

SPECIFICATIONS

REFERENCE: 1. Barghausen Consulting Engineers, LLC, North Utility Yard Infiltration Pond (Sheet C15), Job No. 18111, dated November 18, 2024
2. GeoEngineers, Inc., Technical Memorandum – South Hill Business and Technology Center Centeris: North Detention Pond, File No. 4565-064-09, dated July 3, 2024

GENERAL

- A. Work shall consist of furnishing and construction of an Ultrablock Retaining Wall System (or equivalent) in accordance with these specifications and in reasonably close conformity with the lines, grades, and dimensions shown on the plans.
- B. Work includes preparing foundation soil as well as furnishing and installing leveling pads, drainage fill, and backfill to the lines and grades shown on the construction drawings.
- C. The following design assumptions were used:
- Internal angle of friction for retained soil = 33 degrees
 - Unit weight of retained soil = 125 pcf
 - Maximum exposed wall height = 4.0 feet
 - Batter of wall = 1H : 10V
 - Horizontal pseudostatic coefficient = 0.3 (per referenced Technical Memo)
 - Surcharges (Where Applicable) = 2H:1V Top Slope (Modeled)

SUBMITTALS

- A. Contractor shall submit to the Geotechnical Engineer a Manufacturer's Certification, prior to start of work, that the retaining wall system components meet the requirements of these specifications and the structural design.

QUALITY ASSURANCE

- A. Contractor, other than the owner, shall demonstrate prior experience on projects of similar size and magnitude where the specific retaining wall system has been constructed successfully. Contact names and telephone numbers shall be listed for each project.
- B. Owner shall provide soil testing and quality assurance on a periodic or full-time basis (as required) during Ultrablock wall installation and related earthwork activities. Owner's quality assurance program does not relieve the contractor of responsibility for wall performance.

DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall check all materials upon delivery to ensure that the proper type, grade, color, and certification have been received.
- B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PRODUCTS

DEFINITIONS

- A. Block: a concrete retaining wall element, wet cast from Portland Cement, water, and aggregates, with dimensions of 2.46'H x 4.92'W x 2.46'D.
- B. Drainage Fill: free-draining, angular aggregate (less than 5% fines) which is placed immediately behind the modular concrete units.

BLOCK RETAINING WALL UNITS

- A. Block Units shall conform to the following architectural requirement:
- Bond Configuration: running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
- B. Block materials shall conform to the requirements of Standard Specifications for Ultrablock Wall Units.
- C. Block Units shall conform to the following structural and geometric requirements, measured in accordance with appropriate references:
- minimum compressive strength = 2,200 psi (28-day)
 - absorption = 6% (max.) for standard weight aggregates
 - unit size = 2.46'H x 4.92'W x 2.46'D minimum
 - unit weight = 4,320 lb. each (approximate)

AS-BUILT CONSTRUCTION TOLERANCES

- A. Vertical Alignment: ±1.5 inches over any 10-foot distance
- B. Wall Batter: ±2 degrees of design batter
- C. Horizontal Alignment: ±1.5 inches over any 10-foot distance
Corners, bends, and curves: ±1 foot to theoretical location
- D. Maximum horizontal gap between erected units: 1/2 inch

BASE LEVELING PAD

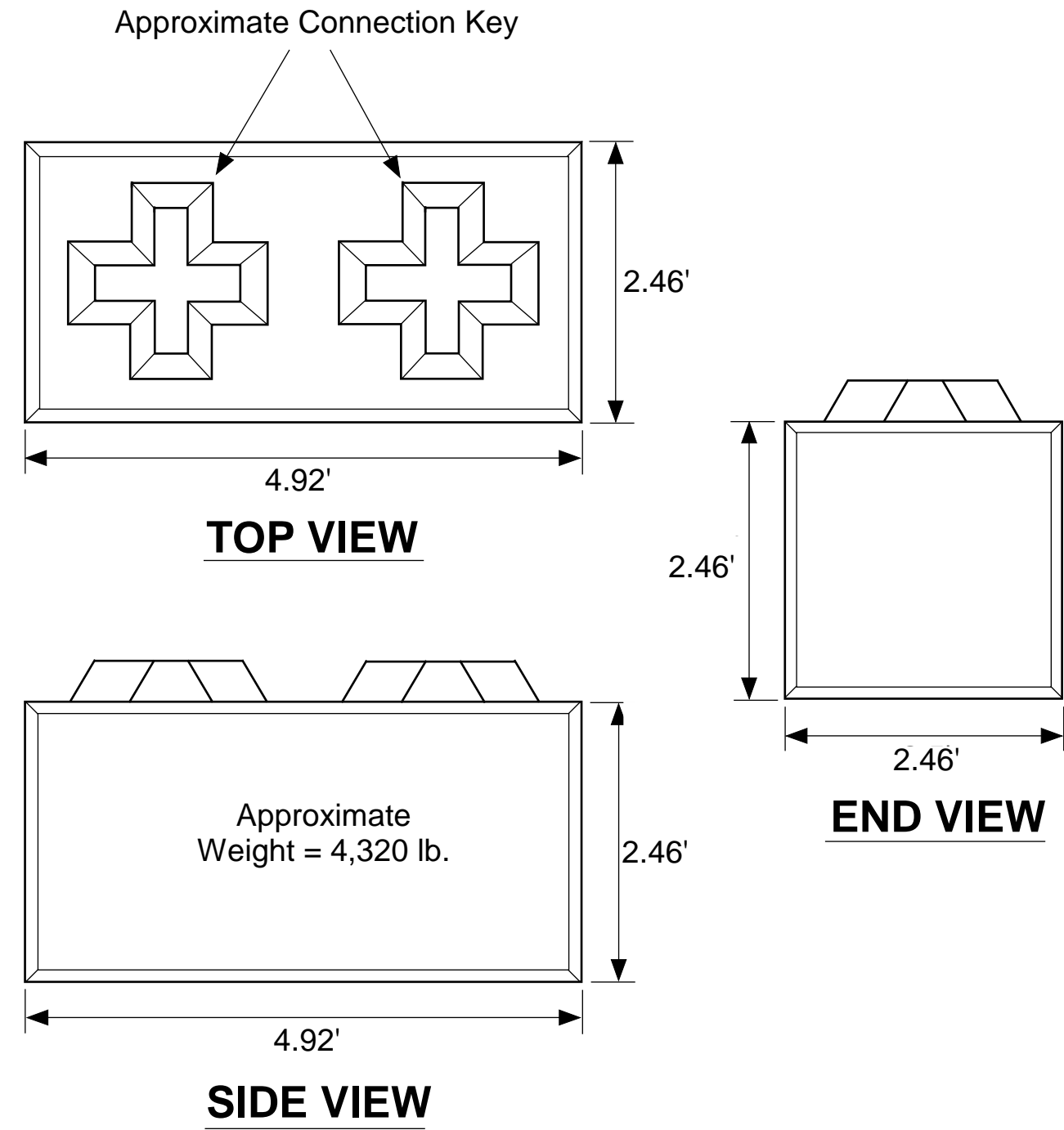
- A. Leveling Pad shall consist of a minimum of 6 inches of 5/8"-minus crushed rock.
- B. The subgrade shall be dense, firm, and unyielding in areas of Native Soil. If the subgrade is comprised of Structural Fill, minimum compaction of 95% of the laboratory maximum dry density, per ASTM D1557 (Modified Proctor), shall be achieved, and the moisture content shall be at (or slightly above) the optimum level.
- C. Leveling Pad shall be prepared to ensure full contact to the base surface of the Ultrablock Units.

ULTRABLOCK UNIT INSTALLATION

- A. The first course of Ultrablocks shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be in accordance with manufacturer's recommendations and installation guidelines.
- B. Place the front units side-by-side. Gaps shall be minimized between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations and installation guidelines.
- C. Place and compact Drainage Fill behind Ultrablock Units. Follow wall erection and drainage fill closely with block placement. Compact reinforced backfill to 95% of the laboratory maximum dry density, per ASTM D1557 (Modified Proctor), in loose lifts not exceeding 12 inches.
- D. Maximum stacked vertical height of Ultrablock Wall Units, prior to unit Drainage Fill and backfill placement and compaction, shall not exceed one course (2.5 feet).
- E. Utility conflicts shall be resolved per coordination between the project owner, wall contractor, and Geotechnical Engineer.
- F. One row of Cap Ultrablocks may be added atop each wall, as needed, without further design analysis.

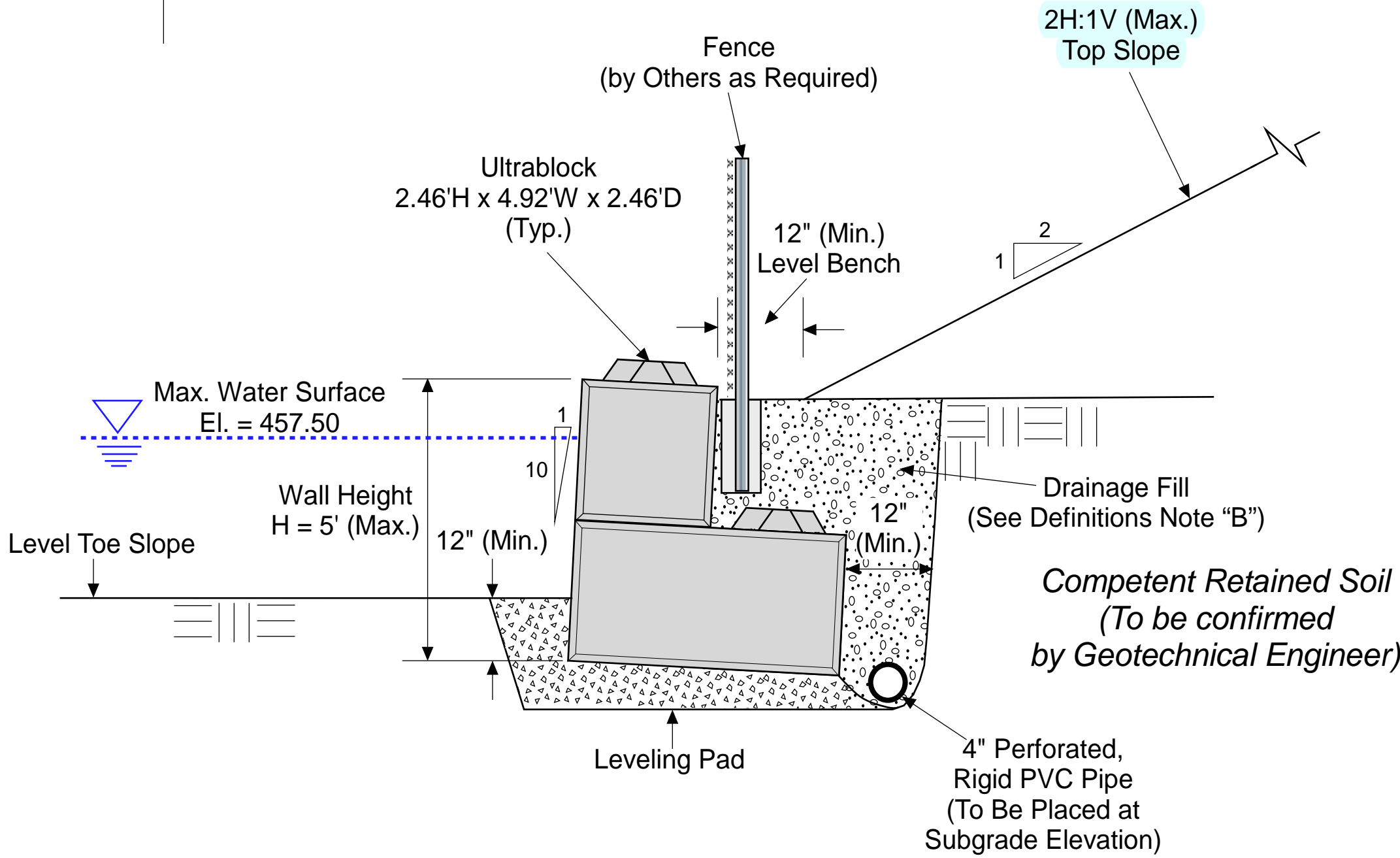
GEOTECHNICAL SPECIAL INSPECTIONS

- A. The Geotechnical Engineer shall be retained to provide special inspections during Ultrablock retaining wall construction. The Geotechnical Engineer shall be contacted, at least 48 hours prior to the start of wall construction and related grading activities, to observe Ultrablock wall installation on a part-time or full-time basis (as appropriate).
- B. Observations by the Geotechnical Engineer (or their representative) do not relieve the contractor of their responsibility to comply with the contract documents, including the notes, details, and specifications provided on these sheets.
- C. Special inspections shall include, but are not necessarily limited to, the following: erosion control; excavation activities; subsurface drainage installation; soil bearing and subgrade/keyway competency; Ultrablock placement and orientation; wall batter; and structural fill placement and compaction testing (where applicable).



ULTRABLOCK UNIT DETAIL

NOT - TO - SCALE

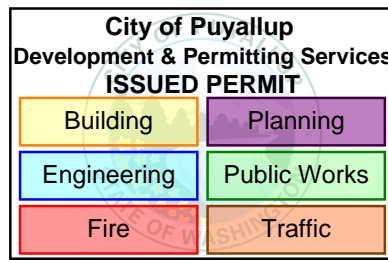


TYPICAL WALL SECTION

NOT - TO - SCALE

City of Puyallup
Building
REVIEWED
FOR
COMPLIANCE

SKinnear
01/06/2025
10:25:40 AM



The approved construction plans, documents, and all engineering must be posted on the job at all inspections in a visible and readily accessible location.

Full sized legible color plans are required to be provided by the permittee on site for inspection.

Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.

PRRWF20241913

Client Barghausen Consulting Engineers, LLC					
Proj. No.	10232	Date	11/26/2024		
Designed	KDH	Drawn	CAM		
Checked	KDH	Approved	KDH	No.	Date
				Revision	



Earth Solutions NW LLC

Geotechnical Engineering, Construction
Observation/Testing and Environmental Services

Western WA: 15365 NE 90th St, Ste 100 • Redmond, WA 98052 • (425) 449-4704
Eastern WA: 3130 Varney Ln, Ste 105 • Pasco, WA 99301 • (509) 905-0275
esnw.com

Gravity Ultrablock Retaining Wall Design
CENTERIS VOLTAGE PARK –
NORTH UTILITY YARD POND
Puyallup, Washington



Sheet No.

W1