

Approved 3/6/25  
-H.O.

Record Detail \* (This section is required.)

Permit Type	Permit Number	Opened Date
Building/Residential/Misc/Retaining Wall	B25000601	02/14/2025

Description of Work  
SFD/ INSTALL 87 LF retaining wall MAX HEIGHT 3'-6" W/ 3' high Railing at the top.\*\*SUBJECT TO FIELD INSPECTION\*\*

Online BP.  
g/l 2/25/25

[check spelling](#)

Address \* (This section is required.)

Search Reset Clear Get Parcel & Owner

Street #	Street Name	Street Type	
11633	VIXENS	PATH	
Unit Type	Unit #	X Coordinate	Y Coordinate
-Select-		-76.91221	39.24343
City	State	Zip Code	Primary
ELLICOTT CITY	MD	21042	Yes

Parcel \* (This section is required.)

Search Reset Clear Get Address & Owner

GIS ID *	Parcel	Parcel Area	Land Value	Improved Value	Exemption Value	Plan Area
884944	24	3.03	545220	2143300	0	RURAL

Legal Description  
LOT 8 3.0351 A [ ]11633 VIXENS PATH [ ]THE CHASE

[check spelling](#)

Block	Lot	Census Tract	Council Dist	Inspection Dist	Supervisor Dist	Map #	DAP Zone
	8	605101	5				
Plan Area	State Tax Id	Subdivision Name					
	1405405076	THE CHASE					
Section	Area	Tax Map					
		29					
Grid	Zoning District	ADC Map					
29-3	RC-DEO	4934-D2					
SDP No.	Final Plan No.	WP File No.					
Record Plat No.	WS Contract No.	FDP No.		Primary			
7260				Yes			
Owner Occupied	Year Built	Historic District					
<input type="radio"/> Yes <input type="radio"/> No	2011	<input type="radio"/> Yes <input checked="" type="radio"/> No					
Historic District Registry No.	Stat Area	Flood Plain					
	5-03	<input type="radio"/> Yes <input checked="" type="radio"/> No					
Building No							

Owner \* (This section is required.)

Search Reset Clear

Name \*  
ASHAI  
Address Line 1  
11633 VIXENS PATH  
Address Line 2  
Address Line 3

325000599 (Pool)



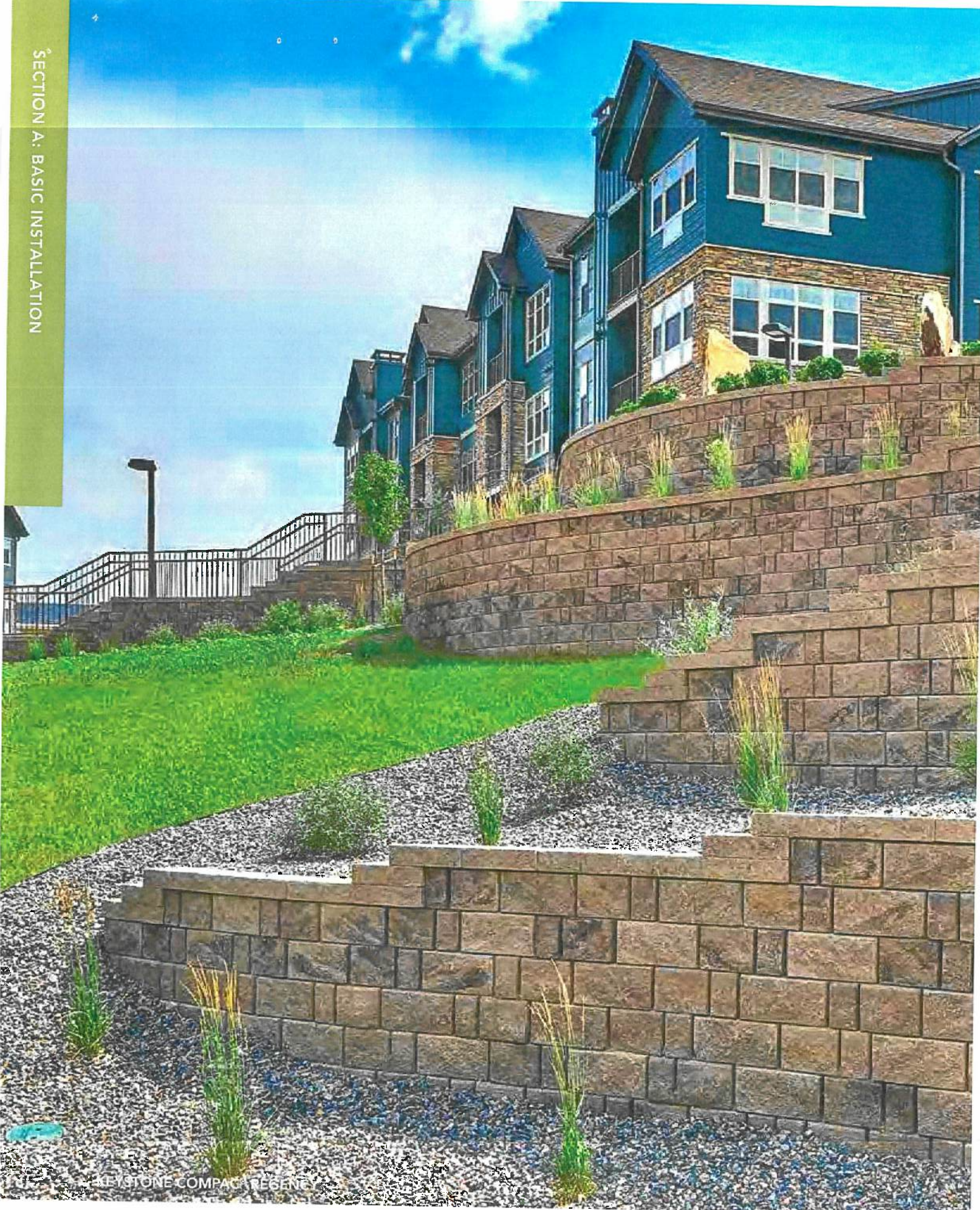


# BASIC INSTALLATION

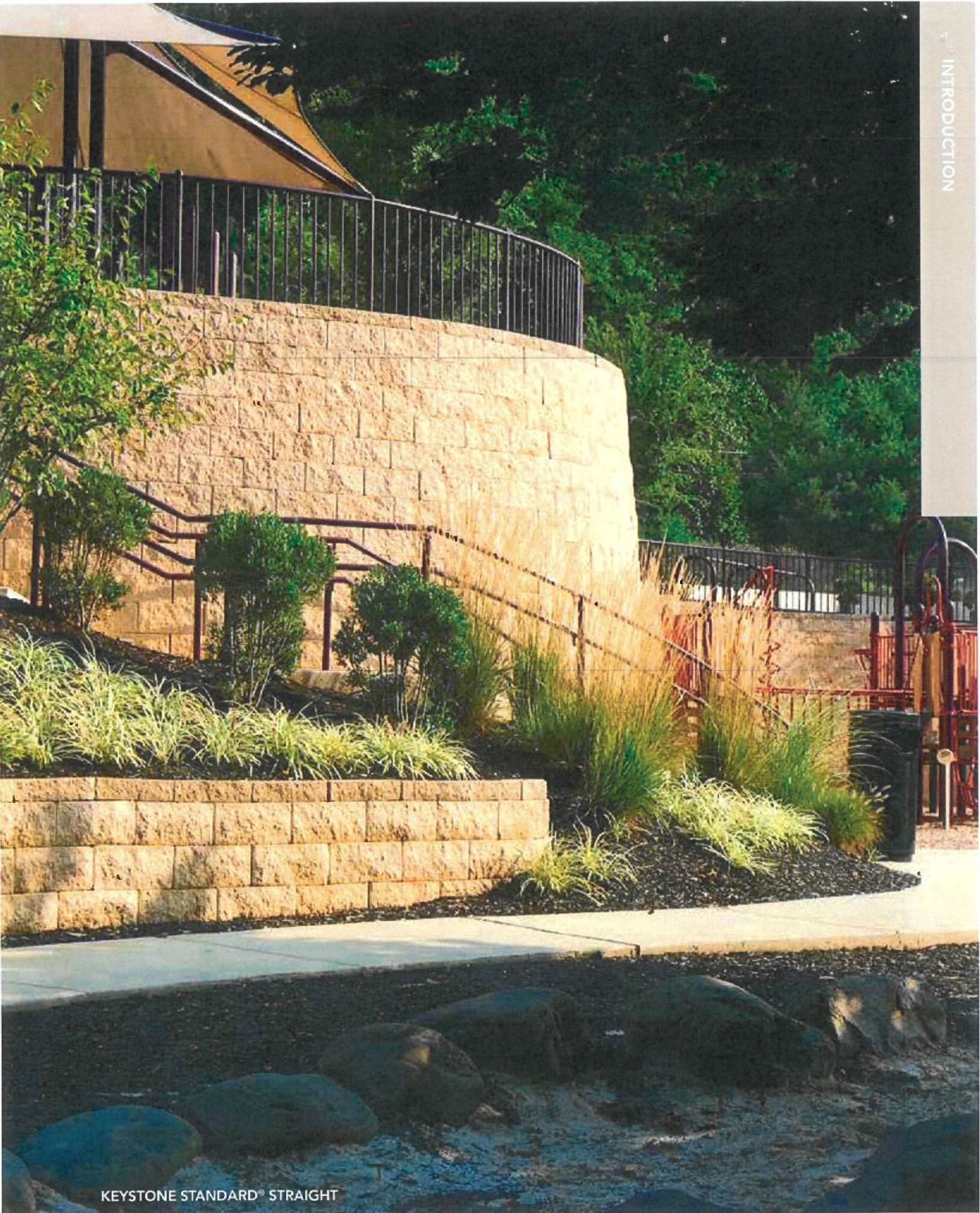
This section will take you through the step-by-step process of installing your retaining wall. Covered in this section is a basic gravity wall installation and also installation procedures for geogrid reinforced walls. While this section may not cover every construction issue you may encounter on your project, it gives a basic overview and helpful hints for the installation of a Keystone retaining wall.

Tools and materials that will be required:

- 12-inch, 48-inch, 72-inch levels
- Tape measure
- Shovel
- Excavating equipment
- Personal protective equipment (PPE)
- 5-lb dead blow hammer
- Heavy hammer and masonry cold chisel
- Stringline
- Compaction equipment (determined by size and scope of wall)
- Concrete saw
- Block splitter
- Keystone structural units and caps
- Structural geogrid, if required
- Unit drainage fill
- Backfill material
- Leveling pad material
- Exterior grade concrete adhesive
- Geotextile fabric
- 4-inch drainage pipe



KEYSTONE COMPACT REGENT

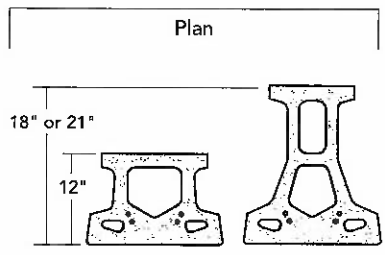
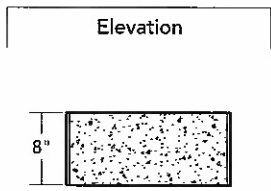
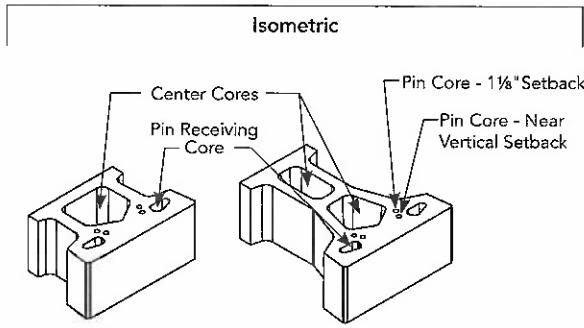
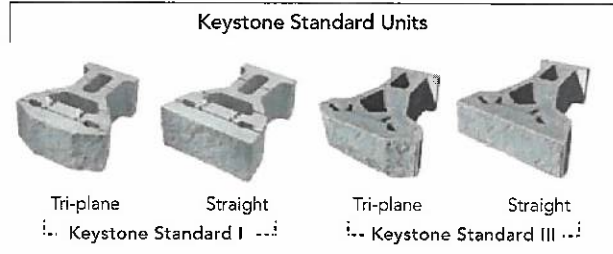
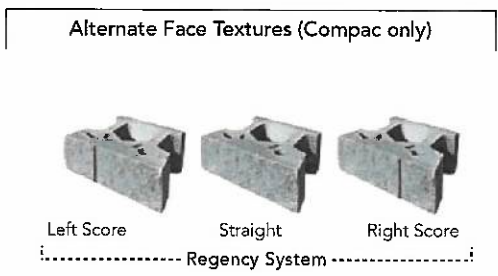
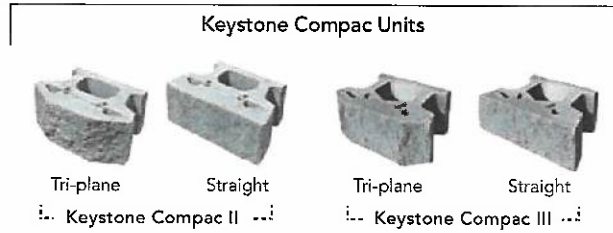


KEYSTONE STANDARD® STRAIGHT

# Keystone® Structural Walls

## DESIGN AND BUILD WITH CONFIDENCE

Our pinned Keystone structural products includes a comprehensive assortment of face styles to satisfy virtually any aesthetic requirement. Structural retaining walls are where Keystone began. Keystone's retaining wall systems continue to be trusted by engineers, architects and contractors worldwide to provide the best site solutions for commercial, municipal, industrial, transportation/DOT and residential applications.



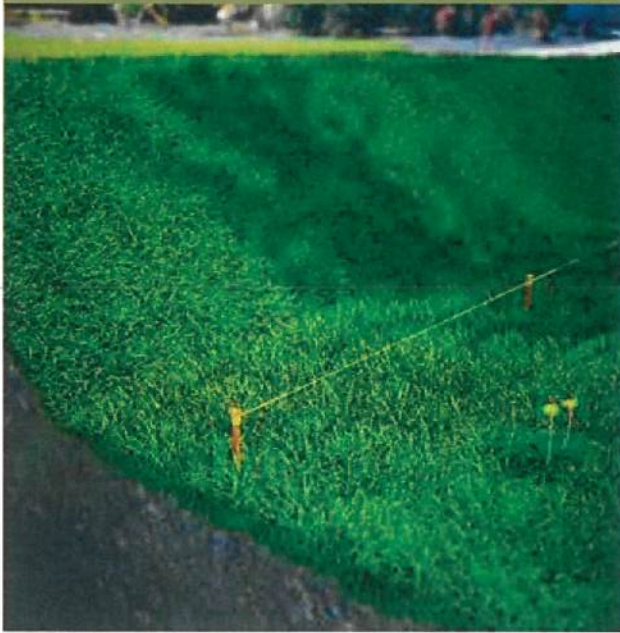
	Height (in)	Width (in)	Depth (in)	Face Area (SF)	Weight (lbs)	Volume of Voids to Tail (CF)
<b>Keystone Compac - Series II</b>	8"	18"	12"	1	81-91	0.35
<b>Keystone Compac - Series III</b>	8"	18"	12"	1	69-77	0.41
<b>Keystone Standard - Series I</b>	8"	18"	18"	1	92-113	0.70
<b>Keystone Standard - Series I</b>	8"	18"	21"	1	97-118	0.90
<b>Keystone Standard - Series III</b>	8"	18"	18"	1	80-93	0.81
<b>Keystone Standard - Series III</b>	8"	18"	21"	1	85-99	1.01

**Note:** Unit weights, dimensions and availability vary by manufacturer. Please contact your local representative.

The information contained herein has been compiled by Keystone Retaining Wall Systems® LLC and to the best of our knowledge, accurately represents the Keystone product used in the applications which are illustrated. Final determination of the suitability for the use contemplated and its manner of use are the sole responsibility of the user. Design and analysis shall be performed by a qualified engineer.

## Installation: Step-by-Step

### STEP 1



### 1. Site Examination / Permitting

Select the location and length for the retaining wall. Call before you dig! In the United States, calling 811 before every digging job gets your underground utility lines marked for free and helps prevent undesired consequences. Digging without calling can disrupt service to an entire neighborhood, harm you and those around you and potentially result in fines and repair costs. Take the necessary measurements, prepare plans, research zoning requirements for your area and obtain proper building permits for your project. Local permitting may require a soils investigation and/or engineered documentation and drawings.



### STEP 2



### 2. Excavation / Embedment

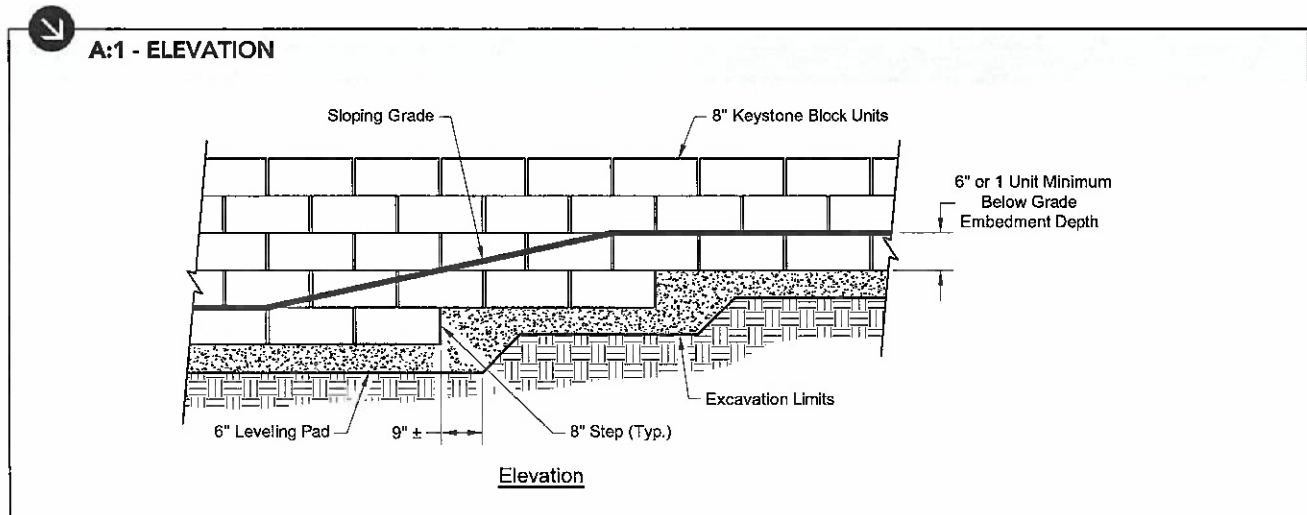
Verify that the layout dimensions are correct and excavate to the lines and grades shown on the construction drawings or to field dimensions. Remove all surface vegetation, organic soils and debris, and verify that the foundation subgrade is in proper condition prior to leveling pad installation. Do not proceed with installation until soft soils or any other unsatisfactory conditions have been corrected.

#### Embedment Recommendations

For small Keystone gravity walls, a minimum of 6-inches embedment is required.

For reinforced soil Keystone walls, the minimum depth of embedment as a ratio to wall height may be determined in the provided table (page 11).

## Installation: Step-by-Step



### NOTES:

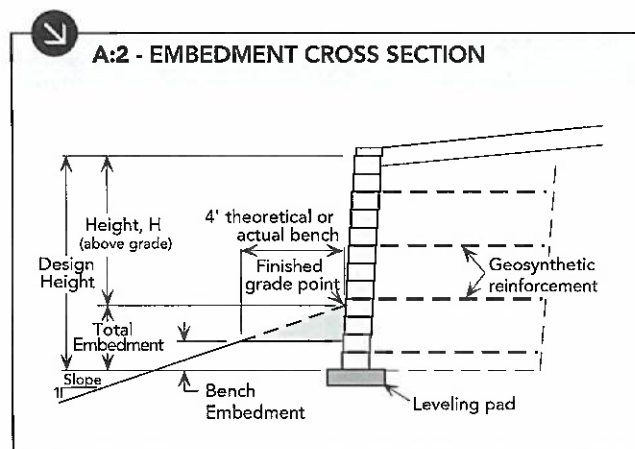
- Project plans, specifications, and design codes may require minimum embedments that exceed the minimums shown here.
- The required embedment depth for Keystone walls may become a controversial issue. The International Building Code (IBC) recommends a 1-foot minimum or below prevailing frost depth, whichever is greater for foundations. AASHTO recommends a 2-foot minimum or below prevailing frost depth, whichever is greater for retaining structures. These minimum recommended depths are based on rigid foundation systems and are not totally applicable to SRWs, which can function properly with significantly less embedment. The proper embedment depth is a function of the structure size and type, the underlying soils, and the site geometry, especially toe slopes. It is important to properly inspect the foundation area when excavated, determine the limits of removal and replacement of unsuitable materials, and then confirm the final embedment depth for stability and bearing given the site conditions.

### Sloping Toe

The minimum embedment required with a 3:1 or steeper slope in front of the wall should be based on the establishment of a minimum 4-foot horizontal bench in front of the wall and establishing a minimum embedment from that point. Fill slopes usually have poor compaction near the edge of slope, and all slopes are subject to erosion and superficial instability (see Figure A:2, right).

The depth of embedment should be increased when any of the following conditions occur:

- Weak bearing soils
- Potential scour of wall toe
- Submerged wall applications
- Significant shrink/swell/frost properties of foundation soils
- Global stability concerns



Slope in front of wall	Minimum embedment
Minimum requirement	0.5'
Horizontal (walls)	H/20
Horizontal (abutments)	H/10
3H:1V	H/10 + 1.33'
2H:1V	H/10 + 2'

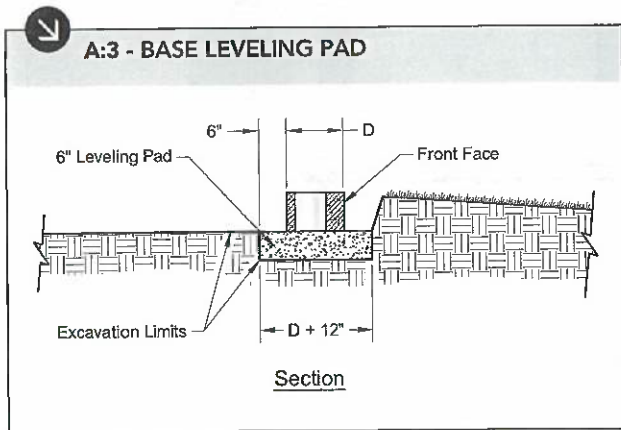
The information contained herein has been compiled by Keystone Retaining Wall Systems® LLC and to the best of our knowledge, accurately represents the Keystone product used in the applications which are illustrated. Final determination of the suitability for the use contemplated and its manner of use are the sole responsibility of the user. Design and analysis shall be performed by a qualified engineer.

## Installation: Step-by-Step



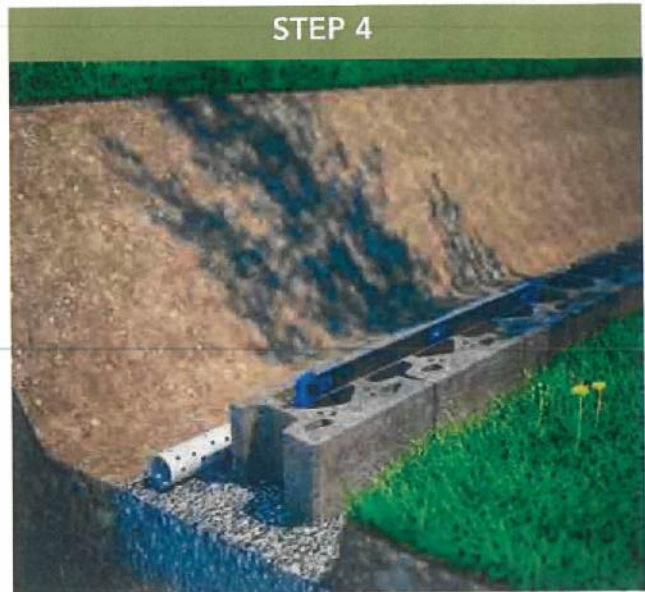
### 3. Prepare the Base Leveling Pad

Start the leveling pad at the lowest elevation along the wall alignment (see Figure A:3, below). The minimum leveling pad width shall be unit depth plus 12 inches. The leveling pad shall be level front-to-back and side-to-side and consist of 6 inches of well-compacted (95% standard proctor or greater) angular granular fill (road base or ½-inch to ¾-inch crushed stone). Lean unreinforced concrete (2,000 psi minimum) is also acceptable to use as a leveling pad. Step the leveling pad up in 8-inch increments at the appropriate elevation change in the foundation. Do not use rounded material (i.e. PEA GRAVEL or SAND) for leveling pad material.



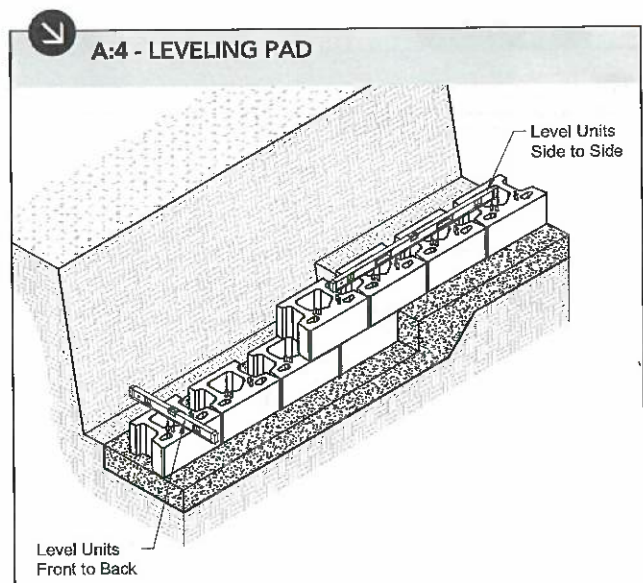
#### NOTES:

- Construct leveling pad with crushed stone or 2,000 psi ± unreinforced concrete.
- The leveling pad foundation is to be approved by the site geotechnical engineer prior to leveling pad placement.



### 4. Install the Base Course

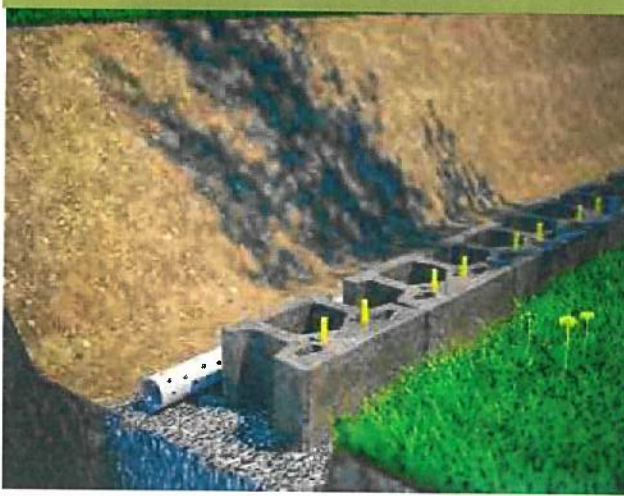
Place the first course of Keystone units (Keystone Compac units shown for illustrative purposes) end-to-end, with face of wall corners touching (do not leave gaps between units) on the prepared base. Ensure that all units are in full contact with the base and properly seated by gently tapping each block corner with the dead blow hammer as required. Level the first course front-to-back, side-to-side, and unit-to-unit down the length of the wall. At base elevation changes, maintain a minimum embedment at step-up locations. A level base course is critical for accurate and acceptable results. (See Figure A:4, below.) Lay out corners and curves in accordance with the "Corners and Curves" section of this manual (page 33).



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## Installation: Step-by-Step

### STEP 5



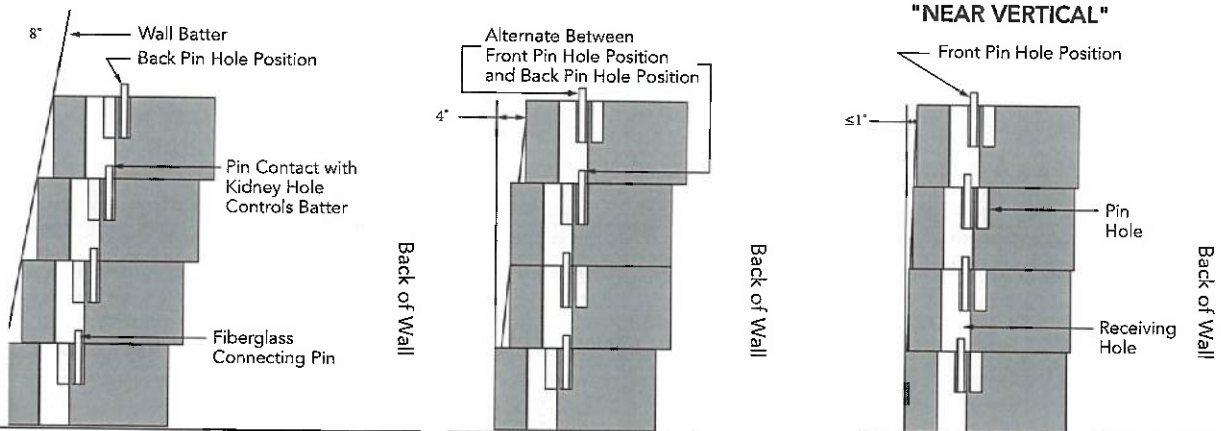
### 5. Insert the Fiberglass Pins/Drainage Pipe

Keystone units have various facing setback options depending on pinning arrangement used from course to course. Typically near vertical and 8° setback are most common (See Figure A:5, below). For the near vertical option, place the pins in the front pin holes, or for the 8° setback, place the pins in the rear pin holes (See Figure A:6, below). Once placed, the pins create an automatic setback and alignment for the additional courses (See Figures A:5 - A:7, below).

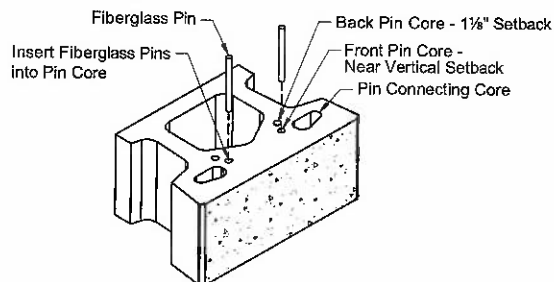
#### NOTE:

- Place pins prior to placing unit core fill.

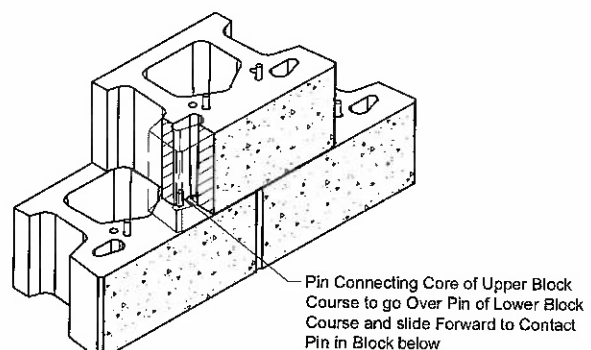
#### A:5 - SETBACK OPTIONS



#### A:6 - PIN INSTALLATION DIAGRAM

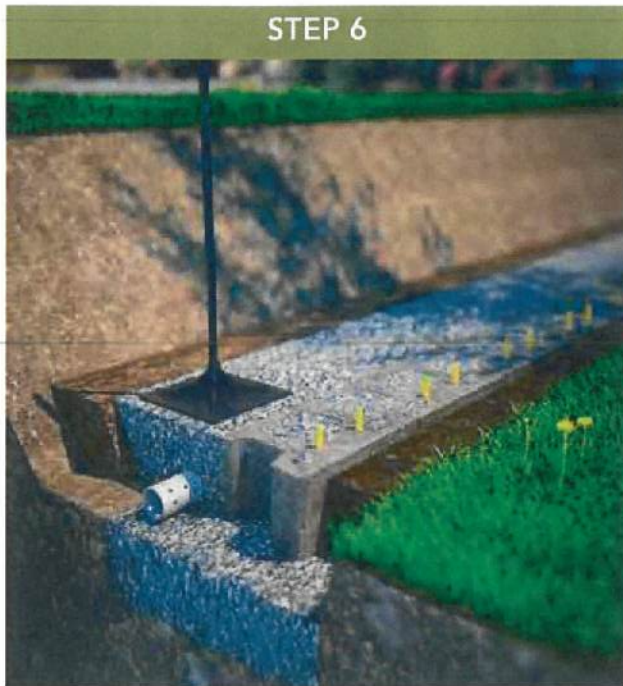


#### A:7 - CONNECTION DIAGRAM



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## Installation: Step-by-Step

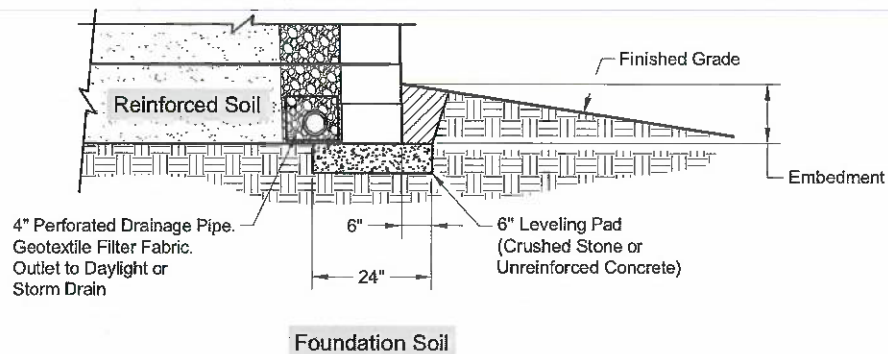


### 6. Install Unit Drainage Fill, Drainage Pipe, Backfill and Compaction

Install drainage pipe behind wall unit and outlet drain to storm system or daylight. See drainage section for additional details (page 54). Once the pins have been installed, provide  $\frac{1}{2}$ - $\frac{3}{4}$  inch (13-19mm) crushed stone unit drainage material to a minimum total distance of 24 inches (610mm) from wall face. Fill all open spaces between units and open cavities/cores with the same unit drainage material. Place the wall backfill behind the unit drainage fill in maximum 8 inch (203mm) lifts and compact to 95% Standard Proctor Density or 92% Modified Proctor Density with the appropriate compaction equipment. Use only hand-operated equipment within 3 feet (1m) of the retaining wall face.



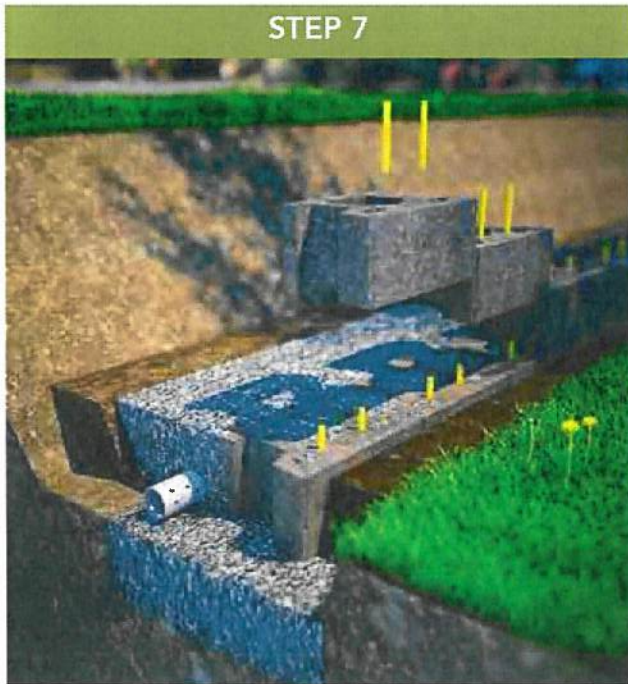
#### A:8 - DRAINAGE PIPE DETAIL



#### NOTE:

- Drainage pipe should maintain positive drainage to daylight; outlet the drainpipe at low points every 30 to 50-feet on center at ends of wall, if appropriate. Alternatively, a raised drain may be utilized per the detail on page 55 of this manual.

## Installation: Step-by-Step



### 7. Install Additional Courses

Remove all excess unit drainage material from the top surface of all the units. Hold the unit so the pin connecting cores of the upper block insert directly over the pin of the lower block course, and push the unit forward to contact the pins of the lower unit. (See *Figure A:9, below.*) Check level front-to-back and side-to-side, shim the units or grind as necessary. It is important to check level front-to-back and side-to-side on every course to maintain proper wall batter and alignment. Proper shimming materials can be any non-degradable material, including but not limited to, asphalt shingles, scrap pieces of geogrid, etc. Shimming of block is not allowed on courses with geogrid reinforcement.

Continue backfilling, installing additional units and checking level to the desired top elevation. Follow wall unit and unit drainage fill installation closely with backfill. Maximum stacked vertical height of wall units prior to unit drainage fill, backfill placement and compaction shall not exceed 2 courses.

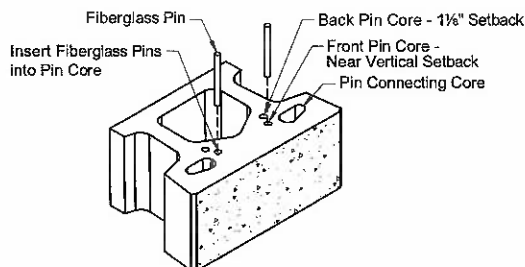
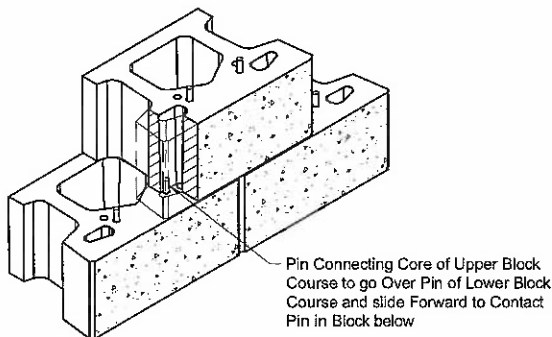
For gravity walls, continue this construction sequence to complete the wall and proceed to Step 10. For geogrid reinforced walls, continue with Step 8 and Step 9.



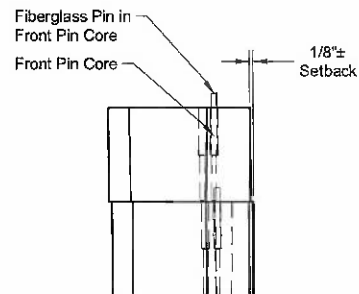
### A:9 - BLOCK CONNECTION DETAIL

#### Note:

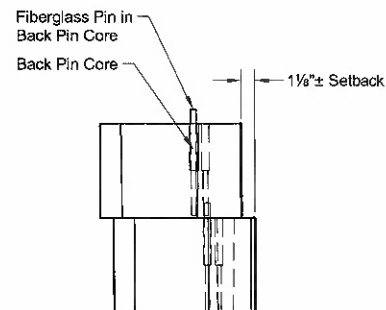
Place two Keystone fiberglass pins in each unit.



Compac III Block to Block Pin Connections Isometrics



Pin Connection - Near Vertical Setback Section



Pin Connection - 1 Inch Setback Section

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## Installation: Step-by-Step

### STEP 8



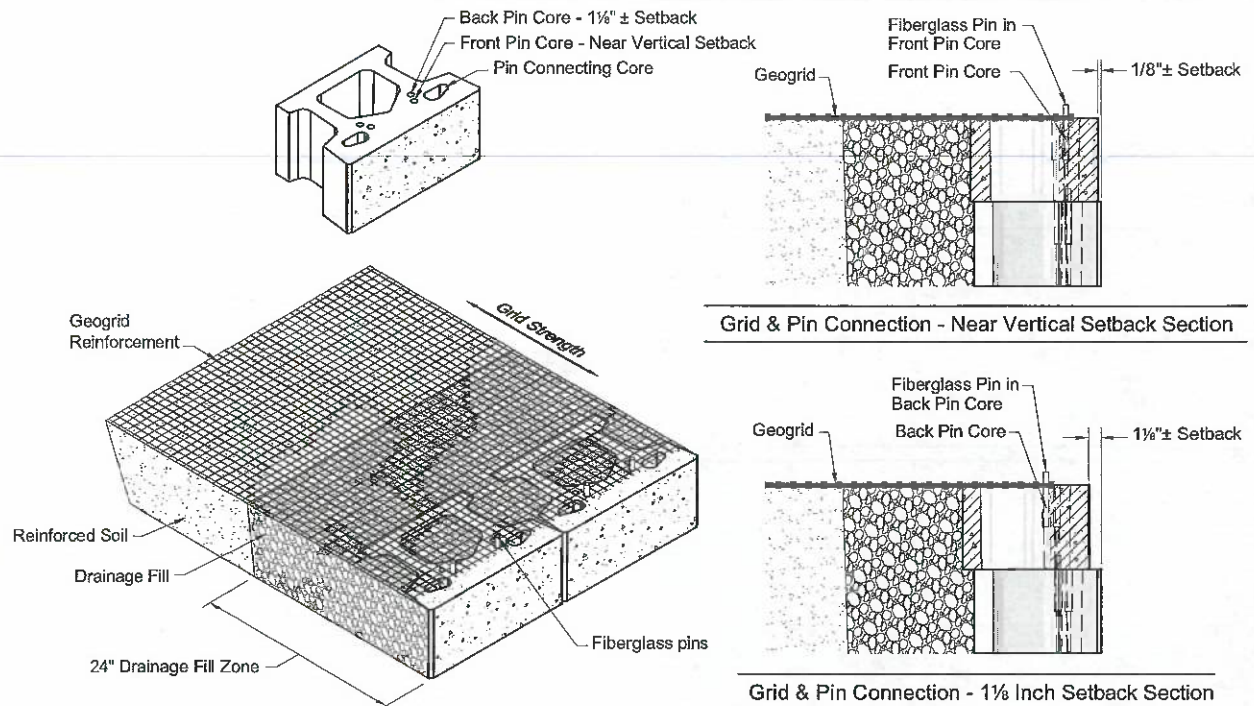
### 8. Structural Geogrid Installation

Start at the lowest wall elevation where a geogrid layer will be placed. The geogrid elevations, depths, and strength will be specified in the engineered design for the wall. Measure and cut the geogrid material to the specified length. Orient geogrid with highest strength axis perpendicular to the wall alignment. Lay geogrid horizontally on compacted backfill within 1-inch of the face of the lower block (see Figure A:10, below). Ensure that the core fill and unit drainage fill is flush with the top of the lower unit prior to geogrid placement.

Geogrid will be placed in pieces side-by-side (100% coverage) with no gapping or overlapping in a continuous layer along the length of design geogrid elevation, unless a change in elevation is specified in the design.



### A:10 - GRID CONNECTION



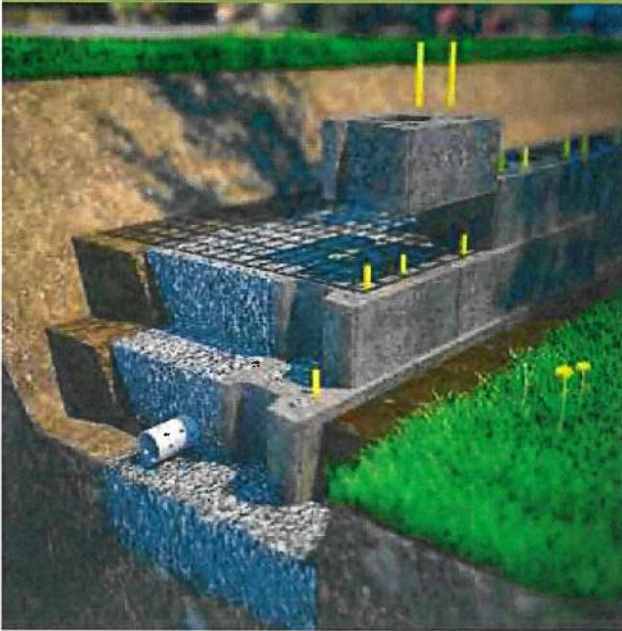
#### NOTES:

- Geogrid is to be placed on level backfill and extended within 1-inch of the front face of the block unit. Place next unit. Pull grid taut and backfill. Stake as required.
- The roll direction is the strength direction of the geogrid. Geogrid is rolled out perpendicular to wall face.

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## Installation: Step-by-Step

### STEP 9



### 9. Reinforced Backfill Placement

Install next course of units over the geogrid to secure in place. Tension the geogrid by pulling it towards the embankment. Place a stake through the end of the geogrid into the ground or place fill over the back edge of geogrid to hold it taut and in place. Do not excessively tension geogrid; this may pull units out of proper alignment.

Proceed with placement of the unit drainage fill and the backfill in the reinforced zone. Specifications for the material to be used as backfill in the reinforced zone should be defined in the engineered plans. Place this material nearest to the units, moving progressively toward the staked end of the geogrid. This procedure will keep the geogrid under tension. Compact the reinforced and drainage fill material to a minimum 95% standard proctor density (ASTM D698) or 92% modified proctor density (ASTM D1557). Or see compaction requirements stated in the engineered plans. Install additional courses as described in Step 7, until the next reinforcement elevation. Repeat Steps 8 and 9.

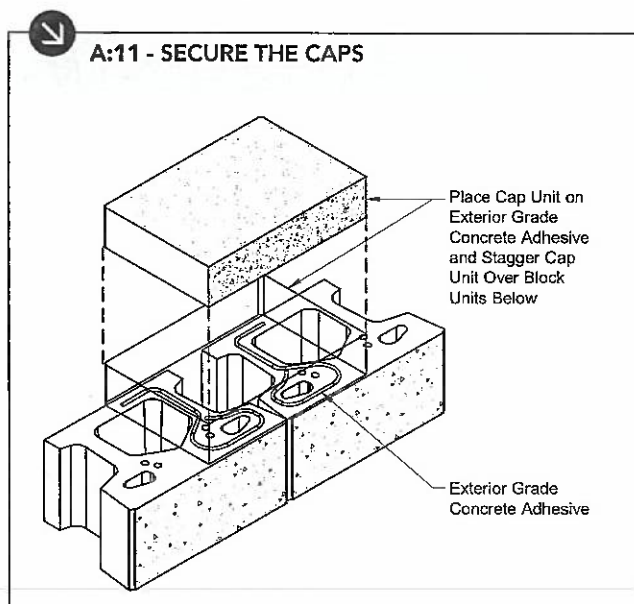
Only hand-operated compaction equipment can be allowed within 3-feet of the back surface of the units. At the end of each day's operation, grade the backfill away from the wall and direct runoff away from the wall face.

### STEP 10



### 10. Capping the Wall

Complete your wall with the appropriate Keystone capping units. These units are available in a variety of sizes and shapes. Availability of these units will vary by region. For cap unit descriptions and placement variations see the section, "Wall Finishing" (page 45) of this manual. Sweep the lower units clean and make sure they are dry. Use exterior grade concrete adhesive on the top surface of the last course before applying cap units (see Figure A:11, below).



## Installation: Step-by-Step

### STEP 11



### 11. Finished Grade and Landscaping

The Keystone retaining wall is now complete. Final grading, planting or other surface material can now be put into place. Typically an 8-inch thick layer of low permeable soil is installed as the final layer of material. This is to help prevent water infiltration into the retained or reinforced zone of the retaining wall. Remember that finished grade conditions affect the wall's performance. Fill placed behind the wall should be graded to flush with the top back of the cap unit. Such conditions should not be altered from the original design.

Loadings that include slopes, parking lots and buildings should be maintained as designed. Any changes to the top-of-wall finished grade must be evaluated prior to wall completion (*see Figures A:12-A:13, page 19*).



KEYSTONE COMPAC STRAIGHT

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## Oswald Jr, Woodin

---

**From:** Oswald Jr, Woodin  
**Sent:** Thursday, March 6, 2025 10:12 AM  
**To:** 'Kim Griffin'  
**Cc:** colsdolls3@gmail.com  
**Subject:** RE: B25000601\_11633 Vixens Path\_Retaining Wall

Thanks Kim.

The building permit has been approved by the Health Department.

Regards,

Hank

Hank Oswald  
Licensed Environmental Health Specialist  
Bureau of Environmental Health  
Howard County Health Department  
8930 Stanford Blvd. Columbia, MD 21045  
(410) 313 - 1786  
[www.hchealth.org](http://www.hchealth.org)

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**From:** Kim Griffin <kgriffin@woodfieldoutdoors.com>  
**Sent:** Thursday, March 6, 2025 9:27 AM  
**To:** Oswald Jr, Woodin <hoswald@howardcountymd.gov>  
**Cc:** colsdolls3@gmail.com  
**Subject:** RE: B25000601\_11633 Vixens Path\_Retaining Wall

[Note: This email originated from outside of the organization. Please only click on links or attachments if you know the sender.]

Hello Hank,

The requested information has been uploaded to the portal.

Thanks so much!

*We look forward to providing you with an exceptional outdoor living experience.*

Sincerely,

**Kim Griffin**

Client Care Coordinator  
443-299-6500



2112 Belair Road, Suite 3  
Fallston, MD 21047  
[woodfieldoutdoors.com](http://woodfieldoutdoors.com)



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**From:** Oswald Jr, Woodin <[hoswald@howardcountymd.gov](mailto:hoswald@howardcountymd.gov)>  
**Sent:** Wednesday, February 26, 2025 9:55 AM  
**To:** Kim Griffin <[kgriffin@woodfieldoutdoors.com](mailto:kgriffin@woodfieldoutdoors.com)>  
**Cc:** [colsdolls3@gmail.com](mailto:colsdolls3@gmail.com)  
**Subject:** B25000601\_11633 Vixens Path\_ Retaining Wall

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You don't often get email from [hoswald@howardcountymd.gov](mailto:hoswald@howardcountymd.gov). [Learn why this is important](#)

Hello Mr. Curro,

This email is in response to building permit # B25000601 (Retaining Wall). We will need a revised site plan with cross section detail showing the retaining wall depth in relation to the SHC to ensure it won't be disturbed. To get the depth of the SHC, you could try measuring the invert depth at the cleanout next to the house and the invert depth through the lid of the septic tank. Please send me these details as soon as possible.

Your building permit has been placed on hold. Should you have any questions, please don't hesitate to contact me.

Regards,

Hank

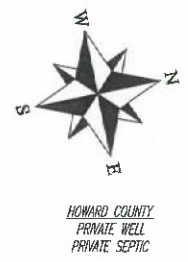
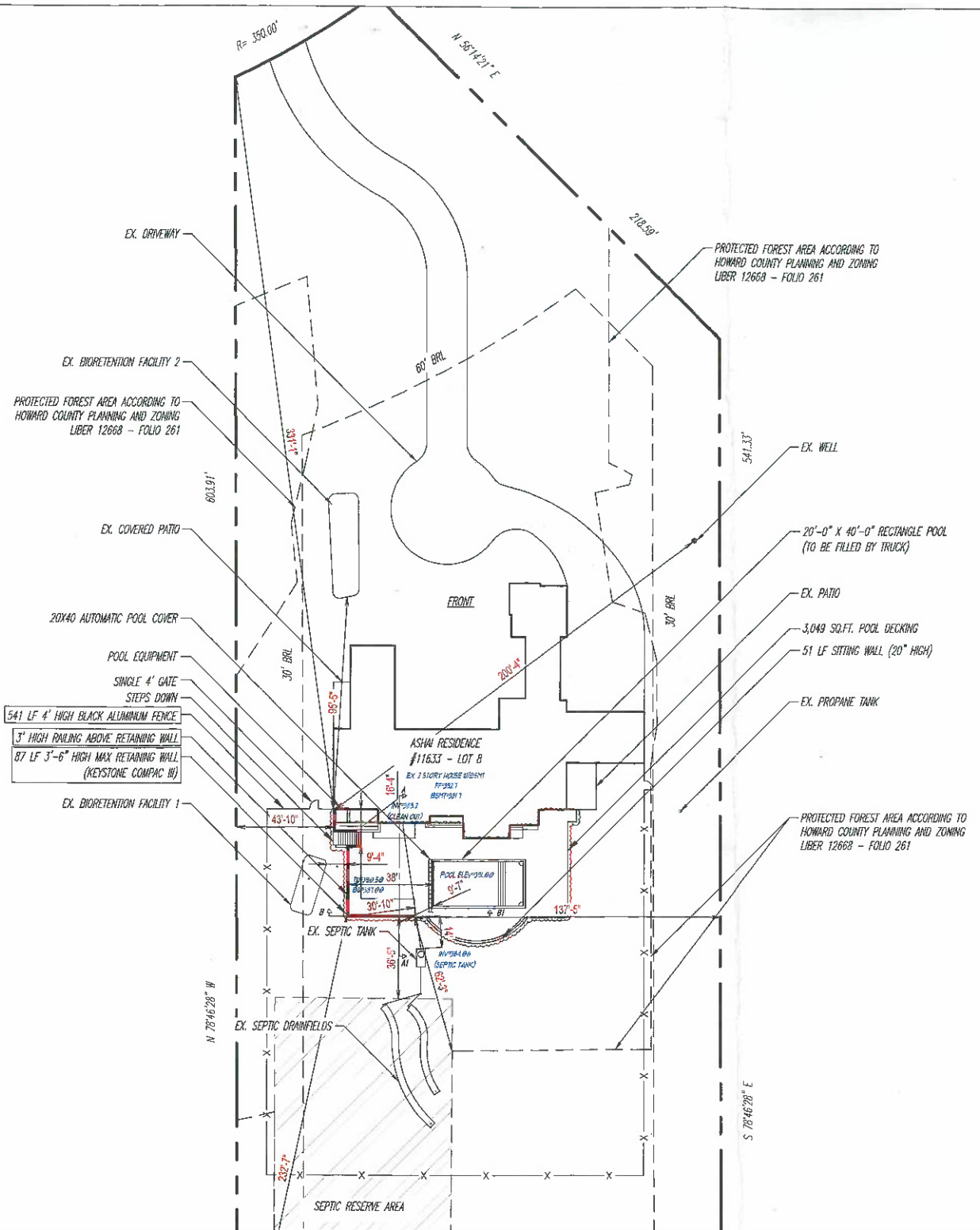
Hank Oswald  
Licensed Environmental Health Specialist  
Bureau of Environmental Health  
Howard County Health Department  
8930 Stanford Blvd. Columbia, MD 21045  
(410) 313 - 1786  
[www.hchealth.org](http://www.hchealth.org)

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B25000601  
 Rec'd 3/10/25  
 Approved 3/10/25



**DIRECTIONS**

**PROFESSIONAL CERTIFICATION:**  
 I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the law of the State of Maryland. License No. 20642, and Expiration 11/16/2026.

Professional Certification:  
 I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the law of the State of Maryland. License No. 20642, and Expiration 11/16/2026.

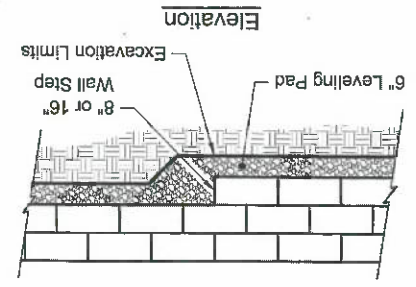
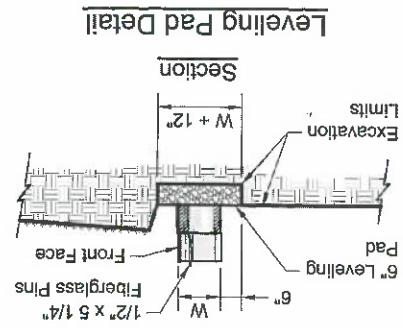
Designed by:  
 Ali Emadi Esqr. 2/20/2025  
 22020-000177248L



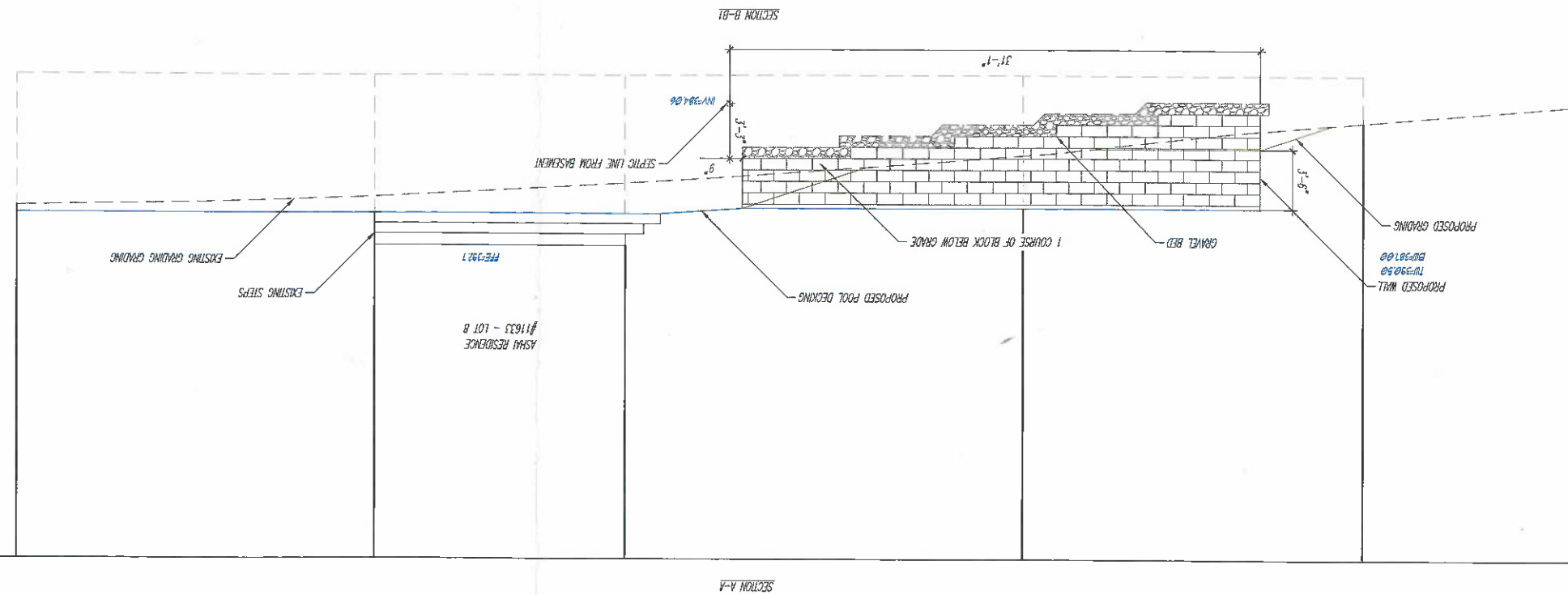
POOL DATA	
DIMENSIONS	20'-0" X 40'-0" RECTANGLE POOL
PERIMETER	120 LF
SURFACE AREA	800 SQ.FT.
GALLONAGE	19,526 GALLONS
DEPTHS	3'-6" TO 5'-0"
FILTER RATE	54 GPM
TURNOVER TIME	6 HOURS
POOL DECK AREA	3,049 SQ.FT.

**PROJECT NAME**

KEY



NOTES: MEASUREMENTS & ELEVATIONS REFERRED ON THE FIELD.  
 SEPTIC LINE NOT DISTURBED DURING WALL INSTALLATION.



EX

PC