



July 1, 2021

South Kingstown Planning Board  
Town of South Kingstown  
180 High Street  
Wakefield, RI 02879

RE: Major Land Development / Change to an Approved Plan  
(Amended Previously Submitted Letter Dated May 28, 2021)

Dear Members of the South Kingstown Planning Board,

The Westerly Community Credit Union would like to seek approval from the South Kingstown’s Planning Board on adding 8 parking spaces to its existing parking lot. The Credit Union’s facility is located at 4979 Tower Hill Road within the Route-1 Special Management District Section 605.10 - Map and Lot 58-1/99.

The Credit Union completed construction of the 24,791 sq/ft facility in October of 2018. The building primarily consists of a bank branch and office space for about 18,000 sq/ft with the remainder being a staff lounge, gym, and file storage. Over the past three years the company has been growing and believes parking will become a barrier to fully occupying the building in the coming years.

In 2020, the Credit Union conducted research on purchasing vacant land on Kelley Way (Lot 57-2/57 and 57-2/58). On November 24, 2020, the Credit Union brought a pre-application before the Town of South Kingstown’s Planning Board. It was determined in February 2021 that due to safety and cost concerns this plan would be disposed of and the Credit Union would seek alternative solutions.

In place of that larger scale project, the Credit Union instead is seeking a smaller expansion of parking within its existing lot. This 8 space expansion is tailored to meet the parking needs into the future and is limited enough to not alter previously performed traffic studies. Additionally, we are looking to use pervious parking materials to not affect previously performed stormwater runoff calculations. We understand the Special Management Districts standards and have addressed each below.

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**Article 7 Section 711.C:** Offices, public or professional administration or service buildings, banks, financial institutions, and similar uses - 1 parking space for each 350 sq/ft of floor area.

**WCCU Comment:** *The Credit Union installed 51 parking spaces to meet this requirement which was the minimum for a building of its size. This was meant to maximize the landscaping and lawn areas of the lot.*

**Article 6 Section 605.15:** At least fifteen (15) percent of the land suitable for development in the Special Management District shall be designated as open space.

**WCCU Comment:** *The Credit Union lot size is 2.06 acres (89,734 sq/ft) X 15% = 13,460 sq/ft required for open space. Currently 0.95 acres (41,382 sq/ft) or 45% is covered by impervious surface (parking, building). The remainder is well manicured lawn, gardens, and a stormwater filtration basin. There is a ‘landscape buffer zone’ located in the front of the building where the 100-foot Route-1 setback is located. This area itself is 16,251 sq/ft.*

*The proposed 8 parking spaces should reduce the open space by 2,000 sq/ft in added impervious surface. This would still allow for greater than 15% of open space (16,251 – 2,000 = 14,251 sq/ft)*

**Article 6 Section 605.7:** No new principal building shall be located within one hundred (100) feet of the state highway line of US Route 1 or Kelley Way (or any highway access easement granted to the Rhode Island Department of Transportation). No parking area or access drive, except required principal access streets or driveways, if allowed, shall be located within this 100-foot setback unless the planning board finds that such parking area or access drive can be totally hidden from view by motorists on US Route 1 or Kelley Way. Such screening shall be accomplished by lowering the elevation of such parking area or drive by a significant amount below the grade of US Route 1 or Kelley Way, which, in combination with grading, landscaping, stone or masonry walls, or a combination thereof, will have the effect of completely preventing views of such facilities from US Route 1 or Kelley Way.

**WCCU Comment:** *The location for the proposed 8 parking spaces will be screened by the difference in the elevation between Route 1 and the Access Road and additional vegetation.*

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The Credit Union has been working with James Rabbit and Jason Parker over the last few months on this parking expansion and we appreciate their assistance and guidance. With their recommendation a sight line analysis was created as well as a revised landscaping plan.

The landscape proposed for the expansion of the parking considers several factors: (1) the need for a screening function from Route 1/Tower Hill Road; (2) the requirement for deer resistant plant materials; (3) a desire for a seasonally interesting plant palette.

(1) Although the view of the proposed parking spaces is limited from Route 1/Tower Hill Road due to the existing grades, the proposed landscaping is staggered such that additional filtering of the spaces will take place. A mix of evergreen and deciduous trees, shrubs and perennials are proposed in visually overlapping plant beds.

(2) Although the impact of deer browse varies each year depending on the severity of the winter and other factors, the plant materials chosen are based on past experiences and several published studies, including a bulletin produced by Rutgers Cooperative Research & Extension entitled "Landscape Plants Rated by Deer Resistance", which has proven to be a consistently accurate predictor of deer damage.

(3) Coordination with Credit Union and landscape architect indicated that the current plant palette in the area was lacking in seasonal interest, and a desire for more color was requested. The plants chosen bloom at different time periods or have colorful/evergreen foliage to enhance the view of the space for staff, patrons, and passers-by.

During the Pre-Application Planning Board Meeting on Tuesday, June 22nd there were a few recommendations made that the Credit Union took the following action on:

1. Provide, in writing, a statement that the Credit Union will not seek any additional parking on the property (58-1/99) after this 'Change to Approved Plan' is approved.
  - a. A letter to that affect is included in this package.
2. Consider adjusting the vegetation selected to provide a taller screening of the proposed parking spaces.

- a. Vegetation has been modified to include taller species that maintain foliage year-round. Additionally, the parking will be labeled as 'compact car'. This will help ensure no large or tall vehicles utilize the spaces. Lastly, we believe this difference in elevation between Route 1 and the spaces helps to augment the screening.
3. Consider installing a large piece of structured art or alike to augment the screening of the parking spaces.
  - a. Given that art, and its interpretation, is so subjective the management of the Credit Union decided to modify the vegetation plan instead.
4. Try to work with the Rhode Island Department of Transportation (RIDOT) to improve and beautify the State owned property between Route 1 and the Access Roadway.
  - a. The Credit Union has attempted this in the past and found RIDOT to be unreceptive to improvements, even as simple as more regular mowing and tree trimming. The Credit Union again has reached out and has received little feedback. Our communication is included in this package.

This package contains the following:

**South Kingstown Town Related Documents**

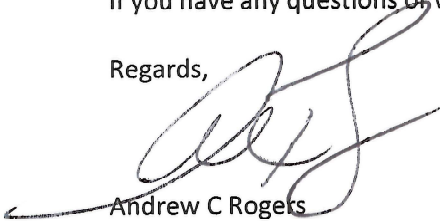
- Project Review Application Form
- Owner Authorization Form
- Project Team Form
- Payment for Project Application
- List of Abutting Property Owners

**Project Plan and Research**

- Parking Lot Layout
- Route 1 to New Parking Sight View Perspective
- Landscaping Plan
- Pervious Parking Material Plans, Erosion and Sediment Control
- Long Term Operation and Maintenance Plan
  - Permeable Pavement Maintenance Checklist
  - Vacuum Sweeping Guidance
  - Example Maintenance Agreement
- Addition of an illuminated flagpole

If you have any questions or would like additional information, please let me know by calling 401-486-3091.

Regards,

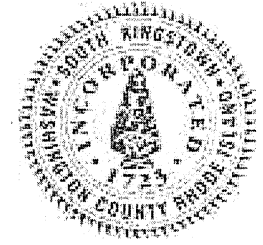


Andrew C Rogers  
Chief Operating Officer

enclosures

**TOWN OF SOUTH KINGSTOWN  
PLANNING BOARD  
PROJECT REVIEW APPLICATION FORM**

*This Application Form is to be submitted with each stage of review.*



**APPLICANT INFORMATION**

Applicant Name: Westerly Community Credit Union  
Name of Primary Contact (if applicant is an organization): Andrew Rogers  
Applicant Address: 4979 Tower Hill Road, Wakefield RI 02879  
Applicant Phone: 401-486-3091 Applicant Email: arogers@westerlyccu.com

**OWNER INFORMATION**

Owner Name(s): Westerly Community Credit Union  
Owner Contact Information: Andrew Rogers, Chief Operating Officer

**PROJECT INFORMATION**

Assessor's Plat and Lot of Parcel(s) Proposed for Subdivision/Development: 58-1:99  
Physical Address or Location of Parcel(s): 4979 Tower Hill Road, Wakefield RI 02879  
Zoning District(s) of Parcel(s): SMD Total Size of Development Parcel: 2.06  
Date of Initial Meeting with Planning Department Staff (before first stage of review): March 9, 2021

**TYPE OF PROJECT** (select all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Development Plan Review                                 | <input type="checkbox"/> Minor Land Development Project             |
| <input type="checkbox"/> Administrative Subdivision                              | <input checked="" type="checkbox"/> Major Land Development Project  |
| <input type="checkbox"/> Minor Subdivision, without street creation or extension | <input type="checkbox"/> Multi-Household Land Development Project   |
| <input type="checkbox"/> Minor Subdivision, with street creation or extension    | <input type="checkbox"/> Flexible Design Residential Project (FDRP) |
| <input type="checkbox"/> Major Subdivision                                       | <input type="checkbox"/> Residential Compound                       |
|  | <input type="checkbox"/> Comprehensive Permit                       |

**CURRENT STAGE OF REVIEW** (if applicable)

- |   |   |
|---|---|
| <input type="checkbox"/> Pre-Application Concept Review | <input type="checkbox"/> Release of Performance/Maintenance Guarantee |
| <input type="checkbox"/> Conceptual Master Plan         | <input checked="" type="checkbox"/> Change to an Approved Plan        |
| <input type="checkbox"/> Preliminary Plan               | <input type="checkbox"/> Reinstatement or Extension to Approved Plan  |
| <input type="checkbox"/> Final Plan                     | <input type="checkbox"/> Request to Combine Review Stages             |
| <input type="checkbox"/> Recording                      | <input type="checkbox"/> Other  |

**WAIVERS AND MODIFICATIONS**

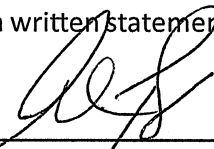
Does this application request waiver of or modification to any of the requirements of the Town of South Kingstown Subdivision and Land Development Regulations?  yes\*  no

*\*If yes, a statement describing the specific regulation(s) for which waiver or modification is requested must be included in the application materials.*

**CERTIFICATION OF COMPLETE APPLICATION**

(1) The applicant hereby certifies that all of the materials required by the applicable checklist(s), as determined by Planning Department staff during the initial meeting, have been submitted including a review fee in the amount of \$ 500.00.

(2) The applicant hereby certifies that the plan set and other submitted materials conform to the requirements of the current adopted version of the Town of South Kingstown Subdivision and Land Development Regulations, or, that a written statement has been provided listing all requested waivers and/or modifications of the Regulations.

  
\_\_\_\_\_  
Applicant Signature

July 1, 2021  
\_\_\_\_\_  
Date

Andrew C Rogers  
\_\_\_\_\_  
Printed Name

# PROJECT TEAM FORM

Submittal Date: July 1, 2021

The Project Team Form is to be submitted with each stage of review. If no changes to the Project Team have occurred since the last stage of review, a copy of the previously submitted Form may be submitted with an updated Submittal Date.

**ATTORNEY** *This entity should be copied on all project correspondence*  **YES**  **NO**

Name: Kenyon Law Associates, LLP

Name of Primary Contact (if attorney is an organization): John F Kenyon

Address: 133 Old Tower Hill Road, Suite 1, Wakefield RI 02879

Phone: 401-789-0217 Email: jfk@kenyonlawyers.com

**ENGINEER** *This entity should be copied on all project correspondence*  **YES**  **NO**

Name: Principe Engineering

Name of Primary Contact (if engineer is an organization): Josh Rosen

Address: 27 Sakonnet Ridge Drive, Tiverton RI 02878

Phone: 401-816-5385 Email: josh@principeengineering.com

**SURVEYOR** *This entity should be copied on all project correspondence*  **YES**  **NO**

Name: \_\_\_\_\_

Name of Primary Contact (if surveyor is an organization): \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**LANDSCAPE ARCHITECT** *This entity should be copied on all project correspondence*  **YES**  **NO**

Name: Principe Engineering

Name of Primary Contact (if landscape architect is an organization): Karen Beck

Address: 27 Sakonnet Ridge Drive, Tiverton RI 02878

Phone: 401-816-5385 Email: karen@principeengineering.com

**ARCHITECT** *This entity should be copied on all project correspondence*  **YES**  **NO**

Name: \_\_\_\_\_

Name of Primary Contact (if architect is an organization): \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**OTHER** *This entity should be copied on all project correspondence*  **YES**  **NO**

Name: \_\_\_\_\_

Role on Project: \_\_\_\_\_

Name of Primary Contact (if entity is an organization): \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**OWNER AUTHORIZATION FORM**

**Submittal Date:** July 1, 2021

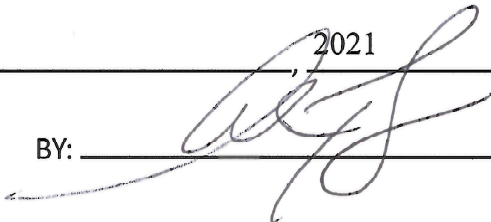
Owner Authorization Forms for each owner of the property being considered for subdivision/development is to be submitted with each stage of review. If no changes to the ownership have occurred since the last stage of review, a copy of the previously submitted Form may be submitted with an updated Submittal Date.

I, Andrew Rogers, Chief Operating Office hereby certify that I am an/the owner of property designated as Plat 58-1, Lot 99, as shown on the Town of South Kingstown Tax Assessor Maps.

I further certify that I am the owner of the development rights for this property.


I hereby authorize and am in agreement with the application, signed by Andrew Rogers, Chief Operating Office (applicant), for subdivision or development for the subject property. Said application is to be submitted to the Planning Department of the Town of South Kingstown for review and decision by the Planning Board.

WITNESS its name this 1 day of July, 2021.

BY:   
Signature of Owner

STATE OF RHODE ISLAND  
County of Washington

In July on the 1 day of 2021, before me personally appeared Andrew C Rogers (name) to me known and known by me to the party executing the foregoing instrument and acknowledged said instrument, by him/her executed, to be his/her free act and deed, as Individual/Corporation (individual, corporation, trustee, partnership, non-profit, etc.).

  
Notary Public

My Commission Expires: March 22, 2025

**LORI A. SMITH**  
Notary Public, State of Rhode Island  
My Commission Expires Mar. 22, 2025  
Commission # 755147

## List of Property Abutters to 4979 Tower Hill Road, Wakefield (58-1/99)

- 49-3:6 Wakefield Meadow Condominium Association  
Bridget Pardee, President  
198 Hampton Way, Wakefield RI 02879
- 50-4:18 Taban Holdings LLC  
Dr. Nima Behazin, DMD  
4959 Tower Hill Road, Wakefield RI 02879
- 50-4:16 Scott Thomas Moran Trust  
C/O John & Cathy Moran  
4943 Tower Hill Road, Wakefield RI 02879
- 57-2:57 Susan & Philip Greene  
108 Kelley Way, Wakefield RI 02879
- 58-1:109 Philip Lynch  
4958 Tower Hill Road, Wakefield RI 02879
- 58-1:97 State of RI - DOT  
4964 Tower Hill Road, Wakefield RI 02879
- 58-1:98 Judith Frederickson & Robert Westcott  
4972 Tower Hill Road, Wakefield RI 02879
- 58-1:98 Judith Frederickson & Robert Westcott  
4972 Tower Hill Road, Wakefield RI 02879
- 58-1:94 Kathleen McGrath  
4994 Tower Hill Road, PO Box 223, Wakefield RI 02879

**Westerly  
Community  
Credit Union**

122 Granite Street  
Westerly, RI 02891  
401-596-7000  
westerlyccu.com

No. 0000178267

Post Date: 05/25/21  
Issue Date: 05/25/21  
Amount: 500.00  
Check Number: 02 0000178267  
Account:  
Reference: PLANNING BOARD

Payee: \*TOWN OF SOUTH KINGSTOWN\*  
TAX COLLECTOR  
180 HIGH STREET  
WAKEFIELD RI 02879

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Community  
Credit Union**

122 Granite Street  
Westerly, RI 02891  
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TAX COLLECTOR  
180 HIGH STREET  
WAKEFIELD RI 02879

THIS DOCUMENT CONTAINS A TRUE WATERMARK - HOLD TO LIGHT TO VIEW

**Westerly  
Community  
Credit Union**

122 Granite Street  
Westerly, RI 02891  
401-596-7000  
westerlyccu.com

WESTERLY COMMUNITY CREDIT UNION  
57-7331/2115

No. 0000178267

DATE  
05/25/21

PAY **EXACTLY**  **500 Dollars 00 Cents**  
five zero zero dollars zero zero cents

\$500.00

\*\*\* Five Hundred Dollars and 00 Cents \*\*\*

WESTERLY COMMUNITY CREDIT UNION

TO THE  
ORDER  
OF

\*TOWN OF SOUTH KINGSTOWN\*  
TAX COLLECTOR  
180 HIGH STREET  
WAKEFIELD RI 02879

*Pete S. Stefanski*  
CHAIRMAN OF THE BOARD

*Robert J. Helaney*  
TREASURER

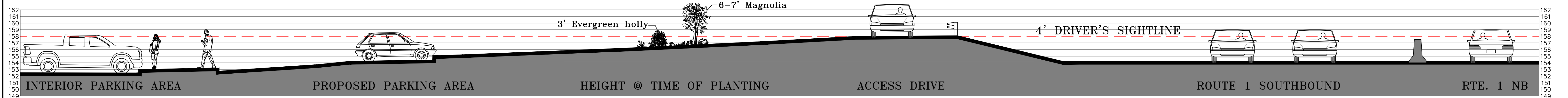




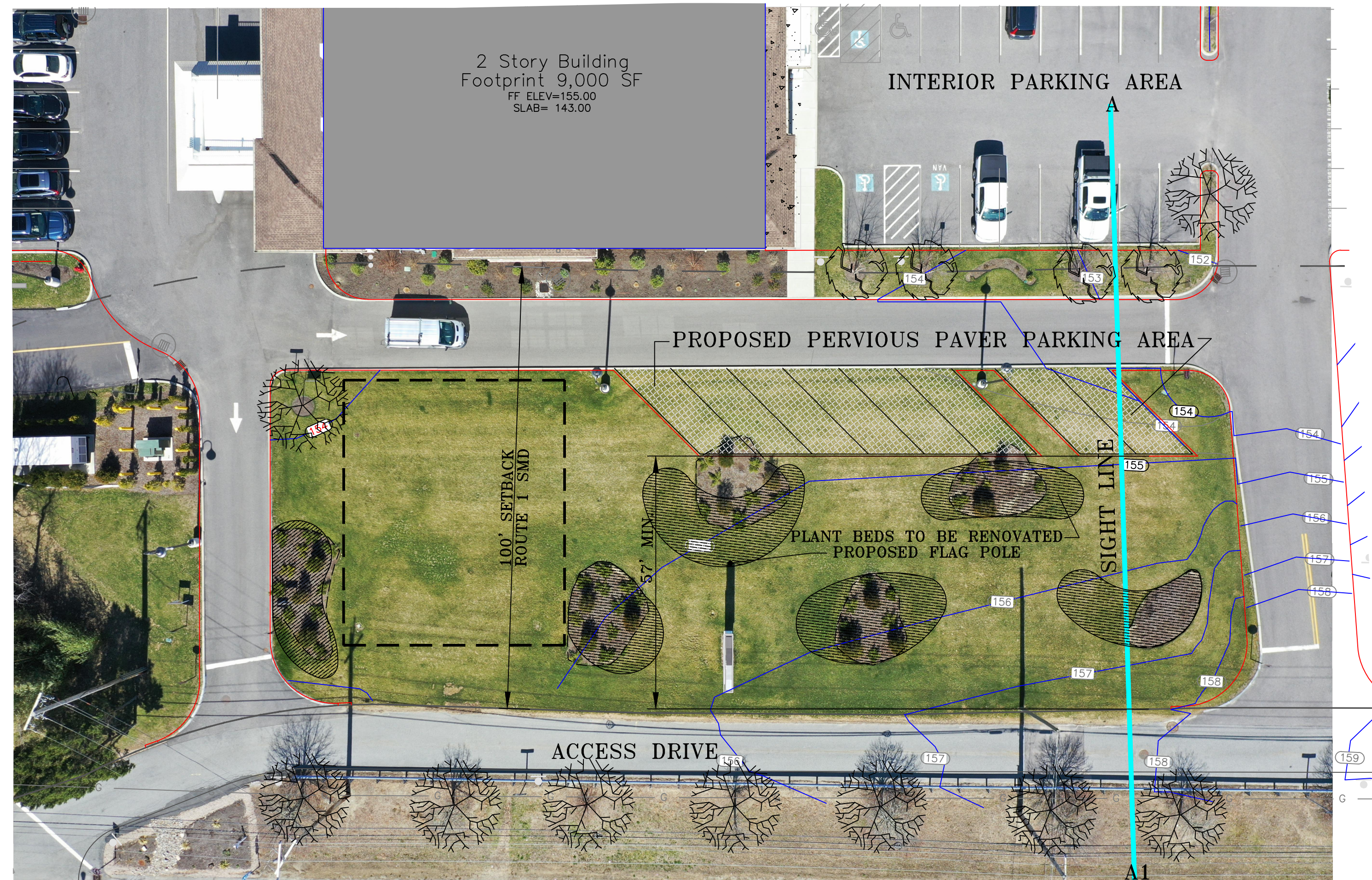
VIEW FROM DRONE CAMERA @ 4' HEIGHT ABOVE ROUTE 1 SOUTHBOUND



VIEW FROM DRONE CAMERA @ 4' HEIGHT ABOVE ROUTE 1 NORTHBOUND



SIGHT LINE CROSS-SECTION (A-A1)



VIEW FROM DRONE CAMERA ABOVE SITE WITH PROPOSED PARKING

PROPOSED PARKING NOTES:

- 1) NO FURTHER PARKING EXPANSION SHALL BE ALLOWED AND/OR REQUESTED FOR THE SUBJECT PROPERTY IN THE FUTURE.
- 2) THE EIGHT (8) ADDITIONAL PARKING SPACES REPRESENTED ON THIS PLAN SHALL BE RESTRICTED TO THE PARKING OF COMPACT CARS ONLY.

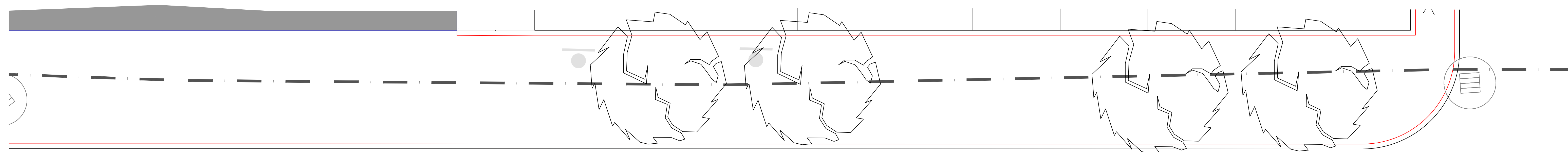
Thomas J. Principe, III  
 REGISTERED PROFESSIONAL ENGINEER

**PRINCIPE COMPANY, INC.**  
**ENGINEERING DIVISION**  
 PO BOX 298  
 TIVERTON, RI 02878  
 401.816.5385  
 PRINCIPEENGINEERING@GMAIL.COM

REVISIONS			
No.	DATE	DRWN	CHKD
1.	6/29/21	KAB	TJP
2.	7/14/21	KAB	TJP

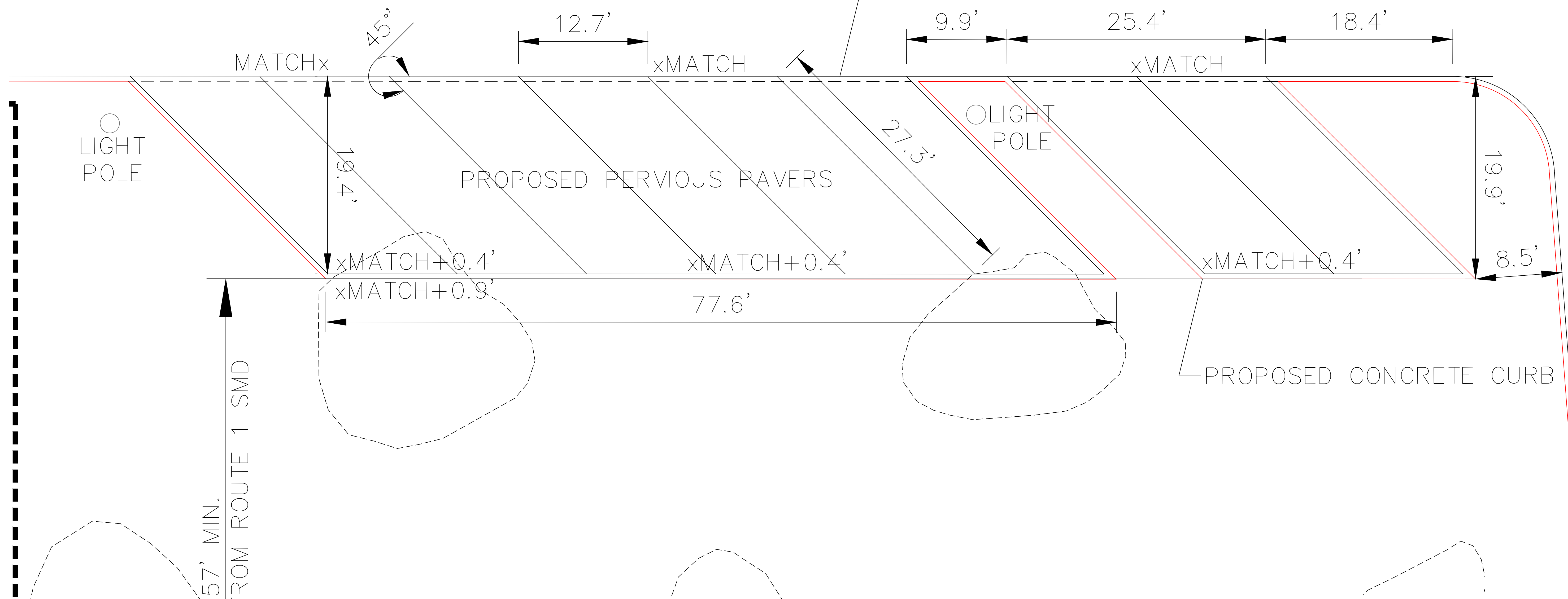
MODIFICATION TO AN APPROVED PLAN  
 for  
**WESTERLY COMMUNITY CREDIT UNION**  
**PARKING EXPANSION**  
 in  
 SOUTH KINGSTOWN, RHODE ISLAND  
**SIGHT VIEW PERSPECTIVE**

SCALE: N/A SHEET NO.: 1 OF 4  
 DRAWN BY: KAB DESIGN BY: KAB CHECKED BY: TJP  
 DATE: 5/27/21 PROJECT NO.: LD-13-1 PH II



EXISTING ASPHALT PAVEMENT

REMOVE & DISPOSE EXISTING CONCRETE CURB  
(SALVAGE CURBING IF CONDITION WARRANTS)



LIGHT POLE

PROPOSED PERVIOUS PAVERS

LIGHT POLE

PROPOSED CONCRETE CURB

57' MIN.  
SETBACK FROM ROUTE 1 SMD

Thomas J. Principe, III  
  
 REGISTERED PROFESSIONAL ENGINEER

**PRINCIPE COMPANY, INC.**  
**ENGINEERING DIVISION**  
 PO BOX 298  
 TIVERTON, RI 02878  
 401.816.5385  
 PRINCIPLEENGINEERING@GMAIL.COM

REVISIONS				
No.	DATE	DRWN	CHKD	
1.	6/29/21	KAB	TJP	
2.	7/14/21	KAB	TJP	

MODIFICATION TO AN APPROVED PLAN  
 for  
**WESTERLY COMMUNITY CREDIT UNION**  
**PARKING EXPANSION**  
 in  
 SOUTH KINGSTOWN, RHODE ISLAND  
**PARKING LAYOUT**

SCALE: 1"=10'  
 SHEET NO.: 2 OF 4  
 DRAWN BY: KAB    DESIGN BY: KAB    CHECKED BY: TJP  
 DATE: 5/24/21    PROJECT NO.: LD-13-1 PH II



**EROSION CONTROL AND SEDIMENT CONTROL PLAN:**

1. PRIOR TO THE COMMENCEMENT OF ANY CLEARING, GRUBBING, DEMOLITION OR EARTHWORK ACTIVITY, TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE PLANS ARE TO BE INSTALLED BY THE CONTRACTOR.
2. CONSTRUCTION ACCESS STABILIZATION ENTRANCE PADS ARE TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF SITE GRUBBING OR EARTHWORK ACTIVITY.
3. EXISTING CATCH BASINS ARE TO BE PROTECTED WITH HAY BALES AND/OR SILT SACS PRIOR TO THE START OF SITE GRUBBING, EARTHWORK OR UNDERGROUND UTILITY AND DRAINAGE INFRASTRUCTURE INSTALLATION TO SERVE THE DEVELOPMENT SITE.
4. THE PROJECT CONSTRUCTION SEQUENCE, TO THE EXTENT PRACTICAL, SHOULD REQUIRE THE INSTALLATION OF DOWN GRADE AND OFF SITE STORM DRAINAGE SYSTEM IMPROVEMENTS BEFORE THE START OF SITE GRUBBING AND EARTHWORK ACTIVITY.
5. TEMPORARY SITE SLOPE TREATMENTS FOR SOIL STABILIZATION SHALL CONSIST OF HAY, STRAW, FIBER MULCH, RIP RAP OR PROTECTIVE COVERS SUCH AS MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, AND EXCELSIOR OR EQUAL PRODUCTS). THESE AND OTHER ACCEPTABLE MEASURES SHALL BE INCORPORATED INTO THE SITE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
6. CONSTRUCTION SITES ARE DYNAMIC, THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND OR MOVEMENT AND MAINTENANCE OF EROSION CONTROLS, SOIL STABILIZATION AND SEDIMENT CONTROL MEASURES AS NEEDED TO MAXIMIZE THE INTENT OF THE PLAN FOR ALL SITE CONDITIONS THROUGHOUT THE CONSTRUCTION PERIOD.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERIODIC INSPECTION, MAINTENANCE, REPAIR, AND REPLACEMENT OF EROSION CONTROLS, SOIL STABILIZATION AND SEDIMENT CONTROL DEVICES UNTIL AN ACCEPTABLE PERMANENT VEGETATIVE GROWTH IS ESTABLISHED. THE CONTRACTOR SHALL MAINTAIN A DETAIL LOG OF ALL EROSION CONTROL INSPECTIONS, COMPLAINTS RELATED TO EROSION OR SEDIMENT, AND CORRECTIVE REMEDIAL MEASURES TAKEN THROUGHOUT THE COURSE OF THE PROJECT CONSTRUCTION.
8. SOIL EROSION AND SEDIMENT CONTROL IS NOT LIMITED TO DAMAGES CAUSED BY WATER BUT ALSO INCLUDES EROSION AND SEDIMENT RESULTING FROM WINDS. MEASURES, SUCH AS TEMPORARY GROUND COVERS, WATER AND CALCIUM APPLICATIONS ARE TO BE UNDERTAKEN AS NEEDED TO MINIMIZE WIND RELATED SOIL AND DUST CONTROL.
9. STOCK PILES OF EARTH MATERIALS SHALL NOT BE LOCATED NEAR WATERWAYS OR WETLANDS. STOCK PILES SHALL HAVE SIDE SLOPES NO GREATER THAN THIRTY PERCENT (30%). STOCK PILES SHALL BE SURROUNDED ON THE DOWN GRADIENT OF THE EXISTING GROUND SURFACE BY HAY BALES OR SILT FENCE. THE STOCK PILES SHALL ALSO BE SEEDED OR STABILIZED IN SOME MANNER TO PREVENT SOIL EROSION.
10. THE SMALLEST POSSIBLE SITE AREAS SHALL BE DISTURBED OR EXPOSED AT ONE TIME AND DENUDE SLOPES OR WORK AREAS SHALL NOT BE LEFT EXPOSED FOR EXCESSIVE PERIODS OF TIME, SUCH AS INACTIVE PERIODS OR SITE WORK SHUT DOWNS.
11. TO THE EXTENT POSSIBLE, ALL DISTURBED AREAS MUST BE SEEDED OR STABILIZED WITHIN THE CONSTRUCTION SEASON. STABILIZATION OF ONE FORM OR ANOTHER SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
12. EXPOSED STEEP OR LONG SLOPES SHOULD BE TREATED WITH "CRIMPING" OR "TRACKING" TO REDUCE EROSION AND SEDIMENT AND TO TACK DOWN SEEDING OR MULCH APPLICATIONS.
13. IF CONCRETE IS TO BE USED ON SITE, THE CONTRACTOR MUST ESTABLISH AND MAINTAIN SPECIFIC WASHOUT AREAS FOR THE CONCRETE TRUCKS WITH APPROPRIATE PROTECTION CONTROLS.
14. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING COLLECTION AND STORAGE LOCATIONS ON-SITE FOR ALL CONSTRUCTION DEBRIS AND TRASH SO THAT THIS MATERIAL DOES NOT BECOME A NEIGHBORHOOD NUISANCE.
15. EXISTING TREES AND VEGETATION WILL BE RETAINED WHENEVER FEASIBLE.
16. SITE SOIL EROSION AND SOIL STABILIZATION AND SEDIMENT CONTROLS MUST CONFORM TO ALL REQUIREMENTS OF THE APPLICABLE LOCAL COMMUNITY ORDINANCES AND STATE REGULATIONS.

**ORDER OF PROCEDURE:**

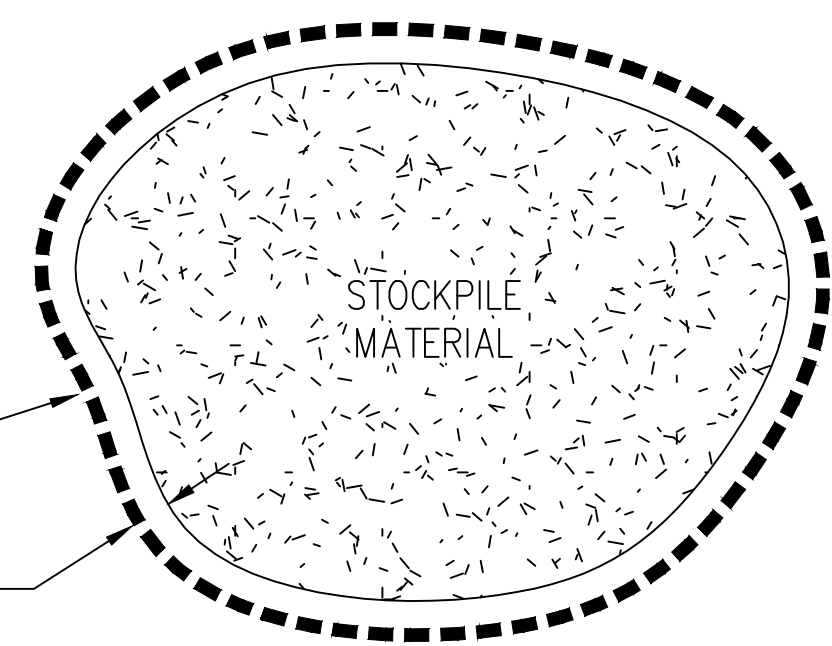
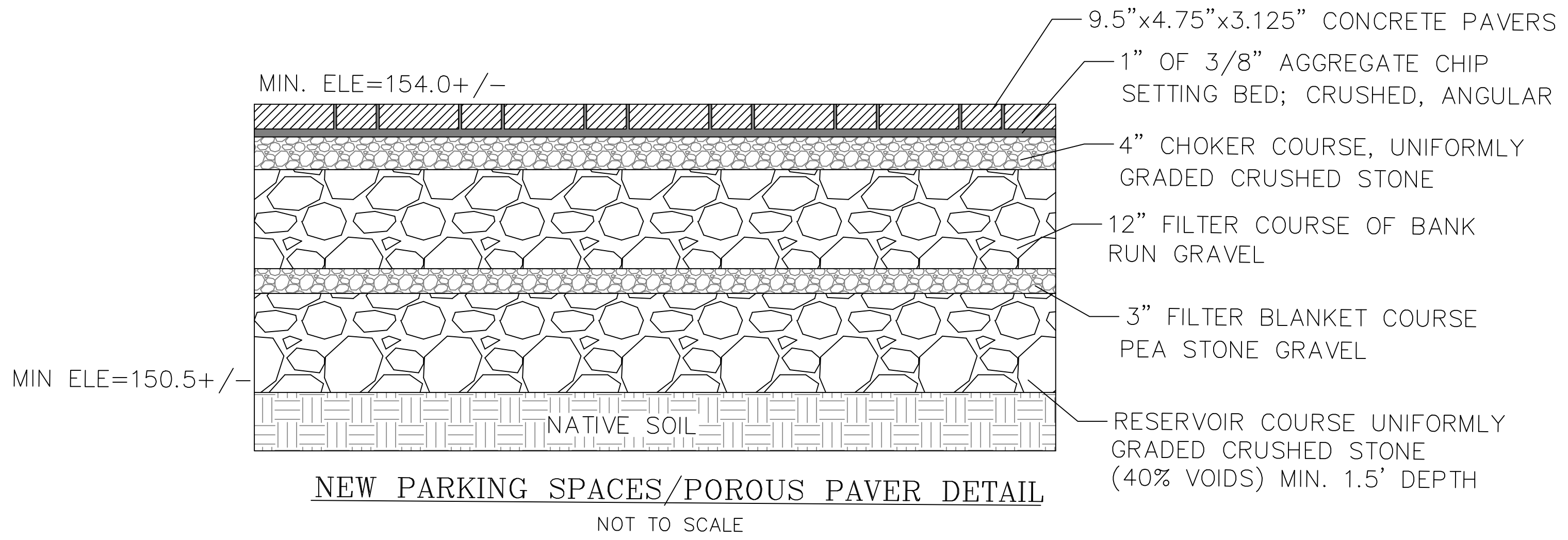
1. PRIOR TO ANY CLEARING AND GRUBBING OR ANY ROUGH GRADING, TEMPORARY HAYBALES AND SANDBAGS SHALL BE PLACED OUTSIDE THE LIMITS OF CONSTRUCTION AS PER THE PLANS (I.E. ALONG ROADWAYS, STREAM BANKS, CRITICAL AREAS, ETC.).
2. ALL EROSION AND SEDIMENTATION CONTROL STRUCTURES SHALL BE PERIODICALLY MAINTAINED AS PER THE RESPECTIVE PROGRAMS FOR TEMPORARY CONTROL.
3. IF WORK PROGRESS IS TO BE INTERRUPTED AT ANY TIME, REFERENCE EROSION AND SEDIMENTATION PROGRAMS FOR TEMPORARY CONTROL.
4. TEMPORARY HAYBALES AND SANDBAGS ALONG AND AT THE ENDS OF ROADWAYS MAY ALSO BE REMOVED AFTER FINAL SOIL STABILIZATION HAS BEEN ACHIEVED AND APPROVED.
5. HAYBALES LOCATED AT DRAINAGE OUTLETS MUST REMAIN UNTIL SUCH TIME THAT A DESIRABLE STAND OF GRASS OR COVER HAS BEEN ESTABLISHED AND THE PROJECT RECEIVES A FAVORABLE APPROVAL FOR FINAL ACCEPTANCE FROM THE ENGINEER.

**SOIL STABILIZATION PROGRAM**

1. DENUDE SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON.
2. ALL DISTURBED SLOPES, EITHER NEWLY CREATED OR EXPOSED PRIOR TO OCTOBER 15, SHALL BE SEEDED OR PROTECTED BY THAT DATE, FOR ANY WORK COMPLETED DURING EACH CONSTRUCTION YEAR.
3. THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH R.I. STD SPECIFICATION M 18.
4. THE SEED MIX SHALL BE INOCULATED WITHIN 24 HOURS, BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
5. THE DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING PERMANENT SEEDING MIXTURES:
 

A. MOWED AREA (ALL FLATS OR SLOPES LESS THAN 3:1)	
MIXTURE:	% BY WEIGHT:
RED FESCUE	75
KENTUCKY BLUEGRASS	15
COLONIAL BENTGRASS	5
PERENNIAL RYEGRASS	5
TOTAL:	100 lbs/Ac.
6. TEMPORARY TREATMENTS SHALL CONSIST OF A HAY, STRAW, OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS) THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
7. HAY OR STRAW APPLICATIONS SHOULD BE IN THE AMOUNT OF 3,000 - 4,000 lbs/Ac.
8. ALL HAYBALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED. IF NEEDED, TEMPORARY SEEDING CAN HELP MINIMIZE THE EROSION. A TEMPORARY SEEDING SPECIES ARE RECOMMENDED:
 

MIXTURE:	lbs /1,000 S.F.
ANNUAL RYEGRASS	1.0 - 1.5
PERENNIAL RYEGRASS	1.0 - 1.5
SUDAN GRASS	0.7 - 1.0
MILLET	0.7 - 1.0
WINTER RYE	3.0
CATS	0.5 - 5.0
WEeping COVER GRASS	0.5 - 5.0
9. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE.
10. ALL FILL SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH THE R.I.D.P.W. STD SPECIFICATIONS SECTION 202.
11. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 15 DAYS OF FINAL GRADING.
12. STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAYS, THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 30% AND STOCKPILES SHALL ALSO BE SEEDED AND/OR STABILIZED.
13. ON BOTH STEEP AND LONG SLOPES CONSIDERATION SHALL BE GIVEN TO "CRIMPING" OR "TRACKING" TO TACK DOWN MULCH APPLICATIONS.
14. REFERENCE THE SEDIMENTATION CONTROL PROGRAM AND ORDER OF PROCEDURE FOR PROPER COORDINATION
15. THE DRAINAGE SYSTEM SHALL RECEIVE ONE FINAL CLEANING PRIOR TO ACCEPTANCE TO THE OVERALL PROJECT BY THE OWNER SEDIMENTS SHALL BE DISPOSED OF IN A PROPER MANNER.



**PARKING SIGN FOR NEW SPACES**  
NOT TO SCALE

Thomas J. Principe, III  
REGISTERED PROFESSIONAL ENGINEER

**PRINCIPE COMPANY, INC.**  
ENGINEERING DIVISION  
PO BOX 298  
TIVERTON, RI 02878  
401.816.5385  
PRINCIPEENGINEERING@GMAIL.COM

REVISIONS

No.	DATE	DRWN	CHKD
1.	6/29/21	KAB	TJP
2.	7/14/21	KAB	TJP

MODIFICATION TO AN APPROVED PLAN  
for  
**WESTERLY COMMUNITY CREDIT UNION PARKING EXPANSION**  
in  
SOUTH KINGSTOWN, RHODE ISLAND  
**DETAILS**

SCALE: 1"=10' SHEET NO: 4 OF 4  
DRAWN BY: KAB DESIGN BY: KAB CHECKED BY: TJP  
DATE: 5/24/21 PROJECT NO.: LD-13-1 PH II

**Westerly  
Community**  
Credit Union

July 1, 2021

South Kingstown Planning Board  
Town of South Kingstown  
180 High Street  
Wakefield, RI 02879

RE: Map and Lot 58-1/99 – No Additional Parking After July 1<sup>st</sup> Application Approval

Dear Members of the South Kingstown Planning Board,

This letter is to confirm that the Westerly Community Credit Union **will not** seek any additional parking on its property located at 4979 Tower Hill Road, Map and Lot 58-1/99 after the current application requesting 8 additional parking spots is approved.

Regards,



Andrew C Rogers  
Chief Operating Officer



**LONG TERM OPERATION AND  
MAINTENANCE PLAN  
May 27, 2021**

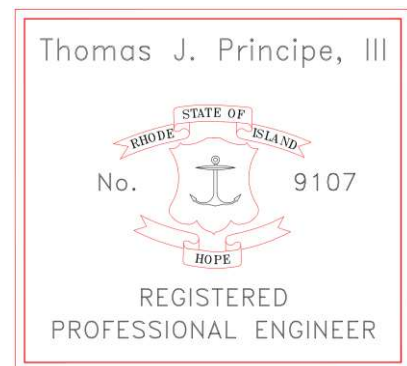
**Westerly Community Credit Union  
4979 Tower Hill Road  
South Kingstown, RI**

***Prepared For:***

Westerly Community Credit Union  
4979 Tower Hill Road  
Wakefield, RI 02879

***Prepared By:***

Principe Engineering, Inc.  
27 Sakonnet Ridge Drive  
Tiverton, Rhode Island



## **TABLE OF CONTENTS**

Permeable Paving

Appendix

- Permeable Pavement Operation, Maintenance and Management Inspection Checklist
- BMP Location Plan
- Maintenance Agreement

In order to minimize the stormwater management system deterioration, the owner shall adhere to the following Operation and Maintenance Plan as well as any additional requirements pertaining to inspection and maintenance measures for this site provided in Appendices E and G of the Rhode Island Stormwater Design and Installation Standards Manual.

### **Permeable Paving**

A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the responsible authority to ensure the following: Areas where infiltrating permeable pavement practices shall never serve as a sediment control device during site construction phase. Great care must be taken to prevent the permeable pavement area from compaction. Permeable paving surfaces require regular vacuum sweeping or hosing (minimum every three months or as recommended by manufacturer) to keep the surface from clogging. Maintenance frequency needs may be more or less depending on the traffic volume at the site. The use of sand and salt shall be minimized during the winter months. Permeable pavement areas shall not be repaved or resealed with impermeable materials. The permeable pavement area shall be inspected annually for deterioration or spalling. Show shall not be stockpiled on permeable pavement. Contractors shall be notified to prevent unintentional stockpiling on permeable pavement.

### **APPENDIX:**

- A. Infiltration Basin Operation, Maintenance and Management Inspection Checklist
- B. BMP Location Plan
- C. Maintenance Agreement

## Permeable Pavement Operation, Maintenance, and Management Inspection Checklist

Project:

Location:

Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
<b>1. Sediment and Debris Cleanout (3 Months or Manufacturer's Recommendation)</b>		
Contributing area free of sediment and debris		
Contributing area stabilized and mown, with grass clippings removed		
Surface free of sediment and debris (e.g., mulch, leaves, trash, etc.)		
No signs of clogging (e.g., standing water)		
Surface does not require vacuuming		
<b>2. Dewatering (Monthly)</b>		
Permeable pavement dewateres between storms		
<b>3. Underdrain Outfall, if present (Annual)</b>		
No evidence of erosion		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Surface Repairs (Annual)		
Surface has not been sealed		
No evidence of surface deterioration or spalling		
Surface (top and base course) does not need to be replaced		

Comments:

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Actions to be Taken:

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### 5.4.5 Vegetation

#### Required Elements

- Other adjacent construction shall be completed and site stabilized before installation of reservoir materials. A dense and vigorous vegetative cover shall be established over any contributing pervious drainage areas before runoff can be accepted into the facility.
- Pavers that are planted with grass require species with deep root systems. Follow manufacturer's guidelines on appropriate species.

#### Design Guidance

- Table G-3 in Appendix G includes a list of native, drought tolerant grasses that may be appropriate for grid pavers.

### 5.4.6 Maintenance

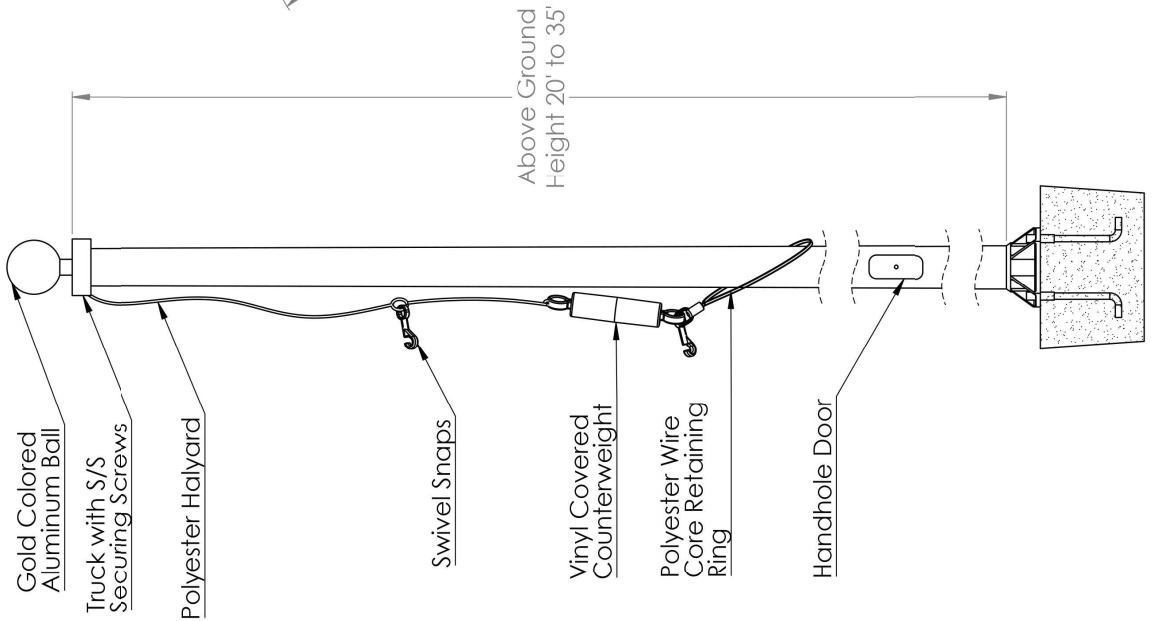
#### Required Elements

- A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the responsible authority.
- Areas where infiltrating permeable pavement practices are proposed shall not serve as a temporary sediment control device during site construction phase.
- Permeable paving surfaces require regular vacuum sweeping or hosing (minimum every three months or as recommended by manufacturer) to keep the surface from clogging. Maintenance frequency needs may be more or less depending on the traffic volume at the site.
- Minimize use of sand and salt in winter months.
- Do not repave or reseal with impermeable materials.
- The Erosion and Sediment Control (ESC) Plan shall specify at a minimum:
  - how sediment will be prevented from entering the pavement area;
  - a construction sequence;
  - drainage management; and
  - vegetative stabilization.

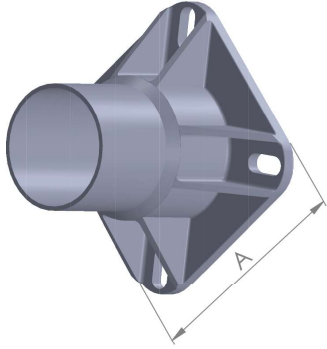
#### Design Guidance

- Keep adjacent landscape areas well maintained and stabilized (erosion gullying quickly corrected).
- Post signs identifying permeable pavement.
- Pavers planted with grass need mowing and often need reseeding of bare areas.
- Mow any upgradient contributing pervious drainage areas, and seed any bare areas.
- Monitor regularly to ensure that the paving surface drains properly after storms.
- Inspect the surface annually for deterioration or spalling.
- Attach rollers to the bottoms of snowplows to prevent them from catching on the edges of pavers.

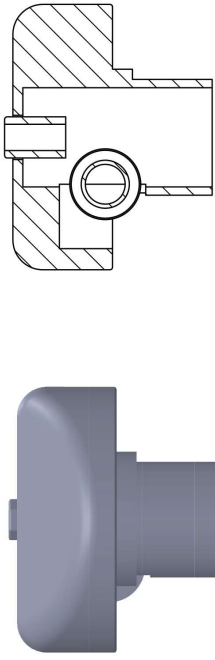
# Aeolus Series Anchor Base External AB201-AB351



Anchor Base



Fiberglass Stationary  
Internal Truck



## Specifications and Accessories

Model	AB201	AB251	AB301	AB351
Above Ground Height	20'	25'	30'	35'
Butt Diameter	5.75"	6"	6.75"	7"
Top Diameter	3"	3"	3"	3"
Pole Weight with Base (lbs)	41	61	78	97
Shipping Weight with Base (lbs)	94	107	131	172
Cleat	8.5" NY	8.5" NY	8.5" NY	8.5" NY
Gold Anodized Ball	5"	5"	6"	6"
Halyard	40' of #10	50' of #10	60' of #10	#10
Truck	F/G	F/G	F/G	F/G
Brass Snaps	1 pair	1 pair	1 pair	1 pair
Anchor Bolt Length (sold separate)	24"	24"	24"	24"
Bolt Diameter	3/4"	3/4"	3/4"	3/4"
Exposed Thread Projection	2.75"	2.75"	2.75"	2.75"
Bolt Circle	8"-9"	9"-11"	9"-11"	9"-11"
Base Width (A)	9" sq.	10.24" sq.	10.24" sq.	10.24" sq.
Standard Flag Size	4'X6'	4'X6'	5'X8'	5'X8'
Vinyl Cover	1 pair	1 pair	1 pair	1 pair

8 7 6 5 4 3 2 1

F

E

D

C

B

A

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1

## Specifications

Provide a Fiberglass Reinforced Composite (FRC) Anchor Base flagpole Model # **AB 351** as manufactured by PLP Composites, Fitzwilliam, NH 03447.

The flagpole shall have a mounting height of 35'.

The butt diameter shall be 7" and the top diameter 3". The pole weight shall be approximately 97 lbs. and a total shipping weight of 172 lbs.

The flagpole shall be manufactured of fiberglass woven roving and polyester resin with 75% of the reinforcing fibers oriented in the axial plane for maximum stiffness and 25% in the radial plane for required hoop strength. Load calculations shall be based on AASHTO and NAAMM standards with the pole designed with a two to one (2:1) safety factor for 125 mph winds, unflagged, with a 1.3 gust factor.

The flagpole shall have an Entasis taper and shall be void of vertical mold seams.

The flagpole shall be sanded smooth and coated with a high gloss Aliphatic Polyurea coating system which provides extended UV protection and weatherability.

The flagpole is equipped with a cam cleat, door with security screw, tab, & lock nut at the time of internalizing prior to shipment.

**Standard colors include:** White, Black, Bronze, Faux-Luminum, & Metallic Bronze

The base requires four anchor bolts with covers and two nuts, two flat washers, and one lock washer per anchor bolt as follows: (sold separately)  
- 3/4"x24" anchor bolt  
- 2-3/4" exposed thread projection recommended



**PLP Composites**

57 Creamery Road - PO Box 429, Fitzwilliam, NH 03447 - Phone: 800-262-6075 - [www.plpcomp.com](http://www.plpcomp.com) or [www.zeusflagpoles.com](http://www.zeusflagpoles.com) - [info@plpcomp.com](mailto:info@plpcomp.com)

Aeolus Series - Model #AB 351	Standard Fittings:	Security Driver	Project:
35' Above Grade Height	Gold Anodized Ball	#10 Polyester Halyard	
10.24" Sq. Aluminum Anchor Base	Cast FG Stationary Truck	Bolt Template	<b>Location:</b>
Top Diameter - 3"	1 pair of Brass Snaps	Small Retaining Ring	
Butt Diameter - 7"	1 pair of Vinyl Covers	Small Counterweight	<b>Date:</b>



# PROPOSAL

Ritacco Electric  
PO Box 1723  
Westerly RI 02891  
401-596-7799

Date:  
5/28/2021

**PROPOSAL SUBMITTED TO:**

WCCU  
ATTN: Jerry Curran  
4979 Tower Hill Rd  
Wakefield RI 02879-2283  
401-447-3256- Jerry Cell  
JCurran@Westerlyccu.com

**JOB NAME:**

Flag Pole Light

**JOB LOCATION:**

WCCU  
Wakefield RI 02879-2283

**Ritacco Electric hereby submits the below specifications and estimates:**

1. Supply & Install PVC piping from existing light pole to flagpole location
2. Supply & Install cooper wiring through PVC piping
3. Supply & Install might post in ground to accommodate light fixture
4. Supply & Install LED light fixture to illuminate flag
5. Make all final electrical Connections & test

**WE PROPOSE TO FURNISH LABOR MATERIALS COMPLETE IN ACCORDANCE WITH THE ABOVE SPECIFICATIONS FOR THE SUM OF:**

Total for Proposal.....	\$1,952.74
1/2 due upon acceptance of proposal.....	\$976.37
1/2 due upon job completion.....	\$976.37

**I accept the above proposal by signing below:**

- The above prices, specifications and conditions are accepted.
- You are authorized to do the work as specified.
- Payment will be as outlined.

**SIGNATURE** \_\_\_\_\_ **DATE** \_\_\_\_\_

I understand work will not begin until Ritacco Electric has received my payment for accepting the proposal

## Andrew Rogers

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**From:** Andrew Rogers  
**Sent:** Thursday, July 1, 2021 9:58 AM  
**To:** Jerry P. Curran  
**Subject:** RE: [\*WARNING\* - SPAM] Give Us Your Feedback!

Great. Thanks.





---

**From:** Jerry P. Curran <jcurran@westerlyccu.com>  
**Sent:** Thursday, July 1, 2021 9:55 AM  
**To:** Andrew Rogers <arogers@westerlyccu.com>  
**Subject:** FW: [\*WARNING\* - SPAM] Give Us Your Feedback!

Here is the confirmation email from RIDOT if you need it for the Planning Board.

---

**From:** Rhode Island Department of Transportation <[no-reply@wufoo.com](mailto:no-reply@wufoo.com)>  
**Sent:** Tuesday, June 29, 2021 10:42 AM  
**To:** Jerry P. Curran <[jcurran@westerlyccu.com](mailto:jcurran@westerlyccu.com)>  
**Subject:** [\*WARNING\* - SPAM] Give Us Your Feedback!

  EXTERNAL MESSAGE – Think Before You Click! Please do not open attachments or click links from an unknown or suspicious origin.  

Thank you for contacting us. We have received your request and will respond to it very soon.

We receive many inquiries each day on various issues. All inquiries are important to us whether they are complimentary or critical. We consider all safety-related concerns a priority. Each response requires a different level of research and will be responded to in the order in which they are received.

We appreciate hearing from the public. It keeps us informed on public opinion regarding road construction and other transportation issues. If you don't hear from us in a timely manner, please contact our Customer Service office at 401-222-2450 or [dot.customerservice@dot.ri.gov](mailto:dot.customerservice@dot.ri.gov). We are open weekdays from 7:30 a.m. – 4 p.m.

## Give Us Your Feedback!

---

**Please let us know why you are contacting us:** Looking to find out when the grass and weeds will be cut along 4979 Tower Hill Road, Wakefield, Route 1 South. Also, can some tree work be done, some of the trees planted years ago need some pruning and trim work. I am the facilities manager for the Westerly Community Credit Union. Our building sits along this stretch and we would like it to look a little more inviting. We have installed 2 adopt a spots and would like to

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help in getting the front looking better. Can we offer to do some improvements ourselves. Please reach out to me to discuss. 401-447-3256, Jerry Curran, Thanks

**Name** Jerry Curran

**Phone Number** (401) 447-3256

**Email \*** [jcurran@westerlyccu.com](mailto:jcurran@westerlyccu.com)

**Did you find this form helpful?** Yes

**How do you get news and information about RIDOT?** Radio

**Which media company (e.g. Providence Journal, Channel 10, WPRO, etc.)?** wpro

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## Andrew Rogers

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**From:** Andrew Rogers  
**Sent:** Wednesday, June 23, 2021 8:22 PM  
**To:** Jerry P. Curran  
**Subject:** FW: Tower Hill Road Access Roadway Tree Replacement

FYI

---

**From:** Andrew Rogers <[arogers@westerlyccu.com](mailto:arogers@westerlyccu.com)>  
**Sent:** Tuesday, August 6, 2019 8:00 AM  
**To:** RI DOT <[dot.customerservice@dot.ri.gov](mailto:dot.customerservice@dot.ri.gov)>  
**Subject:** Tower Hill Road Access Roadway Tree Replacement

Good Morning,

We would like to ask that the DOT trim/replace a few dying trees in a special management district in Wakefield along RT 1. The trees are images below. The area is considered part of scenic RT 1 and it could use some attention.

Actual address on Rt 1 – 4959 Tower Hill Road, Wakefield RI 02879



Andrew Rogers  
Vice President of Operations

401-596-7000 Ext. 2134 | Direct: 401-637-4434 | Fax: 401-596-9609 | Mobile: 401-486-3091  
[arogers@westerlyccu.com](mailto:arogers@westerlyccu.com) | Visit Us At: [www.westerlyccu.com](http://www.westerlyccu.com)  
4979 Tower Hill Rd, Wakefield, RI 02879



*Spreadin' the Love (Giving Back), Southern Rhode Island Chamber of Commerce 2019 Chamber Choice Awards  
 Best Places to Work 2019, Providence Business News  
 #1 Best Bank, The Westerly Sun 2019 Readers' Choice Awards*

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FOR YOUR PRIVACY: Westerly Community Credit Union does not condone sending private personal information, such as account numbers and social security numbers, or any other confidential financial or business information via unsecured email or unsecured email attachments. For your security, you are urged to phone, fax, or mail sensitive information rather than use an unsecured email source.

## Andrew Rogers

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**From:** Andrew Rogers  
**Sent:** Wednesday, June 23, 2021 8:12 PM  
**To:** Jerry P. Curran  
**Subject:** FW: RT1 Access Road at 4959-4979 Tower Hill Rd  
**Attachments:** 0787-011-FINL-SBMP-OPLN-20170707.pdf

FYI

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**From:** Andrew Rogers [<mailto:arogers@westerlyccu.com>]  
**Sent:** Wednesday, April 18, 2018 11:35 AM  
**To:** Meredith Brady <[meredith.brady@dot.ri.gov](mailto:meredith.brady@dot.ri.gov)>  
**Subject:** RT1 Access Road at 4959-4979 Tower Hill Rd

Good Morning,

The Westerly Community Credit Union is currently building a office at 4979 Tower Hill Road in Wakefield. The access to the property is via a spur road with a quick exit off of Route 1. This exit is on a downward hill on Route 1 and quickly rises and requiring fast deceleration on to the narrow access road.

We would like to discuss potential improvements to the access roadway to increase safety and ease of access. Could you please let me know if you are the correct contact? If not, can you please forward this request to the correct person?

## Andrew Rogers

Vice President of Operations

401-596-7000 Ext. 2134 | Direct: 401-637-4434 | Fax: 401-596-9609 | Mobile: 401-486-3091

[arogers@westerlyccu.com](mailto:arogers@westerlyccu.com) | Visit Us At: [www.westerlyccu.com](http://www.westerlyccu.com)

15 Gray Lane, Ashaway, RI 02804



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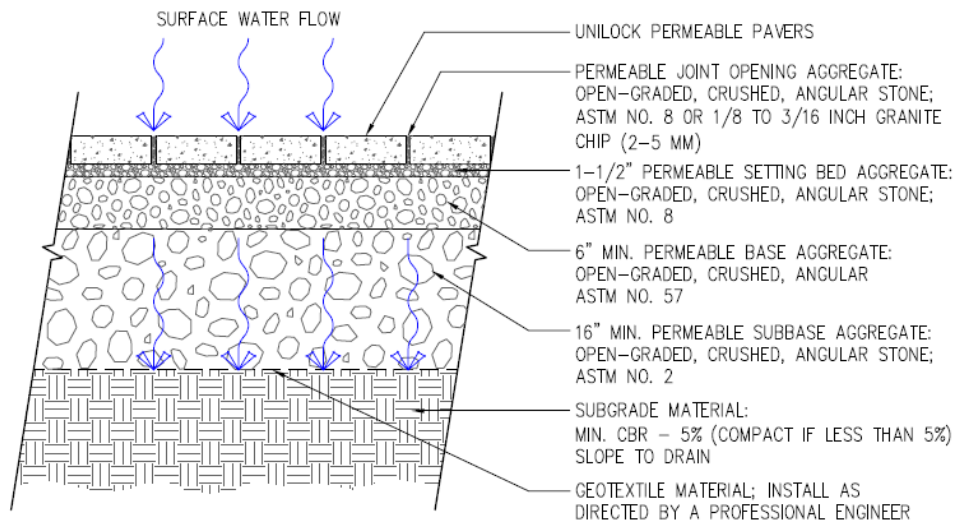
FOR YOUR PRIVACY: Westerly Community Credit Union does not condone sending private personal information, such as account numbers and social security numbers, or any other confidential financial or business information via unsecured email or unsecured email attachments. For your security, you are urged to phone, fax, or mail sensitive information rather than use an unsecured email source.

NOTICE: This electronic mail message and any files transmitted with it are intended exclusively for the individual or entity to which it is addressed. The message, together with any attachment, may contain confidential and/or privileged information.

32-14-13.19

## Unilock Permeable

For any additional information or assistance with this spec please contact your Unilock Representative.



**\*\*\* Delete all text in RED after modifying the text in BLUE. All BLUE text requires modification. \*\*\***

## FOREWORD

*These specifications have been prepared for the general guidance of architects, landscape architects, engineers, contractor and superintendents associated with the construction of interlocking concrete pavements. Consult with a licensed architect, landscape architect or engineer to determine the suitability of the design, confirm site conditions and monitor the installation in critical applications. Unilock is not responsible for the information in this specification meeting local or national building codes. The Architect, Landscape Architect or Engineer of Record is responsible selecting products that meet any and all building code requirements to gain occupancy permit and updating this specification as necessary.*

## INTRODUCTION

*Unilock® permeable pavers are manufactured in a variety of shapes and colors for residential, commercial, municipal and industrial applications. They offer design professionals several engineered pavement systems that are efficient, durable, economical and aesthetically attractive.*

*Unilock® permeable pavers are manufactured to tight dimensional tolerances. This, in combination with their permeable and interlocking capabilities, allows the surface to be completely porous with a high resistance to compressive loads and lateral forces.*

## SECTION 32 14 13.19

### PERMEABLE CONCRETE PAVER MATERIALS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section includes the following:
  - 1. Permeable Concrete Pavers
  - 2. Permeable Joint Opening Aggregate
  - 3. Permeable Joint Aggregate Type 1
  - 4. Permeable Joint Aggregate Type 2
  - 5. Permeable Setting Bed Aggregate (Open-graded)
  - 6. Permeable Base Aggregate (Open-graded)
  - 7. Permeable Subbase Aggregate (Open-graded)

##### 1.02 REFERENCES

Note: Design street, industrial, port and airport pavement thicknesses in consultation with a qualified civil engineer, in accordance with established flexible pavement design procedures, LOCKPAVE® software, and in accordance with Interlocking Concrete Pavement Institute Technical Bulletins. Sample construction detail drawings are available from Unilock®. This specification may require modifications.

- A. ASTM International, latest edition:
  - 1. C 29 Bulk Density and Voids in Aggregate Materials.
  - 2. C 33, Standard Specification for Concrete Aggregates.
  - 3. C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - 4. C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
  - 5. D 448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
  - 6. C 936, Standard Specification for Solid Concrete Interlocking Paving Units.
  - 7. C 979, Standard Specification for Pigments for Integrally Colored Concrete.

8. D 698 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5 lb (24.4 N) Rammer and 12 in. (305 mm) drop.
9. D 1557 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (44.5 N) Rammer and 18 in. (457 mm) drop.
10. C1645 Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units
11. D 4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
12. [D 4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles](#)
13. [D 4533, Standard Test Method for Index Trapezoidal Tearing Strength of Geotextiles](#)
14. [D 4833, Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products](#)
15. [D 4491, Standard Test Method for Water Permeability of Geotextiles by Permittivity](#)
16. [D 4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile](#)

Delete the BLUE text above if no geotextile is being utilized.

Note: In order to determine the latest version of the listed specifications and standards, please consult the ASTM web page ([www.astm.com](http://www.astm.com))

- B. [U.S. Green Building Council Leadership in Energy and Environmental Design \(LEED\)](#)
  1. [Building Design + Construction, latest edition](#)

### 1.03 SUBMITTALS

- A. Permeable Concrete Pavers:
  1. Samples for verification: Three representative full-size samples of each paver type, thickness, color and finish that indicate the range of color variation and texture expected upon project completion.
  2. Accepted samples become the standard of acceptance for the product produced.
  3. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.
  4. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.
- B. Permeable Joint Opening Aggregate:
  1. Provide three representative one pound samples in containers of aggregate materials that indicate the range of color variation and texture expected upon project completion.
  2. Accepted samples become the standard of acceptance for the product produced.
  3. Test results from an independent testing laboratory for sieve analysis, including washed gradations per ASTM C 136.
  4. Test results for void space percentage per ASTM C 29.
- C. Permeable Setting Bed, Base and Subbase Aggregate:
  1. Test results from an independent testing laboratory for compliance with ASTM D 448 No. 8, No. 57 and No. 2.
  2. Test results from an independent testing laboratory for sieve analysis, including washed gradations per ASTM C 136.
  3. Test results for void space percentage per ASTM C 29.
- D. Paving Installation Contractor:
  1. Job references from a minimum of three projects similar in size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.
- E. [LEED \(required only for LEED projects, delete otherwise\)](#)
  1. [LEED Materials and Resources Credit 4, Recycled Materials: Submit letter from manufacturer certifying the products having recycled content, documentation indicating percentages by weight of post-consumer and pre-consumer recycled content.](#)

- a. Include statement indicating costs for each product having recycled content.
2. LEED Materials and Resources Credit 5, Regional Materials: Submit letter from manufacturer certifying products having been extracted, harvested, or recovered, as well as manufactured within 500 miles of the project site.
  - a. Include a statement indicating the percentage by weight which is extracted, harvested, or recovered within 500 miles of the project site.
3. LEED Sustainable Sites Credit 7.1, Non-roof: Submit letter from manufacturer certifying the solar reflectance index (SRI) of the paver is 29 or greater.

#### 1.04 QUALITY ASSURANCE

- A. Utilize a Manufacturer having at least ten years of experience manufacturing interlocking concrete pavers on projects of similar nature or project size.
- B: Source Limitations:
  1. Obtain Permeable Concrete Pavers from one source location with the resources to provide products of consistent quality in appearance and physical properties.
  2. Obtain Permeable Joint Opening Aggregate from one source with the resources to provide materials and products of consistent quality in appearance and physical properties.
- C. Paving Contractor Qualifications:
  1. Utilize an installer having successfully completed concrete paver installation similar in design, material, and extent indicated on this project.
- D. Mockups:
  1. Install a 5 ft x 5 ft paver area.
  2. Use this area to determine joint sizes, lines, laying pattern(s) and levelness. This area will serve as the standard by which the workmanship will be judged.
  3. Subject to acceptance by owner, mock-up may be retained as part of finished work.
  4. If mock-up is not retained, haul offsite and dispose legally.

#### 1.05 DELIVERY, STORAGE & HANDLING

- A. In accordance with Conditions of the Contract and Division 1 Product Requirement Section. (Modify this to match the general conditions of the specific project)
- B. Deliver Permeable Concrete Pavers in manufacturer's original, unopened and undamaged container packaging with identification labels intact.
  1. Coordinate delivery and paving schedule to minimize interference with normal use of streets and sidewalks adjacent to paver installation.
  2. Deliver concrete pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.
  3. Unload pavers at job site in such a manner that no damage occurs to the product or adjacent surfaces.
- C. Store and protect materials free from mud, dirt and other foreign materials.

#### 1.06 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
  1. Install permeable pavers only on unfrozen permeable setting bed aggregate materials.
  2. Install permeable setting bed only on unfrozen permeable base and subbase aggregates.
  3. Install permeable base or subbase aggregates only over unfrozen subgrade.

#### 1.07 PERMEABLE CONCRETE PAVER OVERAGE AND ATTIC STOCK

- A. Provide a minimum of 5% additional material for overage to be used during construction.
- B. Furnish 100 square feet of each product and size used to owner for maintenance and repair. Furnish Permeable Concrete Pavers from the same production run as installed materials.
- C. Manufacture to supply maintenance and reinstatement manuals for Permeable Concrete Paver units.

- 1.08 LEED REQUIREMENTS (required only for LEED projects, delete otherwise)  
 A. Add any specific requirements necessary for achieving desired credits.

## PART 2 PRODUCTS

### 2.01 PERMEABLE CONCRETE PAVERS

- A. Basis-of-Design Product: The permeable concrete paver shapes are based on:
1. Unilock: (Select product or products being used)
    - a. Eco-Optiloc
    - b. Eco-Priora
    - c. Eco-Promenade
    - d. Eco-Line
    - e. DuraFlow
    - f. Town Hall
    - g. (other Unilock products)
  2. As manufactured by:  
 Unilock (Add location)  
 Address  
 City, State and Zip  
 Contact: (insert Unilock representative name and phone number) or your local Territory Manager
  3. The specified products establish minimum requirements that substitutions must meet to be considered acceptable.
    - a. To obtain acceptance of unspecified products, submit written requests at least 7 days before the Bid Date.

Note: Unless required by the owner, an "or equal" line is not necessary when using a basis-of-design specification with the above information is listed and outline in Division 1, Product Substitution Procedures.

Or choose number 3 below and delete above number 3.

3. Substitutions: No substitutions permitted.

- B. Product requirements:
1. Permeable Paver Type 1: Unilock Eco-Optiloc (or other Unilock product name)
    - a. Finish: (Select finish type from below and insert here. Finish type will affect product pricing).
      1. Standard – this is not a face mix finish.
      2. Smooth (Premier) – this is a face mix finish.
      3. Brushed (IL Campo) – this is a face mix finish.
      4. Exposed Granite (Series 3000) – this is a face mix finish.
      5. Granite appearance (Umbriano) – this is a face mix finish.
      6. Tile appearance (Senzo) – this is a face mix finish.
      7. Add other Unilock options.
    - b. Color: Insert product color
    - c. Edge: Chamfer - 3 mm bevel
    - d. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 1/16 inch for length and width. Maximum height tolerance of plus or minus 1/8 inch.
      1. L-shape

Note: Imperial dimensions are nominal equivalents to the metric dimensions.
  2. Permeable Paver Type 2: Unilock Eco-Priora (or other Unilock product name)
    - a. Finish: (Select finish type from below and insert here. Finish type will affect product pricing).
      1. Standard – this is not a face mix finish.
      2. Smooth (Premier) – this is a face mix finish.
      3. Brushed (IL Campo) – this is a face mix finish.

4. Exposed Granite (Series 3000) – this is a face mix finish.
  5. Granite appearance (Umbriano) – this is a face mix finish.
  6. Tile appearance (Senzo) – this is a face mix finish.
  7. Add other Unilock options.
- b. Color: Insert product color
  - c. Edge: Chamfer - 3 mm rolled
  - d. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 1/16 inch for length and width. Maximum height tolerance of plus or minus 1/8 inch.
    1. 120 mm (5 in) x 120 mm (5 in) x 80 mm (3-1/8 in) thick
    2. 120 mm (5 in) x 240 mm (10 in) x 80 mm (3-1/8 in) thick
    3. 240 mm (10 in) x 240 mm (10 in) x 80 mm (3-1/8 in) thick

Note: Imperial dimensions are nominal equivalents to the metric dimensions.
3. Permeable Paver Type 3: Town Hall (or other Unilock product name)
    - a. Finish: molded Streetpaver
    - b. Color: Insert product color(s): Burgundy Red, Burnt Clay, Old Oak
    - c. Edge: molded
    - d. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 1/16 inch for length and width. Maximum height tolerance of plus or minus 1/8 inch..
      1. 10 cm (4 in) x 25 cm (9-3/4 in) x 7 cm (2-3/4 in) thick
  4. (Insert additional Permeable Paver Types here as necessary or delete this line)
- C. Provide pavers meeting the minimum material and physical properties set forth in ASTM C 936, Standard Specification for Interlocking Concrete Paving Units. Efflorescence is not a cause for rejection.
1. Average compressive strength 8000 psi (55MPa) with no individual unit under 7,200 psi (50 MPa).
  2. Average absorption of 5% with no unit greater than 7% when tested according to ASTM C 140.
  3. Conforming to ASTM C 1645 when tested for freeze-thaw requirements.
  4. Height tolerances +/- 3.2 mm (1/8 in).
- Note: Efflorescence is a whitish powder-like deposit that sometimes appears on concrete products. Calcium hydroxide and other water-soluble materials form or are present during the hydration of Portland cement. Pore water becomes saturated with these materials, and diffuses to the surface of the concrete. When this water evaporates, the soluble materials remain as a whitish deposit on the concrete surface. The calcium hydroxide is converted to calcium carbonate during a reaction with carbon dioxide from the atmosphere. The calcium carbonate is difficult to remove with water. However, the efflorescence will wear off with time, and it is advisable to wait a few months before attempting to remove any efflorescence. Commercially available cleaners can be used, provided directions are carefully followed. Some cleaners contain acids that may alter the color of the pavers.
- D. Accept only pigments in concrete pavers conforming to ASTM C 979.  
Note: ACI Report No. 212.3R provides guidance on the use of pigments.
- E. Maximum allowable breakage of product is 5%.

## 2.02 PERMEABLE JOINT OPENING AGGREGATE

- A. Provide Permeable Joint Opening Aggregate materials conforming to ASTM C 33 and gradation requirements of ASTM D 448 No. 8 as shown in Table 1. Unilock recommends using granite chips listed in table 2 below for vehicular areas with heavy traffic loads such as roadways or drive-through areas.

**TABLE 1 - ECO-OPTILOC  
PERMEABLE JOINT OPENING AGGREGATE  
GRADATION REQUIREMENTS  
(CRUSHED LIMESTONE)**

ASTM No. 8	
Sieve Size	Percent Passing
1/2 in (12.5 mm)	100
3/8 in (9.5 mm)	85 to 100
No. 4 (4.75 mm)	10 to 30
No. 8 (2.36 mm)	0 to 10
No. 16 (1.18 mm)	0 to 5

- B. Provide Permeable Joint Opening Aggregate materials conforming to ASTM C 33 and gradation requirements as presented in Table 2.
1. Supplier:
    - a. [Kafka Granite LLC, 101 S. Weber Ave, Stratford, WI 54484 – Toll Free: 800-852-7415](#)
    - b. [Alliance Aqua-Roc](#)
    - c. [SEK Perm Chip](#)
  2. Color: [\(Specify granite chip color if other than crushed limestone\)](#)

**TABLE 2 - ECO-PRIORA & TOWN HALL  
PERMEABLE JOINT OPENING AGGREGATE  
GRADATION REQUIREMENTS  
(GRANITE CHIPS)**

1/8 to 3/16 inch granite chips	
Sieve Size	Percent Passing
1/4 in (6 mm)	97 to 100
No. 4 (4.75 mm)	70 to 83
No. 8 (2.36 mm)	37 to 50
No. 16 (1.18 mm)	0 to 12
pan	

2.03 PERMEABLE SETTING BED AGGREGATE

- A. Provide Permeable Setting Bed Aggregate materials conforming to ASTM C 33 and gradation requirements of ASTM D 448 No. 8 as presented in Table 3.

**TABLE 3  
PERMEABLE SETTING BED AGGREGATE  
GRADATION REQUIREMENTS**

ASTM No. 8	
Sieve Size	Percent Passing
½ in (12.5 mm)	100
3/8 in (9.5 mm)	85 to 100
No. 4 (4.75 mm)	10 to 30
No. 8 (2.36 mm)	0 to 10
No. 16 (1.18 mm)	0 to 5

2.04 PERMEABLE BASE AGGREGATE

- A. Provide Permeable Base Aggregate materials conforming to ASTM C 33 and gradation requirements of ASTM D 448 No. 57 as presented in Table 4.

**TABLE 4  
PERMEABLE BASE AGGREGATE  
GRADATION REQUIREMENTS**

ASTM No. 57	
Sieve Size	Percent Passing
1-1/2 in (37.5 mm)	100
1 in (25 mm)	95 to 100
1/2 in (12.5 mm)	25 to 60
No. 4 (4.75 mm)	0 to 10
No. 8 (2.36 mm)	0 to 5

2.05 PERMEABLE SUBBASE AGGREGATE

- A. Provide Permeable Subbase Aggregate materials conforming to ASTM C 33 and gradation requirements of ASTM D 448 No. 2 as presented in Table 5.

**TABLE 5  
PERMEABLE SUBBASE AGGREGATE  
GRADATION REQUIREMENTS**

ASTM No. 2	
Sieve Size	Percent Passing
3 in (75 mm)	100
2-1/2 in (63 mm)	90 to 100
2 in (50 mm)	35 to 70
1-1/2 in (37.5 mm)	0 to 15
3/4 (19 mm)	0 to 5

Note: For all aggregates, provide washed, clean, have zero plasticity, free from deleterious or foreign matter, crushed, angular rock and contain no No. 200 sieve size aggregate materials used in the construction of permeable pavement. Aggregate materials serve as the structural load bearing platform of the pavement as well as a temporary receptor for the infiltrated water that is collected through the openings in the pavement's surface.

2.06 GEOTEXTILE (Optional depending on soil conditions)

- A. Provide Geotextile material conforming to the following performance characteristics, measured per the test methods referenced:
- 4 oz., nonwoven needle punched geotextile composed of 100% polypropylene staple fibers that are inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.
  - Grab Tensile Strength: ASTM D 4632: 115 lbs.
  - Grab Tensile Elongation: ASTM D 4632: 50%
  - Trapezoidal Tear: ASTM D 4533: 50 lbs.
  - Puncture: ASTM D 4833: 65 lbs.
  - Apparent Opening Size: ASTM D 4751: 0.212 mm, 70 U.S. Sieve
  - Permittivity: ASTM D 4491: 2.0 sec<sup>-1</sup>
  - Flow Rate: ASTM D 4491: 140 gal/min/s.f.
- B. As supplied by Unilock (add location, address, City, State and Zip)  
Contact: (Insert Unilock representative name and phone number) or your local Territory Manager
- Carthage Mills – FX-40HS

2. U.S. Fabrics – US 115NW
3. Mirafi – 140N

## 2.07 EDGE RESTRAINTS

- A. Concrete Edge Restraint as indicated.
- B. Plastic and Metal Edge Restraints:
  1. Permaloc, [www.permaloc.com](http://www.permaloc.com)
    - a. Material Type: Aluminum
    - b. Model No.: 3 inch GeoEdge capture plate and geogrid
  2. SEK Surebond
    - a. Model No.: 8 feet PermEdge with attached geogrid

**Note:** The provision of suitable edge restraints is critical to the satisfactory performance of interlocking concrete block pavement. Abut pavers tightly against the restraints to prevent rotation under load and any consequent spreading of joints. Install sufficiently stable edge restraints that are, in addition to providing suitable edge support for the paver units, able to withstand the impact of temperature changes, vehicular traffic and/or snow removal equipment.

Curbs, gutters or curbed gutter, constructed to the dimensions of municipal standards (noting that these standards generally refer to cast-in-place concrete sections), are considered to be acceptable edge restraints for heavy duty installations. Where extremely heavy industrial equipment is involved such as container handling equipment, review the flexural strength of the edge restraint carefully particularly if a section that is flush with the surface is used and may be subjected to high point loading.

## 2.08 ACCESSORIES (Optional depending on project needs)

- A. [Cleaners] [Sealers]
  1. Supplier: Unilock (add location, address, City, State and Zip)  
Contact: (Insert Unilock representative name and phone number) or your local Territory Manager
  2. Material Type and Description: (Specify material type and description)
  3. Material Standard: (Specify material standard)

**Note:** Generally sealing permeable pavers for utilitarian uses such as parking lots is not necessary. Consult with your product representative prior to specifying or remove section 2.08 Accessories.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Examine areas indicated to receive paving for compliance with requirements for installation tolerances and other conditions affecting performance for the following items before placing the Permeable Concrete Pavers.
  1. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.
  2. Verify that Geotextiles, if applicable, have been placed according to drawings and specifications.
  3. Verify that Permeable Base and Subbase Aggregate materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.
  4. Provide written density test results for soil subgrade, Permeable Base and Subbase Aggregate materials to the Owner, General Contractor and paver installation subcontractor.
  5. Verify location, type, and elevations of edge restraints, concrete collars around utility structures, and drainage inlets.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.
  - 1. Beginning of bedding sand and paver installation signifies acceptance of base and edge restraints.

### 3.02 PREPARATION

- A. Verify that the subgrade soil is free from standing water.
- B. Stockpile Permeable Setting Bed, Joint, Base and Subbase Aggregate materials such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.
- C. Remove any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities before placing the Geotextile and Permeable Subbase Aggregate materials.
- D. Keep area where pavement is to be constructed free from sediment during entire job. Remove and replace all Geotextile, Permeable Joint, Setting Bed, Base and Subbase Aggregate materials contaminated with sediment with clean materials.
- E. Complete all subdrainage of underground services within the pavement area in conjunction with subgrade preparation and before the commencement of Permeable Subbase Aggregate construction.
- F. Prevent damage to underdrain pipes, overflow pipes, observation wells, or inlets and other drainage appurtenances during installation. Report all damage immediately.
- G. Compact soil subgrade uniformly to at least 90 percent of Standard Proctor Density per ASTM D 698 for pedestrian areas. Compact soil subgrade uniformly to at least 95 percent Modified Proctor per ASTM D 1557 for vehicular areas.
- H. Proof-roll prepared subgrade according to requirements in Division 31 Section "Earth Moving" to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting and replace with compacted backfill or fill as directed.

Note: Base compaction and proof-rolling of the subgrade soil on the recommendations of the Design Engineer. Request the Architect/Engineer to inspect subgrade preparations, elevations and conduct density tests for conformance to specifications.

Note: Mechanical tampers (jumping jacks) are recommended for compaction of soil subgrade and aggregate base around lamp standards, utility structures, building edges, curbs, tree wells and other protrusions. Compact areas, not accessible to roller compaction equipment, to the specified density with mechanical tampers. **CAUTION** – Proceed with care around the perimeters of excavations, buildings, curbs, etc. These areas are especially prone to consolidation and settlement. Do not place wedges of backfill in these areas. If possible particularly in these areas, proceed with backfilling and compacting in shallow lifts, parallel to the finished surface.

### 3.03 INSTALLATION

#### A. EDGE RESTRAINTS

- 1. Provide edge restraints as indicated.
  - a. Install job-built concrete edge restraints to comply with requirements in Division 3 Section "Cast-in-Place Concrete." (Add section number and match specification name)
  - b. Provide concrete edge restraint along the perimeter of all paving as specified. Install the face of the concrete edge restraint, where it abuts pavers vertical down to the subbase.
  - c. Construct concrete edge restraint to dimensions and level specified and support on a compacted subbase not less than 6 in (150 mm) thick.
- 2. Provide plastic or metal edge restraints as indicated. (Delete if not being used).
  - a. Provide plastic or metal edge restraints along the perimeter of all paving as indicated and supported on a minimum of 6 inches (150 mm) of Base Aggregate.



runs. By installing from a minimum of three (3) bundles simultaneously, variation in color is dispersed and blended throughout the project).

3. Exercise care in handling face mix pavers to prevent surfaces from contacting backs or edges of other units.
4. Provide Permeable Concrete Pavers using joint pattern as indicated. Adjust joint pattern at pavement edges such that cutting of edge pavers is minimized. Cut all pavers exposed to vehicular tires no smaller than one-third of a whole paver.
5. Use string lines or chalk lines on Permeable Setting Bed aggregate to hold all pattern lines true.
6. Set surface elevation of pavers 1/8 in. (3 mm) above adjacent drainage inlets, concrete collars or channels.
7. Place units hand tight against spacer bars. Adjust horizontal placement of laid pavers to align straight.
  - a. When installation is performed with mechanical equipment, use only unit pavers with spacer bars on sides of each unit.
8. Provide space between paver units of 1/32 in. (1 mm) wide to achieve straight bond lines.
9. Prevent joint (bond) lines from shifting more than  $\pm 1/2$  in. ( $\pm 15$  mm) over 50 ft. (15 m) from string lines.
10. Fill gaps between units or at edges of the paved area that exceed 3/8 inch (10 mm) with pieces cut to fit from full-size unit pavers.
11. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
12. Prevent all traffic on installed pavers until Permeable Joint Aggregate has been vibrated into joints. Keep skid steer and forklift equipment off newly laid pavers that have not received initial compaction and Permeable Joint Aggregate material.
13. Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a to 5000-lbf (22-kN) compaction force at 80 to 90 Hz. Perform at least three passes across paving with vibrator. Vibrate under the following conditions:
  - a. After edge pavers are installed and there is a completed surface.
  - b. Compact installed concrete pavers to within 6 feet (1,800 mm) of the laying face before ending each day's work. Cover pavers that have not been compacted and leveling course on which pavers have not been placed, with nonstaining plastic sheets to prevent Permeable Setting Bed Aggregate from becoming disturbed.
14. Protect face mix Concrete Paver surface from scuffing during compaction by utilizing a urethane pad.
15. Remove any cracked or structurally damaged pavers and replace with new units prior to installing Permeable Joint Opening Aggregate material.
16. Provide, spread and sweep Permeable Joint Opening Aggregate into joints immediately after vibrating pavers into Permeable Setting Bed course until full. Vibrate pavers and add Permeable Joint Aggregate material until joints are completely filled, then remove excess material. This will require at least 4 passes with a plate compactor.
17. Remove excess Permeable Joint Aggregate broom clean from surface when installation is complete.

### 3.04 FIELD QUALITY CONTROL

- A. Verify final elevations for conformance to the drawings after sweeping the surface clean.
  1. Prevent final Concrete Paver finished grade elevations from deviating more than  $\pm 3/8$  in. ( $\pm 10$  mm) under a 10 ft (3 m) straightedge or indicated slope, for finished surface of paving.
- B. [Lippage: Paver-to-Paver Lippage:](#)
  1. [No greater than 3 mm \(1/8 inch\) difference in height between adjacent pavers.](#)

*Note: The industry standard acceptable lippage between adjacent pavers is 3 mm (1/8 inch). Achieving a completely flush paver surface is most desirable but may be unattainable depending on factors such as paver type, setting bed materials or depth, ASTM manufacturing standards or other specific project needs. Consult with your Unilock representative to determine the best approach for a reasonable lippage tolerance on each project.*

### 3.05 REPAIRING, CLEANING AND SEALING

- A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.
- B. Cleaning: Remove excess dirt, debris, stains, grit, etc. from exposed paver surfaces; wash and scrub clean.
  - 1. Clean Permeable Concrete Pavers in accordance with the manufacturer's written recommendations.
- C. Seal as indicated. (If not indicated elsewhere in the contract documents, sealing is not required and remove this section 3.05, C.)
  - 1. Apply Sealer for Permeable Concrete Pavers in accordance with the sealer and paver manufacturer's written recommendations.

### 3.06 PROTECTION

- A. Protect completed work from damage due to subsequent construction activity on the site.

### 3.07 PERMEABLE JOINT AGGREGATE MATERIAL REFILLING

- A. Remove all debris from joint and provide additional Permeable Joint Aggregate material after 120 days and before 150 days after date of Substantial Completion/Provisional Acceptance.
  - 1. Fill Permeable Joint Aggregate material full to the lip of the paver.

**NOTE: This preventative maintenance requirement is very important to include in your specification to help increase the long term function of the system. This is a good item to mention during the prebid meeting.**

### 4.08 LIFE CYCLE ACTIVITIES

- A. Paver cleaning: Clean Permeable Concrete Pavers as needed to remove staining, dirt, debris, etc.
  - 1. Clean per manufacturers recommendations.
- B. Maintenance: Permeable Joint Aggregate Material.
  - 1. Annually inspect Permeable Joint Aggregate material for areas clogged with debris.
  - 2. Vacuum or sweep as necessary to restore surface infiltration.
  - 3. Remove debris by vacuuming or sweeping Permeable Joint Aggregate
    - a. Replenish removed Permeable Joint Aggregate material with clean aggregate material flush to paver lip.
    - b. Sweep excess material from paver surface.

END OF SECTION