS AND VOIDS RESULTING FROM THE DEMOLITION OF STRUCTURES AND FOUNDATIONS WITH SOIL MATERIALS CONSISTING OF STONE, GRAVEL AND SAND, FREE FROM DEBRIS, TRASH, FROZEN MATERIALS, ROOTS AND OTHER ORGANIC MATTER. STONES USED WILL NOT BE LARGER THAN 6 INCHES IN DIMENSION. MATERIAL FROM DEMOLITION MAY NOT BE USED AS FILL. PRIOR TO PLACEMENT OF FILL MATERIALS, UNDERTAKE ALL NECESSARY ACTION IN ORDER TO INSURE THAT AREAS TO BE FILLED ARE FREE OF STANDING WATER, FROZEN MATERIAL, TRASH, DEBRIS. PLACE FILL MATERIALS LAYERS NOT EXCEEDING 6 INCHES IN LOOSE DEPTH AND COMPACT EACH LAYER AT PLACEMENT TO 95% OPTIMUM DENSITY, GRADE SURFACE TO MEET ADJACENT CONTOURS AND TO PROVIDE SURFACE DRAINAGE.
12) REMOVE FROM THE DESIGNATED SITE, AT THE EARLIEST POSSIBLE TIME, ALL DEBRIS RUBBISH, SALVAGEABLE ITEMS, HAZARDOUS AND COMBUSTIBLE SERVICES. REMOVED MATERIALS MAY NOT BE STORED, SOLD OR BURNED ON SITE. REMOVAL OF HAZARDOUS AND COMBUSTIBLE MATERIALS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE PROCEDURES AS AUTHORIZED BY THE FIRE DEPARTMENT OR OTHER APPROPRIATE REGULATORY AGENCIES AND DEPARTMENTS.
13) DISCONNECT, SHUT OFF AND SEAL ALL UTILITIES SERVING THE STRUCTURE(S) TO BE DEMOLISHED BEFORE THE COMMENCEMENT OF THE DESIGNATED DEMOLITION. MARK FOR POSITION ALL UTILITY DRAINAGE AND SANITARY LINES AND PROTECT ALL ACTIVE LINES. CLEARLY IDENTIFY BEFORE THE COMMENCEMENT OF DEMOLITION SERVICES THE REQUIRED INTERRUPTION OF ACTIVE SYSTEMS THAT MAY AFFECT OTHER PARTIES, AND NOTIFY ALL APPLICABLE UTILITY COMPANIES TO INSURE THE CONTINUATION OF SERVICE.
14) PROTECT EXISTING DRAINAGE SYSTEM(S) AS NECESSARY TO PREVENT SEDIMENT FROM ENTERING DURING CONSTRUCTION. SEE DETAIL SHEETS FOR EROSION CONTROL DEVICES.
15) ALL WORK WITHIN ROADWAY RIGHT-OF-WAYS TO CONFORM TO TOWN STANDARDS.
16) THE LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO THE START OF CONSTRUCTION OR SITE CLEARING.
17) IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY DIG SAFE (DIAL 811) 72 HOURS PRIOR TO ANY EXCAVATION ON THIS SITE. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER DEPARTMENT TO MARK OUT THEIR UTILITIES.
18) NOTES ON THIS PLAN THAT READ "TBR" REPRESENT FEATURES TO BE REMOVED. ANY FEATURES NOT LABELED "TBR" OR "TO BE REMOVED" SHALL BE CONSIDERED EXISTING TO REMAIN.
19) SEE LANDSCAPE PLAN FOR LIMITS OF CLEARING AND GRUBBING. AFTER CLEARING, STRIP AND STOCKPILE TOP SOIL PER LANDSCAPE PLAN, IF APPLICABLE.

GRADING & DRAINAGE NOTES:

1) ALL SITE DRAINAGE PIPE SHALL BE CORRUGATED HIGH-DENSITY POLYETHYLENE PIPE WITH STANDARD JOINTS, DUAL-WALL, SMOOTH INTERIOR, AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON PLAN. THE UNDERGROUND DETENTION SYSTEM SHALL HAVE WATER TIGHT (WT) JOINTS MEETING ASTM D3212 SPECIFICATIONS.
2) ALL ROOF AND CANOPY DRAIN PIPE SHALL BE 6" PVC (SDR-35), EXCEPT WITHIN 10' OF A BUILDING FOUNDATION WHERE CAST IRON PIPE SHALL BE USED. MIN. SLOPE=1%.
3) ELEVATIONS ARE BASED ON NAVD88 DATUM.
4) ALL PROPOSED ELEVATIONS AS SHOWN ARE BOTTOM OF CURB ELEVATIONS, UNLESS OTHERWISE NOTED.
5) ANY UTILITY FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND COORDINATED WITH THE APPROPRIATE LOCAL UTILITY COMPANY.
6) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS TO VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
7) ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL DPW AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.
8) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIG-SAFE (DIAL 811) PRIOR TO COMMENCING ANY EXCAVATION.
9) THIS SITE WILL REQUIRE A STATE OF VERMONT AGENCY OF NATURAL RESOURCES DEPARTMENT OF CONSERVATION (DEC) STORMWATER CONSTRUCTION DISCHARGE GENERAL PERMIT 3-9050 FOR THE SITE CONSTRUCTION SINCE THE IMPERVIOUS AREA EXCEEDS ONE HALF OF AN ACRE (ACTUAL IMPERVIOUS = 25,380 SF±). BASED ON THE PROJECT RISK FACTOR, THE CONSTRUCTION SITE OPERATOR SHALL EITHER IMPLEMENT DEC'S EROSION PREVENTION AND SEDIMENT CONTROL PLAN (EPSC PLAN) OR DEVELOP AND IMPLEMENT A PROJECT SPECIFIC EPSC PLAN IN ACCORDANCE WITH THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL.
10) ANY UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY UTILITY COMPANY AND LOCAL DPW.
11) ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO VDOT AND THE TOWN DEPARTMENT OF PUBLIC WORKS, SHALL BE EMPLOYED DURING OPERATIONS WITHIN THE PUBLIC RIGHT-OF-WAY.
12) ALL ADA ACCESSIBLE WALKWAYS CANNOT EXCEED 5% RUNNING SLOPE AND 2% CROSS SLOPE. RAMPS CANNOT EXCEED 8.33% RUNNING SLOPE AND 2% CROSS SLOPE, AND ACCESSIBLE PARKING STALLS AND ACCESS AISLES CANNOT EXCEED 2% SLOPE IN ANY DIRECTION. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.
13) SEE UTILITY PLAN FOR DETAILED UTILITY LAYOUT.
14) CONTRACTOR SHALL FIELD ADJUST GRADES FOR THE TANK PAD TO SHED WATER
15) ALL PROPOSED CATCH BASINS SHALL HAVE 4' SUMPS AND OUTLETS EQUIPPED WITH "ELIMINATOR" OIL HOODS OR APPROVED EQUAL.
16) ALL PIPE DATA IS CALCULATED TO CENTER OF STRUCTURE, TYP.
17) CONTRACTOR TO REFER TO THE OPERATION & MAINTENANCE (O&M) MANUAL FOR STORMWATER MANAGEMENT SYSTEMS & SITE MAINTENANCE DURING AND AFTER CONSTRUCTION.
18) CONTRACTOR TO INSTALL RISER STRUCTURES AT EACH CORNER OF UNDERGROUND DETENTION SYSTEMS AND CLEANOUTS AT EACH END OF EACH ROW TO PROVIDE ACCESS POINTS FOR CLEANING AND MAINTENANCE.
   - TOTAL RISERS PROPOSED = 3
   - TOTAL CLEANOUTS PROPOSED = 7

UTILITY NOTES:

1) ALL SANITARY SEWER PIPE SHALL BE PVC (SDR-35), UNLESS OTHERWISE NOTED.
2) ALL WATER PIPE SHALL BE COPPER (TYPE K), UNLESS OTHERWISE NOTED.
3) ANY UTILITY FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND COORDINATED WITH THE APPROPRIATE LOCAL UTILITY COMPANY.
4) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS TO VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES.
5) ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL DPW AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.
6) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 811 PRIOR TO ANY EXCAVATION.
7) ALL WATER AND SEWER CONSTRUCTION SHALL CONFORM TO DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS.
8) THIS SITE IS SERVED BY MUNICIPAL SEWER AND WATER.
9) ALL ELECTRIC, TELEPHONE AND CABLE TV LINES ARE TO BE UNDERGROUND AND INSTALLED IN CONFORMANCE WITH APPLICABLE UTILITY CO. SPECIFICATIONS.
10) ANY UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY UTILITY COMPANY AND LOCAL DPW.
11) ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO VDOT AND TOWN DEPARTMENT OF PUBLIC WORKS, SHALL BE EMPLOYED DURING OPERATIONS WITHIN THE PUBLIC RIGHT-OF-WAY.
12) REFER TO DETAIL SHEETS FOR ALL UTILITY DETAILS AND ADDITIONAL INFORMATION.
13) THE CONTRACTOR SHALL CONTACT ENGINEER TO INSPECT THE EXISTING SEWER SERVICE LINE PRIOR TO USE. SLIP LINING MAY BE NECESSARY IF FLAWS FOUND IN EXISTING STUB.
14) PRIOR TO CONNECTION INSTALLING WATER CONNECTION, THE CONTRACTOR SHALL APPLY FOR A CONNECTION AND PAY A CONNECTION FEE DETERMINED BY SIZE AND LENGTH OF SERVICES, AND THE COST OF THE METER IF PURCHASED THROUGH THE TOWN.

EROSION CONTROL NOTES:

1) THE EROSION CONTROL PROCEDURES SHALL CONFORM TO THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL.
2) DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS NOTED: THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHOULD BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME AS APPROVED BY THE ENGINEER. LAND SHOULD NOT BE LEFT EXPOSED DURING THE WINTER MONTHS.
3) ALL PERMANENT STORM WATER STRUCTURES SHALL BE STABILIZED PRIOR TO DIRECTING FLOW INTO THEM. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
   B) A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED.
   C) A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED.
   D) OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
4) SEDIMENT CONTROL FENCE SHALL BE INSTALLED AND MAINTAINED DURING AND AFTER DEVELOPMENT TO REMOVE SEDIMENT FROM RUNOFF WATER AND FROM LAND UNDERGOING DEVELOPMENT, WHERE POSSIBLE, NATURAL DRAINAGE WAYS SHOULD BE UTILIZED AND LEFT OPEN TO REMOVE EXCESS SURFACE WATER. SEDIMENT CONTROL FENCE TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.
5) ALL DISTURBED AREAS AND SIDE SLOPES WHICH ARE FINISHED GRADED, WITH NO FURTHER CONSTRUCTION TO TAKE PLACE, SHALL BE LOAMED AND SEEDED WITHIN 72 HOURS AFTER FINAL GRADING. A MINIMUM OF 4" OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. THE SEED MIX SHALL BE AS DESIGNATED BELOW.
6) ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION. THE MAXIMUM LENGTH OF TIME FOR THE EXPOSURE OF DISTURBED SOILS SHALL BE 45 DAYS. HAY OR STRAW MULCH SHALL BE APPLIED TO ALL FRESHLY SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE. BALES SHALL BE UNSPOILED, AIR DRIED, AND FREE FROM WEED, SEEDS AND ANY COARSE MATERIAL.
7) DURING GRADING OPERATIONS INSTALL SEDIMENT CONTROL FENCE ALONG TOE OF SLOPE OF FILL AREAS WHERE SHOWN. BARRIERS ARE TO BE MAINTAINED UNTIL DISTURBED AREAS ARE PAVED OR GRASSED.
8) THE FILL MATERIAL SHALL BE OF APPROVED SOIL TYPE FREE FROM STUMPS, ROOTS, WOOD, ETC. TO BE PLACED IN 12" LIFTS OR AS SPECIFIED. BULLDOZERS, TRUCKS, TRACTORS, OR ROLLERS MAY BE USED FOR COMPACTION BY ROUTING THE EQUIPMENT TO ALL AREAS OR EACH LAYER.
9) AVOID THE USE OF FUTURE OPEN SPACES (LOAM & SEED) WHEREVER POSSIBLE DURING CONSTRUCTION. CONSTRUCTION TRAFFIC SHALL USE THE ROADBEDS OF FUTURE ROADS.

TEMPORARY EROSION CONTROL MEASURES:

1) THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
2) SEDIMENT CONTROL FENCE SHALL BE INSTALLED AS REQUIRED. FENCE IS TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.
3) BALED HAY AND MULCH SHALL BE MOWINGS OF ACCEPTABLE HERBACEOUS GROWTH, FREE FROM NOXIOUS WEEDS OR WOODY STEMS, AND SHALL BE DRY. NO SALT HAY SHALL BE USED.
4) FILL MATERIAL SHALL BE FREE FROM STUMPS, WOOD, ROOTS, ETC.
5) STOCKPILED MATERIALS SHALL BE PLACED ONLY IN AREAS SHOWN ON THE PLANS. STOCKPILES SHALL BE PROTECTED BY SEDIMENT CONTROL FENCING AND SEEDED TO PREVENT EROSION. THESE MEASURES SHALL REMAIN UNTIL ALL MATERIAL HAS BEEN PLACED OR DISPOSED OFF SITE.
6) ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED. A MINIMUM OF 4 INCHES OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA.
7) SEED MIX SHALL BE EQUAL PARTS OF RED FESCUE (CREEPING), KENTUCKY BLUE GRASS, REDTOP, PERENNIAL RYEGRASS.
8) AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED.
9) PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
10) ALL CATCH BASIN INLETS WILL BE PROTECTED WITH INLET PROTECTION AND/OR SILT SACKS.
11) ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED AND CLEANED AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
12) ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTER AREA OR DEWATERING FILTER BAG.
13) TO PREVENT TRACKING OF SEDIMENT ONTO THE EXISTING ROADS, ALL CONSTRUCTION TRAFFIC CAN ONLY EXIT THE SITE OVER THE CONSTRUCTION ENTRANCES SHOWN ON THIS PLAN.

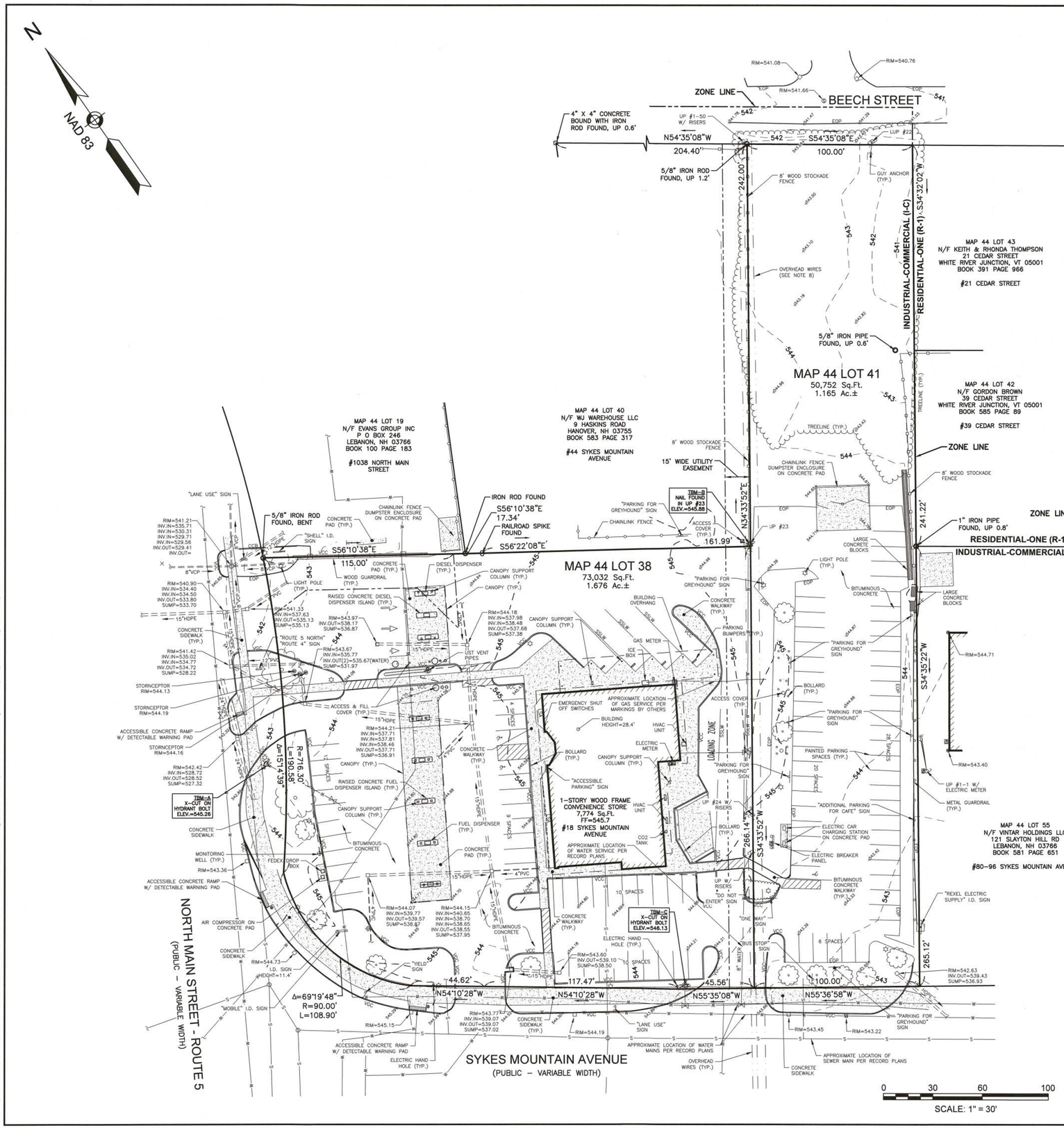
CONSTRUCTION SEQUENCE:

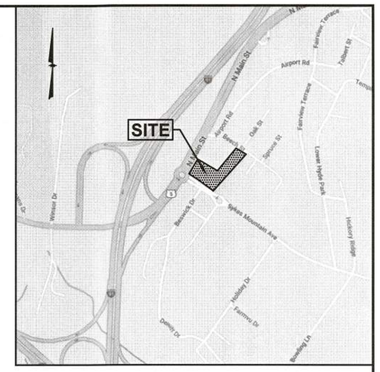
1) SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY ON-SITE CONSTRUCTION AS SHOWN. ADDITIONAL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED AS SOON AS PRACTICAL.
2) REMOVE AND STOCKPILE SOIL AS REQUIRED. STOCKPILE SHALL BE SURROUNDED WITH SEDIMENT CONTROL FENCING TO PREVENT EROSION.
3) CONSTRUCT DRIVEWAYS AND PERFORM SITE GRADING.
4) INSTALL UNDERGROUND UTILITIES & DRAINAGE.
5) BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION.
6) DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SEDIMENT CONTROL FENCES, HAYBALES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING.
7) BEGIN EXCAVATION FOR AND CONSTRUCTION OF BUILDING.
8) FINISH PAVING ALL DRIVES AND PARKING AREAS. CLEAN ALL DRAINAGE STRUCTURES.
9) COMPLETE PERMANENT SEEDING AND LANDSCAPING.
10) AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

WINTER STABILIZATION NOTES:

MAINTENANCE REQUIREMENTS:
MAINTENANCE MEASURES SHOULD CONTINUE AS NEEDED THROUGHOUT CONSTRUCTION, INCLUDING THE OVER-WINTER PERIOD. AFTER EACH RAINFALL, SNOWSTORM, OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHOULD CONDUCT AN INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUING FUNCTION. FOR ANY AREA STABILIZED BY TEMPORARY OR PERMANENT SEEDING PRIOR TO THE ONSET OF THE WINTER SEASON, THE CONTRACTOR SHOULD CONDUCT AN INSPECTION IN THE SPRING TO ASCERTAIN THE CONDITION OF VEGETATION COVER, AND REPAIR ANY DAMAGE AREAS OR BARE SPOTS AND RESEED AS REQUIRED TO ACHIEVE AN ESTABLISHED VEGETATIVE COVER (AT LEAST 85% OF AREA VEGETATED WITH HEALTHY, VIGOROUS GROWTH).
SPECIFICATIONS:
TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF, THE FOLLOWING STABILIZATION TECHNIQUES SHOULD BE EMPLOYED DURING THE PERIOD FROM OCTOBER 15TH THROUGH MAY 15TH.

1) THE AREA OF EXPOSED, UNSTABILIZED SOIL SHOULD BE LIMITED TO ONE ACRE AND SHOULD BE PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT. SUBJECT TO APPLICABLE REGULATIONS, THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF ACTIVITIES ARE CONDUCTED ACCORDING TO A WINTER CONSTRUCTION PLAN, DEVELOPED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF VERMONT OR A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL AS CERTIFIED BY THE CSPESC COUNCIL OF ENVIROCERT INTERNATIONAL, INC.
2) STABILIZATION AS FOLLOWS SHOULD BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS:
   A. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING, OR 2 INCHES OF EROSION CONTROL MIX (SEE DESCRIPTION OF EROSION CONTROL MIX BERMS FOR MATERIAL SPECIFICATION).
   B. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE SEEDED AND COVERED WITH A PROPERLY INSTALLED AND ANCHORED EROSION CONTROL BLANKET OR WITH A MINIMUM 4 INCH THICKNESS OF EROSION CONTROL MIX, UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER. NOTE THAT COMPOST BLANKETS SHOULD NOT EXCEED 2 INCHES IN THICKNESS OR THEY MAY OVERHEAT.
3) ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY OCTOBER 15.
4) INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX SHOULD NOT OCCUR OVER SNOW OF GREATER THAN ONE INCH IN DEPTH.
5) ALL MULCH APPLIED DURING WINTER SHOULD BE ANCHORED (E.G., BY NETTING, TRACKING, WOOD CELLULOSE FIBER).
6) STOCKPILES OF SOIL MATERIALS SHOULD BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. MULCHING SHOULD BE DONE WITHIN 24 HOURS OF STOCKING, AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. NO SOIL STOCKPILE SHOULD BE PLACED (EVEN COVERED WITH MULCH) WITHIN 100 FEET FROM ANY WETLAND OR OTHER WATER RESOURCE AREA.
7) FROZEN MATERIALS, (E.G., FROST LAYER THAT IS REMOVED DURING WINTER CONSTRUCTION), SHOULD BE STOCKPILED SEPARATELY AND IN A LOCATION THAT IS AWAY FROM ANY AREA NEEDING T





LOCATION MAP
(NOT TO SCALE)

NOTES:

1) ZONE: INDUSTRIAL COMMERCIAL DISTRICT (I-C)
   MIN. LOT SIZE: 10,000 Sq.Ft.
   MIN. LOT FRONTAGE: 100 Ft.
   SETBACKS:
   FRONT 10 Ft.
   SIDE 10 Ft.
   REAR 20 Ft.
   REFER TO THE TOWN OF HARTFORD ZONING ORDINANCE FOR VERIFICATION, ADDITIONAL RESTRICTIONS AND PERMITTED USES. THE ZONING INFORMATION SHOWN HEREON IS BASED ON A REVIEW OF THE HARTFORD ZONING ORDINANCE.

2) THIS PLAN IS THE RESULT OF AN ON-THE-GROUND FIELD SURVEY AND UAS SURVEY PERFORMED BY THIS OFFICE BETWEEN JULY 5 AND JANUARY 18, 2024. A PORTION OF THE PLANIMETRIC DETAIL AND PERMANENT PHYSICAL FEATURES SHOWN ON THIS PLAN WERE DIGITIZED FROM RECTIFIED ORTHOPHOTOGRAPHY DERIVED FROM AERIAL IMAGERY OBTAINED VIA UAS BY THIS OFFICE ON JULY 13, 2023.

3) BEARINGS SHOWN HEREON ARE BASED ON NAD83 PER GPS OBSERVATIONS PERFORMED BY THIS OFFICE ON JULY 5, 2023.

4) ELEVATIONS SHOWN HEREON ARE BASED ON NAVD88 PER GPS OBSERVATIONS PERFORMED BY THIS OFFICE ON JULY 5, 2023.

5) LOCATION OF UNDERGROUND UTILITIES IS APPROXIMATE ONLY. ADDITIONAL UNDERGROUND UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED. INVERTS ARE LISTED IN A CLOCKWISE DIRECTION ENDING WITH THE INVERT OUT (UNLESS OTHERWISE NOTED).

6) THE SURVEY TRACT IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 50027C0389E, WITH AN EFFECTIVE DATE OF SEPTEMBER 28, 2007.

7) A TOTAL OF 99 (96 STANDARD, 3 ACCESSIBLE) CLEARLY IDENTIFIABLE PARKING SPACES WERE OBSERVED IN CONDUCTING THIS SURVEY.

8) THERE IS A GENERAL BLANKET EASEMENT THAT EXISTS OVER MAP 44 LOT 41 FOR ALL WIRES, POLE LINES, AQUEDUCTS, AND CONDUITS IN BOOK 248 PAGE 326

UTILITY NOTES:

WATER SERVICE – PUBLIC WATER – HARTFORD WATER SYSTEM

SEWER SERVICE – PUBLIC SEWER – HARTFORD WASTEWATER SYSTEM

GAS SERVICE – NATURAL GAS – VERMONT GAS SYSTEMS

ELECTRICAL SERVICE – GREEN MOUNTAIN POWER

PLAN REFERENCES:

1) "ALTA / ACSM LAND TITLE SURVEY" PREPARED BY: PATHWAY CONSULTING, LLC; PREPARED FOR: SUMMIT DISTRIBUTING, LLC; DATED: APRIL 23, 2009; RECORDED AS PLAN 894A-894C AT THE HARTFORD, VERMONT TOWN CLERK'S OFFICE.

2) "PLAN OF LAND OF CLARENCE E. THIBIDEAU & FRANK & OLIVE F. GILMAN" PREPARED BY: K.A. LECLAIR ASSOCIATES, INC.; DATED FEBRUARY 13, 1968; ON FILE WITH THE HARTFORD, VT TOWN CLERK IN CABINET 679 PAGE 262.

3) "TOWN OF HARTFORD, COUNTY OF WINDSOR, HARTFORD STP 0113(59)S, STP EH09(15), US ROUTE 5 & SYKES MOUNTAIN AVENUE" PREPARED BY STANTEC CONSULTING SERVICES, INC.; APPROVED BY THE TOWN OF HARTFORD ON FEBRUARY 26, 2020.

OWNER OF RECORD:

MAP 44 LOT 38
SUMMIT DISTRIBUTING LLC
240 MECHANIC ST
LEBANON, NH 03766
BOOK 604 PAGE 805

MAP 44 LOT 41
RUTH H. GUERNSEY, TRUSTEE
REVOCABLE TRUST OF RUTH HALL GUERNSEY
22 GREEN STREET WEST
WEST LEBANON, NH 03784
BOOK 502 PAGE 124

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Salem, NH 03079

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240 MECHANIC STREET
LEBANON, NH 03766

ASSESSORS MAP 44 LOT 41
SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
SCOTT M. L'ITALIEN
NO. 132671
REGISTERED LAND SURVEYOR
2/15/2024

REVISIONS		
1.	MISC REV.	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

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EXISTING CONDITIONS PLAN

SCALE: 1"=30'

NEX-2019181

3 OF 13

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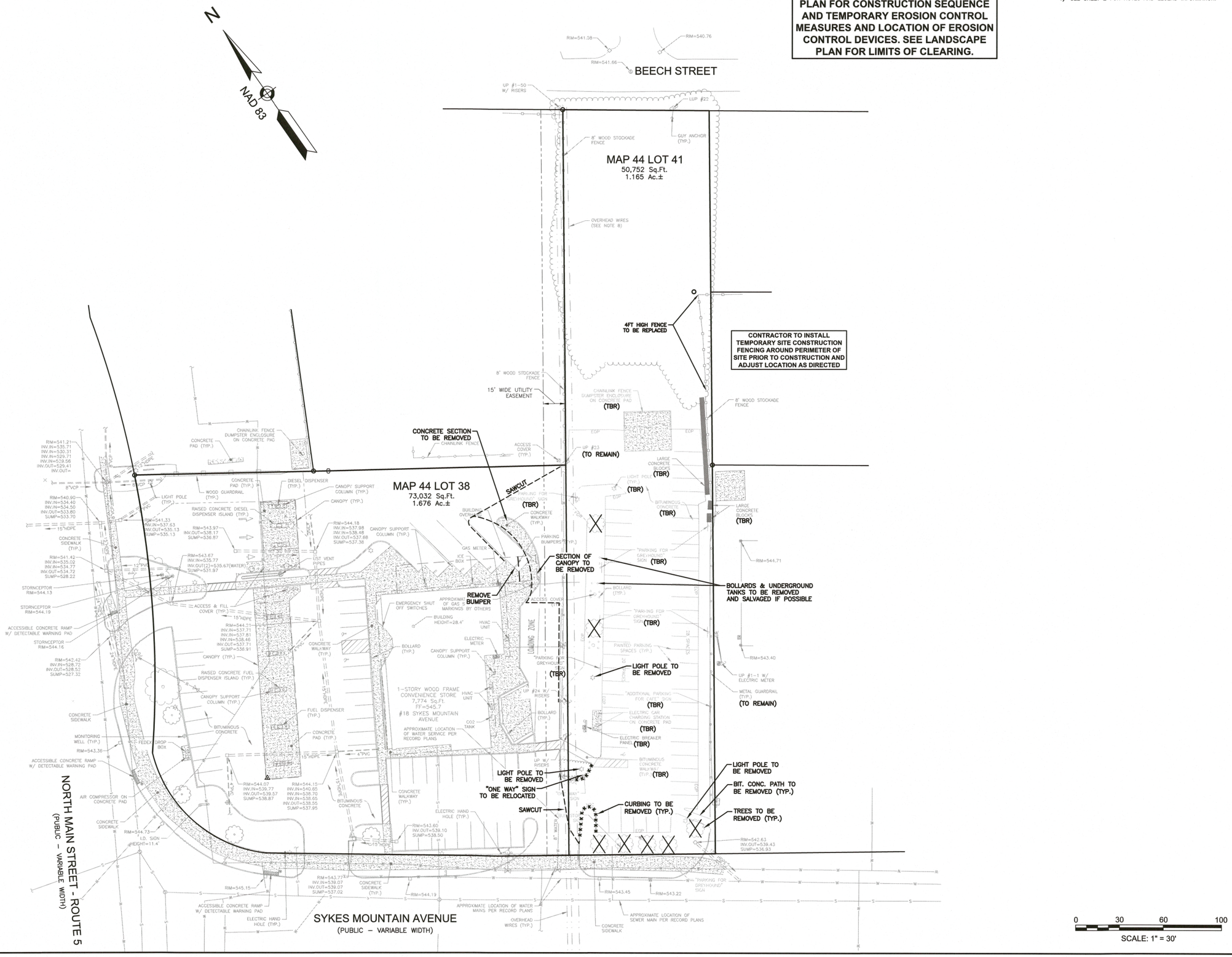
SEE EROSION & SEDIMENT CONTROL PLAN FOR CONSTRUCTION SEQUENCE AND TEMPORARY EROSION CONTROL MEASURES AND LOCATION OF EROSION CONTROL DEVICES. SEE LANDSCAPE PLAN FOR LIMITS OF CLEARING.

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.



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ASSESSORS MAP 44 LOT 41

SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
DAVID R. JORDAN
NO. 135215
CIVIL
REGISTERED PROFESSIONAL ENGINEER
5/1/24

REVISIONS		
2.	REV. PER TOWN COMMENTS	4/17/24
1.	MISC REV.	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

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DEMOLITION PLAN

SCALE: 1"=30'

NEX-2019181

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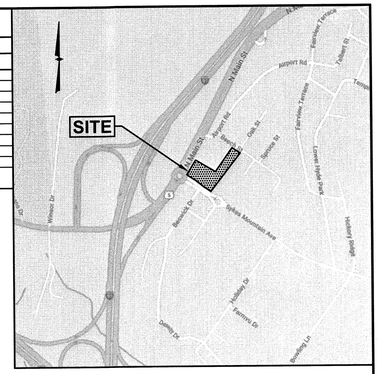
SIGN KEY

SIGN I.D. NUMBER	TEXT/COLOR	SIZE/REMARKS
R1-1	STOP R/W	30" x 30" NEW SIGN WITH POST
R5-1	DO NOT ENTER R/W	30" x 30" NEW SIGN WITH POST
R6-1	ONE WAY B/W	36" x 12" NEW SIGN WITH POST
R7-8	RESERVED PARKING G/B/W	12" x 18" NEW SIGN WITH POST
R7-8A	XXX ACCESSIBLE G/W	6" X 12"
R3-5L	ONLY B/W	36" x 30" NEW SIGN WITH POST

TABLE OF ZONING REGULATIONS - WHITE RIVER JUNCTION, VT

ZONE: INDUSTRIAL COMMERCIAL (I-C)

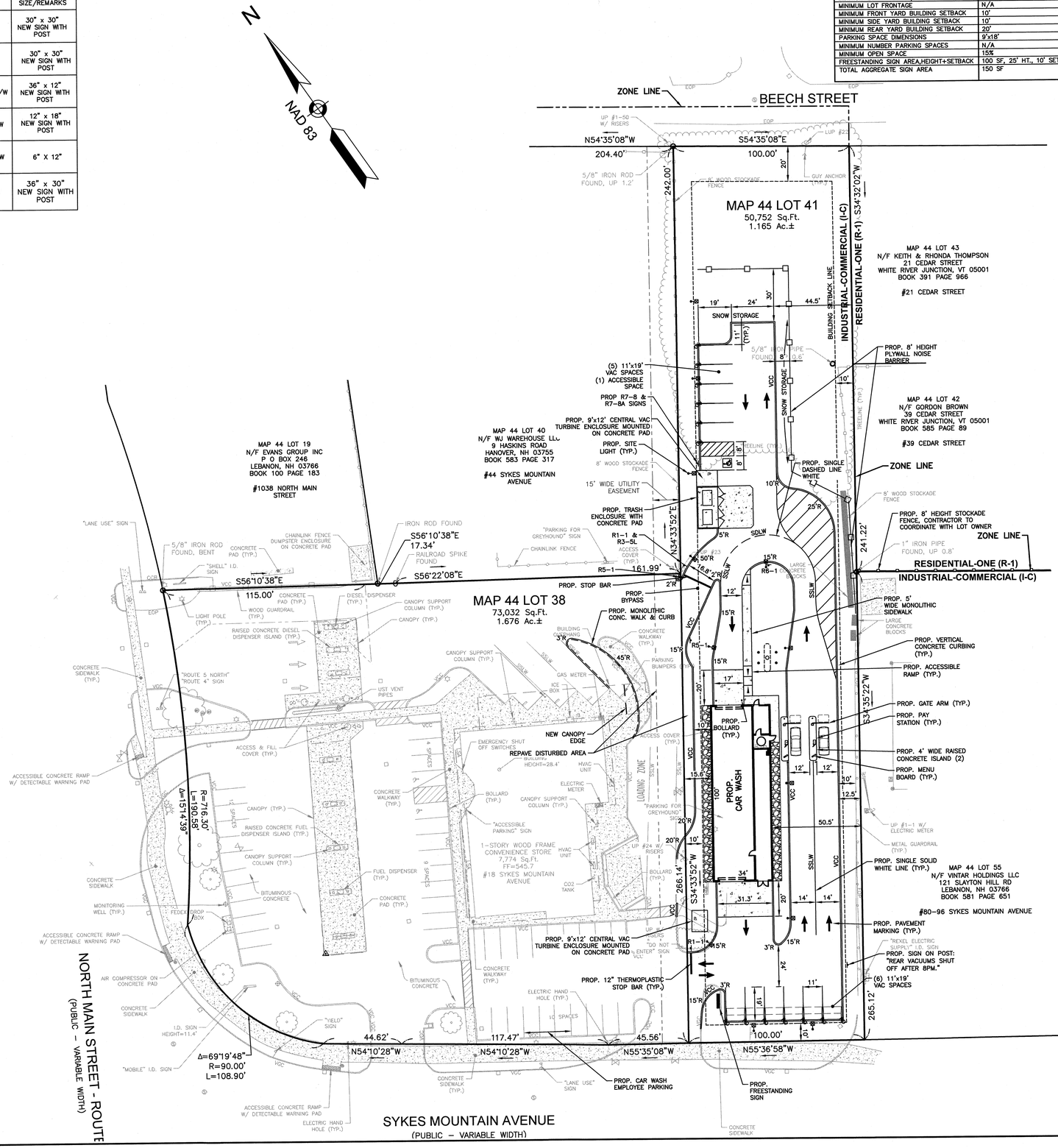
DESCRIPTION	REQUIRED	PROVIDED
MINIMUM LOT AREA Sq. Ft.	10,000 SF	50,752 SF
MINIMUM LOT FRONTAGE	N/A	100'
MINIMUM FRONT YARD BUILDING SETBACK	10'	91.1'
MINIMUM SIDE YARD BUILDING SETBACK	10'	15.6'
MINIMUM REAR YARD BUILDING SETBACK	20'	316.3'
PARKING SPACE DIMENSIONS	9'x18'	11'x19' (VAC SPACES)
MINIMUM NUMBER PARKING SPACES	N/A	12 SPACES
MINIMUM OPEN SPACE	15%	25,237 SF = 49.7%
FREESTANDING SIGN AREA,HEIGHT+SETBACK	100 SF, 25' HT., 10' SETBACK	TBD
TOTAL AGGREGATE SIGN AREA	150 SF	TBD



LOCATION MAP
(NOT TO SCALE)

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.
2) A CONDITIONAL USE PERMIT IS REQUESTED FOR A CAR WASH WITHIN THE INDUSTRIAL COMMERCIAL DISTRICT.
3) CAR WASH HOURS OF OPERATION WILL BE 7AM TO 8PM. VACUUMS WITHIN SPACES TO THE NORTH OF THE CAR WASH SHALL BE SHUT OFF AFTER 8PM.
4) CAR WASH WILL HAVE 2 TO 3 EMPLOYEES PER SHIFT.



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BOOK 502 PAGE 124

0 30 60 100
SCALE: 1" = 30'

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ASSESSORS MAP 44 LOT 41
SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
DAVID R. JORDAN
NO. 135215
CIVIL
REGISTERED PROFESSIONAL ENGINEER
6/11/24

REVISIONS		
3.	REV. FENCING	6/11/24
2.	REV. PER TOWN COMMENTS	4/17/24
1.	MISC REV.	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

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CCC	NID

SITE PLAN

SCALE: 1"=30'

NEX-2019181

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DRAINAGE STRUCTURES

CB–1 (F.D.)
RIM=545.20
INV.OUT=541.80

CB–2
RIM=544.40
INV.OUT=541.35

CB–3 (F.D.)
RIM=544.70
INV.IN=541.20(CB–2)
INV.OUT=541.10

CB–4
RIM=544.00
INV.IN=540.70(OCS–1)
INV.OUT=540.60

CB–5
RIM=543.80
INV.OUT=540.00

CB–6 (F.D.)
RIM=543.60
INV.IN=539.60(CB–5)
INV.IN=539.60(CB–4)
INV.OUT=539.50

DMH–1
RIM=544.00
INV.IN=539.43(CB–6 (F.D.))

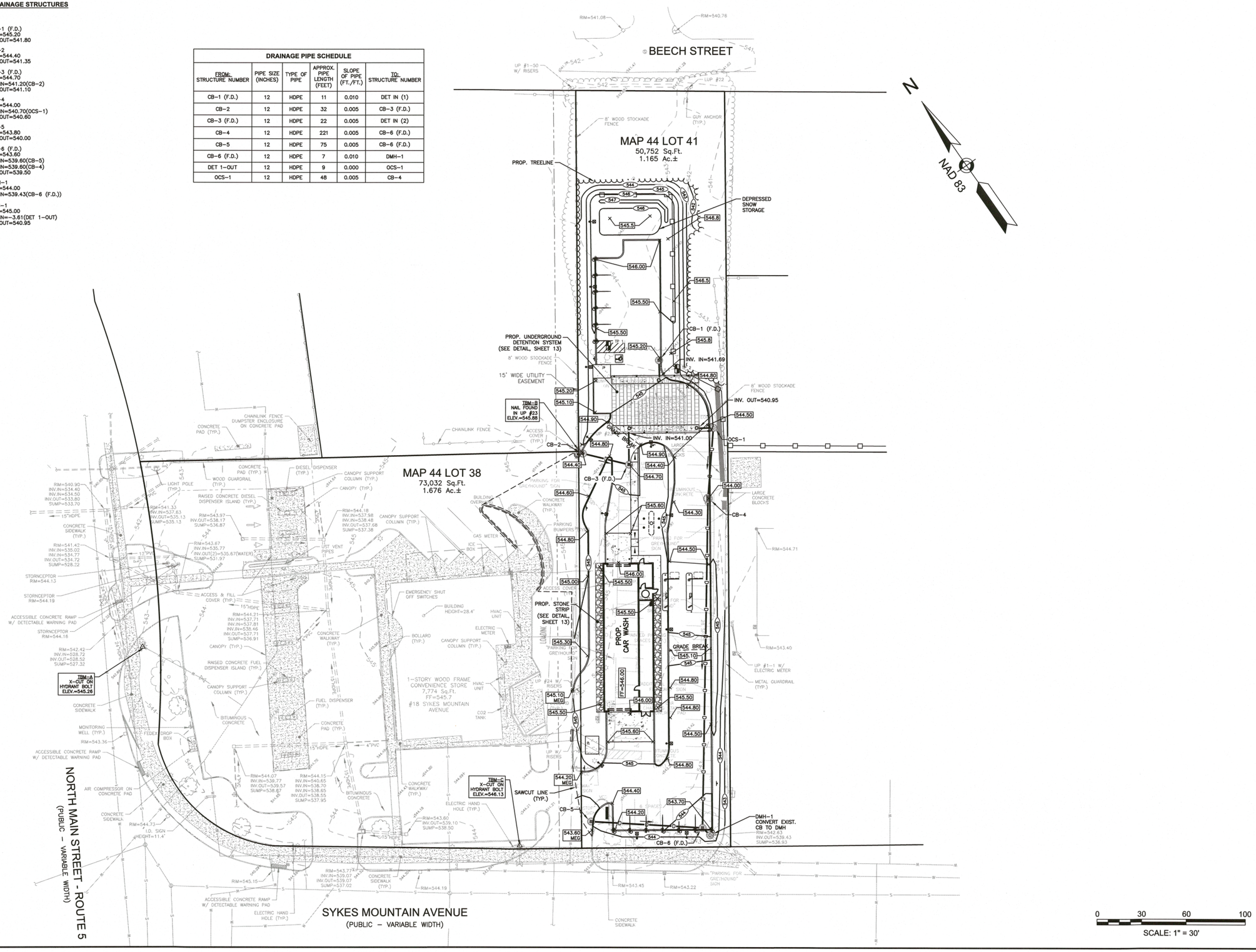
OCS–1
RIM=545.00
INV.IN=–3.61(DET 1–OUT)
INV.OUT=540.95

DRAINAGE PIPE SCHEDULE

FROM: STRUCTURE NUMBER	PIPE SIZE (INCHES)	TYPE OF PIPE	APPROX. PIPE LENGTH (FEET)	SLOPE OF PIPE (FT./FT.)	TO: STRUCTURE NUMBER
CB–1 (F.D.)	12	HDPE	11	0.010	DET IN (1)
CB–2	12	HDPE	32	0.005	CB–3 (F.D.)
CB–3 (F.D.)	12	HDPE	22	0.005	DET IN (2)
CB–4	12	HDPE	221	0.005	CB–6 (F.D.)
CB–5	12	HDPE	75	0.005	CB–6 (F.D.)
CB–6 (F.D.)	12	HDPE	7	0.010	DMH–1
DET 1–OUT	12	HDPE	9	0.000	OCS–1
OCS–1	12	HDPE	48	0.005	CB–4

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.



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ASSESSORS MAP 44 LOT 41

SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
DAVID B. JORDAN
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CIVIL
5/1/24

REVISIONS		
2.	REV. PER TOWN COMMENTS	4/17/24
1.	MISC REV.	2/15/24
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GRADING & DRAINAGE PLAN

SCALE: 1"=30'

NEX-2019181

6 OF 13

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NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.

SEWER PIPE SCHEDULE

FROM: STRUCTURE NUMBER	PIPE SIZE (inches)	TYPE OF PIPE	APPROX. PIPE LENGTH (feet)	SLOPE OF PIPE (ft./ft.)	TO: STRUCTURE NUMBER
BLDG.(D)	6	SDR 35 PVC	119	0.0290	SMH-1
BLDG.(BAY"A")	(2)8	SCH 80 PVC	15	0.1170	RT-2
BLDG.(BAY"B")	2	SCH 80 PVC	64	0.020	RT-1
BLDG.(BAY"C")	4	SCH 80 PVC	30	0.043	RT-3
BLDG.(BAY"D")	6	SCH 80 PVC	38	0.080	OWS-1
RT-2	6	SDR 35 PVC	41	0.020	OWS-1
SMH-1	6	SDR 35 PVC	70	0.024	EXIST. STUB
OWS-1	6	SDR 35 PVC	15	0.020	SMH-1

SEWER STRUCTURES

RT-1*
RIM=545.0±
INV.IN=541.20("B")
INV.OUT=540.95

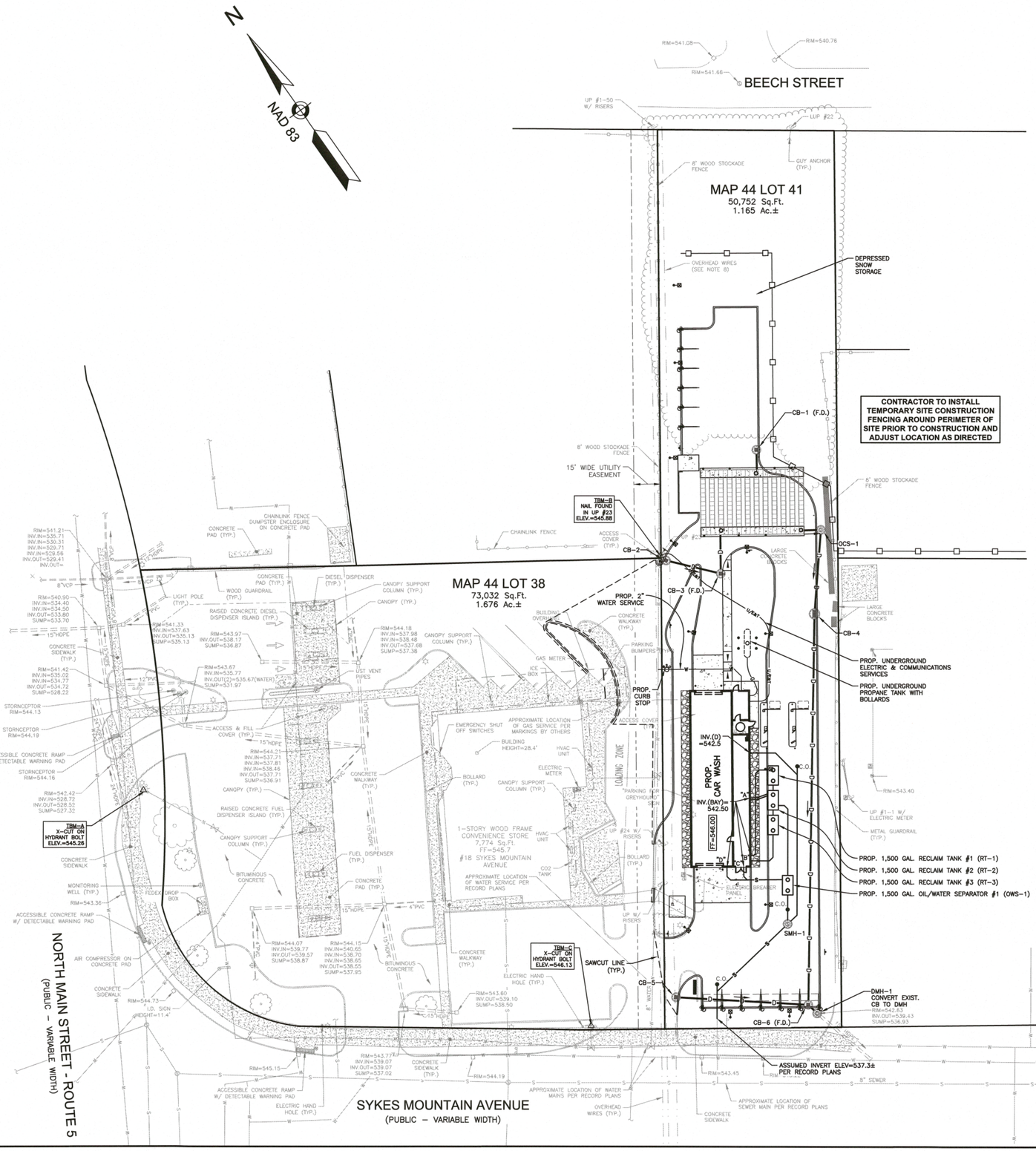
RT-2*
RIM=545.1±
INV.IN=540.75("A")
INV.IN=540.75(RT-1)
INV.IN=540.75(RT-3)
INV.OUT=540.50

RT-3*
RIM=544.8±
INV.IN=541.20("C")
INV.OUT=540.95

OWS-1
RIM=544.8±
INV.IN=539.45
INV.OUT=539.20

SMH-1
RIM=544.5±
INV.IN=539.10(DOMESTIC)
INV.IN=539.10(OWS-1)
INV.IN=539.00(RT-2)
INV.OUT=540.20

* RECLAIM TANK INFORMATION PROVIDED IS CONCEPTUAL. REFER TO RECLAIM DESIGN DRAWINGS BY OTHERS FOR ACTUAL INVERTS & DEPTHS.



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44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
SUMMIT DISTRIBUTING
240 MECHANIC STREET
LEBANON, NH 03766

ASSESSORS MAP 44 LOT 41

SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
DAVID R. JORDAN
NO. 135215
CIVIL
REGISTERED PROFESSIONAL ENGINEER
5/1/24

REVISIONS		
3.	REV. PER TOWN COMMENTS	4/17/24
2.	MISC REV.	2/15/24
1.	REV. PER TOWN COMMENTS	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

DRAWN/DESIGN BY	CHECKED BY
CCC	NID

UTILITY PLAN

SCALE: 1"=30'

NEX-2019181

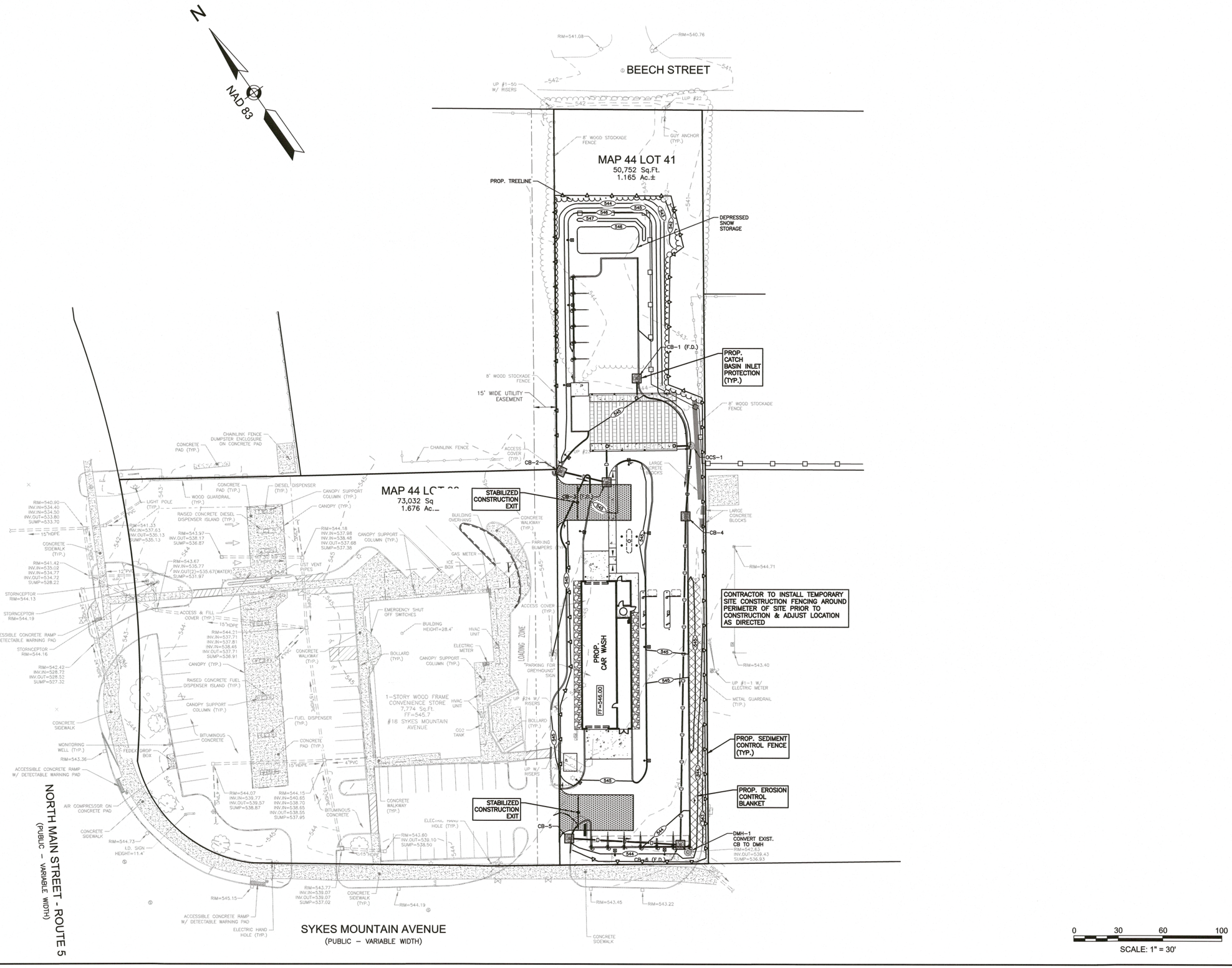
7 OF 13

811 DigSafe MA-ME-NH-RI-VT

F:\Projects\MAX-2019181 - White River Junction, VT - Summit Distributing\CAD Files\2019181_SP.dwg UT 5/01/24 2:19pm srollins

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.



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2.	REV. PER TOWN COMMENTS	4/17/24
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FEBRUARY 2, 2024

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CCC	NID

EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"=30'

NEX-2019181

8 OF 13

811 DigSafe MA-ME-NH-RI-VT

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PLANTING SCHEDULE					
PLANT	QNTY	BOTANICAL NAME	COMMON NAME	MIN. INSTALL SIZE	REMARKS
TREES					
AF	9	ABIES FRASERI	FRASER FIR	6'-7" HT., B&B	
AR	3	ACER RUBRUM 'REDPOINTE'	REDPOINTE MAPLE	2 1/2"-3" CAL., B&B	
SR	3	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE LILAC TREE	2 1/2"-3" CAL., B&B	
MG	4	MALUS 'SPRING SNOW'	SPRING SNOW CRABAPPLE	2 1/2"-3" CAL., B&B	
PP	6	PICEA PUNGENS GLAUCA	COLORADO BLUE SPRUCE	6'-7" HT., B&B	
SHRUBS					
CS	22	CORNUS SERICEA 'ARCTIC FIRE'	ARCTIC FIRE RED TWIG DOGWOOD	18"-24"HT., 3 GAL.	
IG	39	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY	2'-3" HT., 3 GAL	
JV	7	JUNIPERUS VIRGINIANA 'EMERALD SENTINEL'	EMERALD SENTINEL EASTERN RED CEDAR	5'-6" HT., B&B	
PF	20	POTENTILLA FRUTICOSA 'GOLDSTAR'	GOLDSTAR BUSH CINQUEFOIL	2'-3" HT., 3 GAL.	
SJ	21	SPIREA JAPONICA 'GOLDMOUND'	GOLDMOUND SPIREA	18"-24" HT., 3 GAL.	
PERENNIALS & GRASSES					
HD	33	HEMEROCALLIS 'STELLA DE ORO'	DWARF YELLOW DAYLILY	1 GAL.	

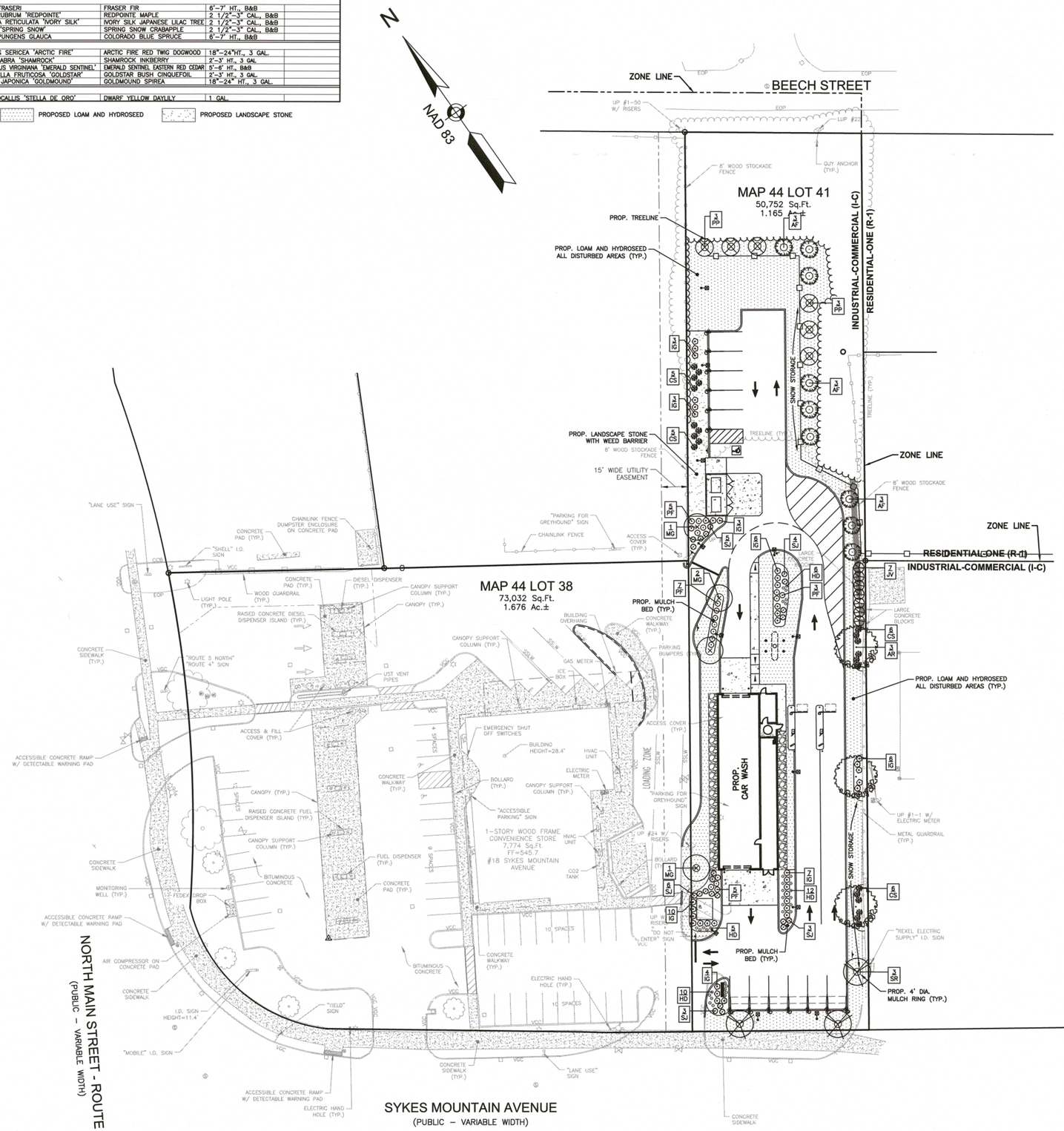
X PLANT QUANTITY
XX PLANT DESIGNATION

PROPOSED LOAM AND HYDROSEED

PROPOSED LANDSCAPE STONE

N

NAD 83



0 30 60 100

SCALE: 1" = 30'

NOTES:

1) SEE SHEET 2 FOR NOTES AND LEGEND INFORMATION.

811 DigSafe MA-ME-NH-RI-VT

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ASSESSORS MAP 44 LOT 41
SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
DAVID R. JORDAN
NO. 175215
CIVIL
5/1/24

REVISIONS		
2.	REV. PER TOWN COMMENTS	4/17/24
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NO.	REVISION	DATE

FEBRUARY 2, 2024

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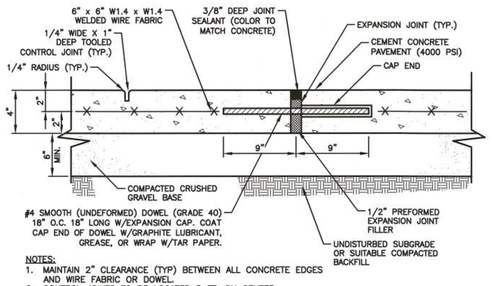
CCC	NID

LANDSCAPE PLAN

SCALE: 1"=30'

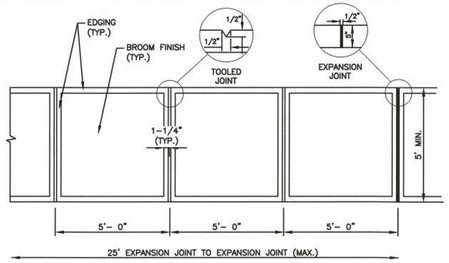
NEX-2019181



NOTES:
1. MAINTAIN 2" CLEARANCE (TYP) BETWEEN ALL CONCRETE EDGES AND WIRE FABRIC OR DOWEL.
2. CONTROL JOINTS TO BE LOCATED 5 FT. ON CENTER.
3. EXPANSION JOINTS TO BE LOCATED 25 FT. ON CENTER.

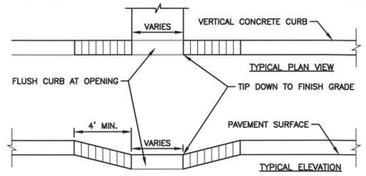
CEMENT CONCRETE SIDEWALK SECTION AND JOINT

NOT TO SCALE



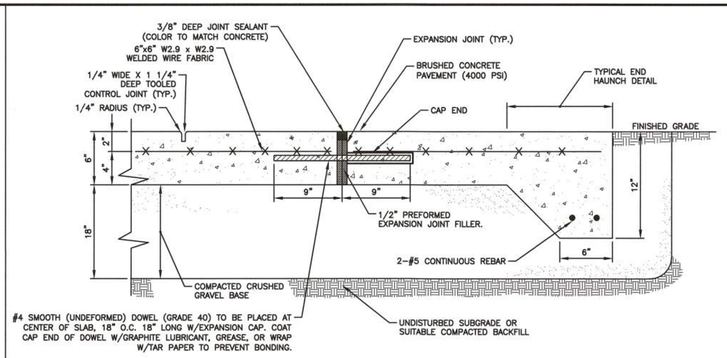
CONCRETE SIDEWALK JOINTING AND EDGING

NOT TO SCALE



TYPICAL TIP DOWN CURB DETAIL

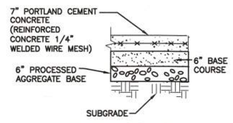
NOT TO SCALE



NOTES:
1. MAINTAIN 2" CLEARANCE (TYP) BETWEEN ALL CONCRETE EDGES AND WIRE FABRIC, DOWEL, OR REBAR.
2. CONTROL JOINTS TO BE LOCATED 5 FT. ON CENTER OR AS SHOWN ON ARCHITECTURAL PLANS.
3. EXPANSION JOINTS TO BE LOCATED 25 FT. ON CENTER.
4. WELDED WIRE FABRIC SHALL BE LAPSED A MINIMUM OF 2 WIRE SPACES.

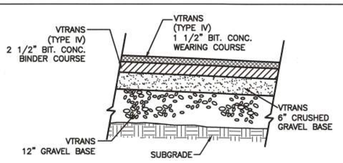
6" HEAVY DUTY CONCRETE PAD

NOT TO SCALE



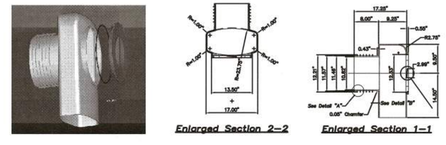
HEAVY DUTY CONCRETE PAVEMENT DETAIL

NOT TO SCALE



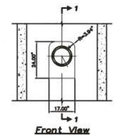
ON-SITE PAVEMENT DETAIL

NOT TO SCALE



Enlarged Section 2–2

Enlarged Section 1–1



Front View

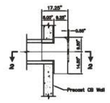
THE ELIMINATOR CATCH BASIN OIL & DEBRIS TRAP

Enlarged Front View

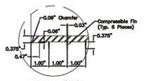
Side View of Cover

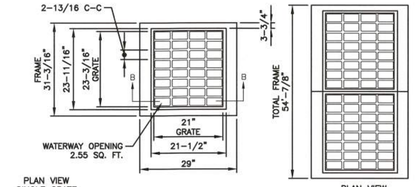
Rear View of Cover w/ Integral Handle

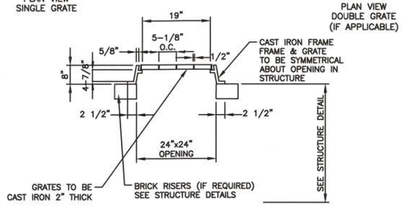
Front View of Cover w/ Integral Handle



Section 1–1

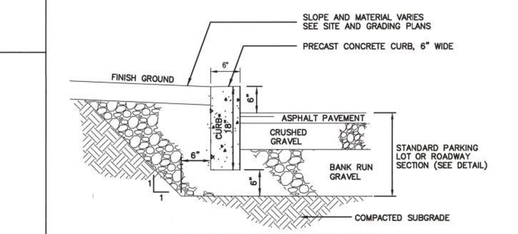






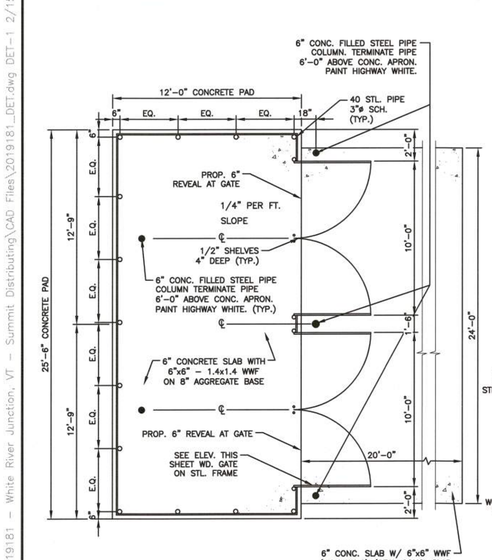
FRAME AND GRATE - TYPE B

NOT TO SCALE



PRECAST CONCRETE CURB

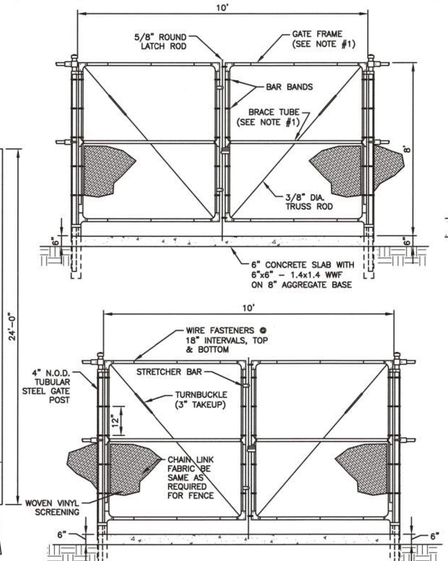
NOT TO SCALE



PLAN VIEW

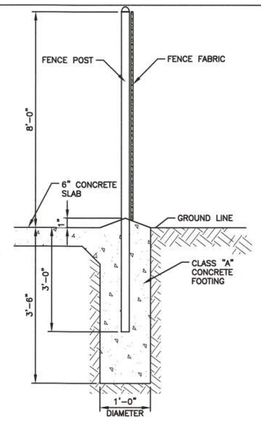
CHAINLINK TRASH ENCLOSURE

NOT TO SCALE



GATE DETAIL

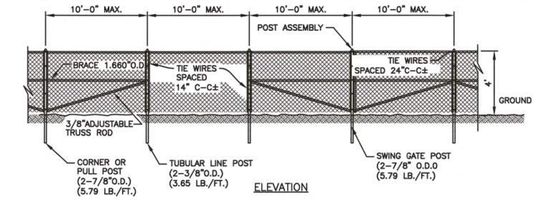
NOTE:
1) NOMINAL OUTSIDE DIAMETER (N.O.D.) OF GATE FRAME AND BRACE TUBE TO BE 1.66" UP TO 6" IN WIDTH, AND 1.90" IF OVER 6' IN WIDTH.



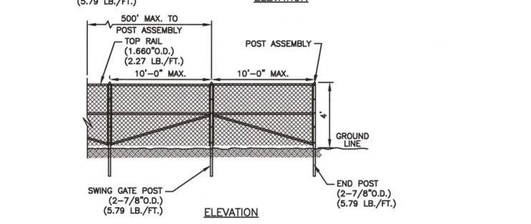
TRASH ENCLOSURE FENCE DETAIL

NOT TO SCALE

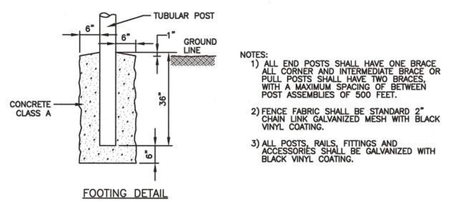
FENCE NOTES:
1) FENCE FABRIC SHALL BE STANDARD 2" CHAIN LINK GALVANIZED MESH WITH PRIVACY SLATS (FOREST GREEN).
2) ALL POSTS SHALL BE GALVANIZED SCHEDULE 40 STEEL PIPE.
3) ALL LINE POSTS TO BE 2.375" O.D. PIPE. MAXIMUM SPACING TO BE 10' ON CENTER.
4) ALL END AND CORNER POSTS TO BE 2.875" O.D. PIPE.
5) ALL TOP AND MIDDLE RAILS TO BE 1.66" O.D. PIPE.
6) ALL FITTINGS AND ACCESSORIES SHALL BE GALVANIZED.



ELEVATION



ELEVATION

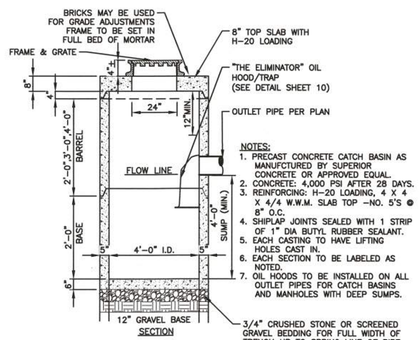


FOOTING DETAIL

NOTES:
1) ALL END POSTS SHALL HAVE ONE BRACE. ALL CORNER AND INTERMEDIATE BRACE OR PULL POSTS SHALL HAVE TWO BRACES, WITH A MAXIMUM SPACING OF BETWEEN POST ASSEMBLIES OF 500 FEET.
2) FENCE FABRIC SHALL BE STANDARD 2" CHAIN LINK GALVANIZED MESH WITH BLACK VINYL COATING.
3) ALL POSTS, RAILS, FITTINGS AND ACCESSORIES SHALL BE GALVANIZED WITH BLACK VINYL COATING.

CHAIN LINK FENCE DETAIL

NOT TO SCALE



NOTES:
1. PRECAST CONCRETE CATCH BASIN AS MANUFCTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL.
2. CONCRETE: 4,000 PSI AFTER 28 DAYS.
3. REINFORCING: H–20 LOADING, 4 X 4 X 4/4 W.W.M. SLAB TOP –NO. 5'S ø 8" O.C.
4. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA BUTYL RUBBER SEALANT.
5. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
6. EACH SECTION TO BE LABELED AS NOTED.
7. OIL HOODS TO BE INSTALLED ON ALL OUTLET PIPES FOR CATCH BASINS AND MANHOLES WITH DEEP SUMPS.
3/4" CRUSHED STONE OR SCREENED GRAVEL BEDDING FOR FULL WIDTH OF TRENCH UP TO SPRING LINE OF PIPE (6" IN EARTH, 12" IN LEDGE)

PRECAST CONCRETE CATCH BASIN WITH HOOD

NOT TO SCALE

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DETAIL SHEET

SCALE: AS SHOWN

NEX-2019181

10 OF 13

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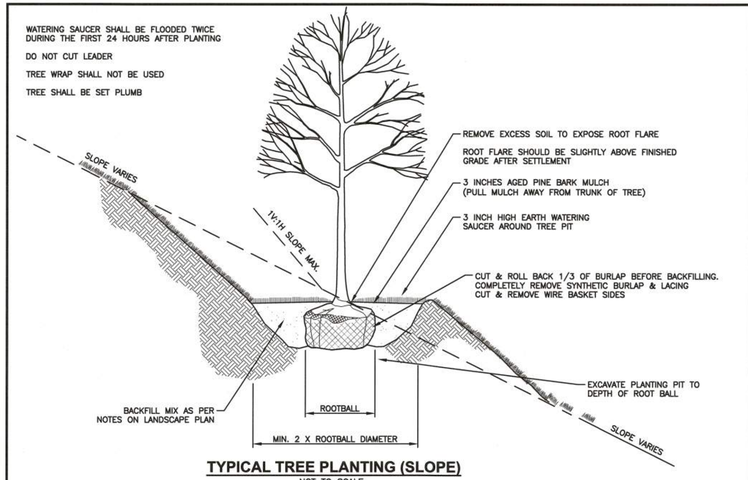
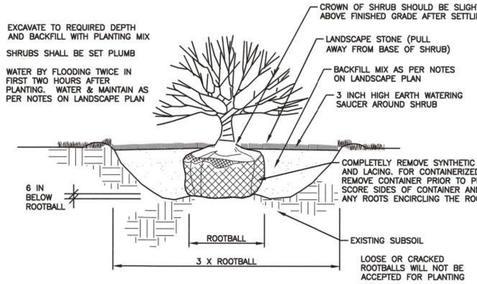
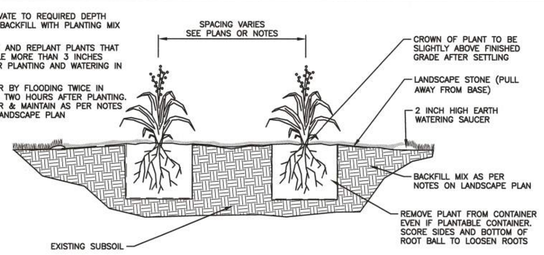


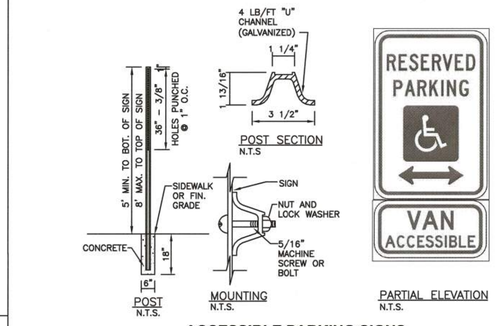
TYPICAL TREE PLANTING (SLOPE)
NOT TO SCALE



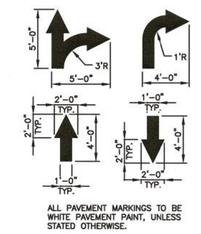
TYPICAL SHRUB PLANTING
NOT TO SCALE



TYPICAL PERENNIAL PLANTING
NOT TO SCALE

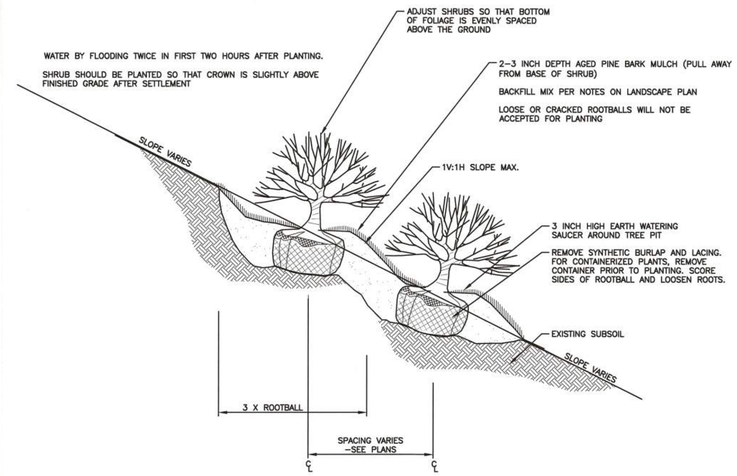


ACCESSIBLE PARKING SIGNS
NOT TO SCALE



ALL PAVEMENT MARKINGS TO BE WHITE PAVEMENT PAINT, UNLESS STATED OTHERWISE.

ON-SITE PAVEMENT MARKING
NOT TO SCALE



TYPICAL SHRUB PLANTING (SLOPE)
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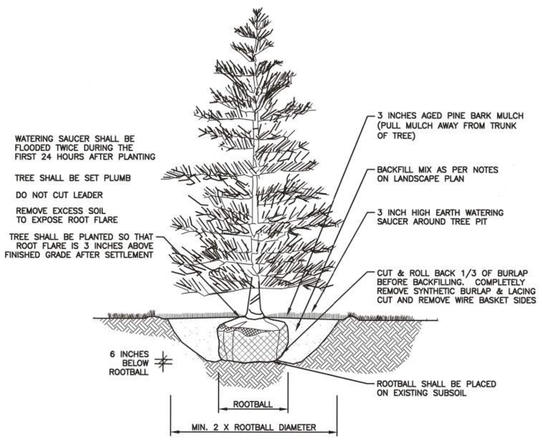

TYPICAL EVERGREEN TREE PLANTING
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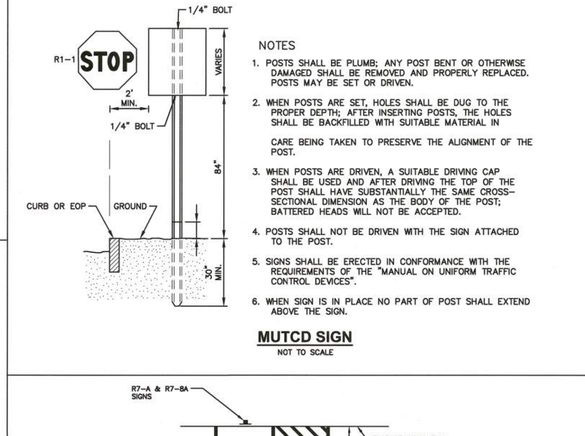
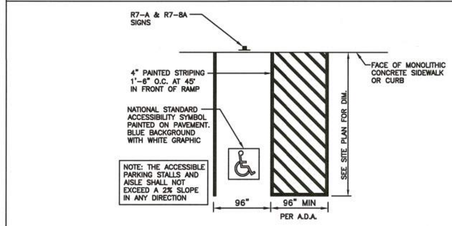


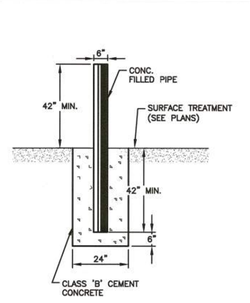
NOTES

1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED. POSTS MAY BE SET OR DRIVEN.
2. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH; AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
6. WHEN SIGN IS IN PLACE NO PART OF POST SHALL EXTEND ABOVE THE SIGN.

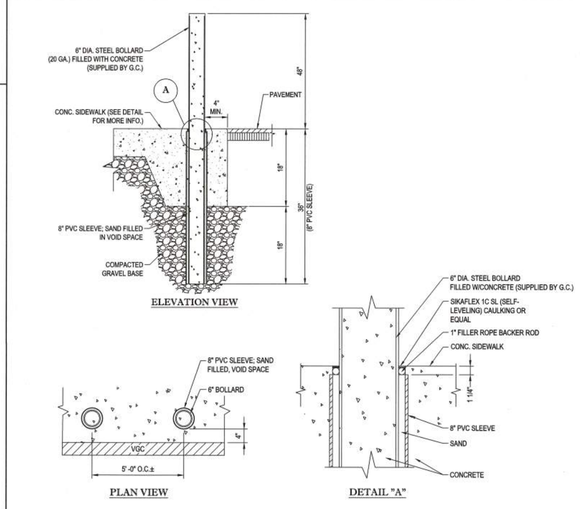
MUTCD SIGN
NOT TO SCALE



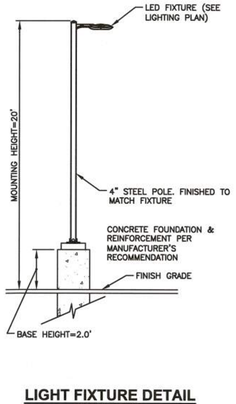
ACCESSIBLE PARKING STALLS
NOT TO SCALE



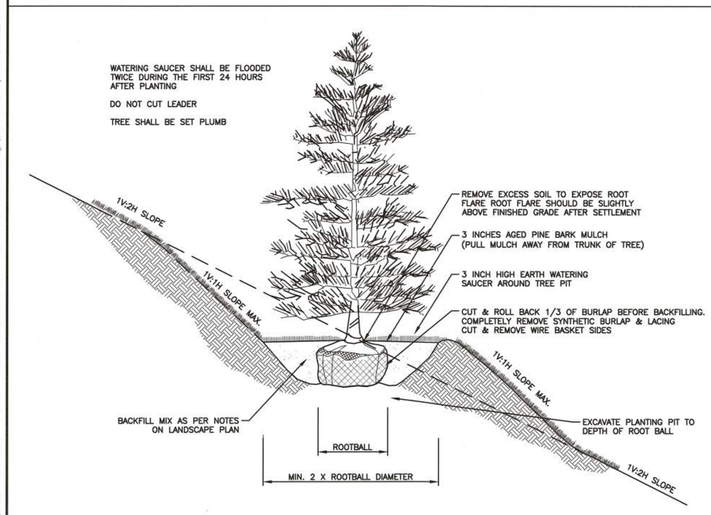
PIPE BOLLARD
NOT TO SCALE



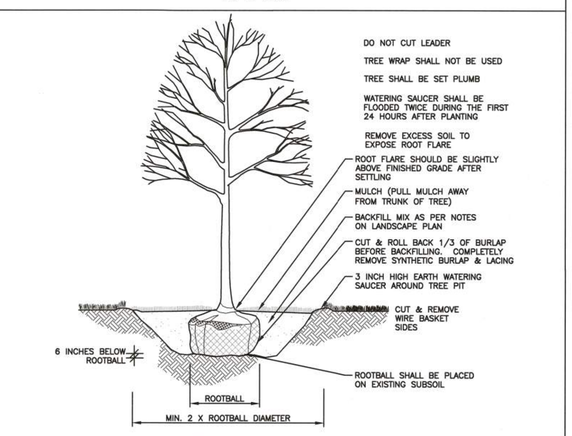
BOLLARD SET IN CONCRETE WALK
NOT TO SCALE



LIGHT FIXTURE DETAIL
NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING (SLOPE)
NOT TO SCALE



TYPICAL TREE PLANTING
NOT TO SCALE

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
SUMMIT DISTRIBUTING
240 MECHANIC STREET
LEBANON, NH 03766

ASSESSORS MAP 44 LOT 41

SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
DAVID R. JORDAN
NO. 135215
CIVIL
REGISTERED PROFESSIONAL ENGINEER
2/15/24

REVISIONS		
1.	MISC REV.	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

DRAWN/DESIGN BY	CHECKED BY
CCC	NID

DETAIL SHEET

SCALE: AS SHOWN

NEX-2019181

11 OF 13

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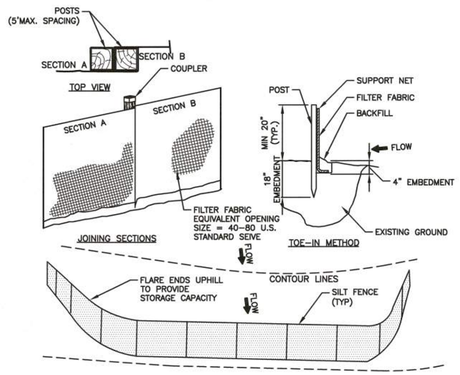


CRITERIA FOR SILT FENCES:

1) SILT FENCE FILTER CLOTH: THE FABRIC FOR THE SILT FENCE SHALL MEET THE FOLLOWING SPECIFICATIONS:

FABRIC PROPERTIES:	MINIMUM ACCEPTABLE VALUES	TEST METHOD
GRAB TENSILE STRENGTH (lbs)	90	ASTM D1682
ELONGATION AT FAILURE (%)	50	ASTM D1682
MULLEN BURST STRENGTH (PSI)	190	ASTM D3786
PUNCTURE STRENGTH (lbs)	40	ASTM D751
EQUIVELANT OPENING SIZE	40-80	US STD SIEVE

2) FENCE POSTS (FOR FABRICATED UNITS) – THE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG. WOOD POSTS WILL BE OF SOUND QUALITY HARDWOOD WITH A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES. STEEL POSTS WILL BE STANDARD T OR U SECTIONS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT. MAXIMUM SPACING SHALL BE 6 LINEAR FEET.

3) WIRE FENCE (FOR FABRICATED UNITS) – WIRE FENCING SHALL BE A MINIMUM 14.5 GUAGE WITH A MAXIMUM 6 INCH MESH OPENING.

4) PREFABRICATED UNITS – PREFABRICATED UNITS MAY BE USED IN LIEU OF THE ABOVE METHOD PROVIDING: (1) THE FILTER CLOTH AND FENCE POSTS MEET THE ABOVE CRITERIA; AND (2) THE UNIT IS INTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

MAINTENANCE:

1) SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.

2) IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.

3) SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMITELY ONE-HALF THE HEIGHT OF THE BARRIER.

4) SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

CONSTRUCTION SPECIFICATIONS:

1) THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.

2) THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND (4" DEEP & 4" WIDE) AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.

3) WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.

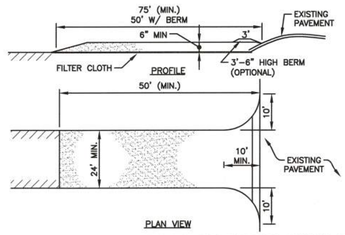
4) FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID-SECTION AND BOTTOM.

5) WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EAC OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES (24" IS PREFERRED), FOLDED, AND STAPLED.

6) POSTS TO BE SPACED AT A MAXIMUM OF 6' ON CENTER.

SEDIMENT CONTROL FENCE

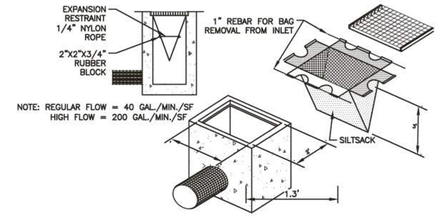
NOT TO SCALE



1. STONE FOR A STABILIZED CONSTRUCTION EXIT SHALL BE 3 INCH COARSE AGGREGATE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED EXIT SHALL NOT BE LESS THAN 50 FEET,
3. THE THICKNESS OF THE STONE FOR THE STABILIZED EXIT SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE EXIT SHALL NOT BE LESS THAN 24' WHERE INGRESS OCCURS.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIT SHALL BE PIPED BENEATH THE EXIT. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO EXIT ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

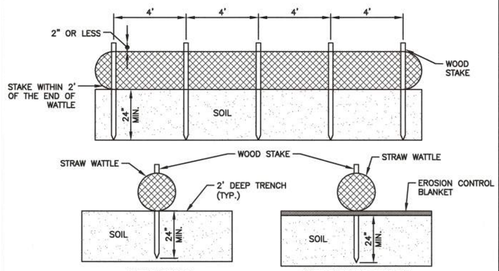
STABILIZED CONSTRUCTION EXIT

NOT TO SCALE



SILT SACK DETAIL-ON OR OFF SITE

NOT TO SCALE



NOTES:
1. ENDS OF WATTLES SHALL BE TURNED SLIGHTLY UP.
2. RECCOMMENDED STAKES ARE 1 1/8" WIDE x 1 1/8" THICK x 30" LONG. STAKES SHALL NOT EXCEED ABOVE THE STRAW WATTLE MORE THAN 2".

STRAW WATTLE

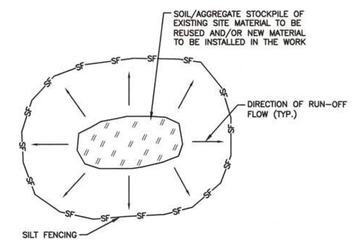
NOT TO SCALE

MAINTENANCE

1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY.
2. SEDIMENT SHOULD BE REMOVED FROM THE TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF OF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS.
3. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.
4. ALL STRUCTURES WITH INLET PROTECTION MUST BE CLEANED AT THE END OF CONSTRUCTION AND WHEN THE SITE IS FULLY STABILIZED.

INLET PROTECTION DETAIL

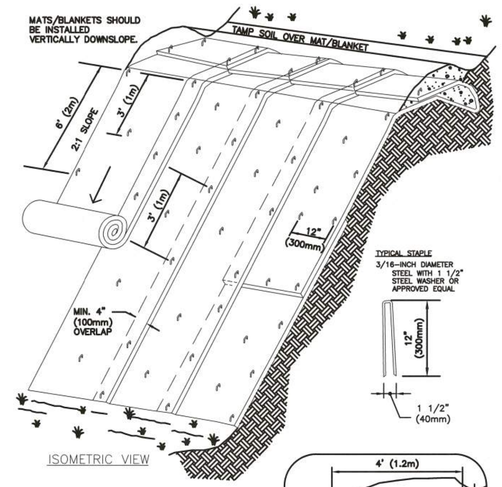
NOT TO SCALE



NOTES:
1. ALL EXISTING EXCAVATED MATERIAL THAT IS NOT TO BE REUSED IN THE WORK IS TO BE IMMEDIATELY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.
2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.
3. RESTORE STOCKPILE SITES TO PRE-EXISTING PROJECT CONDITION AND RESEED AS REQUIRED.
4. STOCKPILE HEIGHTS MUST NOT EXCEED 35'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.

MATERIALS STOCKPILE

NOT TO SCALE



ISOMETRIC VIEW

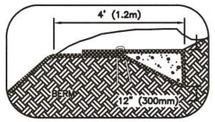
TYPICAL SLOPE
SOIL STABILIZATION

NOTES:
1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH. BACKFILL AND COMPACT TRENCH AFTER STAPLING.
2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW. LAY BLANKETS LOOSELY & MAINTAIN DIRECT CONTACT WITH SOIL – DO NOT STRETCH.
3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE BLANKET END OVER END WITH 6 INCH (MIN.) OVERLAP AND ANCHOR DOWN SLOPE BLANKET IN A 6 INCH DEEP TRENCH.
5. BLANKETS SHALL BE STAPLED ENOUGH TO ANCHOR BLANKET WHILE MAINTAINING CONTACT WITH SOIL. STAPLES SHALL BE PLACED DOWN THE CENTER & STAGGERED WITH THE STAPLES PLACED ALONG EDGES. PATTERN & AMOUNT OF STAPLES VARIES BY MANUFACTURER, SO FOLLOW MANUFACTURERS RECOMMENDATIONS.
6. BLANKET SHALL BE NORTH AMERICAN GREEN SC-150 BN OR APPROVED EQUAL.

MAINTENANCE & MATS
1. BLANKETS SHALL BE INSPECTED WEEKLY DURING CONSTRUCTION & AFTER A RAINFALL IN EXCESS OF 1/2" IN A 24-HOUR PERIOD.
2. FAILURES SHALL BE REPAIRED IMMEDIATELY. IF ANY OF THE FOLLOWING OCCUR; SLOPE WASHOUT, MAT DISPLACEMENT, DAMAGE TO MAT, THE AFFECTED AREA SHALL BE REPAIRED & RESEEDED & MAT SHALL BE REPLACED OR RE-INSTALLED.

BLANKET SLOPE PROTECTION FOR EROSION CONTROL

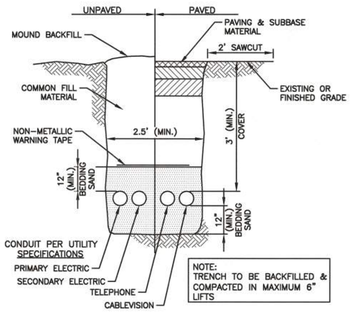
NOT TO SCALE



TYPICAL INSTALLATION
OF EROSION CONTROL
BLANKETS FOR SLOPES

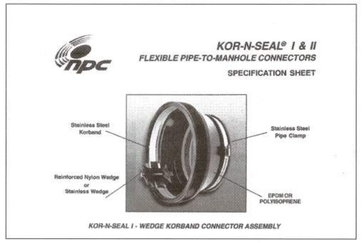
NOT TO SCALE

NOTE:
1) DO NOT USE PRODUCTS THAT CONTAIN WELDED PLASTIC OR THAT ARE "PHOTODEGRADABLE". USE PRODUCTS WITH BIODEGRADABLE NETTING AND NATURAL FIBER MATERIAL (I.E. STRAW OR COCONUT FIBER).
2) THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES MATERIAL UTILIZED.



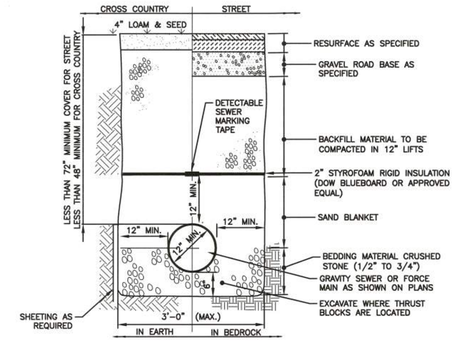
UTILITY TRENCH

NOT TO SCALE



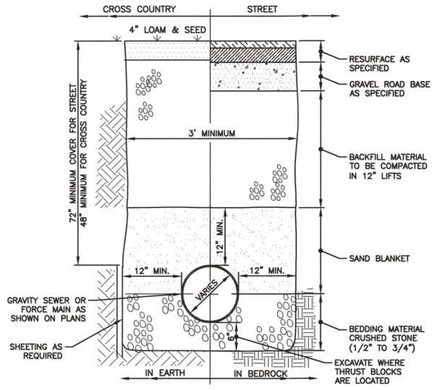
KOR-N-SEAL DETAIL

NOT TO SCALE



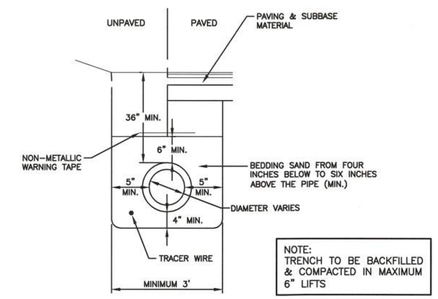
TYPICAL TRENCH SECTION FOR SANITARY SEWER SERVICE WITH LESS THAN 6' OF COVER

NOT TO SCALE



TYPICAL TRENCH SECTION FOR SANITARY SEWER SERVICE

NOT TO SCALE



TYPICAL GAS TRENCH

NOT TO SCALE

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

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FEBRUARY 2, 2024

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CCC	NID

DETAIL SHEET

SCALE: AS SHOWN

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12 OF 13

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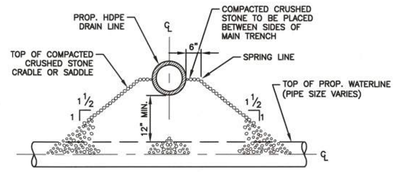
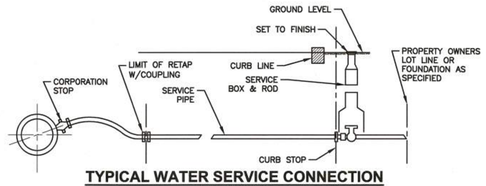
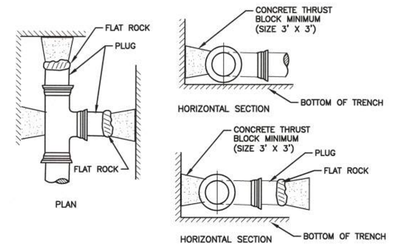


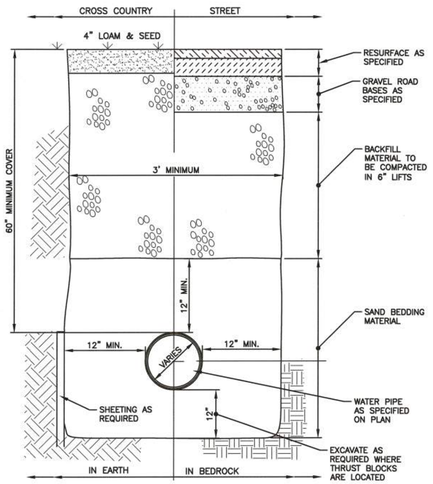
PIPE CROSSING DETAIL
NOT TO SCALE



TYPICAL WATER SERVICE CONNECTION
NOT TO SCALE



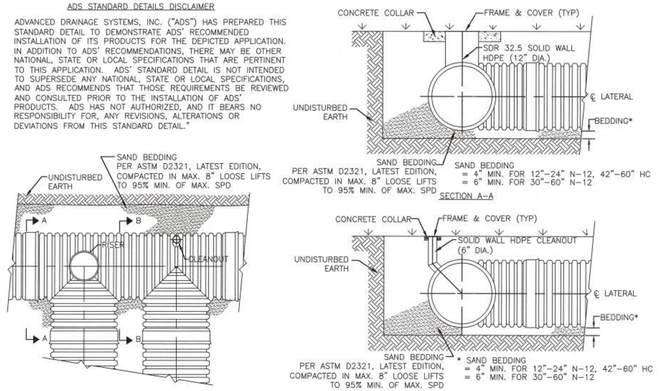
THRUST BLOCK
NOT TO SCALE



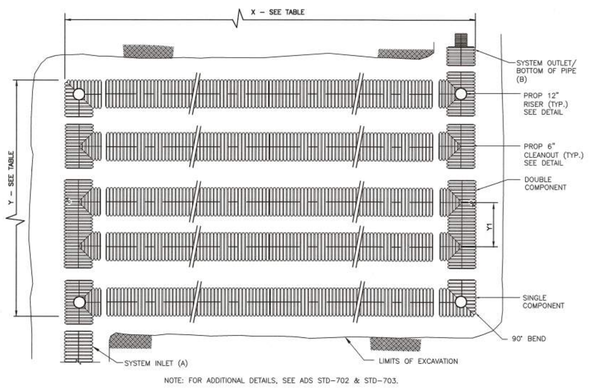
TYPICAL TRENCH SECTION FOR WATER SERVICE
NOT TO SCALE

ADS STANDARD DETAILS DISCLAIMER

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS STANDARD DETAIL TO DEMONSTRATE ADS' RECOMMENDED INSTALLATION OF ITS PRODUCTS FOR THE DEPICTED APPLICATION. IN ADDITION TO ADS' RECOMMENDATIONS, THERE MAY BE OTHER NATIONAL, STATE OR LOCAL SPECIFICATIONS THAT ARE PERTINENT TO THIS APPLICATION. ADS' STANDARD DETAIL IS NOT INTENDED TO SUPERSEDE ANY NATIONAL, STATE OR LOCAL SPECIFICATIONS, AND ADS RECOMMENDS THAT THOSE REQUIREMENTS BE REVIEWED AND CONSULTED PRIOR TO THE INSTALLATION OF ADS' PRODUCTS. ADS HAS NOT AUTHORIZED, AND IT BEARS NO RESPONSIBILITY FOR, ANY REVISIONS, ALTERATIONS OR DEVIATIONS FROM THIS STANDARD DETAIL."



TYPICAL RISER AND CLEANOUT DETAILS
NOT TO SCALE



NOTE: FOR ADDITIONAL DETAILS, SEE ADS STD-702 & STD-703.

UNDERGROUND STORMWATER DETENTION SYSTEM TABLE							
UG DETENTION SYSTEM	LENGTH (X)	WIDTH (Y)	SPACING (Y1) (O.C. TYP.)	PIPE SIZE (INCHES) SOLID	INV. PIPE ELEV. (A)	INV. PIPE ELEV./BOTTOM OF PIPE (B)	# PIPE ROWS
UG-DET #1	36.00'	58.45'	53.1"	30"SOLID(WT)	541.69 541.00	540.95	12

NOTE: SEE TYPICAL CROSS SECTIONS BELOW
WT = WATERTIGHT JOINTS

TYPICAL UNDERGROUND DETENTION SYSTEM LAYOUT
NOT TO SCALE

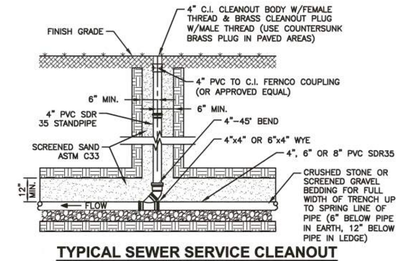
DETENTION SYSTEM NOTES:

1) ALL SITE DRAINAGE PIPE SHALL BE CORRUGATED HIGH–DENSITY POLYETHYLENE PIPE, DUAL WALL, SMOOTH INTERIOR AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON PLAN.

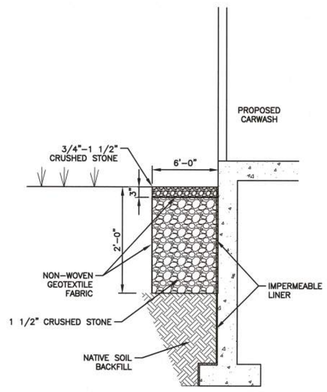
2) CONTRACTOR SHOULD CONFIRM SYSTEM PARTS AND OBTAIN SHOP DRAWINGS FROM MANUFACTURER. SUBSTITUTIONS AND SHOP DRAWINGS SHOULD BE APPROVED BY THE ENGINEER.

3) PARTS SPECIFICATIONS SHOWN ARE AS PROVIDED BY ADS, INC., OR APPROVED EQUAL. ANY CHANGES TO THESE SPECIFICATIONS SHOULD BE APPROVED BY DESIGN ENGINEER FOR PERFORMANCE.

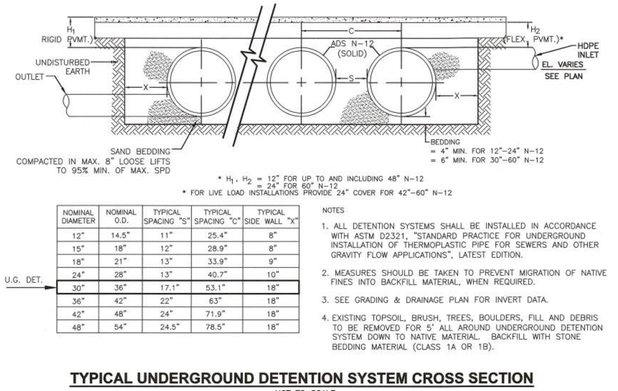
4) SYSTEM TO BE LAID LEVEL.



TYPICAL SEWER SERVICE CLEANOUT
NOT TO SCALE



STONE DRIP EDGE
NOT TO SCALE



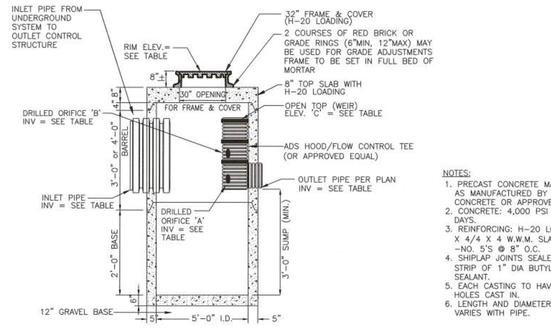
* H_1, H_2 = 12" FOR UP TO AND INCLUDING 48" N–12
= 24" FOR 60" N–12
* FOR LIVE LOAD INSTALLATIONS PROVIDE 24" COVER FOR 42"–60" N–12

NOMINAL DIAMETER	NOMINAL O.D.	TYPICAL SPACING "S"	TYPICAL SPACING "C"	TYPICAL SIDE WALL "X"
12"	14.5"	11"	25.4"	8"
15"	18"	12"	28.9"	8"
18"	21"	13"	33.9"	9"
24"	28"	13"	40.7"	10"
30"	36"	17.1"	53.1"	18"
36"	42"	22"	63"	18"
42"	48"	24"	71.9"	18"
48"	54"	24.5"	78.5"	18"

U.G. DET.

NOTES
1. ALL DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. SEE GRADING & DRAINAGE PLAN FOR INVERT DATA.
4. EXISTING TOPSOIL, BRUSH, TREES, BOULDERS, FILL AND DEBRIS TO BE REMOVED FOR 5' ALL AROUND UNDERGROUND DETENTION SYSTEM DOWN TO NATIVE MATERIAL. BACKFILL WITH STONE BEDDING MATERIAL (CLASS 1A OR 1B).

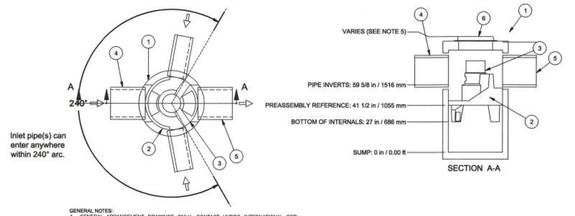
TYPICAL UNDERGROUND DETENTION SYSTEM CROSS SECTION
NOT TO SCALE



NOTES:
1. PRECAST CONCRETE MAN HOLE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL.
2. CONCRETE: 4,000 PSI AFTER 28 DAYS.
3. REINFORCING: H–20 LOADING, 4 X 4/4 X 4 W.W.M. SLAB TOP –NO. 5'S @ 8" O.C.
4. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA BUTYL RUBBER SEALANT.
5. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
6. LENGTH AND DIAMETER OF TEE VARIES WITH PIPE.

OUTLET CONTROL STRUCTURE TABLE								
OCS	RIM	ORIFICE	SIZE (IN.)	ELEV.	INV.IN (SIZE)	INV.IN (ELEV)	INV.OUT (SIZE)	INV.OUT (ELEV)
#1	545.00	A	1" DIA.	540.95	12"	540.95	12"	540.95
		B	1" DIA.	541.45				
		C	12" DIA.	543.10				

PRECAST CONCRETE OUTLET CONTROL STRUCTURE (OCS) FOR UNDERGROUND SYSTEMS
NOT TO SCALE



GENERAL NOTES:
1. GENERAL ARRANGEMENT DRAWINGS ONLY. CONTACT HYDRO INTERNATIONAL FOR SITE SPECIFIC FABRICATION DRAWINGS.
2. THE DIAMETER OF THE INLET & OUTLET PIPES MAY BE NO MORE THAN 24".
3. MULTIPLE INLET PIPES POSSIBLE (REFER TO PROJECT PLANS).
4. INLET/OUTLET PIPE ANGLE CAN VARY TO ALIGN WITH DRAINAGE NETWORK (REFER TO PROJECT PLANS).
5. PEAK FLOW RATE AND MINIMUM HEIGHT LIMITED BY AVAILABLE COVER AND PIPE DIAMETER.
6. LARGER SEDIMENT STORAGE CAPACITY MAY BE PROVIDED WITH A DEEPER SUMP DEPTH.

PRODUCT SPECIFICATIONS:
A. THE TREATMENT SYSTEM SHALL USE AN INDUCED VORTEX TO SEPARATE POLLUTANTS FROM THE WATER COLUMN.
B. THE TREATMENT SYSTEM SHALL FIT WITHIN THE LIMITS OF EXCAVATION (AREA AND DEPTH) AS SHOWN IN THE PROJECT PLANS AND WILL NOT EXCEED THE DIMENSIONS FOR THE DESIGN FLOW RATES SPECIFIED HEREIN.
C. THE TREATMENT SYSTEM SHALL REMOVE GREATER THAN OR EQUAL TO 80% OF TSS (MASS) ON THE TSS LOAD PARTICLE SET (TPSD) OF 100 MICRONS AND/OR 80% OF TSS BASED ON THE TSS LOAD PARTICLE SET (TPSD) OF 50 MICRONS.
D. THE TREATMENT SYSTEM SHALL CONVEY THE PEAK ON–LINE FLOW RATES OF UP TO 18 CFS WITHOUT CAUSING UPSTREAM SURCHARGE CONDITIONS. FULL–SCALE INDEPENDENT LABORATORY SCOUR TESTING SHALL DEMONSTRATE EFFLUENT CONTROL OF LESS THAN OR EQUAL TO 5 MG/L FOR ALL FLOWS UP TO 200% OF WTRV–106.
E. THE TREATMENT SYSTEM SHALL BE CAPABLE OF CAPTURING AND RETAINING FINE SILT AND DEBRIS. FULL–SCALE INDEPENDENT LABORATORY TESTING FOR ON–LINE INSTALLATIONS SHALL DEMONSTRATE PARTICLE SIZES PREDOMINATELY IN THE 20–MICRON RANGE

NOTE: CONTRACTOR SHALL CONFIRM SYSTEM PARTS AND OBTAIN SHOP DRAWINGS FROM MANUFACTURER PRIOR TO CONSTRUCTION.

PARTS LIST				
ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	48	1200	I.D. PRECAST MANHOLE
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)
3	1	30	750	FRAME AND GRATE
4	1	24 (MAX)	600 (MAX)	OUTLET PIPE (BY OTHERS)
5	1	24 (MAX)	600 (MAX)	INLET PIPE (BY OTHERS)

"FIRST DEFENSE" FD-4HC UNIT DETAIL
(OR APPROVED EQUAL)
NOT TO SCALE

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
SUMMIT DISTRIBUTING
240 MECHANIC STREET
LEBANON, NH 03766

ASSESSORS MAP 44 LOT 41

SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

STATE OF VERMONT
DAVID R. JORDAN
NO. 135215
CIVIL
REGISTERED PROFESSIONAL ENGINEER
2/15/24

REVISIONS		
1.	MISC REV.	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

DRAWN/DESIGN BY	CHECKED BY
CCC	NID

DETAIL SHEET

SCALE: AS SHOWN

NEX-2019181

13 OF 13

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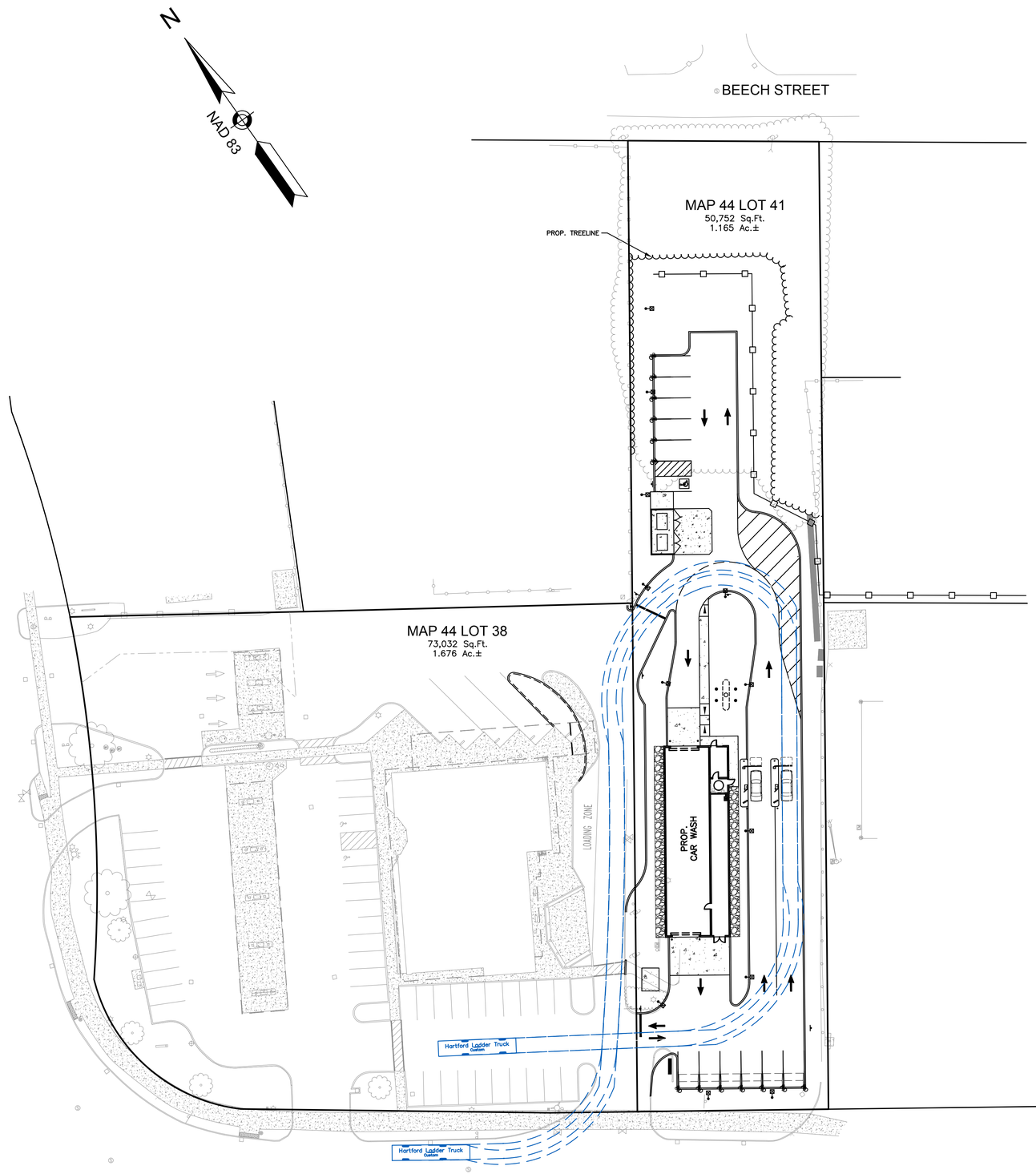

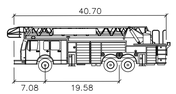

Hartford Ladder Truck

	feet
Width	: 8.00
Track	: 7.83
Lock to Lock Time	: 6.0
Steering Angle	: 42.0

0 30 60 100

SCALE: 1" = 30'

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ASSESSORS MAP 44 LOT 41

SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

REVISIONS		
2.	MISC REV.	2/15/24
1.	REV. PER TOWN COMMENT	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

DRAWN/DESIGN BY	CHECKED BY
CCC	NID

TRUCK TURN PLAN 1 (FIRE)

SCALE: 1"=30'

NEX-2019181

1 OF 1

F:\Projects\MAX-2019181 - White River Junction, VT - Summit Distributing\CAD Files\2019181_SP.dwg TT 1 5/01/24 3:25pm srollins

N

NAD 83

BEECH STREET

MAP 44 LOT 41
50,752 Sq.Ft.
1.165 Ac.±

PROP. TREELINE

MAP 44 LOT 38
73,032 Sq.Ft.
1.676 Ac.±

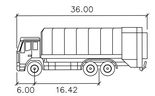
PROP. CAR WASH

LOADING ZONE

Garbage-Front Load

NORTH MAIN STREET - ROUTE 5
(PUBLIC – VARIABLE WIDTH)

SYKES MOUNTAIN AVENUE
(PUBLIC – VARIABLE WIDTH)



Garbage-Front Load

	feet
Width	: 9.33
Track	: 9.33
Lock to Lock Time	: 6.0
Steering Angle	: 23.0

0 30 60 100

SCALE: 1" = 30'

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ASSESSORS MAP 44 LOT 41

SYKES MOUNTAIN AVENUE
WHITE RIVER JUNCTION, VERMONT

REVISIONS		
1.	MISC REV.	2/15/24
NO.	REVISION	DATE

FEBRUARY 2, 2024

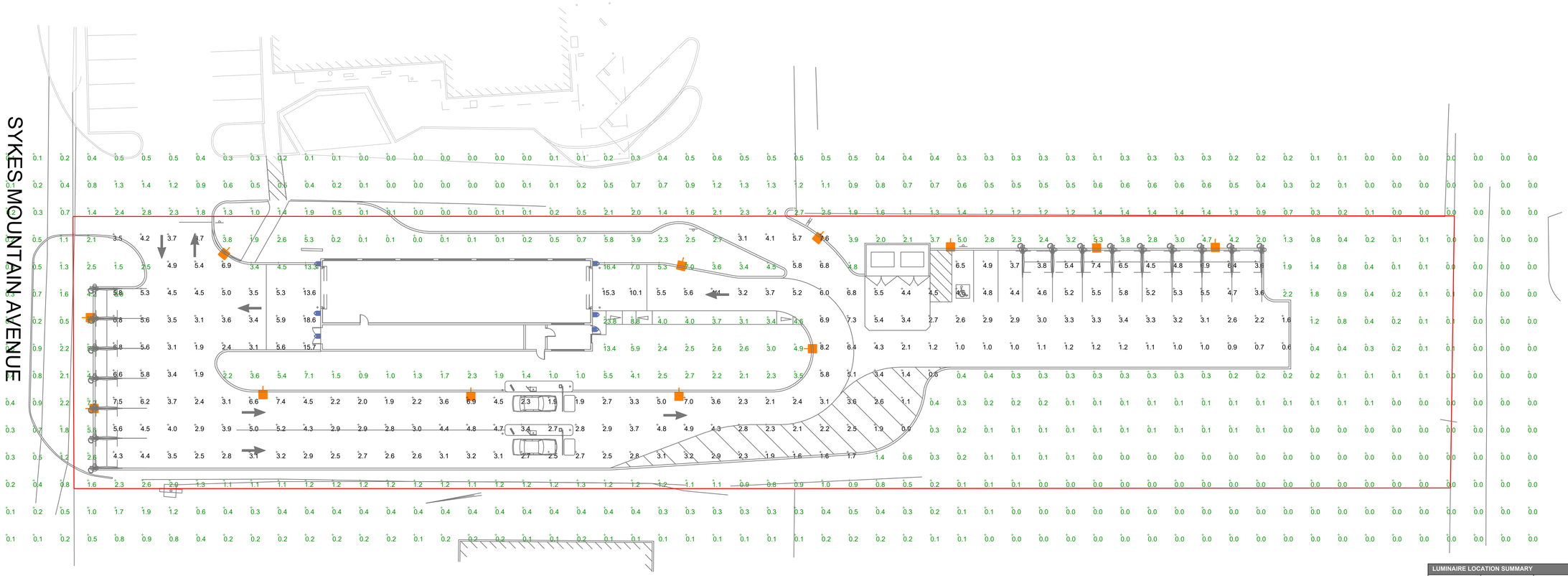
DRAWN/DESIGN BY	CHECKED BY
CCC	NID

TRUCK TURN PLAN 2 (GARBAGE)

SCALE: 1"=30'

NEX-2019181

1 OF 1



NOTES:
- POLE MOUNTED FIXTURES ARE MOUNTED ON A 17FT POLE ATOP A 30 INCH HIGH CONCRETE BASE.

LUMINAIRE LOCATION SUMMARY		
LUM NO.	LABEL	MTG. HT.
1	A	19.5
2	A	19.5
3	A	19.5
4	A	19.5
5	A	19.5
6	A	19.5
7	A	19.5
8	A	19.5
9	A	19.5
10	A	19.5
11	A	19.5
12	A	19.5
13	W	9
14	W	9
15	W	9
16	W	9
17	W	9
18	W	9

FOOTCANDLE LEVELS CALCULATED AT GRADE USING INITIAL LUMEN VALUES					
LABEL	AVG	MAX	MIN	AVG/MIN	MAX/MIN
PAVED AREA	4.04	18.6	0.6	6.73	31.00
UNDEFIND AREA	0.96	23.8	0.0	N.A.	N.A.

LUMINAIRE SCHEDULE										
SYMBOL	QTY	LABEL	ARRANGEMENT	LUMENS	LLF	BUG RATING	WATTS/LUMINAIRE	TOTAL WATTS	MANUFACTURE	CATALOG LOGIC
	12	A	SINGLE	10450	1.030	B2-U0-G2	68	816	Cree Lighting	OSQ-ML-C-DA + OSQM-C-11L-57K7-3M-UL-NM-XX-Q9
	6	W	SINGLE	4071	1.030	B1-U0-G1	26.8	160.8	Cree Lighting	OSQW-C-4L-40K7-3M-UL-WM-XX

REDLEONARD ASSOCIATES
1340 Kemper Meadow Dr, Forest Park, OH 45240
513-574-9500 | redleonard.com

REV.	BY	DATE	DESCRIPTION
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SCALE: 1" = 20'
LAYOUT BY: TAS
DWG SIZE: D
DATE: 1/31/24

PROJECT NAME:
CAR WASH
SUMMIT DISTRIBUTING
WHITE RIVER JCT. VT.
DRAWING NUMBER:
RL-9431-S1

	QTY	LABEL	DESCRIPTION
AREA	12	A	OSQ-ML-C-DA + OSQM-C-11L-57K7-3M-UL-NM-XX-Q9

ADDITIONAL FIXTURE INFO

OSQ Series

OSQ™ LED Area/Flood Luminaire featuring Patented NanoComfort™ Technology – Version C

Rev. Date: V7 11/01/2023

Product Description

The OSQ™ Area/Flood luminaire blends extreme optical control, advanced thermal management and modern, clean aesthetics. Built to last, the housing is rugged cast aluminum with an integral, weathertight LED driver compartment and high performance heat sink.

Acrylic optic w/clear tempered glass lens

Some versions are provided with full circuit board, but not fully populated with LEDs or optics to scale back lumen package

Luminaire can also be directly mounted on direct arm. Mounting adaptor is rugged die cast aluminum and mounts to 2" (50mm) or larger square or round pole, secured by two 5/16-18 UNC bolts spaced on 2" (51mm) centers. Refer to page 14 for fixture mounting information

Adjustable arm mount available as a rugged, die-cast aluminum

Trunnion mount is constructed of 6000 and 6111 steel and is adjustable from 0-180° in 15° degree increments. Trunnion mount secures to surface with (1) 3/4" bolt or (2) 1/2" bolts

Luminaires include 15' (381mm) 18/5 cord exiting the luminaire

Designed for uplight and downlight applications. Uplight orientation not suitable for use with N or R options

Exclusive ColorSeal DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Silver, bronze, black, and white are available.

Weight

Mount	Housing Size		
	Medium	Large	Extra Large
Direct Arm	19.7 lbs. (8.9kg)	28.8 lbs. (13.1kg)	43.8 lbs. (20.0kg)
Adjustable Arm	19.3 lbs. (8.8kg)	28.4 lbs. (12.9kg)	48.6 lbs. (22.0kg)
Trunnion	23.2 lbs. (10.5kg)	32.3 lbs. (14.7kg)	N/A

For BML sensor add 0.1 lbs. (45g), and for NEMA receptacle, add 0.3 lbs. (136g).

ELECTRICAL SYSTEM

- **Input Voltage:** 120-277V, 277-480V or 347-480V, 50/60Hz, Class 1 drivers
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral 10kV/5kA surge suppression protection standard; 20kV/10kA surge suppression protection optional
- When code dictates fusing, a slow blow fuse or type C/D breaker should be used to address inrush current
- Designed with 0-10V dimming capabilities. Dims to 10%. Controls by others
- 0-10V ANSI C137.1-2019 (8-Volt or 9-Volt per power level/options selected) Refer to Dimming spec sheet for details
- **Maximum 10V Source Current:** 1.8mA
- **Operating Temperature Range:** -40˚C - +40˚C (-40˚F - +104˚F)

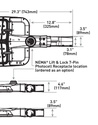
REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed (UL 1598)
- Suitable for wet locations
- Meets NEMA 250 IP standards
- Drivers and LEDs are UL certified in accordance with UL8750
- Meets requirements of IP66 per IEC 60529 when ordered without N or R options
- Certified to ANSI C136.31-2018, 3G bridge and overpass vibration standards
- ANSI C136.2 10kV/5kA (standard) and 20kV/10kA (optional) surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Meets FCC Part 15, Subpart B, Class A limits for conducted and radiated emissions
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- Lens meets IK09 requirements per IEC 60068-2
- Assembled in the USA by Cree Lighting from US and imported parts
- Meets Buy American requirements within ARRA
- RoHS compliant. Consult factory for additional details
- Dark Sky Friendly, IDA Approved when ordered with 3000K CCT and direct arm mount only. Please refer to https://darksky.org/what-we-do/darksky-approved/products-companies/#!/search/keyword=cree for most current information
- DLC and DLC Premium qualified SKUs available. Exceptions apply when 2R, 3R, 4R & 4B options are selected. Please refer to https://qpl.designlights.org/solid-state-lighting/ for most current information
- TLC Lens qualified when ordered with direct arm mount and 3000°CCT. Please refer to https://www.designlights.org/solid-state-lighting/ for most current information
- ⚠ **CA RESIDENTS WARNING:** Cancer and Reproductive Harm - www.p65warnings.ca.gov

US: creelighting.com **(800) 236-4800**
Canada: creelighting-canada.com **(800) 473-1234**

CREE LIGHTING

OSQM - AA Mount



Luminaire	Weight
OSQM	19.3 lbs. (8.8kg)

Note: For OSQL, OSQM and additional mounts, refer to drawings on page 27.

Mount (Luminaire must be ordered separately)*

OSQ-

Medium/Large Mounts	Extra Large Mounts	Color Options:	
OSQ-ML-C-DA Adjustable Arm	**OSQ-X-C-AA** Adjustable Arm	**SV** Silver	**BZ** Bronze
OSQ-ML-C-DA Direct Arm	**OSQ-X-C-DA** Direct Arm	**BK** Black	**WH** White
OSQ-ML-C-TR Trunnion Mount			

*Reference fixture mounting drill pattern, EPA, and pole configuration guidelines data beginning on page 14.

Luminaire (Mount must be ordered separately)

OSQ- | **C**

Family	Size	Series	Lumen Package*	CCT/ CRI	Optic	Voltage	Mount	Color Options	Controls**	Options
OSQ	**M** Medium **L** Large **X** Extra Large	**C**	**Medium** **3L** 3,000 Lumens **4L** 4,000 Lumens **5L** 5,000 Lumens **6L** 6,000 Lumens **7L** 7,000 Lumens **8L** 8,000 Lumens **10L** 10,000 Lumens **11L** 11,000 Lumens **13L** 13,000 Lumens **16L** 16,000 Lumens **Low LCE** **5LLCE** 5,000 Lumens **6LLCE** 6,000 Lumens **7LLCE** 7,000 Lumens **8LLCE** 8,000 Lumens **10LLCE** 10,000 Lumens **11LLCE** 11,000 Lumens **13LLCE** 13,000 Lumens **16LLCE** 16,000 Lumens **Extra Low LCE** **7XLLCE** 7,000 Lumens **8XLLCE** 8,000 Lumens **10XLLCE** 10,000 Lumens **11XLLCE** 11,000 Lumens **13XLLCE** 13,000 Lumens **16XLLCE** 16,000 Lumens	**30K**† 3000K, 70 CRI **40K** 4000K, 70 CRI **50K**† 5000K, 70 CRI **57K7** 5700K, 70 CRI	**Automatics** **1A** Type 1 Mid **2A** Type 2 Mid **3A** Type 3 Mid **4A** Type 4 Mid **5A** Type 5 Mid **6A** Type 6 Mid **Backlight Shield** **BLS** Backlight Shield - Available with all automatic optics except R5L **Backlight Control** **BLC** Backlight Shield - Available with all automatic optics except R5L **Symmetrics** **1S** Type 1 Mid **3S** Type 3 Mid **4S** Type 4 Short **5S** Type 5 Narrow **5W** Type 5 Wide **6S** Type 6 Mid **6W** Type 6 Wide **R5W** Rotated 5W **R6S** Rotated 6S **R6W** Rotated 6W **R5WAS** Rotated 5W with Automotive Frontline Asymmetric factory installed **R6SAS** Rotated 6S with Automotive Frontline Asymmetric factory installed **R6WAS** Rotated 6W with Automotive Frontline Asymmetric factory installed **Backlight Control** **BLC** Backlight Shield - Available with all symmetric optics except R5L **Rotate Left** **R** Rotate optic left - Refer to BWL-C spec sheet for details - Not available with symmetric optics **Rotate Right** **R** Rotate optic right - Refer to BWR-C spec sheet for details - Not available with symmetric optics	**UL** Universal 120-277V **HV** Universal 347-480V - Not available with 5L, 6L, 7L, 8L, 10L, 11L, 13L, 16L, 7XLLCE, 8XLLCE, 10XLLCE, 11XLLCE, 13XLLCE, 16XLLCE lumen packages **UE** Universal 120-277V - Available with 7XLLCE, 8XLLCE, 10XLLCE, 11XLLCE, 13XLLCE, 16XLLCE lumen packages	**WH** Mid-Level - Mount separately **BK** Black - Mount separately **DBZ** Dark Bronze - Mount separately **DWH** Dark White - Mount separately	**BML** Bluetooth® Technology-Enabled Multi-Level Sensor Utilizes a multifunction sensor to control luminaire - Refer to BML spec sheet for details - Refer to BML-DIM-002 spec sheet for details **DIMSENSORMOUNT** Field-Adjustable Output - Must select BT, SK, SV, SS, SL, SW, SB, or SG option - Offers full range adjustability - Refer to pages 15-16 for power and lumen values - Not available with BML or X options or Synapse TLT-HMS **HNTR/SLNR/SLNX/SLNY** Locked Lumen Output - Must select 5L, 6L, 7L, 8L, 10L, 11L, 13L, 16L, 7XLLCE, 8XLLCE, 10XLLCE, 11XLLCE, 13XLLCE, 16XLLCE lumen package - Refer to pages 15-16 for power and lumen values - Not available with the following lumen package/voltage offerings: 7LHV, 7LLCEHV, 8LLCEHV, 10LLCEHV, 11LLCEHV, 13LLCEHV, 16LLCEHV, 7XLLCEHV, 8XLLCEHV, 10XLLCEHV, 11XLLCEHV, 13XLLCEHV, 16XLLCEHV lumen package/voltage - Lumen values are factory preset and locked to the setting selected - Refer to pages 15-16 for power and lumen values	**OVP** 20kV/10kA Surge Suppression - Provides 20kV/10kA surge protection **F** Fusing - Includes one 120-277V or 347V fuse (s required) - Optional Battery Fusing is required for 20W, 340V or UBO - Fuse is preinstalled and ships with luminaire, but must be installed in the field **N** NEMA® Photocontrol Receptacle - Not available with BML or R options **NEMA® Lift & Lock 5-Pin Photocontrol Receptacle** - 7-pin receptacle per ANSI C136.41 - Not available with BML or R options **NEMA® Lift & Lock 5-Pin Photocontrol Receptacle** - 7-pin receptacle per ANSI C136.41 - Available only with OSQM & OSQL luminaires - Not available with downlight applications with maximum 45° tilt - Factory connected 7-720 slim leads - Refer to Photocontrol spec sheet for details **NEMA® Lift & Lock 5-Pin Photocontrol Receptacle** - 7-pin receptacle per ANSI C136.41 - Not available with downlight applications with maximum 45° tilt - Factory connected 7-720 slim leads - Refer to Photocontrol spec sheet for details **SPD10KV** 10kV/5kA Surge Suppression - Provides 10kV/5kA surge protection **SPD20KV** 20kV/10kA Surge Suppression - Provides 20kV/10kA surge protection **EB** Emergency Battery Back-Up - Provides 90 minutes and 7W of power in emergency mode - Not available with R options - Not available with BML, ML or P controls

OSQ-C Series Ambient Adjusted Lumen Maintenance*

Ambient	Initial LMF	25K for Reported* LMF	50K for Reported* LMF	75K for Reported* LMF	100K for Reported* LMF
5˚C (41˚F)	1.02	0.99	0.93	0.88	0.83
10˚C (50˚F)	1.02	0.98	0.93	0.87	0.82
15˚C (59˚F)	1.01	0.98	0.92	0.87	0.82
20˚C (68˚F)	1.01	0.97	0.92	0.86	0.81
25˚C (77˚F)	1.00	0.97	0.91	0.86	0.81

* Lumen maintenance values at 25˚C (77˚F) are calculated per IES TM-21 based on IES LM-80 report data for the LED package and in-situ luminaire testing. Luminaire ambient temperature factors (LAMF) have been applied to all lumen maintenance factors. Please refer to the Temperature Zone Reference Document for ambient average nighttime ambient temperature.

** In accordance with IES TM-21, Reported values represent interpolated values based on time durations that are up to the tested duration in the IES LM-80 report for the LED.

Electrical Data*

Lumen Package	System Watts 120-480V	Utility Label Wattage	Total Current (A) 120V	208V	240V	277V	347V	480V
6L**	24	30	0.21	0.12	0.11	0.09	N/A	N/A
8L	27	40	0.23	0.13	0.12	0.10	0.08	0.06
11L	55	60	0.46	0.27	0.23	0.20	0.16	0.12
13L	68	70	0.57	0.33	0.28	0.25	0.20	0.14
16L	97	100	0.81	0.47	0.40	0.35	0.28	0.20
20L	131	130	1.09	0.63	0.55	0.47	0.38	0.27
30L	175	180	1.46	0.84	0.73	0.63	0.50	0.36
40L	206	260	1.96	1.13	0.98	0.85	0.68	0.49
50L	297	N/A	2.48	1.43	1.24	1.07	0.86	0.62
60L	351	N/A	2.93	1.69	1.46	1.27	1.01	0.73
70L	467	N/A	3.72	2.15	1.86	1.61	1.29	0.93
85L	520	N/A	4.34	2.50	2.17	1.88	1.50	0.93

*Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-277V (277-480V or 347-480V) +5%.
** Available with 6L wattage only.

Accessories

Field-Installed

External Backlight Shield
OSQ-M-C-BLSF (Medium)
OSQ-L-C-BLSF (Large)
OSQ-X-C-BLSF (Extra Large)
- Not for use with rotated optics

Bird Spikes
OSQ-M-C-BRDSPK
OSQ-L-C-BRDSPK
OSQ-X-C-BRDSPK

Shorting Cap
Ask XSLSHRT

Ordering Information

Fully assembled luminaire is composed of two components that must be ordered separately:
Example: **Mount.** OSQ-ML-C-DA-BK + **Luminaire.** OSQM-C-4L-50K7-3M-UL-NM-BK

ADDITIONAL FIXTURE INFO

OSQ Series

OSQW™ LED Wall Mount Luminaire featuring Patented NanoComfort™ Technology

Rev. Date: V1 11/29/2023

Product Description

The OSQW™ LED wall mount luminaire has a slim, low profile design intended for outdoor wall mounted applications. The rugged lightweight aluminum housing and mounting box are designed for installation over standard single gang J-Boxes and mud ring single gang J-Boxes. The luminaire allows for through-wired or conduit entry from the top, bottom, sides and rear. The housing design is intended specifically for LED technology including a weather-tight LED driver compartment and thermal management. Optic design features industry-leading NanoComfort Technology which provides superior glare reduction and visual comfort with high efficacy and uniformity, concentrating light precisely where it is needed.

Applications: General area and security lighting

Performance Summary

Utilizes Patented NanoComfort™ Technology

Utilizes Cree TrueWhite® Technology on 5000K Luminaires

Assembled in the USA by Cree Lighting from US and imported parts

Initial Delivered Lumens: Up to 8,600

Input Power: 14 - 55 watts

Efficacy: Up to 159 LPW

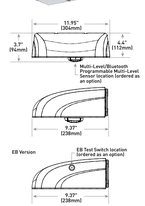
CRI: Minimum 70 CRI (2700K, 3000K, 4000K & 5700K), 90 CRI (5000K)

CCT: 2700K, 3000K, 4000K, 5000K, 5700K

Limited Warranty*: 10 years for luminaire/10 years for ColorSeal DeltaGuard® finish/up to 5 years for Synapse® accessories/1 year for accessories

Limited Warranty Emergency Back Up (EB) Battery: 1 year for Battery Back Up. Test regularly in accordance with local code

*See http://creelighting.com/warranty for warranty terms. For Synapse accessories, consult Synapse spec sheets for details on warranty terms.



Luminaire	Weight
Standard	9.0 lbs. (4.1kg)
Emergency	10.0 lbs. (4.5kg)

Accessories

Field-Installed

Bronze Plate
WM-PLT12** - 12" (305mm) Square
WM-PLT14** - 14" (356mm) Square
- Covers holes left by incumbent wall packs

Synapse® SimpleSNAP 10V Interface
DIM10-220F
- 120-277V
- Requires either Synapse Central Base Station or On-Site Controller
- Refer to DIM10-220F spec sheet for details

Synapse SimpleSNAP Central Base Station
SNAP-CBS-002
- Includes On-Site Controller (OSxSI-002) and 5-button switch
- Indoor and Outdoor rated
- Refer to CBSSNAP-xSI-002 spec sheet for details

Synapse SimpleSNAP On-Site Controller
OSxSI-002
- Verizon® LTE enabled
- Designed for indoor applications
- Refer to OSxSI-002 spec sheet for details

Synapse Building Management System (BMS) Gateway
BMS-GW-002
- Includes BACnet integration
- Refer to BMS-GW-002 spec sheet for details

Synapse Wireless Sensor
WOA-SPM
- Motion and light sensor
- Mounts to luminaire
- Refer to WOA-SPM spec sheet for details

Ordering Information

Example: OSQW-C-3L-27K7-3M-UL-WM-BK

OSQW	C							
Family	**Series**	**Lumen Package***	**CCT/CRI**	**Optic**	**Voltage**	**Mounting**	**Finish**	**Controls****	**Options**
OSQW	**C**	**3L** 2,500 Lumens - Not available with 480V voltage **4L** 4,000 Lumens **6L** 6,000 Lumens **8L** 8,600 Lumens	**27K7** 2700K, 70 CRI **30K** 3000K, 70 CRI **40K7** 4000K, 70 CRI **50K9** 5000K, 90 CRI **57K7** 5700K, 70 CRI	**2W** Type 2 Mid **3W** Type 3 Mid **5W** Type 5 Mid **UW** Type 5 Wide	**UL** Universal 120-277V **HV** Universal 347-480V - Not available with 3L, 4L, 6L, 8L lumen package, EMR, or ML controls, or EB option **UE** Universal 347-480V - Available only with 3L, 4L, 6L, 8L lumen package, EMR, or ML controls, or EB option	**WM** Wall	**BK** Black **BZ** Bronze **SV** Silver **WH** White	**BML Bluetooth® Technology Enabled Multi-Level Sensor** - Utilizes a multifunction sensor - Refer to BML spec sheet for details - Refer to BML-DIM-002 spec sheet for details **EB Emergency Battery Back-Up** - Provides 90 minutes and 7W of power in emergency mode - Not available with BML, ML or P controls

* Lumen Package codes identify approximate light output only. Actual lumen output levels vary depending on CCT selection. Refer to Initial Delivered Lumen tables for specific lumen values.
** Luminaire comes standard with 0-10V dimming. Controls by others.

Electrical Data*

Lumen Package	System Watts 120-480V	System Watts 120V	208V	240V	277V	347V	480V*	EB System Watts 120-277V	Total Current (A) 120V	208V	240V	277V
2L	16	0.13	0.08	0.07	0.06	N/A	N/A	19	0.16	0.09	0.08	0.07
4L	29	0.22	0.13	0.11	0.10	0.08	0.06	30	0.26	0.14	0.12	0.11
6L	40	0.34	0.19	0.17	0.14	0.12	0.08	43	0.36	0.21	0.18	0.16
8L	55	0.47	0.27	0.23	0.20	0.16	0.12	58	0.49	0.28	0.24	0.21

* Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-277V or 347-480V +/- 10%.
** 2L lumen package is only available with 120-277V.

OSQW Series Ambient Adjusted Lumen Maintenance Factors*

Ambient	Initial LMF	25K for Reported* LMF	50K for Reported* LMF	75K for Reported* LMF	100K for Reported* LMF
5˚C	1.02	0.99	0.93	0.88	0.83
10˚C	1.02	0.98	0.93	0.87	0.82
15˚C	1.01	0.98	0.92	0.87	0.82
20˚C	1.01	0.97	0.92	0.86	0.81
25˚C	1.00	0.97	0.91	0.86	0.81
30˚C	0.99	0.96	0.90	0.85	0.80
35˚C	0.99	0.95	0.90	0.85	0.80
40˚C	0.98	0.95	0.89	0.84	0.79
45˚C	0.98	0.94	0.89	0.84	0.79
50˚C	0.97	0.94	0.88	0.83	0.78

* Lumen maintenance values at 25˚C (77˚F) are calculated per IES TM-21 based on IES LM-80 report data for the LED package and in-situ luminaire testing. Luminaire ambient temperature factors (LAMF) have been applied to all lumen maintenance factors. Please refer to the Temperature Zone Reference Document for ambient average nighttime ambient temperature.

** In accordance with IES TM-21, Reported values represent interpolated values based on time durations that are up to the tested duration in the IES LM-80 report for the LED.

Delivered Emergency Lumens

Lumen Package	CCT/CRI 2700K/3000K, 70 CRI	4000K, 70 CRI	5000K, 90 CRI	5700K, 70 CRI
2L	1,070	1,120	810	1,120
4L	1,000	1,060	760	1,060
6L	1,020	1,060	780	1,060
8L	1,110	1,160	800	1,160

Product Specifications

CREE LIGHTING NANOCOMFORT™ TECHNOLOGY

Cree Lighting's NanoComfort™ Technology ends the trade-offs in outdoor lighting by providing superior glare reduction and visual comfort in high-efficiency illumination delivered precisely where it is needed. The basic building block of NanoComfort™Technology is a compact 4x4 array of LEDs. Each of the 16 LEDs in a module is in contact with its own acrylic polymer optic and is surrounded by a highly reflective, white surface. Together, the acrylic optics are cut and sculpted into facets that relieve the glare and harshness while improving visual comfort – all while retaining superb efficacy and control.

CREE TRUEWHITE® TECHNOLOGY

A revolutionary way to generate high-quality white light, Cree TrueWhite® Technology is a patented approach that delivers an exclusive combination of 90+ CRI, beautiful light characteristics and lifelong color consistency, all with the industry's highest luminous efficacy – a true no compromise solution.

CONSTRUCTION & MATERIALS

- Slim, low profile design
- Luminaire housing specifically designed for LED applications with advanced LED thermal management and driver
- Some versions are provided with full circuit board, but not fully populated with LEDs or optics to scale back lumen package
- Luminaire mounting box designed for installation over standard single gang J-Boxes and mud ring single gang J-Boxes
- Luminaire can also be direct mounted to a wall and surface wired
- Includes (4) 3/16" mounting holes for customer supplied hardware. Select hardware appropriate for mounting surface
- Conduit entry from top, bottom, sides, and rear
- Exclusive ColorSeal DeltaGuard® finish features an E-coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Silver, black, white and bronze are available
- **Weight:** Standard - 9.0 lbs. (4.1kg), Emergency - 10.0 lbs. (4.5kg)

ELECTRICAL SYSTEM

- **Input Voltage:** 120-277V or 347-480V, 50/60Hz
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral 10kV/5kA surge suppression protection standard; 20kV/10kA surge suppression protection optional
- When code dictates fusing, a slow blow fuse or type C/D breaker should be used to address inrush current
- Designed with 0-10V dimming capabilities. Dims to 10%. Controls by others
- 0-10V ANSI C137.1-2019 (8-Volt)
- **Maximum 10V Source Current:** 1 mA
- Refer to Dimming spec sheet for details
- **Operating Temperature Range:** -40˚C - +50˚C (-40˚F - +122˚F). Minimum operating temperature with EB option: -20˚C (-4˚F)

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations
- Designed for downlight applications only
- UL924 (EB Option) Maximum mounting height: 20 (6.1m)
- Enclosure rated IP66 per IEC 60598
- ANSI C136.2 10kV/5kA (standard) and 20kV/10kA (optional) surge protection, tested in accordance with IEEE/ANSI C62.41.2
- Meets FCC Part 15, Subpart B, Class A limits for conducted and radiated emissions
- Certified to ANSI C136.31-2001, 3G bridge and overpass vibration standards
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- Lens meets IK09 requirements per IEC 60068-2
- Assembled in the USA by Cree Lighting from US and imported parts
- Meets Buy American requirements within ARRA
- RoHS compliant. Consult factory for additional details
- Dark Sky Approved when ordered with 2700°or 3000°CCTs. (Pending) Please refer to https://darksky.org/what-we-do/darksky-approved/products-companies/#!/search/keyword=cree for most current information
- ⚠ **CA RESIDENTS WARNING:** Cancer and Reproductive Harm - www.p65warnings.ca.gov

Electrical Data*

Lumen Package	System Watts 120-480V**	System Watts 120V	208V	240V	277V	347V***	480V***	EB System Watts 120-277V	Total Current (A) 120V	208V	240V	277V
2L	16	0.13	0.08	0.07	0.06	N/A	N/A	19	0.16	0.09	0.08	0.07
4L	29	0.22	0.13	0.11	0.10	0.08	0.06	30	0.26	0.14	0.12	0.11
6L	40	0.34	0.19	0.17	0.14	0.12	0.08	43	0.36	0.21	0.18	0.16
8L	55	0.47	0.27	0.23	0.20	0.16	0.12	58	0.49	0.28	0.24	0.21

* Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-277V or 347-480V +/- 10%.
** 2L lumen package is only available with 120-277V.
*** 2L lumen package is only available with 120-277V.

OSQW Series Ambient Adjusted Lumen Maintenance Factors*

Ambient	Initial LMF	25K for Reported* LMF	50K for Reported* LMF	75K for Reported* LMF	100K for Reported* LMF
5˚C	1.02	0.99	0.93	0.88	0.83
10˚C	1.02	0.98	0.93	0.87	0.82
15˚C	1.01	0.98	0.92	0.87	0.82
20˚C	1.01	0.97	0.92	0.86	0.81
25˚C	1.00	0.97	0.91	0.86	0.81
30˚C	0.99	0.96	0.90	0.85	0.80
35˚C	0.99	0.95	0.90	0.85	0.80
40˚C	0.98	0.95	0.89	0.84	0.79
45˚C	0.98	0.94	0.89	0.84	0.79
50˚C	0.97	0.94	0.88	0.83	0.78

* Lumen maintenance values at 25˚C (77˚F) are calculated per IES TM-21 based on IES LM-80 report data for the LED package and in-situ luminaire testing. Luminaire ambient temperature factors (LAMF) have been applied to all lumen maintenance factors. Please refer to the Temperature Zone Reference Document for ambient average nighttime ambient temperature.

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Delivered Emergency Lumens

Lumen Package	CCT/CRI 2700K/3000K, 70 CRI	4000K, 70 CRI	5000K, 90 CRI	5700K, 70 CRI
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4L	1,000	1,060	760	1,060
6L	1,020	1,060	780	1,060
8L	1,110	1,160	800	1,160

REDLEONARD ASSOCIATES
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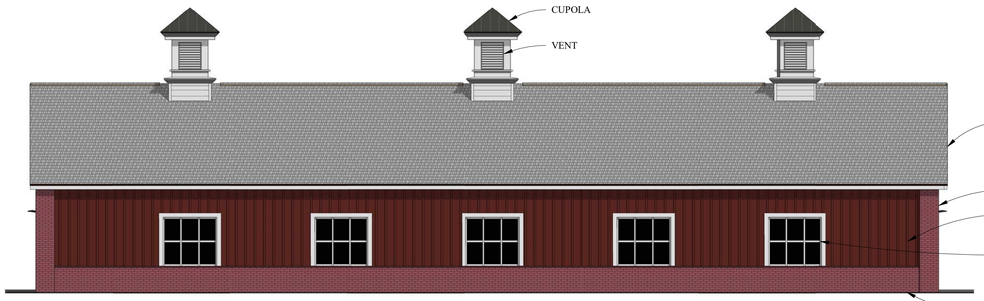
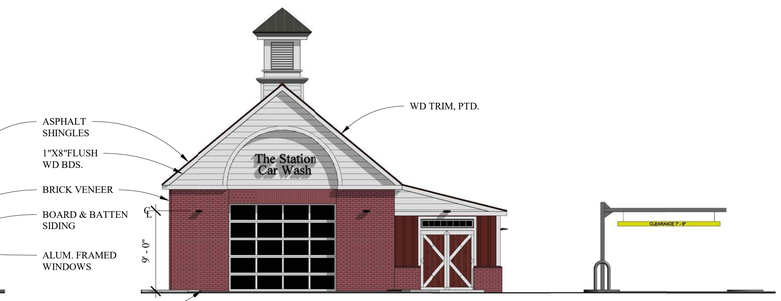
PROJECT NAME:
CAR WASH
SUMMIT DISTRIBUTING
WHITE RIVER JCT. VT.
DRAWING NUMBER:
RL-9431-S1



1 West Elevation
1/8" = 1'-0"



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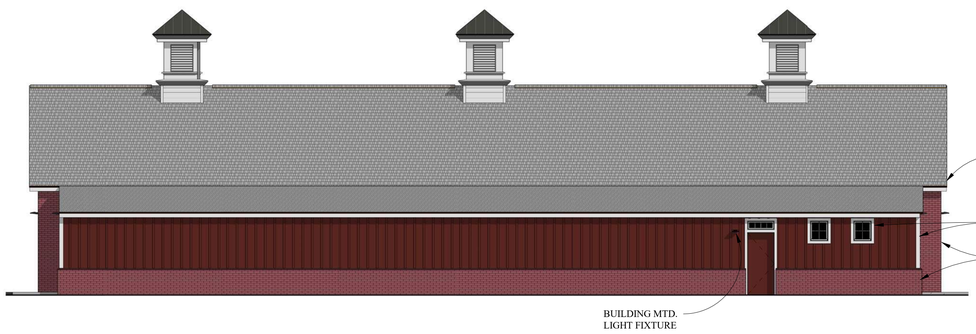
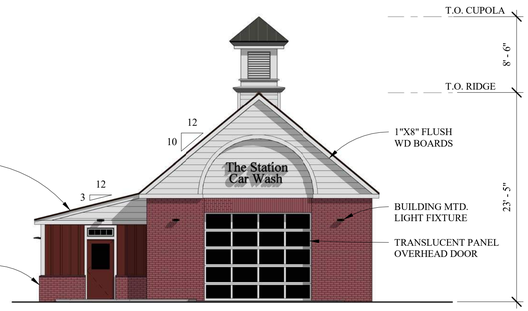
1/8" = 1'-0"



3 East Elevation
1/8" = 1'-0"



4 North Elevation
1/8" = 1'-0"

Summit Distributing, LLC
Summit - WRJ Carwash

18 Sykes Mountain Avenue, VT

Mudge Greeley Architects, PLLC

MGA

85 DCH
Route 10
Lyme, New Hampshire

Exterior Elevations

2320	1/8" = 1'-0"
Job No	Scale
2 FEB 2024	
Date	Revised

E1

June 11, 2024

NEX-2019181.00

Jo-Ann Ells, Hartford Zoning Administrator
Hartford Town Hall
171 Bridge Street
White River Junction, VT 05001

SUBJECT: Response to Comment
Proposed Car Wash
Lot 44-0041-00

Dear Jo-Ann:

Greenman Pedersen, Inc. (GPI) has prepared this Response to Comments (RTC) letter to respond to your comments provided in the "to do" list provided in your email dated April 17, 2024 regarding the car wash for Lot 44-41 along Sykes Mountain Avenue in White River Junction. We have reviewed the comments and this letter has been prepared to summarize our responses. The review comments have been provided below followed by our responses to each, **in bold text**.

Third Party Review

1. *The Applicant needs to submit an updated noise study that includes the site changes discussed with the Zoning Board/Planning Commission and information on how the project complies with §260-31 A of the Zoning Regulations.*

   Once the amended study is received, the Town will obtain proposals for the review.

   An estimate of the cost of the review will be submitted to the Applicant.

   The Applicant will need to confirm their understanding that they are responsible to cover the cost of the review.

   Response: A revised noise study was submitted to the Town on April 24th. Peer review comments were received on May 20th and the noise study has been revised per the comments and included with this submittal.

Plan Amendments

Per the Zoning Board & Planning Commission Hearings in April, the site plan set need to be amended as follows:

- *Move rear vacuum structure closer to the dumpster*
  Response: The vacuum has been relocated as requested.
- *Move fence in the rear of the lot to allow additional landscaping behind the fence (Zoning Board requested that the Applicant speaks to the neighbors)*
  Response: The fence has been moved closer to the rear vacuum area. Space between the fence and pavement has been provided to allow for snow storage. This area will be graded so that snow melt flows toward the paved area and into the closed drainage system provided on the site. The landscaping has been proposed on the abutters' side of the fence to enhance the vegetated buffer.
- *Clarify height and location of all fencing*
  Response: The fence location is provided on sheet 5. The fence shall be 8ft high as labeled on the Site Plan.
- *Confirm fencing will block headlights*
  Response: Vehicular headlights must be between 2 ft to 4 ½ ft off the ground. The highest elevation of the pavement is 546 and the ground at the bottom of the fence adjacent to the

pavement is 546; therefore, the top of the fence will be at elevation 554. Headlight height ranges would be between 548 and 550.5.

- *Provide fencing/landscaping between Brown and Rexall*
  Response: Additional landscaping has been provided adjacent to the southwest corner of Lot 44-42.
- *Amend the design of the snow storage areas in the rear of the lot to function as rain gardens*
  Response: The snow storage area to the north of the vacuum area has been depressed to collect snow storage melt. In addition the area between the fence and the pavement has been graded to flow toward the onsite closed drainage system.
- *Remove the snow storage areas abutting the commercial lot to the east*
  Response: the snow storage area adjacent to lot 44-55 has been removed.
- *Change "granite" curbing to "concrete" curbing*
  Response: "Granite curbing stated in the narrative has been changed to "concrete" curbing to be consistent with the plans.
- *Provide vacuum hours signage*
  Response: A sign has been provided to state "rear vacuums shut off after 8pm."
- *Add 3 Fraser firs to the south of the proposed plantings, and some narrower species south of that*
  Response: Three Fraser Firs have been added and Emerald Sentinel Eastern Cedar have been added to the south of the Firs.
- *Look at spacing of maple trees. Add additional landscaping near maples*
  Response: Shrubs have been added around the base of the maple trees.
- *Add signage to prevent vehicles from exiting through the gas station lot from the rear of the project lot.*
  Response: A left turn only sign has been added to the rear access.

Misc. Items

Per the Zoning Board & Planning Commission Hearings in April the Applicant needs to address the following:

- *Confirm the rear/all vacuums will be turned off at 8PM*
  Response: Our client has agreed to turn off the rear vacuums after 8pm.
- *Consider opening the car wash at 8AM*
  Response: In order to be competitive with the adjacent 24 hour car wash which also abuts a residential neighborhood, the applicant would like to keep to the hours promised at the hearing of 7am to 8pm for the car wash.
- *Provide additional information regarding on-site traffic congestion. Consider having an employee direct traffic on busy days. Provide information about the ability of vehicles to exit the wash lane, and the ability of vehicles to exit vacuum stations in the front of the lot. Respond to concerns regarding general congestion in the front of the lot. Provide information about the merging of lanes/vehicles before the wash tunnel. Provide information about vehicles merging back into the wash lane after using the rear vacuums.*
  Response: Regarding employee assistance to direct traffic on busy days, the Applicant has previously indicated that two to three employees will be on site at any given time. Should the need arise, it is anticipated that available on-site staff will be able to facilitate with overall operational assistance. Regarding the ability of vehicles to exit the wash lane (post wash), per the site plan, motorists will utilize the proposed full-access driveway at the southerly end of the site, whereupon access to the public roadway system (Sykes Mountain Avenue or North Main Street) will occur at one of the driveways on the abutting property (Map 44/Lot 38) through existing and/or proposed cross-access easements. However, if the comment is referring to the possibility of a customer deciding to leave the wash queue after already being in line, that would occur after passing through the pay station, where there would be sufficient room to bypass. Regarding the ability of vehicles to exit vacuum stations in the front of the lot, the site plan indicates that there is sufficient room to complete a turning maneuver from those spots and exit the site with the proposed 24-foot wide drive aisle that is wide enough to accommodate two-way traffic. Regarding "concerns regarding general congestion in front of the lot," the comment is

not entirely understood; however, our general experience has demonstrated that this layout is fairly typical for the size and type of use that is proposed. In addition, there are no sight line restrictions between the front parking spaces, the exit from the car wash, or the full access/egress driveway. Regarding merging of lanes/vehicles before the wash tunnel, this layout and operational component (two or more payment stations merging into a single-file line for service) is typical for the proposed use, and is intended to lessen the overall queue length, as it's spread out over multiple pay stations. Regarding the ability of vehicles to merge back into the wash lane after using the rear vacuums, there is sufficient width to bypass vehicles in queue for the wash tunnel, and egress to the abutting property (Map 44/Lot 38) utilizing the northerly exit-only driveway. Should a customer decide to wash (or re-wash) their vehicle after utilizing the rear vacuum stations, there are no prohibitions restricting re-entry to the site via the full-access southerly driveway.

- *Provide a calculation of the percentage of the wooded area that is proposed to be removed.*
  Response: The Industrial Commercial District requires a minimum of 15% open space. The applicant is proposing to more than double the required open space with the site redevelopment. Approximately 50% of the existing treed area will remain as is with the revised plan.
- *Change "granite" curbing to "concrete" curbing*
  Response: The plan correctly proposes vertical concrete curbing. The response to comment letter dated February 15, 2024 incorrectly stated vertical granite curbing in the response for comment #20.
- *Provide information regarding employee parking (in lease as well)*
  Response: Note number 22 under the General Notes on sheet 2 has been added to state "Car wash will have 2 to 3 employees per shift."
- *Confirm trash removal will be restricted to "daylight hours" (specify hours)*
  Response: Summit Distributing agreed to have trash removal restricted to daylight hours at the previous hearing.
- *Describe emergency vehicle access to the rear of the lot with and without vehicles in the wash lane*
  Response: The site has been designed to allow for a fire apparatus around the building. In the case of an emergency, emergency vehicles can access the site through the outer pay station lane, through the proposed bypass lane, or park within the loading zone on the adjacent property.
- *Provide 800 # for people to call with concerns*
  Response: 800-743-7606
- *Clarify if the dumpster enclosure will be locked*
  Response: The dumpsters are not proposed to be locked.

If you have any questions or need additional information, please feel free to contact myself by phone at 603-374-7906 or by email to nduquette@gpinet.com. We look forward to your response.

Sincerely,

GREENMAN-PEDERSEN, INC.

Nicole Duquette

Nicole Duquette, P.E.
Project Manager

44 Stiles Road, Salem, NH 03079

enclosure(s)

MEMORANDUM

DATE: June 10, 2024

FROM: Aaron M Farbo

TO: Mr. Tom Frawley (Summit Distributing)

CC: Nicole Duquette (GPI)

SUBJECT: Response to Paxwood Acoustics Peer Review Letter (June 7, 2024)

This memo addresses Mr. Duncan's comments to my updated Environmental Sound Study (June Sound Study), specifically item 4 in the summary.

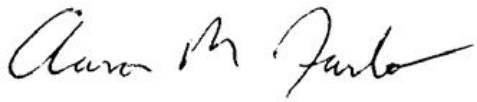
> 4. While the study briefly addresses the more qualitative aspects of Section 110-6 and Section 260-31A, we note that it does not address the potential for disturbance during the daytime at the residences along Cedar Street and Beech Street. A discussion or response on those specific portions of those sections may be merited.

The proposed car wash will only operate during daytime hours when existing background sound levels in the environment are elevated due to traffic on Interstate 91 and local roads, along with commercial activities, including an existing car wash, adjacent to residents along Cedar and Beech Streets. Nearest residences are located closest to the entrance to the car wash, which is the quieter end, farther away from the dryer blowers which are the main source of sound.

Sound from the proposed car wash may be audible at times but is not expected to cause loud, unnecessary, excessive or offensive noise or unusual sound which unreasonably disturbs the peace and quiet of any residential or other sensitive use or which causes discomfort or annoyance to any reasonable person of a normal sensitivity in the area, as defined in Section 110-6. In addition, sound produced by the car wash is not expected to create levels or frequencies which are not customary in the neighborhood or represent a repeated disturbance to others as defined in Section 260-31A.

Based on the proposed noise mitigation measures for the car wash (dryer blower silencers and sound barrier wall), it is my opinion that sound from the car wash during daytime hours at residences along Cedar and Beech Streets will blend into the existing environment and will not cause a noise disturbance as described in Sections 110-6 and 260-31A.

Sincerely,
CAVANAUGH TOCCI



Aaron M. Farbo, *Principal Consultant*
afarbo@cavtocci.com

24063/CTA Peer Review Letter Response Memo 2024-06-10.docx

Paxwood Acoustics

Eddie.Duncan@PaxwoodAcoustics.com

June 7, 2024

Jo-Ann Ells
Department of Planning & Development
Town of Hartford, Vermont
171 Bridge Street
White River Junction, VT 05001
Via email only: jells@hartford-vt.org

Dear Jo-Ann:

At the Town's request, we have reviewed the updated Environmental Sound Study[1] ("June Sound Study") for the White River Junction Car Wash ("Project") proposed by Summit Distributing. We also previously reviewed the original Environmental Sound Study[2] ("April Sound Study"). We provided the findings of our first review to you in a letter on May 20, 2024.

This letter provides the findings our review based on the June Sound Study. The focus of this review is on the updates that were made to the assessment. As discussed in the first review (and continues to be the case for this current review), the study contains the appropriate sections, the authors are qualified to conduct the work, the modeling standard that was used is appropriate, and the sound power levels used in the model are within a reasonable range of what we would expect given the type of sound sources. For more information on these items, a brief project description, and Paxwood Acoustics' qualifications, please refer to our review of the April Sound Study.

Overall, we find that the June Sound Study addresses most of the feedback we provided in our first review including, additional details on the model settings and equipment sound emissions and a brief discussion on Section 110-6 of the Town Code. While the

[1] CavanaughTocci, White River Junction Car Wash Environmental Sound Study, 3 June 2024.
[2] CavanaughTocci, White River Junction Car Wash Environmental Sound Study, 24 April 2024.

PO Box 446, Quechee, Vermont 05059
Phone: 802-299-6966

June Sound Study does not specifically mention the qualitative aspects of Section 260-31A (i.e. customary sounds and repeated disturbances) in its discussion of Section 110-6, the content of the discussion for Section 110-6 are also applicable to some extent to Section 260-31A.

Modeling & Measurement Updates

The primary model updates made to the June Sound Study are that it:

- Utilizes data that was collected by the study author,
- Provides both unmitigated and mitigated model results, and
- Added sound emissions from four vacuum handsets in addition to the 2 central vac turbines that were already included in the analysis.

Use of Measured Data from a Similar Facility

CavanaughTocci collected sound level data at a facility that "contains the same high pressure wash system and dryer blower type as the proposed car wash." The data that was measured at a similar facility was used to calculate sound power levels that are used as sound emission inputs into the model. Use of data measured by the study's author is an improvement over the April Sound Study.

It is noted that the similar facility where measurements were conducted has 12 dryer blowers while the proposed facility only has 8, so the study applied a "slight reduction" to the sound power levels from the blowers. The study does not specify what the slight reduction was but given the difference in the number of blowers, we would expect it to be not greater than -2 dBA. Given the authors experience and their description of the sound power computations, the sound emission data used in the model should be considered appropriate and reasonable.

Specification of Model Settings

The June Sound Study provided a more detailed description of the model settings in Appendix B.[3] These settings include one order of reflection from buildings, receptor height specified at 5 feet above grade, use of a ground factor of 0 on paved areas and 0.5 in non-paved areas, and topography from USGS. All of these model settings are appropriate for the site.

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[3] Appendix B also includes a manufacturer noise test report from AutoVac Industrial. It is our understanding from reading the June Noise Assessment and briefly confirming with the study author that this data was not used in the June Noise Assessment. Instead the June noise assessment used data that was measured by the study author. The AutoVac data remained in the Appendix from the April Noise Assessment even though it was not used in the June Noise Assessment.

Appendix B also specified that the property lines were imported from the Vermont Center for Geographic Information. This should be considered an appropriate source of property line locations, given the distances between the sources and property lines. For example, a property line location through the VCGI data would need to be incorrect by more than 4 feet in order for it to make a difference of approximately 1 dBA in the model calculations.

Unmitigated Model Results

Based on the updated model, the June Sound Study found four residential property line receptors and to residences over the daytime hourly L_{eq} limit of 50 dBA (Section 110-5) and two non-residential property line receptors over the daytime maximum limit of 70 dBA (Section 110-5). The receptors that were over the daytime limits were the two adjacent residences on Cedar Street (21 and 39 Cedar Street), and the property line between those residences and the proposed development.

All receptors were below the nighttime limits given that nighttime operations only involve the operation of the vacuum system at the front of the property adjacent to Sykes Mountain Avenue.

Mitigated Model Results

Mitigated model results are also provided accounting for two mitigation measures (discussed in the next section). With the proposed mitigation in place, all receptors are below sound level limits set in Section 110-5 of the Town Code.

Mitigation

The June Sound Study includes two mitigation measures:

1. Prototype silencers on the intake-side of the dryer blowers in the car wash, and
2. A wooden sound barrier that is 8-feet high.

Blower Silencers

The assessment applies a 3 dBA reduction to the car wash exit and a 1 dBA reduction to the car was entrance based on the attenuation provided by prototype silencers that would be installed on the intake-side of dryer blowers in the car wash. This reduction is based on data collected by WSP Engineering which is attached to the June Sound Study in Appendix C. While the silencers are prototypes, custom silencers for air-moving equipment is not uncommon, and a 1 to 3 dBA reduction from blower silencers can reasonably be expected based on silencer technology assuming they are properly designed. That said, the Town may want to consider a mechanism to ensure that the silencers are installed at the proposed facility and perform as specified in the June Sound Study to maintain the reliability of the model results.

Noise Barrier

The June Sound Study includes an 8-foot high wooden noise barrier and specifies Plywall which is a commercial noise barrier manufacturer. The barrier is an appropriate height, and the materials and construction of Plywall provides good sound reduction.

The barrier in the noise model is located on the backside of the Project site near the rear vacuum systems. It runs along the northern edge of the proposed paved area, parallel to Beech Street, and then runs south along the edge of the paved area before crossing over to the property line between the Project site and 39 Cedar Street. From there it turns eastward and goes off the applicant's parcel and runs along the property line between 39 Cedar Street and the property to the south where Rexel is currently located.

While the barrier, would likely be effective at reducing sound levels, the Town should note that the eastern leg of the barrier is not located on the applicant's property.

Overall, the two proposed mitigation measures should reduce sound levels and are appropriate, but the Town may want to consider:

- Any potential implications of a portion of the noise barrier being off the applicant's property, and
- A mechanism to ensure that the proposed silencers are installed and perform as specified in the June Sound Study.

Addressing Section 110-6 and Section 260-31A

The June Sound Study briefly discusses Section 110-6 of the Town Code in the study's conclusions. It identifies the existing car wash at 130 Sykes Mountain Avenue that may run 24 hours per day and the commercial surrounding commercial properties and states that the proposed use isn't expected to cause a noise disturbance in those areas. The study does not offer a conclusion or discussion about potential daytime noise disturbance at the residential properties on Cedar Street or Beech Street. It does however say that sound from the front vacuum system is not expected to be audible at any residential receptor at night. Without additional information on nighttime background sound levels in the area, we don't necessarily agree that the vacuums would not be audible outside a residential receptor at night, nonetheless we do note that the projected nighttime sound levels are relatively low (21 to 31 dBA) and acceptable for a residential area, based on general community noise guidelines.

As we discussed in the review of the April Sound Study, Section 260-31A, in addition to setting a 70 dBA property line limit, prohibits sound levels and frequencies that are "not customary in the district or neighborhood or which represent a repeated disturbance to others." The June Sound Study does not directly address this portion of the Town Code,

but it did identify that there is an existing car wash in the area that may run 24 hours a day.

Given these two Sections of the Town Code, a discussion or response on the potential for disturbance during the daytime at the residences along Cedar Street and Beech Street may be merited.

Summary

The key takeaways from this review are as follows:

1. The sound emission data used in the June Sound Study is improved having been collected by the study author at a similar facility.
2. The model methodology, settings, and inputs are appropriate and reasonable.
3. The study incorporates two mitigation measures to reduce projected sound levels below the limits in Section 110-5 of the Town Code. As discussed on the previous page, the Town may want to consider any potential implications of a portion of the proposed noise barrier being off the applicant's property, and a mechanism to ensure that the proposed blower silencers are installed and perform as specified in the sound study.
4. While the study briefly addresses the more qualitative aspects of Section 110-6 and Section 260-31A, we note that it does not address the potential for disturbance during the daytime at the residences along Cedar Street and Beech Street. A discussion or response on those specific portions of those sections may be merited.

Sincerely,

Edward Duncan, INCE Bd. Cert.
Principal Consultant & Founder

MEMORANDUM

DATE: June 4, 2024

FROM: Aaron M Farbo

TO: Mr. Tom Frawley (Summit Distributing)

CC: Nicole Duquette (GPI)

SUBJECT: Response to Paxwood Acoustics Peer Review Letter (May 20, 2024)

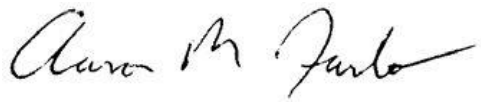
This memo is an accompanying response to my revised sound study report dated June 3, 2024 (White River Junction Car Wash Sound Study Report 2024-06-03) to address the peer review comments from Paxwood Acoustics Letter dated May 20, 2024, which is attached to this memo. I will address each comment section as it appears in the peer review letter.

- **Modeling**
  - Reflections – One order of reflection is included in modeling. Adjacent buildings were included and set as reflective.
  - Ground Absorption –Ground absorption for the entire model is set at G=0.5 (partially absorptive), except for paved areas (parking lots, roads) of the proposed car wash site and surrounding lots which were modeled as G=0 (reflective).
  - Fence – The wooden stockade fence has been upgraded to a Plywall sound barrier wall system (STC 31) and modeled as a sound barrier. www.plywall.com
  - Receptors – Additional receptors were added along the residential property line. All receptor locations represent the worst-case (highest) sound levels emitted from the project.
  - All settings and parameters used in modeling are listed in Appendix B of the revised report.
- **Measurements**
  - Measurements of an existing car wash in Wilbraham, MA were conducted on May 23, 2024 using a calibrated, Class 1 sound level meter. The measured car wash contains the same high pressure wash system and dryer blower type as the proposed car wash. Sound was measured for the following sources:
    - Car wash entrance
    - Car Wash Exit
      - Measurements were conducted with a car moving through the airstream of the dryer blowers, representing the worst-case (maximum) sound level at the exit.
    - Vacuum Blower
    - Vacuum Handset

  - Sound power levels for each source were calculated based on the sound pressure level measurements and assumption of spherical spreading at distances over which we measured the sound levels in the field. See Table 2 in my June 3, 2024 report for unmitigated source sound power levels used in modeling.
  - The Wilbraham car wash contains 12 PECO dryer blowers whereas the proposed car wash contains 8 blowers. A slight reduction was applied to the sound power levels at the car wash entrance and exit presented in Table 2 to account for the lower number of blowers.

- **Prototype Silencers**
  - The prototype dryer blower silencers measured by WSP Engineering were included in the analysis for the mitigated case in my revised report.
    - Based on the WSP measurement report, a 3 dBA reduction was applied to the car wash exits and a 1 dBA reduction was applied to the car wash entrance.
- **Geospatial Data**
  - Topography in modeling was obtained from USGS (United States Geological Survey).
  - Existing buildings and parcel boundaries included in modeling were obtained from the Vermont Center for Geographic Information (VCGI).
- **Relevant Noise Standards**
  - In addition to addressing the specific noise limits in the Hartford Town Code (Chapter 110 and 260), I address the Noise Disturbance criteria listed in Section 110-6 in the conclusion of my revised report.

Sincerely,
CAVANAUGH TOCCI



Aaron M. Farbo, *Principal Consultant*
afarbo@cavtocci.com

24063/CTA Peer Review Letter Response Memo 2024-06-04.docx

Paxwood Acoustics

Eddie.Duncan@PaxwoodAcoustics.com

May 20, 2024

Jo-Ann Ells
Department of Planning & Development
Town of Hartford, Vermont
171 Bridge Street
White River Junction, VT 05001
Via email only: jells@hartford-vt.org

Dear Jo-Ann:

At the Town's request, we have reviewed the Environmental Sound Study ("Sound Study") for the White River Junction Car Wash ("Project") proposed by Summit Distributing. This letter provides the findings our review including a brief description of the Project and documents reviewed, Paxwood Acoustics qualifications to conduct the review, and discussion related to the:

- Qualifications of the authors of the Sound Study,
- Appropriateness of methods and standards used in the Sound Study,
- Reasonableness of the data used in the Sound Study, and
- Addressing of the relevant regulations.

As discussed in this review, we find that the Sound Study:

- Contains the appropriate sections,
- The authors are qualified to conduct the work contained in the Sound Study,
- The modeling standard that was used is appropriate, and
- The sound power levels used in the model are within a reasonable range of what we would expect given the type of sound sources.

However, we are unable to confirm the overall appropriateness of the modeling methodology and the reasonableness of some of the data used and generated due to insufficient details within the Sound Study. In addition, given the proximity of residences

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Phone: 802-299-6966

to the north and northeast along Cedar Street and Beech Street, a discussion of the Project in the context of Section 110-6 and Section 260-31A (i.e. customary sounds and repeated disturbances) of the Town Code may be merited.

Project Description & Reviewed Documents

The Project is a car wash facility proposed on Sykes Mountain Avenue on Map 44 Lot 41. It involves the construction of a building that will house the car wash and associated equipment and the installation of two vacuum systems with one system located at the front of the property near Sykes Avenue and one system located at the rear of the property in a lot behind the proposed car wash building. The existing conditions of the site are a parking lot on the front half of the parcel and an undeveloped yard on the back half of the parcel.

For this review, the primary document we reviewed was the Sound Study[1] by CavanaughTocci. We also reviewed the Site Development Plans[2] for additional context.

Sound Study Review

Qualifications of the Study Firm

CavanaughTocci is a well-known and respected firm in the field of acoustics. They are involved in the relevant professional organizations in our field: the Institute of Noise Control Engineering (INCE), the Acoustical Society of America (ASA), and the National Council of Acoustical Consultants (NCAC). The primary author of the Sound Study, Aaron Farbo, is a Principal Consultant at CavanaughTocci. Mr. Farbo is a full member of both INCE and ASA. While Mr. Farbo himself is not Board Certified through INCE, other staff at his firm are.

CavanaughTocci and Mr. Farbo are qualified to conduct the work contained in the Sound Study.

Appropriateness of Methods & Standards

The relevant standards that come into play in the Sound Study are modeling or calculation standards and measurement standards.

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[1] CavanaughTocci, White River Junction Car Wash Environmental Sound Study, 24 April 2024.
[2] GPI, Site Development Plans Proposed Car Wash, 2 February 2024 with revisions as recent as 17 April 2024

Modeling

The Sound Study utilizes appropriate modeling software (CadnaA) and supporting calculation standards (ISO 9613-2). However, it is not clear from the Sound Study whether appropriate settings were used in the model, so we are unable to verify the accuracy and reasonableness of the calculations. Some key factors that would affect the calculations include ground factor, buildings, and reflections.

Given the built-up environment in the surrounding area, we would recommend that buildings on the proposed property and adjacent properties be included in the model with 1 or 2 orders of reflection. In addition, given that the site is and will be paved, a ground factor of 0, which represents hard ground, would be most appropriate for the Project site, roadways, and neighboring paved parcels. These settings may have been used in the Sound Study, but it is not stated in the report, so we cannot confirm the accuracy or reasonableness of the projected sound levels presented in Table 2 and Figures 1 through 3.

The Sound Study mentions that the analysis includes an 8-foot-high stockade fence along the northern and eastern sides of the site, and it shows the location of the fence in the model result maps (Figures 1 through 3). However, the report does not state how the stockade fence was taken into account in the analysis. Depending on how it was accounted for in the model, it may or may not be appropriate for the calculations. For example, ISO 9613-2 and CadnaA allow one to model a noise barrier, but a typical stockade fence does not fit within the definition of a noise barrier which would allow it to be modeled in that fashion. A noise barrier should not have any appreciable air gaps and should have a surface weight at least 4 pounds per square foot. Stockade fences typically do not fit either of these specifications given that there can be air gaps between the boards and at the base of the fence, and that it weighs less than 4 pounds per square foot. For example, a 6-foot by 8-foot section of spruce/pine/fir stockade fence from Home Depot has a surface weight of ~1.9 lbs/sq. ft.[3] We did not see specifications for the proposed stockade fence in the Site Development Plans.

The model results are provided at discrete receptors along the property line and at nearby residential receptors. While the report states that the property line receptors are located at the closest locations, it would be good if the Sound Study either provided sound levels all along the property line through the use of sound level iso-lines or indicate that the discrete receptors represent the worst-case property line sound levels.

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[3] https://www.homedepot.com/p/Outdoor-Essentials-6-ft-H-x-8-ft-W-Spruce-Pine-Fir-Stockade-Fence-Panel-8847/100087022

Measurements

It did not appear as though any measurements were conducted specifically for the Sound Study, but it did rely upon measurements conducted by others to develop input into the model.

For the AutoVAC equipment, the manufacturer data is provided in a certification report in Appendix B. The certification report indicates that the measurements by the manufacturer were conducted with an Extech 407730 sound level meter. This is a Class 2 sound level meter with an accuracy of +/- 2 dB. We also note that the certification report is not signed nor does it indicate if the sound level meter was calibrated. While it would be preferable if the measurements were conducted with a more accurate Class 1 sound level meter and provided in a report that is signed and indicates that the meter was calibrated, this may represent the best available information from the manufacturer on their system.

The second page in Appendix B provides measured sound pressure levels of dryers in a car wash. It's not clear from the report is this is the same system that would be installed at the proposed Project or if it is being used as a representative system. This should be indicated as it affects the degree to which the data should be relied upon.

Table B-1 in Appendix B provides the actual sound power levels that were used by CavanaughTocci in the modeling, presumably based on the information provided on the prior two pages and the WSP measurement report[4] at the end of the document. Overall, the sound power levels shown in Table B-1 appear to be reasonable given our experience with car wash noise and associated sound sources, but there is a disconnect between the supporting data provided in Appendix B and Table B-1. It is unclear from the report how the sound power levels were calculated or if the calculation method was appropriate. We also note that the WSP report attached at the end of the document includes sound level data on car wash blowers with and without prototype silencers, but the report does not state which data was used in the model or if silencers (prototype or otherwise) are proposed for this car wash.

While the Sound Study uses an appropriate calculation standard (ISO 9613-2) and the overall sound power levels used in the model appear to be reasonable based on our experience, the report provides insufficient details related to model settings, how the stockade fence was accounted for, and how the manufacturer and WSP measurement data were used to generate the sound power levels for the model. Without these details,

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[4] WSP is a large engineering and professional services firm. The WSP report attached to the Sound Study does not identify the author of the report.

we are unable to fully evaluate the appropriateness of the methods and standards used in the Sound Study.

Reasonableness of the Data

As mentioned above, the total sound power levels (listed in Table B-1) which were used as input to the CadnaA model appear to be within a reasonable representative range of sound levels for the type of equipment being proposed. Based on our experience we would expect actual sound emissions from the equipment to be within a few dB of the listed values. That said, page 3 of the study clearly states that this is data from similar car wash projects, but it does not state that it is the same equipment that will be used at this proposed site.

We cannot verify the reasonableness of the projected sound levels at the property line or residential receptors because as previously stated, there is insufficient information in the report to verify that appropriate model settings were used.

Regarding geospatial data, the source of the parcel data is not stated in the report. Given that the highest property line sound level is within 1 dB of the 70 dBA property line sound level limit, using a surveyed parcel boundary layer may be merited to ensure that the limit at the actual property line is not exceeded.

Addressing Relevant Noise Standards

The Sound Study evaluates the relevant quantitative noise standards within the Hartford Town Code. Specifically, the daytime and nighttime residential (and sensitive land use) property line standards in Chapter 110, and the 70 dBA property line limit in Chapter 260.

The Sound Study also identifies some of the more qualitative aspects of the Town Code, specifically Section 110-6, titled Noise Disturbances. Other than identifying this portion of the Town Code, the Sound Study does not provide a discussion on whether the proposed sound levels and sources may be considered:

- “loud, unnecessary, excessive, or offensive”
- “unusual sound which unreasonably disturbs the peace and quiet” or
- “causes discomfort or annoyance to any reasonable person of a normal sensitivity”.

There is also additional qualitative aspects listen in Section 260-31A which states, “Noise levels or frequencies which are not customary in the district or neighborhood or which represent a repeated disturbance to others shall not be permitted.” While this Section is identified in the Sound Study, it is not discussed in the context of the Project.

Given the proximity of residences to the north and northeast along Cedar Street and Beech Street, a discussion of the qualitative factors in Section 110-6 in the context of the residential area and a discussion the qualitative language in Section 260-31A (i.e. customary sounds and repeated disturbances) may be merited.

Paxwood Acoustics Qualifications

Paxwood Acoustics is located in Quechee, Vermont and provides professional consulting services in acoustics and noise control engineering with a focus on environmental permitting and compliance. Eddie Duncan, Principal Consultant, is a Board-Certified Noise Control Engineer through the Institute of Noise Control Engineering and is a member of the Acoustical Society of America. Mr. Duncan has been practicing acoustic consulting for over 20 years. In that time, he has managed over 400 acoustics projects across the country. He has also conducted noise assessments in the Town of Hartford having used the local noise standards in the past.

Sincerely,

Edward Duncan, INCE Bd. Cert.
Principal Consultant & Founder

June 3, 2024

Mr. Tom Frawley
Summit Distributing
240 Mechanic Street
Lebanon, NH 03766

SUBJECT: White River Junction Car Wash
Environmental Sound Study

Dear Mr. Frawley,

As requested, Cavanaugh Tocci has completed a study of environmental sound produced by the proposed car wash to be located at 18 Sykes Mountain Avenue in White River Junction, VT. This report discusses applicable noise regulations and presents our sound impact assessment. Appendix A presents a glossary of acoustical terminology used in this report.

Noise Criteria

White River Junction is an unincorporated village in the town of Hartford, VT. The Town of Hartford Town Code contains noise limits that are pertinent to sound produced by this project, as listed in Chapters 110 and 260.

Hartford Town Code [1]

Chapter 110 Noise
§ 110-5 Residential and other sensitive use areas.

A. In addition to the prohibitions set forth in § 110-6 below, it shall be unlawful for any person at any location to create any sound or to allow the creation of any sound on any property owned, leased, occupied or otherwise controlled by such person which causes the exterior sound level when measured at the property line of any affected single- or multiple-family residence, school, hospital, church, rest home, cemetery, public library or other sensitive use to exceed the sound level standards as set forth in Table I below:

Table I
Sound Level Standards
(for fixed sound sources)

Sound Level Description	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
Hourly Leq, dB	50	45
Maximum Level, dB	70	65

[1] https://www.hartford-vt.org/DocumentCenter/View/9335/Town-Code-PDF

(1) In the event the measured ambient sound level exceeds the applicable sound level standard identified in Table I, the sound level standard (the standard against which violations are measured) shall be adjusted so as to equal the ambient sound level plus three dB.

(2) Each of the sound level standards specified in Table I shall be reduced by five dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be at a lower level than the ambient sound level plus three dB

(3) If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of Table I.

§ 110-6 Noise disturbances.

A. In addition to and notwithstanding any other provisions of this chapter, it is unlawful for any person to willfully make or continue to cause or allow to be made or continued any loud, unnecessary, excessive or offensive noise or unusual sound which unreasonably disturbs the peace and quiet of any residential or other sensitive use or which causes discomfort or annoyance to any reasonable person of a normal sensitivity in the area.

B. In determining whether a violation of the provisions of this section exists, the enforcement officer may consider any of the following:

(1) The volume and intensity of the sound.

(2) The vibration intensity of the sound.

(3) Whether the nature of the sound is usual or unusual.

(4) Whether the origin of the sound is natural or unnatural.

(5) The volume and intensity of the background sound, if any.

(6) The proximity of the sound to residential sleeping facilities.

(7) The nature and zoning of the area within which the sound is being produced.

(8) The density of the inhabitation of the area within which the sound is being produced.

(9) The time of day or night the sound occurs.

(10) The duration of the sound.

(11) Whether the sound is recurrent, intermittent or constant.

Chapter 260 Zoning
§ 260-31 Land use performance standards.

A. Noise volume shall be limited to 70 decibels or less at or beyond the property line. Noise levels or frequencies which are not customary in the district or neighborhood or which represent a repeated disturbance to others shall not be permitted.

The proposed car wash tunnel and rear (north) vacuum system will operate during daytime hours only (8 AM to 8 PM). The vacuum system at the front of the property (south end near Sykes Mountain Ave) will operate 24 hours a day.

Sound produced by the car wash tunnel and vacuum systems are subject to the limits in Table I of Chapter 110 of the Hartford Town Code at nearest residential properties. Sound produced by the car wash tunnel and vacuum systems are limited to daytime hourly L_{eq} of 50 dBA and a maximum level of 70 dBA at residential property lines and receptors. Sound produced by the front vacuum system (24 hours) is subject to the nighttime limit of 45 dBA (hourly L_{eq}) and maximum level of 65 dBA at residential property lines and receptors.

In addition to the residential limits in Chapter 110, Section 31 of Chapter 260 of the Hartford Town Code, Land use performance standards, limits sound to 70 decibels or less at non-residential property line locations.

Project Sound Analysis

Facility-related sound impacts that are associated with equipment at the proposed Project have been calculated using Cadna/A environmental sound modeling software (Version 2023 MR2 DataKustic GmbH). The Cadna/A sound modeling software uses algorithms and procedures described in International Standard ISO 9613-2:1996 "Acoustics- Attenuation of sound during propagation outdoors – Part 2: General method of calculation". This standard and its associated methods are universally accepted for environmental sound modeling of industrial and transit sound sources. The methods described in this standard estimate A-weighted and octave band sound levels for meteorological conditions that are favorable for the propagation of sound (downwind with a wind speed of 1-5 meters/sec). This methodology is also valid for sound propagation under well-developed moderate ground-based temperature profile inversions, which commonly occur on clear calm nights. Appendix B contains additional modeling parameters used in this analysis.

Table 1 lists the stationary car wash equipment sound sources that were included in the acoustic model.

Table 1 – Car Wash Equipment Sound Sources

Item	Quantity	Comments
PECO Dryer Blowers	8	Blowers are located just inside the car wash exit
High Pressure Wash Equipment	1	High pressure wash system includes: Sprayers, washers and underbody wash
Vacuum Vac Systems Autovac Industrial	2	There are two central vac turbines located in enclosures on opposite ends of the site (north and south). The units modeled were 20 HP with VFD.
Vacuum Handset	4	Two active handsets (used to vacuum car interiors) operating outside their holders are included for each vacuum system (2 front, 2 rear).

Source Sound Levels

To understand the sound levels for the proposed car wash, we visited a similar car wash facility on May 23, 2024. This facility, located in Wilbraham, MA contains the same high pressure wash system and dryer blower type as the proposed car wash. We measured sound emitted from the car wash entrance, car wash exit, vacuum blower, and the vacuum handset. For the handset, we measured sound with the vacuum handset out of the housing (open). When the vacuum handset was in the housing, sound levels were at or below background sound from traffic. The closed handset is shown in Figure 1. Table 2 provides the octave band and overall A-weighted sound power levels (L_w) for all the above sources. These sound power levels were computed by Cavanaugh Tocci based on our sound pressure level measurements and assumption of spherical spreading at distances over which we measured the sound levels in the field.

The Wilbraham car wash contains 12 PECO dryer blowers whereas the proposed car wash contains 8 blowers. A slight reduction was applied to the sound power levels at the car wash entrance and exit presented in Table 2 to account for the lower number of blowers.

Table 2 – Unmitigated Car Wash Equipment Sound Power Levels, dB re: 1 pico-watt

Car Wash Source (Qty)	Octave Band Center Frequency, Hz									dBA
	31.5	*63*	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	
Car Wash Entrance (1)	99	101	101	99	98	97	96	90	82	102
Car Wash Exit (1)	97	102	104	103	107	107	106	101	93	112
Vacuum Blower Unit (2)	74	69	76	68	68	71	82	80	77	86
Open Vacuum Handset (2)	80	75	82	74	74	77	88	86	83	92

Our analysis consisted of three operating scenarios which are based on the Hartford Town Code limits: Hourly L_{eq}, Maximum Daytime and Maximum Nighttime. Specific car wash equipment operation for each scenario is presented below:

- Hourly L_{eq}
  - Car Wash Tunnel – 45 cars per hour
    - 30 seconds dryer blower per car
  - Vacuum System –
    - Main Vacuum Blowers (2) – Continuous operation for front and rear systems
    - Handheld Vacuum Nozzle (4) – 30 minutes operation for each nozzle, two at the front vacuum system and two at the rear vacuum system
- Maximum Daytime
  - All equipment is continuously operating at maximum capacity
- Maximum Nighttime
  - Car Wash Tunnel – Not Operating (shut off at night)
  - Vacuum System
    - Front System

- Main Vacuum Blower – Continuously operating
- Handheld Vacuum Nozzles (2) – Continuously operating

- Rear System – Not Operating (shut off at night)

Table 3 provides a summary of the unmitigated modeling results along with appropriate limits from the Hartford Town Code. This table presents the hourly L_{eq} results of acoustic modeling of stationary car wash equipment sound sources at the worst-case residential property line locations (RPL1-RPL7) and residential receptors (R1-R6) along with maximum results for daytime and nighttime scenarios at worst-case non-residential property line locations (PL1-PL4), residential property line locations (RPL1-RPL7) and residential receptors (R1-R6). Receptor locations are shown in Figures 2-4.

Table 3 – Estimate of Unmitigated Stationary Car Wash Equipment Sound Levels (dBA)

Receptor Location	Town of Hartford Town Code Limits	Estimated Hourly L_{eq} Sound Level (dBA) Daytime (7AM-10PM) (Figure 1)	Estimated Maximum Sound Level (dBA) Daytime (7AM-10PM) (Figure 2)	Estimated Maximum* Sound Level (dBA) Nighttime (10PM-7AM) (Figure 3)
RPL1	**Residential Daytime (7AM-10PM) Hourly Leq: 50 dBA Maximum: 70 dBA** **Residential Nighttime (10PM-7AM) Hourly Leq: 45 dBA Maximum: 65 dBA**	56	60	39
RPL2		55	59	36
RPL3		53	56	34
RPL4		51	55	31
RPL5		49	53	31
RPL6		50	54	33
RPL7		50	54	31
R1		52	56	36
R2		51	55	34
R3		47	51	29
R4		45	49	32
R5		42	46	27
R6		46	50	21
PL1	**Performance Standards Non-Residential: 70 dBA**	-	72	56
PL2		-	71	54
PL3		-	63	46
PL4		-	66	40

*Residential nighttime hourly L_{eq} sound levels are equal to the maximum nighttime sound levels presented in Column 5 of Table 3 under the conservative assumption the front vacuum system blower and handset along Sykes Mountain Avenue may operate continuously for a one-hour period.

Project sound levels without mitigation will exceed the residential hourly L_{eq} limits by up to 6 dBA and exceed the non-residential performance standards limit by up to 2 dBA.

Mitigation

We have evaluated two sound mitigation measures. The first is a prototype silencer consisting of acoustically lined cylindrical covers attached to the air intake-side of the dryer blowers. Based on the noise testing report completed by WSP Engineering (attached in Appendix C), we applied a 3 dBA reduction to the car wash exit and a 1 dBA reduction to the car wash entrance sound power levels. The second noise mitigation measure is an 8-foot high wooden sound barrier running along the north and west sides of the car wash site as shown in Figures 2-4. The sound barrier will be specified as Plywall[2], which is a wooden post and panel system that has been tested in accordance with ASTME E-90 and ASTM E-413 which result in a Sound Transmission Class (STC) rating of 31.

Table 4 provides the octave band and A-weighted sound power levels (L_w) for the car wash sources including the prototype silencers on the air intake-side of the dryer blowers. The vacuum sources are unchanged from the previous source table (Table 2).

Table 4 – Mitigated Car Wash Equipment Sound Power Levels, dB re: 1 pico-watt

Car Wash Source (Qty)	Octave Band Center Frequency, Hz									*dBA*
	31.5	*63*	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	
Car Wash Entrance (1)	98	100	100	98	97	96	95	89	81	101
Car Wash Exit (1)	94	98	101	100	104	104	1063	98	90	109
Vacuum Blower Unit (2)	74	69	76	68	68	71	82	80	77	86
Open Vacuum Handset (2)	80	75	82	74	74	77	88	86	83	92

Table 5 provides a summary of the mitigated modeling results, which include the dryer blower intake silencers and Plywall sound barrier wall. Figure 2 presents the hourly L_{eq} results of acoustic modeling of stationary car wash equipment sound sources at the nearest residential (RPL1-RPL7 and R1-R6). Figures 3 and 4 present the maximum results of acoustic modeling for daytime and nighttime scenarios.

[2] https://www.plywall.com/

Table 5 – Estimate of Mitigated Stationary Car Wash Equipment Sound Levels (dBA)

Receptor Location	Town of Hartford Town Code Limits	Estimated Hourly Leq Sound Level (dBA) Daytime (7AM-10PM) (Figure 1)	Estimated Maximum Sound Level (dBA) Daytime (7AM-10PM) (Figure 2)	Estimated Maximum* Sound Level (dBA) Nighttime (10PM-7AM) (Figure 3)
RPL1	**Residential Daytime (7AM-10PM)** **Hourly Leq: 50 dBA** **Maximum: 70 dBA** **Residential Nighttime (10PM-7AM)** **Hourly Leq: 45 dBA** **Maximum: 65 dBA**	42	46	23
RPL2		46	49	28
RPL3		45	49	28
RPL4		44	48	26
RPL5		42	46	29
RPL6		44	47	26
RPL7		46	50	33
R1		46	49	29
R2		44	47	30
R3		41	44	25
R4		44	48	31
R5		42	45	27
R6		41	45	21
PL1	**Performance Standards Non-Residential: 70 dBA**	-	69	56
PL2		-	68	54
PL3		-	62	46
PL4		-	65	40

*Residential nighttime hourly L_{eq} sound levels are equal to the maximum nighttime sound levels presented in Column 5 of Table 3 under the conservative assumption the front vacuum system blower and handset along Sykes Mountain Avenue may operate continuously for a one-hour period.

Conclusion

Based on our review, it is our opinion that sound produced by proposed equipment associated with the car wash to be located at 18 Sykes Mountain Avenue in White River Junction, VT, with the mitigation measures discussed above (dryer blower silencers and Plywall sound barrier wall), will comply with the Town of Hartford Town Code Noise Limits listed in Chapters 110 and 260.

At the commercial properties surrounding the proposed car wash and the existing car wash with two automated bays located at 130 Sykes Mountain Avenue (which may operate 24 hours a day), sound produced by the proposed car wash is not expected to result in a noise disturbance as listed in Section 110-6 of the Hartford Town Code. During nighttime hours when the car wash tunnel is not operational, sound from the front vacuum system is not expected to be audible at any residential receptor location.

Please do not hesitate to contact us with any questions.

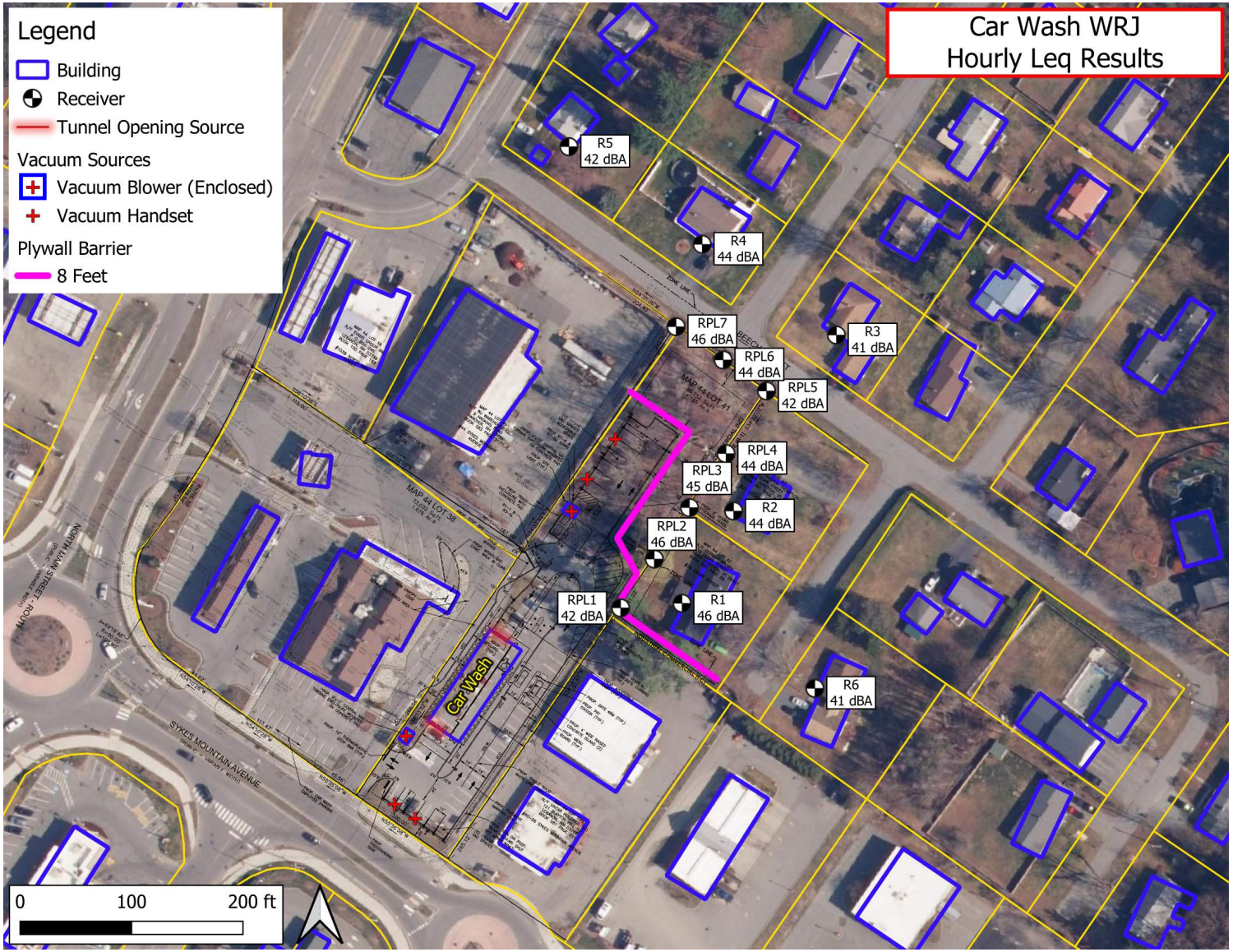
Sincerely,
CAVANAUGH TOCCI

Aaron M. Farbo, *Principal Consultant*
afarbo@cavtocci.com
24063/White River Junction Car Wash Sound Study Report 2024-06-03.docx

FIGURES

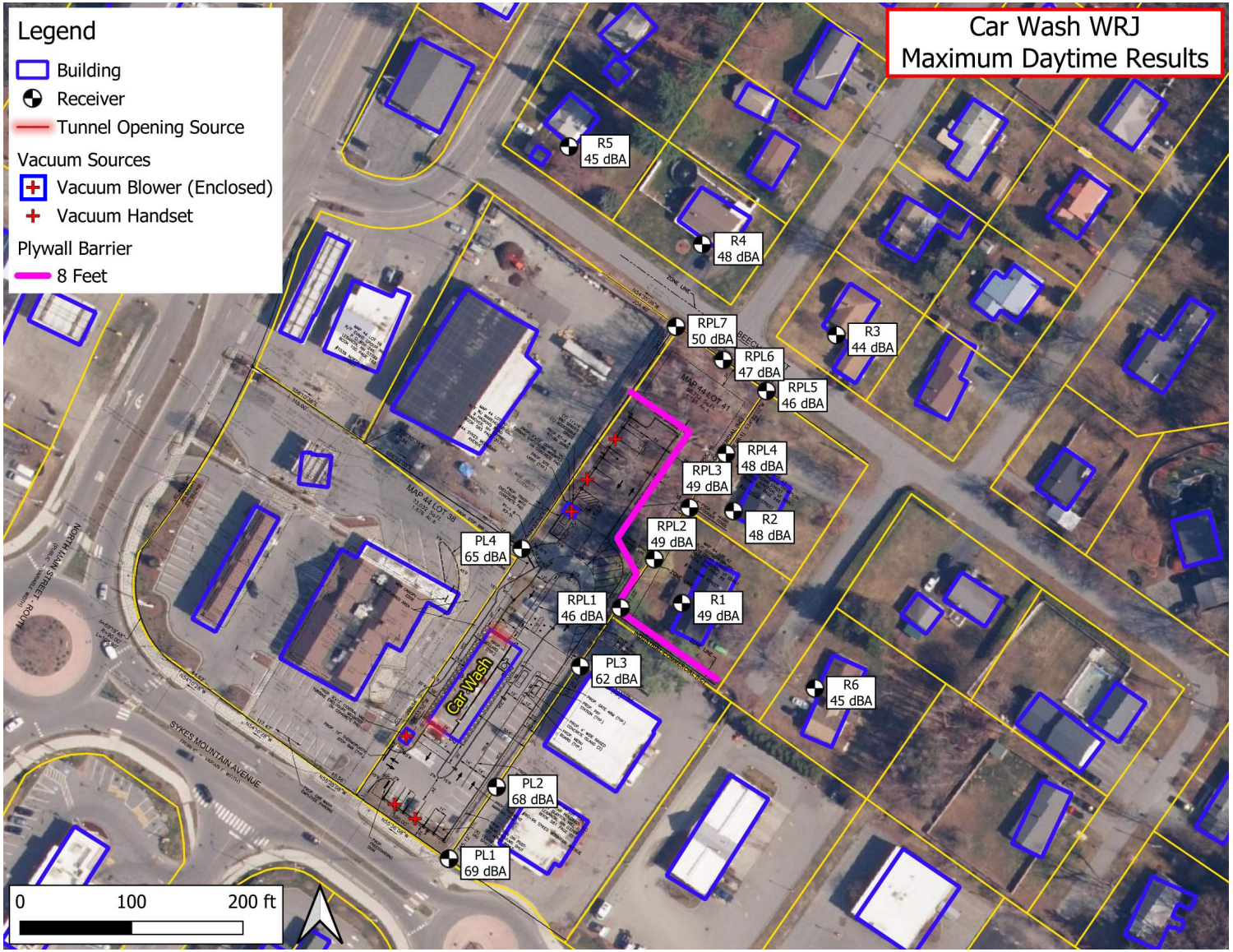
Vacuum Handset in Holder

Figure 1



Aerial Photograph Indicating Car Wash and Vacuum Sources, Plywall Sound Barrier, and Hourly Leq Sound Levels at Residential Property Lines and Receptor Locations

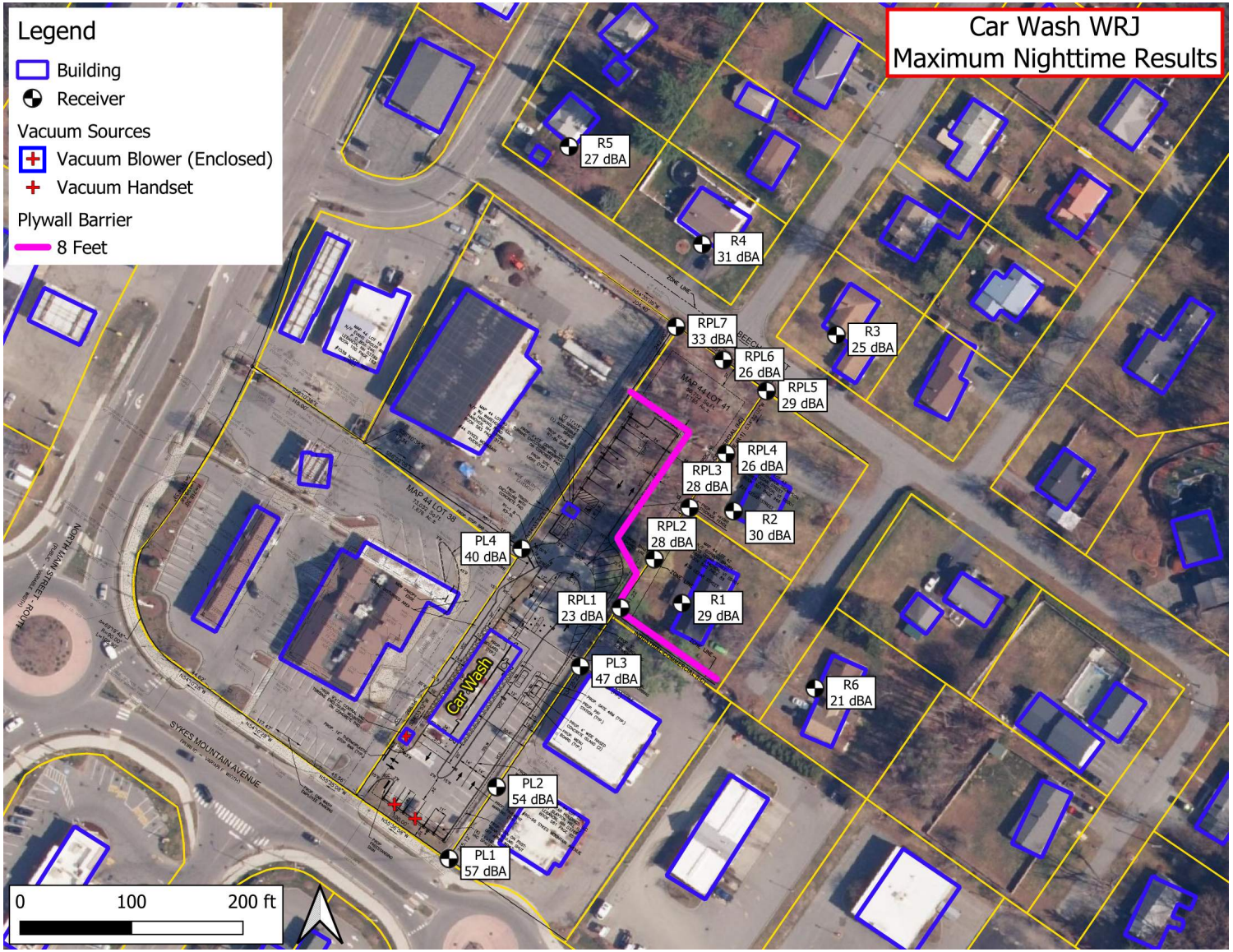
Figure 2



Aerial Photograph Indicating Car Wash, Vacuum Enclosures, Fences and Maximum Daytime Sound Levels at Property Line and Residential Receptor Locations

Figure 3

CAVANAUGHTOCCI



Aerial Photograph Indicating Car Wash, Vacuum Enclosures, Fences and Maximum Nighttime Sound Levels at Property Line and Residential Receptor Locations

Figure 4

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APPENDIX A

Sound Measurement Terminology

SOUND MEASUREMENT TERMINOLOGY

In order to quantify the amplitude, frequency, and temporal characteristics of sound, various acoustical descriptors are used. The following is an introduction to acoustic terminology that is used in this report.

Sound Level

Sound levels are typically quantified using a logarithmic decibel (dB) scale. The use of a logarithmic scale helps to compress the wide range of human sensitivity to sound amplitude into a scale that ranges from approximately 0 to 180 dB. Note however, that the use of the logarithmic scale prevents simple arithmetic operations when combining the cumulative impact of sources. For example, two sources of equal sound level operated simultaneously results in a combined sound level that is only 3 dB higher than if only one source was operated alone. An important feature of the human perception of continuous sound is that an increase or decrease in sound pressure level by 3 dB or less is barely perceptible, and an increase or decrease by 10 dB is perceived as a doubling or halving of noise level.

A-weighting

Generally, the sensitivity of human hearing is restricted to the frequency range of 20 Hz to 20,000 Hz. However, the human ear is most sensitive to sound in the 500 Hz to 5,000 Hz frequency range. Above and below this range, the ear becomes progressively less sensitive. To account for this feature of human hearing, sound level meters incorporate filtering of acoustic signals that corresponds to the varying sensitivity of the human ear to sound at different frequencies. This filtering is called A-weighting. Sound level measurements that are obtained using this filtering are referred to as A-weighted sound levels and are signified by the identifier, dBA. A-weighted sound levels are widely used for evaluating human exposure to environmental sounds. To help place A-weighted sound levels in perspective, Figure A-1 contains a scale showing typical sound levels for common interior and environmental sound sources.

Spectral Characteristics – Octave and 1/3 Octave Band Sound Levels

To characterize a sound, it is often necessary to evaluate the frequency distribution of the sound energy. As mentioned before, the frequencies of most interest where human exposure is concerned range between 20 Hz and 20,000 Hz. This frequency range is commonly divided into octave bands, where an octave band is a range of frequencies. Each octave band is referred to by its center frequency and has a bandwidth of one octave (a doubling of frequency). To cover the full range of human hearing, it is necessary to measure sound in 10 separate octave bands. Typically, the lowest frequency band measured has a center frequency of 31.5 Hz. The next frequency band has a center frequency of 63 Hz. This geometric series continues to the highest frequency band that has a center frequency of 16,000 Hz. A set of octave band sound levels to describe a particular sound is called an octave band spectrum. Covering the full range of hearing, an octave band spectrum would have 10 values, one for each band. Under certain circumstances, more frequency resolution in acoustical data is needed to identify the presence of tonal sounds. A 1/3 octave band spectrum uses filters that divide each

octave band into 3 separate frequency bands. Note that octave band and 1/3 octave band sound levels are not usually A-weighted, with their units being dB.

Environmental Noise Descriptors

Sound levels in the environment are continuously fluctuating and it is difficult to quantify these time-varying levels with single number descriptors. Statistical approaches, which use *percentile sound levels* and *equivalent sound levels*, are often used to quantify the temporal characteristics of environmental sound.

Percentile sound levels (L_n) are the A-weighted sound levels that are exceeded for specific percentages of time within a noise measurement interval. For example, if a measurement interval is one hour long, the 50th percentile sound level (L_{50}) is the A-weighted sound level that is exceeded for 30 minutes of that interval.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The 90th percentile sound level represents the nominally lowest level reached during the monitoring interval and is typically influenced by sound of relatively low level, but nearly constant duration, such as distant traffic or continuously operating industrial equipment. The L_{90} is often used in standards to quantify the existing background or residual sound level.
- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.
- L_{10} is the sound level exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles or aircraft.

By using percentile sound levels, it is possible to characterize the sound environment in terms of the steady-state background sound (L_{90}) and occasional transient sound (L_{10}).

The equivalent sound level (L_{eq}) is the energy average of the A weighted sound level for the measurement interval. Sounds of low level and long duration, as well as sounds of high level and short duration influence this sound level descriptor.

Noise levels at night generally produce greater annoyance than do the same levels which occur during the day. It is generally agreed that a given level of environmental noise during the day would appear to be 10 dBA louder at night – at least in terms of potential for causing community concern. The day night average sound level (Ldn) is a 24 hour average A-weighted sound level where a 10 dB "penalty" is applied to sound occurring between the hours of 10:00 p.m. and 7:00 a.m. The 10 dB penalty accounts for the heightened sensitivity of a community to noise occurring at night.

When a steady continuous sound is measured, the L_{10}, L_{50}, L_{90} and L_{eq} are all equal. For a constant sound level, such as from a power plant operating continuously for a 24-hour period, the L_{dn} is approximately 6 dBA higher than the directly measured sound level.

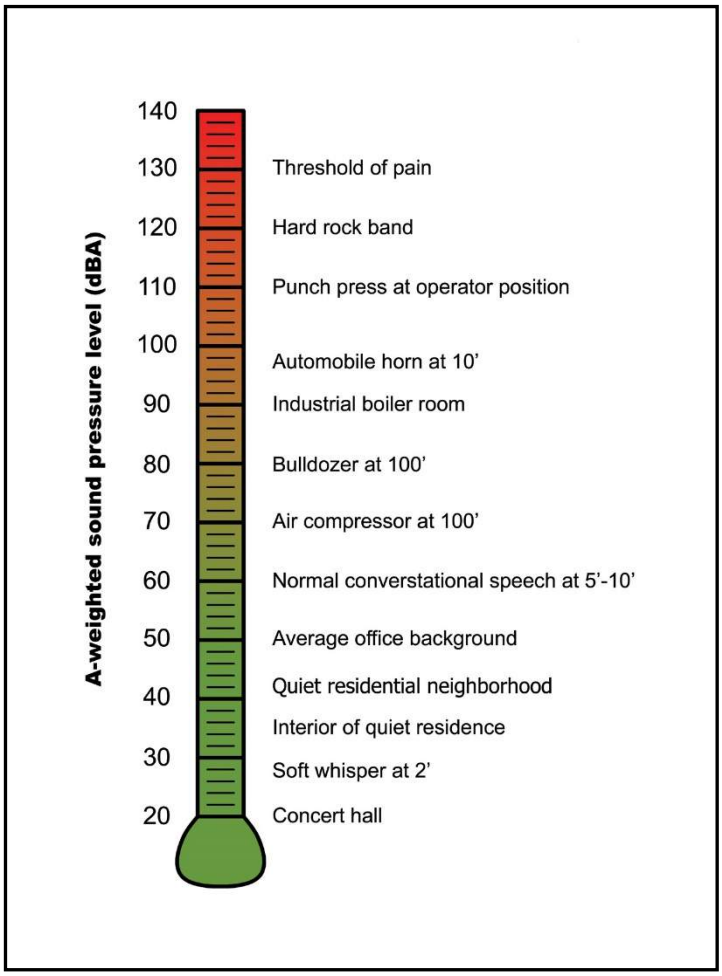

Figure A-1
Typical Sound Levels for Common Interior and Environmental Source

APPENDIX B

Computer Modeling Source Inputs and Parameters

Modeling Technique

Modeling of facility sound was completed using Cadna/A (Datakustik GmbH, Version 2023 MR2). Cadna/A is a computer program that implements the modeling techniques of ISO 9613-1 and ISO 9613-2 to estimate source sound levels at community receptor locations. In calculating sound levels at receptor locations, the Cadna model accounts for reductions in car wash sound pressure levels associated with propagation distance, shielding by intervening structures and topography, and absorption of sound by the atmosphere and porous surfaces.

Computer Model Parameters

Residential receptors in the vicinity of the project site include one-story structures which are modeled at an elevation of 7 feet above grade. Property line receptors were modeled at an elevation of 5 feet above grade.

As sound propagates through the environment, it may encounter boundaries which reflect or absorb some fraction of the incident sound. In our computer model, we have assumed that buildings and parking lots are all acoustically reflective, except where specifically noted. Shielding from topography and existing buildings in the vicinity of the proposed car wash were included in this analysis. To account for reflectors, one order of reflection has been included in computer modeling.

Based on our review of Google Earth images of the site, we have assigned a Ground Attenuation Coefficient (G) of 0.0 (full sound reflecting surface) for ground conditions on paved areas of the proposed car wash site, adjacent paved areas, and roadways. A Ground Attenuation Coefficient of 0.5 (partial sound absorbing surface) was assigned for all non-paved areas in nearby residential neighborhoods, in accordance with the ISO standard. Topography of the surrounding area has been obtained from the United States Geological Survey (USGS) and included in computer modeling.

Existing buildings and parcel boundaries were imported from the Vermont Center for Geographic Information (VCGI - http://vcgi.vermont.gov/).

Attenuation due to foliage and wooded buffers was not included in this analysis.

EQUIPMENT DECIBEL CERTIFICATION

This is to certify that the following AutoVAC equipment was measured with the following decibel levels of noise emission (+/- 2dB) in accordance with ISO 2151:2004. These ratings are taken at 15 feet from the machine with no background noise or outside interference in a 50 x 50ft interior room.

VACUUM PRODUCER					
HORESPOWER	**STAGE**	**START/RUN dB WITH VFD**	**START dB NO VFD**	**SERIAL NO**	**PASS/FAIL**
10	3	64	84		
15	4	66	88		
20	5	66	88		
25	6	72	92		
30	7	74	92		
40	8	76	95		

BLOWER				
HORESPOWER	**START/RUN dB WITH VFD**	**START dB NO VFD**	**SERIAL NO**	**PASS/FAIL**
15	72	85		

Equipment Used to measure decibel levels

EQUIPMENT	MANUFACTURER	MODEL NO	SERIAL NO
Sound Level Meter	Extech Instruments	407730	9848853

Certified By: _____ Date: _____

This certificate does not claim product approval or endorsement by NVLAP, NIST or any agency of the Federal Government. If you have any further questions, please contact AutoVAC at our toll free number 888-628-8682.

CAVANAUGHTOCCI

APPENDIX C

WSP Engineering Prototype Silencer Report

Project Description

This report presents the results of a second round of acoustical tests performed on Sonny's Car Wash dryer blowers and client-designed and installed prototype silencers. The first round of acoustical tests was described in a previous report, *Sonny's Car Wash Dryer Blowers Noise Assessment*, dated 2/16/18.

In this round of tests, the silencers were installed on the dryer blowers at Prestige Car Wash located at 4921 N. University Drive, Lauderhill, Florida. As shown in **Photos 1 and 2**, Prestige is an active car wash in commercial operation. The noise tests were performed after operating hours on 10/3/18 to minimize noise sources in the car wash not attributable to the blowers.

Photo 1. Prestige Car Wash Entry Portal

Photo 2. Prestige Car Wash Exit Portal

Noise Measurement Procedure

The procedure followed in this second round of acoustical tests involved performing calibrated A-weighted broadband and third-octave band noise measurements both with and without the prototype silencers attached to the dryer blowers. As shown in **Figure 1**, noise measurements were performed at nine measurement positions (M0 thru M8) inside, outside and in the vicinity of Prestige Car Wash. The nine positions can be described as follows:

M0 - Inside tunnel towards exit
M1 - Tunnel exit portal (east)
M2 - Outside tunnel in direct line from exit
M3 - Outside tunnel in direct line from exit
M4 - Tunnel entrance portal (west)
M5 - Building facade property to south
M6 - Northern property line
M7 - Outside tunnel in line from entrance
M8 - Inside office/waiting room area

Figure 1. Noise Measurement Positions

The noise measurement instrumentation consisted of a Svantek Model 971 Sound Level Analyzer using a Svantek 7052E Precision Microphone covered with a 3½-inch windscreen. The SVAN-971 was programmed to measure and store Leq noise data in 1-minute samples using an RMS 'slow' time response. The SVAN-971 computed broadband sound levels in unweighted (dBZ) and A-weighted (dBA) decibels, and computed the unweighted third-octave band L_{eq} levels from 20 Hz to 20 kHz. The noise measurement system was calibrated with a Larson Davis Model 150 Calibrator, and complies with ANSI Standard S1.4 for Type 1 quality and accuracy.

Data reduction and post-processing consisted of comparing the broadband A-weighted and third-octave band results measured with and without the silencers at each measurement position. The noise reduction (dBNR) is the difference in decibels between the two measured noise levels. Attempts were made to maintain consistency with as many variables as possible between the two noise measurements; however, background traffic noise did contribute slightly to some of the outdoor readings.

As shown in **Photo 3**, the dryer blowers are typical backward centrifugal air fans. The impellers spin at 3,600 RPM, and each fan has one impeller with 11 blades. Barring other effects, this would lead to expected higher noise emission levels in the 60 Hz, 120 Hz, 180 Hz, 630 Hz and 1,250 Hz third-octave frequency bands. As shown in **Photo 4**, the prototype silencers consisted of acoustically lined cylindrical covers attached to the air intake-side of the blowers. No noise control modifications were performed on the air exhaust-side of the blowers.

Photo 3. Dryer Blowers Without Silencers

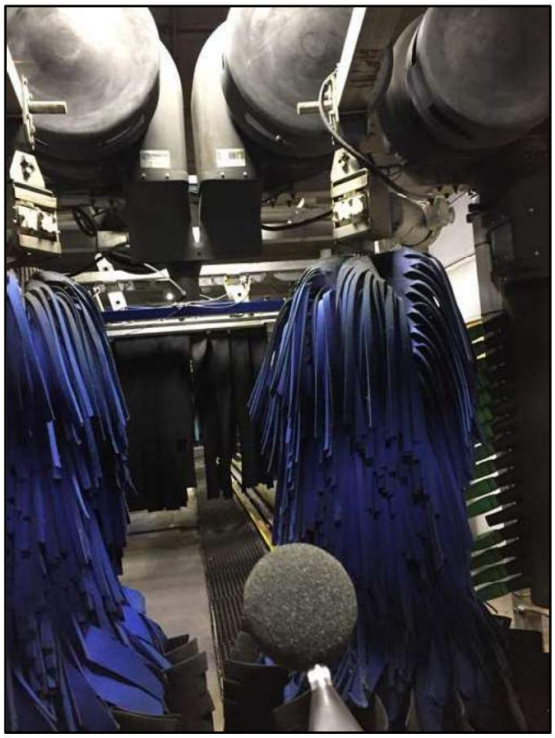

Photo 2. Dryer Blowers With Silencers

Noise Results and Findings

The results of the second round of acoustical tests of the dryer blower prototype silencers can be seen in **Table 1**. The magnitude of noise reduction attributable to the prototype silencers ranged from 1.1 to 4.5 dBNR depending on measurement position. The positions yielding the most noise reduction were those in line with the tunnel exit side of the blowers. The least noise reduction was found in line with the tunnel entrance side. This asymmetry could be attributable to the acoustical directivity of the blowers.

Figures 2 thru 10 show the A-weighted broadband and third-octave band results with and without the silencers for each measurement position. The noise reduction is the difference between the two plotted curves.

All results presented in the table and figures are shown in A-weighted decibels (dBA) so that visual results would correlate better with how humans would perceive the given sounds over the full audio spectrum. Presenting the results in A-weighted decibels also allows for easier identification of the louder frequency bands that would benefit the most from subsequent noise control efforts.

Table 1. Sonny's Dryer Blower Silencers
Acoustical Test Results (Round 2)

Sonny's Car Wash Blower and Silencer Noise Measurement Tests 10/3/18						
Prestige Car Wash - 4921 N. University Drive, Lauderhill, FL 33351						
Site No.	Distance to Blowers* (feet)	Noise Measurement Site Location	Traffic Noise Influence**	Noise Level No Silencers dBA Leq	Noise Level With Silencers dBA Leq	Approx. Noise Reduction dBNR
M0	8	Inside tunnel near blowers towards exit	No	99.7	96.9	2.8
M1	22	Tunnel exit portal (east)	No	96.3	92.8	3.6
M2	51	Outside tunnel in direct line from exit	Slightly	84.8	80.3	4.5
M3	95	Outside tunnel in direct line from exit	Yes	78.4	74.1	4.3
M4	68	Tunnel entrance portal (west)	No	88.3	87.1	1.1
M5	110	Building facade adjacent property to south	Yes	65.7	63.2	2.5
M6	83	Northern property line	Yes	69.7	66.7	3.1
M7	99	Outside tunnel in direct line from entrance	No	77.7	76.5	1.2
M8	10	Inside office/waiting room area	No	67.9	66.1	1.7
*Blowers are located approximately 22 feet inside the car wash tunnel exit and approximately 68 feet inside the tunnel entrance.						
**Traffic noise from N. University Drive NB & SB movements did have an impact on some noise measurements that were farther away from the blower noise.						

Paxwood Acoustics

Eddie.Duncan@PaxwoodAcoustics.com

May 20, 2024

Jo-Ann Ells
Department of Planning & Development
Town of Hartford, Vermont
171 Bridge Street
White River Junction, VT 05001
Via email only: jells@hartford-vt.org

Dear Jo-Ann:

At the Town's request, we have reviewed the Environmental Sound Study ("Sound Study") for the White River Junction Car Wash ("Project") proposed by Summit Distributing. This letter provides the findings our review including a brief description of the Project and documents reviewed, Paxwood Acoustics qualifications to conduct the review, and discussion related to the:

- Qualifications of the authors of the Sound Study,
- Appropriateness of methods and standards used in the Sound Study,
- Reasonableness of the data used in the Sound Study, and
- Addressing of the relevant regulations.

As discussed in this review, we find that the Sound Study:

- Contains the appropriate sections,
- The authors are qualified to conduct the work contained in the Sound Study,
- The modeling standard that was used is appropriate, and
- The sound power levels used in the model are within a reasonable range of what we would expect given the type of sound sources.

However, we are unable to confirm the overall appropriateness of the modeling methodology and the reasonableness of some of the data used and generated due to insufficient details within the Sound Study. In addition, given the proximity of residences

PO Box 446, Quechee, Vermont 05059
Phone: 802-299-6966

to the north and northeast along Cedar Street and Beech Street, a discussion of the Project in the context of Section 110-6 and Section 260-31A (i.e. customary sounds and repeated disturbances) of the Town Code may be merited.

Project Description & Reviewed Documents

The Project is a car wash facility proposed on Sykes Mountain Avenue on Map 44 Lot 41. It involves the construction of a building that will house the car wash and associated equipment and the installation of two vacuum systems with one system located at the front of the property near Sykes Avenue and one system located at the rear of the property in a lot behind the proposed car wash building. The existing conditions of the site are a parking lot on the front half of the parcel and an undeveloped yard on the back half of the parcel.

For this review, the primary document we reviewed was the Sound Study[1] by CavanaughTocci. We also reviewed the Site Development Plans[2] for additional context.

Sound Study Review

Qualifications of the Study Firm

CavanaughTocci is a well-known and respected firm in the field of acoustics. They are involved in the relevant professional organizations in our field: the Institute of Noise Control Engineering (INCE), the Acoustical Society of America (ASA), and the National Council of Acoustical Consultants (NCAC). The primary author of the Sound Study, Aaron Farbo, is a Principal Consultant at CavanaughTocci. Mr. Farbo is a full member of both INCE and ASA. While Mr. Farbo himself is not Board Certified through INCE, other staff at his firm are.

CavanaughTocci and Mr. Farbo are qualified to conduct the work contained in the Sound Study.

Appropriateness of Methods & Standards

The relevant standards that come into play in the Sound Study are modeling or calculation standards and measurement standards.

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[1] CavanaughTocci, White River Junction Car Wash Environmental Sound Study, 24 April 2024.
[2] GPI, Site Development Plans Proposed Car Wash, 2 February 2024 with revisions as recent as 17 April 2024

Modeling

The Sound Study utilizes appropriate modeling software (CadnaA) and supporting calculation standards (ISO 9613-2). However, it is not clear from the Sound Study whether appropriate settings were used in the model, so we are unable to verify the accuracy and reasonableness of the calculations. Some key factors that would affect the calculations include ground factor, buildings, and reflections.

Given the built-up environment in the surrounding area, we would recommend that buildings on the proposed property and adjacent properties be included in the model with 1 or 2 orders of reflection. In addition, given that the site is and will be paved, a ground factor of 0, which represents hard ground, would be most appropriate for the Project site, roadways, and neighboring paved parcels. These settings may have been used in the Sound Study, but it is not stated in the report, so we cannot confirm the accuracy or reasonableness of the projected sound levels presented in Table 2 and Figures 1 through 3.

The Sound Study mentions that the analysis includes an 8-foot-high stockade fence along the northern and eastern sides of the site, and it shows the location of the fence in the model result maps (Figures 1 through 3). However, the report does not state how the stockade fence was taken into account in the analysis. Depending on how it was accounted for in the model, it may or may not be appropriate for the calculations. For example, ISO 9613-2 and CadnaA allow one to model a noise barrier, but a typical stockade fence does not fit within the definition of a noise barrier which would allow it to be modeled in that fashion. A noise barrier should not have any appreciable air gaps and should have a surface weight at least 4 pounds per square foot. Stockade fences typically do not fit either of these specifications given that there can be air gaps between the boards and at the base of the fence, and that it weighs less than 4 pounds per square foot. For example, a 6-foot by 8-foot section of spruce/pine/fir stockade fence from Home Depot has a surface weight of ~1.9 lbs/sq. ft.[3] We did not see specifications for the proposed stockade fence in the Site Development Plans.

The model results are provided at discrete receptors along the property line and at nearby residential receptors. While the report states that the property line receptors are located at the closest locations, it would be good if the Sound Study either provided sound levels all along the property line through the use of sound level iso-lines or indicate that the discrete receptors represent the worst-case property line sound levels.

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[3] https://www.homedepot.com/p/Outdoor-Essentials-6-ft-H-x-8-ft-W-Spruce-Pine-Fir-Stockade-Fence-Panel-8847/100087022

Measurements

It did not appear as though any measurements were conducted specifically for the Sound Study, but it did rely upon measurements conducted by others to develop input into the model.

For the AutoVAC equipment, the manufacturer data is provided in a certification report in Appendix B. The certification report indicates that the measurements by the manufacturer were conducted with an Extech 407730 sound level meter. This is a Class 2 sound level meter with an accuracy of +/- 2 dB. We also note that the certification report is not signed nor does it indicate if the sound level meter was calibrated. While it would be preferable if the measurements were conducted with a more accurate Class 1 sound level meter and provided in a report that is signed and indicates that the meter was calibrated, this may represent the best available information from the manufacturer on their system.

The second page in Appendix B provides measured sound pressure levels of dryers in a car wash. It's not clear from the report is this is the same system that would be installed at the proposed Project or if it is being used as a representative system. This should be indicated as it affects the degree to which the data should be relied upon.

Table B-1 in Appendix B provides the actual sound power levels that were used by CavanaughTocci in the modeling, presumably based on the information provided on the prior two pages and the WSP measurement report[4] at the end of the document. Overall, the sound power levels shown in Table B-1 appear to be reasonable given our experience with car wash noise and associated sound sources, but there is a disconnect between the supporting data provided in Appendix B and Table B-1. It is unclear from the report how the sound power levels were calculated or if the calculation method was appropriate. We also note that the WSP report attached at the end of the document includes sound level data on car wash blowers with and without prototype silencers, but the report does not state which data was used in the model or if silencers (prototype or otherwise) are proposed for this car wash.

While the Sound Study uses an appropriate calculation standard (ISO 9613-2) and the overall sound power levels used in the model appear to be reasonable based on our experience, the report provides insufficient details related to model settings, how the stockade fence was accounted for, and how the manufacturer and WSP measurement data were used to generate the sound power levels for the model. Without these details,

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[4] WSP is a large engineering and professional services firm. The WSP report attached to the Sound Study does not identify the author of the report.

we are unable to fully evaluate the appropriateness of the methods and standards used in the Sound Study.

Reasonableness of the Data

As mentioned above, the total sound power levels (listed in Table B-1) which were used as input to the CadnaA model appear to be within a reasonable representative range of sound levels for the type of equipment being proposed. Based on our experience we would expect actual sound emissions from the equipment to be within a few dB of the listed values. That said, page 3 of the study clearly states that this is data from similar car wash projects, but it does not state that it is the same equipment that will be used at this proposed site.

We cannot verify the reasonableness of the projected sound levels at the property line or residential receptors because as previously stated, there is insufficient information in the report to verify that appropriate model settings were used.

Regarding geospatial data, the source of the parcel data is not stated in the report. Given that the highest property line sound level is within 1 dB of the 70 dBA property line sound level limit, using a surveyed parcel boundary layer may be merited to ensure that the limit at the actual property line is not exceeded.

Addressing Relevant Noise Standards

The Sound Study evaluates the relevant quantitative noise standards within the Hartford Town Code. Specifically, the daytime and nighttime residential (and sensitive land use) property line standards in Chapter 110, and the 70 dBA property line limit in Chapter 260.

The Sound Study also identifies some of the more qualitative aspects of the Town Code, specifically Section 110-6, titled Noise Disturbances. Other than identifying this portion of the Town Code, the Sound Study does not provide a discussion on whether the proposed sound levels and sources may be considered:

- “loud, unnecessary, excessive, or offensive”
- “unusual sound which unreasonably disturbs the peace and quiet” or
- “causes discomfort or annoyance to any reasonable person of a normal sensitivity”.

There is also additional qualitative aspects listen in Section 260-31A which states, “Noise levels or frequencies which are not customary in the district or neighborhood or which represent a repeated disturbance to others shall not be permitted.” While this Section is identified in the Sound Study, it is not discussed in the context of the Project.

Given the proximity of residences to the north and northeast along Cedar Street and Beech Street, a discussion of the qualitative factors in Section 110-6 in the context of the residential area and a discussion the qualitative language in Section 260-31A (i.e. customary sounds and repeated disturbances) may be merited.

Paxwood Acoustics Qualifications

Paxwood Acoustics is located in Quechee, Vermont and provides professional consulting services in acoustics and noise control engineering with a focus on environmental permitting and compliance. Eddie Duncan, Principal Consultant, is a Board-Certified Noise Control Engineer through the Institute of Noise Control Engineering and is a member of the Acoustical Society of America. Mr. Duncan has been practicing acoustic consulting for over 20 years. In that time, he has managed over 400 acoustics projects across the country. He has also conducted noise assessments in the Town of Hartford having used the local noise standards in the past.

Sincerely,

Edward Duncan, INCE Bd. Cert.
Principal Consultant & Founder

April 24, 2024

Mr. Tom Frawley
Summit Distributing
240 Mechanic Street
Lebanon, NH 03766

SUBJECT: White River Junction Car Wash
Environmental Sound Study

Dear Mr. Frawley,

As requested, Cavanaugh Tocci has completed a study of environmental sound produced by the proposed car wash located at 18 Sykes Mountain Avenue in White River Junction, VT. This report discusses applicable noise regulations and presents our sound impact assessment. Appendix A presents a glossary of acoustical terminology used in this report.

Noise Criteria

White River Junction is an unincorporated village in the town of Hartford, VT. The Town of Hartford Town Code contains noise limits that are pertinent to sound produced by this project, as listed in Chapters 110 and 260.

Hartford Town Code [1]

Chapter 110 Noise
§ 110-5 Residential and other sensitive use areas.

A. In addition to the prohibitions set forth in § 110-6 below, it shall be unlawful for any person at any location to create any sound or to allow the creation of any sound on any property owned, leased, occupied or otherwise controlled by such person which causes the exterior sound level when measured at the property line of any affected single- or multiple-family residence, school, hospital, church, rest home, cemetery, public library or other sensitive use to exceed the sound level standards as set forth in Table I below:

Table I
Sound Level Standards
(for fixed sound sources)

Sound Level Description	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
Hourly Leq, dB	50	45
Maximum Level, dB	70	65

[1] https://www.hartford-vt.org/DocumentCenter/View/9335/Town-Code-PDF

(1) In the event the measured ambient sound level exceeds the applicable sound level standard identified in Table I, the sound level standard (the standard against which violations are measured) shall be adjusted so as to equal the ambient sound level plus three dB.

(2) Each of the sound level standards specified in Table I shall be reduced by five dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be at a lower level than the ambient sound level plus three dB

(3) If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of Table I.

§ 110-6 Noise disturbances.

A. In addition to and notwithstanding any other provisions of this chapter, it is unlawful for any person to willfully make or continue to cause or allow to be made or continued any loud, unnecessary, excessive or offensive noise or unusual sound which unreasonably disturbs the peace and quiet of any residential or other sensitive use or which causes discomfort or annoyance to any reasonable person of a normal sensitivity in the area.

B. In determining whether a violation of the provisions of this section exists, the enforcement officer may consider any of the following:

(1) The volume and intensity of the sound.

(2) The vibration intensity of the sound.

(3) Whether the nature of the sound is usual or unusual.

(4) Whether the origin of the sound is natural or unnatural.

(5) The volume and intensity of the background sound, if any.

(6) The proximity of the sound to residential sleeping facilities.

(7) The nature and zoning of the area within which the sound is being produced.

(8) The density of the inhabitation of the area within which the sound is being produced.

(9) The time of day or night the sound occurs.

(10) The duration of the sound.

(11) Whether the sound is recurrent, intermittent or constant.

Chapter 260 Zoning
§ 260-31 Land use performance standards.

A. Noise volume shall be limited to 70 decibels or less at or beyond the property line. Noise levels or frequencies which are not customary in the district or neighborhood or which represent a repeated disturbance to others shall not be permitted.

The proposed car wash tunnel and rear (north) vacuum system will operate during daytime hours only (8 AM to 8 PM). The vacuum system at the front of the property (south end near Sykes Mountain Ave) will operate 24 hours a day.

Sound produced by the car wash tunnel and vacuum systems are subject to the limits in Table I of Chapter 110 of the Hartford Town Code at nearest residential properties. Sound produced by the car wash tunnel and vacuum systems are limited to daytime hourly Leq of 50 dBA and a maximum level of 70 dBA at residential property lines and receptors. Sound produced by the front vacuum system (24 hours) is subject to the nighttime limit of 45 dBA (hourly Leq) and maximum level of 65 dBA at residential property lines and receptors.

In addition to the residential limits in Chapter 110, Section 31 of Chapter 260 of the Hartford Town Code, Land use performance standards, limits sound to 70 decibels or less at non-residential property line locations.

Project Sound Analysis

Facility-related sound impacts that are associated with equipment at the proposed Project have been calculated using CadnaA environmental sound modeling software (Version 2023 MR2 DataKustic GmbH). The CadnaA sound modeling software uses algorithms and procedures described in International Standard ISO 9613-2:1996 “Acoustics- Attenuation of sound during propagation outdoors – Part 2: General method of calculation”. This standard and its associated methodology are the most universally accepted approach for environmental sound modeling of industrial and transit sound sources. The methodology described in this standard provides estimates of A-weighted and octave band sound levels for meteorological conditions that are favorable for the propagation of sound (downwind with a wind speed of 1-5 meters/sec). This methodology is also valid for sound propagation under well-developed moderate ground-based temperature profile inversions, which commonly occur on clear calm nights.

The analysis is based on source sound emission data derived from manufacturer provided sound data (dryer blowers and vacuum system) and measurements (high pressure wash and spectrum for the blowers and vacuum system) from similar car wash tunnel projects. Manufacturer-provided sound data information and sound power data used in modeling are presented in Appendix B.

Table 1 lists the stationary car wash equipment sound sources that were included in the acoustic model.

Table 1 – Car Wash Equipment Sound Sources

Item	Quantity	Comments
PECO Dryer Blowers	8	Blowers Include acoustically lined cylindrical silencer covers attached to the air intake-side of the blowers.
High Pressure Wash Equipment	1	High pressure wash system includes: Sprayers, washers and underbody wash
Vacuum Vac Systems Autovac Industrial	2	There are two central vac turbines located in enclosures on opposite ends of the site (north and south). The units modeled were 20 HP with VFD.

Our analysis consisted of three operating scenarios which are based on the Hartford Town Code limits: Hourly Leq, Maximum Daytime and Maximum Nighttime. Specific car wash equipment operation for each scenario is presented below:

- Hourly Leq
    - Car Wash Tunnel – 45 cars per hour
        - 30 seconds high pressure wash per car
        - 30 seconds dryer blower per car
    - Vacuum System – Continuous operation for front and rear systems
- Maximum Daytime
    - All equipment is continuously operating at maximum capacity
- Maximum Nighttime
    - Car Wash Tunnel – Not Operating (shut off at night)
    - Vacuum System
        - Front System – Continuous operation
        - Rear System – Not Operating (shut off at night)

Table 2 provides a summary of the modeling results along with appropriate limits from the Hartford Town Code. Figure 1 presents the hourly Leq results of acoustic modeling of stationary car wash equipment sound sources at the nearest residential property line locations (RPL1-RPL3) and residential receptors (R1-R6). Figures 2 and 3 present the maximum results of acoustic modeling for daytime and nighttime scenarios at nearest non-residential property line locations (PL1-PL4), residential property line locations (RPL1-RPL3) and residential receptors (R1-R6).

The analysis includes an 8-foot high stockade wooden fence along the east and north sides of the site that extends east along the adjacent property as shown in Figures 1-3.

Table 2 – Estimate of Stationary Car Wash Equipment Sound Levels (dBA)

Receptor Location	Town of Hartford Town Code Limits	Estimated Hourly Leq Sound Level (dBA) Daytime (7AM-10PM) (Figure 1)	Estimated Maximum Sound Level (dBA) Daytime (7AM-10PM) (Figure 2)	Estimated Maximum* Sound Level (dBA) Nighttime (10PM-7AM) (Figure 3)
RPL1	**Residential Daytime (7AM-10PM) Hourly Leq: 50 dBA Maximum: 70 dBA** **Residential Nighttime (10PM-7AM) Hourly Leq: 45 dBA Maximum: 65 dBA**	45	49	14
RPL2		46	50	15
RPL3		43	47	17
R1		48	52	13
R2		46	50	14
R3		42	46	11
R4		43	46	28
R5		42	46	27
R6		46	50	20
PL1	**Performance Standards Non-Residential: 70 dBA**	-	69	46
PL2		-	68	47
PL3		-	68	24
PL4		-	68	42

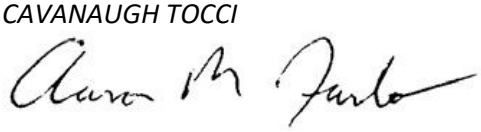
*Residential nighttime Hourly Leq sound levels are equal to the maximum nighttime sound levels presented in Column 5 of Table 2 under the conservative assumption the front vacuum system along Sykes Mountain Avenue may operate continuously for a one hour period.

Conclusion

Based on our review, it is our opinion that sound produced by proposed equipment associated with the car wash to be located at 18 Sykes Mountain Avenue in White River Junction, VT will comply with the Town of Hartford Town Code Noise Limits listed in Chapters 110 and 260.

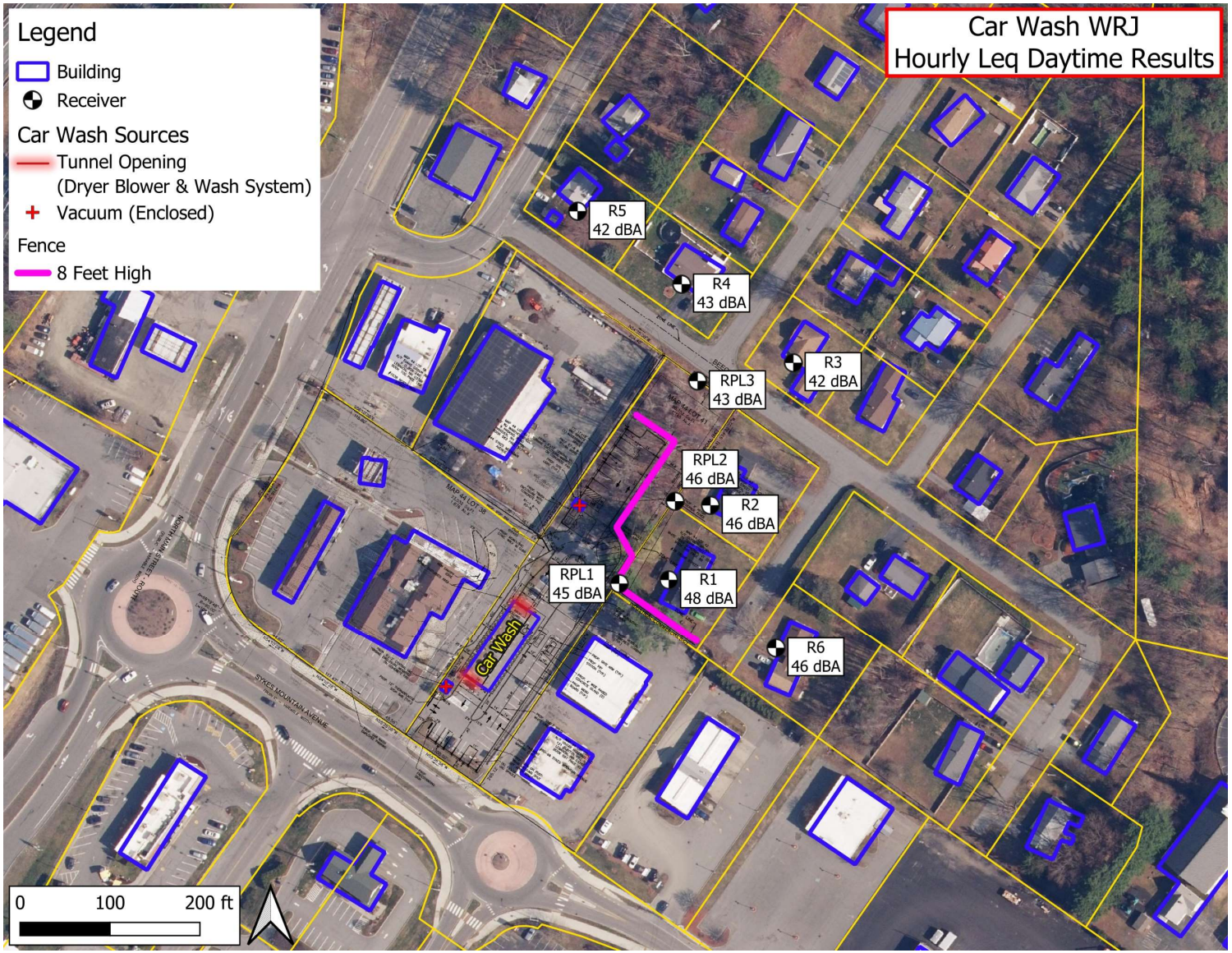
Please do not hesitate to contact us with any questions.

Sincerely,
CAVANAUGH TOCCI



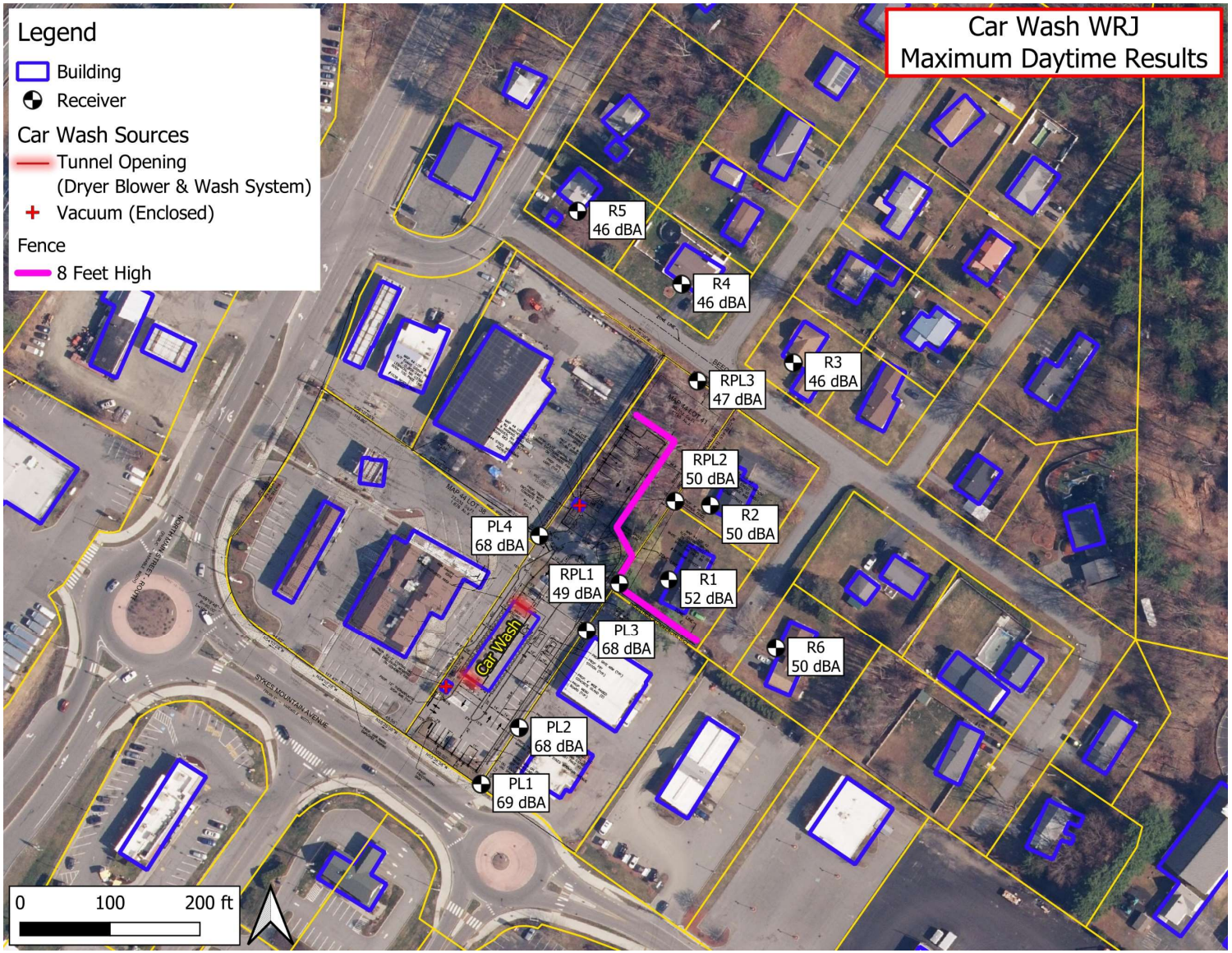
Aaron M. Farbo, *Principal Consultant*
afarbo@cavtocci.com

FIGURES



Aerial Photograph Indicating Car Wash, Vacuum Enclosures, Fences and Hourly Leq Sound Levels at Residential Property Lines and Receptor Locations

Figure 1



Aerial Photograph Indicating Car Wash, Vacuum Enclosures, Fences and Maximum Daytime Sound Levels at Property Line and Residential Receptor Locations

Figure 2

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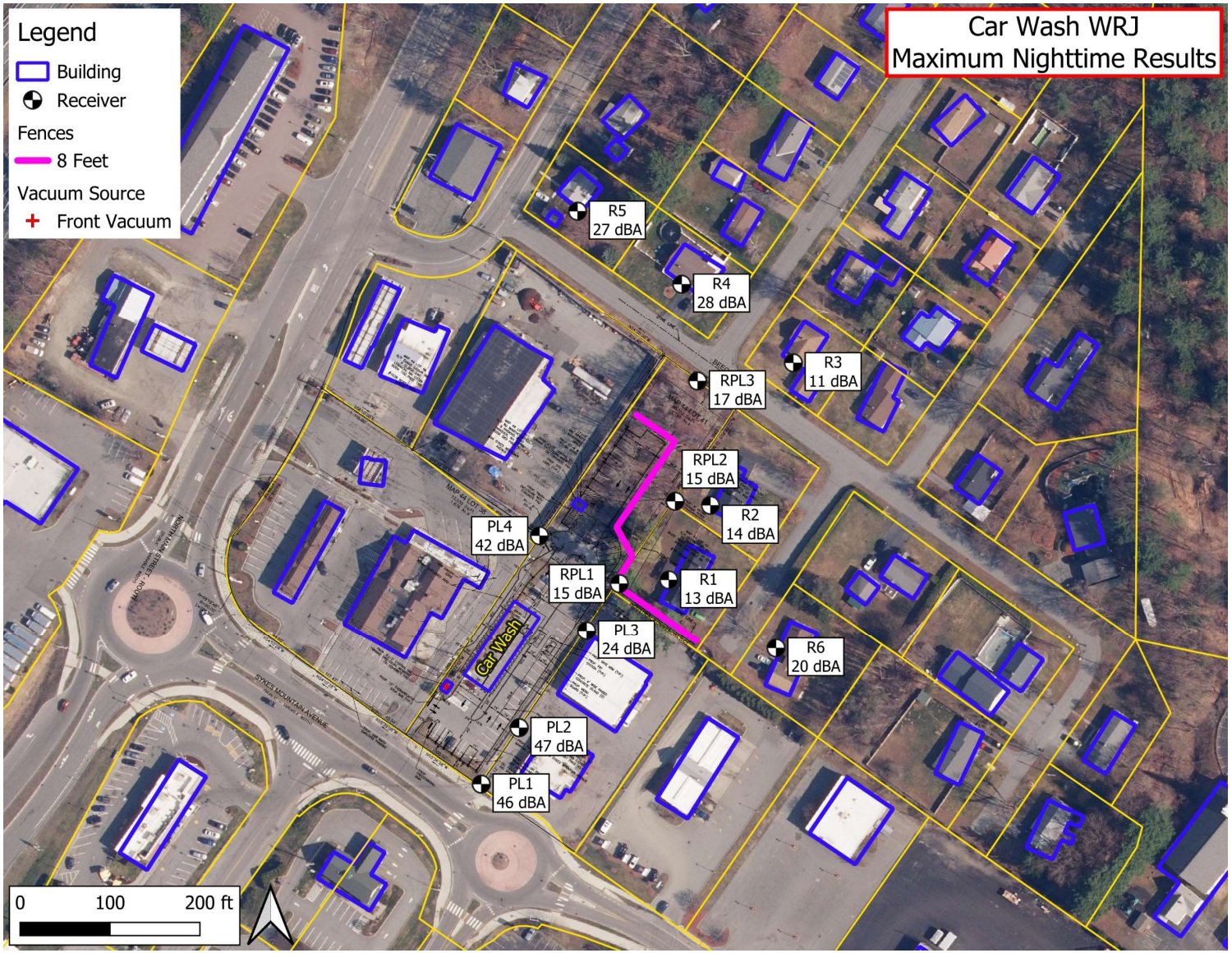


Aerial Photograph Indicating Car Wash, Vacuum Enclosures, Fences and Maximum Nighttime Sound Levels at Property Line and Residential Receptor Locations

Figure 3

CAVANAUGHTOCCI

APPENDIX A

Sound Measurement Terminology

SOUND MEASUREMENT TERMINOLOGY

In order to quantify the amplitude, frequency, and temporal characteristics of sound, various acoustical descriptors are used. The following is an introduction to acoustic terminology that is used in this report.

Sound Level

Sound levels are typically quantified using a logarithmic decibel (dB) scale. The use of a logarithmic scale helps to compress the wide range of human sensitivity to sound amplitude into a scale that ranges from approximately 0 to 180 dB. Note however, that the use of the logarithmic scale prevents simple arithmetic operations when combining the cumulative impact of sources. For example, two sources of equal sound level operated simultaneously results in a combined sound level that is only 3 dB higher than if only one source was operated alone. An important feature of the human perception of continuous sound is that an increase or decrease in sound pressure level by 3 dB or less is barely perceptible, and an increase or decrease by 10 dB is perceived as a doubling or halving of noise level.

A-weighting

Generally, the sensitivity of human hearing is restricted to the frequency range of 20 Hz to 20,000 Hz. However, the human ear is most sensitive to sound in the 500 Hz to 5,000 Hz frequency range. Above and below this range, the ear becomes progressively less sensitive. To account for this feature of human hearing, sound level meters incorporate filtering of acoustic signals that corresponds to the varying sensitivity of the human ear to sound at different frequencies. This filtering is called A-weighting. Sound level measurements that are obtained using this filtering are referred to as A-weighted sound levels and are signified by the identifier, dBA. A-weighted sound levels are widely used for evaluating human exposure to environmental sounds. To help place A-weighted sound levels in perspective, Figure A-1 contains a scale showing typical sound levels for common interior and environmental sound sources.

Spectral Characteristics – Octave and 1/3 Octave Band Sound Levels

To characterize a sound, it is often necessary to evaluate the frequency distribution of the sound energy. As mentioned before, the frequencies of most interest where human exposure is concerned range between 20 Hz and 20,000 Hz. This frequency range is commonly divided into octave bands, where an octave band is a range of frequencies. Each octave band is referred to by its center frequency and has a bandwidth of one octave (a doubling of frequency). To cover the full range of human hearing, it is necessary to measure sound in 10 separate octave bands. Typically, the lowest frequency band measured has a center frequency of 31.5 Hz. The next frequency band has a center frequency of 63 Hz. This geometric series continues to the highest frequency band that has a center frequency of 16,000 Hz. A set of octave band sound levels to describe a particular sound is called an octave band spectrum. Covering the full range of hearing, an octave band spectrum would have 10 values, one for each band. Under certain circumstances, more frequency resolution in acoustical data is needed to identify the presence of tonal sounds. A 1/3 octave band spectrum uses filters that divide each

octave band into 3 separate frequency bands. Note that octave band and 1/3 octave band sound levels are not usually A-weighted, with their units being dB.

Environmental Noise Descriptors

Sound levels in the environment are continuously fluctuating and it is difficult to quantify these time-varying levels with single number descriptors. Statistical approaches, which use *percentile sound levels* and *equivalent sound levels*, are often used to quantify the temporal characteristics of environmental sound.

Percentile sound levels (L_n) are the A-weighted sound levels that are exceeded for specific percentages of time within a noise measurement interval. For example, if a measurement interval is one hour long, the 50th percentile sound level (L_{50}) is the A-weighted sound level that is exceeded for 30 minutes of that interval.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The 90th percentile sound level represents the nominally lowest level reached during the monitoring interval and is typically influenced by sound of relatively low level, but nearly constant duration, such as distant traffic or continuously operating industrial equipment. The L_{90} is often used in standards to quantify the existing background or residual sound level.
- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.
- L_{10} is the sound level exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles or aircraft.

By using percentile sound levels, it is possible to characterize the sound environment in terms of the steady-state background sound (L_{90}) and occasional transient sound (L_{10}).

The equivalent sound level (L_{eq}) is the energy average of the A weighted sound level for the measurement interval. Sounds of low level and long duration, as well as sounds of high level and short duration influence this sound level descriptor.

Noise levels at night generally produce greater annoyance than do the same levels which occur during the day. It is generally agreed that a given level of environmental noise during the day would appear to be 10 dBA louder at night – at least in terms of potential for causing community concern. The day night average sound level (Ldn) is a 24 hour average A-weighted sound level where a 10 dB "penalty" is applied to sound occurring between the hours of 10:00 p.m. and 7:00 a.m. The 10 dB penalty accounts for the heightened sensitivity of a community to noise occurring at night.

When a steady continuous sound is measured, the L_{10}, L_{50}, L_{90} and L_{eq} are all equal. For a constant sound level, such as from a power plant operating continuously for a 24-hour period, the L_{dn} is approximately 6 dBA higher than the directly measured sound level.

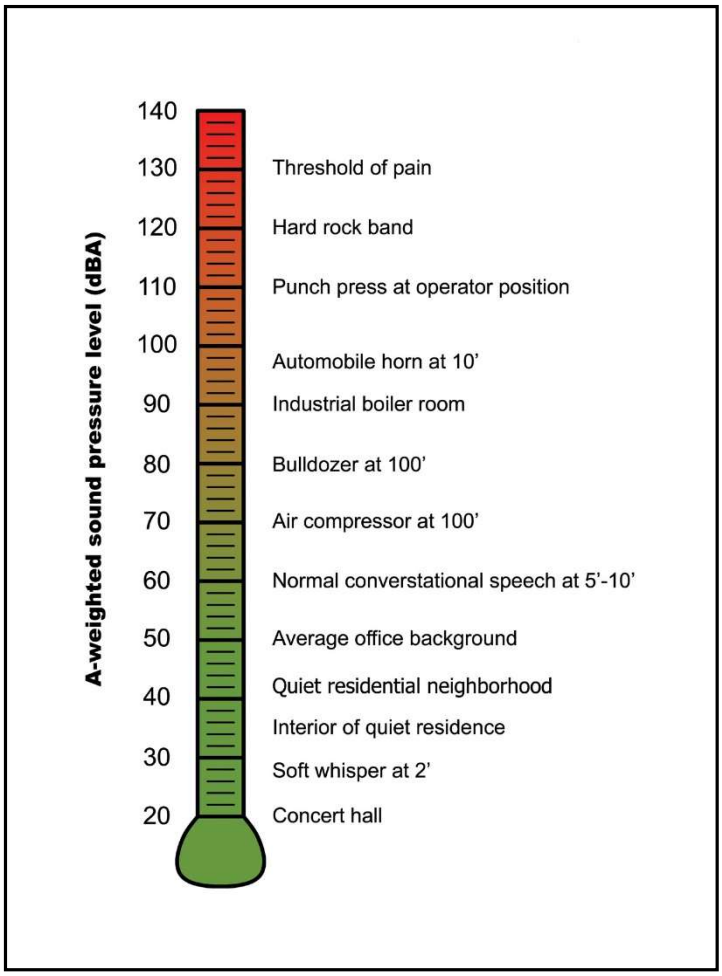


Figure A-1
Typical Sound Levels for Common Interior and Environmental Source

APPENDIX B

Manufacturer and Modeling Sound Data

EQUIPMENT DECIBEL CERTIFICATION

This is to certify that the following AutoVAC equipment was measured with the following decibel levels of noise emission (+/- 2dB) in accordance with ISO 2151:2004. These ratings are taken at 15 feet from the machine with no background noise or outside interference in a 50 x 50ft interior room.

VACUUM PRODUCER					
HORESPOWER	**STAGE**	**START/RUN dB WITH VFD**	**START dB NO VFD**	**SERIAL NO**	**PASS/FAIL**
10	3	64	84		
15	4	66	88		
20	5	66	88		
25	6	72	92		
30	7	74	92		
40	8	76	95		

BLOWER				
HORESPOWER	**START/RUN dB WITH VFD**	**START dB NO VFD**	**SERIAL NO**	**PASS/FAIL**
15	72	85		

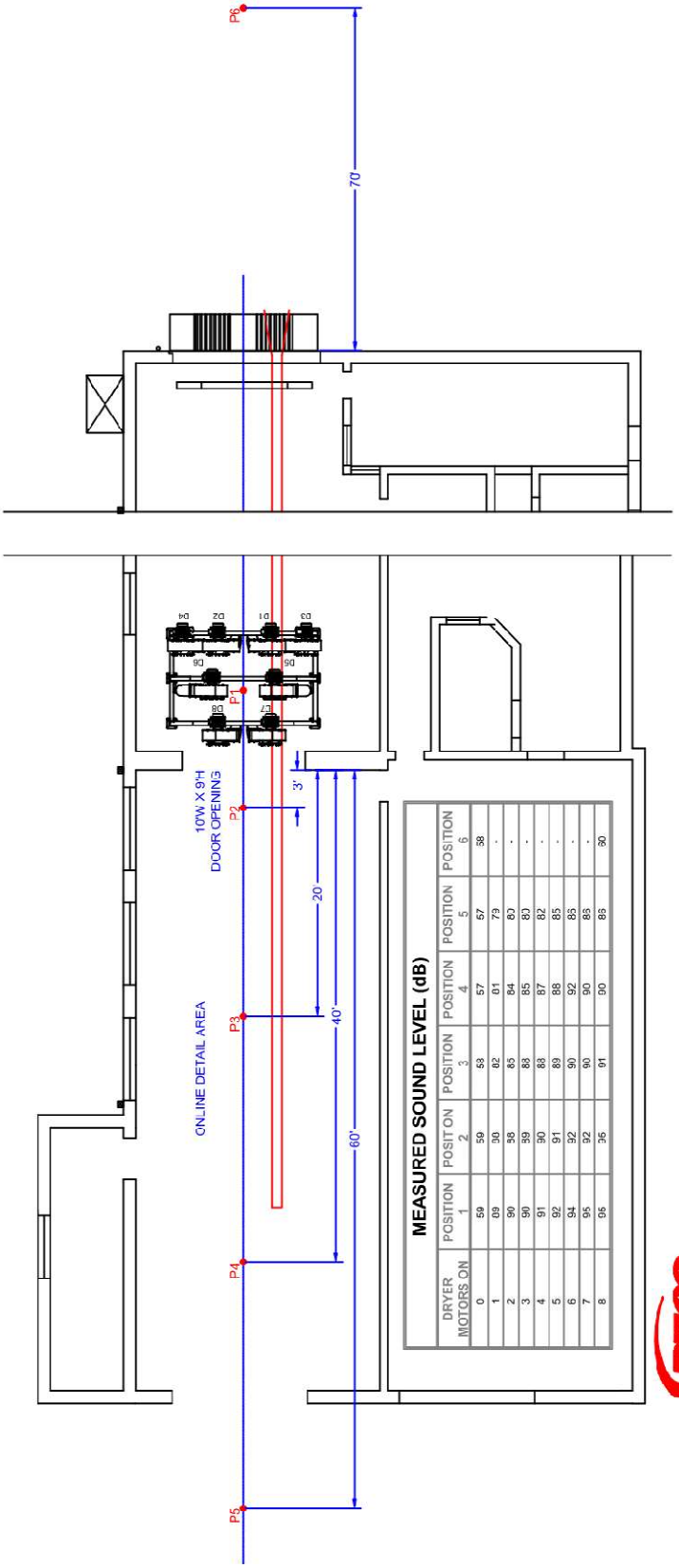
Equipment Used to measure decibel levels

EQUIPMENT	MANUFACTURER	MODEL NO	SERIAL NO
Sound Level Meter	Extech Instruments	407730	9848853

Certified By: _____ Date: _____

This certificate does not claim product approval or endorsement by NVLAP, NIST or any agency of the Federal Government. If you have any further questions, please contact AutoVAC at our toll free number 888-628-8682.

CAVANAUGHTOCCI



MEASURED SOUND LEVEL (dB)

DRYER MOTORS ON	POSITION 1	POSITION 2	POSITION 3	POSITION 4	POSITION 5	POSITION 6
0	59	59	83	57	67	38
1	89	90	82	81	79	-
2	90	88	85	84	80	-
3	90	89	88	85	80	-
4	91	90	88	87	82	-
5	92	91	89	88	85	-
6	94	92	90	92	85	-
7	95	92	90	90	85	-
8	96	96	91	90	88	80

CAVANAUGHTOCCI

Table B-1 presents the sound power spectrum of sources considered in stationary car wash equipment computer modeling.

Name	Sound power spectrum									Overall sound power	
	31.5	*63*	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*dBA*	*dBZ*
Entry Door Dryer Blowers	95	102	99	96	105	98	99	91	82	105	109
Exit Door Dryer Blowers	90	97	94	91	100	93	94	86	77	100	104
High Pressure Wash	85	90	89	87	87	86	88	90	86	95	97
Vacuum (20HP with VFD)	71	69	71	81	64	71	84	79	72	87	87

Table B-1. Sound power spectra of stationary car wash sources [dB]

Project Description

This report presents the results of a second round of acoustical tests performed on Sonny's Car Wash dryer blowers and client-designed and installed prototype silencers. The first round of acoustical tests was described in a previous report, *Sonny's Car Wash Dryer Blowers Noise Assessment*, dated 2/16/18.

In this round of tests, the silencers were installed on the dryer blowers at Prestige Car Wash located at 4921 N. University Drive, Lauderhill, Florida. As shown in **Photos 1 and 2**, Prestige is an active car wash in commercial operation. The noise tests were performed after operating hours on 10/3/18 to minimize noise sources in the car wash not attributable to the blowers.

Photo 1. Prestige Car Wash Entry Portal

Photo 2. Prestige Car Wash Exit Portal

Noise Measurement Procedure

The procedure followed in this second round of acoustical tests involved performing calibrated A-weighted broadband and third-octave band noise measurements both with and without the prototype silencers attached to the dryer blowers. As shown in **Figure 1**, noise measurements were performed at nine measurement positions (M0 thru M8) inside, outside and in the vicinity of Prestige Car Wash. The nine positions can be described as follows:

M0 - Inside tunnel towards exit
M1 - Tunnel exit portal (east)
M2 - Outside tunnel in direct line from exit
M3 - Outside tunnel in direct line from exit
M4 - Tunnel entrance portal (west)
M5 - Building facade property to south
M6 - Northern property line
M7 - Outside tunnel in line from entrance
M8 - Inside office/waiting room area

Figure 1. Noise Measurement Positions

The noise measurement instrumentation consisted of a Svantek Model 971 Sound Level Analyzer using a Svantek 7052E Precision Microphone covered with a 3½-inch windscreen. The SVAN-971 was programmed to measure and store Leq noise data in 1-minute samples using an RMS 'slow' time response. The SVAN-971 computed broadband sound levels in unweighted (dBZ) and A-weighted (dBA) decibels, and computed the unweighted third-octave band L_{eq} levels from 20 Hz to 20 kHz. The noise measurement system was calibrated with a Larson Davis Model 150 Calibrator, and complies with ANSI Standard S1.4 for Type 1 quality and accuracy.

Data reduction and post-processing consisted of comparing the broadband A-weighted and third-octave band results measured with and without the silencers at each measurement position. The noise reduction (dBNR) is the difference in decibels between the two measured noise levels. Attempts were made to maintain consistency with as many variables as possible between the two noise measurements; however, background traffic noise did contribute slightly to some of the outdoor readings.

As shown in **Photo 3**, the dryer blowers are typical backward centrifugal air fans. The impellers spin at 3,600 RPM, and each fan has one impeller with 11 blades. Barring other effects, this would lead to expected higher noise emission levels in the 60 Hz, 120 Hz, 180 Hz, 630 Hz and 1,250 Hz third-octave frequency bands. As shown in **Photo 4**, the prototype silencers consisted of acoustically lined cylindrical covers attached to the air intake-side of the blowers. No noise control modifications were performed on the air exhaust-side of the blowers.

Photo 3. Dryer Blowers Without Silencers

Photo 2. Dryer Blowers With Silencers

Noise Results and Findings

The results of the second round of acoustical tests of the dryer blower prototype silencers can be seen in **Table 1**. The magnitude of noise reduction attributable to the prototype silencers ranged from 1.1 to 4.5 dBNR depending on measurement position. The positions yielding the most noise reduction were those in line with the tunnel exit side of the blowers. The least noise reduction was found in line with the tunnel entrance side. This asymmetry could be attributable to the acoustical directivity of the blowers.

Figures 2 thru 10 show the A-weighted broadband and third-octave band results with and without the silencers for each measurement position. The noise reduction is the difference between the two plotted curves.

All results presented in the table and figures are shown in A-weighted decibels (dBA) so that visual results would correlate better with how humans would perceive the given sounds over the full audio spectrum. Presenting the results in A-weighted decibels also allows for easier identification of the louder frequency bands that would benefit the most from subsequent noise control efforts.

Table 1. Sonny's Dryer Blower Silencers Acoustical Test Results (Round 2)

Sonny's Car Wash Blower and Silencer Noise Measurement Tests 10/3/18						
Prestige Car Wash - 4921 N. University Drive, Lauderhill, FL 33351						
Site No.	Distance to Blowers* (feet)	Noise Measurement Site Location	Traffic Noise Influence**	Noise Level No Silencers dBA Leq	Noise Level With Silencers dBA Leq	Approx. Noise Reduction dBNR
M0	8	Inside tunnel near blowers towards exit	No	99.7	96.9	2.8
M1	22	Tunnel exit portal (east)	No	96.3	92.8	3.6
M2	51	Outside tunnel in direct line from exit	Slightly	84.8	80.3	4.5
M3	95	Outside tunnel in direct line from exit	Yes	78.4	74.1	4.3
M4	68	Tunnel entrance portal (west)	No	88.3	87.1	1.1
M5	110	Building facade adjacent property to south	Yes	65.7	63.2	2.5
M6	83	Northern property line	Yes	69.7	66.7	3.1
M7	99	Outside tunnel in direct line from entrance	No	77.7	76.5	1.2
M8	10	Inside office/waiting room area	No	67.9	66.1	1.7
*Blowers are located approximately 22 feet inside the car wash tunnel exit and approximately 68 feet inside the tunnel entrance.						
**Traffic noise from N. University Drive NB & SB movements did have an impact on some noise measurements that were farther away from the blower noise.						