

SPECIFICATIONS

REFERENCE: 1. CES NW, Inc., Civil Plans, Job No. 20083, dated March 12, 2025
2. Earth Solutions NW, LLC, Geotechnical Evalation, ES-6481, dated February 12, 2019

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 = 32 degrees
 - Unit weight of retained soil = 120 pcf
 - Maximum exposed wall height = 5.5 feet
 - Batter of wall = 1H : 10V
 - Site-modified peak ground acceleration = 0.55 g (per 2021 IBC; Site Class D)
 - Surcharge (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 checked in all directions to ensure that all units are in full contact with the base and properly seated.
- 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 OBSERVATIONS & TESTING

- A. The Geotechnical Engineer shall be retained to provide observation and testing services 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. The scope of observations and testing shall include, but is 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).

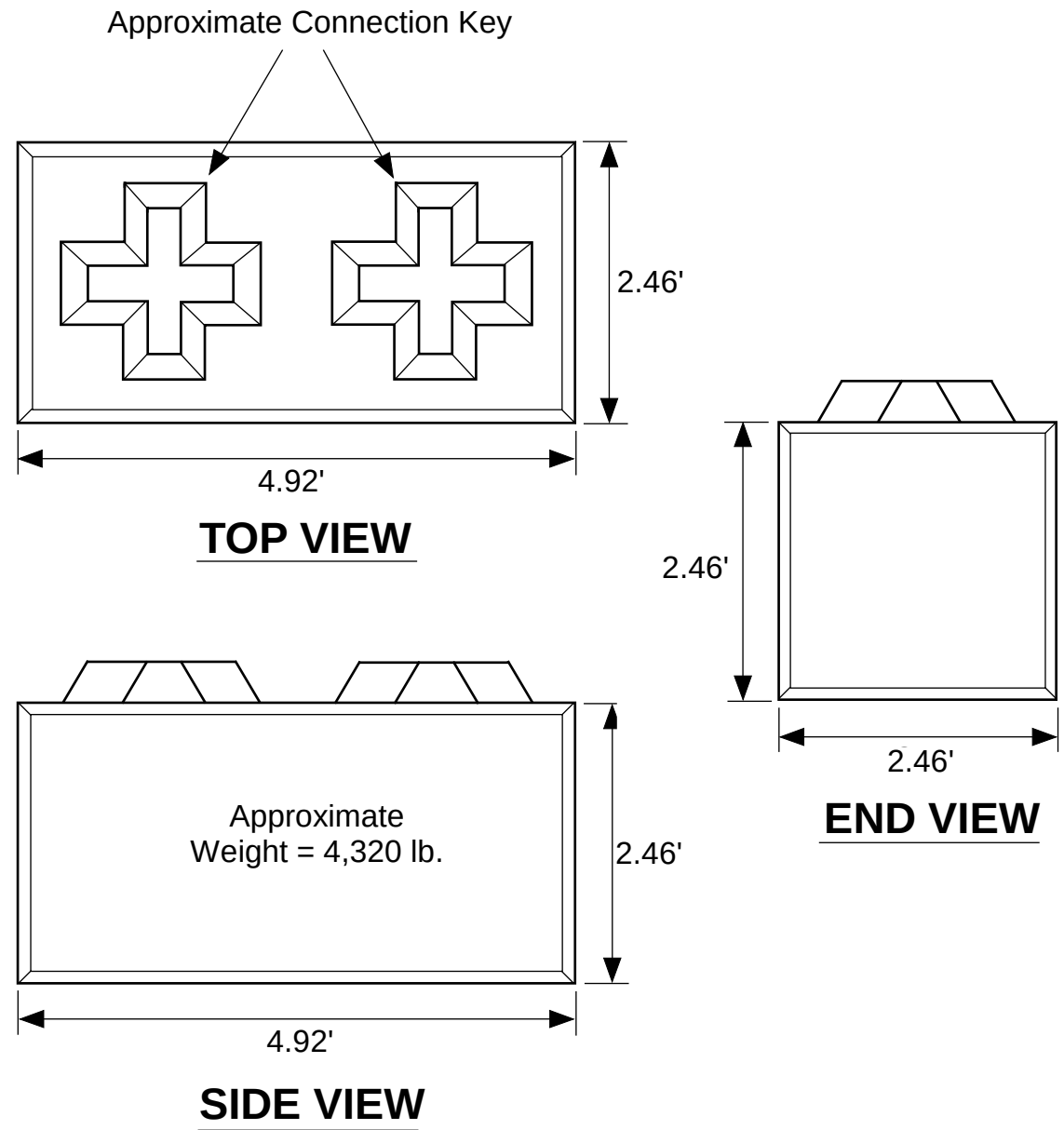
Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.

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.

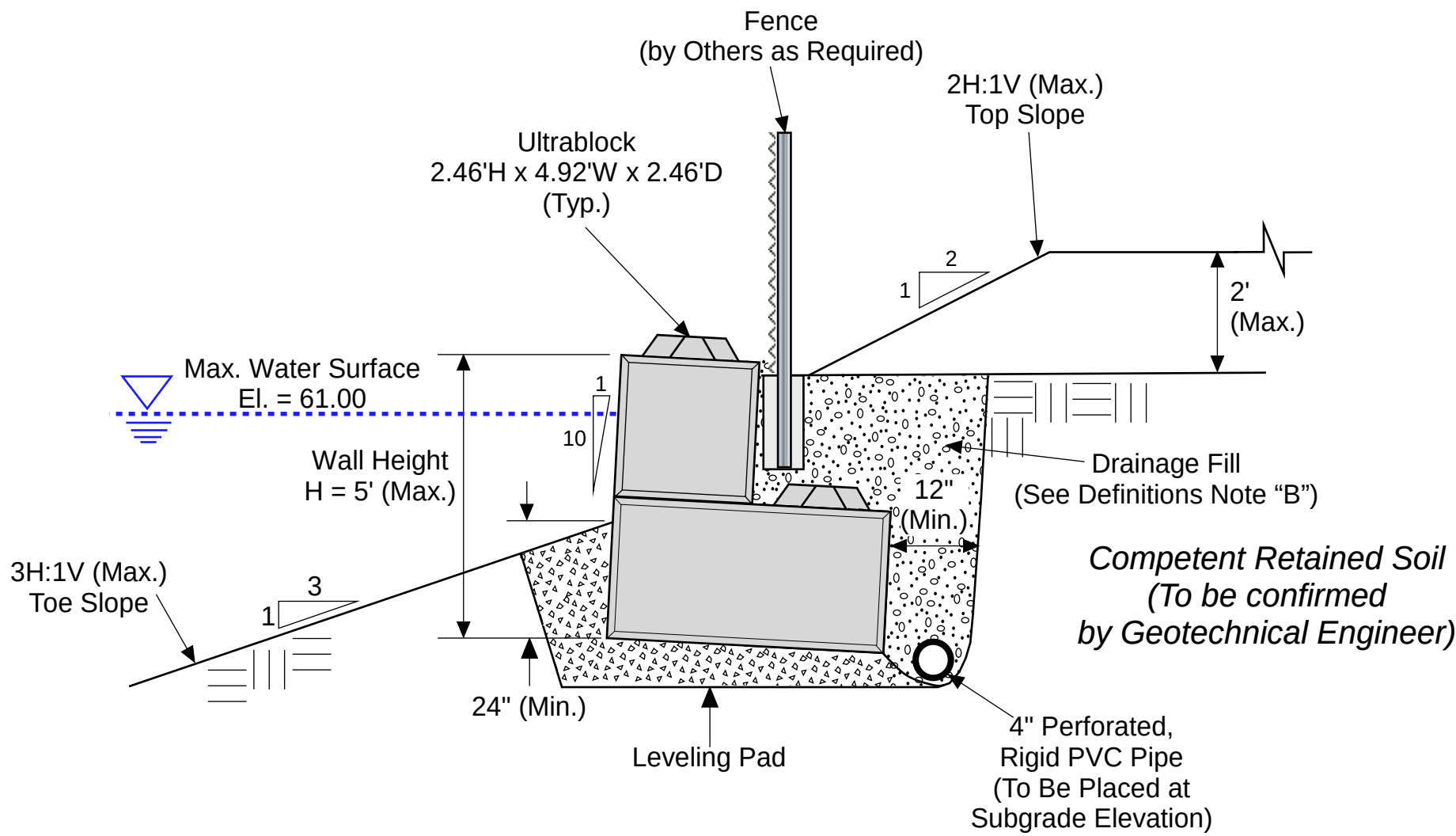
City of Puyallup
Building
REVIEWED
FOR
COMPLIANCE

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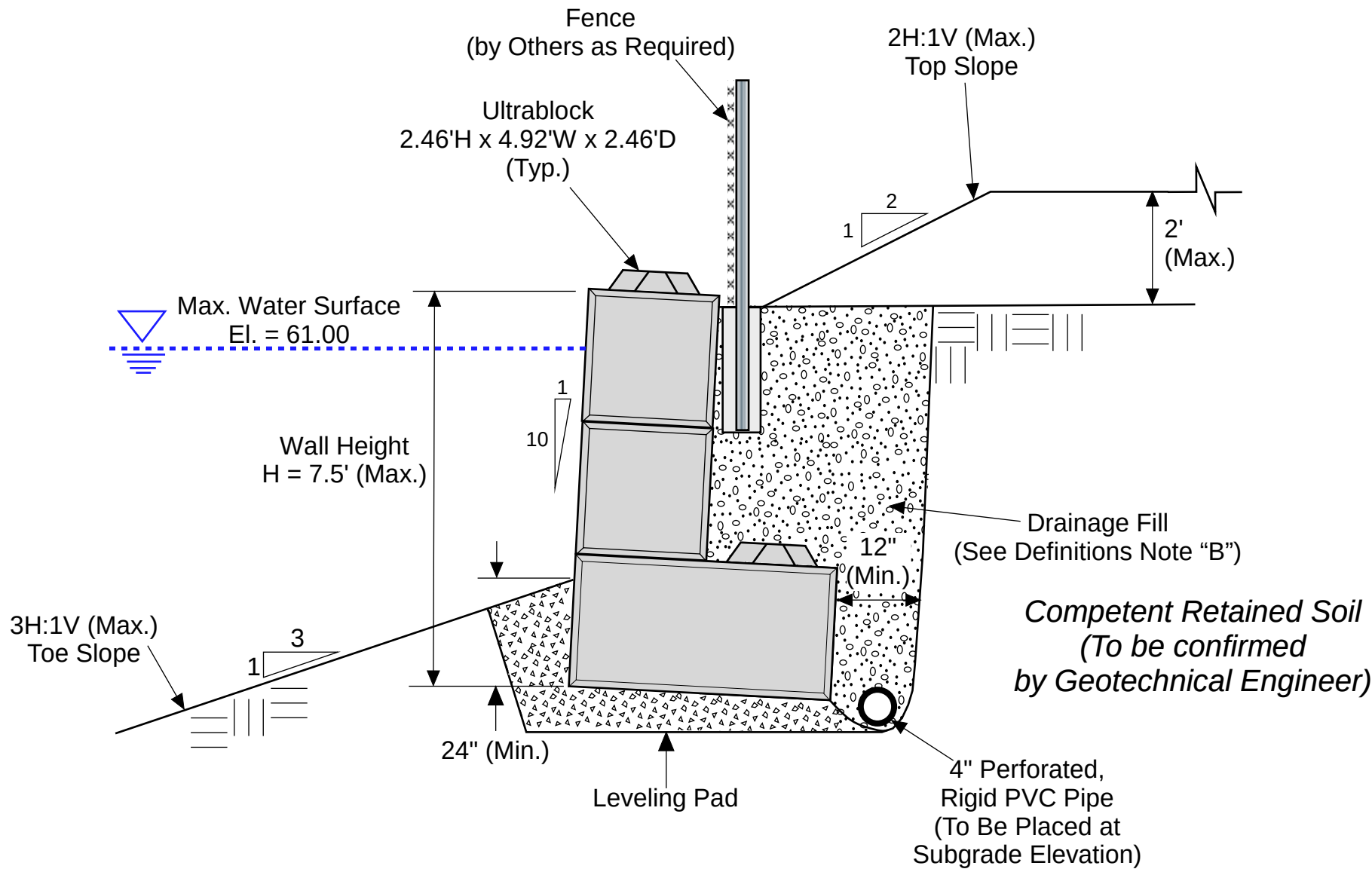
ULTRABLOCK UNIT DETAIL

NOT - TO - SCALE



TYPICAL 5.0' WALL SECTION

NOT - TO - SCALE



TYPICAL 7.5' WALL SECTION

NOT - TO - SCALE

Client	Through Terra, LLC			
Proj. No.	6481.02	Date	04/04/2025	
Designed	KDH	Drawn	MRS	
Checked	KDH	Approved	KDH	
				No. Date Revision



Geotechnical Engineering
Environmental Services
Earthwork Observation & Testing
CESCL & Stormwater Services

REDMOND 425-449-4704
PASCO 509-905-0275
SILVERDALE 360-722-5081

esnw.com

Gravity Ultrablock Retaining Wall Design
BPLC PROPERTIES
Puyallup, Washington



Sheet No.

W1

PRRWF20250845

