



TRANSMITTAL

SUBMITTAL NO. 012 REV 1

| | |
|--|--------------------|
| <p>2</p> <p>Carolyn Decker, P.E. Terra Associates, Inc. 12220 – 113th Avenue NE, Suite 130 Kirkland, WA 98034</p> <p>Zayin Wall, P.E. Barghausen Consulting Engineers, Inc. 18215 72nd Avenue South Kent, WA 98032</p> | DATE: 3/12/21 |
| | POE JOB NO.: 20-11 |
| | PROJECT: |
| <p>PUYALLUP LOGISTICS Submittal #012 REV 1 RETAINING WALL</p> | |
| ATTN: Above | |

The items listed below are transmitted as checked below:

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> For your approval | <input type="checkbox"/> Sent as requested | <input type="checkbox"/> Approved as submitted |
| <input type="checkbox"/> For your use | <input checked="" type="checkbox"/> Returned after review | <input type="checkbox"/> Approved as noted |
| <input checked="" type="checkbox"/> For review/comment | | <input type="checkbox"/> Returned for corrections |
| <input type="checkbox"/> Other - _____ | | |

| PGS | DATED | DESCRIPTION |
|----------|----------|------------------------------|
| 6 pages | 2/24/21 | Retaining Wall Design |
| 2 pages | 11/15/20 | Wall Material & Qty Criteria |
| 20 pages | 2/24/21 | Design Calculations |

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|---|
| <p>REMARKS</p> <p>Enclosed, please find our block retaining wall submittal including Design, Material Criteria and Design Calculation for review and approval.</p> <p>Thanks.</p> |
| <p>COMMENTS</p> <p><input checked="" type="checkbox"/> NO EXCEPTIONS TAKEN <input type="checkbox"/> REVISE AND RESUBMIT <input type="checkbox"/> REJECTED SEE REMARKS <input type="checkbox"/> FURNISH AS CORRECTED <input type="checkbox"/> SUBMIT SPECIFIED ITEM</p> <p><small>Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for conforming and correlating all quantities and dimensions selecting fabrication process and techniques or construction coordinating his work with that of all other trades, verifying compliance with the jurisdictional agencies; and performing his work in a safe and satisfactory manner.</small></p> <p>BARGHAUSEN CONSULTING ENGINEERS, Inc. Date 05/17/2021 By <i>Zayin Wall</i></p> |

Copy to: SMARTSHEET
Doug Deach

By: Clay Johnson
Title: Sr. Project Manager

PUYALLUP CORPORATE PARK PUYALLUP, WA

GENERAL NOTES:

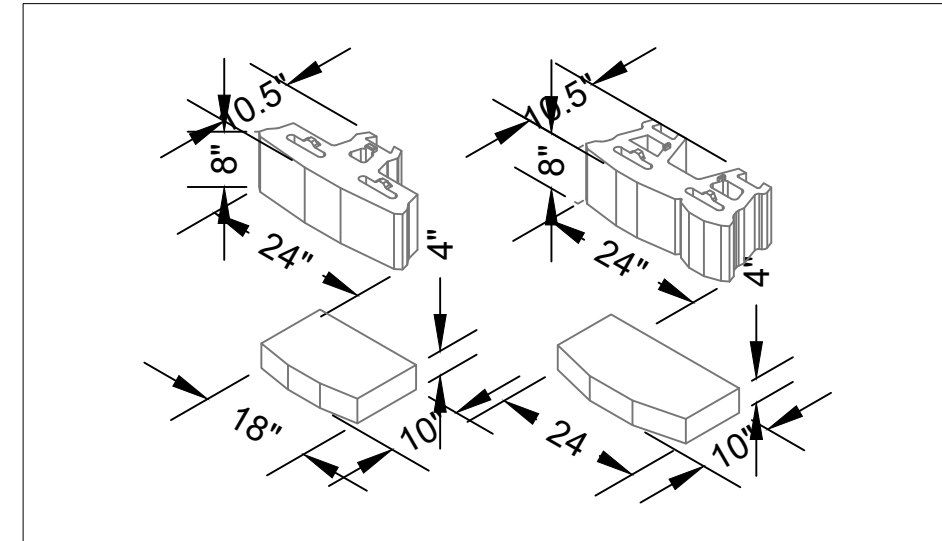
DESIGN PROVISIONS:

1. THE FOLLOWING EFFECTIVE STRENGTH PARAMETERS WERE ASSUMED IN THE PREPARATION OF THE STRUCTURAL CALCULATIONS FOR THE RETAINING WALL SYSTEM:

| SOIL PROPERTIES | | | | |
|-----------------|--------------|-----------|----------------|-------------|
| ZONE | ϕ° | COH (PSF) | γ (PCF) | DESCRIPTION |
| REINFORCED FILL | 33 | 0 | 125 | SAND |
| RETAINED FILL | 32 | 0 | 120 | SILTY SAND |
| FOUNDATION | 32 | 50 | 120 | SILTY SAND |

SOIL TYPES AND DESIGN PROPERTIES SHALL BE CONFIRMED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO WALL CONSTRUCTION.

2. THE WALL(S) ARE DESIGNED TO SUPPORT THE FOLLOWING MAXIMUM SURCHARGE LOADINGS:
 LIVE LOAD: 250 PSF (PARKING)
 DEAD LOAD: NONE
 BACK SLOPE: NONE
 SEISMIC: 0.326g (WsDOT BridgeLink)
3. THE FOUNDATION SOILS AT WALL LOCATIONS SHALL BE CAPABLE OF SAFELY SUPPORTING THE MAXIMUM APPLIED BEARING PRESSURE, AS SHOWN ON THE WALL PROFILES, WITHOUT FAILURE OR EXCESSIVE SETTLEMENT. LOCAL BEARING CAPACITY SHALL BE CONFIRMED BY THE SITE GEOTECHNICAL ENGINEER AFTER FOUNDATION EXCAVATION AND PRIOR TO WALL CONSTRUCTION.
4. REFERENCES:
 4.1. GEOTECHNICAL REPORT
 4.1.1. GEOTECHNICAL REPORT, East Main Industrial, East Main Street and Shaw Road, Puyallup, WA, Terra Associates, Inc., Project no T-8222, September 27, 2019.
 4.1.2. 11/13/20 Properties confirmed by Terra Associates.



GravityStone Edge Retaining Wall

| SHEET INDEX | |
|-------------|-----------------------------|
| SHEET | DESCRIPTION |
| T-1 | TITLE PAGE / SPECIFICATIONS |
| P-1 | PLAN VIEW |
| 1-1/1-2 | WALL 1 |
| 2-1 | WALL 2 |
| D-1 | GRAVITYSTONE EDGE DETAILS |

GENERAL NOTES:

SUGGESTED QUALITY ASSURANCE PROVISIONS:

1. WALL CONSTRUCTION SHALL BE SUPERVISED BY A QUALIFIED ENGINEER OR TECHNICIAN TO VERIFY FIELD AND SITE SOIL CONDITIONS. IF THIS WORK IS NOT PERFORMED BY THE SITE GEOTECHNICAL ENGINEER, A QUALIFIED GEOTECHNICAL ENGINEER/TECHNICIAN SHALL BE CONSULTED IN THOSE MATTERS PERTAINING TO THE SOIL CONDITIONS AND WALL PERFORMANCE.
2. THE FOUNDATION SOILS AT THE BASE OF THE WALL(S) SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER. ANY UNSUITABLE SOILS OR IMPROPERLY COMPACTED EMBANKMENT MATERIAL SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER PRIOR TO WALL CONSTRUCTION TO PROVIDE ADEQUATE BEARING CAPACITY AND MINIMIZE SETTLEMENT.
3. ALL WALL EXCAVATION AND RETAINED SOILS SHALL BE INSPECTED FOR GROUNDWATER CONDITIONS. ANY ADDITIONAL DRAINAGE PROVISIONS REQUIRED IN THE FIELD SHALL BE INCORPORATED INTO THE WALL CONSTRUCTION AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
4. WALL BACKFILL MATERIAL SHALL BE TESTED AND APPROVED BY THE ENGINEER, MEETING THE MINIMUM REQUIREMENTS OF THE APPROVED DESIGN PLANS OR SPECIFICATIONS.
5. ALL SOIL BACKFILL SHALL BE TESTED BY THE GEOTECHNICAL ENGINEER FOR MOISTURE, DENSITY, AND COMPACTION PERIODICALLY (EVERY 2' VERTICALLY, 100'-200' C/C) MEETING THE MINIMUM REQUIREMENTS OF THE APPROVED DESIGN PLANS OR SPECIFICATIONS.
6. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN QUALITY CONTROL FOR THE CONSTRUCTION OF THE WALL TO ASSURE COMPLIANCE WITH CONTRACT REQUIREMENTS AND MAINTAIN RECORDS OF ITS QUALITY CONTROL.
7. ALL WALL ELEVATIONS, GRADES, AND BACK SLOPE CONDITIONS SHALL BE VERIFIED BY THE ENGINEER IN THE FIELD FOR CONFORMANCE WITH APPROVED DESIGN PLANS. ANY REVISIONS TO THE STRUCTURE GEOMETRY OR DESIGN CRITERIA SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.
8. SURFACE WATER SHALL BE DIVERTED AWAY FROM THE RETAINING WALL AND WALL REINFORCED ZONE. WHERE WATER CANNOT BE DIVERTED, NOTIFY THE ENGINEER FOR DESIGN OF A SWALE TO DIVERT THE FLOW OR A DROP BOX TO DRAIN THE WATER THROUGH THE WALL.

PART 1: GENERAL

1.01 Description

- The work to be performed includes sourcing, providing and installing concrete retaining wall blocks to the lines and grades as specified on the project construction drawings and as may be further specified herein.
- Work includes preparing foundation soil, furnishing and installing leveling pad, unit fill and backfill to the lines and grades shown on the construction drawings.
- Work includes furnishing and installing all related materials required for construction of the retaining wall as shown on the construction shop drawings.

1.02 Reference Standards

- ASTM D448 Sizes of Aggregate for Road and Bridge Construction.
- ASTM D698 Laboratory Compaction Characteristics using Standard Effort.

1.03 Quality Assurance

- Owner shall be responsible for soil testing and inspection quality control during earthwork operations.

PART 2: MATERIALS

2.01 Definitions

- Retaining Wall Unit - A segmental concrete facing block that is able to be arranged, stacked, placed, combined, or interchanged easily into an assembled wall system.
- Leveling Pad - A compacted crushed stone pad which serves as a flat surface for placing the initial course of precast units.
- Granular Aggregate - Clean 1" minus crushed angular rock located within and immediately behind the retaining wall units to facilitate drainage and avoid compaction in close proximity to the retaining wall units.
- Joint Geotextile - A filter fabric installed to prevent infill and/or backfill material from migrating through the joints.
- Foundation Soil - Soil zone immediately beneath the retaining wall facing units, the wall leveling pad and the reinforced soil zone.
- Retained Soil - Soil immediately behind the retaining wall facing drainage aggregate or reinforced backfill if present.
- Subsurface Drainage System - A system for removing water from behind the wall and channeling it to a point of positive drainage.

2.02 GravityStone Edge

- GravityStone Edge wall units shall have a minimum 28-day compressive strength of 3,000 psi.
- Texture on the face of the block shall be specified. Other surfaces to be smooth form type.

2.03 Base Leveling Pad Material

- Material shall consist of compacted crushed stone as shown on the construction drawing.

2.04 Gravel Layer

- Gravel layer shall consist of clean 1" minus crushed stone or crushed gravel meeting the following gradation:

| Sieve Size | % Passing |
|------------|-----------|
| 1" | 100 |
| 3/4" | 100-75 |
| No. 4 | 0-10 |
| No. 50 | 0-5 |

2.05 Retained Backfill

- Backfill shall be free of debris or organic material. Plasticity Index (PI) < 20 and Liquid Limits (LL) < 40
- Material can be site excavated material when the above requirements are met. Unsuitable soils for backfill (high plastic clays or organic materials) shall not be used in the retained soil mass.

PART 3: EXECUTION

3.01 Excavation

- Contractor shall excavate to the lines and grades shown on the construction drawings. Contractor shall be careful not to disturb embankment and foundation materials beyond lines shown.

3.02 Foundation Soil Preparation

- Foundation soil shall be excavated as required for leveling pad dimensions shown on the construction drawings, or as directed by the Geotechnical Engineer.
- Unsuitable soils shall be removed and replaced with acceptable material.
- Over-excavated areas shall be backfilled with approved compacted backfill material.

3.03 Base Leveling Pad

- Leveling pad materials shall be placed upon approved foundation as shown on the construction drawings to a minimum thickness of 6".
- Aggregate material shall be compacted to provide a dense, level surface on which to place the first course of modular units. Compaction shall be to 95% of Standard Proctor Density as determined in accordance with ASTM D698. For crushed rock, material shall be densely compacted as determined by visual observation.

3.04 Unit Installation

- The first course of concrete modular wall units shall be carefully placed on the base leveling pad. Each unit shall be checked for level and alignment.
- Units are placed side by side for full length of wall alignment. Alignment may be done by means of a string line or offset from a base line.
- Sweep excess material from top of units and install next course. Ensure that each course is completely unit filled between and 12" behind block. Backfill and compact prior to proceeding to next course.

3.05 Fill Placement

- Backfill material shall be placed with a maximum of 8" lifts and compacted to 95% of Standard Proctor Density. As determined in accordance with ASTM D698. The in place moisture content shall not exceed the optimum moisture content as determined in accordance with ASTM D698 and be no lower than 2% below optimum moisture content.
- Only hand-operated compaction equipment shall be allowed within 3' of the back surface of the concrete units.

Project Name and Address

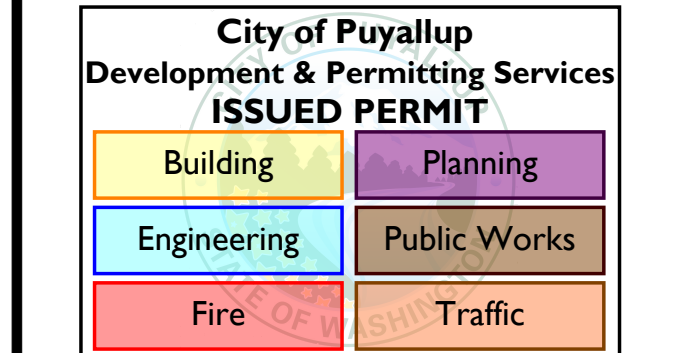
**PUYALLUP CORPORATE PARK
PUYALLUP, WA**

Firm Name and Address

RACE ENGINEERING ASSOC.
4851 Four Seasons Ct
Eagan, MN 55122
e: rrace@rea-llc.com
t: 612-670-7009

DESIGN INFORMATION PROVIDED FOR INTERNAL STABILITY ONLY. EXTERNAL STABILITY, INCLUDING BUT NOT LIMITED TO FOUNDATION SETTLEMENT, GLOBAL STABILITY AND SLOPE STABILITY ARE THE RESPONSIBILITY OF THE OWNER AND OWNER'S ENGINEER.

General Notes



No. Revision/Issue Date

PROFESSIONAL SIGNATURE



SHEET TITLE

TITLE PAGE/SPECIFICATIONS

Project

20-006-04

Date

2/24/2021

Scale

Sheet

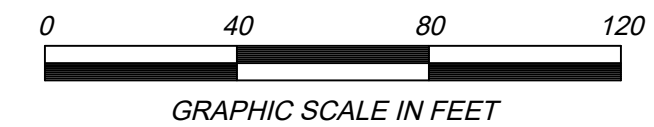
T-1

SCALE: 1"=40'

WITH THE ANNULAR SPACE BETWEEN THE SLEEVE AND THE STORMWATER PIPE FILLED WITH GROUT.

GENERAL DESIGN NOTES:

THE SITE PLAN IS FOR ILLUSTRATION ONLY. IT WAS REPRODUCED FROM " GRADING AND DRAINAGE PLAN, PUYALLUP CORPORATE PARK, PUYALLUP, WA., BARGHANUSEN CONSULTING ENGINEERS, INC., JOB NO 20705, SHEET C4, 1/25/2021.



The west retaining wall (wall 1) shall connect retaining wall footing drain to storm catch basin #15, and the east retaining wall (wall 2) shall connect the retaining wall footing drain to storm catch basin #9 as depicted on the approved civil plans.

APPROVED PLAN CITY OF PUYALLUP PLANNING DIVISION APPROVED BY: Chris BEALE DATE: 03/29/2022 PRRWF20220381

City of Puyallup Development & Permitting Services ISSUED PERMIT Building Planning Engineering Public Works Fire Traffic

PRRWF20220381 City of Puyallup Development Engineering APPROVED

See permit conditions. ycharitou 03/28/2022 2:13:12 PM

Civil Permit E-20-0137

The applicant and contractor shall comply with the Geotechnical Report (project No. T-8222) prepared by Terra Associates, Inc. for Panattoni Development Company dated July 13, 2020.

Call Before You Dig. It's the law. Dial 811 or call 1-800-424-5555.

Prior to starting site work, request an erosion and sediment inspection through the CityView portal.

Refer to the City standard details 02.03.02 & 05.02.01 for typical erosion and sedimentation control methods.

Project Name and Address PUYALLUP CORPORATE PARK PUYALLUP, WA

Firm Name and Address RACE ENGINEERING ASSOC. 4851 Four Seasons Ct Eagan, MN 55122 e: rrace@rea-llc.com t: 612-670-7009

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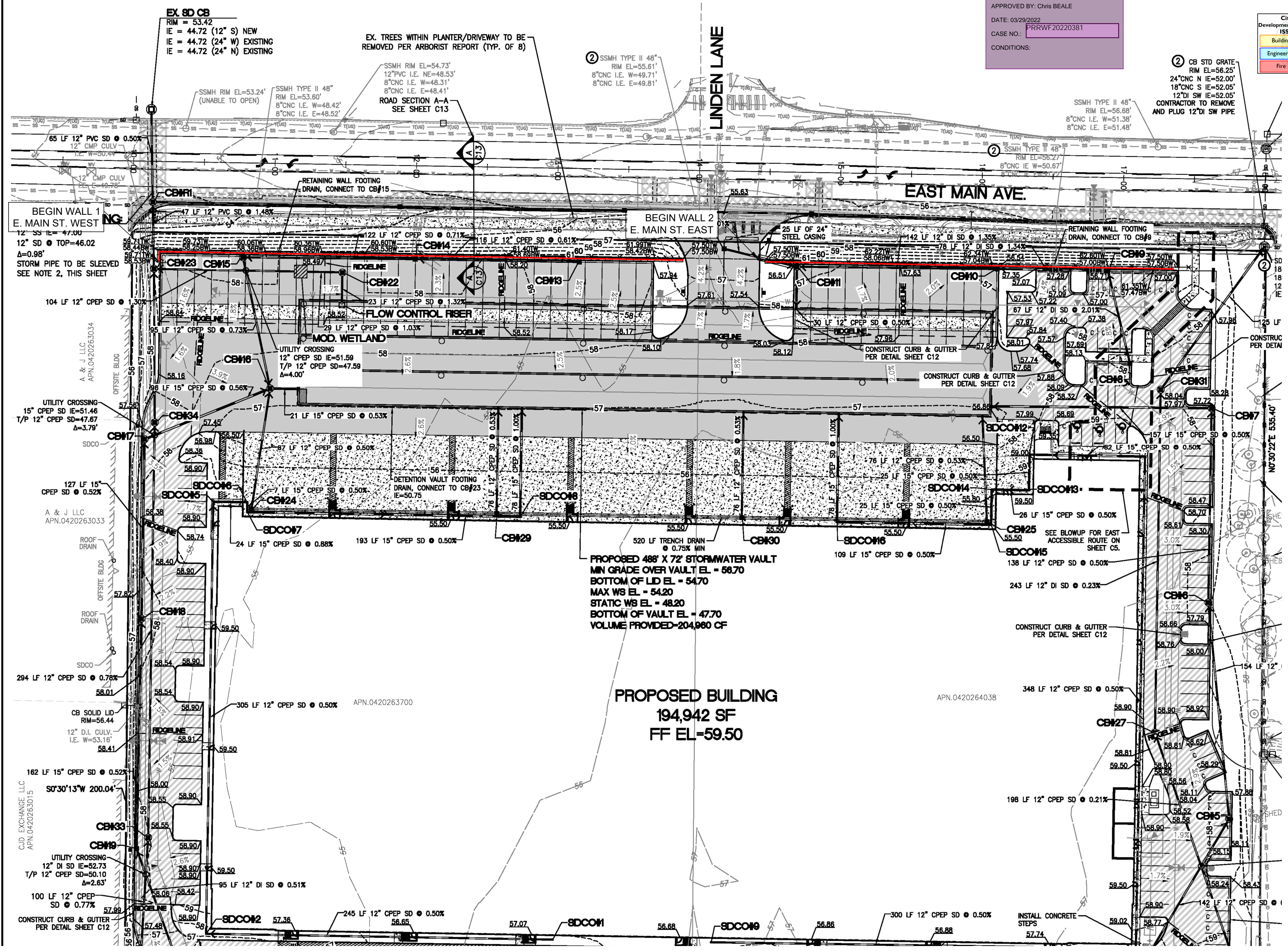
City of Puyallup Development & Permitting Services ISSUED PERMIT Building Planning Engineering Public Works Fire Traffic

Table with 3 columns: No., Revision/Issue, Date

PROFESSIONAL SIGNATURE ROBERT J. RACE STATE OF WASHINGTON PROFESSIONAL ENGINEER

SHEET TITLE PLAN VIEW

Table with Project (20-006-04), Date (2/24/2021), Sheet (P-1), and Scale



PROPOSED BUILDING 194,942 SF FF EL=59.50

PROPOSED 48' X 72' STORMWATER VAULT MIN GRADE OVER VAULT EL = 58.70 BOTTOM OF LID EL = 54.70 MAX WS EL = 54.20 STATIC WS EL = 48.20 BOTTOM OF VAULT EL = 47.70 VOLUME PROVIDED-204,960 CF

Project Name and Address

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PUYALLUP, WA**

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General Notes

**City of Puyallup
Development & Permitting Services
ISSUED PERMIT**

| | |
|-------------|--------------|
| Building | Planning |
| Engineering | Public Works |
| Fire | Traffic |

| No. | Revision/Issue | Date |
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SHEET TITLE

WALL 1

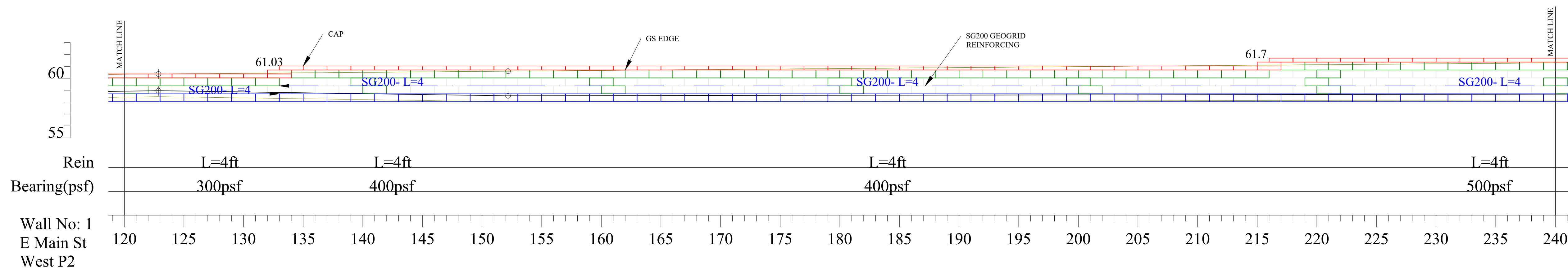
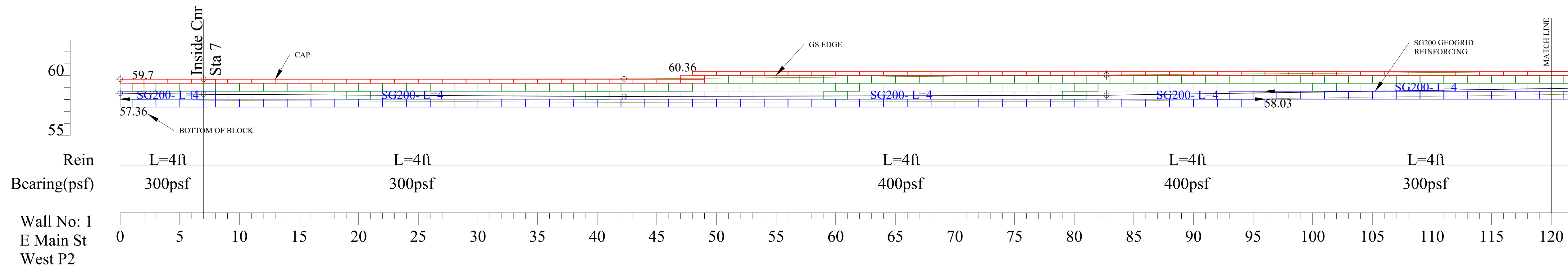
Project
20-006-04

Date
2/24/2021

Scale

Sheet

1-1



Project Name and Address

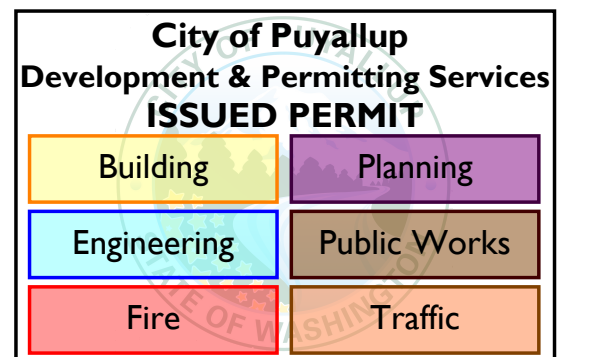
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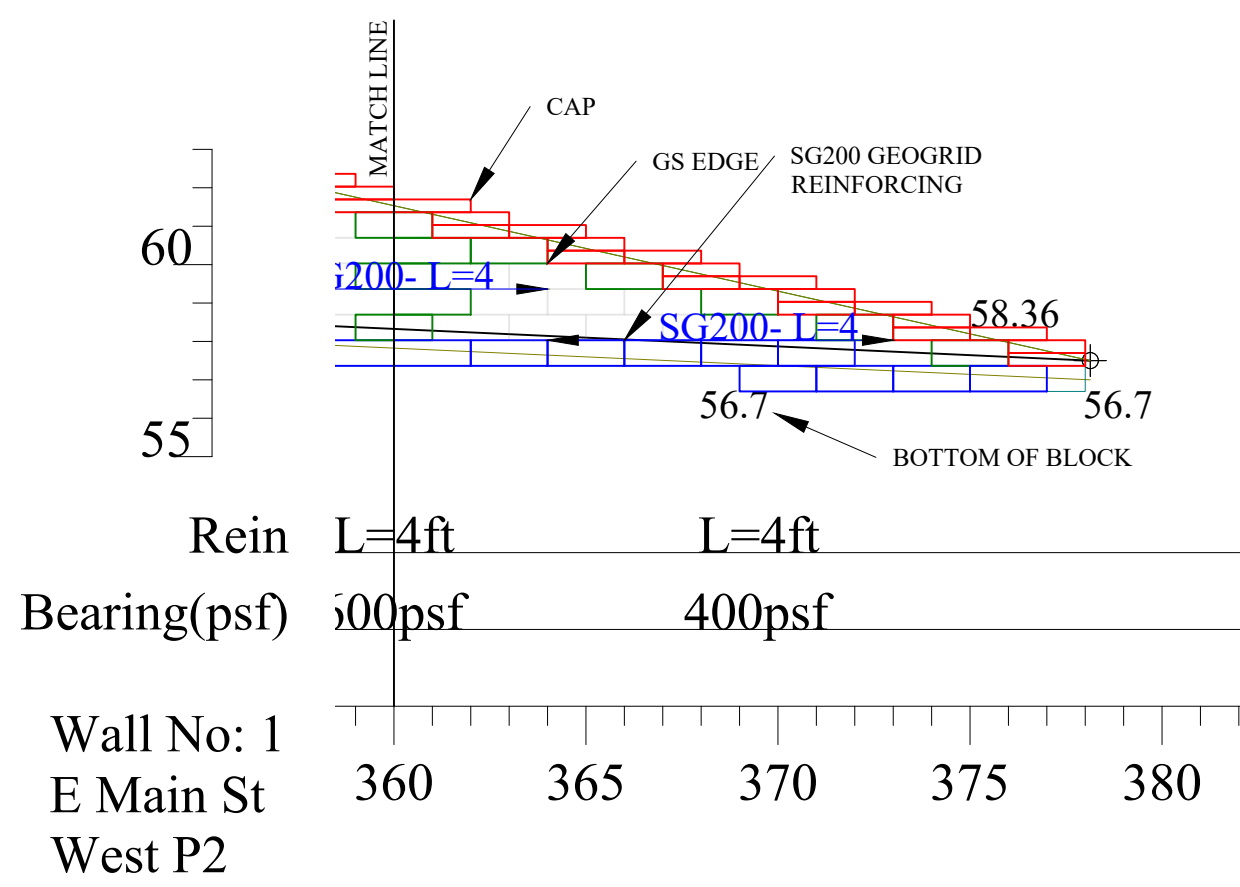
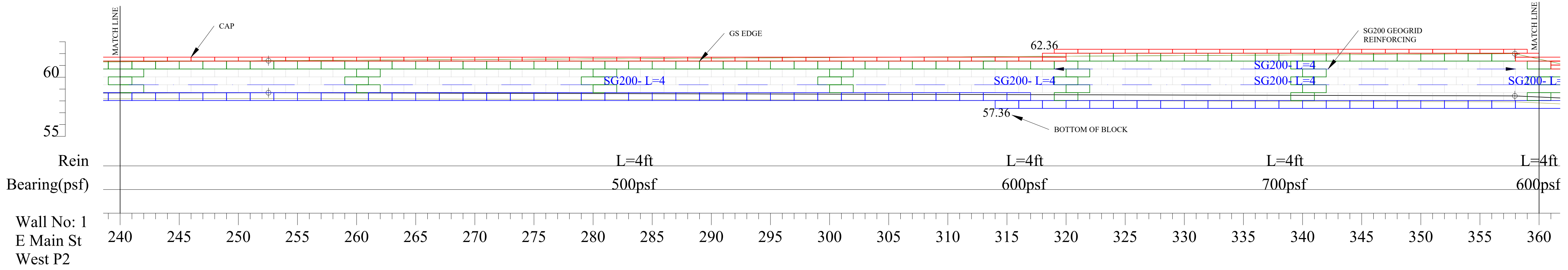
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SHEET TITLE

WALL 1

| | |
|----------------------|--------------|
| Project 20-006-04 | Sheet 1-2 |
| Date 2/24/2021 | |
| Scale | |



PUYALLUP CORPORATE PARK
11/15/20
RACE

Project Name and Address
PUYALLUP CORPORATE PARK
PUYALLUP, WA

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General Notes

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

| | |
|-------------|--------------|
| Building | Planning |
| Engineering | Public Works |
| Fire | Traffic |

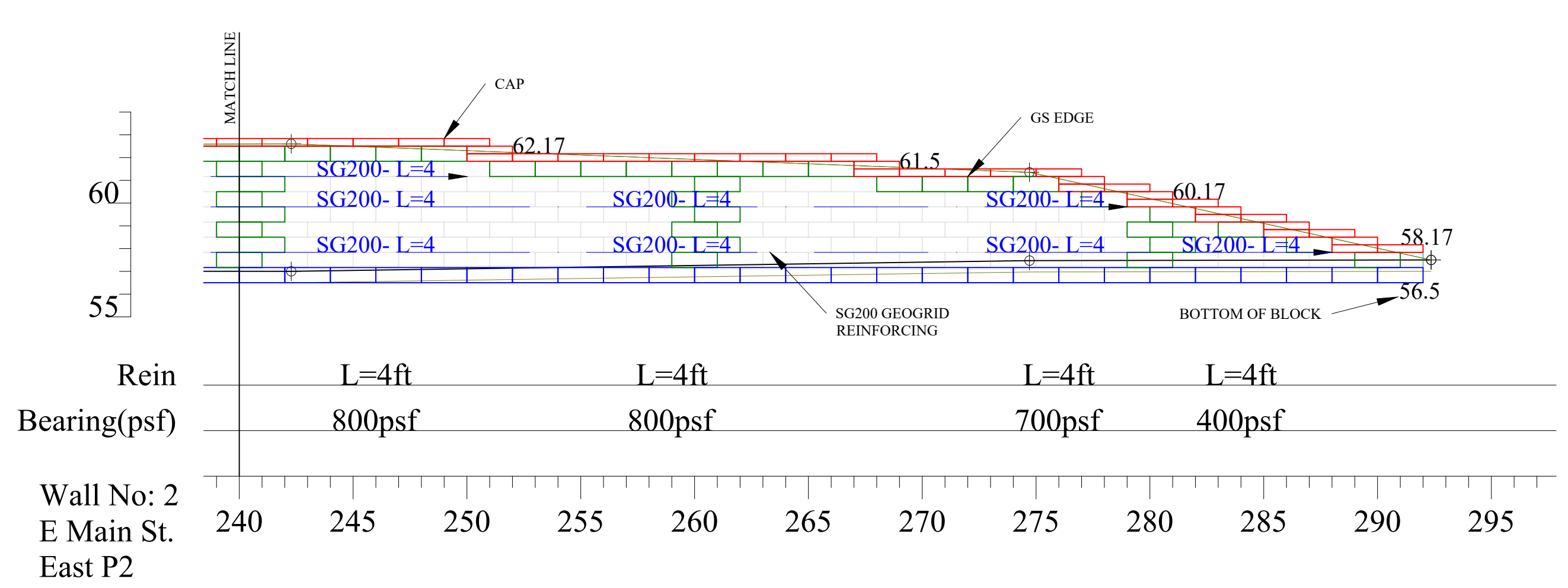
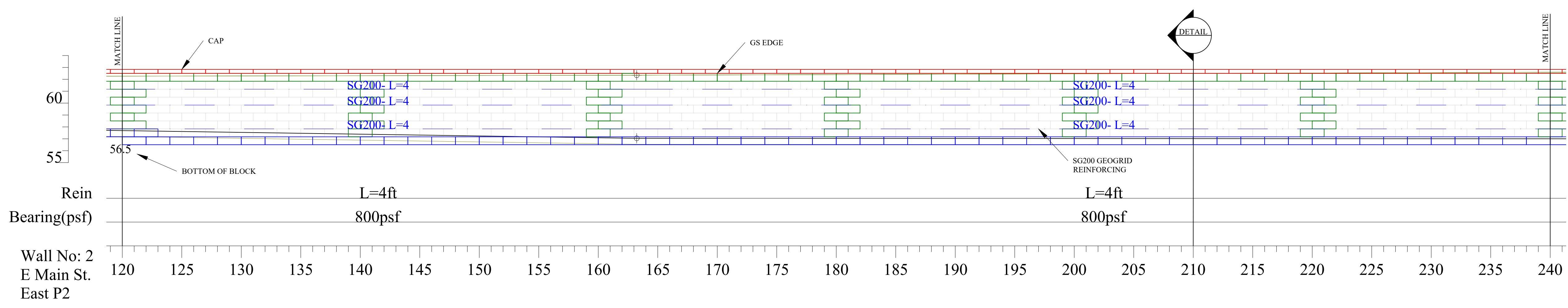
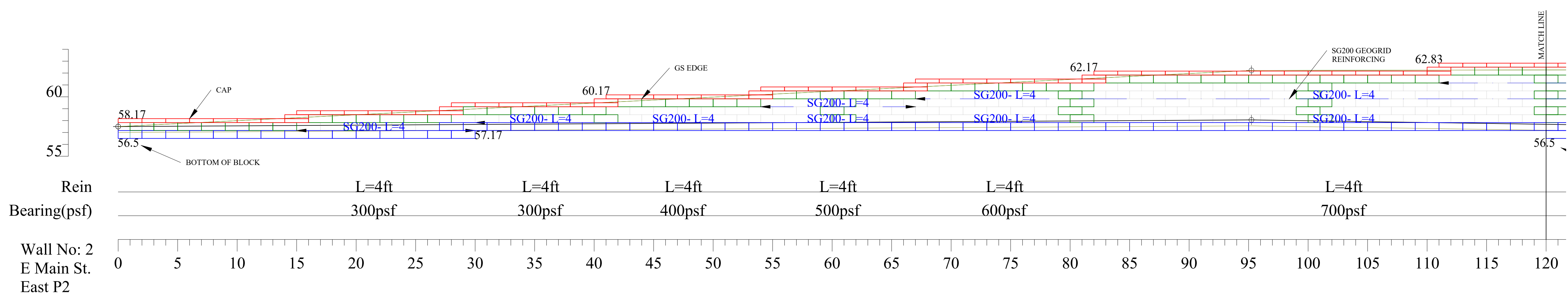
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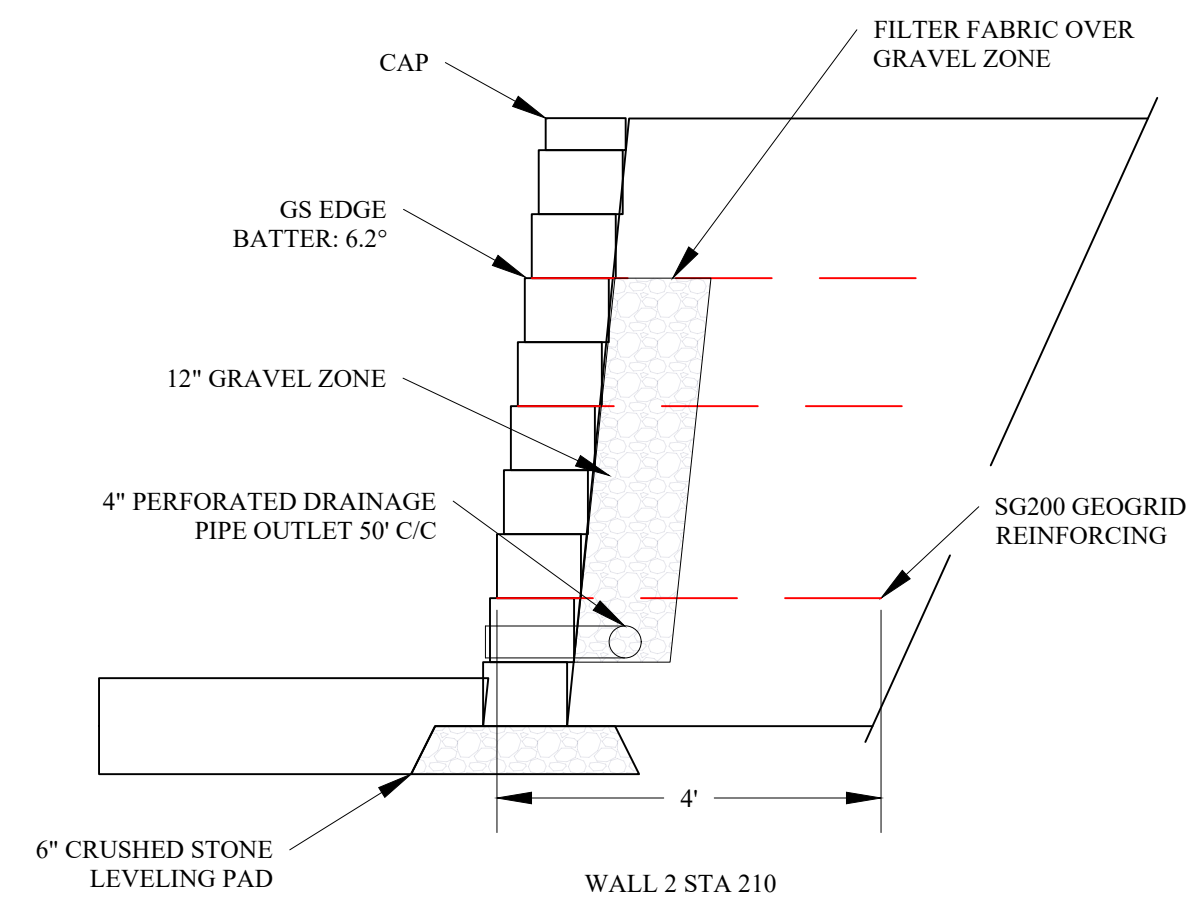


SHEET TITLE
WALL 2

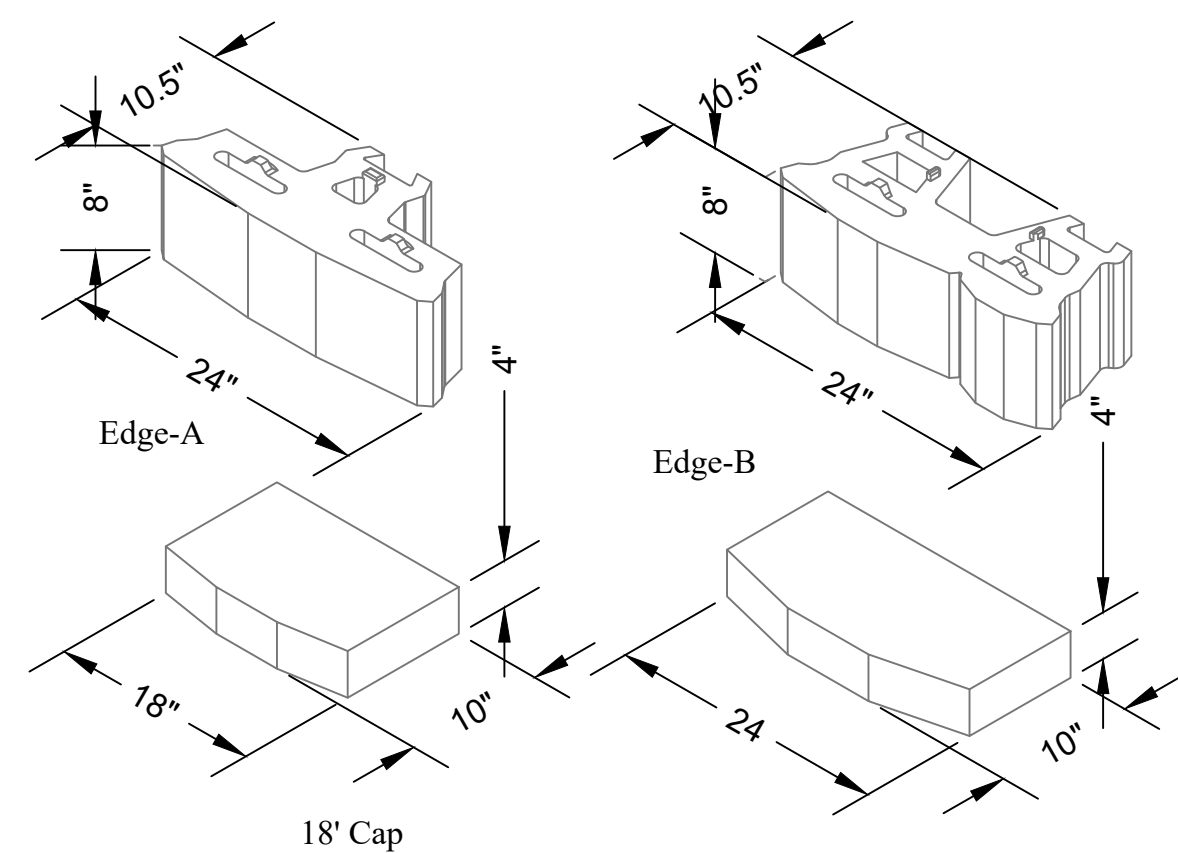
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| Project 20-006-04 | Sheet |
| Date 2/24/2021 | 2-1 |
| Scale | |



11/15/20 PUYALLUP CORPORATE PARK RACE



1. THE SECTION SHOWN IS A REPRESENTATIVE WALL SECTION. THE WALL HEIGHTS, ELEVATIONS, TOE SLOPES, AND BACK SLOPES VARY ACCORDING TO THE ELEVATION PLAN AND SITE PLAN RESPECTIVELY.
2. UPON EXCAVATION, WHERE UNSUITABLE SOILS ARE FOUND, SUBCUT TO DEPTH "D" AS REQUIRED BY THE ONSITE GEOTECHNICAL ENGINEER AND REPLACE WITH SUITABLE COMPACTED STRUCTURAL FILL TO ACHIEVE THE REQUIRED BEARING CAPACITY. THE STRUCTURAL FILL SHALL BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY.
3. APPROXIMATE LIMITS OF EXCAVATION VARIES. ACTUAL LIMITS AND SIDE SLOPES TO BE DETERMINED BY CONTRACTOR, FIELD CONDITIONS AND OSHA REGULATIONS.
4. THE WALLS SHALL BE CONSTRUCTED WITH GS EDGE UNITS USING THE 6.2° SETBACK.
5. THE DESIGN REQUIRES STRATA SG200 SOIL REINFORCING AT THE ELEVATIONS SHOWN.
6. DO NOT BRING HEAVY COMPACTION OR PAVING EQUIPMENT WITHIN 3' OF THE BACK OF THE RETAINING WALL.
7. SEE MANUFACTURER INFORMATION FOR ADDITIONAL DETAILS ON THE GS EDGE RETAINING WALL SYSTEM.



Project Name and Address

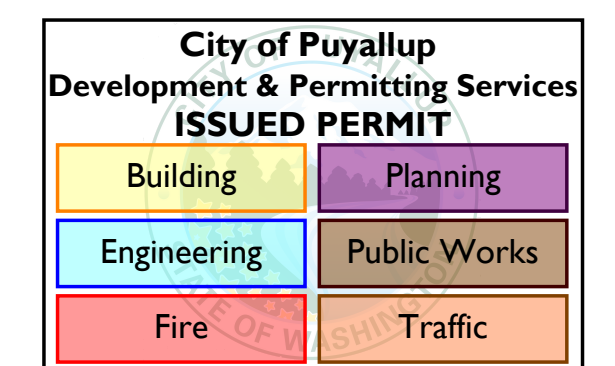
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GRAVITYSTONE EDGE DETAILS

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D-1