

BRIGHT STREET COOPERATIVE

Final Plat Application
to the City of Burlington



APPLICANT: CHAMPLAIN HOUSING TRUST

September 05, 2014



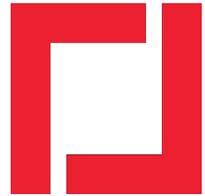
Duncan Wisniewski Architecture

Bright Street Cooperative

Prepared for: The City of Burlington DRB

Prepared by: Duncan Wisniewski Architecture (Taryn Barrett and Michael Wisniewski)

September 5, 2014



cover letter

The Champlain Housing Trust (CHT), partnered with Housing Vermont (HVT), has the honor of presenting the Bright Street Cooperative final plat application to the City of Burlington Development Review Board. This application includes new items listed in the Index on the next page along with all of the original drawings. For the project overview and narrative, section 106 historic buildings evaluation report, structural assessment report, and the traffic evaluation see the appendix from the preliminary plat application.

The following items are responses to items listed in the Preliminary Plat Approval Comments:

2. See attached Fire Marshall's email agreeing with accuracy of minutes when we collaborated to define emergency vehicle access to the site.
3. Boundary Survey attached.
4. There are no proposed phases to this project. Plans are to begin construction in the spring of 2015 and finish approximately 12 months after.
5. Corrective Action Plan is currently a work in progress.
6. Proposed construction hours 7am-5pm weekdays and 8am-5pm weekends.
7. This project will use infiltration chambers to infiltrate the 1 year storm event. Almost all of the impervious runoff will be directed to the chambers. The driveway to the parking garage and minor sidewalk runoff are the only areas that do not make it to the infiltrators. Megan Moir and Steve Roy have reviewed the design. Final details are shown on the detail sheets.
8. See attached RAB drawings for outdoor lighting including the added garage lighting plan and the revised entry & walkway lighting plan.
9. The original bike parking called for 12 exterior spaces and 11 interior spaces. We would like to add 5 additional spaces (likely inside), probably more. See attached details.
10. Affordability: There will be three tiers of income targeting – 14 will be affordable to households earning less than 50% of Area Median Income (AMI); 22 will be targeted to households earning less than 60% of AMI and the remaining six units will be market-rate units available for rent without a maximum income limit.
11. Snow on the garage entrance ramp will be handled with an integrated melting system. Removal from walkways will be blown into adjacent green belts and larger amounts will be stored at adjacent patios.
12. See the attached sign-off from the Vermont Division of Historic Preservation.
13. CHT, HVT, & DWA would like to request a waiver to the 6 mo. period between demolition and the commencement of new construction. We hope to demolish 114 Archibald St in November 2014 because it will be vacant and potentially become a threat to public safety. Although we expect to begin construction in May, a slightly later start would be outside of the 6 mo. window.

Sincerely

Michael Wisniewski

INDEX

forms (Attached)

- ZONING PERMIT APPLICATION FORM
 - APPLICATION FEE: ECC \$6.9 Million = \$14,010 Fee.
 - \$10 Filing Fee +
 - \$300 per lot or unit = \$12,600 or,
 - \$200 + \$2/\$1,000 ECC = \$14,000 or,
 - \$.10/sq. ft. = \$6,433.
 - Development Review Fee: (due prior to release of DRB approval)
 - \$3/\$1,000 ECC = \$20,700 or,
 - \$0.20/sq. ft. = \$12,865.

text

- MEETING MINUTES: FIRE MARSHALL OFFICE AND DWA (AGREES W/ SITE ACCESS CONDITIONS AS DESIGNED)
- DIVISION OF HISTORIC PRESERVATION SIGN-OFF

appendix

- REVISED RAB LIGHTING CUT SHEETS
- BIKE PARKING CUT SHEETS

drawings (Bound Separately)

- 1.0 ARCHITECTURAL SITE PLAN 1:20
- 2.0 AERIAL PERSPECTIVE
- 3.0 STREET PERSPECTIVE
- 4.0 CONTEXT PHOTOGRAPHS
- 5.1 35-PLEX ELEVATIONS (minor revisions)
- 5.2 35-PLEX ELEVATIONS (minor revisions)
- 5.3 35-PLEX GARAGE PLAN (minor revisions)
- 6.0 TRINITY ELEVATIONS (minor revisions)
- 7.0 DUPLEX ELEVATIONS (minor revisions)
- 8.0 ARCHITECTURAL WALL CROSS SECTIONS
- L1.0 EXISTING TREE AND FENCING DEMO DIAGRAM
- L2.0 PLANTING PLAN
- RAB SITE LIGHTING PLAN (revised)
- RAB WALKWAY LIGHTING PLANS (revised)
- RAB GARAGE LIGHTING PLANS (added)
- RAB SITE LIGHTING SCHEDULES (revised)
- EX-1 EXISTING CONDITIONS PLAN
- SP-1 SITE PLAN
- SP-2 SITE DEMOLITION PLAN
- CD-1 CIVIL DETAILS
- CD-2 CIVIL DETAILS
- CD-3 CIVIL DETAILS
- CD-4 CIVIL DETAILS
- CD-5 CIVIL DETAILS
- CD-6 CIVIL DETAILS
- CD-7 EROSION PREVENTION & SEDIMENT CONTROL
- BOUNDARY SURVEY, LANDS OF CHAMPLAIN HOUSING TRUST (added)



Department of Planning and Zoning

149 Church Street, City Hall
Burlington, VT 05401-8415
Phone: (802) 865-7188
Fax: (802) 865-7195

www.burlingtonvt.gov/pz

Zoning Permit Application

Use this form for ALL zoning permit applications. See the relevant checklist for specific requirements.

PROJECT LOCATION ADDRESS: 112-114 ARCHIBALD; 27, 35-39, 47 BRIGHT STREET

PROPERTY OWNER*: c/o AMY DEMETROWITZ

*If condominium unit, written approval from the Association is also required

APPLICANT: C/O MICHAEL WISNIEWSKI

POSTAL ADDRESS: 88 KING STREET

CITY, ST, ZIP: BURLINGTON, VT 05401

DAY PHONE: 802-862-6244

EMAIL: AMY.DEMETROWITZ@CHAMPLAINHOUSINGTRUST.ORG

SIGNATURE:

I am the owner. In addition, I duly authorize the applicant (if noted) to act on my behalf for all matters pertaining to this zoning permit application.

POSTAL ADDRESS: 255 SOUTH CHAMPLAIN ST

CITY, ST, ZIP: BURLINGTON, VT 05401

DAY PHONE: 802-864-6693

EMAIL: MICHAELW@DUNCANWISNIEWSKI.COM

SIGNATURE:

Description of Proposed Project: DEVELOP 42 NEW HOUSING UNITS TO FORM A P.U.D. AS A HOUSING COOPERATIVE. THE MAIN PEDESTRIAN ACCESS IS FROM BRIGHT STREET AND VEHICULAR ACCESS IS OFF OF ARCHIBALD STREET. THE PROJECT HAS A MIX OF UNIT TYPES, OUTDOOR SPACES, AND UNDERGROUND PARKING.

Existing Use of Property: Single Family Multi Family: #14 Units Other: _____

Proposed Use of Property: Single Family Multi Family: #44 Units Other: _____

Will 400 sq ft or more of land be disturbed, exposed and/or developed? Yes No
(If yes, you will need to provide the 'Erosion Prevention and Sediment Control Plan' questionnaire with a site plan)

For Single Family & Duplex, will total impervious area be 2500 sq ft or more? Yes No
(If yes, you will need to provide the 'Stormwater Management Plan' questionnaire with a site plan)

Are you proposing any work within or above the public right of way? Yes No
(If yes, you will need to receive prior approval from the Department of Public Works)

Estimated Construction Cost (value)*: \$6,900,000.00

(*Estimated cost a typical contractor would charge for all materials and labor, regardless of who physically completes the work)

- Within 30 days of submission, the permit application will be reviewed for completeness, and, if complete, will be processed administratively or referred to a board for review. All permit approvals or denials are subject to an appeal period (15 days for administrative permit; 30 days for board permit).
- A building (and/or electrical, mechanical, plumbing, curb cut) permit will also be required. Contact the Department of Public Works at 802-863-9094 to inquire.
- Please ask for assistance if you have any questions about filling out this form. Call the Planning and Zoning at 802-865-7188, or visit the office in the lower level of City Hall, 149 Church Street.

Office Use Only: Zone: _____ Eligible for Design Review? _____ Age of House _____ Lot Size _____

Type: SN ___ AW ___ FC ___ BA ___ COA 1 ___ COA 2 ___ COA 3 ___ CU ___ MA ___ VR ___ HO ___ SP ___ DT ___ MP ___

Check No. _____ Amount Paid _____ Zoning Permit # _____

From: Barry Simays BSimays@burlingtonvt.gov
Subject: RE: Bright Meeting 04_Fire Department
Date: April 7, 2014 at 12:14 PM
To: Michael Wisniewski michaelw@duncanwisniewski.com, Demetrowitz Amy amy.demetrowitz@champlainhousingtrust.org, Cobb Sue Sue@hvt.org, Nedde Bill Bill.Nedde@krebsandlansing.com, Joseph Keenan JKeenan@burlingtonvt.gov, Jeff Hodgson jhodgson@wagnerhodgson.com, Bonnie Kirn Donahue bkirn@wagnerhodgson.com, Taryn Barrett tarynb@duncanwisniewski.com

Michael,

Thank you for providing this summary. The content accurately represents our discussion at this office on 4/1/2014. As stated during the meeting, this office will require a standpipe system in the 35-plex based on significant firefighter access concerns presented by building position, and the excessive hose-lays that would otherwise be required to fight a fire in a remote unit on the top floor.

Thank you again,

BC Barry Simays, CFI
Fire Marshal
Burlington Fire Department
132 North Avenue
Burlington, VT 05401
(802) 864-5577
(802) 658-7665 (Fax)
bsimays@burlingtonvt.gov

Non-Discrimination

The City of Burlington will not tolerate unlawful harassment or discrimination on the basis of political or religious affiliation, race, color, national origin, place of birth, ancestry, age, sex, sexual orientation, gender identity, marital status, veteran status, disability, HIV positive status or genetic information. The City is also committed to providing proper access to services, facilities, and employment opportunities. For accessibility information or alternative formats, please contact Human Resources Department at 865-7145.

From: Michael Wisniewski [michaelw@duncanwisniewski.com]
Sent: Wednesday, April 02, 2014 20:06
To: Demetrowitz Amy; Cobb Sue; Nedde Bill; Joseph Keenan; Barry Simays; Jeff Hodgson; Bonnie Kirn Donahue; Taryn Barrett
Subject: Bright Meeting 04_Fire Department

Hi All,

Here are the notes from our meeting with Fire Department yesterday.

Michael

Michael Wisniewski
Duncan • Wisniewski Architecture
255 South Champlain St.
Burlington, VT 05401
802.864.6693 ext. 2#
michaelw@duncanwisniewski.com

DATE 04.01.14

FROM Michael Wisniewski & Taryn Barrett, Duncan • Wisniewski Architecture

TO Amy Demetrowitz - CHT
Sue Cobb - HVT
Jeff Hodgson, Bonnie Kirn Donahue - WH
Bill Nedde - KL
Joe Keenan, Barry Simays - BFD

RE **BRIGHT STREET - Fire Department Access/Requirements Review**

GENERAL

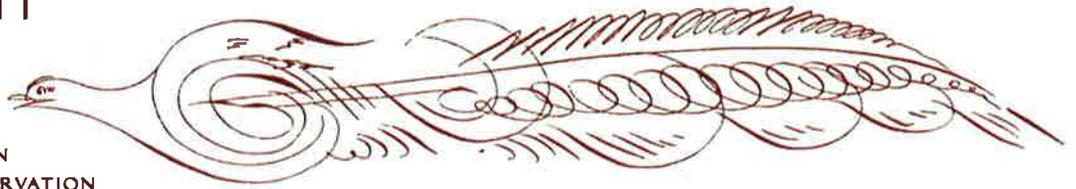
- We reviewed the latest drawing presented by DWA, showing all revisions to date including many changes since the last BFD input during technical review.
- BFD would like to access the 35-Plex aerially with either Engine 2 or 4 along the ramp at the Archibald entrance. In the original design the duplex was built over this ramp precluding fire truck access. This ramp starts out at 5.4%, decreases to 5% at the 2 parking spaces, then continues down to the parking garage at a maximum 10.2% slope. These 'straight stick' aerials can reach up to 60' with their ladders, which would park them partially on the 10.2% slope and partially along the 5% slope. The maximum allowed for these engines is 12%. The width of the ramp is adequate at 23 feet, with 20 feet designated towards the drive aisle and 3 feet for pedestrians or bikers. However, when an engine is parked here it will limit vehicle access from the garage to the street. This is not atypical for emergency vehicles to block civilian traffic.
- The ramp will be designed to carry the tower weight even though it is unlikely to be utilized.
- BFD requests a Fire Department Connection (FDC) closer to the street than the entry point of the 35-Plex, either on the Trinity or Duplex 1. The purpose is to reduce the length of 4" lines from the engine parked on Bright Street to the sprinkler system in the building which requires personal that may be needed to perform other tasks. It was determined that the best location may be along the courtyard on Duplex 1, where it can rise up through the slab under a stair and elbow out the wall. This remote FDC must be labeled according to the NFPA lettering requirements indicating that it does not serve the building for which it is located on, and that it does serve the 35-Plex. An outdoor horn/strobe shall be located over the FDC that will be activated with the 35-Plex system. The FDC must be within 100 feet of the closest hydrant, which Bill is locating along Bright Street proximate to the NE corner of the Trinity.
- Riverside Ave has a 10 inch water line that meets an old 6 inch water line on Bright Street, servicing an existing hydrant at the northern end of the street. The water flow calculations done last fall by DPW and coordinated by KL were presented and are very strong for this existing hydrant. All parties agree to minimize the use of the existing 6 inch line and to tap into the water as close as possible to the existing hydrant, run a new 6 inch line south to a

new hydrant. Bill will contact Rob Green and Adam at the water department about the construction and location of this hydrant.

- Due to the reduced access to the 35-Plex and the length of the building the BFD will require a standpipe in each of the two stairwells for water supply in an emergency.
- The southern pedestrian entry is required to have a horn/strobe, annunciator panel, and a Knox box.
- The Trinity does not require a sprinkler system by code, Michael will verify this with Ned Holt.
- Based on all of the above the original requirement of an open courtyard at the main entry off Bright St. being designed for fire truck access is no longer required given that they will access the building off Archibald. We will still provide a 9' curb cut and a 12' wide paved access for small emergency and service vehicles.

LIZ PRITCHETT
ASSOCIATES

HISTORIC PRESERVATION
ARCHITECTURAL CONSERVATION



August 6, 2014

James Duggan, Environmental Review Coordinator
Vermont Division for Historic Preservation
1 National Life Drive, 6th Floor
Montpelier, Vermont 05620

Re: Bright Street Cooperative, Burlington, VT
14 Archibald Street, 35-39 Bright Street, 47 Bright Street, Burlington, VT
Section 106 Review - HOME funds: Final Review Letter

Dear James;

I have conducted review of the above-referenced undertaking in accordance with the standards set forth in 36 C.F.R. 800, regulations established by the Advisory Council on Historic Preservation to implement Section 106 of the National Historic Preservation Act. Project review consists of identifying the project's potential impacts to historic buildings, structures, historic districts, historic landscapes and settings, and known or potential archeological resources.

I reviewed this undertaking in my Historic Buildings Evaluation Report dated October 2013. On January 8, 2014, the State Historic Preservation Officer (SHPO) concurred with my determination that the proposed demolition of the house at 39 Bright Street, a dwelling that is in poor condition but appears marginally eligible for listing in the National Register of Historic Places, would result in an adverse effect. The SHPO also agreed with the proposed mitigation measure to handle the adverse effect, which called for new construction that will be compatible with the surrounding historic resources in this neighborhood in the Old North End, and for the opportunity to review plans and elevations of the proposed new buildings on the site. I have recently reviewed updated plans and elevations dated 7/16/14: #s 5.1, 5.2, 6.1, 7.1, and also a 3-D rendering of the proposed buildings on the site, a conceptual streetscape view of Bright Street with the new housing structures, and a site plan. Copies of these plans have been forwarded to the SHPO for review and concurrence.

In my professional opinion, the proposed designs for the Bright Street Cooperative comply with *The Secretary of the Interior's Standards* for new construction in a historic neighborhood, and meet the mitigation measure for this project for new designs that are compatible with the historic character of Bright Street and surrounding resources. If the SHPO concurs with this determination, please sign on the line provided below.

Sincerely yours,

Liz Pritchett, Historic Preservation Consultant

Concur:

Vermont State Historic Preservation Officer

8/8/14

Date

cc: Amy Demetrowitz, Champlain Housing Trust

SLIM12Y

12, 18 and 26 Watt SLIM wallpacks are ultra efficient and deliver impressive light distribution with a compact low-profile design that's super easy to install as a downlight or uplight.

Color: Bronze

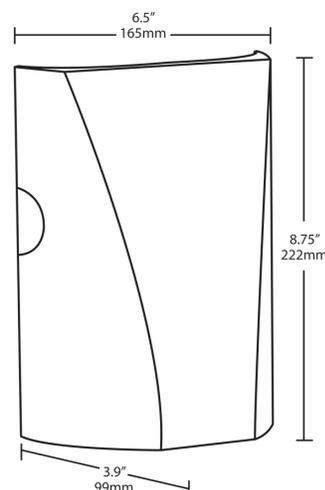
Weight: 4.5 lbs

LED Info

Watts: 12W
 Color Temp: 3000K (Warm)
 Color Accuracy: 82
 L70 Lifespan: 100000
 LM79 Lumens: 1,019
 Efficacy: 72 LPW

Driver Info

Type: Constant Current
 120V: 0.12A
 208V: 0.08A
 240V: 0.07A
 277V: 0.06A
 Input Watts: 14W
 Efficiency: 85%



Technical Specifications

UL Listing:

Suitable for wet locations. Suitable for mounting within 1.2m (4ft) of the ground.

IP Rating:

Ingress Protection rating of IP66 for dust and water.

LED:

Multi-chip, long-life LED.

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

Driver:

Constant Current, Class 2, 100-277V, 50/60 Hz., 4KV surge protection, 350mA, 100-240VAC 0.3-0.15 Amps, 277VAC 0.15Amps, Power Factor 99%.

THD:

10.4% at 120V

Input Watts:

14W.

Output Lumens:

1,019.

Color Accuracy (CRI):

82 CRI

Correlated Color Temp. (Nominal CCT):

3000K

Cold Weather Starting:

The minimum starting temperature is -40°F/-40°C.

Ambient Temperature:

Suitable for use in 40°C (104°F) ambient temperatures.

Thermal Management:

Superior heat sinking with internal Air-Flow fins.

Housing:

Precision die-cast aluminum housing.

Mounting:

Heavy-duty mounting bracket with hinged housing for easy installation.

Recommended Mounting Height:

Up to 8 ft.

HID Replacement Range:

The SLIM12 can be used to replace 70W MH based on delivered lumens.

Lens:

Tempered glass lens.

Reflector:

Specular thermoplastic.

Gaskets:

High-temperature silicone.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

ADA Compliant:

SLIM™ is ADA Compliant.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.

SLIM12Y - continued

Dark Sky Approved:

The International Dark Sky Association has approved this product as a full cutoff, fully shielded luminaire.

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines for the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2011.

Green Technology:

Mercury and UV free, and RoHS compliant.

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

Patents:

The design of the SLIM™ is protected by patents in U.S. Pat D681,864, and pending patents in Canada, China, Taiwan and Mexico.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010).

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

Suitable in accordance with FAR Subpart 25.4.

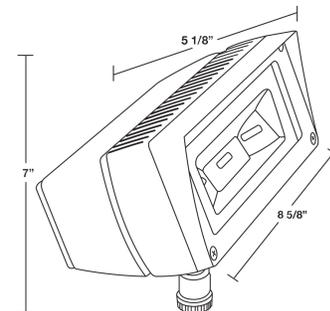


FFLED18Y

Rectangular shaped LED floodlight designed to replace 70W Metal Halide. Patent Pending airflow technology ensures long LED and driver lifespan. Use for building facade lighting, sign lighting, LED landscape lighting and instant-on security lighting.

Color: Bronze

Weight: 4.8 lbs



LED Info

Watts: 18W
 Color Temp: 3000K (Warm)
 Color Accuracy: 84
 L70 Lifespan: 100000
 LM79 Lumens: 1,422
 Efficacy: 64 LPW

Driver Info

Type: Constant Current
 120V: 0.2A
 208V: 0.15A
 240V: 0.13A
 277V: 0.11A
 Input Watts: 22W
 Efficiency: 81%

Technical Specifications

Lumen Maintenance:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

IP Rating:

Ingress Protection rating of IP65 for dust and water.

NEMA Type:

7H x 6V Beam Spread.

Airflow:

Patent pending Airflow technology heat sink for superior cooling.

LEDs:

18 Watt high performance LEDs.

Driver:

Constant Current, Class 2, 100 - 277V, 50 - 60 Hz, 100 - 277VAC 0.4 Amps.

THD:

10.6% at 120V

Surge Protection:

6kV

Ambient Temperature:

Suitable for use in 40°C ambient temperatures.

Cold Weather Starting:

The minimum starting temperature is -40°F/-40°C.

Thermal Management Housing:

Die-cast aluminum housing, lens frame and mounting arm.

Mounting:

Heavy-duty mounting arm with O ring seal & stainless steel screw.

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for (SSL) Products, ANSI C78.377-2008.

Equivalency:

The FFLED18 is Equivalent in delivered lumens to a 70W Metal Halide.

Reflector:

Semi-specular anodized aluminum.

Gaskets:

High-temperature silicone gaskets.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

Mercury and UV free.

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy Lighting Facts label.



FFLED18Y - continued

California Title 24:

FFLED18 complies with California Title 24 building and electrical codes.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Patents:

The FFLED design is protected by U.S. Pat. D643,147, Canada Pat. 140798, China Pat. ZL201130171304.1, Mexico Pat. 36757 and pending patent in Taiwan.

UL Listing:

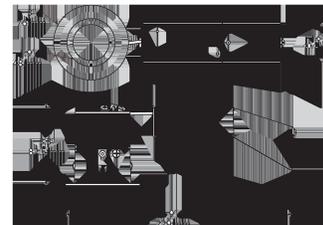
Suitable For Wet Locations. Suitable for mounting within 1.2M(4FT) of the ground.

RDLED2R8-WY-TW

Clean, unobtrusive design delivers smooth and abundant light from an aperture just over 1 inch wide. Available in flush trim for a trimless look without the mess left behind from ceiling finishing work.

Color: White trim

Weight: 1.5 lbs



LED Info

Watts: 8W
 Color Temp: 3000K
 Color Accuracy: 83
 L70 Lifespan: 100000
 LM79 Lumens: 582
 Efficacy: 65 LPW

Driver Info

Type: Constant Current
 120V: 0.08A
 208V: N/A
 240V: N/A
 277V: N/A
 Input Watts: 9W
 Efficiency: 90%

Technical Specifications

UL Listing:

Suitable for wet locations in a covered ceiling

IC Rating:

Suitable for direct contact with insulation

Trim Component:

This component can be ordered with New Construction housing in order to make a complete fixture.

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LED:

High-output, long-life LED with 2-step binning and integrated driver technology

Driver:

Constant Current, Class 2, 120VAC Only, 50/60Hz, 200mA, 0.07A

Ambient Temperature:

Suitable for use in 55°C ambient temperatures

Cold Weather Starting:

The minimum starting temperature is -40°F/-40°C

Dimming Driver:

TRIAC compatible dimmer as low as 10%.

Lens:

Nanostructure lens eliminates "hot spots", and helps provide smooth, uniform light and higher efficiency

Housing:

Specification-grade, die-cast aluminum construction

Installation:

Torsion springs easily install into ceiling collar (remodeler) or rough-in (new construction)

Optics:

Wall wash optics engineered for wide lateral distribution and smooth soft light from ceiling to floor.

Trim Ring:

White powder coated die cast 1/2" trim ring.

Spacing Criteria:

0-180° (along): 0.92
 90-270° (across): 1.28
 diagonal: 1.06

Equivalency:

RDLED 8W is equivalent to 50W MR16

Color Consistency:

2-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period

Green Technology:

Mercury and UV free, and RoHS compliant

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contain no VOC or toxic heavy metals.

IESNA LM79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

California Title 24:

RDLED2R8 complies with 2013 California Title 24 building and electrical codes as a commercial indoor fixture for general spaces when used with a vacancy sensor and TRIAC dimming control. Select a vacancy sensor using catalog number LVS800. TRIAC dimmer provided by others.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of ten (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010)

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

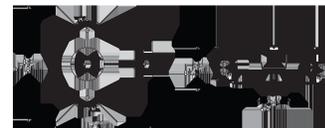
Suitable in accordance with FAR Subpart 25.4

ND2T

Easy to install 2" new construction rough-in for use with RDLED2 trims. The Remodeler Trim component must be ordered with the New Construction Housing in order to make a complete fixture. Available in flush trim for a trimless look without the mess left behind from ceiling finishing work.

Color: Natural

Weight: 1.6 lbs



LED Info

Watts: 0W
 Color Temp: Sold Separately
 Color Accuracy: N/A
 L70 Lifespan: N/A
 LM79 Lumens: 0
 Efficacy: N/A

Driver Info

Type: N/A
 120V: N/A
 208V: N/A
 240V: N/A
 277V: N/A
 Input Watts: 0W
 Efficiency: N/A

Technical Specifications

UL Listed:

Suitable for wet locations in a covered ceiling

IC Rating:

Suitable for direct contact with insulation

Housing Component:

This component must be ordered with the 2 inch downlights trim in order to make a complete fixture.

[See here for Square 2" Trims](//productLines.php?majorGroup=REMODELE_R_2INCH_SQUARE)

Housing:

Professional-grade, heavy-gauge steel construction with 1/2" trim.

Butterfly Brackets:

The Butterfly bracket allows to mount with the following 1/4 x 1/2" bar stock, C Channel, 1/2" conduit, or nailer bars.

Easy Installation:

Ceiling clamps install quickly and hold housing securely. Clamp ceilings from 1/2" to 2 1/2" thick, with course and fine adjustments.

Trim:

1/2" trim

California Title 24:

ND2T complies with 2013 California Title 24 building and electrical codes as a commercial indoor fixture for general spaces when used with a RAB 2 inch LED downlight, a vacancy sensor and TRIAC dimming control. Select a vacancy sensor using catalog number LVS800. TRIAC dimmer provided by others.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of ten (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010)

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

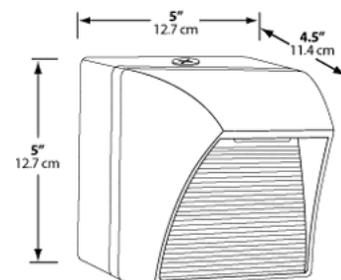
Suitable in accordance with FAR Subpart 25.4

WPLED5Y

LED 5W Wallpacks. 3 cutoff options. Patent Pending thermal management system. 100,000 hour L70 lifespan. 5 Year Warranty.

Color: Bronze

Weight: 2.0 lbs



LED Info

Watts: 5W
 Color Temp: 3000K (Warm)
 Color Accuracy: 88
 L70 Lifespan: 100000
 LM79 Lumens: 128
 Efficacy: 24 LPW

Driver Info

Type: Constant Current
 120V: 0.18A
 208V: 0.18A
 240V: 0.18A
 277V: N/A
 Input Watts: 5W
 Efficiency: 94%

Technical Specifications

UL Listing:

Suitable for wet locations in downlight position only.
 Suitable for mounting within 1.2m (4ft) of the ground.

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

IP Rating:

Ingress Protection rating of IP66 for dust and water.

Patents:

The WPLED design is protected by patents pending in the U.S., Canada, China, Taiwan and Mexico.

LEDs:

5W, high-output, long-life LED.

Drivers:

Constant current, Class 2, 100 - 240VAC, 50 - 60 Hz, 0.18 Amps.

Fixture Efficacy:

24 Lumens per Watt

Ambient Temperature:

Suitable for use in 40°C ambient temperatures.

Surge Protection:

1 KV

Cold Weather Starting:

The minimum starting temperature is -40°F/-40°C.

Thermal Management:

Integral cast aluminum mounting pad for optimum heat sinking to ensure cool operation with maximum LED life and light output.

Housing:

Precision die cast aluminum housing and mounting plate. 1 1/2" backbox with three 1/2" conduit entry points.

Gaskets:

High temperature silicone gaskets.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Color Accuracy:

88 CRI

Color Temperature (Nominal CCT):

3000K

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated color temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2008.

Equivalency:

The WPLED5 is Equivalent in delivered lumens to a 13W CFL or 60W incandescent.

Green Technology:

Mercury and UV free.



WPLED5Y - continued

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and 80, and have received the Department of Energy "Lighting Facts" label.

California Title 24:

WPLED5 complies with California Title 24 building and electrical codes.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010).

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

Suitable in accordance with FAR Subpart 25.4.

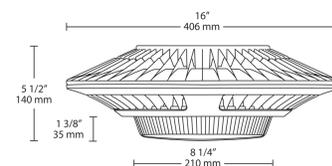


GLEED78

78 Watts of energy efficient LED garage lighting replaces 250 Watt Metal Halide. 100,000 hour LED lifespan. 5 year warranty. High-performance output maximizes spacing criterion.

Color: Bronze

Weight: 18.2 lbs



LED Info

Watts: 78W
 Color Temp: 5100K (Cool)
 Color Accuracy: 68
 L70 Lifespan: 100000
 LM79 Lumens: 7,053
 Efficacy: 80 LPW

Driver Info

Type: Constant Current
 120V: 0.74A
 208V: 0.47A
 240V: 0.41A
 277V: 0.35A
 Input Watts: 88W
 Efficiency: 88%

Technical Specifications

UL Listing:

Suitable for Wet Locations. Covered Ceiling Mount Only.

Lumen Maintenance:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LEDs:

6x13W high-output, long-life LEDs.

Drivers:

3x26W Driver, Constant Current, Class 2, 100V-277V, 50/60 Hz, 6kv Surge Protection, 720mA, 100-277VAC 0.4 Amps.

Power Factor:

99.4% at 120V, 90.8% 277V

THD:

8.0% at 120V, 10.7% at 277V

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F).

Ambient Temperature:

Suitable for use in 40°C (104°F) ambient temperatures.

Thermal Management:

Superior heat sinking with integrated air-flow fins.

Housing:

Precision die-cast aluminum housing and door frame.

Mounting:

Easy hanging plate with hooks for ceiling mount.

Lens:

Prismatic polycarbonate lens.

Reflector:

Specular vacuum-metallized polycarbonate

Gaskets:

High-temperature silicone.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.

Color Consistency:

7-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2011.

Equivalency:

The GLED78 is Equivalent in delivered lumens to 250W Metal Halide.

Green Technology:

Mercury and UV Free, and RoHS compliant.

GLED78 - continued

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

California Title 24:

See GLED78BB/BL or GLED52/D10 for a 2013 California Title 24 compliant product. Any additional component requirements will be listed in the Title 24 section under technical specifications on the product page.

Patents:

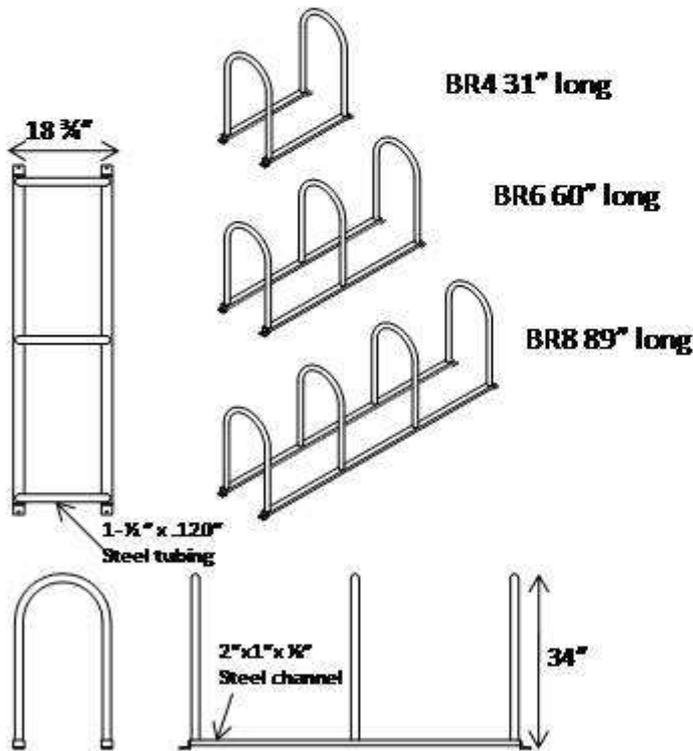
The design of GLED78 is protected by patents pending in US, Canada, China, Taiwan and Mexico.



Data Sheet

The Bike Rib[®] Rack

Stable, secure, easy to use, no-nonsense bike parking. The Rib Rack has been an industry standard for the last 20 years, replacing the old wheel bender racks in schoolyards, playgrounds and city streets throughout the USA.



Finish Options

Galvanized

Hot-dipped after fabrication

Powder Coat Paint

With optional zinc rich prime coat

Thermo-plastic Coating

With optional zinc rich prime coat

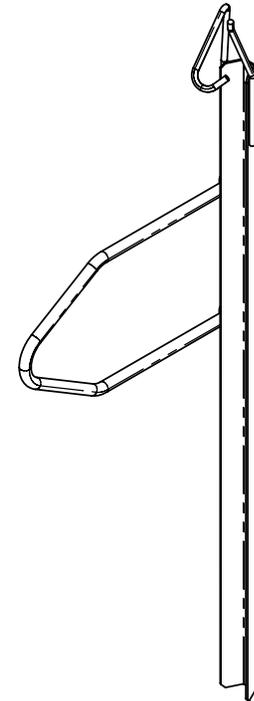
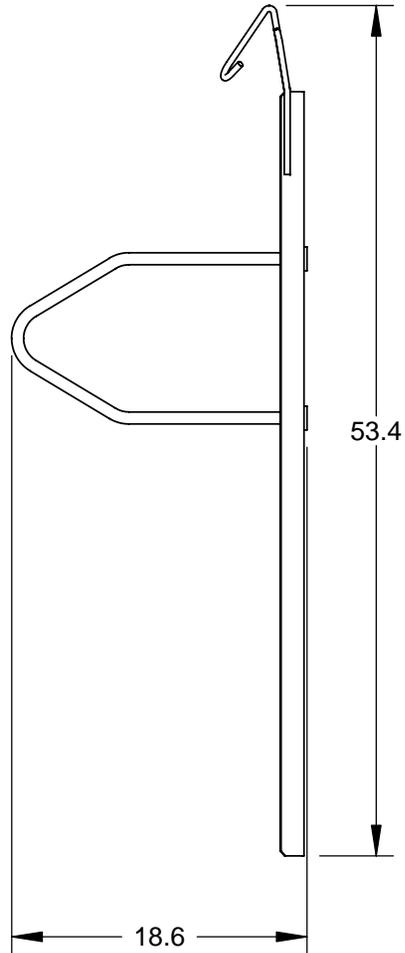
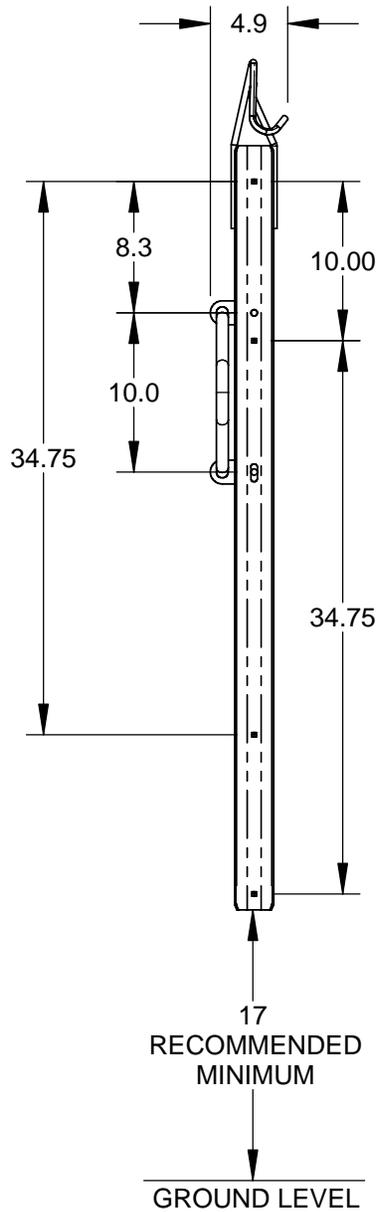
Only available in surface mount (shown in photos)

Function First, Inc. 3935 N. Country Club Rd. #25 Tucson, AZ 85716

<http://www.bikerack.com> - bikeribs@yahoo.com

1.888.BIKE.RIB 1.888(245.3742)

FAX 1.520.844.1110



NOTE:

1. DO NOT SCALE DRAWING.
2. INTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



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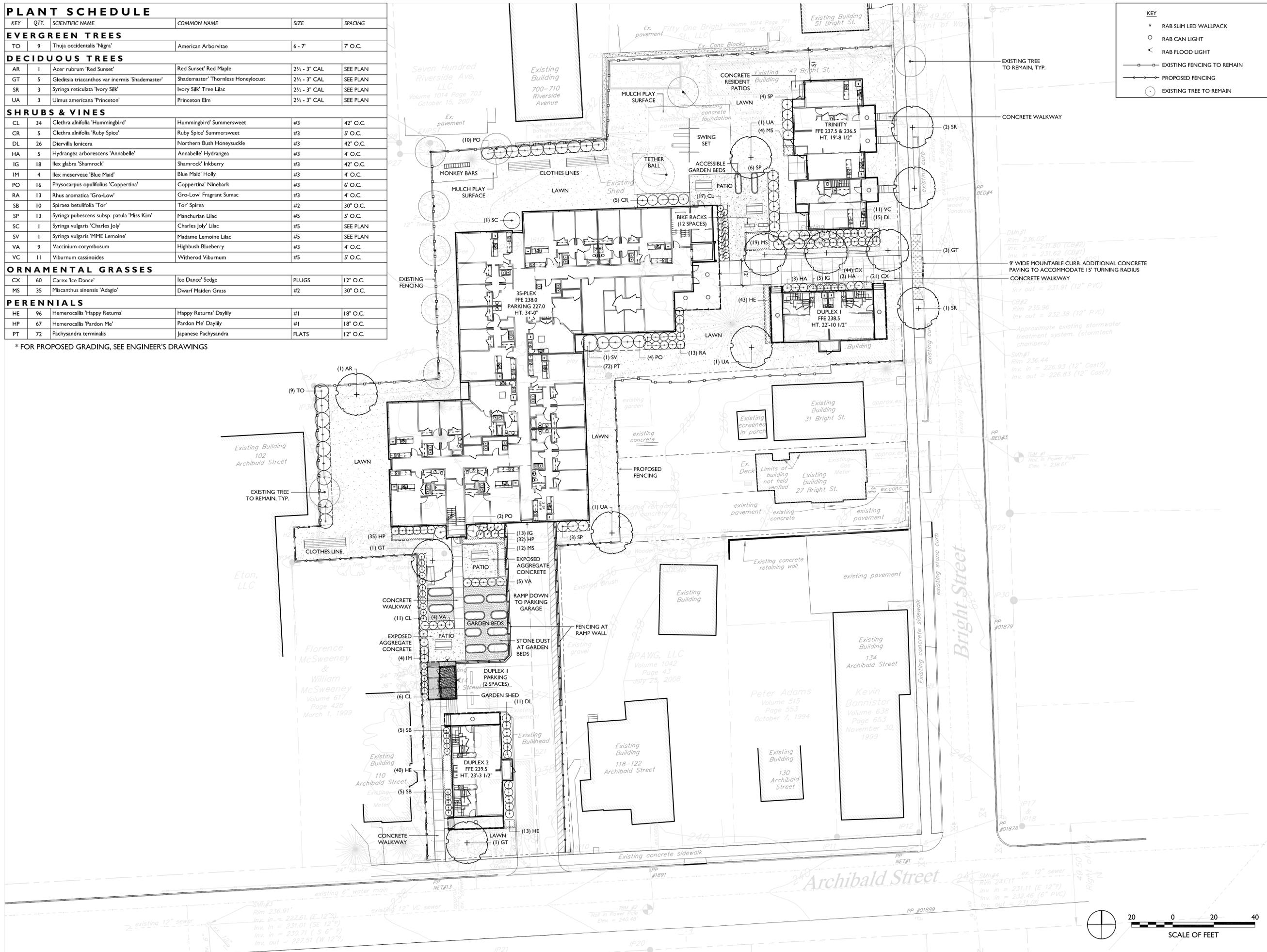
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TITLE:
6006 - LOCKING VERTICAL RACK

PLANT SCHEDULE

KEY	QTY.	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING
EVERGREEN TREES					
TO	9	Thuja occidentalis 'Nigra'	American Arborvitae	6 - 7'	7' O.C.
DECIDUOUS TREES					
AR	1	Acer rubrum 'Red Sunset'	Red Sunset' Red Maple	2 1/2 - 3" CAL	SEE PLAN
GT	5	Gleditsia triacanthos var inermis 'Shademaster'	Shademaster' Thornless Honeylocust	2 1/2 - 3" CAL	SEE PLAN
SR	3	Syringa reticulata 'Ivory Silk'	Ivory Silk' Tree Lilac	2 1/2 - 3" CAL	SEE PLAN
UA	3	Ulmus americana 'Princeton'	Princeton Elm	2 1/2 - 3" CAL	SEE PLAN
SHRUBS & VINES					
CL	34	Clethra alnifolia 'Hummingbird'	Hummingbird' Summersweet	#3	42" O.C.
CR	5	Clethra alnifolia 'Ruby Spice'	Ruby Spice' Summersweet	#3	5' O.C.
DL	26	Dierrevilla lonicera	Northern Bush Honeysuckle	#3	42" O.C.
HA	5	Hydrangea arborescens 'Annabelle'	Annabelle' Hydrangea	#3	4' O.C.
IG	18	Ilex glabra 'Shamrock'	Shamrock' Inkberry	#3	42" O.C.
IM	4	Ilex meserveae 'Blue Maid'	Blue Maid' Holly	#3	4' O.C.
PO	16	Physocarpus opulifolius 'Coppertina'	Coppertina' Ninebark	#3	6' O.C.
RA	13	Rhus aromatica 'Gro-Low'	Gro-Low' Fragrant Sumac	#3	4' O.C.
SB	10	Spiraea betulifolia 'Tor'	Tor' Spirea	#2	30" O.C.
SP	13	Syringa pubescens subsp. patula 'Miss Kim'	Manchurian Lilac	#5	5' O.C.
SC	1	Syringa vulgaris 'Charles Joly'	Charles Joly' Lilac	#5	SEE PLAN
SV	1	Syringa vulgaris 'MME Lemoine'	Madame Lemoine Lilac	#5	SEE PLAN
VA	9	Vaccinium corymbosum	Highbush Blueberry	#3	4' O.C.
VC	11	Viburnum cassinoides	Withered Viburnum	#5	5' O.C.
ORNAMENTAL GRASSES					
CX	60	Carex 'Ice Dance'	Ice Dance' Sedge	PLUGS	12" O.C.
MS	35	Miscanthus sinensis 'Adagio'	Dwarf Maiden Grass	#2	30" O.C.
PERENNIALS					
HE	96	Hemerocallis 'Happy Returns'	Happy Returns' Daylily	#1	18" O.C.
HP	67	Hemerocallis 'Pardon Me'	Pardon Me' Daylily	#1	18" O.C.
PT	72	Pachysandra terminalis	Japanese Pachysandra	FLATS	12" O.C.

* FOR PROPOSED GRADING, SEE ENGINEER'S DRAWINGS



KEY

- ▽ RAB SLIM LED WALLPACK
- RAB CAN LIGHT
- ◀ RAB FLOOD LIGHT
- EXISTING FENCING TO REMAIN
- PROPOSED FENCING
- EXISTING TREE TO REMAIN

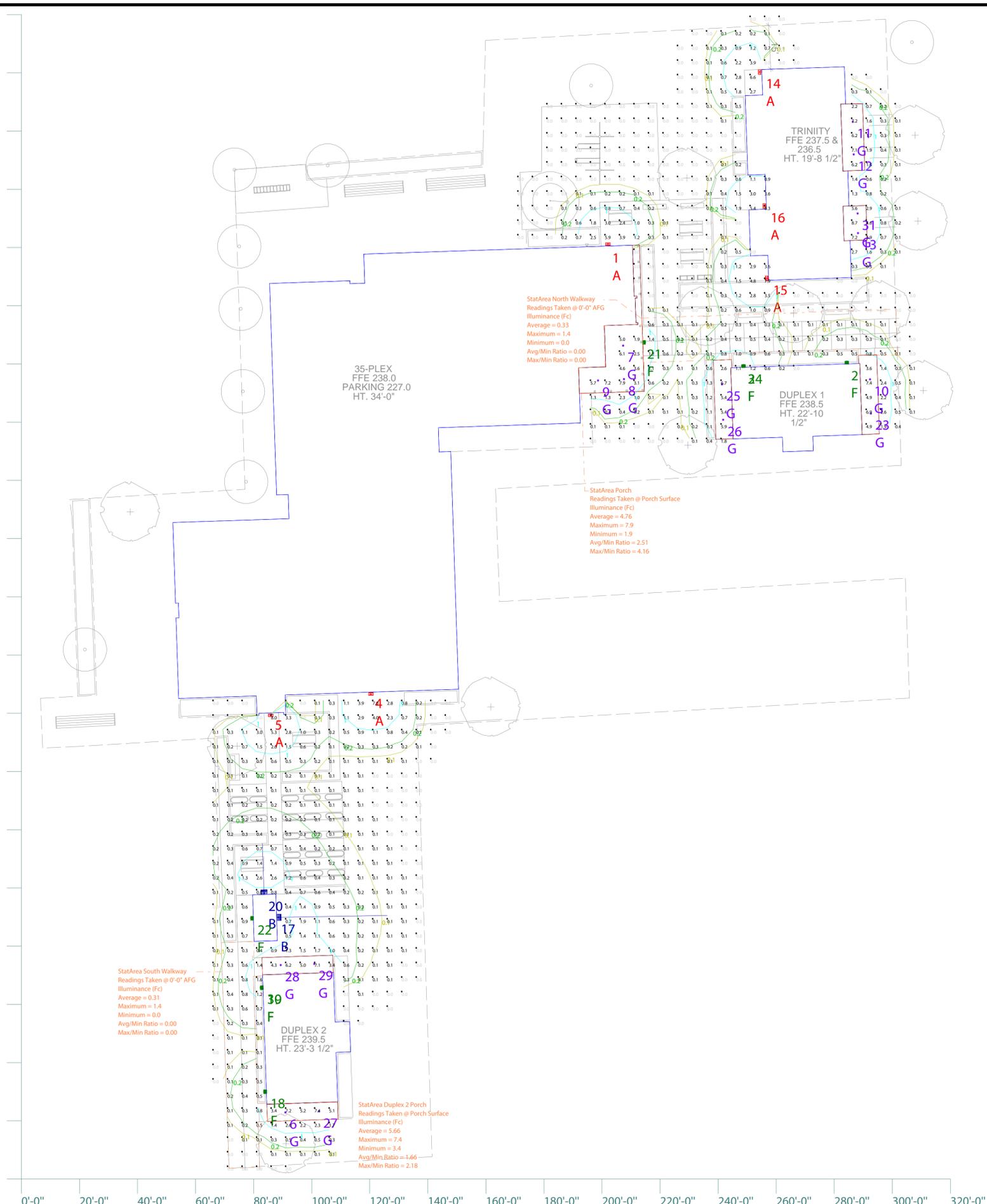
BRIGHT STREET COOPERATIVE

PLANTING PLAN

REVISIONS



400'-0"
380'-0"
360'-0"
340'-0"
320'-0"
300'-0"
280'-0"
260'-0"
240'-0"
220'-0"
200'-0"
180'-0"
160'-0"
140'-0"
120'-0"
100'-0"
80'-0"
60'-0"
40'-0"
20'-0"
0'-0"



StatArea South Walkway
Readings Taken @ 0'-0" AFG
Illuminance (Fc)
Average = 0.31
Maximum = 1.4
Minimum = 0.0
Avg/Min Ratio = 0.00
Max/Min Ratio = 0.00

35-PLEX
FFE 238.0
PARKING 227.0
HT. 34'-0"

TRINITY
FFE 237.5 &
236.5
HT. 19'-8 1/2"

DUPLIX 1
FFE 238.5
HT. 22'-10
1/2"

DUPLIX 2
FFE 239.5
HT. 23'-3 1/2"

StatArea Duplex 2 Porch
Readings Taken @ Porch Surface
Illuminance (Fc)
Average = 5.66
Maximum = 7.4
Minimum = 3.4
Avg/Min Ratio = 1.66
Max/Min Ratio = 2.18

0'-0" 20'-0" 40'-0" 60'-0" 80'-0" 100'-0" 120'-0" 140'-0" 160'-0" 180'-0" 200'-0" 220'-0" 240'-0" 260'-0" 280'-0" 300'-0" 320'-0"

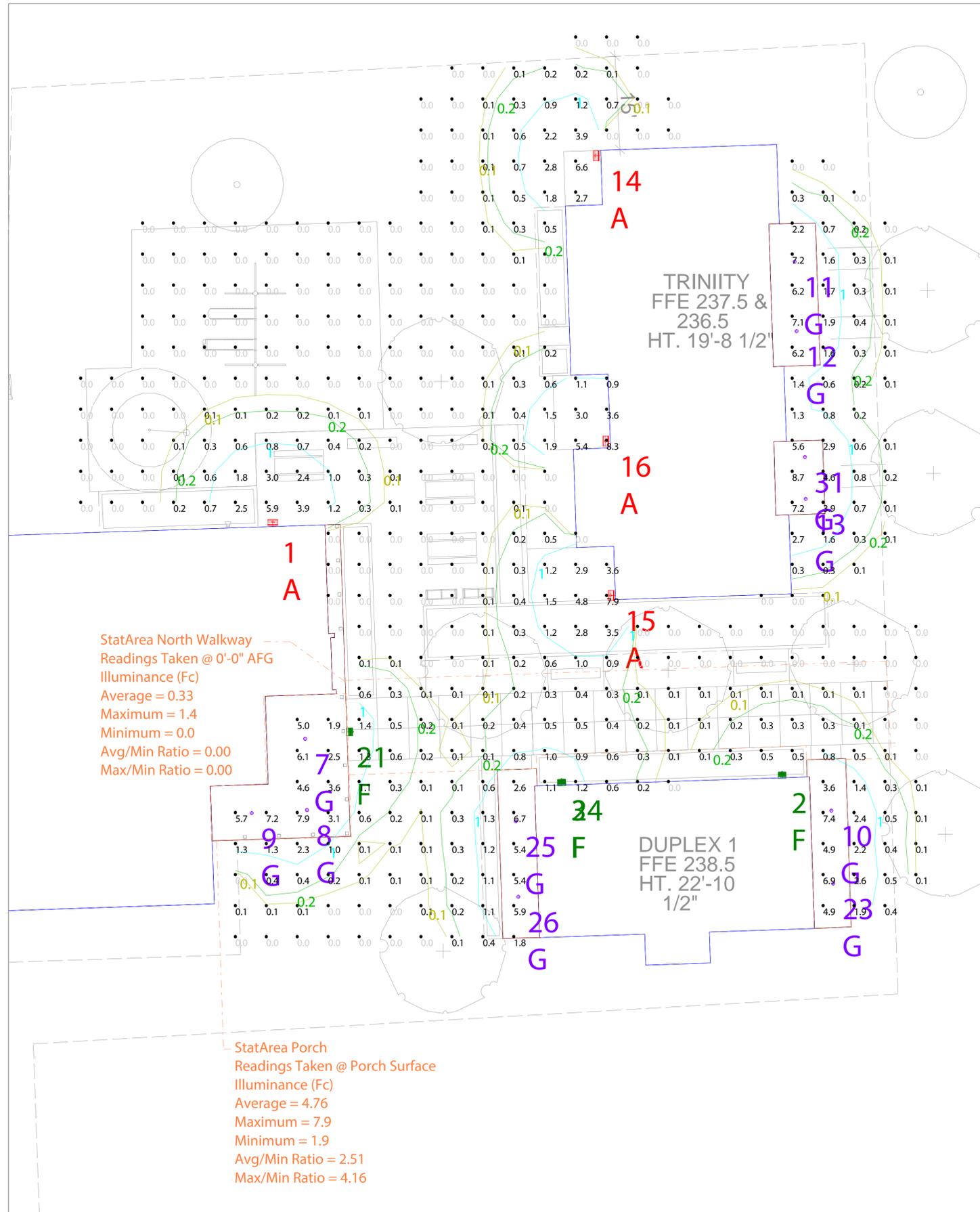
Scale: 1 inch= 20 Ft.

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<p>Scale: as noted</p> <p>Date: 7/31/2014</p> <p>Drawn By: BEL</p>	<p>Job Name:</p> <p>Bright Street Cooperative</p> <p>Burlington, VT</p> <p>Lighting Layout</p> <p>Version E</p>	<p>Prepared For:</p> <p>Holbrook Associated</p> <p>35 Reservoir Park Drive</p> <p>Rockland, MA 02370</p> <p>Tel: 888-839-1578</p>	<p>RAB Lighting</p> <p>170 Ludlow Avenue</p> <p>Northvale, NJ 07647</p> <p>Tel: (888) 722-1000</p> <p>Fax: (888) 722-1232</p> <p>WWW.RABWEB.COM</p>
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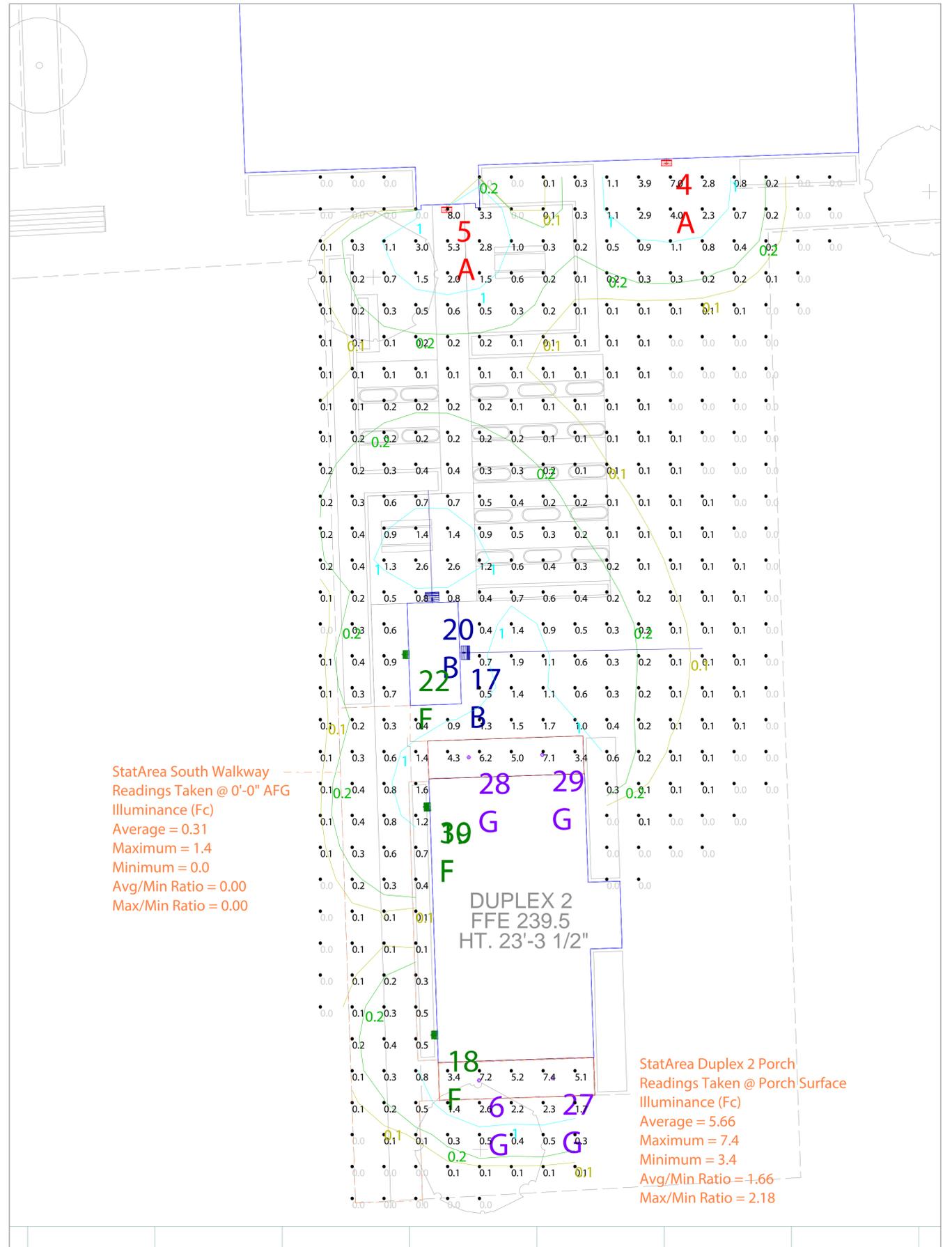




StatArea North Walkway
 Readings Taken @ 0'-0" AFG
 Illuminance (Fc)
 Average = 0.33
 Maximum = 1.4
 Minimum = 0.0
 Avg/Min Ratio = 0.00
 Max/Min Ratio = 0.00

StatArea Porch
 Readings Taken @ Porch Surface
 Illuminance (Fc)
 Average = 4.76
 Maximum = 7.9
 Minimum = 1.9
 Avg/Min Ratio = 2.51
 Max/Min Ratio = 4.16

Scale: 1 inch= 10 Ft.



StatArea South Walkway
 Readings Taken @ 0'-0" AFG
 Illuminance (Fc)
 Average = 0.31
 Maximum = 1.4
 Minimum = 0.0
 Avg/Min Ratio = 0.00
 Max/Min Ratio = 0.00

StatArea Duplex 2 Porch
 Readings Taken @ Porch Surface
 Illuminance (Fc)
 Average = 5.66
 Maximum = 7.4
 Minimum = 3.4
 Avg/Min Ratio = 1.66
 Max/Min Ratio = 2.18

Scale: 1 inch= 10 Ft.

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Scale: as noted
 Date: 7/31/2014
 Drawn By: BEL

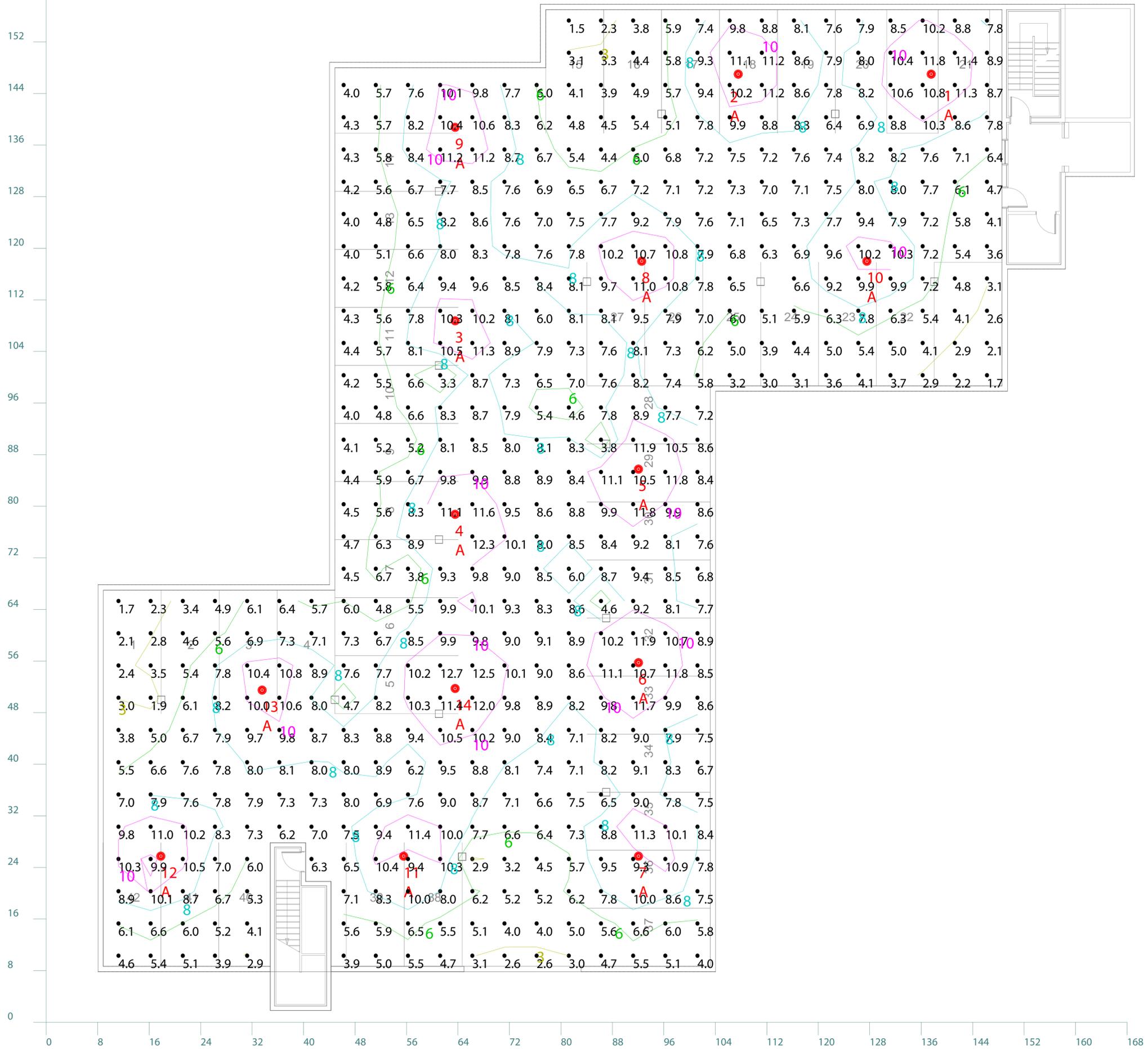
Job Name:
 Bright Street Cooperative
 Burlington, VT
 Lighting Layout
 Version E

Prepared For:
 Holbrook Associated
 35 Reservoir Park Drive
 Rockland, MA 02370
 Tel: 888-839-1578

RAB Lighting
 170 Ludlow Avenue
 Northvale, NJ 07647
 Tel: (888) 722-1000
 Fax: (888) 722-1232
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Scale: 1 inch= 8 Ft.

Lighting Design Disclaimer

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Scale: as noted	Date: 7/1/2014	Drawn By: BEL
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Job Name: Bright Street Garage Burlington, VT Lighting Layout Version B

Prepared For: Holbrook Associated P.O. Box 401 Rockland, MA 02370 Tel: 800-322-9641 Fax: 781-871-2956

RAB Lighting 170 Ludlow Avenue Northvale, NJ 07647 Tel: (888) 722-1000 Fax: (888) 722-1232 WWW.RABWEB.COM

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Luminaire Schedule											
Symbol	Tag	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts	Arr. Watts	Total Watts	Filename
	A	14	GLED78	SINGLE	7053	1.000	LED Garage Ceiling Mount 78W Cool	88.3	88.3	1236.2	GLED78 - Cool - ITL79965.IES

Calculation Summary											
Label	Description	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	PtSpcLr	PtSpcTb	
CalcPts Parking Garage	Readings Taken @ 0'-0" AFF	Illuminance	Fc	7.37	12.7	1.5	4.91	8.47	5	5	

Expanded Luminaire Location Summary					
LumNo	Tag	Label	X	Y	Z
1	A	GLED78	133.5	147	8.15
2	A	GLED78	103.5	147	8.15
3	A	GLED78	59.5	108.75	8.15
4	A	GLED78	59.5	78.75	8.15
5	A	GLED78	88	85.75	8.15
6	A	GLED78	88	55.75	8.15
7	A	GLED78	88	25.75	8.15
8	A	GLED78	88.5	118	8.15
9	A	GLED78	59.5	138.75	8.15
10	A	GLED78	123.5	118	8.15
11	A	GLED78	51.5	25.75	8.15
12	A	GLED78	13.75	25.75	8.15
13	A	GLED78	29.5	51.5	8.15
14	A	GLED78	59.5	51.75	8.15

Total Quantity: 14

NOTES:

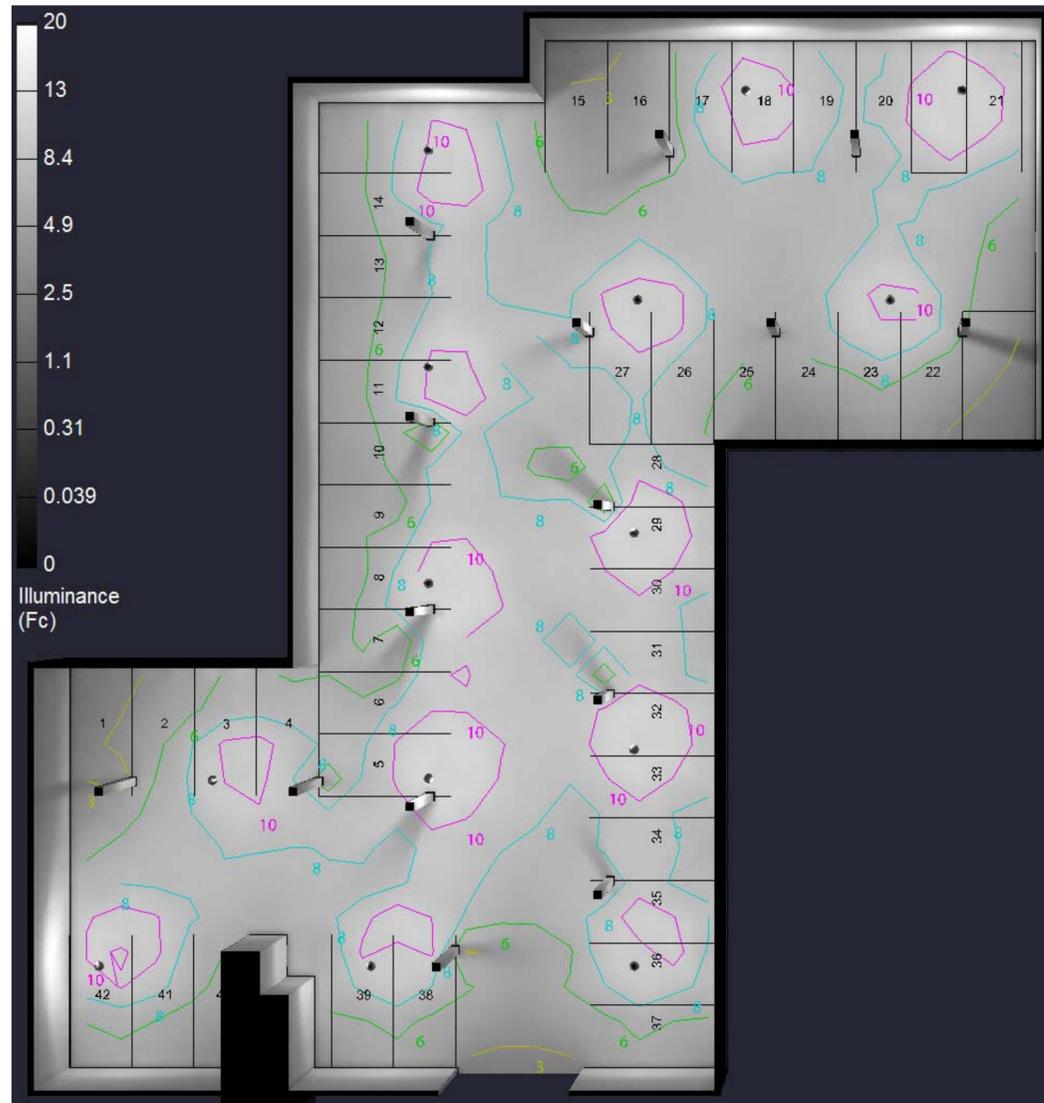
* The light loss factor (LLF) is a product of many variables, only lamp lumen depreciation (LLD) has been applied to the calculated results unless otherwise noted. The LLD is the result (quotient) of mean lumens / initial lumens per lamp manufacturers' specifications.

* Illumination values shown (in footcandles) are the predicted results for planes of calculation either horizontal, vertical or inclined as designated in the calculation summary. Meter orientation is normal to the plane of calculation.

* The calculated results of this lighting simulation represent an anticipated prediction of system performance. Actual measured results may vary from the anticipated performance and are subject to means and methods which are beyond the control of RAB Lighting, Inc.

* Mounting height determination is job site specific, our lighting simulations assume a mounting height (insertion point of the luminaire symbol) to be taken at the top of the symbol for ceiling mounted luminaires and at the bottom of the symbol for all other luminaire mounting configurations.

* RAB Lighting Inc. luminaire and product designs are protected under U.S. and International intellectual property laws. Patents issued or pending apply.



Top View



Interior View



A : GLED78

Lighting Design Disclaimer

The Lighting Analysis, Layout, Energy Analysis and/or Visual Simulation ("Lighting Design") provided by RAB Lighting, Inc. ("RAB") represents an anticipated prediction of lighting system performance based upon design parameters and information supplied by others. These design parameters and information provided by others have not been field verified by RAB and therefore actual measured results may vary from the actual field conditions. RAB recommends that design parameters to actual measured light levels or energy consumption levels as compared to those illustrated by the Lighting Design. RAB neither warrants, either implied or stated, nor represents the appropriateness, completeness or suitability of the Lighting Design in compliance with any applicable regulatory code requirements with the exception of those specifically stated on drawings created and submitted by RAB. The Lighting Design is issued, in whole or in part, as advisory documents for informational purposes and is not intended for construction nor as being part of a project's construction documentation package.

Scale: as noted

Date: 7/1/2014

Drawn By: BEL

Job Name:
Bright Street Garage
Burlington, VT
Lighting Layout
Version B

Prepared For:
Holbrook Associated
P.O. Box 401
Rockland, MA 02370
Tel: 800-322-9641
Fax: 781-871-2956

RAB Lighting
170 Ludlow Avenue
Northvale, NJ 07647
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Fax: (888) 722-1232
WWW.RABWEB.COM

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Luminaire Schedule												
Symbol	Tag	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts	Arr. Watts	Total Watts	Filename	
	A	6	SLIM12Y	SINGLE	1019	1.000	LED Slim Wallpack 12W 3000K	14.3	14.3	85.8	SLIM12Y-Warm - ITL73995.IES	
	B	2	FFLED18Y	SINGLE	1432	1.000	LED Floodlight 18W 3000K	22.1	22.1	44.2	FFLED18Y - Warm - ITL78797.IES	
	F	8	WPLED5Y	SINGLE	128	1.000	LED Wallpack 5W 3000K	5.3	5.3	42.4	WPLED5Y-Warm - LSI27623.IES	
	G	15	RDLED2R8-WY-TW +ND2T	SINGLE	582	1.000	LED Downlight 8W 3000K	8.91	8.91	133.65	RDLED2R8-WY - Warm - ITL81484.ies	

Calculation Summary											
Label	Description	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	PtSpclr	PtSpctb	
CalcPts Ground Plane	Readings Taken @ 0'-0" AFG	Illuminance	Fc	0.68	8.7	0.0	N.A.	N.A.	5	5	
StatArea Duplex 2 Porch	Readings Taken @ Porch Surface	Illuminance	Fc	5.66	7.4	3.4	1.66	2.18			
StatArea North Walkway	Readings Taken @ 0'-0" AFG	Illuminance	Fc	0.33	1.4	0.0	N.A.	N.A.			
StatArea Porch	Readings Taken @ Porch Surface	Illuminance	Fc	4.76	7.9	1.9	2.51	4.16			
StatArea South Walkway	Readings Taken @ 0'-0" AFG	Illuminance	Fc	0.31	1.4	0.0	N.A.	N.A.			

Expanded Luminaire Location Summary								
LumNo	Tag	Label	X	Y	Z	Orient	Tilt	Roll
1	A	SLIM12Y	202.053	320.681	8	90	0	0
2	F	WPLED5Y	284.357	280.308	11	90	0	0
3	F	WPLED5Y	248.71	279.134	11	90	0	0
4	A	SLIM12Y	120.358	167.127	8	270	0	0
5	A	SLIM12Y	85.845	159.788	8	270	0	0
6	G	RDLED2R8-WY-TW +ND2T	90.922	22.91	7.5	90	0	0
7	G	RDLED2R8-WY-TW +ND2T	207.274	286.321	8	180	0	0
8	G	RDLED2R8-WY-TW +ND2T	207.569	274.83	8	135	0	0
9	G	RDLED2R8-WY-TW +ND2T	198.632	274.338	8	90	0	0
10	G	RDLED2R8-WY-TW +ND2T	292.325	274.74	7.5	180	0	0
11	G	RDLED2R8-WY-TW +ND2T	286.398	363.218	7.5	180	0	0
12	G	RDLED2R8-WY-TW +ND2T	286.705	352.015	7.5	180	0	0
13	G	RDLED2R8-WY-TW +ND2T	288.178	324.975	7.5	180	0	0
14	A	SLIM12Y	254.803	380.313	7.5	180	0	0
15	A	SLIM12Y	257.227	309.417	8	180	0	0
16	A	SLIM12Y	256.366	334.297	8	180	0	0
17	B	FFLED18Y	88.387	89.905	8	1	78	0
18	F	WPLED5Y	84.109	30.03	11	180	0	0
19	F	WPLED5Y	82.934	65.735	11	180	0	0
20	B	FFLED18Y	83.568	98.184	8	92	65	0
21	F	WPLED5Y	214.33	287.438	8	0	0	0
22	F	WPLED5Y	79.58	89.633	8	180	0	0
23	G	RDLED2R8-WY-TW +ND2T	292.627	262.985	7.5	180	0	0
24	F	WPLED5Y	248.782	279.133	11	93.781	0	0
25	G	RDLED2R8-WY-TW +ND2T	241.317	273.015	7.5	3.781	0	0
26	G	RDLED2R8-WY-TW +ND2T	241.731	260.856	7.5	3.781	0	0
27	G	RDLED2R8-WY-TW +ND2T	102.476	23.282	7.5	90	0	0
28	G	RDLED2R8-WY-TW +ND2T	89.315	73.537	7.5	273.77	0	0
29	G	RDLED2R8-WY-TW +ND2T	100.868	73.925	7.5	273.77	0	0
30	F	WPLED5Y	82.932	65.812	11	183.77	0	0
31	G	RDLED2R8-WY-TW +ND2T	288.055	331.727	7.5	180	0	0

Total Quantity: 31



A : SLIM12Y



B : FFLED18Y



G : RDLED2R8-WY-TW +ND2T



F : WPLED5Y

NOTES:

* CALCULATED VALUES DO NOT INCLUDE CONTRIBUTIONS FROM EXISTING LIGHT SOURCES

* The light loss factor (LLF) is a product of many variables, only lamp lumen depreciation (LLD) has been applied to the calculated results unless otherwise noted. The LLD is the result (quotient) of mean lumens / initial lumens per lamp manufacturers' specifications.

* Illumination values shown (in footcandles) are the predicted results for planes of calculation either horizontal, vertical or inclined as designated in the calculation summary. Meter orientation is normal to the plane of calculation.

* The calculated results of this lighting simulation represent an anticipated prediction of system performance. Actual measured results may vary from the anticipated performance and are subject to means and methods which are beyond the control of RAB Lighting, Inc.

* Mounting height determination is job site specific, our lighting simulations assume a mounting height (insertion point of the luminaire symbol) to be taken at the top of the symbol for ceiling mounted luminaires and at the bottom of the symbol for all other luminaire mounting configurations.

* RAB Lighting, Inc. luminaire and product designs are protected under U.S. and International intellectual property laws. Patents issued or pending apply.

This information is confidential and the sole property of RAB Lighting. It is not to be reproduced or distributed to others without the written permission of RAB Lighting. The calculation and results thereof as shown in this report are based on information provided by the customer. Therefore design parameters such as surface reflectances, size, mounting height, depreciation factors, orientation and tilt must be verified. RAB Lighting disclaims all implied warranties with regard to actual installed light levels as compared to those based on inaccurate or incomplete data. RAB LIGHTING NEITHER WARRANTS NOR REPRESENTS THE APPROPRIATENESS, COMPLETENESS OR SUITABILITY OF DESIGN ILLUSTRATION FOR SATISFYING ANY APPLICABLE REGULATORY CODE REQUIREMENTS. NOT FOR CONSTRUCTION.

Scale: as noted

Date: 7/31/2014

Drawn By: BEL

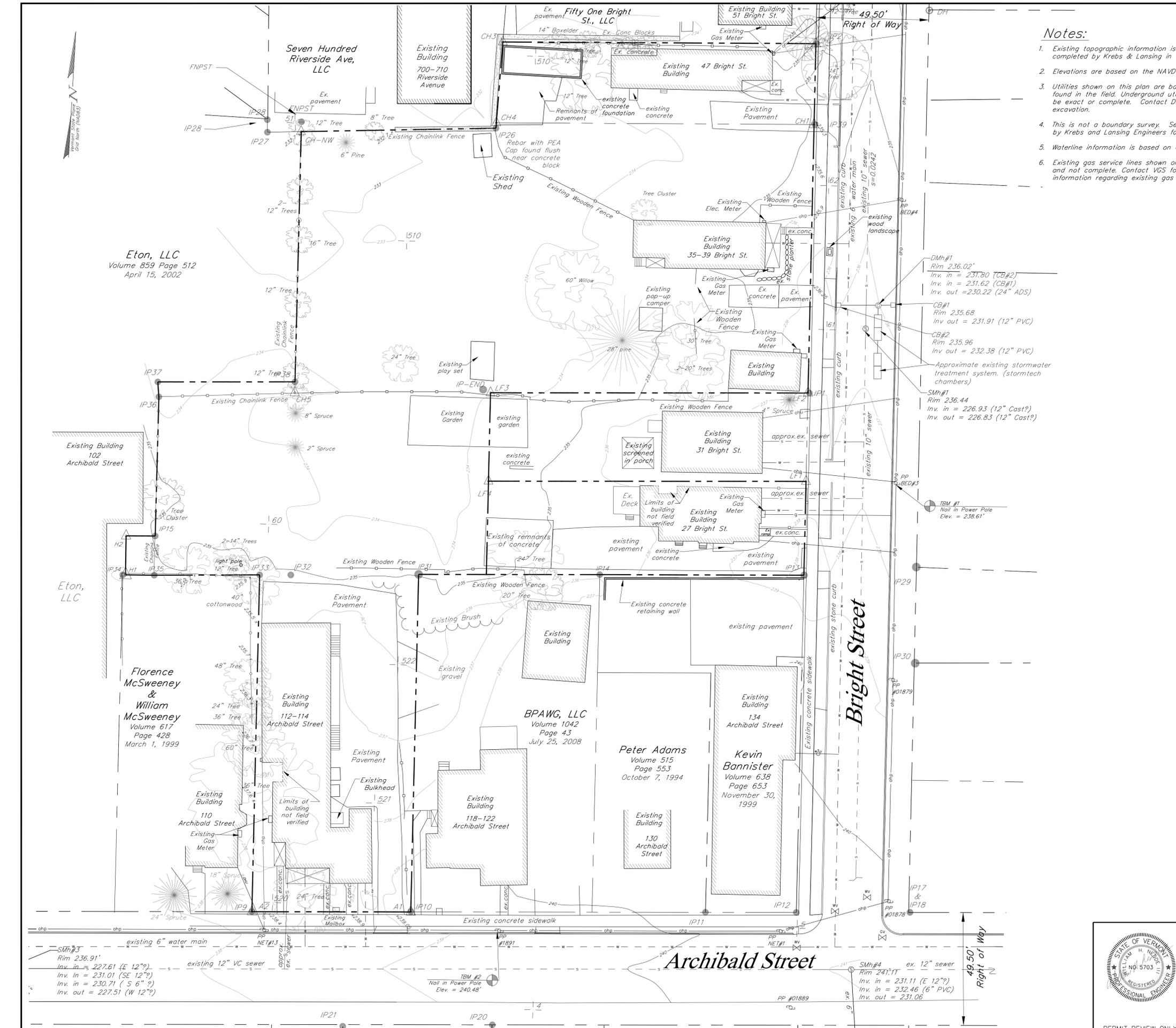
Job Name:
Bright Street Cooperative
Burlington, VT
Lighting Layout
Version E

Prepared For:
Holbrook Associated
35 Reservoir Park Drive
Rockland, MA 02370
Tel: 888-839-1578

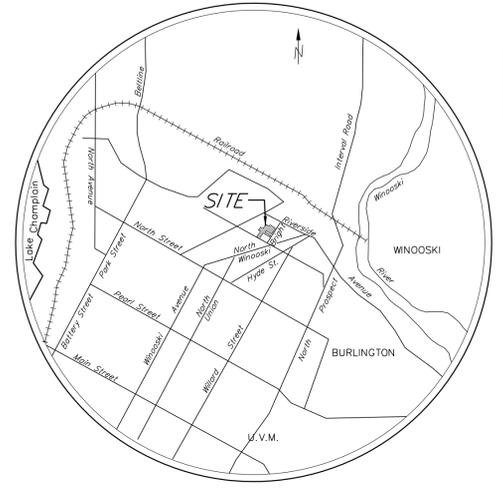
RAB Lighting
170 Ludlow Avenue
Northvale, NJ 07647
Tel: (888) 722-1000
Fax: (888) 722-1232
WWW.RABWEB.COM

Filename: C:\Users\brittany\My Documents\Bright Street Cooperative Layout 040114E.AGI



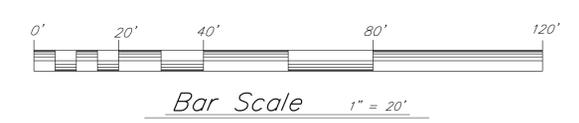


- Notes:**
- Existing topographic information is from a field survey completed by Krebs & Lansing in October of 2013.
 - Elevations are based on the NAVD 88 vertical datum.
 - Utilities shown on this plan are based on visible evidence found in the field. Underground utilities are not warranted to be exact or complete. Contact Dig Safe prior to any excavation.
 - This is not a boundary survey. See Boundary Survey prepared by Krebs and Lansing Engineers for boundary information.
 - Waterline information is based on City of Burlington Mapping.
 - Existing gas service lines shown on this plan are approximate and not complete. Contact VGS for complete and accurate information regarding existing gas lines.

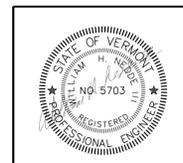


Location Map
N.T.S.

- Legend**
- |— Survey Control Point
 - ☆ Existing Sign
 - ☆ Existing Light Pole
 - ⊙ Existing Deciduous Tree
 - ⊙ Existing Evergreen Tree
 - 314.7 x Existing Spot Grade Elevation
 - 150 Existing Contour
 - s— Existing Gas Line/Valve
 - fm— Existing Sewer Line/Manhole
 - st— Existing Sewer Forcemain
 - ohp— Existing Storm Line/Manhole/Basin
 - ohp— Existing Overhead Electric Line/Power Pole
 - ohu— Existing Overhead Utility
 - comm— Existing Communications Line
 - pbx— Existing PBX Line
 - ue&t— Existing Underground Electric & Telephone Line
 - lite— Existing Site Lite Line
 - hps— Existing Steam Line
 - WL— Existing Wetland
 - Existing Guardrail
 - Existing Tree Line
 - Existing Chain Link Fence
 - Existing Barbed Wire Fence
 - Existing Stockade Fence
 - Existing Underground Power
 - Existing Water Line/Hydrant/Valve/Shutoff
 - Approximate Property Line
 - Existing Setback
 - Existing Easement



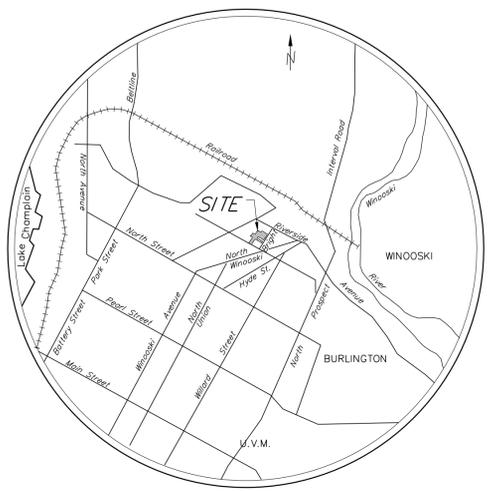
Date revised	Description	Checked	Date
Survey	RAK/RAW		
Drawn	RAW		
Checked	IAJ		
Scale	1" = 20'		
Date	April 4, 2014		
Project	13220	Bright Street	Burlington, Vermont
KREBS & LANSING Consulting Engineers, Inc. 164 Main Street, Colchester, Vermont 05446		EX-1	



PERMIT REVIEW ONLY



Eton, LLC
Volume 859 Page 512
April 15, 2002



Location Map
N.T.S.

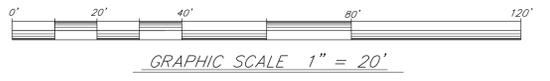
Legend

- Pre-construction Excavation
- New Deciduous Tree
- New Evergreen Tree
- Proposed Permeability Test
- Finish Grade Spot Grade Elevation
- Finish Grade Direction of Flow
- Finish Grade 5-foot Contour Interval
- Finish Grade 1-foot Contour Interval
- New Gas Line/Valve
- New Sewer Line/Manhole
- New Sewer Forcemain
- New Storm Line/Manhole/Basin
- New Underdrain
- New Roof Drain
- New Water Line/Hydrant/Valve/Shutoff
- New PBX Line
- New Underground Power
- New Clearing Limits
- New Chain Link Fence
- New Stockade Fence
- Construction Fence
- Barrier Fence
- Silt Fence
- New concrete
- New Structural concrete
- New concrete (exposed aggregate)
- New pavement and subbase

Site Plan Notes:

- New lighting shown is approximate, refer to lighting plans by others for lighting design and construction details.

See Notes On Sheet EX-1:



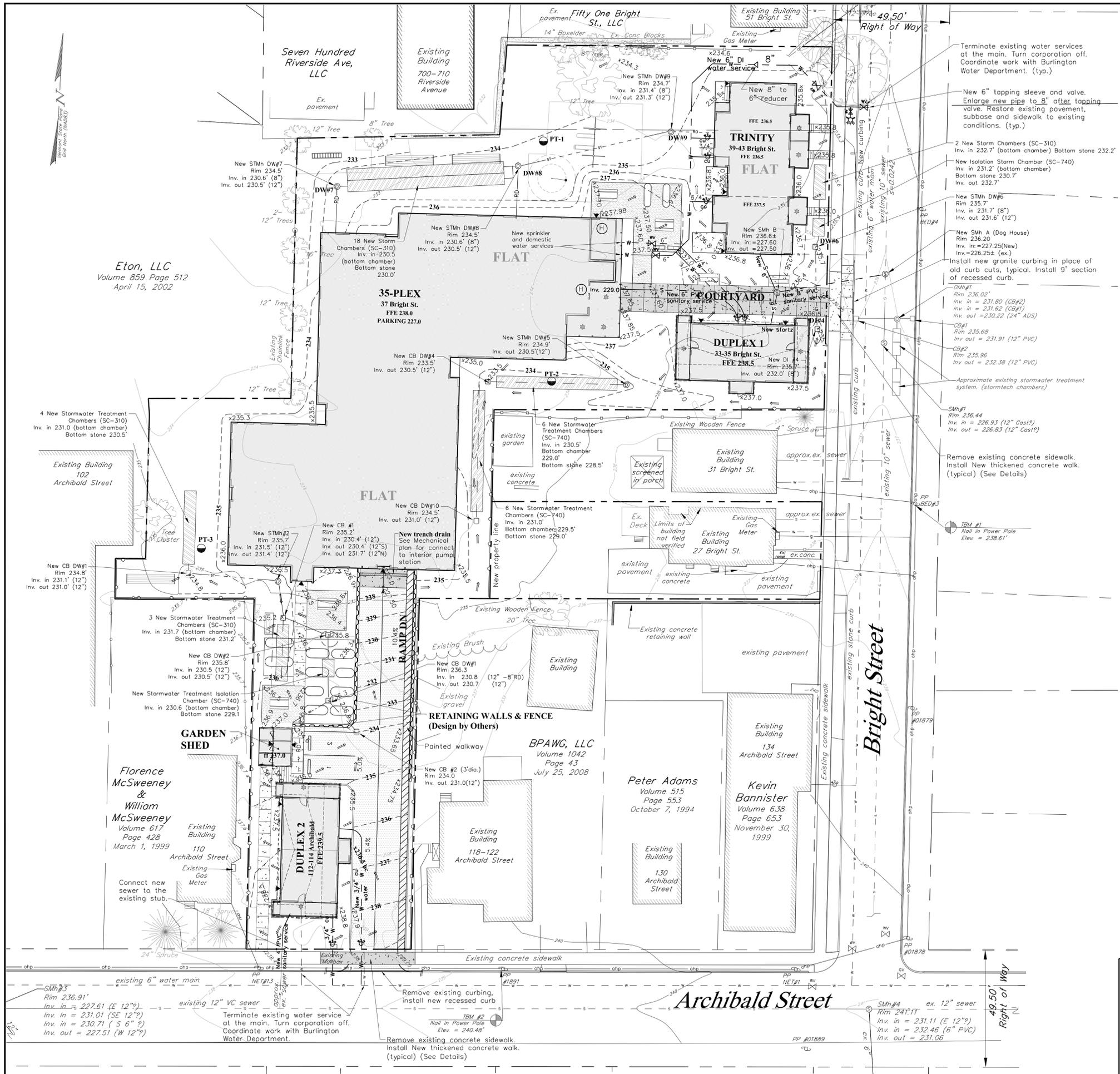
Sept. 2, 2014	new stormwater treatment system, grading	dmr	9/02/14
Aug. 19, 2014	Add street addresses	whn	8/19/14
July 26, 2014	permeability tests added	whn	7/26/14
Date revised	Description	Checked	Date



Design WHN
Drawn TJB
Checked
Scale 1" = 20'
Date April 4, 2014
Project 13220

Site Plan
Champlain Housing Trust Inc.
Bright Street
Burlington, Vermont

KREBS & LANSING Consulting Engineers, Inc.
164 Main Street, Colchester, Vermont 05446
Burlington, Vermont
SP-1



Terminate existing water services at the main. Turn corporation off. Coordinate work with Burlington Water Department. (typ.)

New 6" tapping sleeve and valve. Enlarge new pipe to 8" after tapping valve. Restore existing pavement, subbase and sidewalk to existing conditions. (typ.)

2 New Storm Chambers (SC-310) Inv. in 232.7' (bottom chamber) Bottom stone 232.2'

New Isolation Storm Chamber (SC-740) Inv. in 231.2' (bottom chamber) Bottom stone 230.7'

New STMh DW#6 Rim 235.7' Inv. in 231.7' (8") Inv. out 231.6' (12")

New SMh A (Dog House) Rim 236.20' Inv. in 227.25(New) Inv. = 226.25± (ex.)

Install new granite curbing in place of old curb cuts, typical. Install 9' section of recessed curb.

DM#1 Rim 236.02' Inv. in = 231.80 (CB#2) Inv. in = 231.62 (CB#1) Inv. out = 230.22 (24" ADS)

CB#1 Rim 235.68' Inv. out = 231.91 (12" PVC)

CB#2 Rim 235.96' Inv. out = 232.38 (12" PVC)

Approximate existing stormwater treatment system. (stormtech chambers)

SM#1 Rim 236.44' Inv. in = 226.93 (12" Cast?) Inv. out = 226.83 (12" Cast?)

Remove existing concrete sidewalk. Install New thickened concrete walk. (typical) (See Details)

TBM #1 Nail in Power Pole Elev. = 238.61'

Remove existing curbing, install new recessed curb

Remove existing concrete sidewalk. Install New thickened concrete walk. (typical) (See Details)

SM#4 ex. 12" sewer Rim 241.11' Inv. in = 231.11 (E 12") Inv. in = 232.46 (6" PVC) Inv. out = 231.06'



Eton, LLC
Volume 859 Page 512
April 15, 2002

Florence McSweeney & William McSweeney
Volume 617
Page 428
March 1, 1999

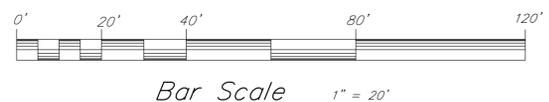
BPAWC, LLC
Volume 1042
Page 43
July 25, 2008

Peter Adams
Volume 515
Page 553
October 7, 1994

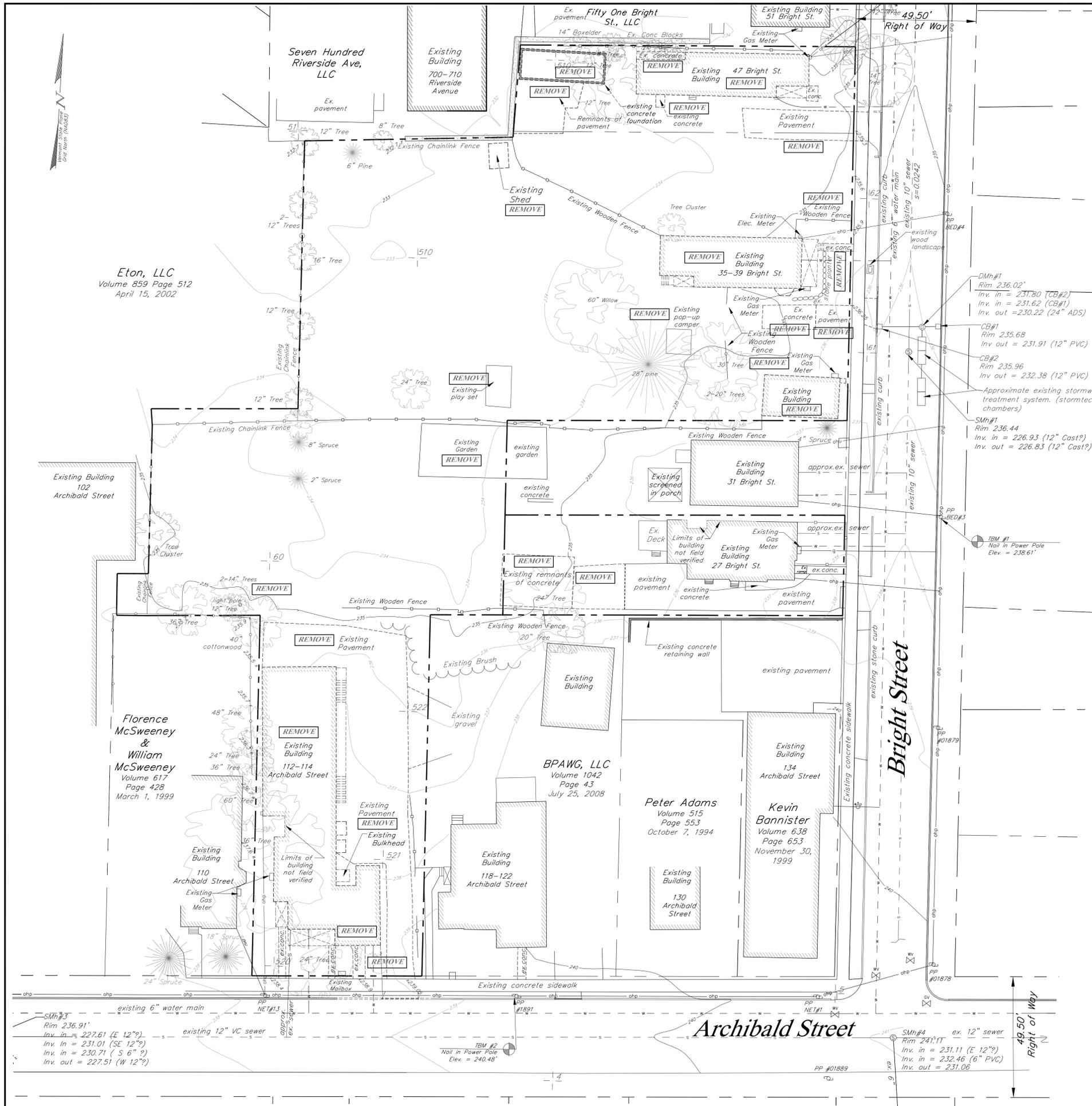
Kevin Bannister
Volume 638
Page 653
November 30, 1999

Demolition Notes

- The location of underground electrical lines which service the site lights are not shown on the Civil Plans. Other electrical lines may exist which are not shown on this plan.
- Refer to specifications for detailed scope of demolition work.
- Prior to disrupting existing utilities, Contractor shall be responsible for confirming status of all utilities to be abandoned.
- All abandoned utilities outside 6 ft. of the new building footprints shall be cut, capped, and abandoned in-place unless the removal of the abandoned utility is required during construction. All abandoned utilities within 6 ft. of the new building footprints shall be removed. All abandoned manholes, catch basins, and utility vaults shall be demolished and removed. Plug open ends of all abandoned pipes or conduits with concrete or water tight end cap. See Structural Plans for backfill requirements for all items removed from within the influence of the new building footprints (95% standard proctor compaction).
- The Contractor shall establish snow fence protection barrier at the drip edge of all existing trees to remain within 10 ft. of construction disturbance.
- All excess fill, stumps, rock, topsoil, waste, and other material is the exclusive property of the Contractor and shall be removed from the property and disposed of in a State approved disposal location.
- Contractor shall maintain water and sanitary services to all existing buildings to remain.
- Contractor shall demolish and remove all existing infrastructure necessary to construct the new project as designed. This plan does not show every item to be demolished and may not accurately show the limits of the items to be partially demolished.
- See Specifications for recycling requirements for site and building.
- This drawing refers to Civil Site Engineering items, located outside the building, only.
- See Landscape Architect plans for demolition of existing trees, other existing vegetation and fencing.



Date revised	Description	Checked	Date
Designed	WHN		
Drawn	TJB		
Checked			
Scale	1" = 20'		
Date	April 4, 2014		
Project	13220	Bright Street	Burlington, Vermont
		Site Demolition Plan Champlain Housing Trust Inc.	
PERMIT REVIEW ONLY		KREBS & LANSING Consulting Engineers, Inc. 164 Main Street, Colchester, Vermont 05446	
		© Krebs & Lansing 2014 SP-2	



Construction Notes

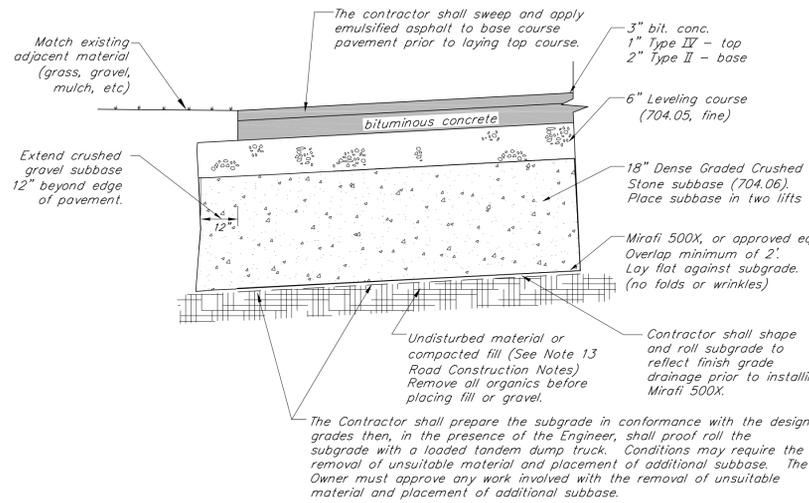
- The methods and materials of construction shall conform to the latest standards of the City of Burlington and the State of Vermont. All work shall be in conformance with all permits and approvals issued for the project. In case of conflict, the more stringent specification shall apply as directed by Engineer. All work shall be done in a workmanlike manner and completed in the time specified by Owner.
- The Contractor shall be responsible for all work and materials shown and required to make the job complete. These drawings do not show every fitting or appurtenance. Materials shall be as specified on the drawings. Manufacturer's product specifications shall be submitted for all materials to the Engineer for approval prior to installation.
- The location and size of existing underground utilities is not warranted to be exact or complete. The Contractor shall field locate all utilities and shall contact the affected utility company, the Engineer and the City of Burlington prior to making any hook ups. The Contractor shall be solely responsible for all existing utilities and their uninterrupted services. All off-site backfill, sheeting and shoring, dewatering, clearing and grubbing, erosion control, dust control, traffic control, grading, and all incidentals shall be included as part of the required work.
- Repair of all disturbed areas, grading, seeding, mulching, repair of roads and curbs, paving, and other incidentals are included as part of the required work. All disturbed areas shall be loamed and mulched until permanent ground cover is established.
- The Contractor shall verify all horizontal control and temporary bench marks before use.
- The workmen and public shall be protected by the Contractor from any and all hazards connected with the construction work. Open trenches, materials, or equipment within the working limits are to be guarded by the use of adequate barricades or flag men. All barricades left in position overnight are to be properly lighted. Kerosene pots are not acceptable. When work narrows the usable pavement, flag men shall be employed to aid the flow of traffic so that there will be no undue delays. The Contractor shall be held responsible for the safety of all workmen and the general public and all damages to property occurring from or upon the work occasioned by negligence or shall be held responsible for the safety of all workmen and the general public and all damages to property occurring from or upon the work occasioned by negligence or day or night within the working area. All work shall be in conformance to OSHA regulations, Title 19, Parts 1926.651 and 1926.652, and applicable to VOSHA regulations.
- Definition of "Preconstruction Excavation" for these contract documents shall be:
The site contractor shall expose utility and obtain all necessary information, including but not limited to, invert elevation, size, depth, pipe type, joint location, etc. Contractor shall transit survey the location and elevations of the utility. Contractor shall provide the engineer with sketches indicating horizontal and vertical information of pipe or conduit type and size, cross-section information, concrete encasement information (top and bottom elevations, width, etc.), joint location, etc. of each required existing underground utility. Accuracy of horizontal location is within 1 foot, and accuracy of vertical elevation is within 0.02 ft. (1/4"). Coordinate all excavation with City, Owner, and Engineer. Preconstruction excavations shall occur prior to ordering structures and prior to utility construction, to facilitate redesign if necessary.
- Contractor shall contact Dig Safe prior to any excavation.
- All new storm extending from catch basin structures shall be laid with a laser to elevation and slope as shown on the plans.
- The Contractor shall sawcut all existing pavement to be removed. The Contractor shall minimize the pavement area disturbance. Contractor shall be responsible for all pavement repair and restoration necessary to complete the work.
- The Contractor shall be responsible for all construction layout.
- Temporary silt fence shall be erected prior to any clearing or construction. Fencing may be erected in phases, but in no case shall construction of clearing proceed fencing. Special areas may be designated by the Owner for preservation of existing trees. These areas shall be the Contractor's responsibility to insure no damage is done to designated trees.
- Existing plantings are located in general areas as shown on the plans. Contractor shall protect plantings scheduled to remain so as not to damage these or their root systems.
- Contractor shall comply with all permits and approvals issued for this project.
- Contractor shall sign on as the Co-Permittee for the State of Vermont Erosion Prevention and Sediment Control permit for the project.
- Slope stability upon unsaturated soil conditions. If during construction saturated soils are encountered, contact the Engineer immediately.

Concrete Curb

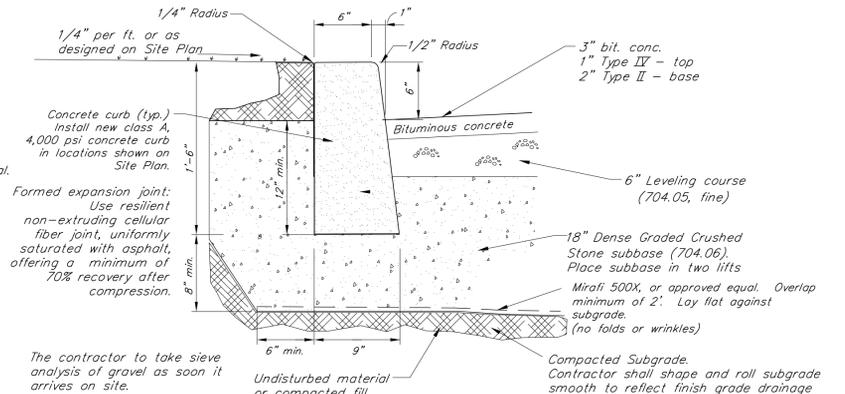
- Broom finish concrete
- All joints to be too finished
- Expansion/contraction joints every 20' with 1/2" joint filler.
- Score 1/3 total depth at 10' intervals
- Apply 2 coats of Euclid Everclear VOX cure/seal compound to all concrete surfaces, per the manufacturer's specifications.

All concrete used in the construction of concrete curb shall be air-entrained (5-7%) and made with Portland cement. The concrete shall meet section 501 of the State of Vermont Standard Specification for Class 4 concrete and have min. 28 day compressive strength of 4,000 psi.

Provide a 6' taper at end of curb.



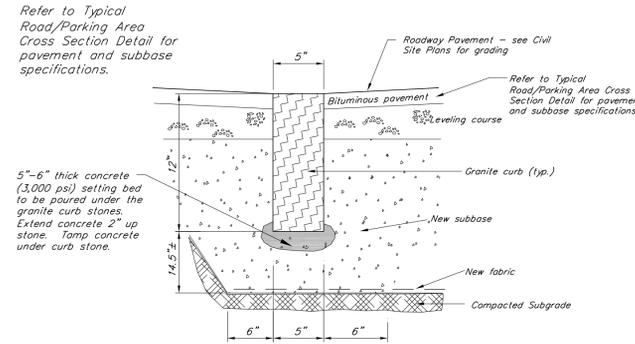
Without Curb



With Concrete Curb

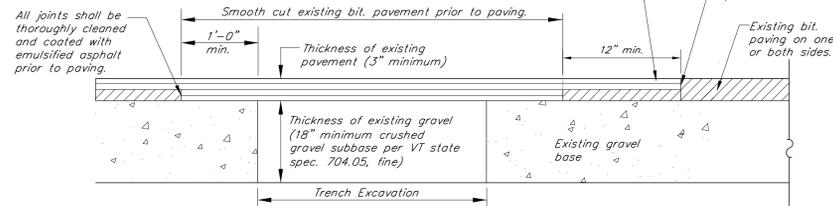
Typical Road/Parking Area Cross Section Detail

N.T.S.



Flush Granite Curb

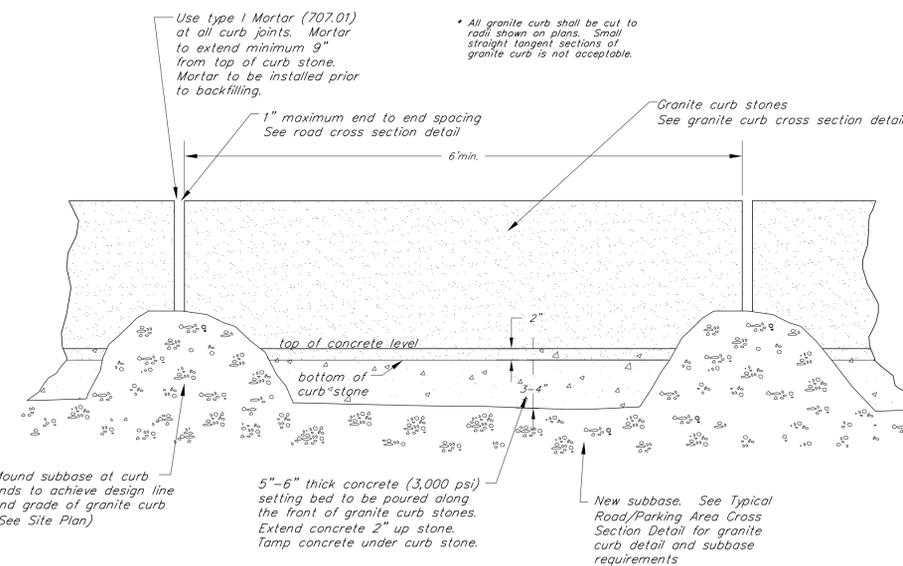
N.T.S.



- Set up and maintain signs and other safety control devices.
- Reshape hole and patch area by cutting with a concrete saw into square or rectangular shape and cut side faces vertically. Reshape downward solid material and around hole to sound pavement.
- Backfill trench in 6" lifts and compact each lift to 95% of maximum density of optimum moisture content as determined by ASTM D698 standard proctor.
- Remove all loose material and thoroughly sweep the hole area clean of mud and standing water.
- Apply liquid asphalt tack to vertical faces in a uniform manner. Do not puddle tack coat on bottom of hole.
- Fill top of hole with type II bituminous concrete and compact in lifts no more than 2" thick. Each lift should be thoroughly compacted with a vibratory plate compactor or a portable roller. Experience has shown that 15 to 20 passes with a vibratory roller and mix temperature above 250F (121C) are necessary to ensure good compaction. Hand tamp should only be used for small areas (less than 1 sq. ft.).
- Clean up area. Do not leave excess fill or excavated material on the pavement. Remove safety signs.

Replacement of Existing Road Subbase and Bituminous Pavement

N.T.S.



Typical Granite Curb Section Detail

N.T.S.

Road Construction Notes

(All references to road shall apply to parking areas as well.)

- New road shall be constructed to the line and grade shown on the drawings. The road and utility locations shall be as typically detailed unless otherwise shown.
- All road and parking construction shall be completed in accordance with the Vermont Agency of Transportation "Standard Specifications for Construction" 2011, hereafter called Vermont Highway Specifications, specifications found on these plans, and project specifications. In case of conflict, the more stringent specification shall apply as determined by the Engineer.
- The Contractor shall follow Vermont Highway Specifications (2011) Section 203.11 for placing and spreading embankments.
- Fill material for road embankment shall meet Note #13 below and be approved by the Engineer. Fill shall be placed in 12" lifts, wetted and compacted with satisfactory compaction equipment to 95% of maximum density (Standard Proctor).
- Road in fill sections shall be placed and compacted a minimum of 3 feet above top of any utility to be installed before trench is excavated for pipe placement. In trenches and cut sections, the Contractor shall provide all necessary sheeting, shoring and bracing to maintain compliance with all OSHA/VOSHA regulations.
- Methods for construction of subgrade shall conform to Vermont Highway Specifications (2011) 203.12 or as determined by the Engineer.
- Any subgrade or subbase disturbed by Contractor, or rendered unsuitable by construction machinery, shall be removed and replaced with approved granular backfill at the Contractor's expense. The subgrade shall be compacted to attain at least 95% of the maximum density (Standard Proctor) before placing road or embankment materials.
- The Owner will pay for on site soils testing (compaction, sieve, and proctor). The Contractor shall pay for failing tests.
- Sand borrow and cushion shall conform to Vermont Highway Specifications (2011) 703.03. Granular borrow shall conform to the Vermont Highway Specifications 703.04.
- Gravel subbase for pavement shall conform to Vermont Highway Specifications (2011) 704.06, Dense Graded Crushed Stone. Substitute materials identified in VAOT Specifications Section 301 - Subbase are not allowed.
- Leveling course shall conform to Vermont Highway Specifications (2011) 704.05, fine grading. Shoulders shall conform to Section 704.12, Aggregate for Shoulders. Substitute materials identified in VAOT Specifications Section 301 - Subbase are not allowed.
- Bituminous concrete pavement shall conform to Vermont Highway Specifications (2011) Section 404 and 406. Binder course shall be Type I + II, and finish wearing course shall be Type III, IV, or as detailed.
- Embankment fill for all impervious areas, EXCLUDING BUILDINGS, shall be a sieve specification as follows:

Sieve	% Finer
4"	100
2"	85-100
#4	60-100
#200	30 maximum
- Dense graded crushed stone, crushed gravel and sand borrow shall not be contaminated by work. Construction traffic shall not travel over exposed areas of this material.
- Contractor is responsible for all pavement markings (ie. parking striping, handicap markings, stop bars, etc.) shown or implied on the Plans. This includes both new and replacement of existing.
 - Paint for pavement markings shall be Hydraplast Waterborne Traffic Paint by Franklin Paint Company. It shall be reflective, VOC compliant fast drying, 100% acrylic waterborne traffic paint.
 - Traffic paint shall be applied with a uniform thickness and at a rate such that no pavement is visible after drying. Additional paint application will be required if underlying pavement is visible.

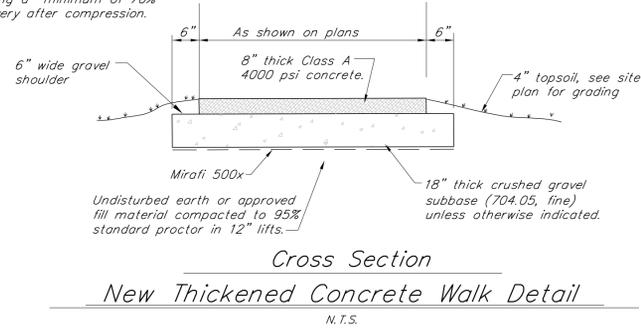
Date revised	Description	Checked	Date
Design	WHN		
Drawn	DMR		
Checked			
Scale	N.T.S.		
Date	April 3, 2014		
Project	13220	Bright Street	Burlington, Vermont
KREBS & LANSING Consulting Engineers, Inc. 164 Main Street, Colchester, Vermont 05446			
PERMIT REVIEW ONLY			CD-1

Concrete Slab

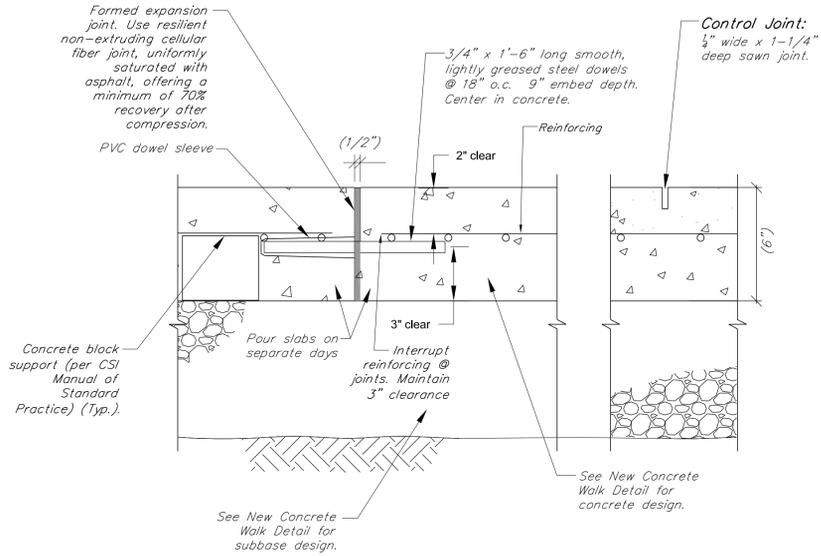
All concrete used in the construction of concrete sidewalk shall be air entrained and made with Portland cement. The concrete shall meet section 501 of the State of Vermont Standard Specification for Class A concrete and have 28 day compressive strength of 4,000 psi.

Joint filler shall be resilient non-extruding cellular fiber joint, uniformly saturated with asphalt, offering a minimum of 70% recovery after compression.

- Broom finish concrete with tooled edges.
- Expansion joints shall be spaced 20 ft. on center unless otherwise indicated on Site Plan.
- Score control joints 1-1/4" depth at intervals equal to width of sidewalk.
- Apply 2 coats of Euclid Everclear VOX cure/seal compound to all concrete surfaces, per the manufacturer's specifications.
- Concrete construction shall conform to section 618.03 of the current VAOT Standard Specifications for Construction



Cross Section
New Thickened Concrete Walk Detail
N.T.S.



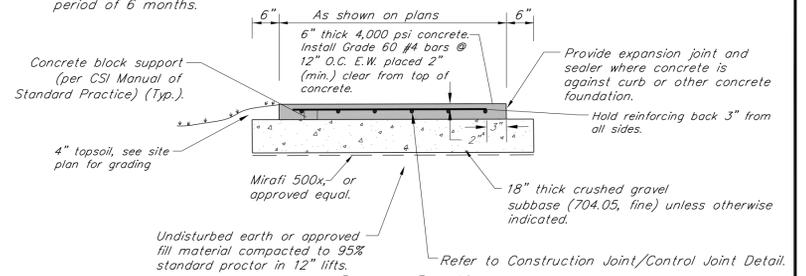
Concrete Construction Joint/Control Joint Detail
N.T.S.

All concrete used in the construction of concrete sidewalk shall be air entrained (5 - 7 %) and made with Portland cement. The concrete shall meet section 501 of the State of Vermont Standard Specification for Class A concrete and have 28 day compressive strength of 4,000 psi.

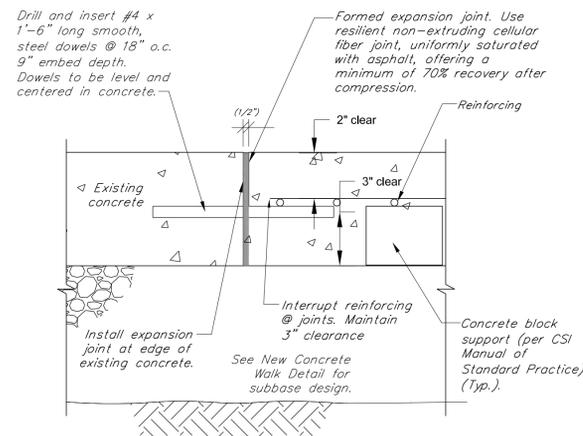
Note: Owner or Contractor is not allowed to place deicing materials on newly poured concrete sidewalk for a period of 6 months.

Concrete Slab

- Broom finish concrete with tooled edges
- Expansion joints shall be spaced max. 24' in all directions. See Site Plan for layout.
- Score control joints 1-1/4" depth at intervals equal to width of sidewalk.
- Apply 2 coats of Euclid Everclear VOX cure/seal compound to all concrete surfaces, per the manufacturer's specifications.
- Concrete construction shall conform to section 618.03 of the current VAOT Standard Specifications for Construction



Cross Section
New Concrete Walk Detail
(For Concrete Walks 7 ft. Wide or Greater)
N.T.S.



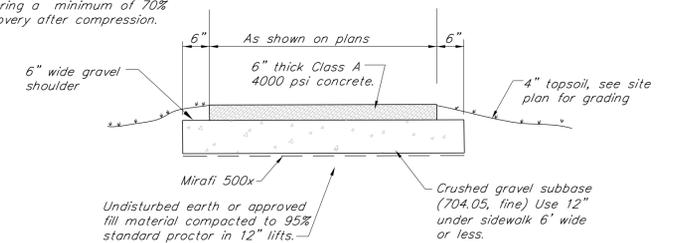
Concrete Slab Joint Detail for Connection to Existing Concrete
N.T.S.

All concrete used in the construction of concrete sidewalk shall be air entrained and made with Portland cement. The concrete shall meet section 501 of the State of Vermont Standard Specification for Class A concrete and have 28 day compressive strength of 4,000 psi.

Joint filler shall be resilient non-extruding cellular fiber joint, uniformly saturated with asphalt, offering a minimum of 70% recovery after compression.

Concrete Slab

- Broom finish concrete with tooled edges.
- Expansion joints shall be spaced 20 ft. on center unless otherwise indicated on Site Plan.
- Score control joints 1-1/4" depth at intervals equal to width of sidewalk.
- Apply 2 coats of Euclid Everclear VOX cure/seal compound to all concrete surfaces, per the manufacturer's specifications.
- Concrete construction shall conform to section 618.03 of the current VAOT Standard Specifications for Construction



Cross Section
New Concrete Walk Detail
(For Concrete Walks 6ft. Wide or Less)
N.T.S.

Date revised	Description	Checked	Date
Design	WHN		
Drawn	DMR		
Checked			
Scale	N.T.S.		
Date	April 3, 2014		
Project	13220	Bright Street	Burlington, Vermont

PERMIT REVIEW ONLY

Civil Details

Champlain Housing Trust Inc.

KREBS & LANSING Consulting Engineers, Inc.
164 Main Street, Colchester, Vermont 05446

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2014
CD-2

Construction Notes

The Contractor will be responsible for all construction of water main, storm and sanitary sewer systems as shown on the plans. The Contractor will be responsible for all necessary adapters, fittings, etc. to make connections to the existing and proposed units. The Contractor shall be responsible for all work shown or implied on the plans and/or referenced in the specifications and permits. The Contractor shall submit, for approval by the Engineer, all types of materials and products used.

Water Main (Applies to new domestic water mains and services) (See also Fire Service Main Notes)

- The pipe for water main shall be CL52 ductile iron. Ductile iron fittings shall conform to AWWA C110, 350 pounds working pressure. Valves shall be manufactured to meet all requirements of AWWA specification C509.
- All pipe shall be installed in accordance with AWWA C600. The pipe shall be kept free of foreign matter and debris during installation. When the process of pipe laying has stopped, any open ends of pipe shall be plugged. There shall be a minimum of 6'-0" (1.82 m) cover over all pipe and service lines. Any pipe deflection shall not exceed fifty (50%) percent of recommended manufacturer's maximum deflection. Backfill materials and procedures shall be as detailed on the drawings. The Contractor shall be responsible for any and all sheeting and/or shoring necessary to comply with OSHA - VOSHA regulations.
- The testing of the water main shall consist of the testing of all installed pipe, services and hydrants in accordance with AWWA C600. The testing shall consist of a pressure test and leakage test. All testing shall be done with potable water and in the presence of the Engineer and a representative from the Burlington Water Department. The pressure test consists of maintaining a minimum internal pipe pressure of 200 psi (140,620 kg/m²) for two (2) hours. If the pressure drops more than 5 psi (3515 kg/m²) in the first hour, this constitutes failure of the test for the particular section of pipe. Failure of any test section will necessitate repair and/or replacement of the failed section.
- Chlorinating of the system shall be accomplished after the water main has been successfully pressure tested and thoroughly flushed. Disinfecting shall be in accordance with AWWA C-651. The disinfecting process shall be deemed acceptable only after two samples of water from the flushed disinfected main shows no evidence of bacteriological contamination. Use minimum 25 mg/l chlorine concentration for 24 hours. The concentration must remain above 10 mg/l. Tablet disinfecting is not acceptable.
- The water main shall be thoroughly flushed with a minimum flow velocity of 2.5 ft/s to flush foreign materials out of the valves and hydrants. Prior to flushing, the Contractor shall contact the Owner, Fire Department in the municipality, the District Water Supply company, and the Engineer.

Fire Service Main

- The pipe for water main shall be CL52 ductile iron. Ductile iron fittings shall conform to AWWA C110, 350 pounds working pressure. Valves shall be manufactured to meet all requirements of AWWA specification C509.
- All pipe shall be installed in accordance with AWWA C600. The pipe shall be kept free of foreign matter and debris during installation. When the process of pipe laying has stopped, any open ends of pipe shall be plugged. There shall be a minimum of 6'-0" cover over all pipes and service lines. Any pipe deflection shall not exceed fifty (50%) percent of recommended manufacturer's maximum deflection. Backfill materials and procedures shall be as detailed on the drawings. The Contractor shall be responsible for any and all sheeting and/or shoring necessary to comply with OSHA - VOSHA regulations.
- The testing of the water main shall consist of the testing of all installed pipe, services and hydrants in accordance with NFPA 24. The testing shall consist of a pressure test and leakage test. All testing shall be done with potable water and in the presence of the Engineer. The pressure test consists of maintaining a minimum internal pipe pressure of 200 psi (140,620 kg/m²) for two (2) hours. The amount of leakage at the joints shall not exceed 2 qt/hr per 100 gaskets or joints, irrespective of pipe diameter. If the pressure drops more than 5 psi (3515 kg/m²) in the first hour, this constitutes failure of the test for the particular section of pipe. Failure of any test section will necessitate repair and/or replacement of the failed section.
- Chlorinating of the system shall be accomplished after the water main has been successfully pressure tested and thoroughly flushed. Disinfecting shall be in accordance with AWWA C-651. The disinfecting process shall be deemed acceptable only after two samples of water from the flushed disinfected main shows no evidence of bacteriological contamination. Use minimum 25 mg/l chlorine concentration for 24 hours. The concentration must remain above 10 mg/l. Tablet disinfecting is not acceptable.
- Acceptable water main flushing requirements are provided below. Prior to flushing, the Contractor shall contact the Owner, Fire Department in the municipality, the District Water Supply company, and the Engineer.

Underground piping, from the water supply to the system riser, and lead-in connections to the system riser shall be completely flushed before the connection is made to downstream fire protection system piping.

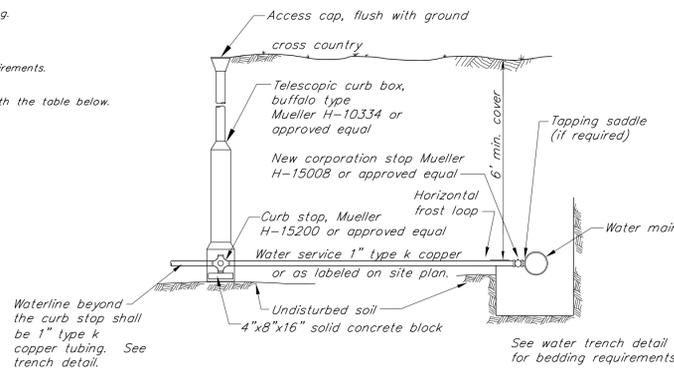
The flushing operation shall be continued for a sufficient time to ensure thorough cleaning.

The minimum rate of flow shall be not less than one of the following:

- Hydraulically calculated water demand flow rate of the system, including any hose requirements. (provided by the mechanical/sprinkler consultant)
- Flow necessary to provide a velocity of 10 ft/sec (3.1 m/sec) in accordance with the table below.
- Maximum flow rate available to the system under fire conditions.

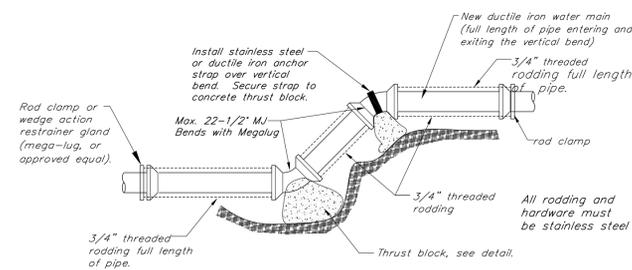
Flow Required to Produce a Velocity of 10 ft/sec (3 m/s) in Pipes

Pipe Size	Flow Rate		
In.	mm	gpm	L/min
4	102	390	1,476
6	152	880	3,331
8	203	1,560	5,905
10	254	2,440	9,235
12	305	3,520	13,323



Water Service Detail

N.T.S.

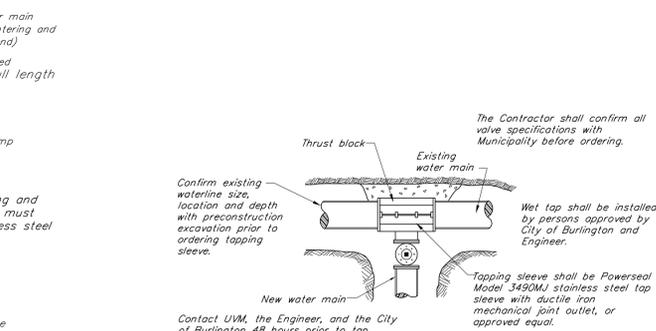


Notes:

- See thrust block detail for additional information.
- Prior to pouring thrust blocks, all fittings are to be wrapped with 4 mil. polyethylene

Vertical Bend Thrust Block Restraint Detail

N.T.S.

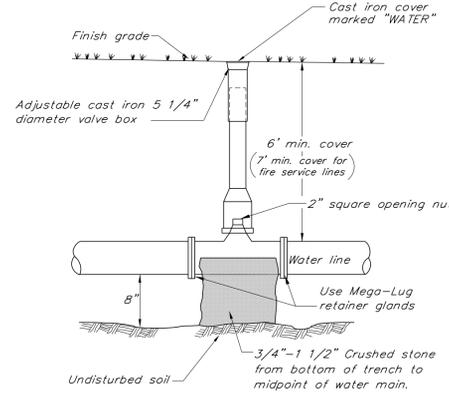


Typical Tapping Sleeve and Valve

N.T.S.

*The Contractor shall confirm all hydrant * specifications with Municipality before ordering.

- Gate valves shall be A.W.W.A. C 509 Standard Gate Valves with mechanical joints of sizes as required on the plans. All valves shall be of cast or ductile.
- All valves shall be of cast or ductile iron body, parallel brass seats, non-rising stem, inside screw, double disk construction with "O" Ring Stem Seals.
- The gate valves shall open counter-clockwise and be designed for a working pressure of 200 psi. Verify open direction with City of Burlington Water Department.
- All valves to be equipped with a valve box for a minimum of 6 feet (6') of cover material.



Typical Resilient Seat Gate Valve

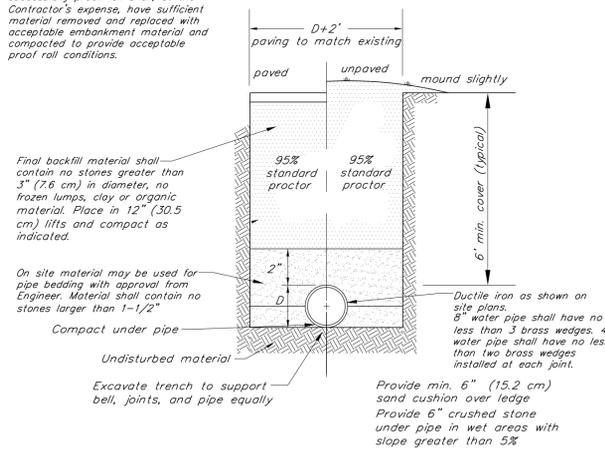
N.T.S.

General Water Main Notes:

- Four-inch and six-inch pipe shall have no less than 2 brass wedges installed at each joint. Eight-inch pipe shall have no less than 3 wedges installed at each joint.
- The Contractor shall coordinate the termination/shutdown of the existing water service with the Burlington Water Department and the Civil Engineer.
- These plans provide design and details of water main beyond 5 ft. outside the building.
- These plans provide design and details of water main beyond 5 ft. outside the building. The Site Contractor shall be responsible for extending the waterline to the plumbing connection within the building. (See Mechanical/Plumbing Engineers plans for scope, design and specifications within 5 ft. of the building.)
- Contractor shall provide all necessary fittings and appurtenances to complete the waterline construction work. This includes temporary fittings and gauges necessary to safely complete the flushing activities required prior to making connections with building plumbing.

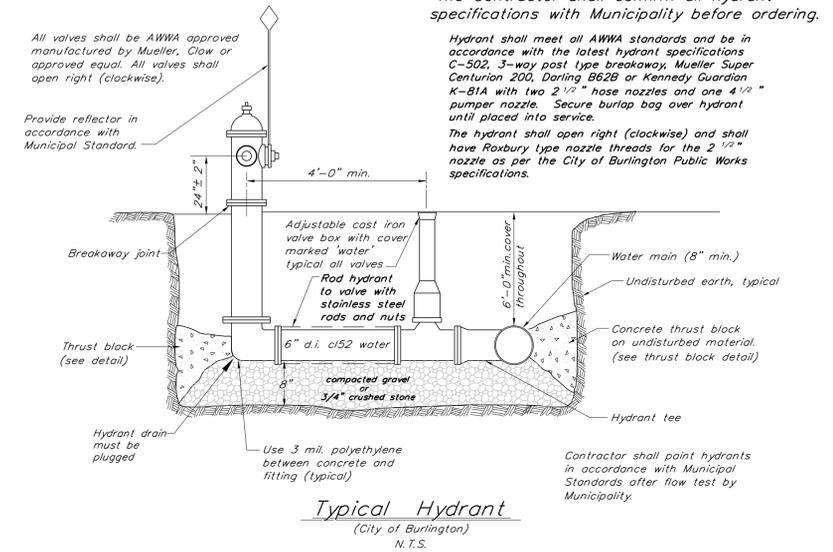
Backfill material under roads or paved areas must pass subgrade proof roll. Any trench area that does not successfully proof roll shall, at the Contractor's expense, have sufficient material removed and replaced with acceptable embankment material and compacted to provide acceptable proof roll conditions.

The Contractor shall be responsible for complying with OSHA - VOSHA regulations.



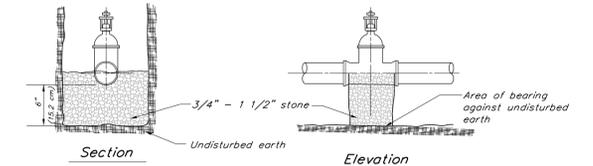
Typical Water Trench Detail

N.T.S.



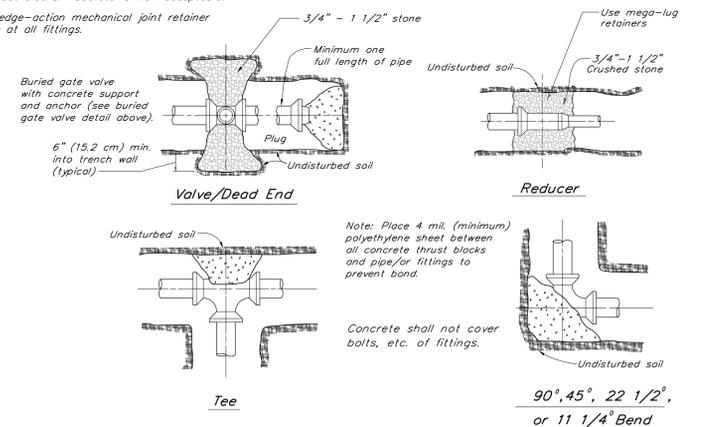
Typical Hydrant

(City of Burlington)
N.T.S.



Note

- A thrust block shall be installed at all water main bends, end caps, and tees.
- Precast thrust blocks are NOT acceptable.
- Redi-mix concrete (2,500 psi min) must be used for thrust blocks. Sacrete is NOT acceptable.
- Use wedge-action mechanical joint retainer glands at all fittings.



Minimum Area of Bearing Surface of Concrete Thrust Block (in square feet)

3"		4"		6"		8"		12"		SOIL CONDITION	SAFE BEARING LOAD(P/SF)								
ENDS & TEES	VALVES & REDUC.																		
0.5	0.5	0.5	0.5	1.0	1.0	1.5	1.0	0.5	2.0	2.5	1.5	1.0	4.0	5.5	3.0	1.5			
1.0	1.0	1.0	0.5	1.5	2.0	1.0	0.5	3.0	4.0	2.0	1.0	4.5	6.5	3.5	2.0	10.0	14.0	7.5	4.0
1.0	1.0	1.0	0.5	2.0	0.5	1.5	1.0	3.5	5.0	3.0	1.5	6.0	8.5	5.0	2.5	13.0	18.5	10.0	5.0
1.5	2.5	1.5	1.0	2.5	3.5	2.0	1.0	5.5	7.5	4.0	2.0	9.0	13.0	7.0	3.5	20.0	27.5	15.0	8.0
3.0	4.5	2.5	1.5	5.0	7.0	4.0	2.0	10.5	15.0	8.0	4.0	18.0	25.0	14.0	7.0	39.0	55.0	30.0	15.0

Maximum water pressure = 200 PSI (140,620 kg/m²)

Thrust Block Details

N.T.S.

Date revised	Description	Checked	Date
Design	WHN		
Drawn	DMR		
Checked			
Scale	N.T.S.		
Date	April 3, 2014		
Project	13220	Bright Street	

PERMIT REVIEW ONLY

Civil Details

Champlain Housing Trust Inc.

Burlington, Vermont

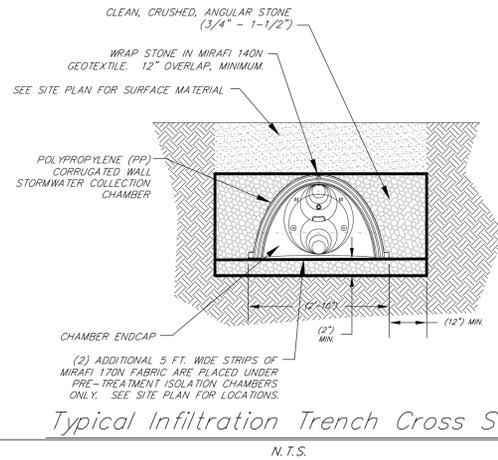
KREBS & LANSING Consulting Engineers, Inc.
164 Main Street, Colchester, Vermont 05446

CD-3

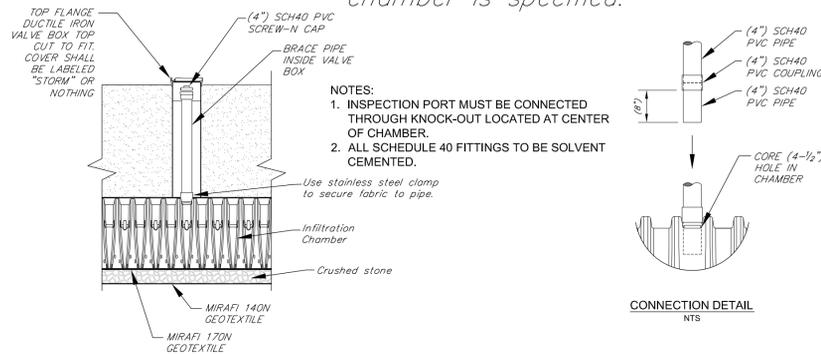
Stormwater infiltration chambers detailed on this plan are based on specifications for the StormTech SC-310 system.

Infiltration System Construction Notes:

All upstream/upslope construction shall be complete and stabilized prior to allowing runoff from entering any infiltration systems. "Stabilized" shall mean paved surfaces, washed crushed stone, or vegetated areas that have established a dense and vigorous vegetative cover.



Inspection ports shall be installed in all pre-treatment isolation chambers and in the first chamber outside the catch basin when no isolation chamber is specified.



Typical Inspection Port Cross Section
N.T.S.

SIGN MATERIALS:
THE SIGN BASE MATERIALS USED FOR REGULATORY SIGNS MAY BE ANY OF THE FOLLOWING OF THE MINIMUM THICKNESS NOTED.

24" X 12"	24" X 24"	24" X 30"	36" X 48"
12" X 18"	24" X 36"	30" X 24"	48" X 60"
18" X 24"	30" X 24"	48" X 60"	
0.060"	0.080"	0.100"	

FLAT SHEET ALUMINUM
ALL PANELS SHALL HAVE RETROREFLECTIVE BACKGROUNDS
ALL SIGN POSTS SHALL BE SQUARE TUBE GALVANIZED STEEL PLACED IN GALVANIZED STEEL ANCHORS - SEE POST AND ANCHOR SELECTION CHART

GENERAL NOTES:

- All square tube steel posts and anchors shall be formed into a size and shape in such a manner that neither flash nor weld shall interfere with the telescoping properties, nor damage the galvanizing.
- Anchor may be driven or set into a dug hole and backfilled. If driven, a driving cap shall be used. The dug hole installation method shall be utilized in areas with poor soil conditions or as directed by the engineer. Backfill shall be compacted as directed by the engineer.
- The tops of sign posts shall be at or near the top of sign. The post shall not extend above the top of sign.
- Sign posts shall be installed a minimum of one foot below ground, inside the anchor. The length of anchor exposed above ground shall not exceed four inches.
- All dimensions shown in inches.

POST AND ANCHOR SELECTION CHART

POST SIZE (IN.)	POST THICKNESS (IN.)	POST WEIGHT (LBS./FT.)	POST GAGE	SECTION MODULUS (IN. ³)	ONE POST SV	TWO POST SV	THREE POST SV	POSTS PERMITTED IN 8' PATH	ANCHOR SIZE (IN.)	ANCHOR GAGE	MINIMUM ANCHOR LENGTH
1.75	.083	1.88	14	0.222	45	90	135	TWO	2.00	12	30
2.00	.109	2.42	12	0.393	80	160	240	TWO	2.25	12	48
2.50	.109	3.35	12	0.673	137	274	411	ONE	3.00	7	48

NOTES:

- All sign posts shall have 7/16 inch holes every one inch on center (all four sides).
- The number of sign posts permitted within an eight foot path assumes that the sign assembly is not protected by guardrail or is located within a guardrail's deflection distance determined per the current "American Association of State Highway and Transportation Officials" (AASHTO) roadside design guide. Additional posts may be installed using slip bases that meet "national cooperative highway research program" (NCHRP) report 350 or the AASHTO "Manual For Assessing Safety Hardware" (mash). The appropriate resource shall be determined as described in the mash publication.
- To use the selection value (SV) columns in the table above, multiply a sign's surface area in square feet (H X L) by the sign's height in feet measured from the ground to the centroid of the sign assembly (H). This result must be less than or equal to the corresponding selection value. Note, that for signs with multiple posts, the largest height dimension shall be used to calculate the post selection value.
- The design criteria utilized in sign post and anchor selection is as follows: wind speed of 70 mph (10 year mean recurrence interval), wind pressure of 19 psf, steel minimum yield of 55,000 psi, and an allowable stress of 1.4 (0.60 fy).

Roadway Sign and Post Details
N.T.S.

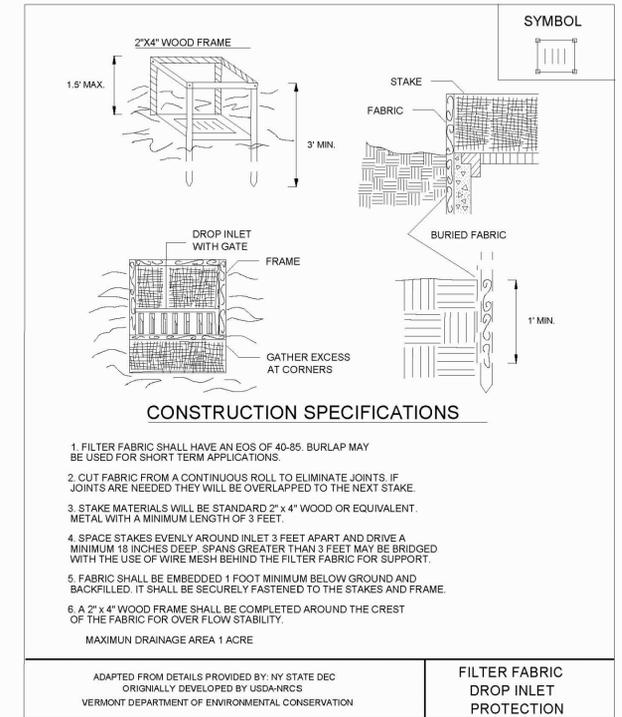
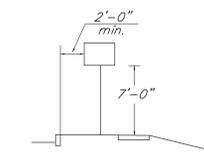
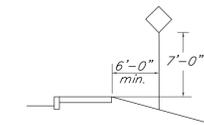
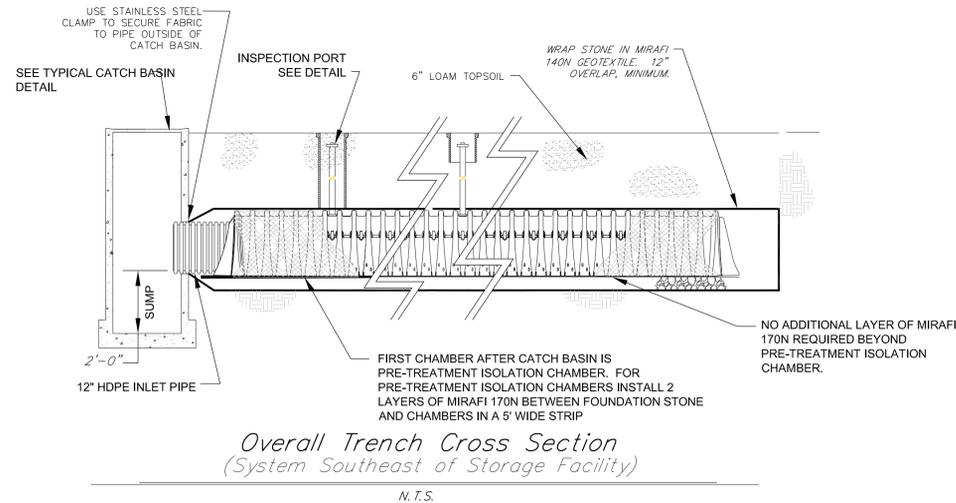
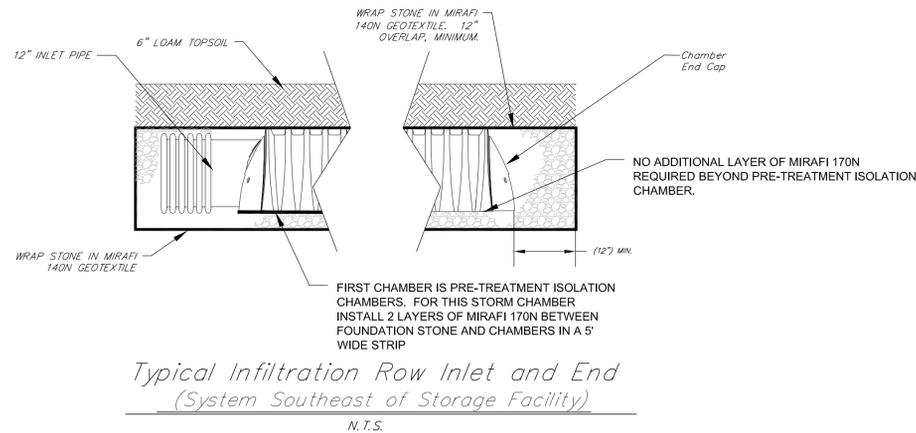


Figure 5.3b Storm Drain Inlet Protection: Filter Fabric



IF SUFFICIENT CLEARANCE IS NOT AVAILABLE BETWEEN CURB AND SIDEWALK MOUNT SIGN BEHIND SIDEWALK AS SHOWN AT TOP. CHECK FOR ADEQUATE R.O.W.

IF A SECONDARY SIGN IS MOUNTED BELOW ANOTHER SIGN, THE MINIMUM CLEARANCE MAY BE REDUCED BY ONE FOOT.

Roadway Sign Height Details
N.T.S.

Date revised	Description	Checked	Date
Design	WHN		
Drawn	DMR		
Checked			
Scale	N.T.S.		
Date	April 3, 2014		
Project	13220	Bright Street	

Civil Details

Champlain Housing Trust Inc.

164 Main Street, Colchester, Vermont 05446

PERMIT REVIEW ONLY

CD-5

Soil and Seeding Notes

- Topsoil shall be screened and shall have a minimum 4" depth unless additional depth is specified on the plans. Topsoil shall be natural, fertile, friable soil representative of local productive soil and free of clay lumps, stones, subsoil or other foreign matter, not frozen or muddy. Acidly range PH 5-7 not less than three (3) percent humus. Samples will be required for approval. All soil testing costs will be paid by Contractor.
- Commercial fertilizer shall be a complete plant food containing nitrogen (50% organic) phosphoric acid and potash. Soil tests will indicate composition required.
- Hydro seeding is the preferred practice for turf establishment. Specifications are:
Fertilizer: 19-19-19 75 lbs per 1,000 gallons of water
Lime: 100 lbs. per 1,000 gallons of water
Seed: 6 lbs per 1,000 square feet.
71.46% Min. Futuro 3000 Per Rye Grass Germ: 90%
14.81% Min. Dynasty Tall Fescue Germ: 90%
9.74% Min. Creeping Red Fescue Germ: 90%
2.32% Max. Crab
1.61% Max. Inert
0.06% Max. Weed
Mulch: 300 lbs. per 1,000 gallons of water.
Tactiler: 5 lbs. per 1,000 gallons of water.
- The grass seed may be applied by hand method at a rate of 6 lbs. per 1,000 sq. ft.
- Areas having soil compaction as a result of construction shall be rato-filled prior to seeding.
- If hand seeding, only straw mulch is to be used and secured by netting either organic or inorganic. If inorganic is used, it must be removed before the first mowing.
- Starter fertilizer shall be applied at the normal rate at the time of seeding. Fertilizer application will not be allowed in sensitive areas and adjacent to drainage ways as determined by the Engineer.
- Watering is to be done by the Contractor to maintain proper growth. Contractor shall supply the water and all apparatus necessary to apply the water (i.e. hoses, sprinklers, etc.).
- Staking of all topsoiled areas to control foot traffic will be required. Acceptable staking materials will be grade stakes and twine or string with flagging attached for visibility. Contractor is responsible to maintain stakes throughout the warranty period.
- A guarantee through the first growing season is required with any sparse or bare areas larger than 1 sq. ft. to be redone.
- The Contractor shall test topsoil to determine proper application rate of lime and fertilizer. Submit tests to Engineer for approval.
- Seeding is permitted from May 15 - June 15, and August 15 - September 15. Other seeding is possible at other times with prior approval from the Engineer.

CONSTRUCTION STAKEOUT NOTES

The Contractor shall be responsible for all construction stakeout for the project. The Engineer shall provide the Contractor an AutoCAD R2000 drawing of the site design. The drawing will include horizontal and vertical survey control. Additional survey control will be the responsibility of the Contractor.

- The Contractor shall be responsible for using proper survey equipment and having properly trained personnel to use this information. Any Contractor that does not have proper equipment or personnel shall subcontract the work to a competent consultant.
- The horizontal control datum may be based on a coordinate system that is unique for this project. Project north may not refer to astronomic or magnetic north.
- The Contractor shall check the integrity of survey control points by occupying a control point checking distance to back sight and checking distance and angle to another control point prior to any construction stakeout. The contractor shall not proceed with stakeout if either measured distances or angles do not match calculated values.
- Graphical images of infrastructure in the AutoCAD drawing may not be in an accurate representation of its size. It is the Contractor's responsibility to verify size and shape of all items to be staked out.
- After completion of radial stakeout with the survey transit, the Contractor shall check each stakeout point as necessary to verify the horizontal and vertical position of the point and that it is correct in relationship to the rest of the project.
- The Contractor shall complete all construction stakeout to an accuracy of 0.1 feet (excluding building stakeout).

North American Green S75BN

Material Content

Straw	100% (.50 lbs./sq.yd.) (.27 kg/m ²)
Netting	Leno woven, 100% biodegradable jute fiber
Weight	approximately 1.64 lbs/1000 s.f.
Thread	Biodegradable

Installed as per manufacturer's specifications.

Material Specifications

Erosion control blanket shall be a machine-produced mat of 100% agricultural straw.

The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top side with natural fiber netting having an approximate 1/2" X 1/2" mesh and be sewn together with biodegradable thread.

Straw erosion control blanket shall be S75BN as manufactured by North American Green, Inc. (812-867-6632) or equivalent. Erosion control blanket shall have the following properties:

Erosion Control Matting

Erosion Prevention and Sediment Control Notes

- Contractor shall be responsible for complying with all State and Local erosion prevention and sediment control standards and permit requirements during construction.
- The limit of disturbance shall be clearly defined by Contractor's surveyor prior to clearing. Erosion and sediment control devices shall be established to trap sediment on site.
- All erosion control shall be placed as shown on the drawings or as ordered by the Engineer. The Contractor shall maintain the erosion control measures until the Engineer is satisfied that permanent ground cover is established and that further measures are not required. It shall be the responsibility of the Contractor to employ appropriate erosion control as shown on these drawings and any other measures as necessary to trap sediment on site.
- All areas of disturbance shall be permanently or temporarily stabilized as soon as possible and within 48 hours of final grading. All areas of disturbance shall be at least temporarily stabilized within 7 days of initial disturbance. Any disturbance after 7 consecutive days of exposed soil shall be stabilized daily unless the following exceptions apply:
 - Stabilization is not required if earthwork is to continue in the area in the next 24 hours and there is no precipitation forecast in the next 24 hours.
 - Stabilization is not required if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of 2 ft. or greater (e.g. house foundation excavation, utility trenches). Stabilization measures shall include mulch and netting, erosion control matting, crushed stone, gravel, or pavement.
- Refer to the Low Risk Site Handbook for Erosion Prevention and Sediment Control for acceptable methods of stabilization.
- The Contractor shall use water for dust control. **There will be a ZERO tolerance for dust**
- The Contractor shall provide inlet protection around all catch basins (existing or new) that collect construction site stormwater runoff. Crushed stone inlet protection may be used in non-paved areas.
- A stabilized construction entrance (See Detail) shall be installed and maintained at all construction access locations.
- All paved roads used by construction vehicles shall be swept daily during periods of active construction, or at a greater frequency, if dirt or gravel is tracked from the site. The swept debris shall be immediately removed from the curb face if applicable.
- All temporary erosion and sediment control measures shall be removed within 30 days after final stabilization or after the measures are no longer needed, unless otherwise authorized.
- All sediment removed from sediment control practices shall be placed in an approved soil disposal area.
- All areas that do not have established vegetation by October 15th must be stabilized in accordance with the Winter Construction Requirements listed on this sheet.
- After permanent seeding the Contractor shall be responsible for watering, if necessary, to ensure adequate vegetative growth.
- Water from dewatering activities that flows off site must be clear. Water must not be pumped into storm sewers, lakes, or wetlands unless the water is clear.
- The Contractor shall be responsible for all inspection and maintenance of the erosion prevention and sediment control practices for the project. Inspections and corresponding reports shall be performed at a minimum, once a week and after every precipitation event that results in a discharge from the site.

Contractor shall call 540-1748 or email Megan Mair (mmair@cl.burlington.vt.us) at least 24 hours prior to initiating earth disturbance and submit name, cell phone number, and email contact information of the erosion control coordinator for the project.

The perimeter of the site and all BMPs will be inspected at the end of each workday to ensure that sediment will not leave the site. If sediment has traveled beyond the site boundary, it shall be swept up or otherwise removed and deposited on-site in an upgradient area at the end of each workday.

Winter Construction Requirements (October 15th - April 15th)

- For areas to be stabilized by vegetation, seeding shall be completed no later than September 15th to ensure adequate growth and cover.
- If seeding is not completed by September 15th, additional non-vegetative protection must be used to stabilize the site for the winter period. This includes the use of Erosion Control Matting or netting of a heavy mulch layer.
- Where mulch is used for temporary stabilization it must be applied at double the standard rate, or a minimum of 3 inches with an 80%-90% cover.
- Stabilized Construction Entrances shall be enlarged to provide for snow stockpiling.
- Limits of disturbance plan shall be moved or replaced to reflect any revised boundaries of winter work.
- A snow management plan shall be prepared with adequate storage and control of meltwater, requiring cleared snow to be stored down slope of all areas of disturbance and out of stormwater treatment structures.
- A minimum 25 foot buffer shall be maintained from perimeter controls such as silt fence.
- Drainage structures must be kept open and free of snow and ice dams.
- Silt fence and other practices requiring earth disturbance must be installed ahead of frozen ground.
- To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day, with the following exceptions:
 - If no precipitation within 24 hours is forecast and work will resume in the same disturbed area within 24 hours, daily stabilization is not necessary.
 - Disturbed areas that collect and retain runoff, such as house foundation or open utility trenches.
- Prior to stabilization, snow or ice must be removed to less than 1 inch thickness.
- Use stone to stabilize areas such as the perimeter of buildings under construction or where construction vehicle traffic is anticipated. Stone paths should be 10-20 feet wide to accommodate vehicular traffic.

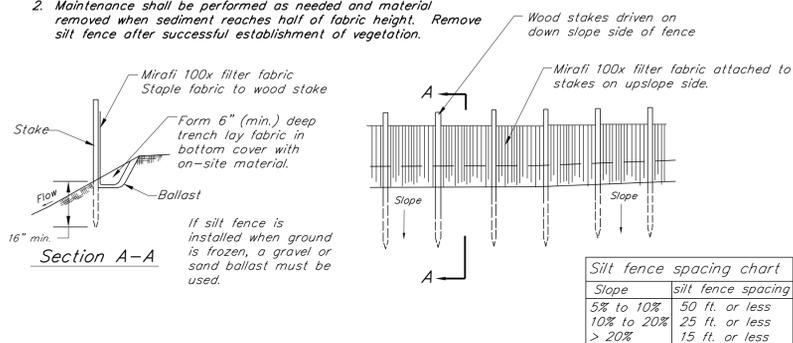
General Grading and Site Work Notes

- All area disturbed and all areas within the clearing limits shall be graded and covered with a minimum of 4" of compacted loam topsoil. The areas to be loamed shall be free and clear of roots, waste material and other deleterious material. Topsoil shall be spread and lightly compacted to a depth of 4". Topsoil shall be approved by the Engineer.
- All cut slopes shall be no steeper than 3h on 1v. All fill slopes shall be no steeper than 2.5h on 1v.
- Temporary silt fence shall be erected prior to any clearing or construction. Fencing may be erected in phases, but in no case shall construction of clearing proceed fencing. Special areas may be designated by the Owner for preservation of existing trees. These areas shall be the Contractor's responsibility to insure no damage is done to designated trees.
- Existing plantings are located in general areas as shown on this plan. Contractor shall protect plantings so as not to damage these or their root systems.
- Slope stability based upon unsaturated soil conditions. If during construction saturated soils are encountered, contact the Engineer immediately.

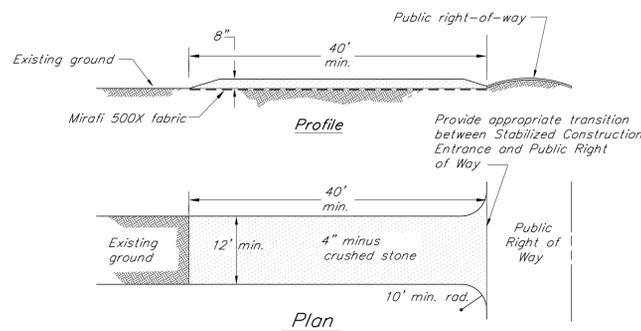
Construction Limit Barriers

- Temporary chain-linked construction fence shall be used to delineate construction limits where practical.
- Orange construction fence or snow fence shall be used to demarcate short-term construction activities as well as around the drip line of any existing trees to remain.
- 3" thick orange polyester mesh webbing may also be used to demarcate construction limits except within 50 feet of any stream, lake, pond or wetland. For this project, polyester mesh webbing should not be used in areas that are proximate to pedestrian or vehicular traffic.

- NOTE:**
- Contractor shall be responsible for the installation, maintenance, and removal of silt fence in all locations shown on the plans.
 - Maintenance shall be performed as needed and material removed when sediment reaches half of fabric height. Remove silt fence after successful establishment of vegetation.



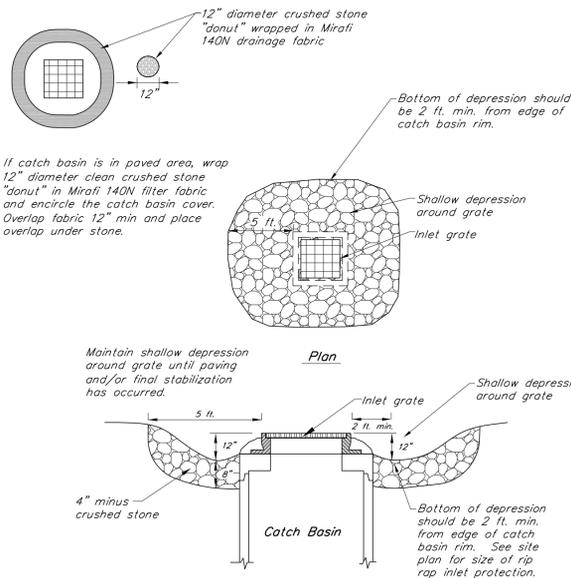
Typical Temporary Silt Fence



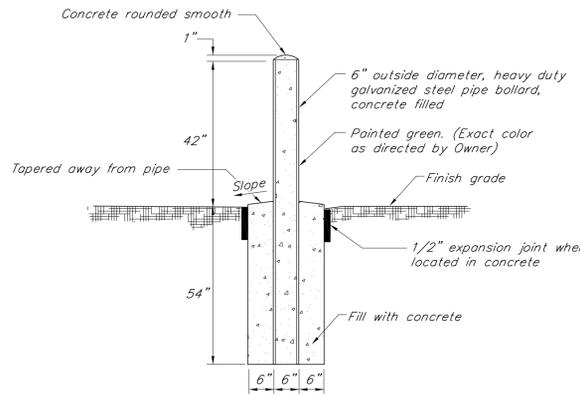
Note:

- Contractor shall be responsible for the installation, maintenance, and removal of a stabilized construction entrance at each construction entrance for the project. The Construction Stabilized Entrance and its continued maintenance shall be a minimum measure to prevent tracking of sediment off-site.
- Contractor to use Mirafi 500x under stone for temporary construction roads.
- Stabilized construction entrances shall be repaired when voids are 80% filled with sediment. Repair shall include adding additional 4" minus crushed stone and/or removal of contaminated stone.

Temporary Stabilized Construction Entrance



Catch Basin Inlet Protection



Bollard Detail

Date revised	Description	Checked	Date
Design	WHN		
Drawn	DMR		
Checked			
Scale	N.T.S.		
Date	April 3, 2014		
Project	13220	Bright Street	

PERMIT REVIEW ONLY

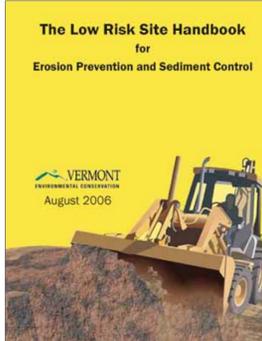
Civil Details

Champlain Housing Trust Inc.

Burlington, Vermont

KREBS & LANSING Consulting Engineers, Inc.
164 Main Street, Colchester, Vermont 05446

CD-6



The Low Risk Site Handbook for Erosion Prevention and Sediment Control

Any construction activity that disturbs 1 or more acres of land, or is part of a larger development plan that will disturb 1 or more acres, requires a Vermont state permit for stormwater discharges from construction sites.

Construction General Permit 3-9020 guides an applicant in the determination of the potential risk to water quality from the construction activity and categorizes the applicant's activity as Low Risk, Moderate Risk, or that which requires an Individual Permit.

The standards in this handbook serve as the required Erosion Prevention and Sediment Control Plan for construction sites determined to be "Low Risk" under GP-3-9020.

Contact Information
 VT DEC - Water Quality Division
 Stormwater Section
 103 South Main Street, Building 10 North
 Waterbury, VT 05671-0408
 Tel: 802-241-3770 or 4320
 www.vtwaterquality.org/stormwater.htm

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Section 1 Introduction

What is erosion prevention and sediment control?

Sediment washing into streams is one of the largest water quality problems in Vermont. Sediment can kill or weaken fish and other organisms and adversely impact aquatic habitat.

On most construction sites, vegetation that holds the soil in place and protects it from erosive forces of rain and runoff is removed, leaving large areas of soil exposed to the elements. During rainfall or snowmelt, the exposed soil may be easily eroded and transported to nearby streams, lakes, or wetlands.

To prevent this from happening, a small number of simple practices to prevent erosion and control soil on the construction site must be used.

Do I need a permit?

Any construction activity that disturbs 1 or more acres of land, or is part of a larger development plan that will disturb 1 or more acres, requires a Vermont state permit for stormwater discharges from construction sites.

Application Process

- Obtain a copy of the permit and determine the Risk Category of the proposed project. The permit is available online at: www.vtwaterquality.org/stormwater.htm.
- Submit the Notice of Intent (NOI) form, notifying the Department of your intent to begin construction. *Submit the NOI to DEC at least 60 days before you plan to begin construction to allow sufficient time for processing.
- Upon receipt of written authorization from DEC, you are covered under the permit and may begin construction.
- If your project is determined to be "Low Risk," you must follow this handbook for erosion prevention and sediment control on your construction site.

5. If your site is not classified as Low Risk, then you must follow the Department guidance in GP-39020 for Moderate Risk activities or those requiring an Individual Permit.

Section 2 The Requirements

1. Mark Site Boundaries

Purpose: Mark the site boundaries to identify the limits of construction. Delineating your site will help to limit the area of disturbance, preserve existing vegetation and limit erosion potential on the site.

Requirements: You must physically mark the limits of construction.

How to comply:

Before beginning construction, walk the site boundaries and flag trees, post signs, or install orange safety fencing.

Fence is required on any boundary within 50 feet of a stream, lake, pond or wetland, unless the area is already developed (existing roads, buildings, etc.)

Mark Site boundaries 4

2. Limit Disturbance Area

Purpose: Limit the amount of soil exposed at one time to reduce the potential erosion on site.

Requirements: The permitted disturbance area is specified on the site's written authorization to discharge. Only the acreage listed on the authorization form may be exposed at any given time.

How to comply:

Plan ahead and phase the construction activities to ensure that no more than the permitted acreage is disturbed at one time.

Be sure to properly stabilize exposed soil with seed and mulch, or erosion control matting before beginning work in a new section of the site.

Limit Disturbance Area 6

3. Stabilize Construction Entrance

Purpose: A stabilized construction entrance helps reduce mud from vehicle wheels to prevent tracking onto streets.

Requirements: If there will be any vehicle traffic off of the construction site, you must install a stabilized construction entrance before construction begins.

Construction entrance detail. Erosion/silt mat must keep mud from tracking onto both paved and dirt roads.

How to install:

Rock Size: Use a mix of 1 to 4 inch stone

Depth: 6 inches minimum

Width: 12 feet minimum (or length of driveway, if shorter)

Length: 40 feet minimum (or length of driveway, if shorter)

Geotextile: Place filter cloth under entire gravel bed

Maintenance: Refresh with clean stone as required to keep sediment from tracking onto the street.

Good stabilized construction entrance. Adequate width to accommodate construction traffic and prevent mud tracking onto neighboring streets. Filter cloth for gravel is 6 inches deep and 48 feet long. Stabilize Construction Entrance 8

How to install:

Rock string and placement back OK for residential site, and very little mud appears on the road. The rock should be at least 6 more feet and 12 feet wide. Ensure the rock is laid out as the entrance and exit points. Note that marks near rock. Stone area must be kept clear.

Rock string and placement back OK for residential site, and very little mud appears on the road. The rock should be at least 6 more feet and 12 feet wide. Ensure the rock is laid out as the entrance and exit points. Note that marks near rock. Stone area must be kept clear.

Stabilize Construction Entrance 9

How to install:

Rock past was installed properly with right sized rock, but lack of filter fabric resulted in a clogging rock to spread and site into the soil. Note that marks near rock. Must be used or replaced unless the permit requirements are a permanent larger facility.

Rock past was installed properly with right sized rock, but lack of filter fabric resulted in a clogging rock to spread and site into the soil. Note that marks near rock. Must be used or replaced unless the permit requirements are a permanent larger facility.

Stabilize Construction Entrance 10

4. Install Silt Fence

Purpose: Silt fence intercept runoff and allow suspended sediment to settle out.

Requirements: Silt fence must be installed:

- on the downhill side of the construction activities
- between any ditch, swale, storm sewer inlet, or waters of the State and the disturbed soil

*Hay bales must not be used as sediment barriers due to their tendency to degrade and fall apart.

How to install silt fence:

- Dig a trench 6 inches deep across the slope
- Unroll silt fence along the trench
- Ensure stakes are on the downhill side of the fence
- Join fencing by rolling the end stakes together
- Drive stakes in against downhill side of trench
- Drive stakes until 16 inches of fabric is in trench
- Push fabric into trench and spread along bottom
- Fill trench with soil and pack down

Maintenance:

- Remove accumulated sediment before it is halfway up the fence.
- Ensure that silt fence is trenched in ground and there are no gaps.

Remember stakes go on the downhill side. Dig trench first, install fence in downhill side of trench. Lay fabric into trench, then backfill on the uphill side of the fence (toward the bare soil area).

Install Silt Fence 12

Where to place:

- Place silt fence on the downhill edge of bare soil. At the bottom of slopes, place fence 10 feet downhill from the end of the slope (if space is available).
- Ensure the silt fence catches all runoff from bare soil. Maximum drainage area is 1/4 acre for 100 feet of silt fence.
- Install silt fence across the slope (not up and down hills)
- Install multiple rows of silt fence on long hills to break up flow.
- Do not install silt fence across ditches, channels, or streams or in stream buffers.

How to install silt fence:

- Dig a trench 6 inches deep across the slope
- Unroll silt fence along the trench
- Ensure stakes are on the downhill side of the fence
- Join fencing by rolling the end stakes together
- Drive stakes in against downhill side of trench
- Drive stakes until 16 inches of fabric is in trench
- Push fabric into trench and spread along bottom
- Fill trench with soil and pack down

Maintenance:

- Remove accumulated sediment before it is halfway up the fence.
- Ensure that silt fence is trenched in ground and there are no gaps.

Install Silt Fence 12

Very good use of continuous "bunny" (monoculture) silt fence. Note that wire fencing is installed between the filter fabric and the posts.

Very good use of continuous "bunny" (monoculture) silt fence. Note that wire fencing is installed between the filter fabric and the posts.

Install Silt Fence 13

Very good installation of multiple silt fences on long slope. Run ends of fencing uphill to prevent gaps. Leave silt fences up until grass is well established on all areas of the slope. The silt fence area is as soon as possible. Remove or spread accumulated sediment and remove silt fence after all grass is up.

Very good installation of multiple silt fences on long slope. Run ends of fencing uphill to prevent gaps. Leave silt fences up until grass is well established on all areas of the slope. The silt fence area is as soon as possible. Remove or spread accumulated sediment and remove silt fence after all grass is up.

Install Silt Fence 14

Divert Upland Runoff

Purpose: Diversion berms intercept runoff from above the construction site and direct it around the disturbed area. This prevents "clean" water from becoming muddy with soil from the construction site.

Requirements: If stormwater runs onto your site from upslope areas and your site meets the following two conditions, you must install a diversion berm before disturbing any soil.

- You plan to have one or more acres of soil exposed at any one time (excluding roads).
- Average slope of the disturbed area is 20% or steeper.*

Berms and ditches divert runoff around construction sites and reduce erosion and sedimentation problems. Scatter berms and ditches where construction.

Divert Upland Runoff 15

How to install:

2:1 SLOPE OR FLATTER
 CROSS SECTION
 CUT OR FILL SLOPE
 GRADLINE

A - Berm Height: 1.5 feet
 B - Berm Width: 2 feet
 C - Flow width: 8 inches
 D - Flow depth: 8 inches
 Slope slopes: 2:1 or flatter

- Compact the berm with a shovel or earth-moving equipment.
- Seed and mulch berm or cover with erosion control matting immediately after installation.
- Stabilize the flow channel with seed and straw mulch or erosion control matting. Line the channel with 4 inch stone if the channel slope is greater than 20%.
- Ensure the berm drains to an outlet stabilized with stones. Ensure that there is no erosion at the outlet.
- The diversion berm shall remain in place until the disturbed areas are completely stabilized.

* See page 39 for slope calculations.

Divert Upland Runoff 16

Well built vegetation berm diverting runoff. Diversion berms and ditches should be installed after construction. Use matting if slopes are steep.

Well built vegetation berm diverting runoff. Diversion berms and ditches should be installed after construction. Use matting if slopes are steep.

Divert Upland Runoff 17

6. Slow Down Channelized Runoff

Purpose: Stone check dams reduce erosion in drainage channels by slowing down the stormwater flow.

Requirements: If there is a concentrated flow (e.g. in a ditch or channel) of stormwater on your site, then you must install stone check dams. Hay bales must not be used as check dams.

How to install:

Height: No greater than 2 feet. Center of dam should be 9 inches lower than the side elevation

Side slopes: 2:1 or flatter (see p.39 for slope calculation)

Stone size: Use a mixture of 2 to 9 inch stone

Width: Dams should span the width of the channel and extend up the sides of the banks

Spacing: Space the dams so that the bottom (toe) of the upstream dam is at the elevation of the top (crest) of the downstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

Spacing (in feet) = Height of check dam (in feet) / Slope in channel (ft/ft)

Maintenance: Remove sediment accumulated behind the dam

Good installation of rock check dams to divert rain runoff around residential construction site on steep slope into a river. Direction ditches can be used with grass channel slopes are 5% or less, and with 4 inch stone if they are steeper.

Divert Upland Runoff 18

How to install:

Rock string and placement back OK for residential site, and very little mud appears on the road. The rock should be at least 6 more feet and 12 feet wide. Ensure the rock is laid out as the entrance and exit points. Note that marks near rock. Stone area must be kept clear.

Rock string and placement back OK for residential site, and very little mud appears on the road. The rock should be at least 6 more feet and 12 feet wide. Ensure the rock is laid out as the entrance and exit points. Note that marks near rock. Stone area must be kept clear.

Stabilize Construction Entrance 19

as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam.

If significant erosion occurs between check dams, a liner of stone should be installed.

as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam. If significant erosion occurs between check dams, a liner of stone should be installed.

Slow Down Channelized Runoff 20

7. Construct Permanent Controls

Purpose: Permanent stormwater treatment practices are constructed to maintain water quality, ensure groundwater flow, and prevent downstream flooding. Practices include detention ponds and wetlands, infiltration basins, and stormwater filters.

Requirements: If the total impervious* area on your site, or within the common plan of development, will be 1 or more acres, you must apply for a State Stormwater Discharge Permit and construct permanent stormwater treatment practices on your site. These practices must be installed before the construction of any impervious surfaces.

How to comply: Contact the Vermont Stormwater Program and follow the requirements in the Vermont Stormwater Management Manual. The Stormwater Management Manual is available at: www.vtwaterquality.org/stormwater.htm

*An impervious surface is a manmade surface, including but not limited to, paved and impervious roads, parking areas, roofs, driveways, and walkways, from which precipitation runs off rather than infiltrates.

Rock check dams must be installed before excavation or fill activities begin. See "How to install" for spacing directions.

Good installation of temporary rock check dams. The check dams should extend up the sides of the banks. Middle section should be lower than the sides. Clear out sediment as it accumulates. Remove check dams after site and channel are stabilized with vegetation.

Slow Down Channelized Runoff 22

How to install:

Hay bales must not be used as check dams due to their high failure rates.

Hay bales must not be used as check dams due to their high failure rates.

Slow Down Channelized Runoff 22

How to install:

This wet pond is designed to treat stormwater runoff, recharge groundwater, regulate the flow of water into nearby streams, and prevent downstream flooding.

This wet pond is designed to treat stormwater runoff, recharge groundwater, regulate the flow of water into nearby streams, and prevent downstream flooding.

Construct Permanent Controls 24

How to install:

Install all permanent stormwater treatment practices before conducting any impervious surfaces on site. This stormwater wetland treats stormwater runoff from the adjacent parking lot.

Install all permanent stormwater treatment practices before conducting any impervious surfaces on site. This stormwater wetland treats stormwater runoff from the adjacent parking lot.

Construct Permanent Controls 24

8. Stabilize Exposed Soil

Purpose: Seeding and mulching, applying erosion control matting, and hydroseeding are all methods to stabilize exposed soil. Mulches and matting protect the soil surface while grass is establishing.

Requirements: All areas of disturbance must have temporary or permanent stabilization within 1, 2, 4, or 24 days of initial disturbance, as stated in the project authorization. After this time, any disturbance in the area must be stabilized at the end of each work day.

The following exceptions apply:

- Stabilization is not required if earthwork is to continue in the area within the next 24 hours and there is no precipitation forecast for the next 24 hours.
- Stabilization is not required if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation, utility trenches).

All areas of disturbance must have permanent stabilization within 48 hours of reaching final grade (See page 33).

Erosion Control Matting
 As per manufacturer's instructions

Hydroseed
 As per manufacturer's instructions

Stabilize Exposed Soil 26

How to comply:

Prepare bare soil for seeding by grading the top 3 to 6 inches of soil and removing any large rocks or debris.

Seeding Rates for Temporary Stabilization
 April 15 - Sept. 15 - Ryegrass (annual or perennial): 20 lbs./acre
 Sept. 15 - April 15 - Winter oat: 100 lbs./acre

Seeding Rates for Final Stabilization:

Grass from:	Variety	lbs./acre	lb./1,000 sq.ft.
Brilliant (perennial)	Empire/Pasture	5	0.10
Common white clover	Common	8	0.20
Tall fescue	KY31/Rebel	10	0.25
Timothy	Common	2	0.05
Ryegrass (perennial)	Pendleton/Lin.	5	0.10

* Use 25 tons of straw or straw (1.2 bales/1,000 sq. ft.) or 15 tons of straw (1.2 bales/1,000 sq. ft.)

April 15 - Sept. 15 - Hay or Straw: 1 inch deep (1.2 bales/1,000 sq. ft.)
 Sept. 15 - April 15 - Hay or Straw: 2 in. deep (2.4 bales/1,000 sq. ft.)

Erosion Control Matting
 As per manufacturer's instructions

Hydroseed
 As per manufacturer's instructions

Stabilize Exposed Soil 26

Excellent stabilization of large slopes to limit the area of disturbance. Note that erosion control matting within 48 hours of grading to ensure good contact between soil and mat.

Excellent stabilization of large slopes to limit the area of disturbance. Note that erosion control matting within 48 hours of grading to ensure good contact between soil and mat.

Stabilize Exposed Soil 27

9. Winter Stabilization

Purpose: Managing construction sites to minimize erosion and prevent sediment loading of waters in a year-round challenge. In Vermont, this challenge becomes even greater during the late fall, winter, and early spring months.

"Winter construction" as discussed herein, describes the period between October 15 and April 15, when erosion prevention and sediment control is significantly more difficult.

Rains in late fall, thaws throughout the winter, and spring melt and rains can produce significant flows over frozen and saturated ground, greatly increasing the potential for erosion.

Requirements for Winter Shutdown: For those projects that will complete earth disturbance activities prior to the winter period (October 15), the following requirements must be adhered to:

- For areas to be stabilized by seeding, seeding shall be completed no later than September 15 to ensure adequate growth and cover.
- If seeding is not completed by September 15, additional non-vegetative protection must be used to stabilize the area.

Excellent application of hay mulch. Good mulch cover and sediment barrier around soil exposures.

Stabilize Exposed Soil 28

How to install:

Dissemination and seeding of slopes before winter will reduce or eliminate erosion in the spring. The grass on this slope is holding the soil in place and preventing infiltration of the melting snow.

Dissemination and seeding of slopes before winter will reduce or eliminate erosion in the spring. The grass on this slope is holding the soil in place and preventing infiltration of the melting snow.

Winter Stabilization 30

Requirements for Winter Construction

If construction activities involving earth disturbance continue past October 15 or begin before April 15, the following requirements must be adhered to:

- Entered access points, stabilized to provide for snow stockpiling.
- Limits of disturbance moved or replaced to reflect boundary of winter work.
- A snow management plan prepared with adequate storage and control of meltwater, requiring cleared snow to be stored down slope of all areas of disturbance and out of stormwater treatment structures.
- A minimum 25 foot buffer shall be maintained from perimeter controls such as silt fence.
- In areas of disturbance that drain to a water body within 100 feet, two rows of silt fence is recommended to be installed along the contour.
- Drainage structures must be kept open and free of snow and ice dams.

Winter Stabilization 31

How to install:

Hay bales must not be used as check dams due to their high failure rates.

Hay bales must not be used as check dams due to their high failure rates.

Winter Stabilization 32

How to install:

Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.

For seeding and mulching rates, follow the specifications under Rule 8, "Stabilizing Exposed Soil".

Within 48 hours of final grading, erosion control matting and mulch have been applied.

Stabilize Soil at Final Grade 34

How to install:

Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.

For seeding and mulching rates, follow the specifications under Rule 8, "Stabilizing Exposed Soil".

Within 48 hours of final grading, erosion control matting and mulch have been applied.

Stabilize Soil at Final Grade 34

How to install:

Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.

For seeding and mulching rates, follow the specifications under Rule 8, "Stabilizing Exposed Soil".

Within 48 hours of final grading, erosion control matting and mulch have been applied.

Stabilize Soil at Final Grade 34

12. Dewatering Activities

Purpose: Treat water pumped from dewatering activities so that it is clear when leaving the construction site.

Requirements: Water from dewatering activities that flows off of the construction site must be clear. Water must not be pumped into storm sewers, lakes, or wetlands unless the water is clear.

How to comply: Using sock filters or sediment filter bags on dewatering discharge hoses or pipes, discharge water into silt fence enclosures established in vegetated areas away from waterways. Remove accumulated sediment after the water has dispersed and stabilize the area with seed and mulch.

Water is pumped from the construction site into a silt fence enclosure or a vegetated area or into a soak filter away from waterways.

Dewatering Activities 36

How to install:

Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.

For seeding and mulching rates, follow the specifications under Rule 8, "Stabilizing Exposed Soil".

Within 48 hours of final grading, erosion control matting and mulch have been applied.

Stabilize Soil at Final Grade 34

12. Inspect Your Site

Purpose: Perform site inspections to ensure that all sediment and erosion control practices are functioning properly. Regular inspections and maintenance of practices will help to reduce costs and protect water quality.

Requirements: Inspect the site at least once every 7 days and after every rainfall or snowmelt that results in a discharge from the site. Perform maintenance to ensure that practices are functioning according to the specifications outlined in this handbook.

In the event of a noticeable sediment discharge from the construction site, you must take immediate action to inspect and maintain existing erosion prevention and sediment control practices. Any visibly disturbed sediment runoff or erosion at the disturbed site (see map) shall be reported to the Vermont Stormwater Program. Forms for reporting discharges are available at: www.vtwaterquality.org/stormwater.htm

Example Site Inspection Form

	Y	N
1. Boundary Limits		
• Site boundary markers are up and visible		
2. Limit Disturbance Area		
• Only the acreage listed on the Authorization to Discharge is disturbed at one time		
3. Construction Entrance		
• 20' wide tracking of mud prevented		

Example Site Inspection Form

	Y	N
4. Sediment Barriers		
• Silt fence is trenched into ground with tie gaps		
• Accumulated sediment is less than 1/2 way up the fence		
5. Diversion Berms		
• All upland stormwater is diverted around the site		
6. Check Dams		
• Check dams are in place and stretch the width of the channel		
• Channels are stable with no erosion		
7. Stabilize Exposed Soil		
• Seed and mulch, and/or erosion control blankets, are being used in accordance with the permit		
8. Winter Stabilization		
• After September 15, all disturbed areas have been seeded and mulched to 3 inches deep, or covered in erosion control blankets.		
• For ongoing construction, exposed soil is stabilized prior to reworked areas.		
9. Stabilize Soil at Final Grade		
• Within 48 hours of establishing final grade, soil is seeded and mulched or covered in erosion control matting.		
Water Being off the site		
• Water is free of sediment (color is clear)		
Inspection		

Section 3 Additional Resources

How to calculate slope: 2:1 Slope Ratio

Approximate Slope Conversions

Percent	Feet	Slope ratio (ft/ft)	Degrees
Very steep	50%	1:1	45°
	50%	2:1	27°
	33%	3:1	18°
	25%	4:1	14°
	20%	5:1	11°
	10%	10:1	6°
	5%	20:1	3°

How to estimate disturbance area:
 1 acre = 43,560 square feet = 4,840 square yards

Area in acres (width in feet x length in feet)

ft x ft	acres	ft x ft	acres	ft x ft	acres
100	0.2	0.5	0.5	0.7	0.9
150	0.3	0.5	0.7	1.0	1.4
200	0.5	0.7	0.9	1.4	1.8
300	0.7	1.0	1.4	2.1	2.8
400	0.9	1.4	1.8	2.8	3.7
500	1.1	1.7	2.4	3.4	4.5

Acknowledgments

Design details and standards for sediment and erosion control practices have been adapted from the New York State Standards and Specifications for Erosion and Sediment Control, August 2005.

Photographs and illustrations provided by Tetra Tech, Kim Greenwood, Don Lake, Jim Pease, and Hydrograss Technologies.

This document has been adapted from the Kentucky Erosion Prevention and Sediment Control Field Guide produced by the Tetra Tech Water Resources Division in Fairfax, VA for the Kentucky Division of Conservation and Division of Water. Inquiries regarding this publication should be directed to Barry Tompkins, Tetra Tech, 1080 Eaton Place, Suite 340, Fairfax VA 22030 (703.385.0000).

Printing of this manual is sponsored by the Winook National Resources Conservation District through a grant by the U.S. Environmental Protection Agency.

Vermont Department of Environmental Conservation
 Water Quality Division - Stormwater Section
 103 South Main Street, Building 10 North
 Waterbury, VT 05671-0408
 Tel: 802-241-3770 or 3777
 Fax: 802-241-3287

www.vtwaterquality.org/stormwater.htm

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Contractor shall employ as many of these best management practices to prevent soil from leaving the construction site. If evidence is found of soil leaving the construction site, the Engineer shall direct Site Contractor to implement additional best management practices at no additional cost to Owner.

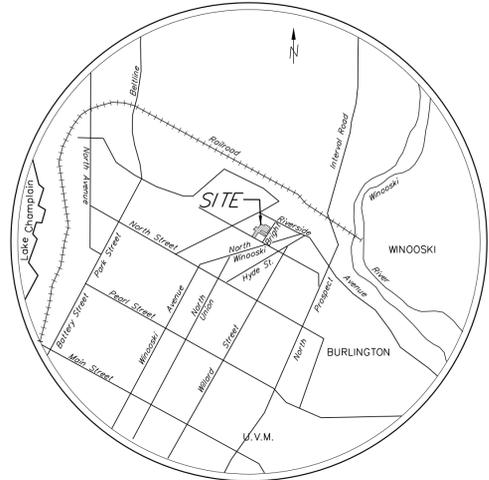


Date revised	Description	Checked	Date
Designed	WHN		
Drawn	DMR		
Checked			
Scale	N.T.S.		
Date	April 3, 2014		
Project	13220		

Burlington, Vermont

Low Risk Site Handbook for

Vermont State Plane
Grid North (NAD83)



Location Map
N.T.S.

Survey Notes

- All bearings are calculated and referenced to Vermont State Plane Grid North. Vermont State Plane Grid North was determined from GPS readings taken at control points 1, 2, 3, 4 & 5.
- A closed traverse was completed in September 2013 using a total station theodolite/ electronic distance meter (Sokkia SET 330 R).
- No layout information for Bright Street or Archibald Street was recovered. The right of way for both streets was assumed to be 49.5 feet wide. The alignment of the right of way limit was for taken from the roadways and existing monumentation recovered.

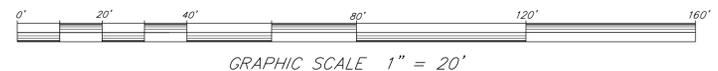
Legend

- Survey control point
- Iron pipe found
- Iron pipe (#6 rebar) with aluminum cap L.L.S. 639 set
- Concrete monument found
- Calculated point
- Property Line
- Approximate Property Line
- Limits of Historical Title Line
- Chain Link Fence
- Wooden Fence

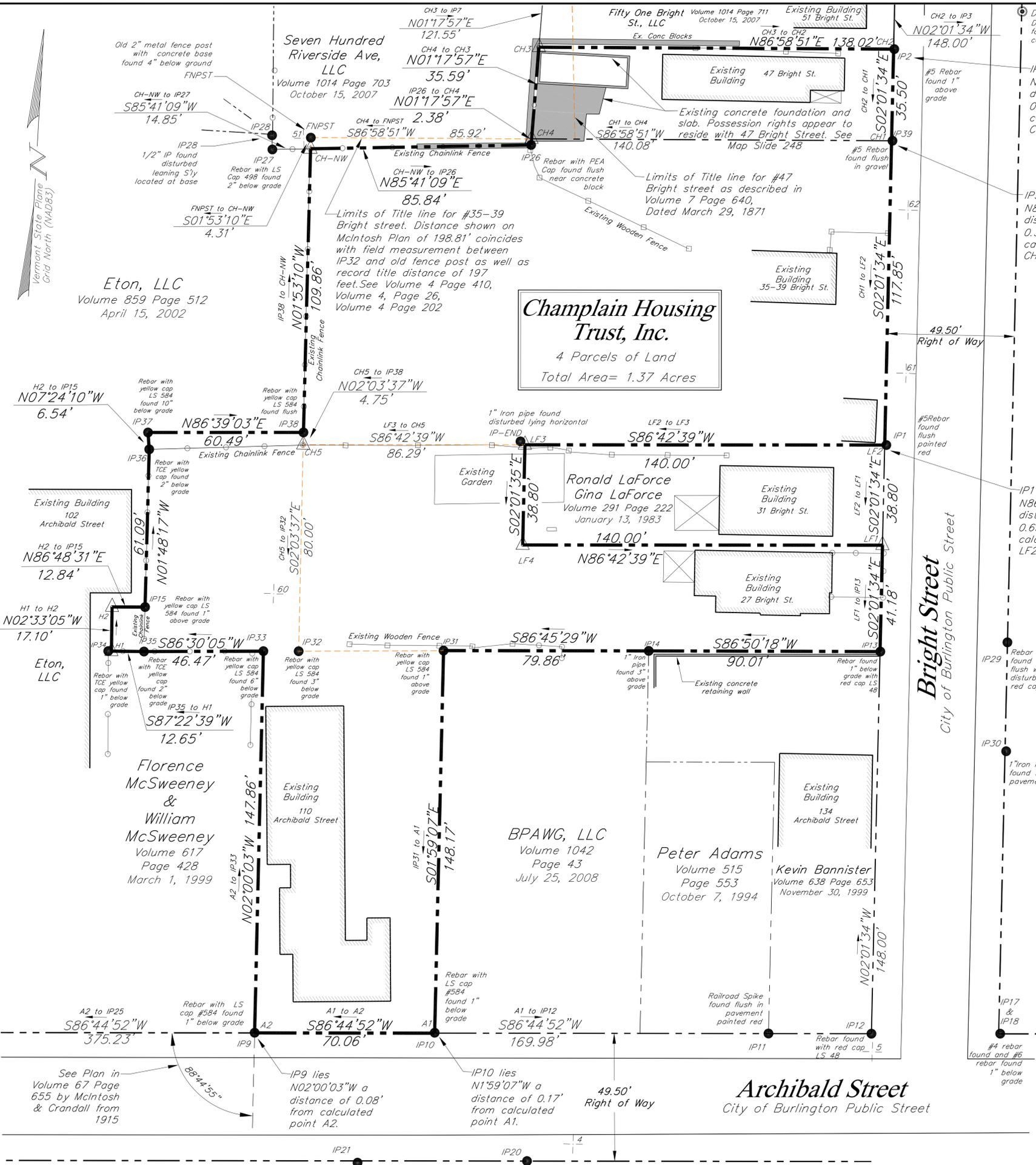
Boundary Notes

- The descriptions controlling the locations of the boundaries of the land surveyed and the physical evidence located and existing on the ground were compared and analyzed to provide boundary locations that are most indicative of the original intent of the deeds and in harmony with existing monumentation. Where conflicts between physical evidence and written evidence are substantial, deeds and/or documents should be or will be executed to eliminate any color of title or conflict.
- This plat of survey depicts boundary location of the lands under the title of Champlain Housing Trust, Inc. and also the limits, where known, of easements, licenses and/or other servitudes and rights that may encumber or benefit the surveyed premises with the exception of utility easements.
- Monuments have been set in and on the ground where shown on the plat of survey where, in the opinion of the surveyor, it was necessary to perpetuate a corner not otherwise monumented. Monuments shown as "to be set" will be set at the title holder's direction.
- Any boundary line location, based on deeds or documents recorded in the public records by which title or rights were conveyed to Champlain Housing Trust, Inc., or title or rights in lands of Champlain Housing Trust, Inc. were otherwise delineated, is subject to accuracy and legality of those deeds or documents. Where those deeds or documents are improperly executed as a matter of law or contain errors or omissions in fact, or contain or are based upon erroneous conclusions of law, then the depicted boundary locations may not be valid.
- The boundary line locations shown are also subject to accuracy and legality or lack of authority of any grantor or grantee who professed the right or ability to convey, receive or condemn property or rights in the surveyed property.
- Any depiction on the plats of survey of boundary lines or other structures, exclusive of boundary lines for Champlain Housing Trust, Inc. were located by tachometry. The location and depiction of boundary lines other than those of Champlain Housing Trust, Inc. are not warranted and all boundary lines depicted are subject to the accuracy and completeness of the public record.
- This plat of survey is for the sole use of Champlain Housing Trust, Inc. Use by other property owners, private or municipal, is specifically unauthorized.

Champlain Housing Trust, Inc.
Volume 1159 Page 598
December 28, 2011
Volume 1155 Page 595
December 23, 2011
Volume 1207 Page 177
February 13, 2013
Volume 975 Page 557
September 11, 2006
Total Area= 1.37 Acres



Champlain Housing Trust, Inc.
4 Parcels of Land
Total Area= 1.37 Acres



Certification
This survey is based on physical evidence found in the field and information abstracted from deeds and other pertinent records and this survey is consistent with that evidence. This plat conforms to 27 V.S.A. section 1403.

DRAFT

Date revised	Description	Checked	Date
Survey	RAK/RAW		
Drawn	RAW		
Checked	IAJ		
Scale	1" = 20'		
Date	October 4, 2013		
Project	13220		

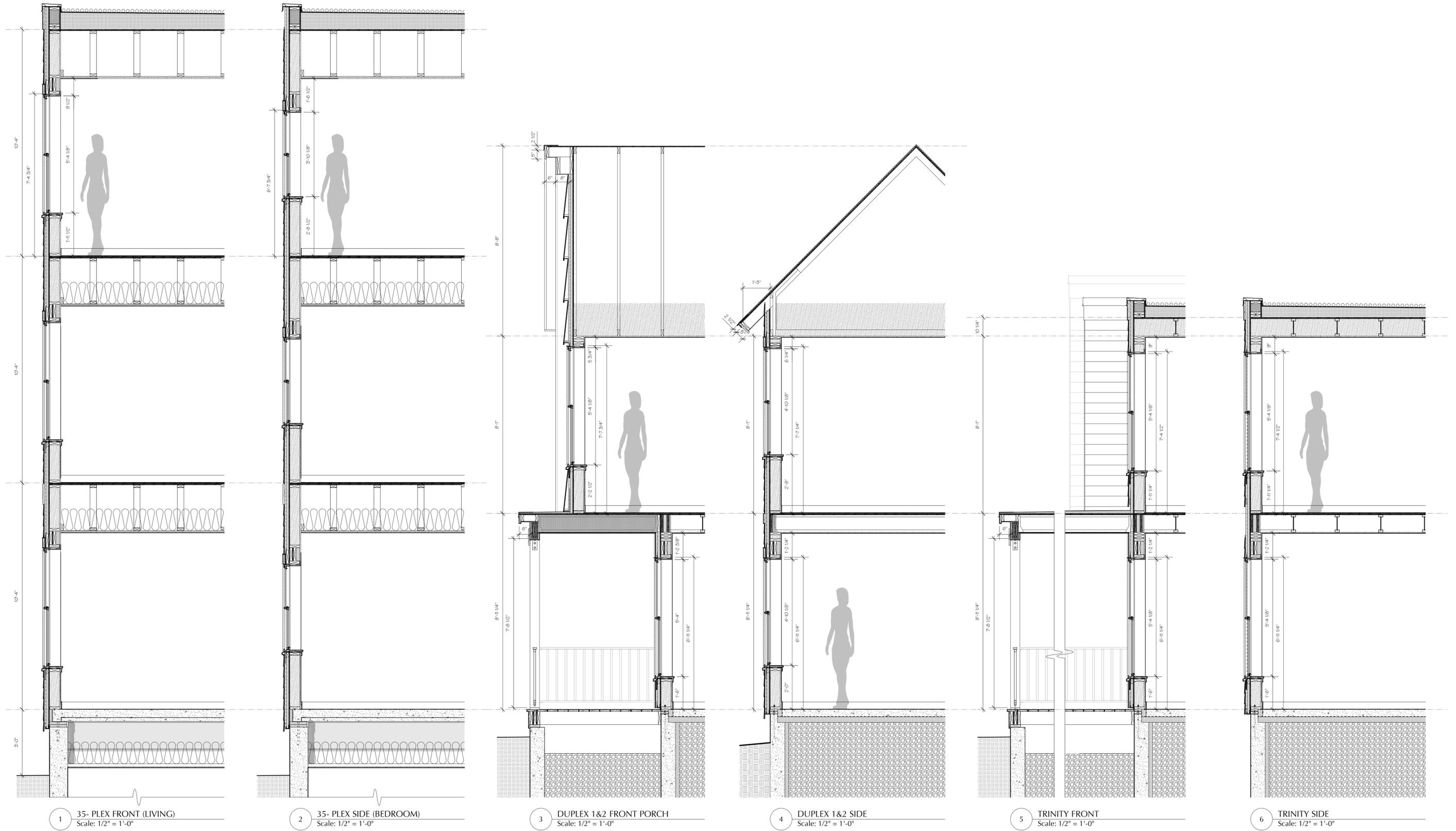
Boundary Survey

Lands of
Champlain Housing Trust Inc.

Bright Street
Burlington, Vermont

KREBS & LANSING Consulting Engineers, Inc.
164 Main Street, Colchester, Vermont 05446

Ion A. Jewkes, L.L.S. #639



1 35- PLEX FRONT (LIVING)
Scale: 1/2" = 1'-0"

2 35- PLEX SIDE (BEDROOM)
Scale: 1/2" = 1'-0"

3 DUPLEX 1&2 FRONT PORCH
Scale: 1/2" = 1'-0"

4 DUPLEX 1&2 SIDE
Scale: 1/2" = 1'-0"

5 TRINITY FRONT
Scale: 1/2" = 1'-0"

6 TRINITY SIDE
Scale: 1/2" = 1'-0"

SCHEMATIC ARCHITECTURAL WALL CROSS SECTIONS

NOTE: WINDOW AND TRIM LOCATIONS AND SIZES WILL ADJUST DURING DESIGN DEVELOPMENT TO MATCH CLAPBOARD LAYOUT.

BRIGHT STREET COOPERATIVE

BURLINGTON, VT

**Duncan
Wisniewski** 
ARCHITECTURE

255 SOUTH CHAMPLAIN STREET
BURLINGTON, VERMONT 05401
T: 802.864.6693

DATE: 04.11.14

8.0

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A Professional Corporation

PRELIMINARY PLAT

KEY

- ex. tree to be removed
- ex. tree to remain
- — — — — ex. fencing to remain
- — — — — ex. fencing to be removed
- — — — — proposed fencing
- proposed building



BRIGHT STREET COOPERATIVE

EXISTING TREE & FENCING DEMO DIAGRAM

REVISIONS

