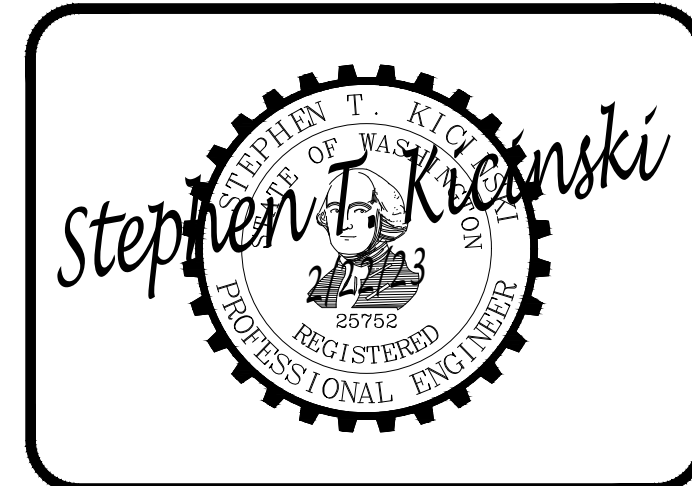


General Notes

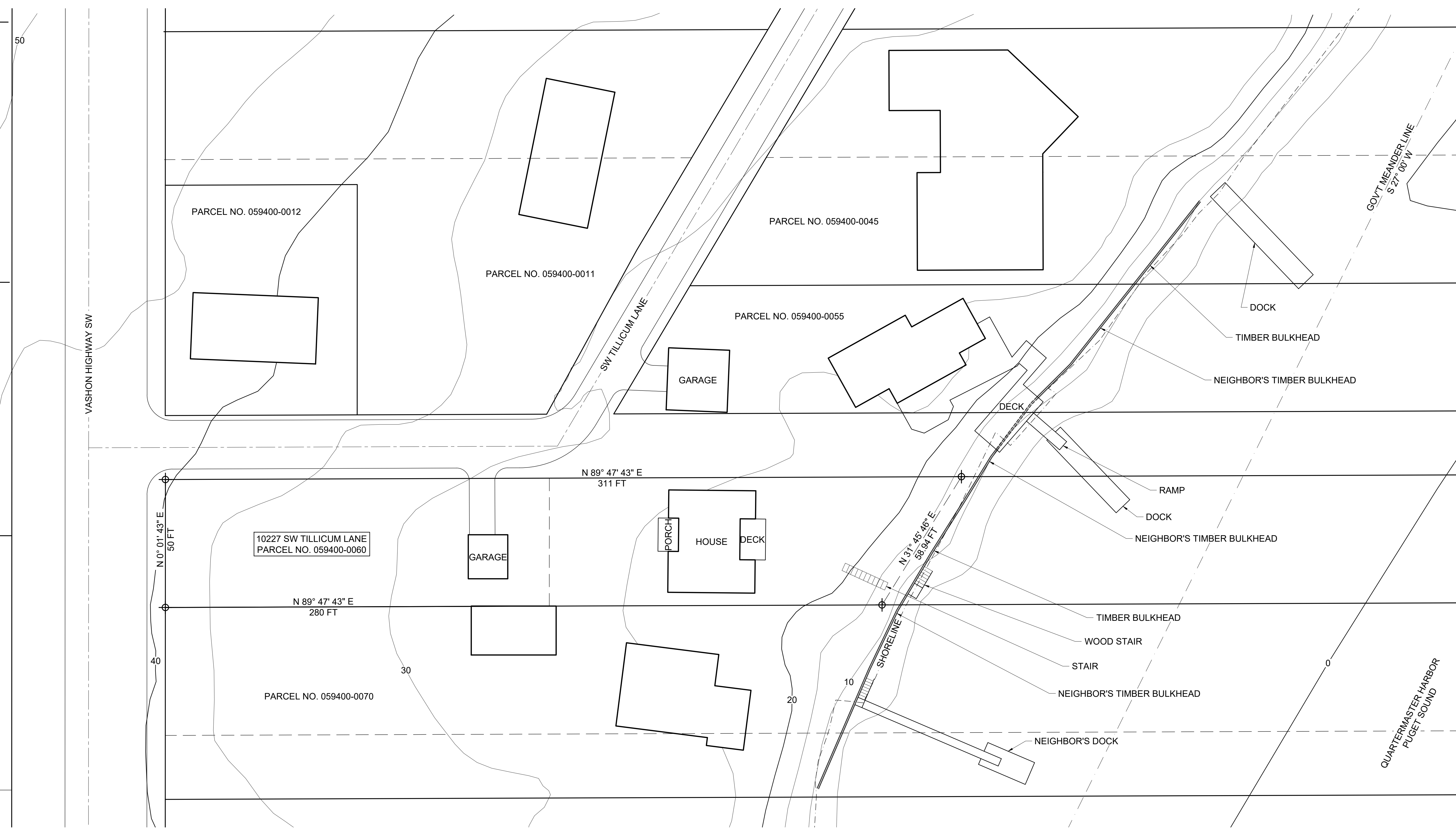
No.	Revision/Issue	Date

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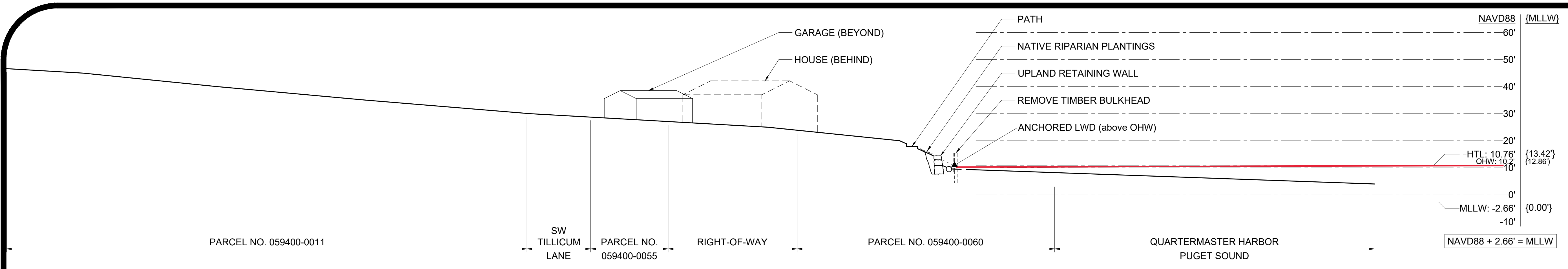
Project Name and Address
FINDLAY SHORELINE PROTECTION
 10227 SW Tillicum Lane
 Vashon, Washington 98070

Project FINDLAY	Sheet C2
Date 22 FEB 2023	
Drafter DSD	Engineer STK



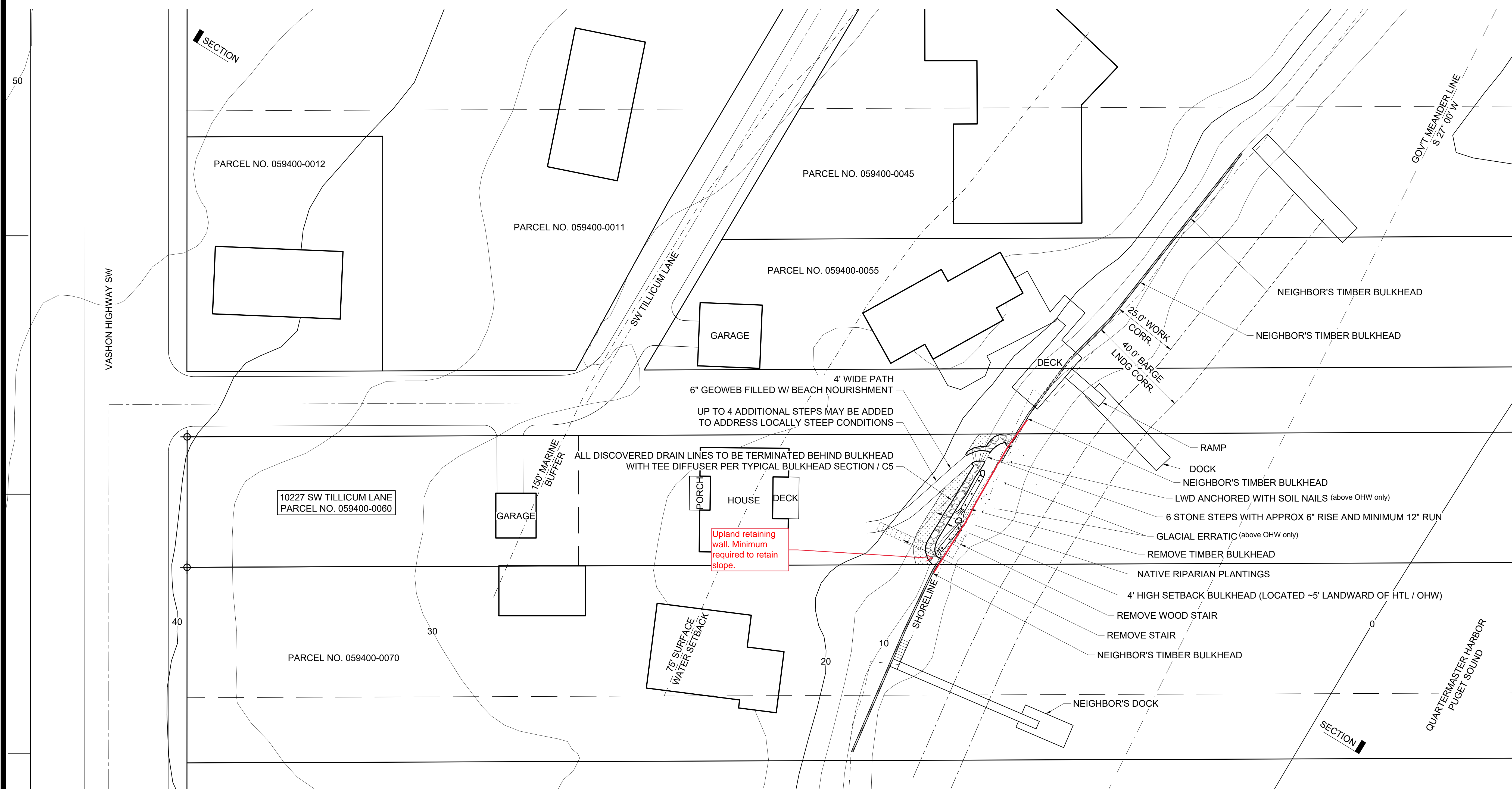
NOTE:
 SITE PLAN HAS BEEN ESTABLISHED THROUGH KING COUNTY GIS INFORMATION, QUARTER SECTION MAP qs. NE182203, AND A 2001 SURVEY BY JEROLD D O'HARE (RECORDING NO. 20011003900009), BUT DOES NOT CONSTITUTE A LEGAL SURVEY AND SHOULD BE CONSIDERED APPROXIMATE ONLY.





SECTION - PROPOSED

1" = 20'-0" 0' 20' 40' 60'



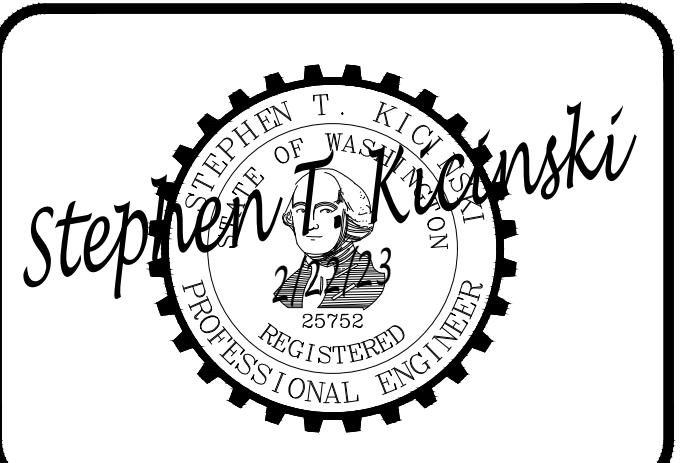
PLAN - PROPOSED

1" = 20'-0" 0' 20' 40' 60'

General Notes

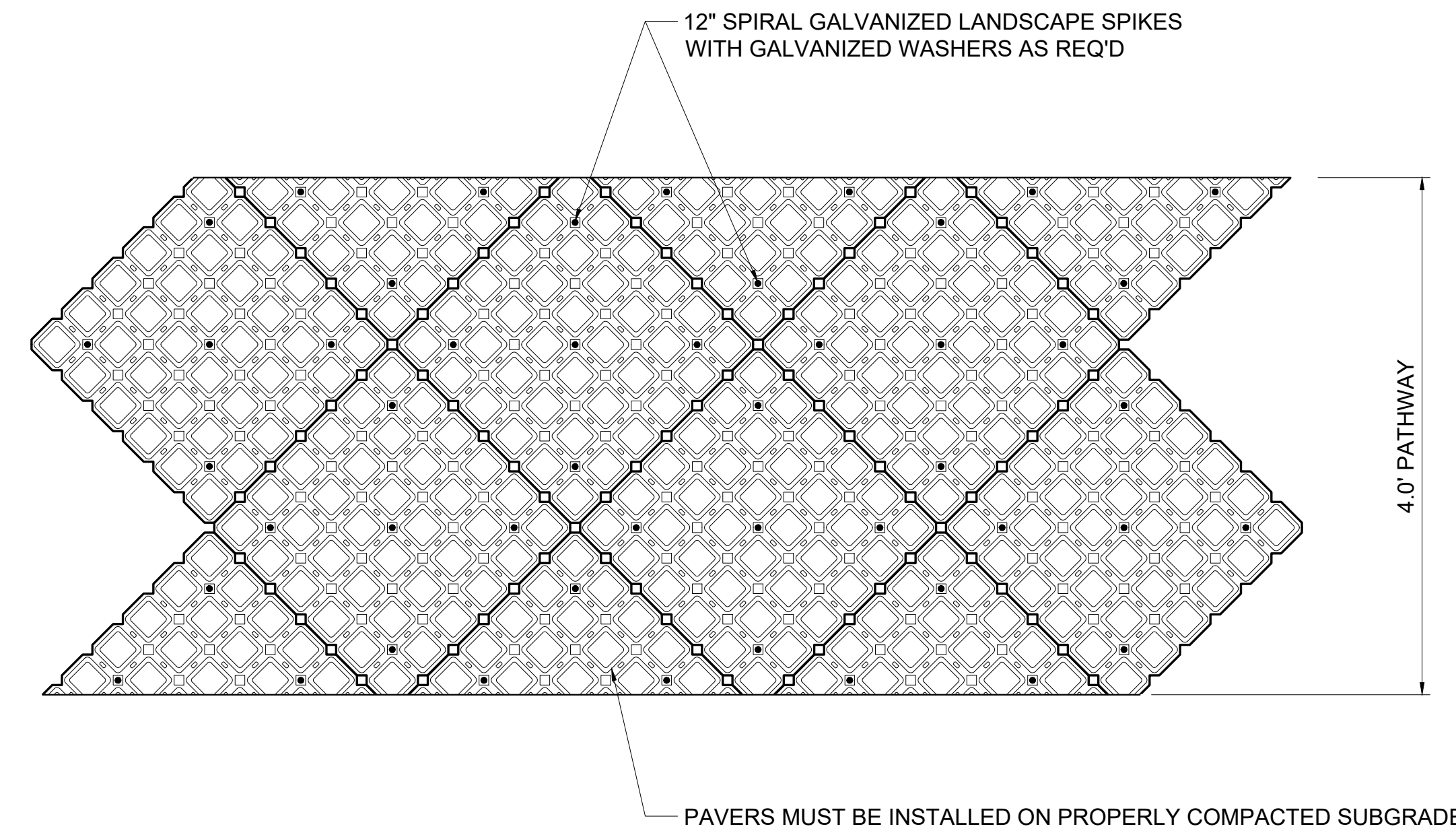
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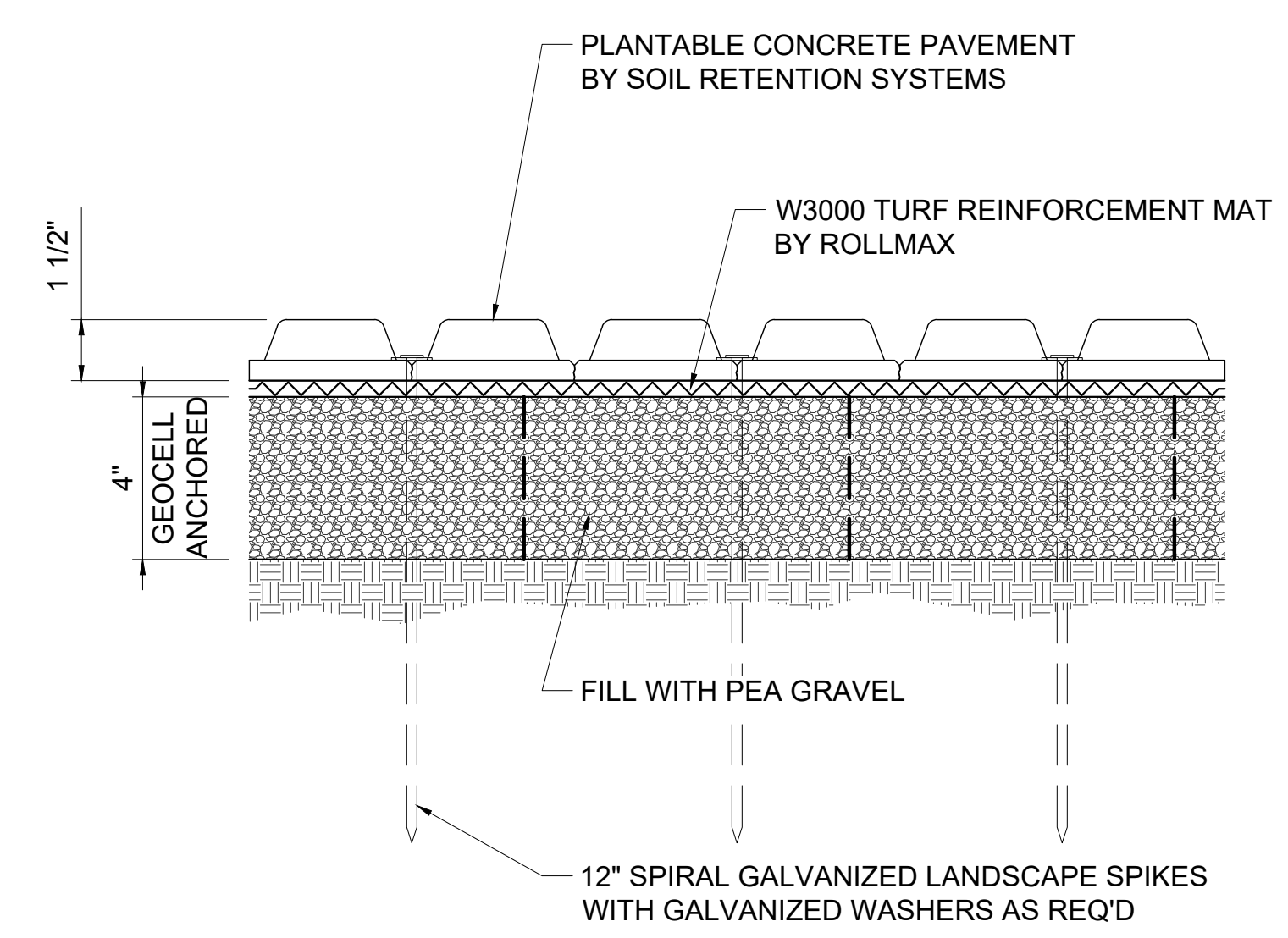


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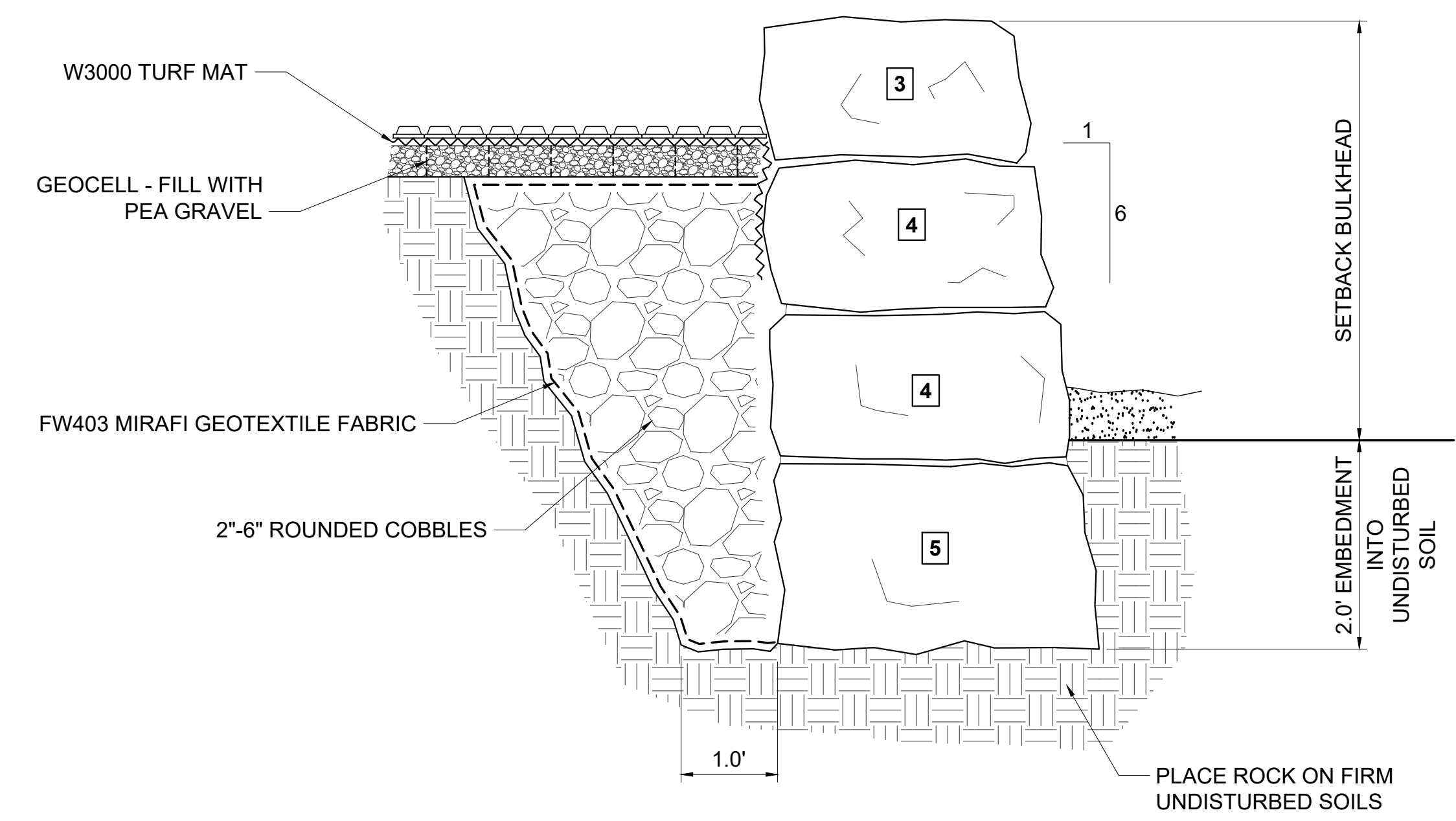
Project FINDLAY	Sheet C3
Date 22 FEB 2023	Engineer STK
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DETAIL 3
1" = 1'-0"



DETAIL 1
NOT TO SCALE



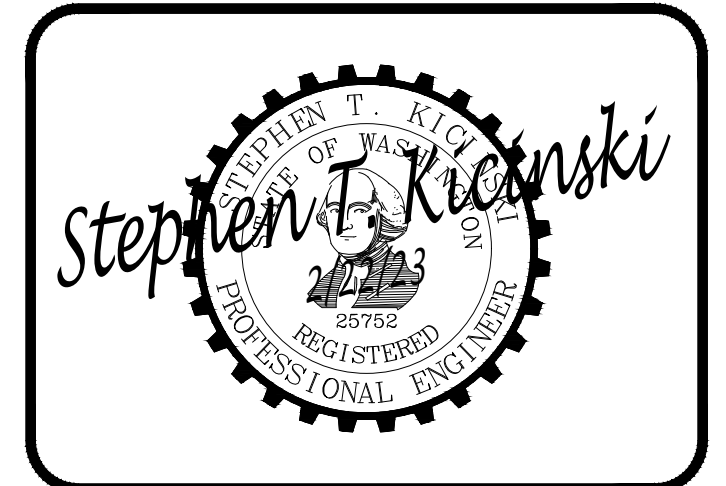
NOTE:
SEE TYPICAL BULKHEAD SECTION / C5
FOR ADDITIONAL ROCK BULKHEAD
CONSTRUCTION INFORMATION

DETAIL 2
NOT TO SCALE

General Notes

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Date 22 FEB 2023	Engineer STK
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PART 1: GENERAL

- THE CONTRACTOR SHALL OBTAIN AND CONFORM TO ALL LOCAL AND STATE PERMITS REQUIRED TO COMPLETE THE WORK. IF PERMIT REQUIREMENTS CONFLICT WITH THESE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND ENGINEER OF RECORD OF ANY CONFLICTS, SO THAT MODIFICATIONS TO THE PLANS CAN BE PROVIDED, AS APPROPRIATE.
- WORK SHALL INCLUDE FURNISHING ALL MATERIALS, LABOR, EQUIPMENT, AND SUPERVISION FOR CONSTRUCTION OF THE ROCK BULKHEAD IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, AND IN GENERAL CONFORMANCE WITH THE LINES, GRADES, DESIGN, AND DIMENSIONS SHOWN ON THE DRAWINGS OR AS ESTABLISHED BY THE OWNER OR THE OWNERS' REPRESENTATIVE.
- THE CONTRACTOR SHALL CONTACT THE ONE-CALL UNDERGROUND UTILITY LOCATION SERVICE AT 1-800-424-5555 TO HAVE ANY AND ALL UTILITIES LOCATED AT LEAST 2 FULL BUSINESS DAYS PRIOR TO BEGINNING SITE EXCAVATION.
- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CONTRACT DOCUMENTS, NOTES AND THE INTERNATIONAL BUILDING CODE.
- DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE ADJACENT PROPERTIES AND DOWNGRADE AREAS.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION PROCEDURES INCLUDING EXCAVATION OF EXCESS SOIL, PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL SAFETY REGULATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES, AND SHALL CHECK AND VERIFY ALL DIMENSIONS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER *IN WRITING* AND SHALL BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
- THE DRAWINGS INDICATE THE TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED, BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED SUBJECT TO REVIEW BY THE STRUCTURAL ENGINEER.
- ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE BUT WITHOUT ANY GUARANTEE OF WARRANTY OF ACCURACY. WHERE ACTUAL CONDITIONS CONFLICT WITH THE DRAWINGS, THEY SHALL BE REPORTED IN WRITING TO THE STRUCTURAL ENGINEER SO THAT PROPER REVISIONS MAY BE DEVELOPED. MODIFICATIONS OF DETAILS OF CONSTRUCTION SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
- ANY AND ALL CONTRACTOR INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR APPROVAL PRIOR TO IMPLEMENTATION OF THE CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THE WORK.
- VEGETATION REMOVAL UPSLOPE FOR THE BULKHEAD SHALL BE MINIMIZED. PRESERVE ALL TREES.
- CONTRACTOR TO MAINTAIN REASONABLE ACCESS TO BOTH PARKING AREA AND PATHWAY TO NEIGHBORING PROPERTIES DURING CONSTRUCTION.
- AT CONSTRUCTION COMPLETION, THE CONTRACTOR SHALL PERFORM FINAL CLEANUP OF THE SITE. FINAL CLEANUP INCLUDES, BUT IS NOT LIMITED TO:
 - REMOVAL OF ALL RUBBISH, SURPLUS MATERIALS AND DISCARDED MATERIALS.
 - REMOVAL AND PROPER DISPOSAL OF ALL TREATED PILES.
 - REMOVAL OF ALL EQUIPMENT.
 - RESTORATION OF PARKING AREA AND ROAD, REMOVING TIRE TRACKS AND FILLING POTHOLES.
 - FINAL GRADING PER PLANS.

PART 2: MATERIALS

- BULKHEAD ROCK SHALL BE NON-WEATHERED, HARD, SOUND, AND DURABLE. ROCK SHALL BE FREE OF SEAMS, CRACKS, AND OTHER DEFECTS THAT REDUCE ITS RESISTANCE TO WEATHER. ROCK SHALL HAVE A MINIMUM DENSITY OF 160 POUNDS PER CUBIC FOOT. THE ROCK TYPE IDENTIFIED BY THE CONTRACTOR SHALL BE APPROVED BY THE OWNER PRIOR TO MOBILIZATION. APPROXIMATE ROCK SIZE IS PRESENTED IN THE TABLE BELOW.
- QUARRY SPALLS SHALL CONSIST OF 2 TO 6 INCH CRUSHED ROCK THAT CONFORMS TO SECTION 9-13.7(2) OF THE 2018 WSDOT STANDARD SPECIFICATIONS.

- PERMEABLE BALLAST SHALL CONFORM TO SECTION 9-03.9(2) OF THE 2018 WSDOT STANDARD SPECIFICATIONS.
- STORMWATER DISPERSION PIPE SHALL CONSIST OF NOMINAL 6-INCH DIAMETER PERFORATED CORRUGATED DOUBLE WALL N-12 HIGH DENSITY POLYETHYLENE (HDPE) PIPE, 6-INCH NOMINAL DIAMETER SDR11 PERFORATED SOLID WALL HDPE PIPE, OR NOMINAL 6-INCH DIAMETER SCHEDULE 40 PVC PIPE. THE PERFORATED DISPERSION PIPE SHALL HAVE A MINIMUM WATER INLET AREA (WIA) OF 1.5 SQUARE INCHES PER LINEAR FOOT OF PIPE. DISPERSION PIPE AND PIPE JOINTS SHALL BE COMPATIBLE WITH REROUTED STORM WATER TIGHTLINE PIPES.
- GEOTEXTILE FILTER FABRIC SHALL CONSIST OF MIRAFI FW403, OR APPROVED EQUIVALENT.
- BEACH NOURISHMENT MATERIAL AND PLACEMENT SHALL CONFORM TO WASHINGTON STATE DEPARTMENT OF FISH AND WILDLIFE PROJECT PERMIT REQUIREMENTS.
- HABITAT MIX MATERIAL MUST BE IN COMPLIANCE WITH THE FOLLOWING SPECIFICATIONS:

SIEVE SIZE	PERCENT PASSING BY WEIGHT
5/8-INCH	100
3/8-INCH	90-100
1/16-INCH	40-50
1/100-INCH (.25MM)	0-5
- ALL HILFIKER SPIRALNAILS SHALL BE FORMED WITH A 90-DEGREE TWIST AT EVERY FOOT. THE SPIRALNAIL SHALL BE MADE FROM 2" SCHEDULE 80 PIPE, GRADE B (MINIMUM TENSILE STRESS 60 KSI, MINIMUM YIELD STRESS 35 KSI, CONFORMING TO THE MINIMUM REQUIREMENTS OF ASTM A-53.
 - DESCRIPTION: 2" SCHEDULE 80 PIPE
 - REQUIREMENT: ASTM A-53
- ANCHORED LOGS SHOULD BE DOUG FIR WITH MINIMUM 24" DIAMETER.
- LOGS SHOULD HAVE ONE ANCHOR FOR EVERY 10' IN LENGTH. MINIMUM TWO PER LOG.

PART 3: DESIGN CRITERIA

- ALLOWABLE BEARING CAPACITY OF 1500 PSF BASED ON THE 2018 INTERNATIONAL BUILDING CODE, UNLESS A SITE-SPECIFIC GEOTECHNICAL ENGINEERING REPORT IS PROVIDED.
- SITE PLAN TOPOGRAPHY WAS OBTAINED FROM KING COUNTY GIS, WHICH USES NAVD88 AS THE VERTICAL DATUM.

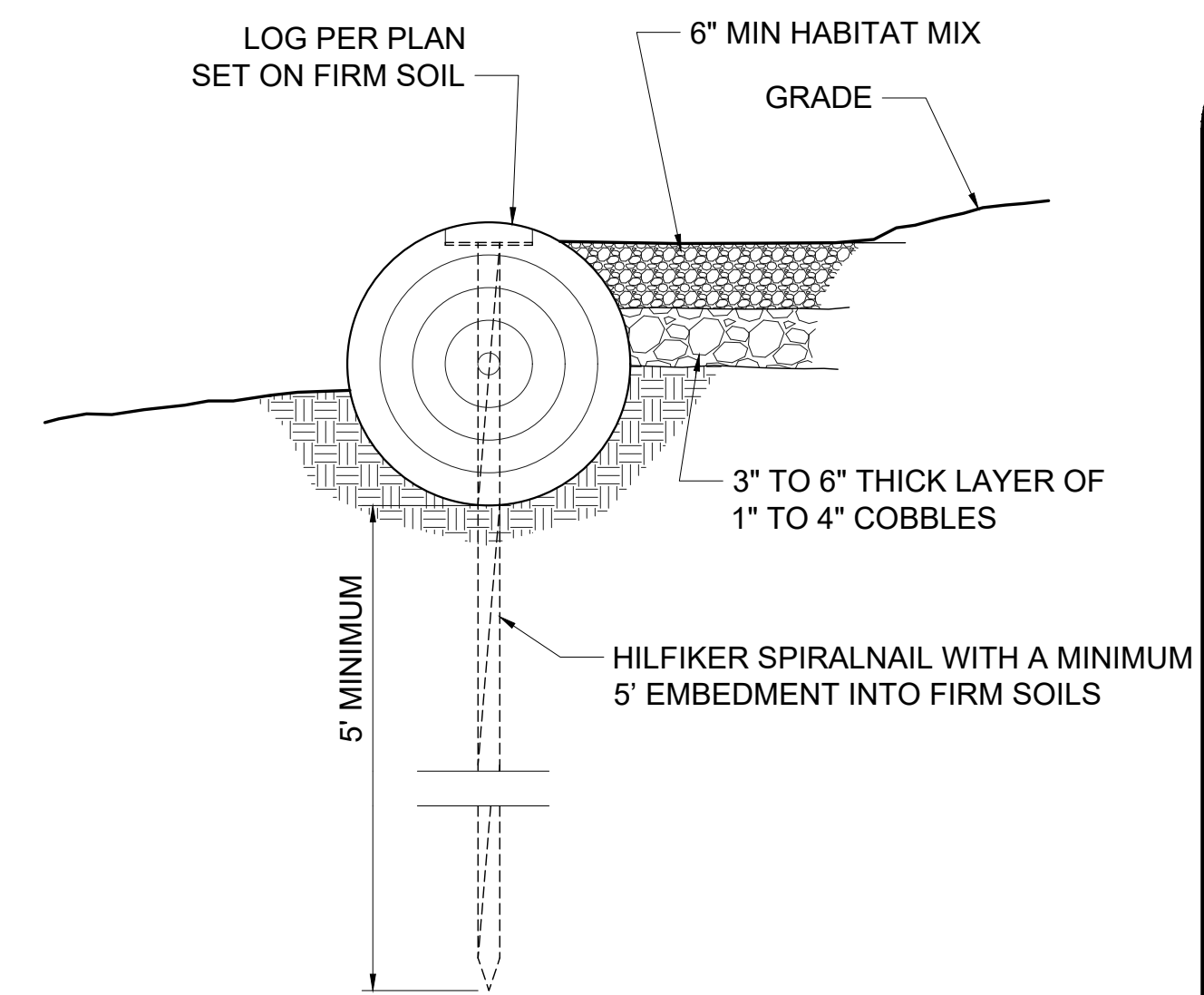
PART 4: EXECUTION

- VERIFICATION OF EXISTING SITE CONDITIONS
 - THE CONTRACTOR SHALL VERIFY ON-SITE GRADES AND CONDITIONS PRIOR TO CONSTRUCTION. THE OWNER AND THE ENGINEER-OF-RECORD SHALL BE IMMEDIATELY NOTIFIED IF ON-SITE CONDITIONS DIFFER FROM THE BULKHEAD DESIGN DRAWINGS.
- EXCAVATION
 - THE CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES REQUIRED FOR CONSTRUCTION OF THE BULKHEAD, AS SHOWN ON THE DESIGN DRAWINGS.
 - THE CONTRACTOR SHALL DIVERT SURFACE WATER AND PROVIDE TEMPORARY DEWATERING AS REQUIRED TO PREPARE THE BULKHEAD'S SUBGRADE SOILS.
 - THE CONTRACTOR SHALL PROTECT EXISTING SITE FEATURES, OFF-SITE FEATURES, AND SITE IMPROVEMENTS FROM DAMAGE DURING CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, THE LARGE TREE NEAR THE BULKHEAD. TEMPORARY EXCAVATION STABILITY AND SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - THE EXISTING SITE SOILS ALONG THE SHORELINE, PRONE TO WAVE AND TIDAL EROSION WHEN EXPOSED, SHALL BE REMOVED FROM THE SITE UNLESS DISPERSAL OF THE SOIL ON THE BEACH AS NOURISHMENT IS PERMITTED BY THE WASHINGTON STATE DEPARTMENT OF FISH AND WILDLIFE.
 - SITE EXCAVATIONS SHALL BE COMPLETED IN SECTIONS TO REDUCE THE POTENTIAL FOR TEMPORARY SLOPE INSTABILITY. ONE CONSTRUCTION SECTION SHALL BE EQUAL TO THE LENGTH OF BULKHEAD THAT CAN BE EXCAVATED, BACKFILLED, AND CONSTRUCTED IN ONE WORK DAY.
- BULKHEAD AND ROCKERY CONSTRUCTION
 - THE BULKHEAD SHALL BE FOUNDED ON FIRM AND UNYIELDING NATIVE SOILS.
 - THE BULKHEAD FACE BATTER SHALL BE 6 VERTICAL TO 1 HORIZONTAL.
 - ROCK SHALL DECREASE IN SIZE FROM THE BOTTOM TO THE TOP OF THE BULKHEAD AT A UNIFORM RATE. REFER TO THE ROCK SIZE DESIGNATION TABLE FOR SPECIFIC ROCK SIZES. CONTRACTOR SHALL NOT SUBSTITUTE A SMALLER ROCK THAN THAT SPECIFIED IN THE TABLE.

- EMBEDMENT OF THE LOWEST COURSE OF ROCK SHALL BE A MINIMUM OF 24 INCHES BELOW EXISTING BEACH ELEVATION AT THE FACE OF THE BULKHEAD.
 - THE LONG DIMENSION OF THE ROCK SHALL EXTEND PERPENDICULAR TO THE ROCK FACE.
 - ROCKS SHALL BE PLACED TO AVOID CONTINUOUS JOINT PLANES IN VERTICAL OR LATERAL DIRECTIONS. EACH ROCK SHALL BEAR ON TWO OR MORE ROCKS BELOW IT, WITH GOOD FLAT-TO-FLAT ROCK CONTACT.
 - QUARRY SPALL BACKFILL BEHIND THE BULKHEAD SHALL BE PLACED BEHIND EACH COURSE AND TAMPED TO PROVIDE A STABLE CONDITION PRIOR TO PLACING ROCKS FOR THE NEXT SUCCESSIVE COURSE.
 - CONTRACTOR TO CHINK ALL GAPS LARGER THAN 2" IN BULKHEAD FROM LANDWARD SIDE TO PREVENT LOSS OF QUARRY SPALLS
 - GEOTEXTILE FABRIC SHALL COVER THE BOTTOM OF THE WALL EXCAVATION, EXTEND UP THE CUT FACE, AND COVER THE TOP OF THE QUARRY SPALL BACKFILL. GEOTEXTILE FABRIC JOINTS SHALL OVERLAP AT LEAST 18 INCHES.
 - ROCK WALLS ARE PRIMARILY EROSION CONTROL STRUCTURES. NATIVE MATERIALS MUST BE STABLE AND FREE STANDING IN CUT FACE.
- 4. QUALITY CONTROL**
- WE RECOMMEND THAT THE OWNER RETAIN THE ENGINEER-OF-RECORD TO PERFORM PERIODIC OBSERVATIONS DURING CONSTRUCTION.
 - THE ABOVE FIELD OBSERVATIONS DO NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO MEET THE MORE STRINGENT OF THE DESIGN DRAWINGS, PERMIT REQUIREMENTS, OR OTHER MANUFACTURER'S REQUIREMENTS.

PART 5: SPECIAL DESIGN PROVISIONS

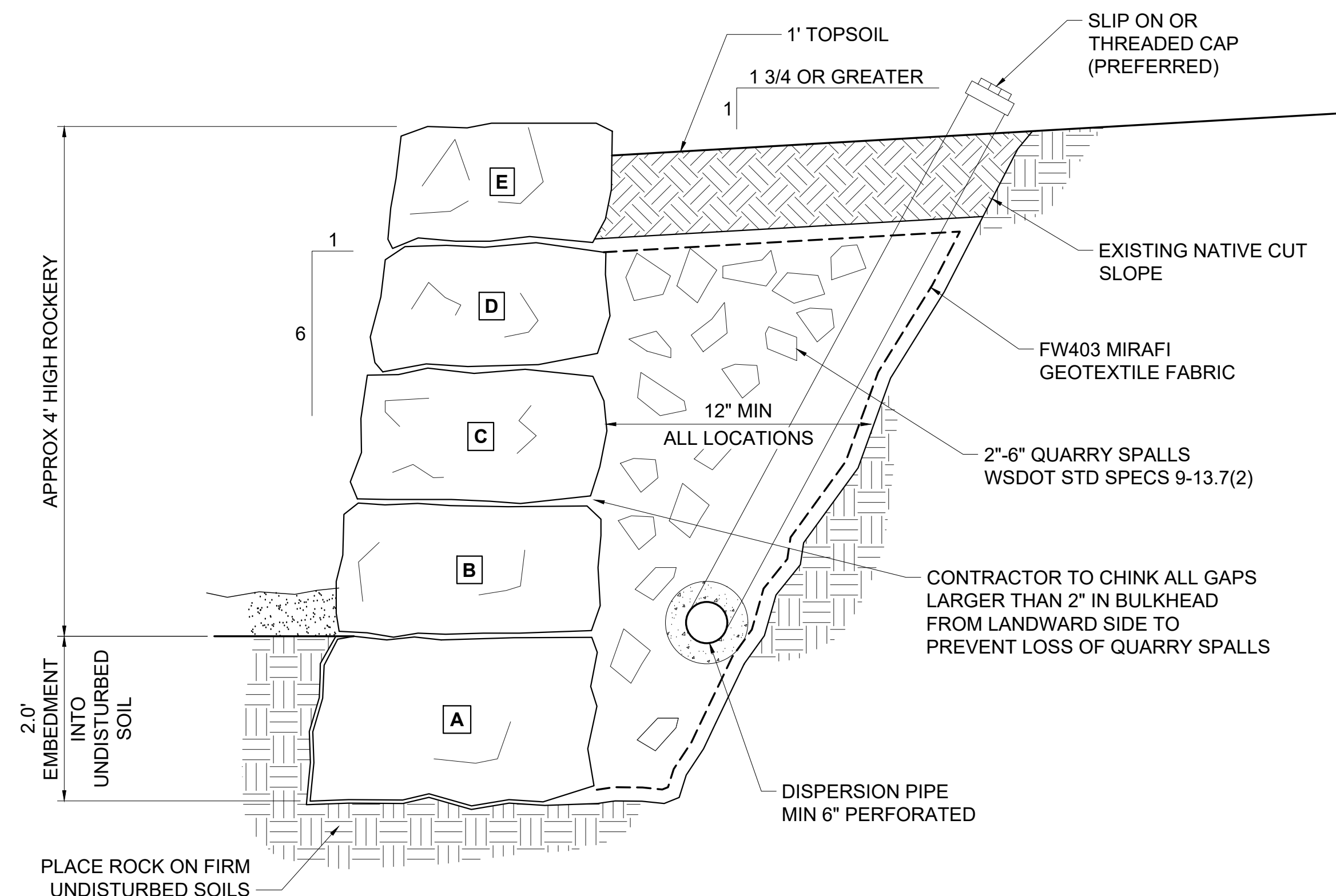
- THE BULKHEAD SHALL BE COMPLETED IN GENERAL ACCORDANCE WITH THESE PLANS AND THE CURRENT EDITION OF THE ASSOCIATED ROCKERY CONTRACTORS (ARC) STANDARD ROCK WALL CONSTRUCTION GUIDELINES.
- IF SITE CONDITIONS OR DESIGN PARAMETERS ARE DIFFERENT THAN WHAT HAS BEEN PRESENTED HEREIN, THE OWNER AND ENGINEER-OF-RECORD SHALL BE NOTIFIED IMMEDIATELY.
- ANY REVISIONS TO DESIGN PARAMETERS OR PROPOSED BULKHEAD GEOMETRY MAY REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.



LOG ANCHORAGE SECTION
NOT TO SCALE

ROCK SIZE DESIGNATION						
WALL HEIGHT (FEET)	HEIGHT ABOVE GRADE (FEET)	A	B	C	D	E
6	4	4	3	3	2	
8	6	5	4	4	3	
10	8	6	5	4	3	3
12	10	6	5	5	4	4
						NUMBER IN TABLE IS EQUAL TO ROCK SIZE

APPROXIMATE ROCK SIZES		
ROCK SIZE	AVERAGE DIMENSION (IN)	ROCK WEIGHT (LBS)
ONE-MAN	12-18	50-150
TWO-MAN	18-28	200-700
THREE-MAN	28-36	700-2,000
FOUR-MAN	36-48	2,000-4,000
FIVE-MAN	48-54	4,000-6,000
SIX-MAN	54-60	6,000-8,000

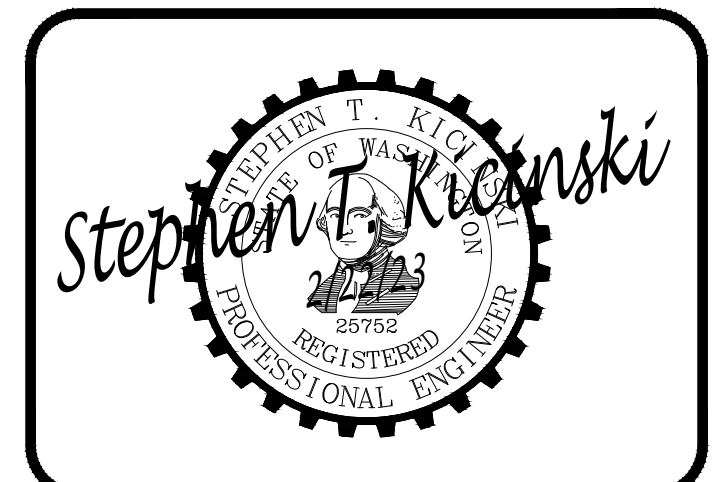


TYPICAL BULKHEAD SECTION
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