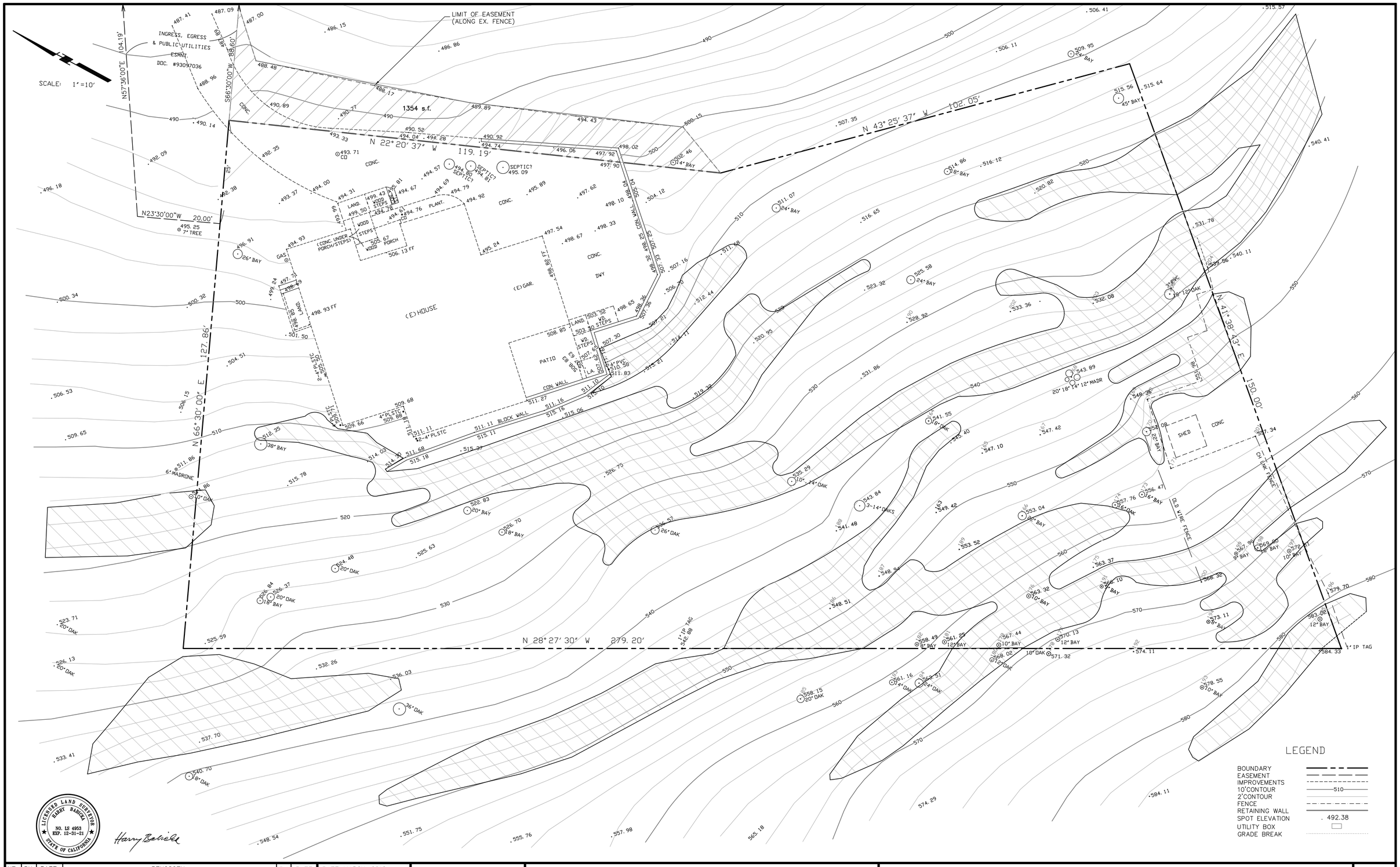

LICENSED LAND SURVEYOR HARRY BABICKA NO. LS 4953 EXP. 12-31-21 STATE OF CALIFORNIA

Harry Babicka

NO.	BY	DATE	REVISION	BY	DATE
		6/19	ADDITIONAL TOPOGRAPHIC SURVEY		
		9/19	ADDITIONAL TOPOGRAPHIC SURVEY		

DATE: MARCH, 2018
SCALE: HOR. 1"=10' VERT.
DESIGNED:
DRAWN: JK
PROJ. ENGR:

BY: HARRY BABICKA L. S. 4953
DATE:

WESTFALL ENGINEERS, INC.
14583 BIG BASIN WAY, SARATOGA, CA 95070 (408)867-0244

TOPOGRAPHIC MAP

250 BONITA ROAD, PORTOLA VALLEY

JOB NO. 2018-002

SHEET 1 OF 1

CALLOUT LEGEND

FINISH SCHEDULE — (X) DESIGN ELEMENT DESCRIPTION — DETAIL PAGE XX / DETAIL # X

FINISH SCHEDULE

SYMBOL	ITEM	MANUFACTURER / SUPPLIER	DESCRIPTION OR MODEL #	COLOR/FINISH	DIMENSIONS
A	DECOMPOSED GRANITE	PBM (408.246.0550)	D.G. PAVING	GOLD FINES	-
B	COLOR CONCRETE	SCOFIELD SYSTEMS (800.8009900)	PAD & STEPS	TBD	-
C	BATU WOOD	T&H BUILDING SUPPLY(650.366.3732)	BATU, FOR ENTRANCE FLOATING STEPS	OILED	-
D	PAVER	CALSTONE (408.246.0550)	QUARRY STONE	CAMERON CREAM	PATTERN: HERRINGBONE 45
F	PAVER	STEPSTONE INC (408.246.0550)	SIDE PATH UPTO NEW LAWN AREA	CAL ARCH PAVER AGAVE #1812	RUNNING BOND, 8"X16"
G	STEEL	-	-	TBD	-
H	PT WOOD	T&H BUILDING SUPPLY(650.366.3732)		BROWN	-
H	KEY STONE	TBD	TBD	TBD	

PLEASE NOTE: ALL THE MATERIALS SELECTED MEETING NEED TO BE CONFIRMED IN THE CD MEETING

LCD1 2 (D) PAVER ON SAND

FLOATING WOOD STEPS W/ LIGHTS SEE STRUCTURAL DRAWINGS

LCD2 3 (H) HANDRAIL STEEL

KEYSTONE WALL, SEE STRUCTURAL DRAWINGS

APPROXIMATE LOCATION OF EXPANSION LEACH LINE

LCD2 4 WOOD SAFETY RAILING H.T. TBD

(B) P.I.P. COL. CONCRETE PAD — LCD1 3

(A) PATHWAY DECOMPOSED GRANITE — LCD1 4

(A) PATHWAY DECOMPOSED GRANITE — LCD1 4

(A,C) P.T. TIMBER STEPS D.G PAVING BETWEEN — LCD1 1

P.I.P. CNCRETE WALL, SEE STRUCTURAL PLANS

(F) PATHWAY PAVER ON SAND — LCD1 2

(C) STAIRS BATU WOOD — LCD2 1

EXISTING KEYSTONE WALL TO BE REMOVED

(H) STEEL RAILING ON TOP OF WALL — LCD2 3

(E) KEYSTONE WALL TO REMAIN

LCD1 4 (A) PATHWAY DECOMPOSED GRANITE

SUBDRAIN (TYP.)

APPROXIMATE LOCATION OF EX. LEACH LINE

KEYSTONE WALL, SEE STRUCTURAL DRAWINGS

P.I.P. CONCRETE WALL, SEE STRUCTURAL DRAWINGS

EXPANSION LEACH FIELD

PROPOSED PRIMARY LEACH LINE (TYPICAL)

NORTH

REGISTERED LANDSCAPE ARCHITECT LOUIS J. MARINKEVI No. 6220 Signature 12/6/2020 Date STATE OF CALIFORNIA EXP 1/31/2021

landsystems
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C27 474943
RLA 3220
1064 Cherry Street, San Carlos, CA 94070
650.851.2793
www.landsystemslandscapes.com

JOB
DUTTA RES.

CONSTRUCTION PLAN

DESIGNER
AC

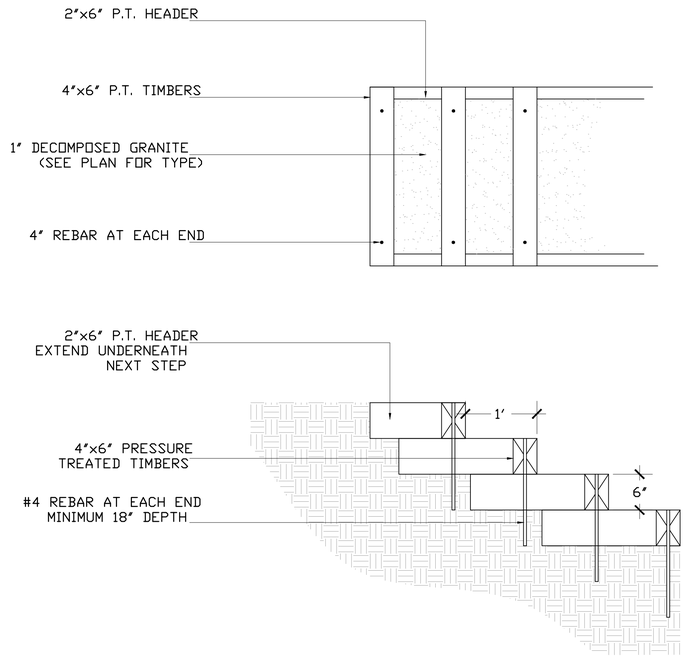
PC
TV

DUTTA RESIDENCE
250 BONITA ROAD,
PORTOLA VALLEY, CA 94028

DATE
02.25.2020
REVISIONS
08.04.2020 1

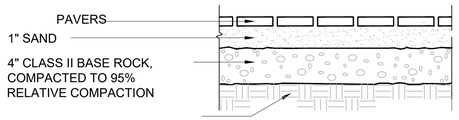
SCALE
1/8" = 1'-0"

SHEET
LCP
CONSTRUCTION PLAN



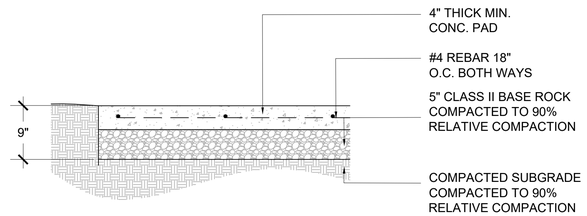
1 D.G. STEPS W/4"x6" PT TIMBERS

SCALE: 1" = 1'- 0"



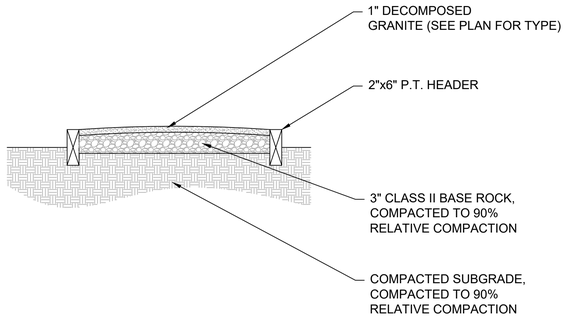
2 PAVER ON SAND

SCALE: 1" = 1'- 0"



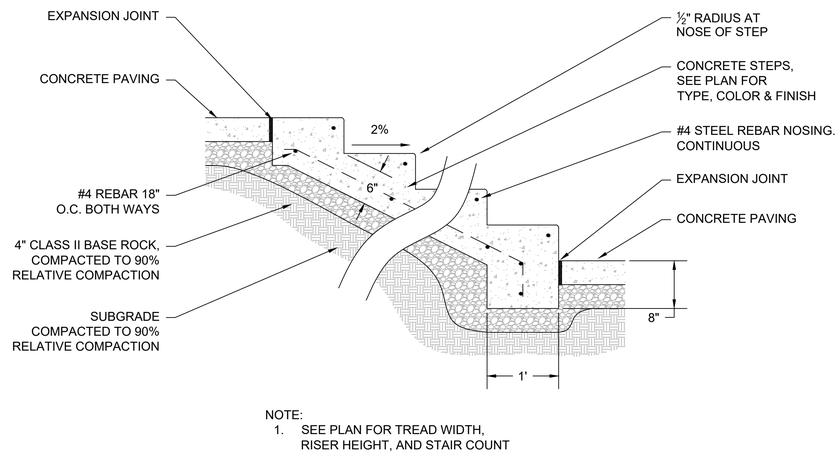
3 CONCRETE PAD

SCALE: 1" = 1'- 0"



4 D.G. PAVING

SCALE: 1" = 1'- 0"



NOTE:
1. SEE PLAN FOR TREAD WIDTH, RISER HEIGHT, AND STAIR COUNT

5 CONC. STEPS

SCALE: 1" = 1'- 0"

landsystems
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C27 474943
RLA 3220
3113 Middlefield Road
Redwood City, CA. 94063-3731
650.851.2793
www.landsystemslandscapes.com

JOB
DUTTA RES.

CONSTRUCTION DETAILS

DESIGNER
AC

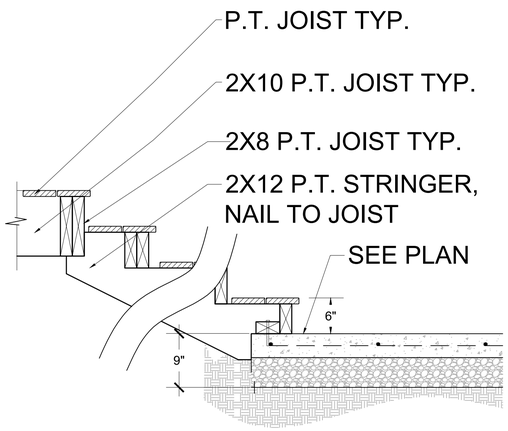
PC
TV

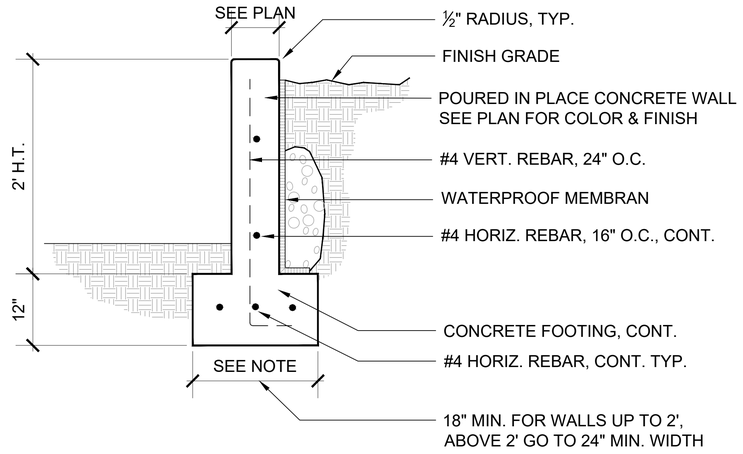
DUTTA RESIDENCE
250 BONITA ROAD
PORTOLA VALLEY, CA 94028

DATE
12.14.17
REVISIONS
2.6.18
2.14.18

SCALE
AS SHOWN

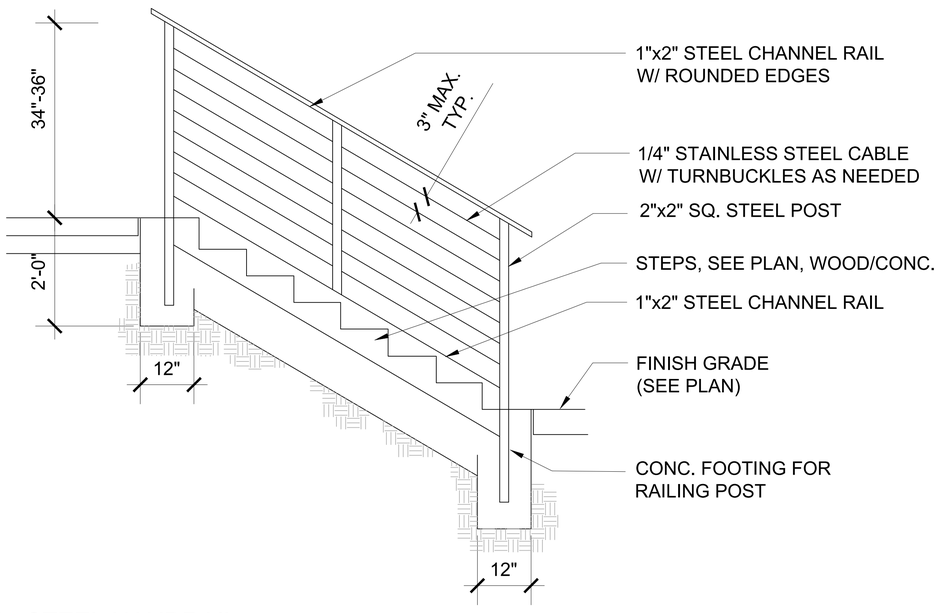
SHEET
LCD1





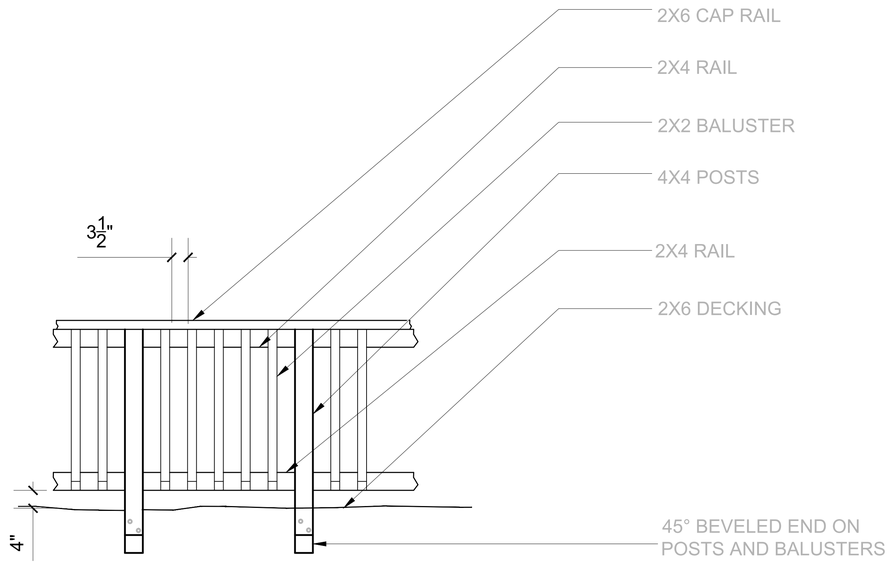
1 WOOD STEPS

SCALE: 1" = 1'- 0"



2 CONC. PLANTER WALL

SCALE: 1/2" = 1'- 0"



3 STEEL HANDRAIL

SCALE: 3/4" = 1'- 0"

4 WOOD SAFETY RAILING

SCALE: 3/4" = 1'- 0"

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CONSTRUCTION DETAILS

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PC
TV

DUTTA RESIDENCE
250 BONITA ROAD,
PORTOLA VALLEY, CA 94028

DATE
12.14.17
REVISIONS
2.6.18
2.14.18
6.8.18
7.26.18

SCALE
AS SHOWN

SHEET
LCD2

1. THESE DRAWINGS AND THE ASSOCIATED STRUCTURAL CALCULATIONS ENTITLED "STRUCTURAL CALCULATIONS FOR RETAINING WALLS & EXTERIOR STAIRS" HAVE BEEN PREPARED BY SCHNEIDER ENGINEERING AS A PRODUCT OF SERVICE FOR THE EXCLUSIVE USE OF SANJEET DUTTA (CLIENT) FOR THE PROJECT DESCRIBED HEREIN. THEY MUST NOT BE USED BY OTHER PARTIES OR FOR OTHER PURPOSES WITHOUT THE MUTUAL PRIOR WRITTEN CONSENT OF SCHNEIDER ENGINEERING AND THE CLIENT.

2. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE CALIFORNIA BUILDING CODE, 2019 EDITION, ASCE 7 - 16 ("MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES") AND ALL APPLICABLE LOCAL CODES AND ORDINANCES. NOTES AND SPECIFICATIONS ON THESE DRAWINGS SHALL TAKE PRECEDENCE OVER THESE STRUCTURAL NOTES.

3. THE CONTRACTOR SHALL CHECK ALL DRAWINGS IMMEDIATELY UPON THEIR RECEIPT AND SHALL FIELD VERIFY ALL EXISTING DIMENSIONS, STRUCTURAL CONFIGURATIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED OF ANY DISCREPANCIES BETWEEN THE ACTUAL CONDITIONS AND THOSE SHOWN ON THESE DRAWINGS WHICH MIGHT IMPACT THE STRUCTURAL DESIGN.

4. FOUNDATION DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE SOILS REPORTS PREPARED BY UFP GEOTECHNOLOGY, A DIVISION OF C2 EARTH, INC. ENTITLED "GEOTECHNICAL RECOMMENDATIONS, PROPOSED RETAINING WALLS AND LANDSCAPE IMPROVEMENTS, DUTTA PROPERTY, 250 BONITA ROAD, SAN MATEO COUNTY, CALIFORNIA" (THEIR DOCUMENT Id. 0284IU-02LI, SERIAL NO. 18250), DATED 7 NOVEMBER, 2017, AND FEBRUARY 2020 REVIEW LETTER w/ DESIGN RECOMMENDATIONS FOR UN-DRAINED RETAINING WALLS, BOTH OF WHICH SHALL BE INCORPORATED THEREIN BY REFERENCE.

5. THE DEPTH, DIMENSIONS AND LOCATION OF NEW STAIR AND WALL CAISSONS, RETAINING WALL LEVELLING PAD AND GRADING BENCH EARTH EXCAVATIONS SHALL BE INDIVIDUALLY FIELD VERIFIED BY THE PROJECT SOILS ENGINEER IN ACCORDANCE WITH THESE DRAWINGS AND THE SOILS REPORT REFERENCED IN NOTE 4 (ABOVE).

6. ALL EARTHWORK AND SITE DRAINAGE, INCLUDING PREPARATION OF SUB-GRADE, INSTALLATION OF RETAINING WALL BACK-DRAINS AND BACKFILL, GEO-GRID INSTALLATION AND SOIL COMPACTION, AND SURFACE DRAINAGE SHOULD BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT BY UFP GEOTECHNOLOGY (C2EARTH) REFERENCED IN NOTE 4 (6 LEFT).

7. THE SOILS ENGINEER(S) SHOULD BE PROVIDED SUFFICIENT ADVANCE NOTIFICATION (408-866-5436) OF ANY EARTHWORK OPERATIONS AS PROVIDED FOR IN THEIR REPORT, AND SHOULD BE PRESENT TO OBSERVE AND/OR TEST AS NECESSARY THE EARTHWORK AND FOUNDATION INSTALLATION PHASES OF THE PROJECT.

8. ALL AREAS DISTURBED AS A RESULT OF CONSTRUCTION SHALL BE PROTECTED AGAINST EROSION AS APPROPRIATE BY INSTALLING SILT FENCES AND STRAW WATTLES DURING CONSTRUCTION, FOLLOWED BY SEEDING AND THE INSTALLATION OF EROSION CONTROL BLANKETS. ALL SUCH MEASURES SHALL BE PERFORMED IN ACCORDANCE WITH THE EROSION CONTROL DRAWING BY WESTFALL ENGINEERS, INC., AS WELL AS THE EROSION CONTROL REQUIREMENTS AND BEST MANAGEMENT PRACTICES OF THE COUNTY OF SAN MATEO, CALIFORNIA. ADDITIONAL SILT FENCES AND STRAWS WATTLES MAY BE NECESSARY TO PROTECT THE AREA FOLLOWING THE COMPLETION OF CONSTRUCTION.

9. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL TEMPORARY SHORING, CONCRETE FORMS, FORM TIES AND BRACING, STOCKPILES, CONSTRUCTION ROADS AND RAMPS, SCAFFOLDING, BRACING AND ALL CONSTRUCTION MEANS AND METHODS, AS WELL AS FOR ALL TEMPORARY SAFETY AND ACCESS FEATURES REQUIRED TO FACILITATE CONSTRUCTION AND MAINTAIN A SAFE, SECURE JOB SITE ENVIRONMENT.

10. ALL CONSTRUCTION DEBRIS AND EXCAVATION SPOILS SHALL BE REMOVED FROM THE JOB SITE AND HAULED TO AN APPROPRIATE DISPOSAL SITE. EXCAVATION SPOILS MAY BE DISPERSED ON SITE AND/OR USED AS BACKFILL ONLY AS APPROVED BY THE SOILS ENGINEER. SPOILS MAY ALSO BE USED AS LANDSCAPE FILL IF AND AS APPROVED BY THE LANDSCAPE ARCHITECT.

GENERAL & EARTHWORK NOTES

REFER TO STRUCTURAL DRAWINGS SHEETS2 FOR "KEYSTONE" WALLS TYPICAL DETAILS, NOTES AND ADDITIONAL INFORMATION

VICINITY MAP

NO SCALE

SITE PLAN

SCALE: 1"=10'

DATE	REVISION
2/20	WALL DRAIN
7/20	LEACH PLAN
10/20	SEPTIC FTG.

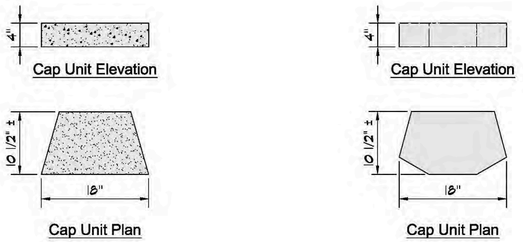
Client:
Sanjeet Dutta
250 Bonita Road
Portola Valley, California 94028
(408) 644-4064

REGISTERED PROFESSIONAL ENGINEER F. A. SCHNEIDER No. C28724 CIVIL STATE OF CALIFORNIA

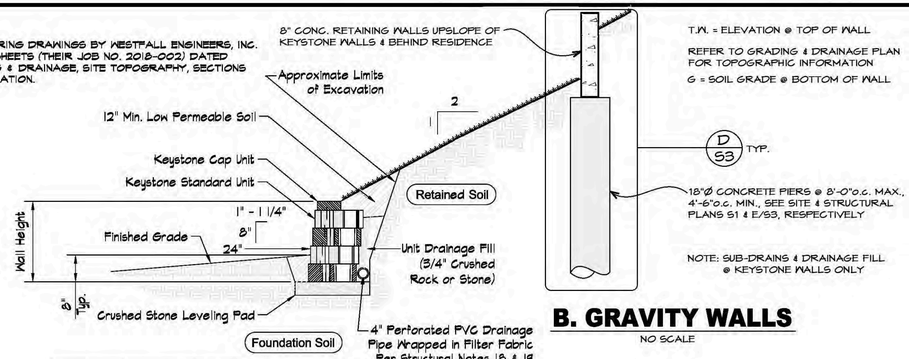
SCHNEIDER ENGINEERING
CIVIL / STRUCTURAL ENGINEERING
2150 TRADE ZONE BLVD., SUITE #105G
SAN JOSE, CALIFORNIA 95131-1730
Phone:(408)275-6482, E-mail:faseinginer@sbcglobal.net

LANDSCAPE WALL & STAIRS
DUTTA RESIDENCE
250 BONITA ROAD
PORTOLA VALLEY, CALIFORNIA

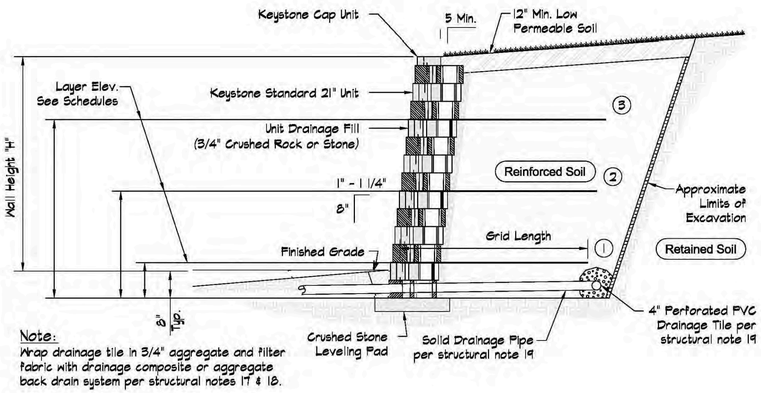
DATE: DECEMBER 2018
DRAWN: F.A.S./R.S.C.
SHEET
S1
OF (4) SHEETS



REFER TO CIVIL ENGINEERING DRAWINGS BY WESTFALL ENGINEERS, INC. CONSISTING OF TWO (2) SHEETS (THEIR JOB NO. 2018-002) DATED JULY, 2018 FOR GRADING & DRAINAGE, SITE TOPOGRAPHY, SECTIONS AND ADDITIONAL INFORMATION.



A. CAP UNIT OPTIONS



Note:
Wrap drainage tile in 3/4" aggregate and filter fabric with drainage composite or aggregate back drain system per structural notes 17 & 18.

B. GRAVITY WALLS

NO SCALE

WALL HEIGHT	GRID LAYER	LAYER ELEV.	GRID LENGTH
≤ 4'-0"	NONE	SEE GRAVITY WALL SECTION	
4'-8"	2	3.33'	6.0'
	1	0.67'	4.0'
5'-4"	2	4.0'	6.0'
	1	1.33'	5.0'
6'-0"	2	4.67'	6.5'
	1	2.0'	6.0'
6'-8"	2	5.33'	7.0'
	1	2.67'	7.0'
7'-4"	3	6.0'	7.0'
	2	3.33'	6.0'
	1	0.67'	5.5'
8'-0"	3	6.67'	7.5'
	2	4.0'	6.0'
	1	1.33'	6.0'

KEYSTONE (M.S.E.) WALLS:
AS OUTLINED IN THE GEOTECHNICAL RECOMMENDATIONS (SOILS REPORT, NOTE 4/S1), THE FOLLOWING MATERIAL PARAMETERS MAY BE USED FOR THE M.S.E. WALL DESIGNS FOR THE SANTA CLARA FORMATION (FOUNDATION MATERIALS):

- WEIGHT, Y = 125 PCF
- INTERNAL ANGLE OF FRICTION, Φ = 30 DEGREES
- NEGLIGIBLE COHESION, C = 0
- ALLOWABLE BEARING CAPACITY, FB = 2,000 PSF

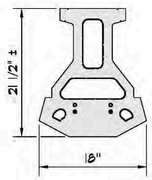
FOR ENGINEERED FILL OR ON-SITE SOIL OR COLLUVIUM (BACKFILL MATERIAL), INCLUDING REINFORCED FILL AND RETAINED ZONE, USE:

- UNIT WEIGHT, Y = 120 PCF
- INTERNAL ANGLE OF FRICTION, Φ = 25 DEGREES*
- NEGLIGIBLE COHESION, C = 0

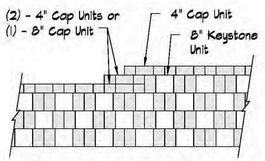
SITE WALLS ARE NOT SUBJECT TO ADDITIONAL EARTHQUAKE LOADING REQUIREMENTS. CALCULATE THE WALL HEIGHT FROM THE BOTTOM OF THE LOWEST BLOCK TO THE TOP OF THE UPPER BLOCK.

* EVALUATE BACKFILL IN RETAINED ZONE COMPRISED OF NATIVE MATERIALS AND/OR DRAIN-ROCK USING A PHI ANGLE OF Φ = 30° , TO BE CONFIRMED BY THE PROJECT SOILS ENGINEER PRIOR TO CONSTRUCTION.

C. REINFORCED EARTH WALLS

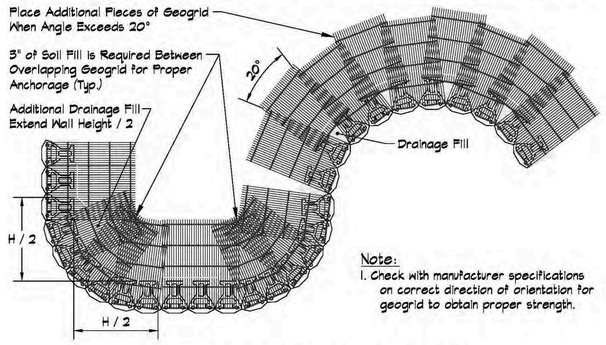


D. GEOGRID SCHEDULE



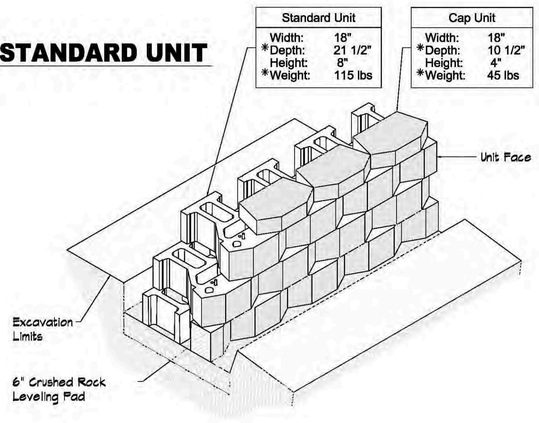
Note:
1. Secure all cap units with Keystone Kapseal or equal.

E. WALL DESIGN CRITERIA

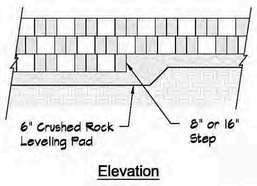


Note:
1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.

F. STANDARD UNIT

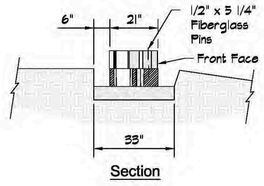


G. TOP OF WALL STEPS



H. GEOGRID ON CURVES

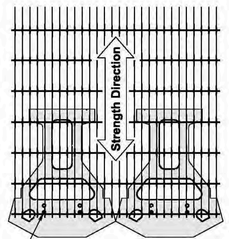
Base Leveling Pad Notes:
1. The leveling pad is to be constructed of crushed stone
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.



I. BASE PAD ISOMETRIC

J. BOTTOM OF WALLS TEPS

K. LEVELING PAD



L. GRID & PIN CONNECTION

THESE DRAWINGS ARE FOR THE STRUCTURAL DESIGN AND CONSTRUCTION OF A SERIES OF "KEYSTONE" MECHANICALLY STABILIZED EARTH (M.S.E.) GRAVITY RETAINING WALLS CONSTRUCTED ABOVE A LANDSCAPED AREA CREATING A SERIES OF TERRACES, AND REINFORCED-EARTH WALLS OF VARYING HEIGHT AND REINFORCEMENT GEOGRIDS BELOW THE LANDSCAPED LAWN AREA. GRAVITY WALLS ABOVE THE LAWN, REFERRED TO AS "UPHILL WALLS", SHALL BE DESIGNED FOR BACKFILL SLOPES OF 46.6% (Θ = 25.00) MAXIMUM AND NO ADDITIONAL SURCHARGE. THE REINFORCED-EARTH "DOWNHILL WALLS" BACKFILLS SHALL BE GRADED, OR SLOPED-TO-DRAIN, TO APPROXIMATELY 2% (1.50) BEHIND THE WALL, WITH A RESIDENTIAL FLOOR LIVE LOAD SURCHARGE OF 40PSF FOR A MAXIMUM WIDTH OF 32-FEET.

"KEYSTONE" M.S.E. WALLS ARE DESIGNED USING THE RANKINE METHOD AND SHALL BE CONSTRUCTED OF STANDARD 21" UNITS W/ AN 80 FACE BATTER. WALLS W/ GEOGRID SHALL USE MIRAFI 3XT. WALLS NOT REQUIRING GEOGRID ARE "GRAVITY WALLS". ALL M.S.E. WALLS SHALL BE EMBEDDED A MINIMUM OF 8" (ONE BLOCK MODULE) BELOW GRADE ON A MINIMUM 6" THICK BASE OF CRUSHED, COMPACTED STONE, OR BETTER.

THESE CALCULATIONS ALSO ADDRESS THE STRUCTURAL ANALYSIS AND DESIGN OF TWO NEW EXTERIOR STAIRWAYS, ONE LEADING TO THE EXISTING FRONT PORCH AND THE OTHER TO AN EXISTING REAR DECK. THE NEW FRONT STAIRS AND HANDRAILS WILL BE CONSTRUCTED OF STRUCTURAL STEEL WITH WOODEN STAIR TREADS, SUPPORTED ON REINFORCED CONCRETE FOUNDATIONS AT THEIR DOWN-GRADIENT ENDS. THEY WILL BE BOLTED TO AND SUPPORTED BY THE EXISTING WOOD-FRAMED WALLS OF THE RESIDENCE AT THEIR UP-GRADIENT ENDS, WHICH WILL BE REINFORCED AS NEEDED TO RECEIVE THE NEW STAIR CONNECTIONS. THE NEW REAR STAIRS WILL CONSIST OF STEEL-REINFORCED, POURED-IN-PLACE SLABS/STEPS-ON-GRADE STRADDLED BY NEW RETAINING WALLS SUPPORTED ON CONCRETE DRILLED PIERS FOUNDED IN THE UNDERLYING SUPPORTIVE CONGLOMERATE (BEDROCK). NO OTHER CONSTRUCTION IS INCLUDED IN THIS SCOPE OF WORK.

SCOPE OF WORK

FOUNDATION & WALL NOTES

11. CONCRETE SHALL BE NORMAL WEIGHT AND DEVELOP A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 2,500 PSI WITHIN 28 DAYS. CONCRETE COARSE AGGREGATE SHALL HAVE A MAXIMUM DIMENSION OF 1½", ¾" MAXIMUM FOR SLABS. FOR CONCRETE TO BE PUMPED, ⅜" PEA GRAVEL COARSE AGGREGATE WITH 6 SACKS OF CEMENT PER CUBIC YARD IS RECOMMENDED. FOR SHALLOW FOOTINGS, NO SPECIAL INSPECTION OF CONCRETE PLACEMENT OR CONCRETE TESTING IS REQUIRED UNLESS SPECIFICALLY MANDATED BY THE LOCAL BUILDING AUTHORITY.

12. REINFORCING STEEL SHALL BE NEW DEFORMED BILLET STEEL MEETING ALL APPLICABLE ASTM STANDARDS AND ACI-318. STEEL REINFORCEMENT SHALL BE GRADE 60 FOR #5 BARS AND LARGER, GRADE 40 FOR #4 BARS AND SMALLER. LAP ALL REINFORCING STEEL CONTACT SPLICES A MINIMUM OF 40 BAR DIAMETERS, UNLESS NOTED OTHERWISE ON THESE DRAWINGS.

13. REINFORCING STEEL SHALL BE TIED TOGETHER AND HELD FIRMLY IN PLACE TO PREVENT AGAINST DISPLACEMENT DURING CONCRETE PLACEMENT. PLACE STEEL REINFORCEMENT ON MORTAR BLOCKS, STEEL CHAIRS OR OTHER DEVICES TO MAINTAIN A MINIMUM CLEARANCE OF 3-INCHES WHERE CONCRETE IS DEPOSITED AGAINST EARTH, 2-INCHES WHERE DEPOSITED AGAINST FORMED SURFACES.

14. MECHANICALLY STABILIZED EARTH RETAINING WALL UNITS SHALL BE KEYSTONE STANDARD 21.5" TRI-PLANE OF COLOR AND TEXTURE TO BE SELECTED BY THE OWNER, PLACED IN RUNNING BOND CONFIGURATION WITH FACE BATTER AS INDICATED ON THESE DRAWINGS. KEYSTONE CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS. STANDARD UNIT DIMENSIONS SHALL BE 8"(H) X 18" (W) X 21.5" (D) INTERLOCKED WITH 2 SHEAR CONNECTOR PINS PER UNIT, UNLESS NOTED OTHERWISE ON THESE DRAWINGS.

15. MECHANICALLY STABILIZED EARTH (SEGMENTAL) RETAINING WALL SHEAR CONNECTOR PINS SHALL BE ½" DIAMETER THERMO-SET ISOPHTHALIC POLYESTER RESIN-PULTRUDED FIBERGLASS REINFORCEMENT RODS CAPABLE OF HOLDING THE GEO-GRID IN THE PROPER DESIGN POSITION DURING GRID PRE-TENSIONING AND BACKFILLING.

16. GEO-GRIDS SHALL CONSIST OF GEO-SYNTHETIC REINFORCEMENT MANUFACTURED SPECIFICALLY FOR SOIL REINFORCEMENT APPLICATIONS KNITTED FROM HIGH TENACITY POLYESTER FILAMENT YARN OR HIGH DENSITY POLYETHYLENE AND COATED WITH AN IMPREGNATED PVC COATING. ALL GEO-GRID MATERIAL SHALL BE MIRAFI 3XTG OR EQUAL APPROVED BY THE ENGINEER AND SHALL BE WRAPPED AROUND SHEAR PIN CONNECTORS AT THE ELEVATIONS SHOWN ON THE "KEYSTONE WALL REINFORCING SCHEDULE", SHEET S2. OMIT BOTTOM LAYER OF GEO-GRID IF INTERRUPTED AT WALL STEPS FOR INTERMEDIATE WALL HEIGHTS BETWEEN THOSE GIVEN IN THE SCHEDULE.

17. RETAINING WALL BACKFILL DRAINAGE AND RETAINING WALL UNIT FILL SHALL CONSIST OF CLEAN COARSE GRAVEL ("DRAIN ROCK") OR CLASS 2 "PERMEABLE MATERIAL" CONFORMING TO STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION, SECTION 68-1.025 EXTENDING THE FULL WIDTH OF THE WALL. THE ROCK SHOULD CONTINUE FULL-HEIGHT OF WALLS, TO WITHIN 12-INCHES BELOW THE FINISHED SURFACE GRADE.

18. DRAIN ROCK SHALL BE ENVELOPED BY FILTER FABRIC, SUCH AS MIRAFI 140N OR EQUAL, AND CAPPED WITH A 12-INCH THICKNESS OF IMPERVIOUS CLAY SOIL OR CONCRETE SWALE PER NOTE 20 (BELOW). ALL BACKFILL DRAINAGE MATERIALS, FILTER FABRIC AND THEIR INSTALLATION SHALL BE APPROVED BY THE PROJECT SOILS ENGINEER(S).

19. COLLECTOR PIPES SHALL BE PLACED BEHIND RETAINING WALL WHERE INDICATED ON THESE PLANS, AND SHALL BE PERFORATED ON THE BOTTOM AND SOLID ELSEWHERE FOR DRAINAGE. ALL PIPES SHALL BE P.V.C. OR A.B.S., SCHEDULE 40, S.D.R.35 OR BETTER. NO CORRUGATED DRAINAGE PIPES SHALL BE PERMITTED. DRAINAGE PIPES SHALL HAVE A MINIMUM 2% SLOPE TO DRAIN AS INDICATED ON THESE PLANS, AND SHALL BE DIRECTED TO A SUITABLE DISCHARGE LOCATION WITH ENERGY DISSIPATION AS RECOMMENDED BY THE PROJECT SOILS ENGINEER.

20. WATER SHOULD NOT BE ALLOWED TO FLOW OVER THE TOP OF RETAINING WALLS. A CONCRETE-LINED "V"-DITCH OR IMPERVIOUS SOIL SWALE SHOULD BE CONSTRUCTED ADJACENT TO AND ALONG THE TOP OF WALLS TO COLLECT SURFACE RUN-OFF FROM THE UPHILL SLOPE. THE "V"-DITCH OR SWALE SHOULD TRANSPORT THE COLLECTED WATER TO A NATURAL DRAINAGE SWALE, DRAINAGE CATCH BASIN OR OTHER DISCHARGE LOCATION VIA AN APPROPRIATE DRAINAGE CONVEYANCE AND AWAY FROM FOUNDATIONS AS DEEMED SUITABLE BY THE PROJECT SOILS ENGINEER.

KEYSTONE RETAINING WALL SYSTEMS

RETAINING WALL ANALYSIS & DESIGN PERFORMED USING
RETAINING WALL DESIGN
KeyWall_2012 Version 3.7.2 Build 10
SOFTWARE PROVIDED BY THE MANUFACTURER

DATE	REVISION
2/20	WALL DRAIN
7/20	LEACH PLAN
10/20	SEPTIC FTG.

Client:
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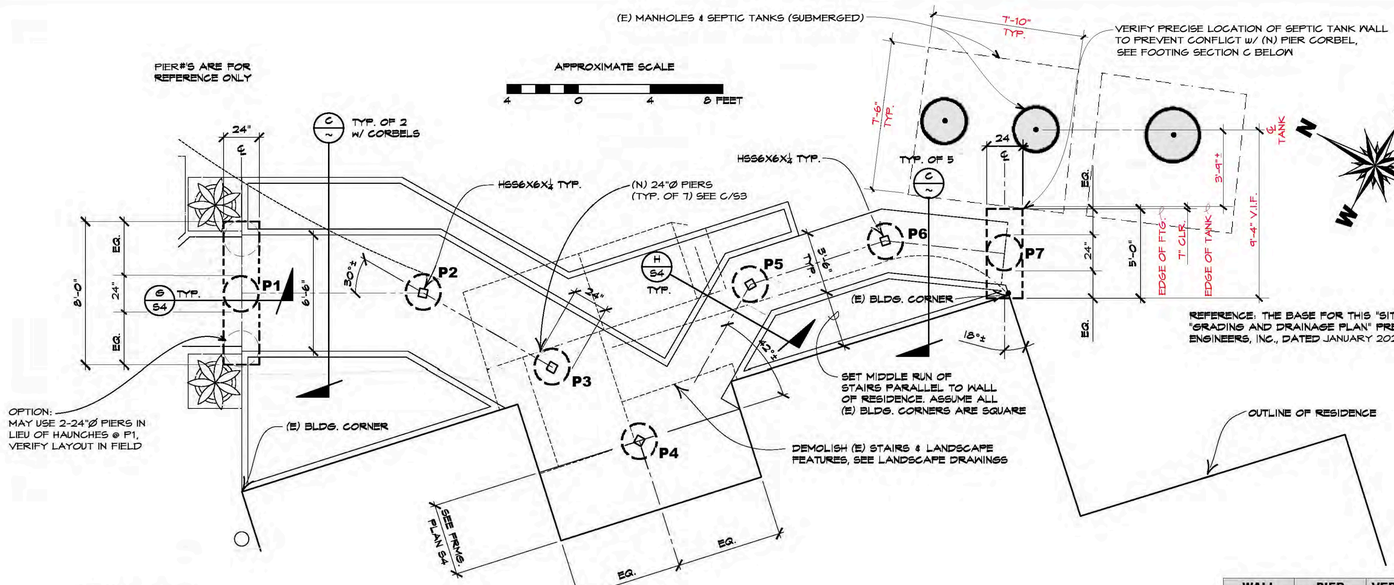
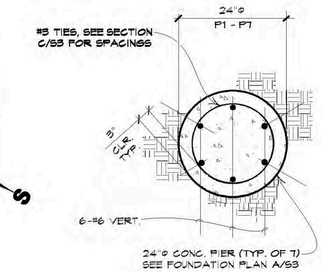
(408) 644-4064

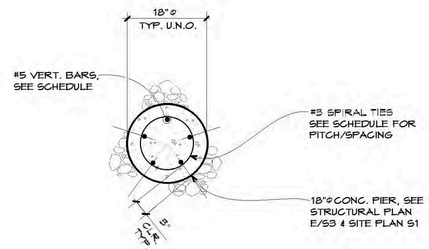
SCHNEIDER ENGINEERING
CIVIL / STRUCTURAL ENGINEERING
2150 TRADE ZONE BLVD., SUITE #105G
SAN JOSE, CALIFORNIA 95131-1730
Phone:(408)275-6482, E-mail:fasengineer@sbcglobal.net

LANDSCAPE WALL & STAIRS
DUTTA RESIDENCE
250 BONITA ROAD
PORTOLA VALLEY, CALIFORNIA

DATE: DECEMBER 2018
DRAWN: F.A.S./R.S.C.
SHEET
S2
OF (4) SHEETS







B. PIER SECTIONS

SCALE: 3/4"=1'-0"

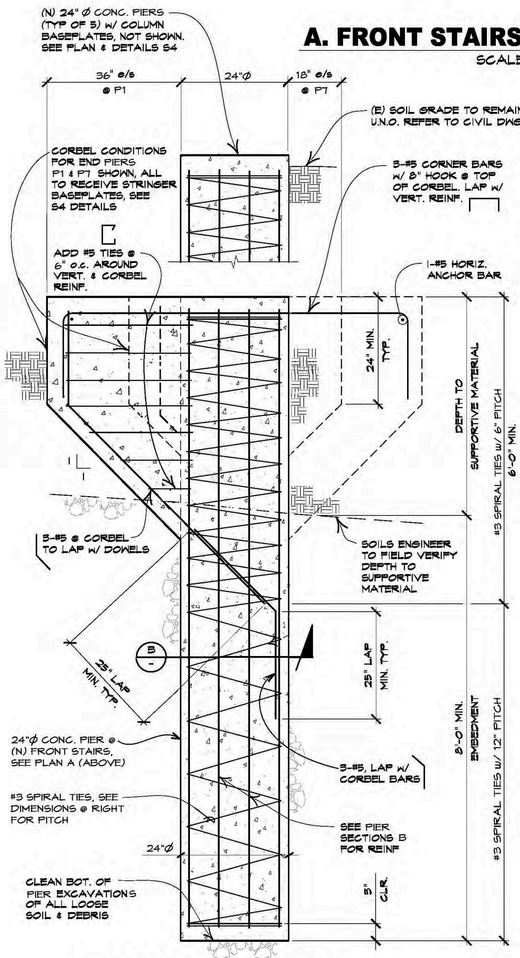
THE FOLLOWING DESIGN PARAMETERS ARE SUPPLEMENTAL DESIGN RECOMMENDATIONS FOR PIER-AND-GRADE-BEAM SUPPORTED RETAINING WITH UN-DRAINED BACKFILL DUE TO CONCERNS OVER THEIR PROXIMITY TO POTENTIAL FUTURE LEACH FIELD EXPANSION AREA. THEY ARE THEREFORE NOT RELIEVED OF HYDROSTATIC PRESSURE, WHICH WILL BE DOCUMENTED BY C2EARTH IN THEIR PLAN REVIEW LETTER:

- PIERS SHALL HAVE A MINIMUM DIAMETER OF 16-INCHES.
- ACTIVE PRESSURE, E.F.W. = 90PCF FOR WALLS W/O BACK-DRAINS TO RESIST LEACHATE INTRUSION
- ADD 12PCF SURCHARGE FOR WALLS W/ SLOPING BACKFILL ≤ 2H:1V (HORIZONTAL: VERTICAL).
- ANY PORTION OF THE PIERS IN THE NON-SUPPORTIVE TOPSOIL/COLLUVIUM, AND ANY POINT-BEARING RESISTANCE SHOULD BE NEGLECTED FOR SUPPORT.
- FOOTINGS SUPPORTING GRAVITY WALLS AND GRADE BEAMS BENEATH PIER-SUPPORTED WALLS SHALL BEAR ON OR BE EMBEDDED IN THE SANTA CLARA FORMATION BEDROCK. APPLY ACTIVE LOADS TO 2-FEET OF UPHILL FACES OF GRADE BEAMS DUE TO DOWNWARD SLOPE ON THEIR DOWNHILL SIDES.
- PASSIVE PRESSURE RESISTANCE TO LATERAL LOADS SHALL BE TAKEN AS AN EQUIVALENT FLUID PRESSURE OF 400PCF OVER 1½ PIER DIAMETERS, TO A MAXIMUM OF 3,000PSF IN THE UNDERLYING SUPPORTIVE MATERIAL.
- FOR WALLS SUPPORTED ON CONVENTIONAL FOOTINGS (IF ANY) BEARING ON THE SANTA CLARA FORMATION, USE AN ALLOWABLE BEARING PRESSURE OF 2,000PSF.
- USE A FRICTIONAL COEFFICIENT, M_F = 0.35 IN ADDITION TO PASSIVE PRESSURE TO RESIST SLIDING.

WALL DESIGN CRITERIA

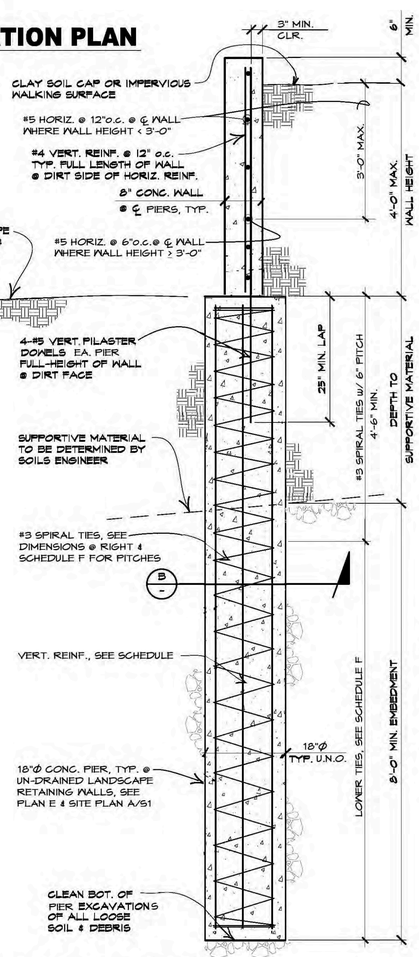
A. FRONT STAIRS FOUNDATION PLAN

SCALE: 1/4"=1'-0"



C. FOOTING SECTION

SCALE: 3/4"=1'-0"



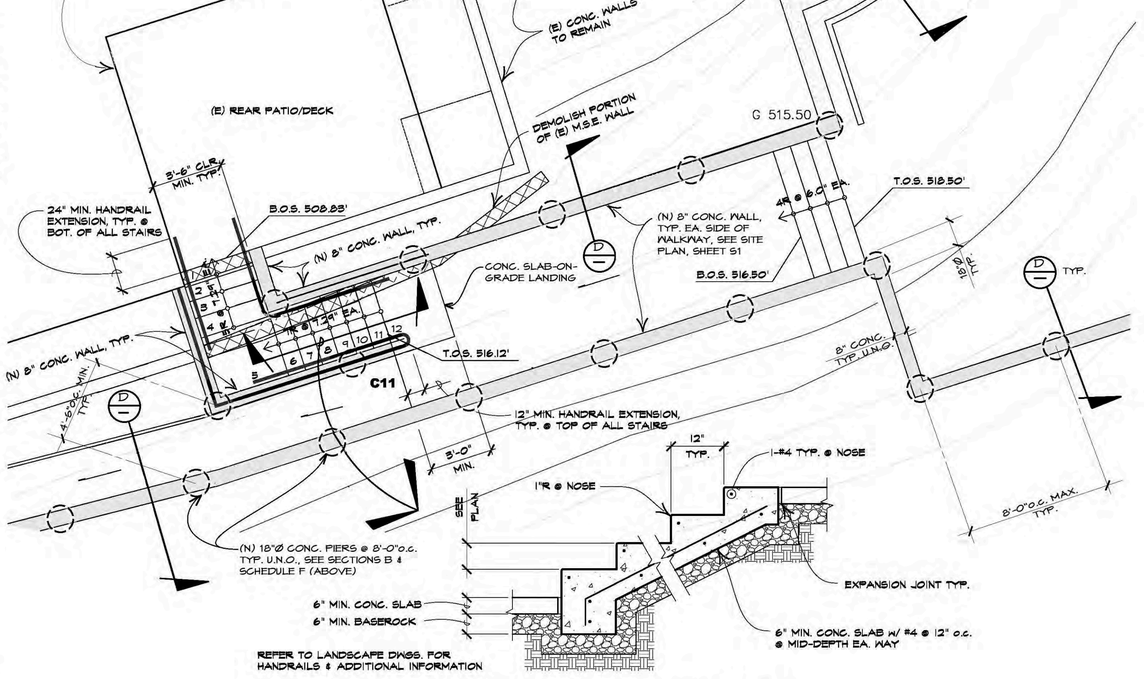
D. WALL SECTION

SCALE: 3/4"=1'-0"

WALL HEIGHT	PIER DEPTH	VERTICAL REINF.	LOWER TIES
≤ 2'-0"	8'-0"	4 - #6	#3 @ 9"o.c.
3'-0"	10'-0"	5 - #6	#3 @ 9"o.c.
4'-0"	12'-0"	9 - #6	#3 @ 8"o.c.

F. PIER SCHEDULE

NO SCALE



E. REAR STAIRS STRUCTURAL PLAN

SCALES: 1/4"=1'-0" & 3/4"=1'-0"

DATE	REVISION
2/20	WALL DRAIN
7/20	LEACH PLAN
10/20	SEPTIC FTG.

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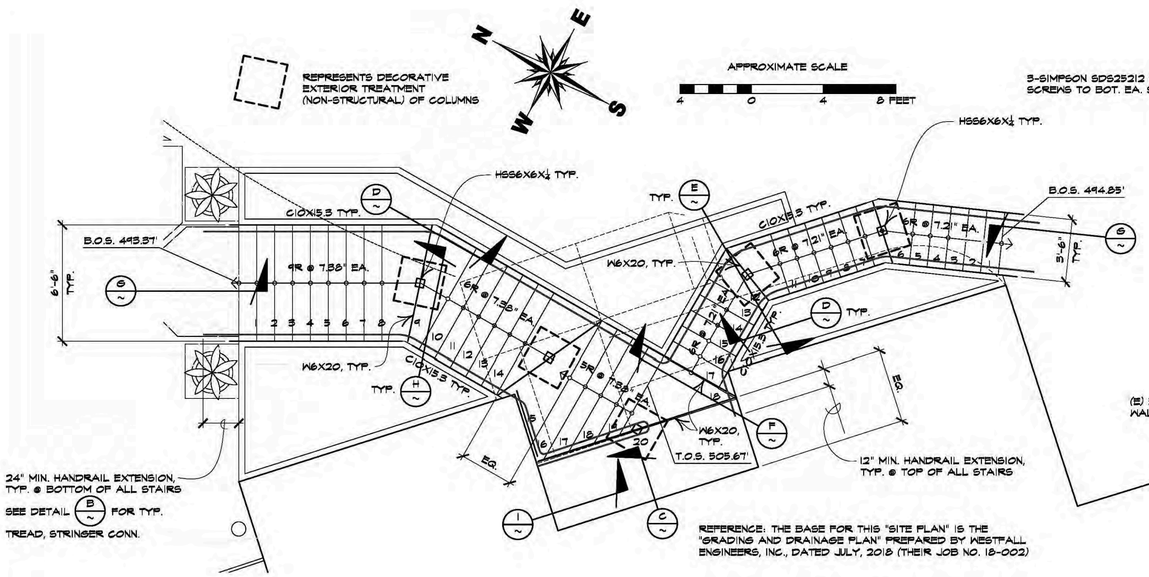
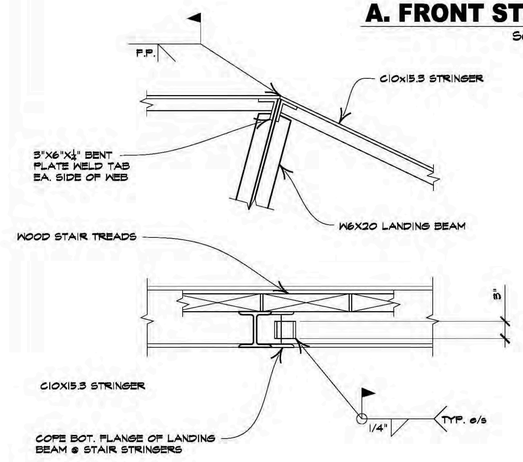
LANDSCAPE WALL & STAIRS
DUTTA RESIDENCE
250 BONITA ROAD
PORTOLA VALLEY, CALIFORNIA

DATE: DECEMBER 2018
DRAWN: F.A.S./R.S.C.
SHEET
S3
OF (4) SHEETS



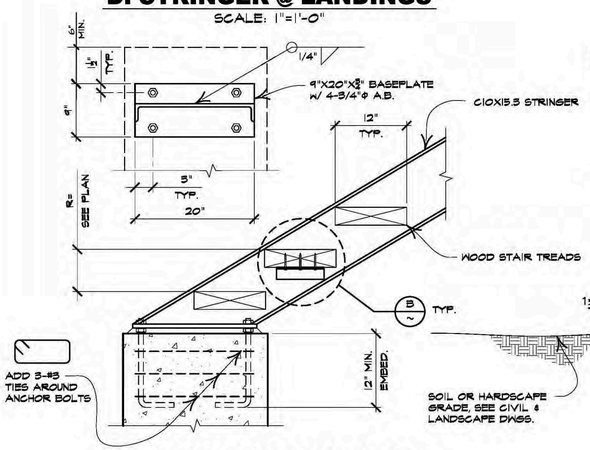
A. FRONT STAIRS FRAMING PLAN

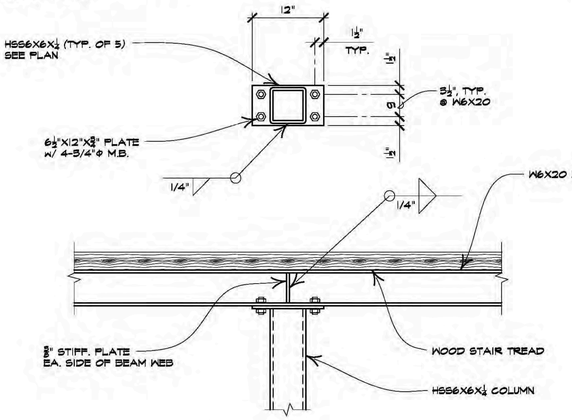
SCALE: 1/4"=1'-0"



D. STRINGER @ LANDINGS

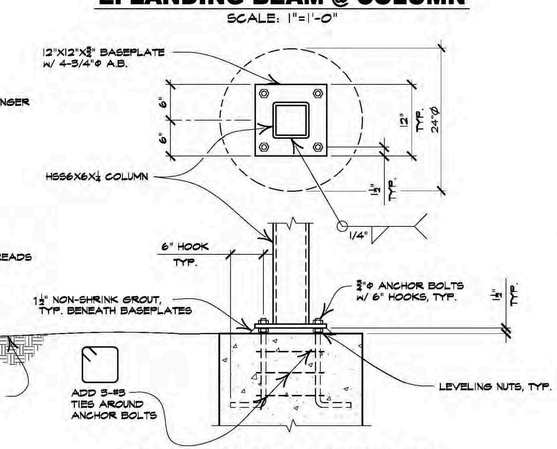
SCALE: 1"=1'-0"





E. LANDING BEAM @ COLUMN

SCALE: 1"=1'-0"

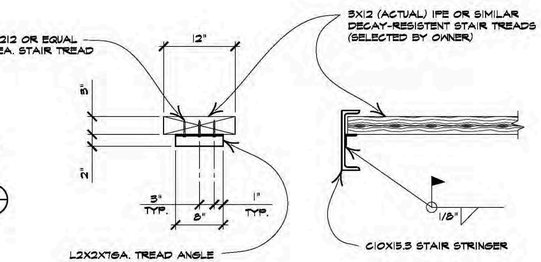


G. STRINGER BASEPLATE

SCALE: 1"=1'-0"

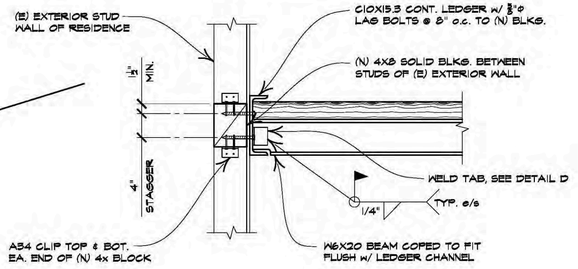
H. COLUMN BASEPLATE

SCALE: 1"=1'-0"



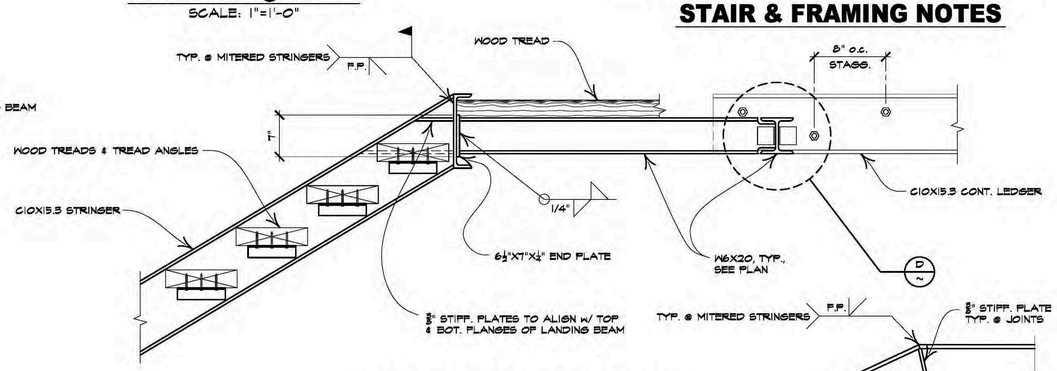
B. TYPICAL TREAD ANGLE

SCALE: 1"=1'-0"



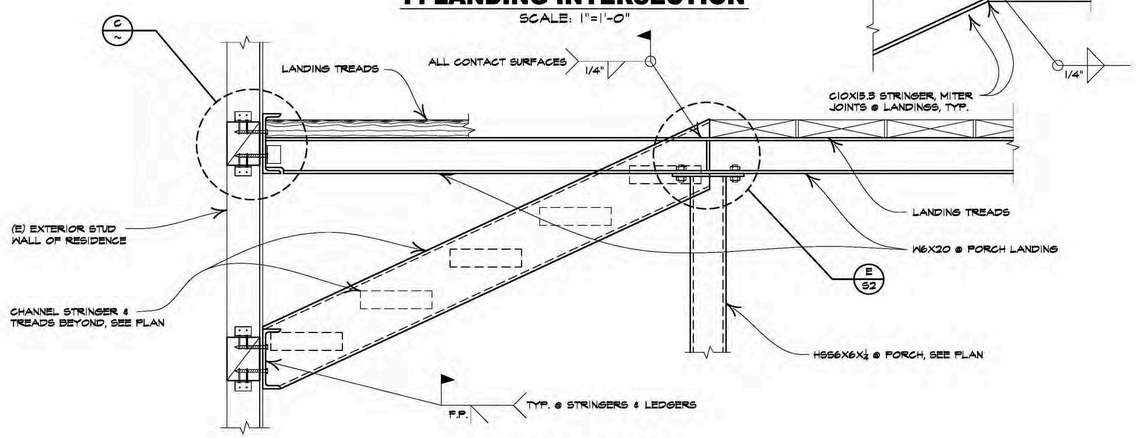
C. PORCH @ WALL

SCALE: 1"=1'-0"



F. LANDING INTERSECTION

SCALE: 1"=1'-0"



I. PORCH LANDING

SCALE: 1"=1'-0"

21. ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY, INCLUDING, BUT NOT NECESSARILY LIMITED TO, MUDSILLS AND LEDGERS, SHALL BE PRESSURE-TREATED DOUGLAS FIR OR FOUNDATION GRADE REDWOOD. THEIR ATTACHMENTS TO WALLS AND FOUNDATIONS SHALL CONSIST OF MINIMUM ⅝" DIAMETER ANCHOR BOLTS AT NO MORE THAN 48" ON CENTER (MINIMUM 2 PER PIECE) OR OTHER CONNECTORS AS SPECIFIED ON THESE DRAWINGS.

22. METAL FRAMING CONNECTION DEVICES SPECIFIED ON THESE PLANS SHALL BE AS MANUFACTURED BY SIMPSON COMPANY. ALL CLIPS AND BRACKETS ATTACHED TO OR IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE GALVANIZED OR COATED WITH OTHER CORROSION RESISTANT MATERIAL. OTHER FRAMING DEVICES MAY BE USED IF DEEMED TO BE OF EQUAL OR BETTER QUALITY AND APPROVED BY SCHNEIDER ENGINEERING.

23. STRUCTURAL STEEL MEMBERS SHALL BE FY = 36KSI, CONFORMING TO A.S.T.M. STANDARD A-36 AND A500, GRADE B, OR BETTER FOR HSS STEEL TUBES. ALL SHALL BE SHOP OR FIELD-COATED WITH MINIMUM 2 COATS OF HEAVY DUTY RUST INHIBITIVE PRIMER, SUCH AS RUSTOLEUM OR APPROVED EQUAL. ALL FABRICATION, INCLUDING HOLES, WELDS AND CUTS SHALL BE DONE IN THE FABRICATION SHOP. NO FIELD WELDING OR TORCH CUTTING SHALL BE PERMITTED UNLESS SPECIFICALLY CALLED FOR ON THESE DRAWINGS, OR OTHERWISE APPROVED BY SCHNEIDER ENGINEERING.

24. ALL WELDING TO BE DONE IN AN APPROVED SHOP BY CERTIFIED WELDER(S) W/ E70-XX ELECTRODES. FIELD WELDING AND TORCH-CUTTING SHALL NOT BE PERMITTED UNLESS APPROVED BY SCHNEIDER ENGINEERING W/ SPECIAL INSPECTION PER C.B.C. SECTION 1701.

25. ALL NAILS AND SCREWS SHALL BE COMMON WIRE SIZES AS SPECIFIED ON THESE PLANS, UNLESS SPECIFIED OTHERWISE. ALL NAILS ATTACHED TO OR IN CONTACT WITH PRESSURE-TREATED WOOD SHALL BE GALVANIZED, STAINLESS STEEL OR COATED WITH OTHER CORROSION RESISTANT MATERIAL.

26. BOLTS SHALL BE A-307 WITH HEAVY HEX NUTS AND NO THREADS IN THE SHEAR PLANE. ALL BOLTS ATTACHED TO OR IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE GALVANIZED, STAINLESS STEEL OR COATED WITH OTHER CORROSION RESISTANT MATERIAL. THREADED RODS SHALL NOT BE USED IN PLACE OF BOLTS UNLESS SPECIFICALLY APPROVED BY SCHNEIDER ENGINEERING.

27. MALLEABLE IRON WASHERS OR STEEL PLATE WASHERS, AS NOTED BELOW, SHALL BE USED WHEREVER BOLTS BEAR AGAINST WOOD.

    ½"Ø BOLTS: 2½" X 2½" X 0.25" (¼") PLATE ⅝"Ø BOLTS: 3" X 3" X 0.315" (⅝") PLATE
    ¾"Ø BOLTS: 2¾" X 2¾" X 0.315" (⅝") PLATE 1"Ø BOLTS: 3½" X 3½" X 0.34" (¾") PLATE

28. STEEL REINFORCING DOWELS INSTALLED IN EXISTING CONCRETE FOUNDATIONS SHALL BE SET IN AN APPROVED TWO-PART EPOXY ADHESIVE, SUCH AS SIMPSON SET-XP (ICC REPORT ESR-2508) OR OTHER APPROVED EPOXY PRODUCT, INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS NEW AND EXISTING CONCRETE CONTACT SURFACES SHALL BE CONNECTED WITH #5 REINFORCING DOWELS SET IN ⅝" DIAMETER BY 6-INCH DEEP HOLES WITH EPOXY AT 12-INCH INTERVALS, U.N.O.

29. GUARDRAILS, SLEEVES, GROUT, ETC. SHALL BE SELECTED BY THE OWNER. GUARDRAIL SHALL HAVE A MINIMUM NET HEIGHT OF 42-INCHES AND CAPABLE OF RESISTING LATERAL DESIGN LOADS AS SPECIFIED IN CALIFORNIA BUILDING CODE, CHAPTER 16. SCHNEIDER ENGINEERING IS AVAILABLE TO PROVIDE ADDITIONAL DESIGN RECOMMENDATIONS FOR SUCH MISCELLANEOUS ITEMS AT THE OWNER'S REQUEST.

30. ALL SURFACE TREATMENTS, COATINGS, SEALANTS AND OTHER PROTECTIVE FINISHES SHALL BE SELECTED AND INSTALLED BY THE OWNER OR THE CONTRACTOR(S), UNLESS SPECIFIED OTHERWISE ON THESE PLANS.

STAIR & FRAMING NOTES

DATE	REVISION
2/20	WALL DRAIN
7/20	LEACH PLAN
10/20	SEPTIC FTG.

Client:
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LANDSCAPE WALL & STAIRS
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DATE: DECEMBER 2018
DRAWN: F.A.S./R.S.C.
SHEET
S4
OF (4) SHEETS

LIGHTING SCHEDULE
MANUFACTURE: FX LUMINAIRE

SYM	QTY	TYPE	MODEL	W	W	BULB	NOTES
(path light symbol)	33	PATH LIGHT	CALEDTA-AB G-ZD-3LED-18RA-AB	4.5	121.5	3 LED	CONTROL BY (transformer symbol) 1
(up light symbol) 2	0	UP LIGHT	VS-ZD-9LED-AB	4.5	27	9 LED	CONTROL BY (transformer symbol) 2
(wall light symbol) 2	8	WALL LIGHT	UN-ZD-1LED-AB	2.4	19.2	1 LED	CONTROL BY (transformer symbol) 2
(wall light symbol)	20	WALL LIGHT	LF-ZD-1LEDCU-AB	2.4	48	1 LED	CONTROL BY (transformer symbol) 1
(transformer symbol) 2	2	(N) TRANSFORMER	LZD-300-SS		215.7		

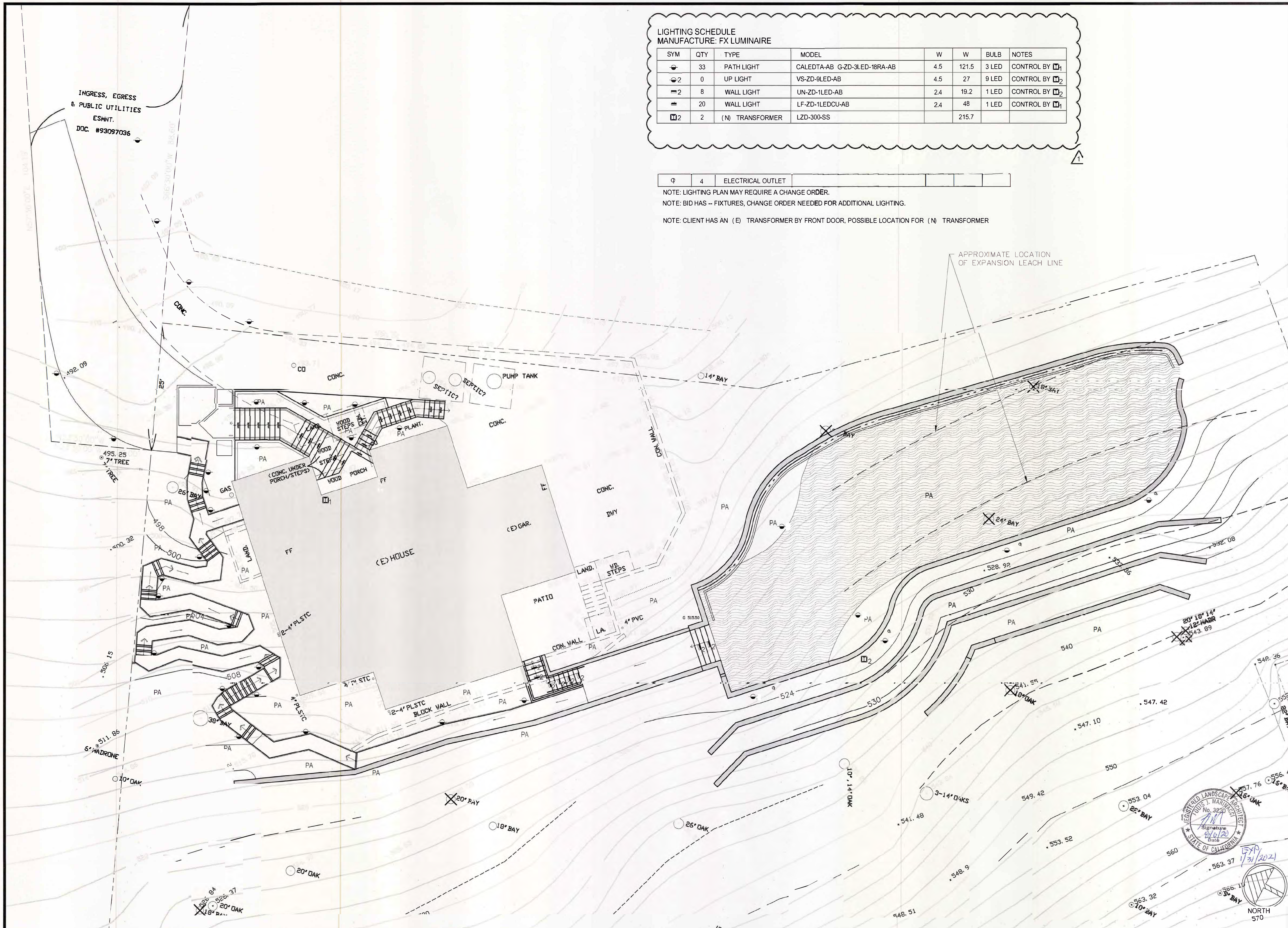
1

(outlet symbol)	4	ELECTRICAL OUTLET				

NOTE: LIGHTING PLAN MAY REQUIRE A CHANGE ORDER.

NOTE: BID HAS -- FIXTURES, CHANGE ORDER NEEDED FOR ADDITIONAL LIGHTING.

NOTE: CLIENT HAS AN (E) TRANSFORMER BY FRONT DOOR, POSSIBLE LOCATION FOR (N) TRANSFORMER



landsystems
LANDSCAPE ARCHITECTS AND CONTRACTORS
1064 Cherry Street, San Carlos, CA 94070
650.851.2793
C27 474943

JOB
DUTTA RES.

LIGHTING PLAN

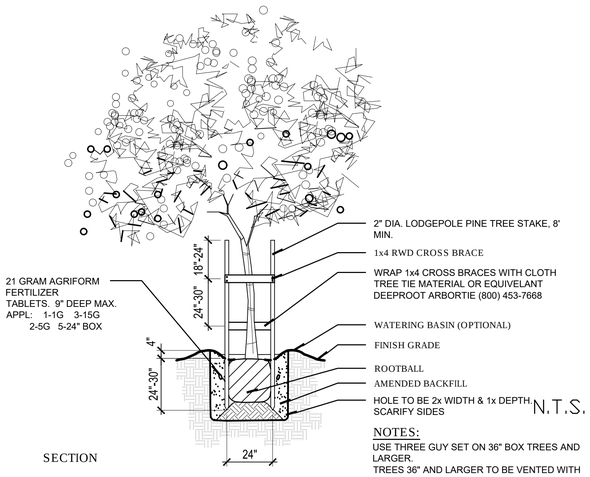
DESIGNER
AC
PC
TV

DUTTA RESIDENCE
250 BONITA ROAD,
PORTOLA VALLEY, CA 94028

DATE
02.25.2020
REVISIONS
08.04.2020 1

SCALE
1/8"=1'-0"

SHEET
LP
LIGHTING PLAN



SECTION

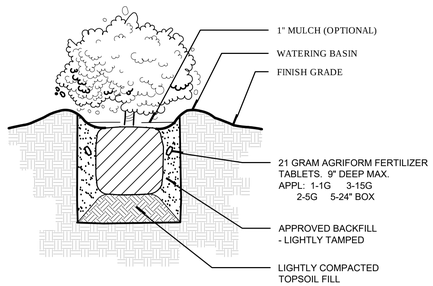
N.T.S.

NOTES:
USE THREE GUY SET ON 36" BOX TREES AND LARGER.
TREES 36" AND LARGER TO BE VENTED WITH (2) 4" PERF. PIPES

1 TREE STAKING

SCALE: NOT TO SCALE

TRE-ST1

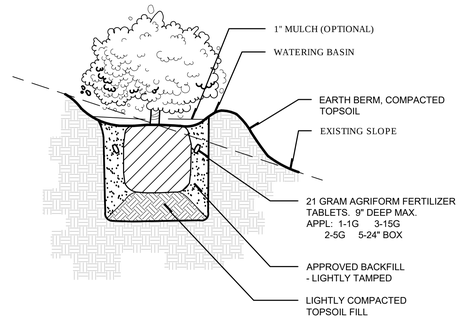


SECTION

2 SHRUB PLANTING

SCALE: NOT TO SCALE

SHB-PT1

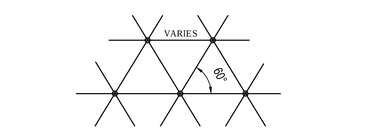


SECTION

3 SHRUB PLANTING (ON SLOPE)

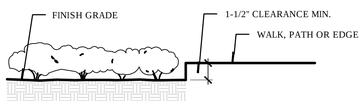
SCALE: NOT TO SCALE

SHB-PT2



GROUNDCOVER SHALL BE PLANTED TRIANGULARLY AS SHOWN, REFER TO PLANTING PLAN FOR SPACING

GROUNDCOVER SPACING



GROUNDCOVER EDGE

TURF EDGE

SECTION

4 GROUND COVER PLANTING

SCALE: NOT TO SCALE

GRD-CV1

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JOB
DUTTA RES.

LANDSCAPE PLANTING DETAILS

DESIGNER
AC

PC
TV

DUTTA RESIDENCE
250 BONITA ROAD,
PORTOLA VALLEY, CA 94028

DATE
12.15.17
REVISIONS
8.2.18

SCALE
NTS

SHEET
LPD1
PLANTING DETAILS

WALLACE LABS
365 Coral Circle
El Segundo, CA 90245
(310) 615-0116

SOILS REPORT — Print Date: Jun. 23, 2020

Location: 250 Bonita Road
Requester: Sanjeet Dutta

graphic interpretation: * very low, ** low, *** moderate
**** high, ***** very high

ammonium bicarbonate/DTPA
extractable - mg/kg soil

Interpretation of data				Sample ID Number	20-175-23	
low	medium	high		Sample Description	4"	
			elements			graphic
0 - 7	8-15	over 15	phosphorus		29.45	*****
0-60	60 -120	121-180	potassium		402.73	*****
0 - 4	4 - 10	over 10	iron		87.32	*****
0- 0.5	0.6- 1	over 1	manganese		6.68	****
0 - 1	1 - 1.5	over 1.5	zinc		6.78	****
0- 0.2	0.3- 0.5	over 0.5	copper		2.72	****
0- 0.2	0.2- 0.5	over 1	boron		0.26	* * *
			calcium		514.27	****
			magnesium		129.01	****
			sodium		12.29	*
			sulfur		7.01	*
			molybdenum		n d	*
			nickel		1.34	**
The following trace			aluminum		4.56	****
elements may be toxic			arsenic		0.05	*
The degree of toxicity			barium		1.41	*
depends upon the pH of			cadmium		0.16	*
the soil, soil texture,			chromium		n d	*
organic matter, and the			cobalt		0.03	*
concentrations of the			lead		2.11	**
individual elements as			lithium		0.25	*
well as to their interactions.			mercury		n d	*
			selenium		n d	*
The pH optimum depends			silver		n d	*
upon soil organic			strontium		2.03	*
for clay and loam soils:			vanadium		0.45	*
under 5.2 is too acidic						
6.5 to 7 is ideal			Saturation Extract			
over 9 is too alkaline			pH value		6.46	***
The ECe is a measure of			ECe (milli-mho/cm)		0.22	*
the soil salinity:						millieq/l
1-2 affects a few plants			calcium		22.4	1.1
2-4 affects some plants,			magnesium		7.3	0.6
> 4 affects many plants.			sodium		6.4	0.3
			potassium		16.9	0.4
			cation sum			2.4
problems over 150 ppm			chloride		8	0.2
good 20 - 30 ppm			nitrate as N		17	1.2
			phosphorus as P		1.2	0.0
toxic over 800			sulfate as S		4.0	0.2
			anion sum			1.7
toxic over 1 for many plants			boron as B		0.15	*
increasing problems start at 3			SAR		0.3	*
est. gypsum requirement-lbs./1,000 square feet					2	
			calculated percolation rate inches/hour		1.22	
			soil texture		gravelly loam	gravel > 2 mm
			sand		47.2%	24.9%
			silt		34.0%	gravel > 1/4 inch
			clay		18.8%	7.4%
			lime (calcium carbonate)		no	gravel > 1/2 inch
			Total nitrogen		0.417%	0.0%
			Total organic carbon		7.287%	
			carbon:nitrogen ratio		17.5	
			organic matter based on carbon		14.57%	
			moisture content of soil		15.3%	
			half saturation percentage		36.8%	

Elements are expressed as mg/kg dry soil or mg/l for saturation extract.
pH and ECe are measured in a saturation paste extract. nd means not detected.

WALLACE LABORATORIES, LLC

365 Coral Circle
El Segundo, CA 90245
phone (310) 615-0116 fax (310) 640-6863

June 24, 2020

Sanjeet Dutta, SanjeetDutta@yahoo.com
250 Bonita Road
Portola Valley, CA 94028

RE: Soil Management Report
Sample received June 22, 2020, Our ID No. 20-175-23, 4"

Dear Sanjeet,

The pH is modestly acidic at 6.46. The salinity is low at 0.22 millimho/cm.

Nitrogen and boron are moderate. Sulfur is low. Phosphorus, potassium, iron, manganese, zinc, copper and magnesium are high. The concentrations of common non-essential heavy metals are low. Aluminum is high.

Aluminum restricts growth by interfering with the metabolism of phosphorus and calcium. It causes stunting and discoloration. Foliage may turn a dull gray green. Aluminum is high in poorly aerated soil and in overly acidic soils. Soluble calcium helps to reduce the toxicity of aluminum.

Available sodium is low. SAR (sodium adsorption ratio) is 0.3.

The texture is gravelly loam. Based on the non-gravel fraction, it contains 47.2% sand, 47.4% silt and 18.8% clay. The gravel content is 24.9%.

Soil organic matter is high at 14.6% on a dry weight basis. The carbon:nitrogen ratio is 17.5.

The estimated rate of water percolation based on Soil Water Characteristics version 6.02.74 model developed by Keith Saxton of the USDA is moderate at 1.22 inches per hour for normal soil compaction. The model is based on the soil texture, percent gravel and percent soil organic matter.

Recommendations

The soil has sufficient soil organic matter. Apply gypsum at 10 pounds per 1,000 square feet and work it into the soil. On a volume basis, incorporate gypsum into the soil at the rate of ½ pound per cubic yard.

For maintenance fertilization, apply calcium nitrate (15.5-0-0) at 6 pounds per 1,000 square feet about once per quarter. Nitrate helps to increase soil aeration and decrease aluminum. If not over applied, calcium nitrate (15.5-0-0) will slowly increase the pH.

Soil Analyses Plant Analyses Water Analyses

Continuation, June 24, 2020, page 2

Monitor the site with periodic soil and leaf tissue testing. Adjust the fertility and irrigation programs as needed.

Sincerely,

Garn A. Wallace, Ph. D.
GAW:n

PLEASE NOTE:
CONTRACTOR TO FOLLOW ALL RECOMMENDATIONS
OF THE LAB FOR SOIL PREPARATION

REGISTERED LANDSCAPE ARCHITECT
LOUIS J. MARINACCI
No. 3220
Signature
Date 6/6/20
STATE OF CALIFORNIA

GAP
1/31/2021

landsystems
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C27 474943
RLA 3220

JOB
DUTTA RES.

SOIL MANAGEMENT REPORT

DESIGNER
PC

DUTTA RESIDENCE
250 BONITA ROAD,
PORTOLA VALLEY, CA 94028

DATE
08.01.2020
REVISIONS

SCALE
N/A

SHEET
REPORT

ENLARGEMENT PLAN

IRRIGATION LEGEND

SYMBOL	ITEM	MANUFACTURER/REMARKS
W	EX. WATER METER	2"
C	CONTROLLER	RACHIO 3, 16 -ZONE
M	MOISTURE SENSOR	ACURITE 5-IN-1 MOISTURE SENSOR
POC	POINT OF CONNECTION	POINT OF CONNECTION TO DOMESTIC WATER LINE
	BACKFLOW PREVENTION DEVICE	REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY. 1" FEBCO 825-Y, BRASS
	GATE (MANUAL SHUT OFF) VALVE	EVERBILT BRASS, 170-2-1-EB
	AUTOMATIC CONTROL VALVE	RAINBIRD-DVF-100, 1"
	ADJUSTABLE ROTARY NOZZLE	RAIN BIRD R-VAN18 RAIN BIRD R-VAN-18-360
	MAIN LINE	PVC, SCH 40, 1", JM-EAGLE
	DRIP LINE	1/2" POLY TUBE, LANDSCAPE PRODUCTS
HB	HOSE BIB	1", BUCKNER-SUPERIOR, BRASS
	3" SLEEVE PIPE	PVC, SDR 35, 3" MIN, JM-EAGLE
	LATERAL LINE	PVC, SCH 40, 1", JM-EAGLE
	PRESSURE REGULATING FILTER	RAIN BIRD, PRF-100-RBY, PLASTIC
SM	SUB WATER METER	NETAFIM, 1"

VALVE#	HYDRPZONE	VALVE#	GPM	APPLICATION RATE	OPERATING PRESSURE
1	HZ1(LOW)	DRIP	0.77	0.13 in/h	25 P.S.I.
2	HZ2(MODERATE)	DRIP	1.18	0.50 in/h	25 P.S.I.
3	HZ3(MODERATE)	DRIP	1.05	0.31 in/h	25 P.S.I.
4	HZ4(LOW)	DRIP	1.30	0.12 in/h	25 P.S.I.
5	HZ5(MODERATE)	DRIP	0.99	0.25 in/h	25 P.S.I.
~~5B~~	~~HZ5(MODERATE)~~	~~DRIP~~	~~0.82~~	~~0.44 in/h~~	~~25 P.S.I.~~
6	HZ6(LOW)	DRIP	0.36	0.07 in/h	25 P.S.I.
7	HZ7(MODERATE)	DRIP	0.32	0.28 in/h	25 P.S.I.
8	HZ8(LOW)	DRIP	0.91	0.15 in/h	25 P.S.I.
9	HZ9(LOW)	DRIP	0.87	0.09 in/h	25 P.S.I.
10	HZ10(MODERATE)	DRIP	0.97	0.17 in/h	25 P.S.I.
11	HZ11(LOW)	DRIP	0.92	0.16 in/h	25 P.S.I.
12	HZ12(LOW)	DRIP	0.69	0.22 in/h	25 P.S.I.
13	HZ13(MODERATE)	DRIP	0.67	0.11 in/h	25 P.S.I.
14	HZ14(LOW)	ROTARY NOZZLE	13.72	0.63 in/h	65 P.S.I.
15	HZ14(LOW)	ROTARY NOZZLE	19.8	0.60 in/h	65 P.S.I.
16	HZ14(LOW)	ROTARY NOZZLE	13.72	0.63 in/h	65 P.S.I.

NOTE:

ALL EXISTING PLANTS WILL BE IRRIGATED USING SEPARATE EMITTER, WATER USE DEPENDS ON THE PLANT SPECIES EXCEPT NATIVE OAK AND NATIVE PLANT NO ADDITIONAL IRRIGATION. LOW WATER USE TO USE 0.5-1 GALLON/HR EMITTER, MODERATE WATER USE TO USE 1-1.5 GALLON/HR EMITTER DEPENDING ON THE SIZE OF THE PLANTS

WATER SUPPLY TYPE: CALWATER

NOTE: DOUBLE SLEEVE 1" WATER LINE 10' IN EACH DIRECTION WHERE IT CROSSES SEPTIC TRANSPORT LINE 2

AT THE TIME OF FINAL INSPECTION, THE PERMIT APPLICANT MUST PROVIDE THE OWNER OF THE PROPERTY WITH A CERTIFICATE OF COMPLETION, CERTIFICATE OF INSTALLATION, IRRIGATION SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE.

AN IRRIGATION AUDIT REPORT SHALL BE COMPLETED BY A CERTIFIED IRRIGATION AUDITOR AT THE TIME OF FINAL INSPECTION. SUBMIT THIS REPORT TO SAN MATEO COUNTY PLANNING FOR REVIEW AND ACCEPTANCE IN 8-1/2"X11" FORMAT.

I HAVE COMPLIED WITH THE CRITERIA OF THE ORDINANCE AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE LANDSCAPE DESIGN PLAN

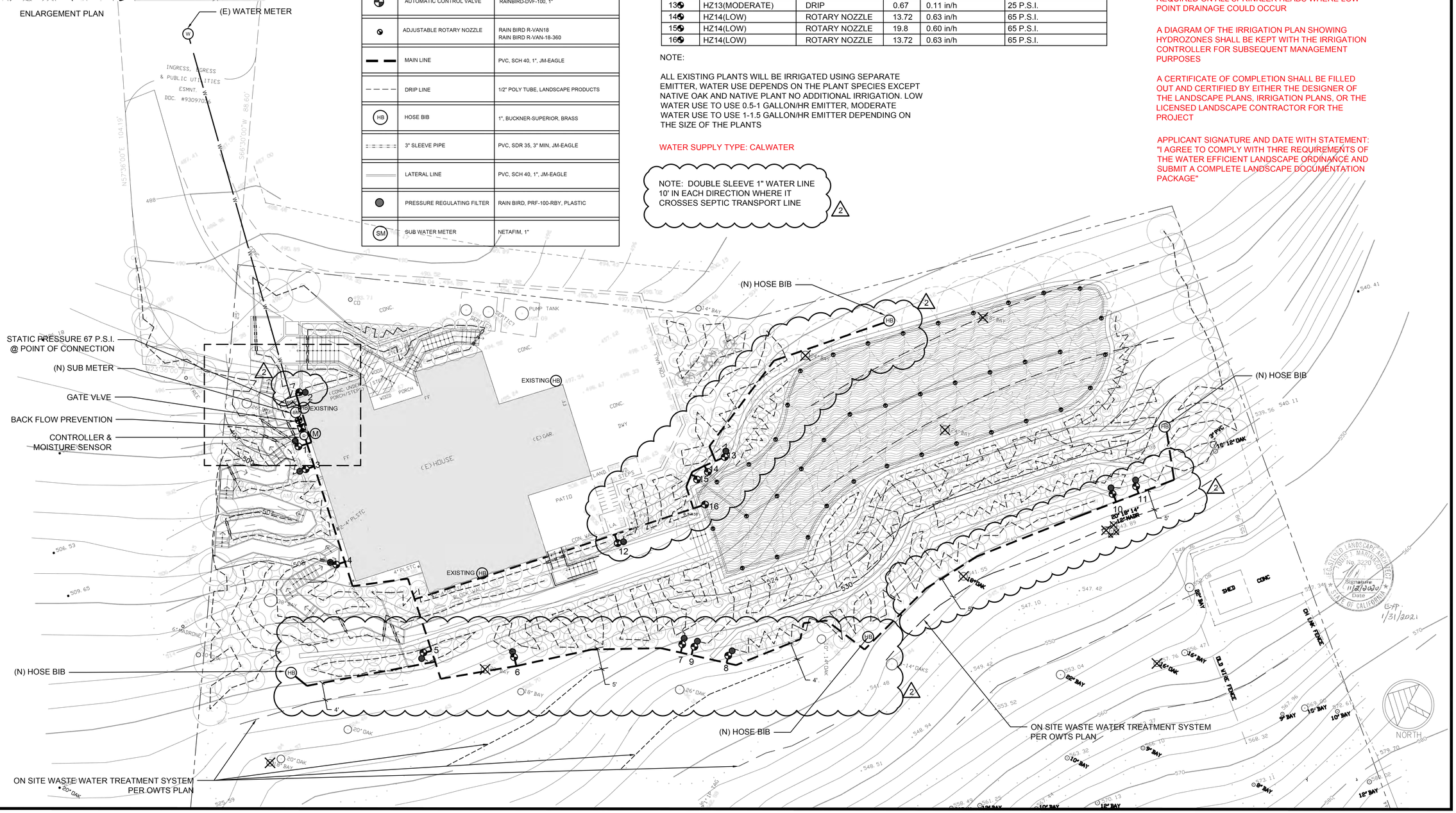
PRESSURE REGULATING DEVICES ARE REQUIRED IF WATER PRESSURE IS BELOW OR EXCEEDS THE RECOMMENDED PRESSURE OF THE SPECIFIED IRRIGATION DEVICES

CHECK VALVES OR ANTI-DRAIN VALVES ARE REQUIRED ON ALL SPRINKLER HEADS WHERE LOW POINT DRAINAGE COULD OCCUR

A DIAGRAM OF THE IRRIGATION PLAN SHOWING HYDROZONES SHALL BE KEPT WITH THE IRRIGATION CONTROLLER FOR SUBSEQUENT MANAGEMENT PURPOSES

A CERTIFICATE OF COMPLETION SHALL BE FILLED OUT AND CERTIFIED BY EITHER THE DESIGNER OF THE LANDSCAPE PLANS, IRRIGATION PLANS, OR THE LICENSED LANDSCAPE CONTRACTOR FOR THE PROJECT

APPLICANT SIGNATURE AND DATE WITH STATEMENT: "I AGREE TO COMPLY WITH THRE REQUIREMENTS OF THE WATER EFFICIENT LANDSCAPE ORDINANCE AND SUBMIT A COMPLETE LANDSCAPE DOCUMENTATION PACKAGE"



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IRRIGATION PLAN

DESIGNER
QL

PC
TV

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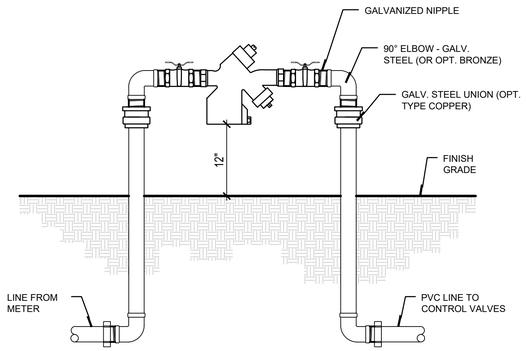
250 BONITA ROAD,
PORTOLA VALLEY, CA 94028

DATE
02.25.2020
REVISIONS
08.04.2020
11.02.2020 2

SCALE
3/32" = 1'-0"

SHEET
IRR
IRR PLAN

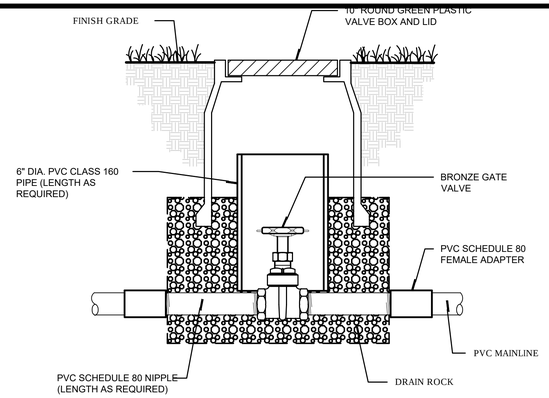


SECTION

A RP BACKFLOW PREVENTER

SCALE: NOT TO SCALE

PRE-RP1



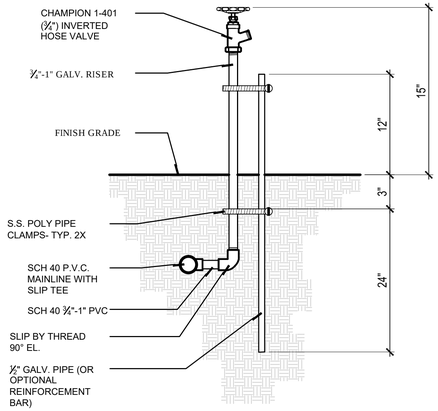
NOTE:
SET TOP OF BOX EVEN WITH FINISH GRADE IN TURF AREAS.

SECTION

B GATE VALVE

SCALE: NOT TO SCALE

VAL-GA1

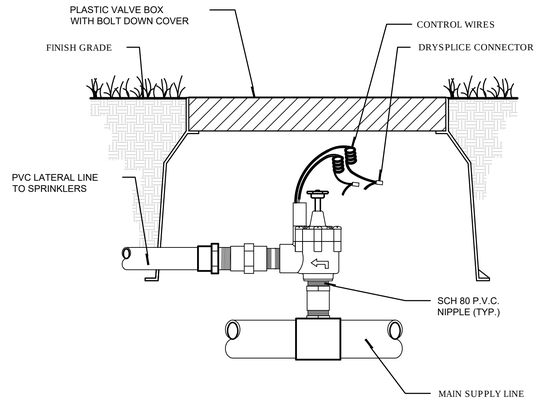


SECTION

C HOSE BIBB

SCALE: NOT TO SCALE

HOS-BI1



SECTION

D REMOTE CONTROL VALVE

SCALE: NOT TO SCALE

VAL-RE1

NOTES:

1. PLACE WYE STRAINER TO ONE SIDE OF BOX FOR MAINTENANCE.
2. ROTATE WYE STRAINER 30 DOWNWARD FROM HORIZONTAL.

SECTION

E DRIP IRRIG. & PRESSURE REG.

SCALE: NOT TO SCALE

PRE-RE1

SECTION

F POP-UP SPRAY & RTR. HEADS

SCALE: NOT TO SCALE

SPR-HE1

SECTION

G SHB HEAD & RISER ASSEMBLY

SCALE: NOT TO SCALE

SHR-HE1

NOTE:

H. BUBBLER OPTION A

SCALE: NOT TO SCALE

NOTE:

I. BUBBLER OPTION B

SCALE: NOT TO SCALE

J. DRIPLINE IRRIGATION

SCALE: NOT TO SCALE

K. DRIPLINE CONNECTIONS

SCALE: NOT TO SCALE

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3113 Middlefield Road
Redwood City, CA, 94063-3731
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LID1
IRRIGATION DETAILS

California Water Efficient Landscape Worksheet

Reference Evapotranspiration (ETo): 42.8 | Project Type: Residential | 0.55

Hydrozone # / Planting Descriptiona	Plant Factor (PF)	Irrigation Methodb	Irrigation Efficiency (IE)c	ETAF (PF/IE)	Landscape Area (Sq. Ft.)	ETAF x Area	Estimated Total Water Use (ETWU)d
Regular Landscape Areas							
HZ1	0.2	DRIP	0.81	0.25	552.8	138	1479
HZ2	0.5	DRIP	0.81	0.62	219.6	136	3613
HZ3	0.5	DRIP	0.81	0.62	277.2	172	4561
HZ4	0.2	DRIP	0.81	0.25	882.5	221	5855
HZ5	0.5	DRIP	0.81	0.62	333.1	207	5480
HZ6	0.2	DRIP	0.81	0.25	389	97	2581
HZ7	0.5	DRIP	0.81	0.62	77.4	48	1273
HZ8	0.2	DRIP	0.81	0.25	527	132	3496
HZ9	0.2	DRIP	0.81	0.25	721.3	180	4785
HZ10	0.5	DRIP	0.81	0.62	505	313	8308
HZ11	0.2	DRIP	0.81	0.25	499	125	3310
HZ12	0.2	DRIP	0.81	0.25	234	59	1552
HZ13	0.5	Drip	0.81	0.62	378	234	6219
HZ14	0.2	Overhead	0.75	0.27	2878.2	777	20621
				Totals	8474	2839	73134
Special Landscape Areas							
				Totals	0		
						ETWU Total	73134
						Maximum Allowed Water Allowance (MAWA)e	123678

All Landscape Areas	
Total ETAF x Area	2839
Total Area	8474
Average ETAF	0.33

Average ETAF for Regular Landscape Areas must be .55 or below for residentail areas, and .45 or below for non-residential areas.

Hydrozone Category	PF-Plant Factor
Very Low Water Use	0.0 - 0.1
Low Water Use*	0.1 - 0.3
Moderate Water Use	0.4 - 0.6
High Water Use	0.7 - 1.0

Irrigation Method	IE- Irrigation Efficiency
Overhead Spray	0.75
Drip	0.81

HZ1 LOW
HZ2 MODERATE
HZ3 MODERATE
HZ4 LOW
HZ5 MODERATE
HZ6 LOW
HZ7 MODERATE
HZ8 LOW
HZ9 LOW
HZ10 MODERATE
HZ11 LOW
HZ12 LOW
HZ13 MODERATE
HZ14 LOW

LOW WATER USE

MODERATE WATER USE

WATER SUPPLY TYPE: CALWATER

NOTES:

RE-CIRCULATING WATER SYSTEMS SHALL BE USED FOR WATER FEATURES.

A MINIMUM 3-INCH LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS EXCEPT TURF AREAS, CREEPING OR ROOTING GROUNDCOVER, OR DIRECT SEEDING APPLICATIONS WHERE MULCH IS CONTRAINDICATED.

FOR SOILS LESS THAN 6% ORGANIC MATTER IN THE TOP 6 INCHES OF SOIL, COMPOST AT A RATE OF A MINIMUM OF FOUR CUBIC YARDS PER 1,000 SQUARE FEET OF PERMEABLE AREA SHALL BE INCORPORATED TO A DEPTH OF SIX INCHES INTO THE SOIL.

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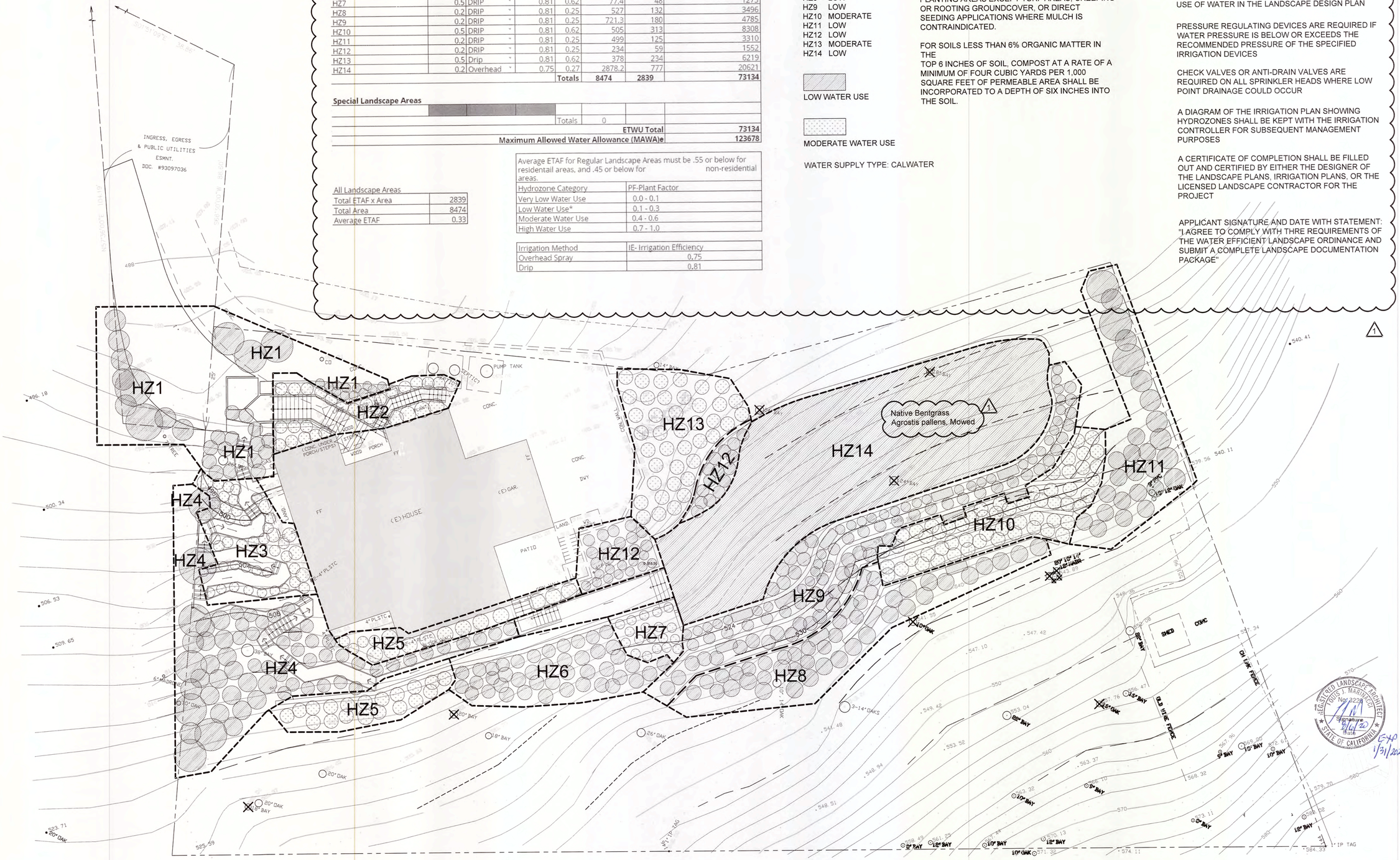

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DATE
02.25.2020
REVISIONS
07.30.2020 1

SCALE
3/32" = 1'-0"

SHEET
WELO
WELO PLAN

LEGEND

EXISTING		PROPOSED
▭	BULDING	▭
⊛	MONUMENT	
□	CURB INLET	
○	AREA DRAIN	
•	POLE	•
◯	SANITARY SEWER MANHOLE	●
◎	STORM DRAIN MANHOLE	◉
⊗	FIRE HYDRANT	⊗
⊗	WATER VALVE	⊗
○	STREET LIGHT	○
○	CLEANOUT	○
———	BOUNDARY	———
———	LOT LINE	———
— — —	CENTERLINE	— — —
— — — —	LIMIT OF EASEMENT	— — — —
———	CURB	———
———	CURB AND GUTTER	———
———	EDGE OF PAVEMENT	———
———	CONTOUR	———
— — —	FENCE	— — —
— · — · —	FLOW LINE	— · — · —
SS — SS	SANITARY SEWER	SS — SS
SD — SD	STORM DRAIN	SD — SD
E — E	ELECTRICAL	
G — G	GAS	G — G — G
W — W	WATER	W — W — W
———	FIBER ROLLS	———
— — — —	LEACH LINE	----------
	SUBDRAIN	.....

SCALE: 1"=10'

EARTHWORK QUANTITIES

			CUT	FILL	DEPTH OF CUT	DEPTH OF FILL
			C.Y.	C.Y.	FEET	FEET
YARD			544	187	11	8.5
EXPORT			357			

NOTES:
THE PROJECT GEOTECHNICAL ENGINEER AND/OR CIVIL ENGINEER WILL CONDUCT SITE REVIEWS OF THE DRAINAGE SYSTEM DURING CONSTRUCTION AND PROVIDE THE COUNTY WITH LETTERS DOCUMENTING THAT THE DRAINAGE SYSTEM(S) HAVE BEEN COMPLETED PER PLAN.

ALL STORM DRAIN PIPE WILL BE SOLID 6" PVC PIPES.

S01°51'09"E 38.86'
INGRESS, EGRESS & PUBLIC UTILITIES ESMNT. DOC. #93097036
N57°36'00"E 104.19'
S66°30'00"W 88.60'
N 22° 20' 37" W 119.19'
N 43° 25' 37" W 102.05'
N 41° 38' 43" E 150.00'
N 66° 30' 00" E 127.86'
N 28° 27' 30" W 279.20'
N23°30'00"W 495.20.00'
EXISTING SEPTIC FORCE MAINS TO BE ABANDONED IN PLACE. NEW MAINS TO BE CONSTRUCTED AT LEAST 12" FROM THE DISSIPATER
APPROXIMATE LOCATION OF EXPANSION LEACH LINE
ENERGY DISSIPATER INV 505.00
EXTEND SUBDRAIN TO ENERGY DISSIPATER
A.D. GR. 518.50 INV OUT 509.10
GRASSY SWALE
A.D. GR. 515.00 INV IN 508.05 INV OUT 506.00
4'-6"PVC S=0.01
7'-6"PVC S=0.02
A.D.GR. 512.47 INV 508.32
6'-6"PVC S=0.01
A.D.GR. 514.80 INV 508.38
REMOVE EX. WALL
29'-6"PVC S=0.01
23'-6"PVC S=0.01
A.D.GR.511.00 INV 508.28
A.D.GR.517.00 INV 512.14
SUBDRAIN (TYP.)
APPROXIMATE LOCATION OF EX. LEACH LINE
EXPANSION LEACH FIELD
PROPOSED PRIMARY LEACH LINE (TYPICAL)
(E) HOUSE
(E) GAR.
PUMP TANK
SEPTIC1
SEPTIC2
SHED
CONC
DWY
PATIO
BLOCK WALL
CH. LINK FENCE
BLD. WIRE FENCE
REGISTERED PROFESSIONAL ENGINEER KAREL CYMBAL NO. C 34524 EXP. 09-30-2021 CIVIL STATE OF CALIFORNIA

NO.	BY	DATE	REVISION	BY	DATE

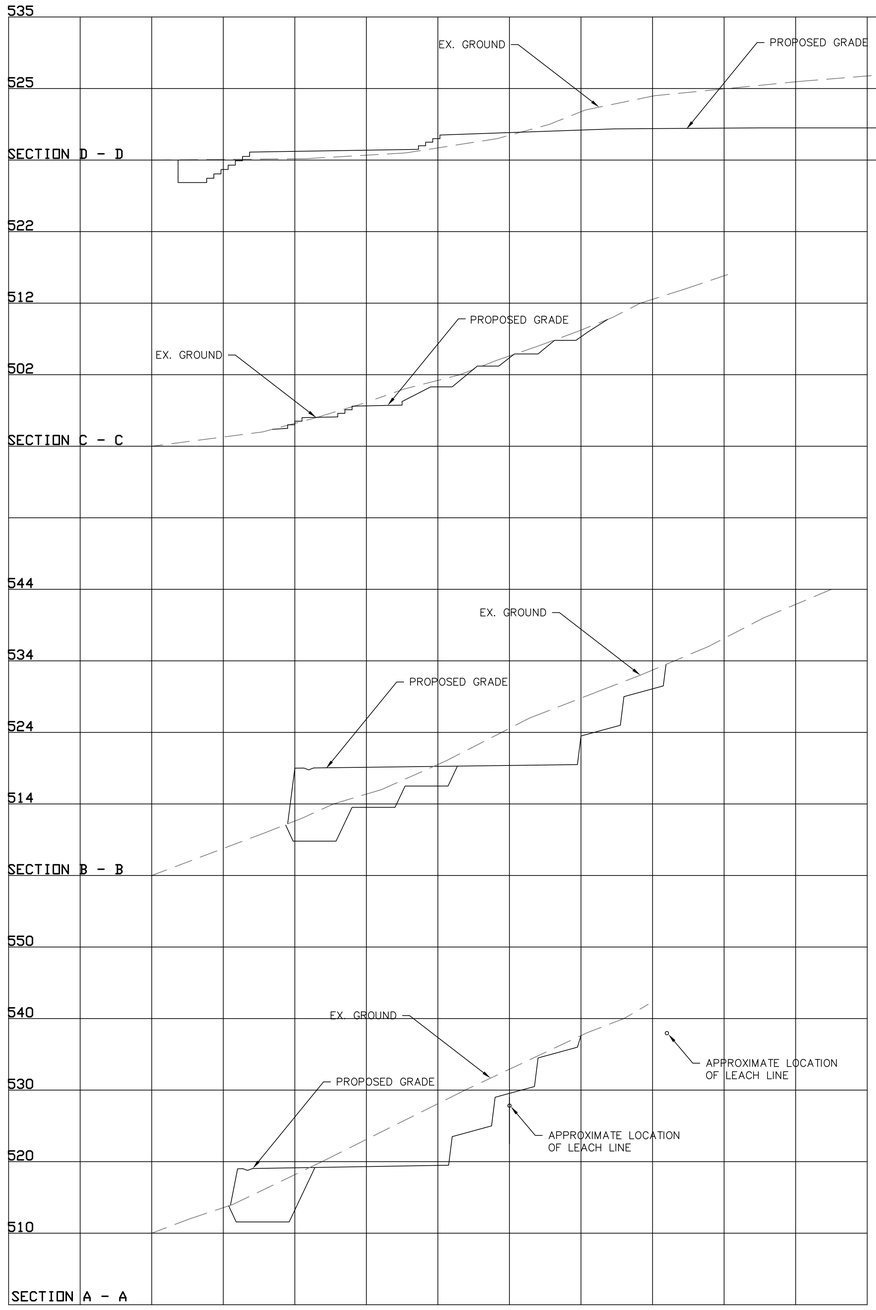
DATE: JUNE 30, 2020
SCALE: HOR. 1"=10' VERT.
DESIGNED: JC
CHECKED: KC
PROJ. ENGR: JC

BY: KAREL CYMBAL, RCE 34524
DATE:

WESTFALL ENGINEERS, INC.
14583 BIG BASIN WAY, SARATOGA, CA 95070 (408)867-0244

GRADING AND DRAINAGE PLAN
250 BONITA ROAD, PORTOLA VALLEY

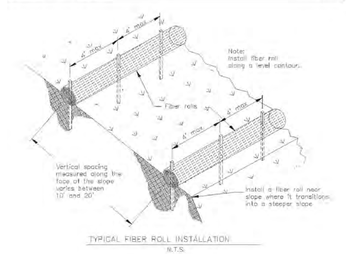
JOB NO. 2018-002
SHEET 1 OF 4



GRADING SECTIONS

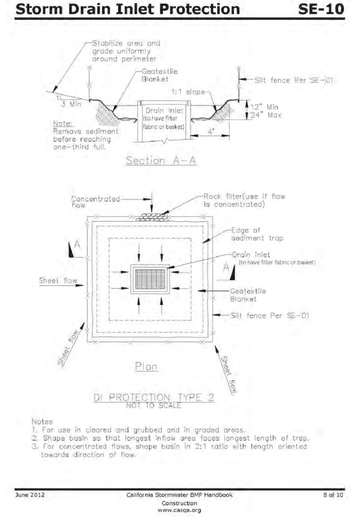
VERTICAL SCALE: 1 inch = 10 feet
HORIZONTAL SCALE: 1 inch = 10 feet

Fiber Rolls SE-5

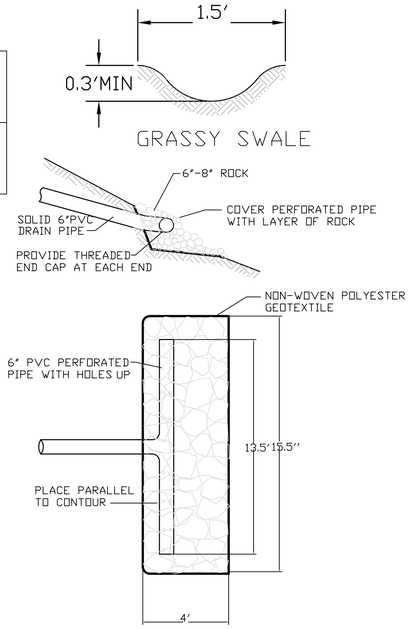


NOTES:
If more than one fiber roll is placed in a row, the rolls must be overlapped, not abutted. Turn the ends of the fiber roll up-slope to prevent runoff from going around the roll.

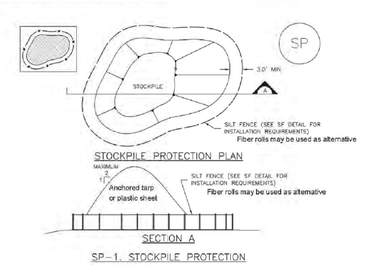
Storm Drain Inlet Protection SE-10



Notes
1. For use in cleared and grubbed and fri graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



Stockpile Management (SP)



SP-1. STOCKPILE PROTECTION

AIR QUALITY, LANDSCAPING & EROSION CONTROL

1. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
2. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
3. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY (NON-TOXIC) SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS AT CONSTRUCTION SITES.
4. ALL CONSTRUCTION VEHICLES, EQUIPMENT AND DELIVERY TRUCKS SHALL HAVE A MAXIMUM IDLING TIME OF 5 MINUTES (AS REQUIRED BY THE CALIFORNIA AIRBORNE TOXIC CONTROL MEASURE TITLE 13, SECTION 2485 OF CALIFORNIA CODE OF REGULATIONS (CCR)). ENGINES SHALL BE SHUT OFF IF CONSTRUCTION REQUIRES LONGER IDLING TIME UNLESS NECESSARY FOR PROPER OPERATION OF THE VEHICLE.
5. ALL CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED AND PROPERLY TUNED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ALL EQUIPMENT SHALL BE CHECKED BY A CERTIFIED MECHANIC AND DETERMINED TO BE RUNNING IN PROPER CONDITION PRIOR TO OPERATION.
6. ALL FILL SLOPES SHALL BE COMPACTED AND LEFT IN A SMOOTH AND FIRM CONDITION CAPABLE OF WITHSTANDING WEATHERING.
7. ALL EXPOSED DISTURBED AREAS SHALL BE SEEDED WITH BROME SEED SPREAD AT THE RATE OF 5 LB. PER 1000 SQUARE FEET (OR APPROVED EQUAL). SEEDING AND WATERING SHALL BE MAINTAINED AS REQUIRED TO ENSURE GROWTH.
8. THE OWNER, CONTRACTOR, AND ANY PERSON PERFORMING CONSTRUCTION ACTIVITIES SHALL INSTALL AND MAINTAIN CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPS) ON THE PROJECT SITE AND WITHIN THE SAN MATEO COUNTY ROAD RIGHT-OF-WAY THROUGHOUT THE DURATION OF THE CONSTRUCTION AND UNTIL THE ESTABLISHMENT OF PERMANENT STABILIZATION AND SEDIMENT CONTROL TO PREVENT THE DISCHARGE OF POLLUTANTS INCLUDING SEDIMENT, CONSTRUCTION MATERIALS, EXCAVATED MATERIALS, AND WASTE INTO THE SANTA CLARA COUNTY RIGHT-OF-WAY, STORM SEWER WATERWAYS, ROADWAY INFRASTRUCTURE. BMPS SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING;
   A. PREVENTION OF POLLUTANTS IN STORM WATER DISCHARGES FROM THE CONSTRUCTION SITE AND THE CONTRACTOR'S MATERIAL AND EQUIPMENT LAYDOWN / STAGING AREAS.
   B. PREVENTION OF TRACKING OF MUD, DIRT, AND CONSTRUCTION MATERIALS ONTO THE PUBLIC ROAD RIGHT-OF-WAY.
   C. PREVENTION OF DISCHARGE OF WATER RUN-OFF DURING DRY AND WET WEATHER CONDITIONS ONTO THE PUBLIC ROAD RIGHT-OF-WAY.
9. THE OWNER, CONTRACTOR, AND ANY PERSON PERFORMING CONSTRUCTION ACTIVITIES SHALL ENSURE THAT ALL TEMPORARY CONSTRUCTION FACILITIES, INCLUDING BUT NOT LIMITED TO CONSTRUCTION MATERIALS, DELIVERIES, HAZARDOUS AND NON-HAZARDOUS MATERIAL STORAGE, EQUIPMENT, TOOLS, PORTABLE TOILETS, CONCRETE WASHOUT, GARBAGE CONTAINERS, LAYDOWN YARDS, SECONDARY CONTAINMENT AREAS, ETC. ARE LOCATED OUTSIDE THE SANTA CLARA COUNTY ROAD RIGHT-OF-WAY.
10. EROSION CONTROL PLAN IS A GUIDE AND SHALL BE AMENDED AS NECESSARY TO PREVENT EROSION AND ILLICIT DISCHARGES ON A YEAR AROUND BASIS, DEPENDING ON THE SEASON, WEATHER, AND FIELD CONDITIONS. EROSION CONTROL MEASURES IN ADDITION TO THOSE NOTED IN THE PERMITTED PLANS MAY BE NECESSARY. FAILURE TO INSTALL SITE SITE AND SITUATIONALY APPROPRIATE EROSION CONTROL MEASURES MAY RESULT IN VIOLATIONS, FINES, AND A STOPPAGE OF WORK.
11. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
12. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
13. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY (NON-TOXIC) SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS AT CONSTRUCTION SITES.
14. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS AT CONSTRUCTION SITES. THE USE OF DRY POWDER SWEEPING IS PROHIBITED.
15. SWEEP STREETS DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO ADJACENT PUBLIC STREETS. THE USE OF DRY POWDER SWEEPING IS PROHIBITED.

REGISTERED PROFESSIONAL ENGINEER KAREL CYMBAL NO. C 34534 EXP. 09-30-2021 CIVIL STATE OF CALIFORNIA

NO.	BY	DATE	REVISION	BY	DATE

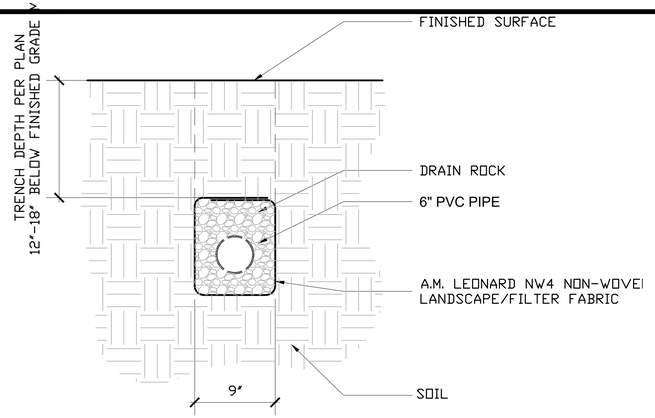
DATE:SEPTEMBER 2020
SCALE: HOR. 1"=10' VERT. 1'=10'
DESIGNED: JC
CHECKED: KC
PROJ. ENGR: JC

BY: KAREL CYMBAL, RCE 34534
DATE:

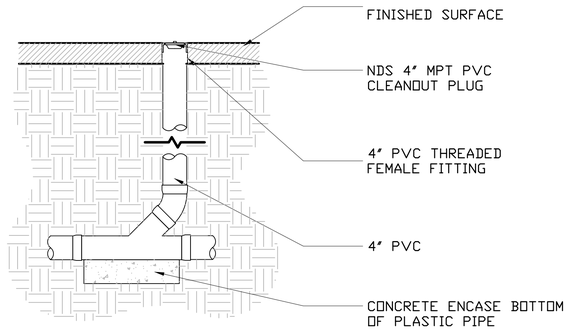
WESTFALL ENGINEERS, INC.
14583 BIG BASIN WAY, SARATOGA, CA 95070 (408)867-0244

GRADING AND DRAINAGE PLAN
250 BONITA ROAD, PORTOLA VALLEY

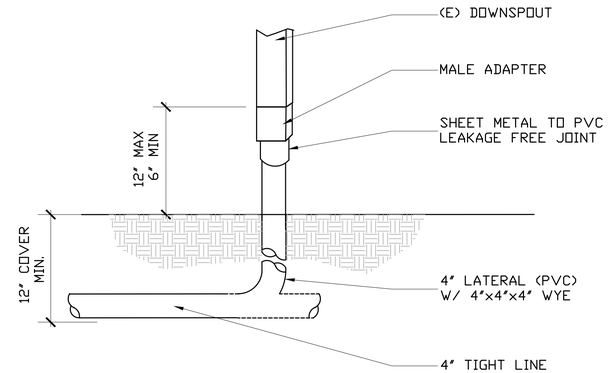
JOB NO. 2018-002
SHEET 2
OF 4



1. DRAIN PIPE
SCALE: 1-1/2" = 1' -0"



2. DRAIN CLEANOUT
SCALE: 1" = 1' -0"



3. DOWNSPOUT TIE-IN
SCALE: 1" = 1' -0"

4. ATRIUM DRAIN
SCALE: 1" = 1' -0"

5. TRENCH DRAIN
SCALE: 3" = 1' -0"

landsystems
LANDSCAPE ARCHITECTS AND CONTRACTORS
C27 474943
RLA 5220
3113 Middlefield Road
Redwood City, CA. 94063-3731
650.851.2793
www.landsystemsdesign.com

JOB
DUTTA RES.

DRAINAGE DETAILS

AC

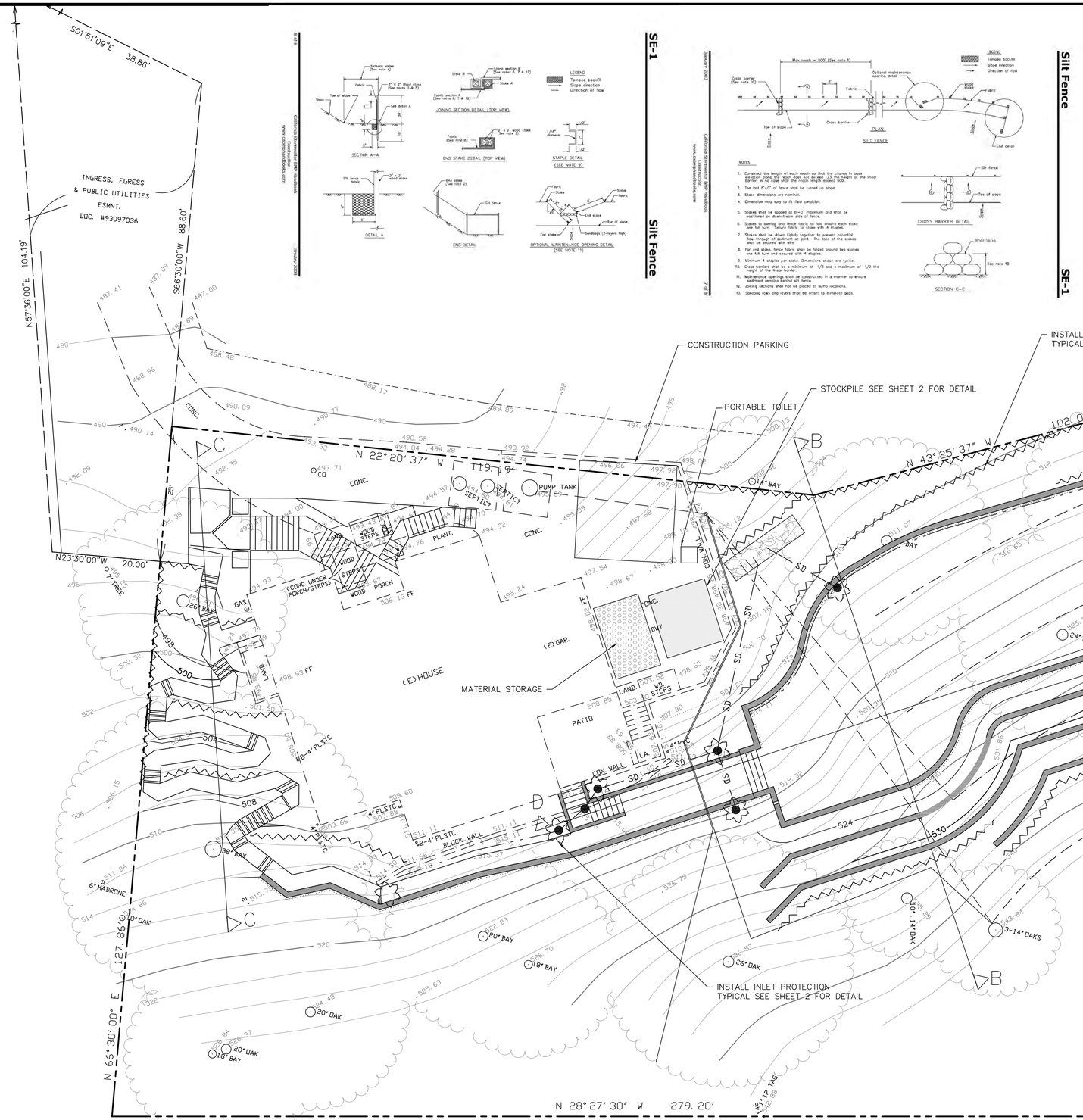
TV

DUTTA RESIDENCE
250 BONITA ROAD,
PORTOLA VALLEY, CA 94028

DATE
12.14.17
REVISIONS
8.2.18

SCALE
NTS

SHEET
LDD
DRAINAGE DETAILS



BMP Notes
Erosion Control Point of Contact: Sanjeet Dutta, 250 Bonita Road, Portola Valley, sanjeetdutta@yahoo.com <mailto:sanjeetdutta@yahoo.com>, 408-644-4064.
Perform clearing and earth-moving activities only during dry weather. Measures to ensure adequate erosion and sediment control shall be installed prior to earth-moving activities and construction.
Measures to ensure adequate erosion and sediment control are required year-round. Stabilize all denuded area and maintain erosion control measures continuously between October 1 and April 30.
Store, handle, and dispose of construction materials and wastes properly, so as to prevent their contact with stormwater.
Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, and non-stormwater discharges to storm drains and watercourses.
Use sediment control or filtration to remove sediment when dewatering site and obtain Regional Water Quality Control Board (RWQCB) permit(s) as necessary.
Avoid cleaning, fueling, or maintaining vehicles on-site, except in a designated area where wash water is contained and treated.
Limit and time applications of pesticides and fertilizers to prevent polluted runoff.
Limit construction access routes to stabilized, designated access points.
Avoid tracking dirt or other materials off-site; clean off-site paved areas and sidewalks using dry sweeping methods.
Train and provide instruction to all employees and subcontractors regarding the Watershed protection Maintenance Standards and Construction Best Management Practices.
Placements of erosion materials at these locations are required on weekends and during rain events.
The areas delineated on the plans for parking, grubbing, storage, etc., shall not be enlarged or "run over".
Construction sites are required to have erosion control materials on-site during the "off-season".
Dust control is required year-around.
Erosion control materials shall be stored on-site.
Use of plastic sheeting between October 1 and April 30 is not acceptable, unless for used on stockpiles where the stockpile is also protected with fiber rolls containing the base of the stockpile.
Tree protection shall be in place before any demolition, grading, excavating or grubbing is started.

REGISTERED PROFESSIONAL ENGINEER
KAREL CYMBAL
NO. C 34534
EXP. 09-30-2021
CIVIL
STATE OF CALIFORNIA

NO.	BY	DATE	REVISION	BY	DATE

DATE: SEPTEMBER 2020
SCALE: HOR. 1"=10' VERT.
DESIGNED: JC
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BY: KAREL CYMBAL, RCE 34534
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WESTFALL ENGINEERS, INC.
14583 BIG BASIN WAY, SARATOGA, CA 95070 (408)867-0244

EROSION CONTROL PLAN
250 BONITA ROAD, PORTOLA VALLEY

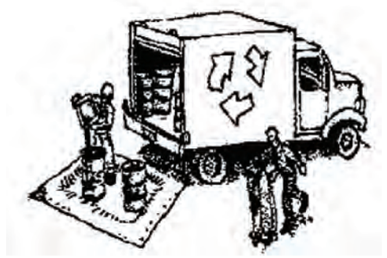
JOB NO. 2018-002
SHEET 3
OF 4

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management



Non-Hazardous Materials

- ❑ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- ❑ Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials

- ❑ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ❑ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ❑ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ❑ Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- ❑ Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- ❑ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- ❑ Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- ❑ Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- ❑ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

Construction Entrances and Perimeter

- ❑ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ❑ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control

Maintenance and Parking

- ❑ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ❑ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ❑ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ❑ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment.

Spill Prevention and Control

- ❑ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ❑ Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- ❑ Clean up spills or leaks immediately and dispose of cleanup materials properly.
- ❑ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- ❑ Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

Earthmoving

- ❑ Schedule grading and excavation work during dry weather.
- ❑ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ❑ Remove existing vegetation only when absolutely necessary, and seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.
- ❑ Prevent sediment from migrating offsite and protect storm drain inlets, gutters, ditches, and drainage courses by installing and maintaining appropriate BMPs, such as fiber rolls, silt fences, sediment basins, gravel bags, berms, etc.
- ❑ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- ❑ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells
  - Buried barrels, debris, or trash.

Paving/Asphalt Work

- ❑ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ❑ Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- ❑ Do not use water to wash down fresh asphalt concrete pavement.

Sawcutting & Asphalt/Concrete Removal

- ❑ Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- ❑ Shovel, abosorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- ❑ If sawcut slurry enters a catch basin, clean it up immediately.

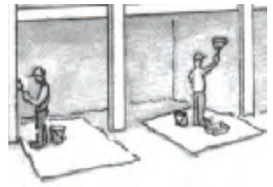
Concrete, Grout & Mortar Application

- ❑ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- ❑ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- ❑ When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

Landscaping

- ❑ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ❑ Stack bagged material on pallets and under cover.
- ❑ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

Painting & Paint Removal



Painting Cleanup and Removal

- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ❑ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.

Dewatering

- ❑ Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer call your local wastewater treatment plant.
- ❑ Divert run-on water from offsite away from all disturbed areas.
- ❑ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- ❑ In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal.

Storm drain polluters may be liable for fines of up to $10,000 per day!


NORTH
1" = 10'
P1 - P6, SP1 =
PERC TEST & SOIL PROFILE conducted in January 2020.
Test holes for tests done in 2001 are circled and labeled w/ year.
SP1 = DEEP HOLE
11 FT DEPTH on 12/27/20
(SOIL LOG shown on OWTS 2)
ELECTRICAL BUILDNG PERMIT is REQUIRED
ALL PVC is Sch. 40, solvent-welded, and 150 PSI rated
(E) STORM WATER PIPE AND DISCHARGE
(E) SEPTIC TANK 1,500 GAL, CONCRETE TRAFFIC-RATED
(E) PUMP TANK 1,500 GAL, CONCRETE TRAFFIC-RATED
(E) 1 1/2" PVC DISCHARGE LINE
(E) 1 1/4" PVC TRANSPORT LINES (2) (abandoned in place)
ABANDON (E) DF (3) TOTAL 270 LINEAR FT
(N) PRESSURE-RATED DIVERTER VALVE 2" BRASS BALL VALVE (150 PSI RATED)
ALARM/CONTROL PANEL (Orenco MVP-S1) (audible/visual alarms) inside garage
2" PVC SUPPLY LINES
(E) 4 BR HOUSE
EDGE OF PAVEMENT
CONTOUR
FENCE
FLOW LINE
SANITARY SEWER
STORM DRAIN
ELECTRICAL
GAS
WATER
FIBER ROLLS
LEACH LINE
SUBDRAIN
Christopher Day
Digitally signed by Christopher Day
Date: 2020.07.09 07:10:58 -07'00'
NOTES:
THE PROJECT GEOTECHNICAL ENGINEER AND/OR CIVIL ENGINEER WILL CONDUCT SITE REVIEWS OF THE DRAINAGE SYSTEM DURING CONSTRUCTION AND PROVIDE THE COUNTY WITH LETTERS DOCUMENTING THAT THE DRAINAGE SYSTEM(S) HAVE BEEN COMPLETED PER PLAN.
ALL STORM DRAIN PIPE WILL BE SOLID 6" PVC PIPES.
DOTTED LINE INDICATES WALL SUBDRAIN.
ALL WALLS WITHIN 25 FT of DRAINFIELDS ARE DESIGNED TO HAVE NO DRAIN, NO STORM WATER CONVEYANCE.
THE WALLS SHOULD BE CONSIDERED GRADING CUTS. SETBACK TO THE WALLS IS ADDRESSED IN GEOTECH REPORT.
1997 11 FT HOLE
EXP
PRIMARY
THESE AREAS NOT SHADED ARE LESS THAN 50% SLOPE.
Remove tree & cut to level grade (when installed)
PRIMARY 1 - 90 linear ft
EXP 2 - 65 linear ft
EXP 1 - 50 linear ft
EXP 1 - 40 linear ft
PRIMARY 2 - 40 linear ft
PRIMARY 2 - 50 linear ft
EXP 2 - 25 linear ft
EXPANSION LEACH FIELD
PROPOSED PRIMARY LEACH LINE (TYPICAL)
SP1 (11 FT)
P1
P2
P3
P4
P5
P6
no foundation under shed
EXISTING DF 90 ft
8 ft trench depth, 6 ft drainrock
Replace 3" perf drainpipe w/ 1 1/2" PVC for pressure-dosed distribution.
Replace drainrock if needed.
INSPECTION WELL DETAIL: (5)
shown as:
(NOT TO SCALE)
THREADED WRENCH TIGHT CAP
12" concrete annular seal
HACKSAW SLOTS (1" vertical spacing below 18")
sand pack
4" PVC PIPE
BOTTOM CAP
TOTAL DEPTH: 11 ft

PROJECT SCOPE & RATIONALE:

The scope of this project is to create a lawn area at the property with new retaining walls, grading & drainage. This will result in abandonment of all expansion and one primary drainfields currently serving the 4 BR house. One existing drainfield (90 ft length) will remain and be converted to pressure-dosed dispersal. New pressure-dosed drainfields (primary and expansion) are proposed to replace the abandoned drainfields. A new pump and diverter valve are proposed, along with new supply piping after the diverter, adjusting and purge valves, and performance wells to monitor groundwater conditions around the installation.

The existing drainfield to be retained was excavated to expose the drainpipe in a small section in the location shown and found to have drainrock and pipe in good condition. The pipe was observed to be 3" perforated PVC, which appears to show that the existing system is not actually pressure-dosed.

A percolation test was conducted in 2020 resulting in an "A" rating as shown. Soil profile analysis was also conducted for an 11 ft hole demonstrating soil depth & separation of proposed trench bottoms to potential high groundwater level meeting the requirement of 3 ft for pressure-dosed trenches. Pressure-dosing is required due to slope exceeding 35% in most of the areas proposed.

C2Earth, Inc. is retained for this project and has indicated that the setback of drainfields to steep slopes and retaining walls as shown are acceptable based on their geological engineering investigation and evaluation of the proposed septic area. The risk of slope instability is low according to the report being submitted.

Retaining walls proposed within 25 ft of the proposed and existing drainfields are designed with no sub-drain adjacent to the walls' edges. Grading and drainage improvements within 25 ft of the drainfields are designed for sheet flow only of storm runoff w/ no drainage conveyances such as swales that would be a concern.

Env. Health issued a construction permit in 2005 for the existing system including 1,500 gal septic tank, 180 ft of standard drainfield trench in 2 lines, and a pump. The design plan by Steve Brooks on file appears to accurately show the as-built system based on recent field observations including a 1,500 gal traffic-rated pump tank separate from the septic tank, a diversion valve and 100% expansion area drainfields.

The existing system may have been installed w/o benefit of inspection as per available records. If so, this will be rectified to the extent possible during construction.

ANNUAL SEPTIC & PUMP TANKS INSPECTION REQUIRED:
1) Access risers & lids in good condition.
2) Structural Integrity - probe interior walls/baffles, inlet/outlet T-pipes.
3) Check Tuf-Tite effluent filter and clean if needed.
4) Septic tank liquid level - should be at outlet invert in tank.
5) Pump tank electrical & signal wires in good condition.
6) Pump tank proper operation of float switches.
SEPTIC TANK SHALL BE PUMPED OUT WHENEVER SOLIDS or FLOATING MATERIAL EXCEED 30% OF TANK VOLUME OR ENCROACH ON INLET/OUTLET T's.
MINIMUM SEPTIC TANK PUMPING FREQUENCY IS 3 TO 5 YEARS.
PUMP TANK to be pumped out when debris may encroach on pump intake.

ON-SITE WATER TIGHTNESS TESTING
(REQUIRED PRIOR TO SEPTIC TANK & PUMP TANK USE)
1. FILL TANK TO TOP OF RISER 1 INCH FROM LID (or to at least 1" in riser)
2. LET TANK SIT FOR 1 HOUR
3. OBSERVE WATER LEVEL IN RISER BEFORE AND AFTER 1 HR PERIOD
4. IF LEVEL HAS FALLEN , INSPECT FOR LEAKS
5. REPAIR ANY LEAKS AND REPEAT TEST

ONGOING MONTORING & REPORTING REQUIREMENTS:
(must be performed by licensed professional or service provider)
YEARS 1 - 4: Semi-annually // YEARS 5+ of operation: Annually
1) Record wastewater flow based on water meter readings or other method
2) Measurement and recording of water levels in inspection wells.
3) Inspection of pump and valves operation, including squirt test.
4) Inspection of dispersal fields for seepage, erosion, etc.
MONITORING REPORT SHALL BE SIGNED BY LICENSED PROFESSIONAL AND SUBMITTED TO EH IN ACCORDANCE WITH THE SYSTEM OPERATING PERMIT.

Construction Inspections Required w/ Designer & EH:
1. Layout Inspection - All components staked or painted
2. Open Trench Inspection - Components in & not covered
3. Pump Test - Pumps, squirt test, and alarms operational.
4. Septic & Pump Tank Water Tightness Testing.
5. Final inspection - All components covered.

Owner Reponsiblity for Alternative Type Septic System:
Owner will acknowledge that the property is served by an alternative pressure-dosed trench type septic system requiring an ongoing service contract, maintenance, and an annual EH operating permit.

PRESSURE-DOSED TRENCH MANAGEMENT REQUIREMENTS:

	Work	Minimum Frequency
Inspection	• Conduct routine visual observations of disposal field and downslope area and surroundings for wet areas, pipe leaks or damage, soil erosion, drainage issues, abnormal vegetation, or other problems. • Perform all inspections of pump and appurtenances (per system O&M manual, and Performance Evaluation Guidelines in Section 5.3 of this Manual).	• Every 6 to 12 months.
Maintenance	• Purge laterals, squirt and balance. • Exercise valves to ensure functionality. • Perform all maintenance work as recommended by equipment manufacturer for any special valves or other components. • Investigate and repair erosion, drainage or other disposal field problems, as needed. • Investigate and perform distribution system corrective work, as required. • Record work done.	• Distribution system maintenance annually. • Other maintenance as required.
Water Monitoring & Sampling	• Measure and record water levels in trench observation wells. • Measure and record water levels in dispersal field monitoring wells, as applicable, per permit requirements. • Obtain and analyze water samples from monitoring wells, as applicable, per permit requirements.	• Measure trench water levels annually. • Other monitoring according to permit conditions, as applicable.
Reporting	• Report findings to Environmental Health per permit requirements. • Standard report to include dates, observation well and monitoring well readings and other data collected, work performed, corrective actions taken, and performance summary. • Report public health/water quality emergency to Environmental Health staff immediately.	• According to permit conditions, typically every year, depending on system size, usage, history, location.

LEGEND

BOUNDARY
EASEMENT
IMPROVEMENTS
10'CONTOUR
2'CONTOUR
FENCE
RETAINING WALL
SPOT ELEVATION 492.38
UTILITY BOX
GRADE BREAK

LEGEND:
- ● = end standpipe(3)
- AV = adjusting valve (3)
- PV = purge valve (3)
- ▷ = inspection well (5)
- T = concrete thrust block (9)

ORIG 3/6/2020
REV 1: 9 JULY 2020
REV 2:

PLAN BY: Christopher Day, R.E.H.S.
P.O. Box 26, Redwood City, CA 94064
Tel. 650-293-1045
Email: christopherdayr@aol.com

OWNER:
Sanjeet Dutta
Tel. 408-644-4064
Email: sanjeetdutta@yahoo.com

250 Bonita Rd., Portola Valley, CA 94028
APN 080-060-570

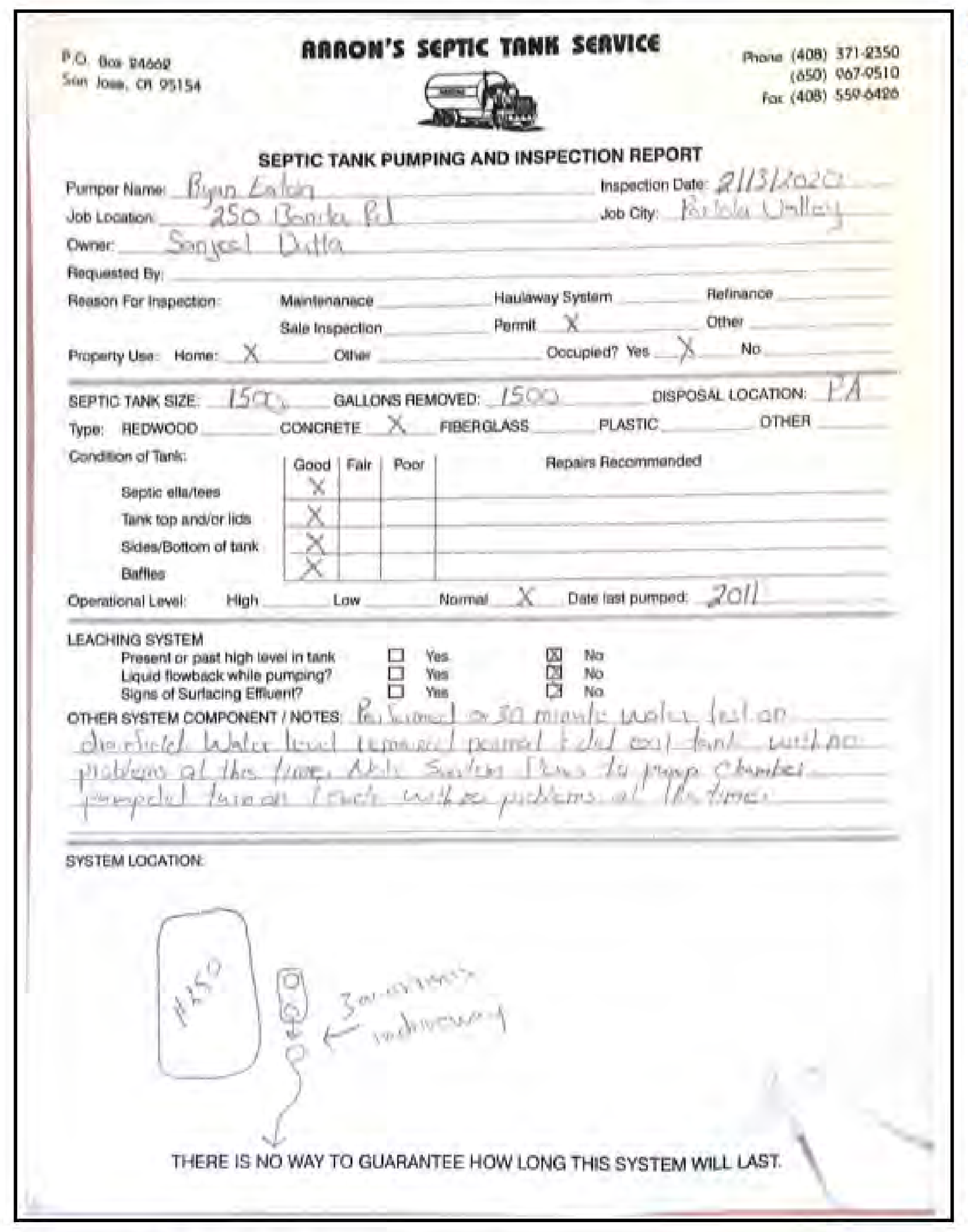
SITE PLAN

NEW PRESSURE-DOSED SEPTIC SYSTEM
(To Serve Existing 4 BR House & Allow Proposed Grading)

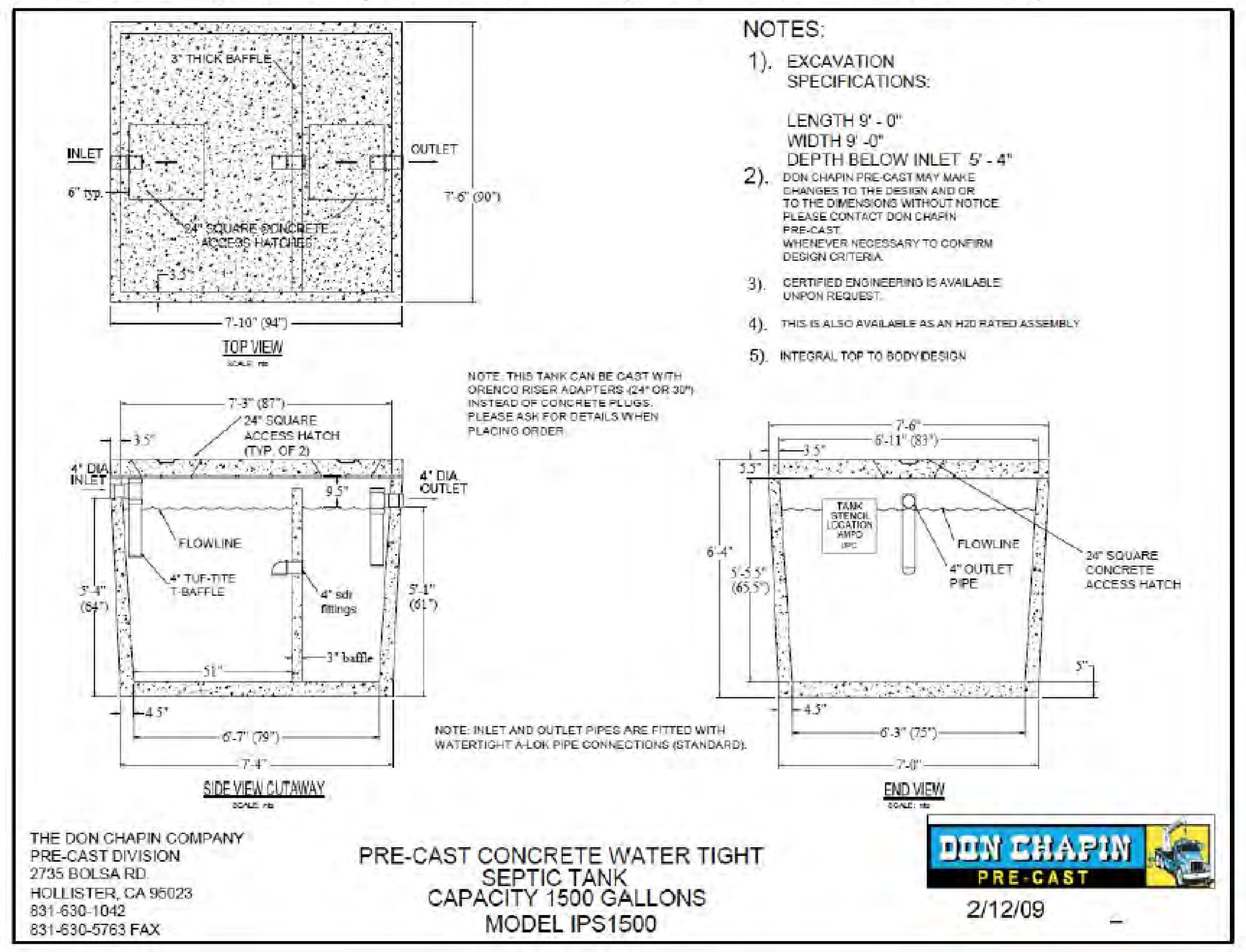
OWTS 1

JOB NO. 2018-002
SHEET 1 OF 1

(E) SEPTIC TANK & PUMP TANK:



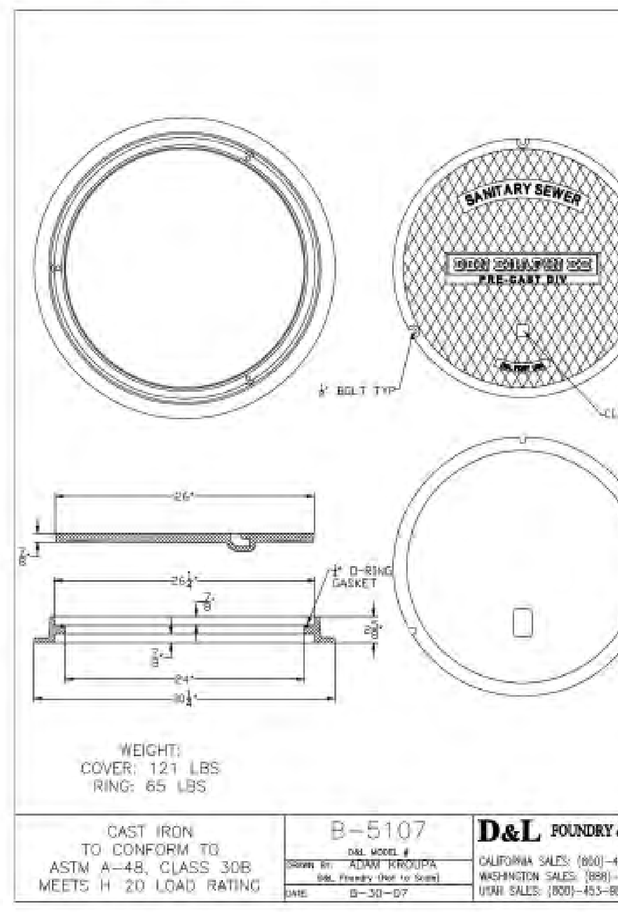
Based on available information and field observation, the presumed model of both the existing septic and pump tank is Don Chapin IPS1500 (traffic-rated, concrete)



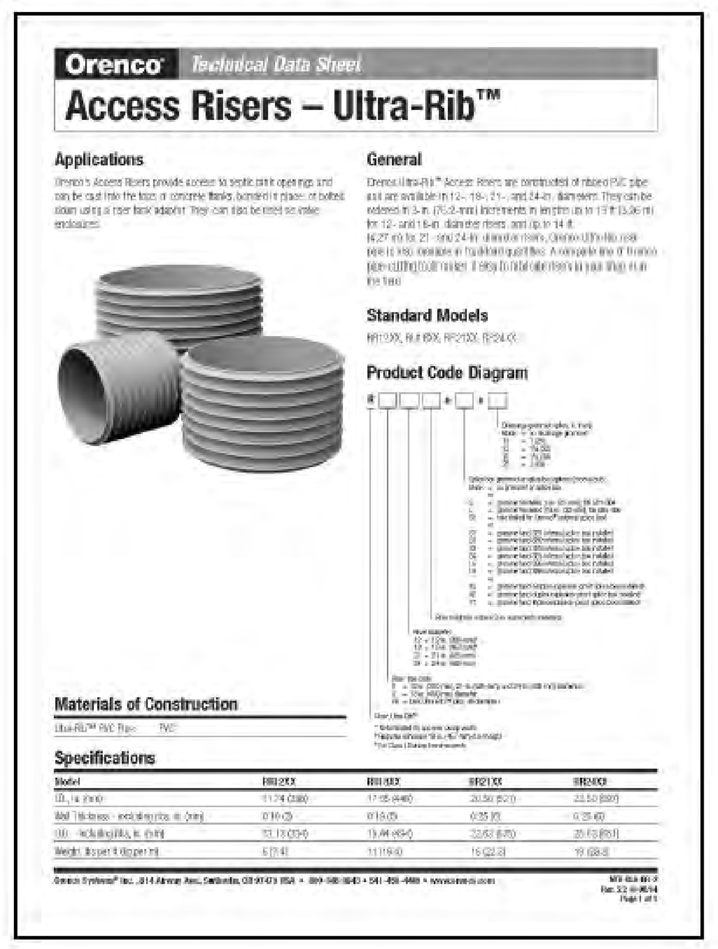
NEW SEPTIC TANK EFFLUENT FILTER:

Pump Tank Outlet invert elevation = 491.09 ft.
(36' Burial Depth)

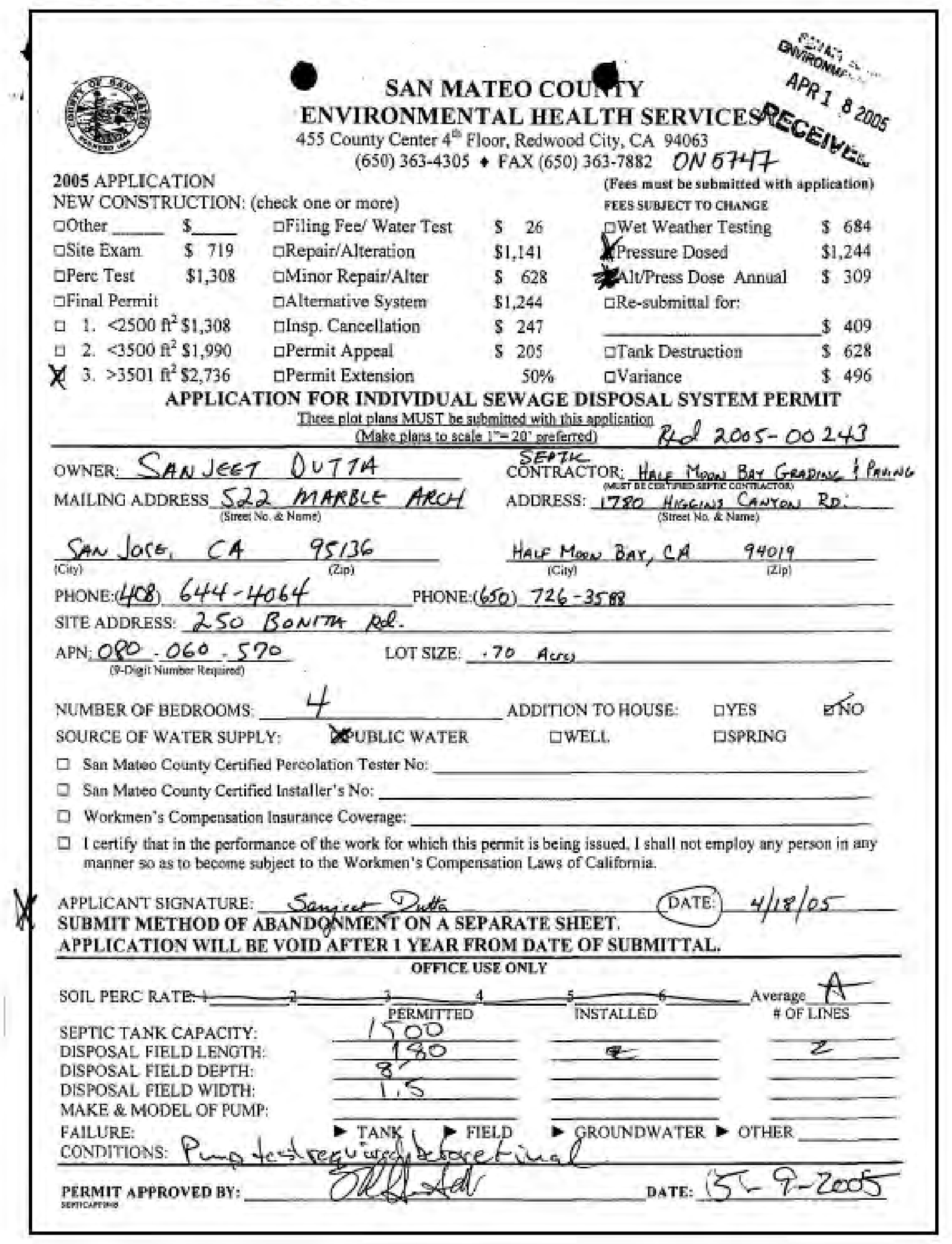
(E) TANK LIDS:



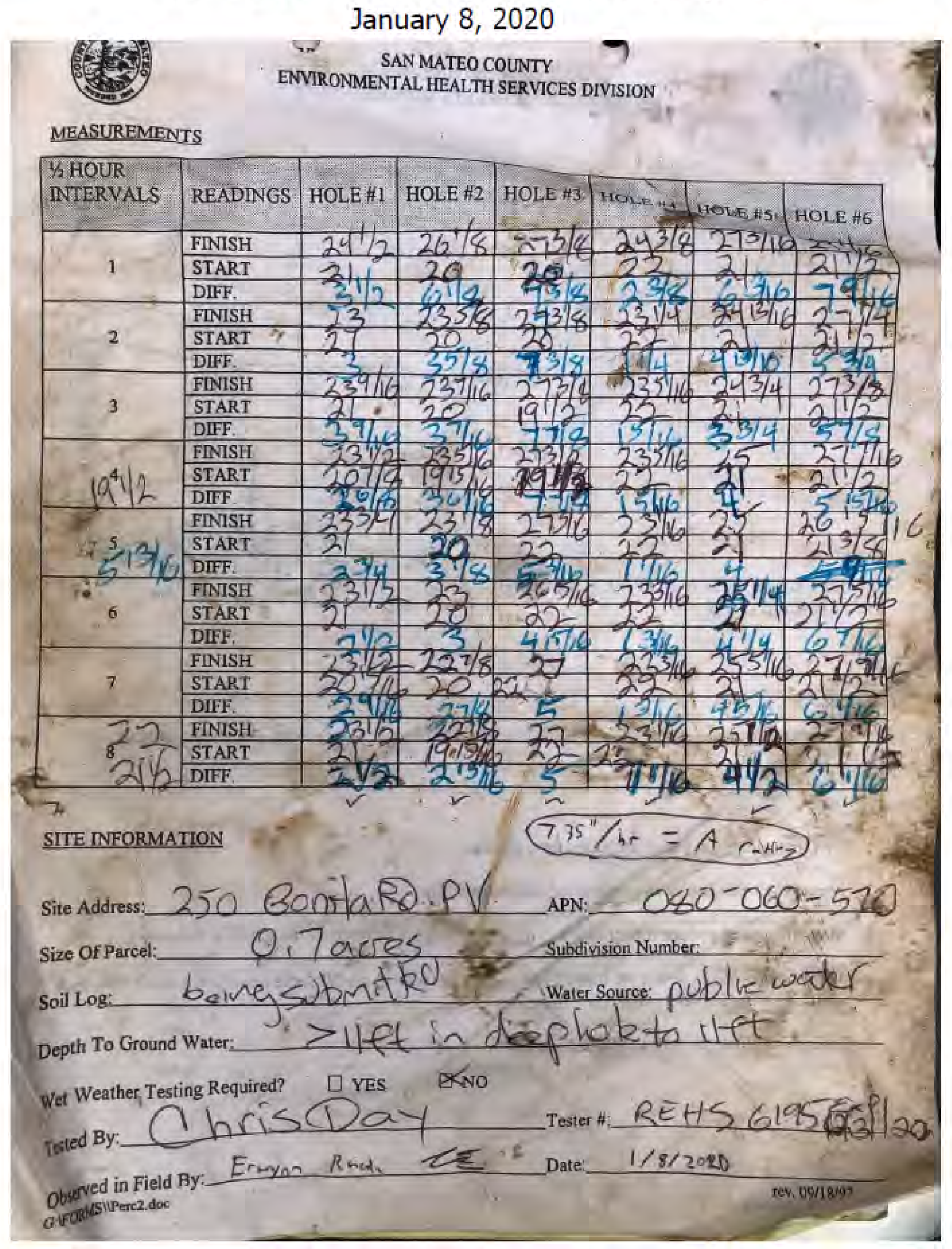
(E)TANK RISERS:



2005 PERMIT:



"A" PERC TEST RATING - 7.35 IN/HR
January 8, 2020



SOIL LOG:

Soil Analysis Test Data

APN 080-060-570	Test Conducted on 12/27/2019
250 Bonita Rd., Portola Valley, CA	By Chris Day, R.E.H.S. Tel. 650-293-1045
Owner: Sanjeet Dutta	Witnessed by Allison Fang, R.E.H.S.

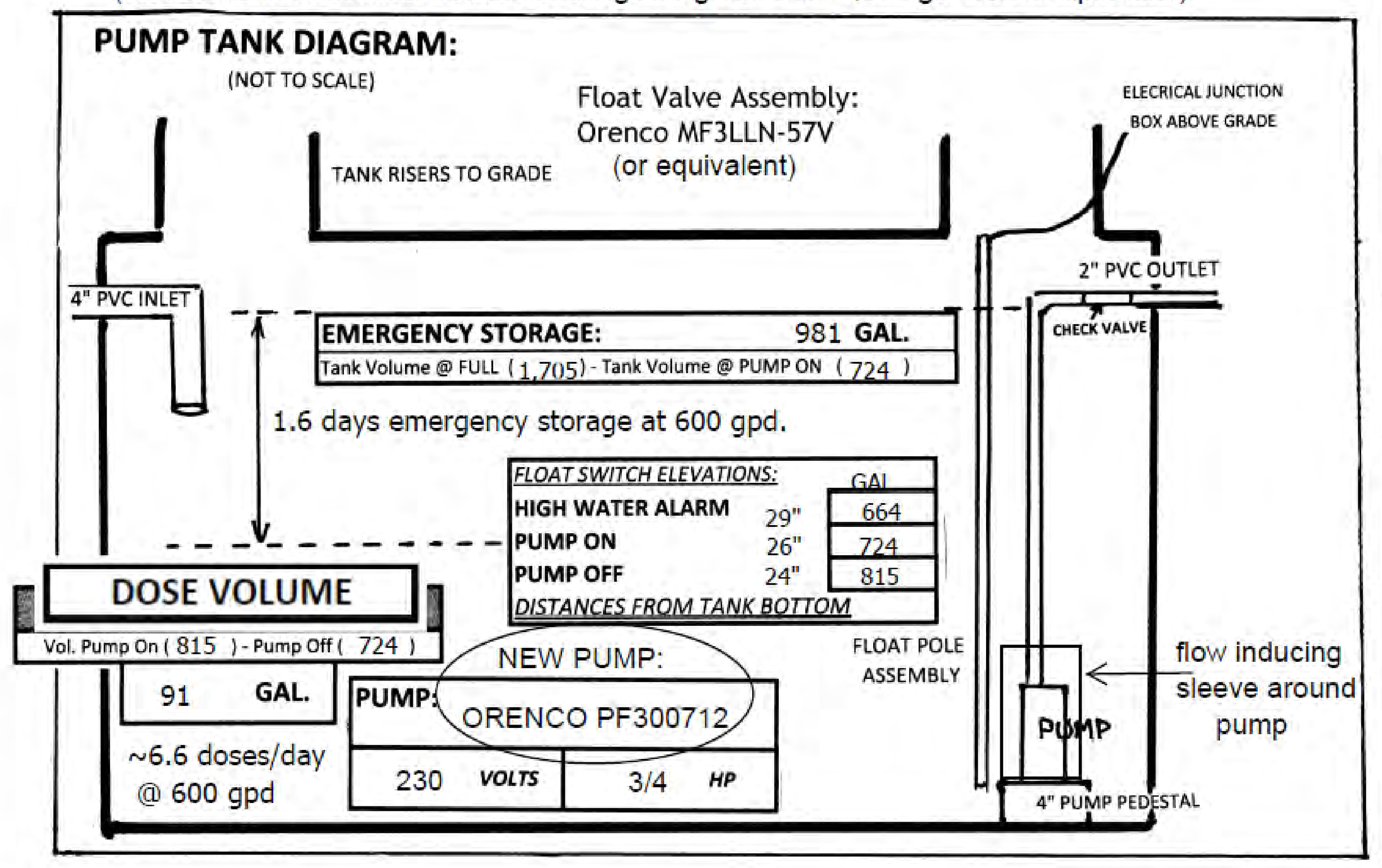
Soil Profile Test Hole #1	Depth: 11 ft.	
0 to 2 1/2 ft	Clay Loam Roots Coarse & Common Pores Medium & Common Weak Subangular Structure Less Than 15% Rock Dry Condition of Soil Color Black No Mottling	Not Restrictive
2 1/2 to 5 ft	Sandy Clay Roots Coarse & Medium Pores Fine & Few Weak Subangular Structure About 30% Rock Dry Condition of Soil Color Medium Brown No Mottling	Not Restrictive
5 to 11 ft	Sandy Clay Roots None Pores Fine & Common Weak Subangular Structure About 50% Rock Dry Condition of Soil Color Medium Brown No Mottling	Not Restrictive

TABULATION of PERC TEST RESULTS:

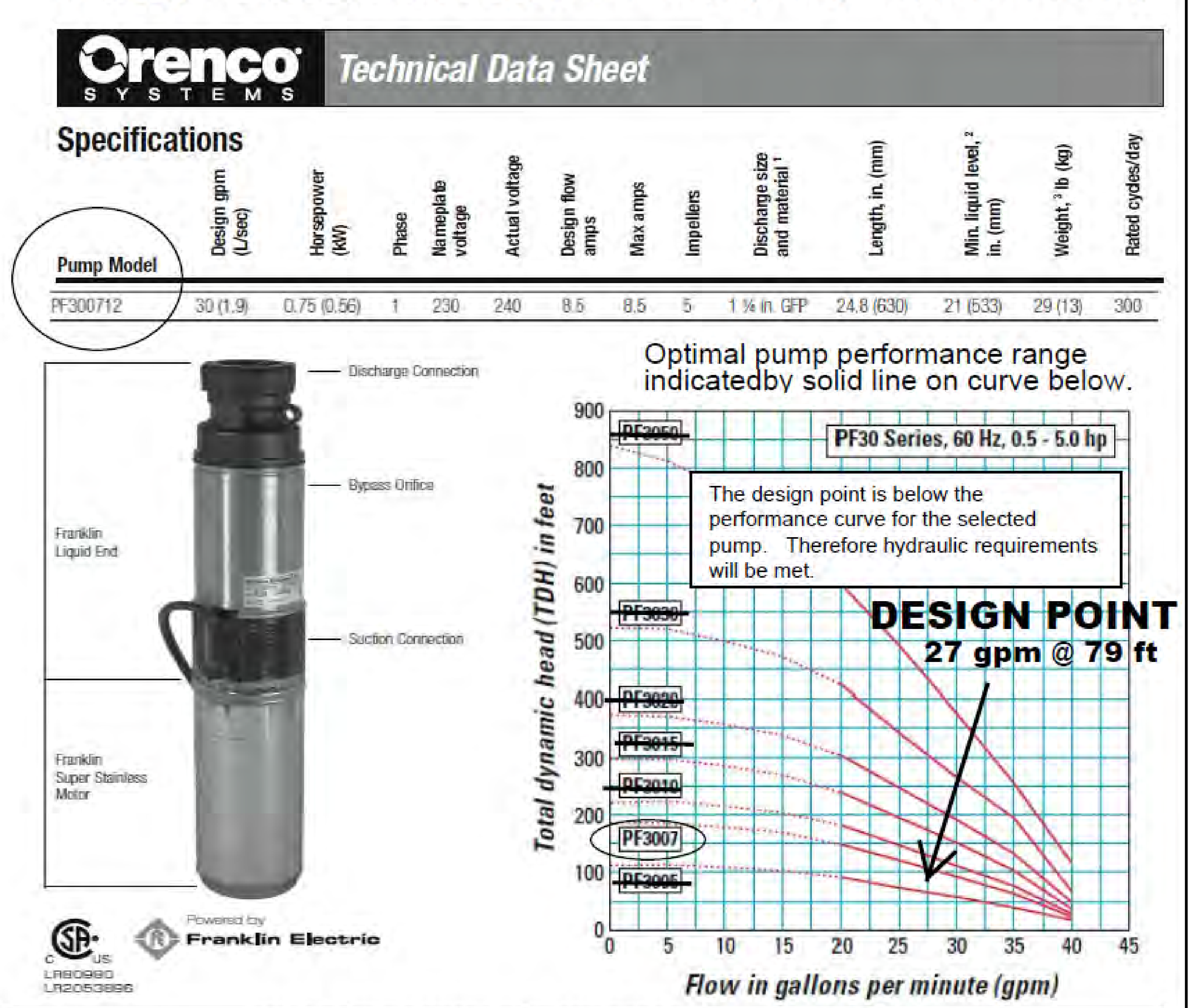
Hole #	1	2	3	4	5	6
Rate (in/hr)	5	5 7/8	10	2 1/8	9	12 1/8
Average			7.35 in/hr			

PUMP TANK DIAGRAM & EMERGENCY STORAGE:

(elevations from nominal volume chart ignoring baffle for 1,500 gal Don Chapin tank)



PUMP SELECTION: (existing pump replacement)



PUMP HYDRAULICS REQUIREMENTS CALCULATION:

Calculation of pressure loss for Primary 1 side of diverter is sufficient to ensure that hydraulic requirements are also met for Primary 2 side of diverter due to longer pipe run and higher elevation lift to supply Primary 1. The slightly higher flow rate for Primary 2 laterals was used in the calculations for conservative determination of total dynamic head.

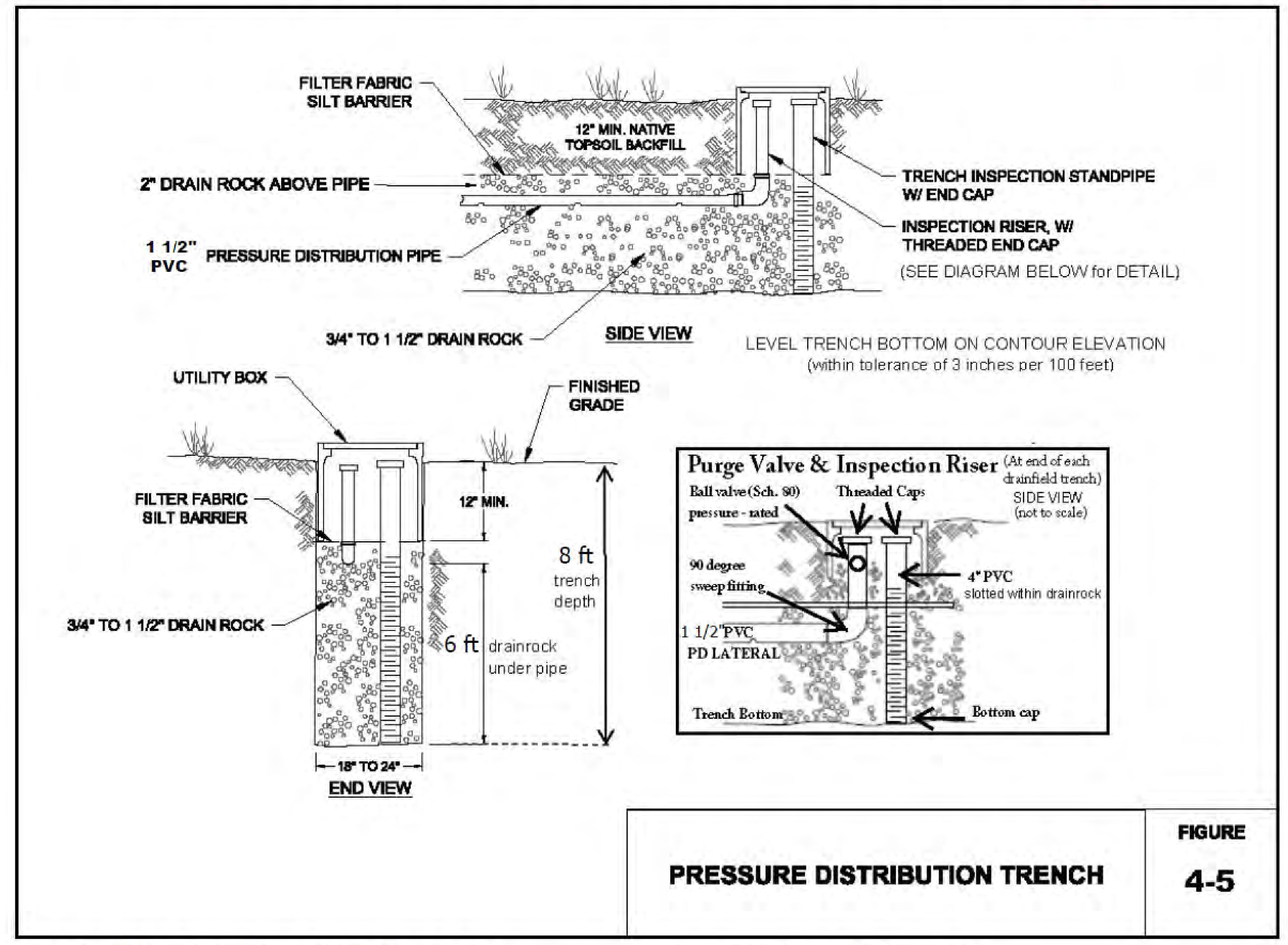
FLOW RATE - The orifice discharge rate for 3/16" diameter at 5 ft residual head is 0.93 gpm (SOURCE: COWA PD Design Manual, p. 153)

1. 28 & 29 orifices (Primary 1 & 2 respectively each side of diverter) x 0.93 gpm/orifice =	26 & 27 GPM
PRESSURE - Note: All PVC is Schedule 40. (SOURCE: COWA Manual, p. 154)	NOTE THAT SOME LENGTHS AND ELEVATIONS ARE EXAGGERATED FOR CONSERVATIVE
1. Lift in pump tank from pump discharge to outlet:	5.0 ft
2. Elevation lift to uppermost PD lateral (542 - 491):	51.0 ft
3. Existing 1 1/4" PVC Discharge Line From Pump Tank to Diverter: 40 ft pipe length + 1xCheck valve (12 ft) + 3x90o(11 ft) + 1 1/4"-2" pipe fitting(21 ft) — 84 ft (27 gpm/98.3)	7.7 ft
4. 2" PVC Supply Length & Fittings from DV to DF: 140 ft pipe length + T-Branch(12 ft) + Ball valve(55 ft) + 6x90o(17 ft) + gate valve(3 ft) — 227 ft (27 gpm/284.5)	2.9 ft
5. Pipe size reduction at PD lateral (2" to 1 1/2" coupler fitting) equivalent length is 50 ft. — 50 ft (27 gpm/284.5)	0.6 ft
6. 1 1/2" PVC PD Lateral: 90 ft Pipe + 67 ft fittings (90 degree sweep 12 ft + ball valve 55 ft) — 157 ft (27 gpm/147.5)	6.8 ft
7. Residual Head	5.0 ft
TOTAL:	79.0 ft

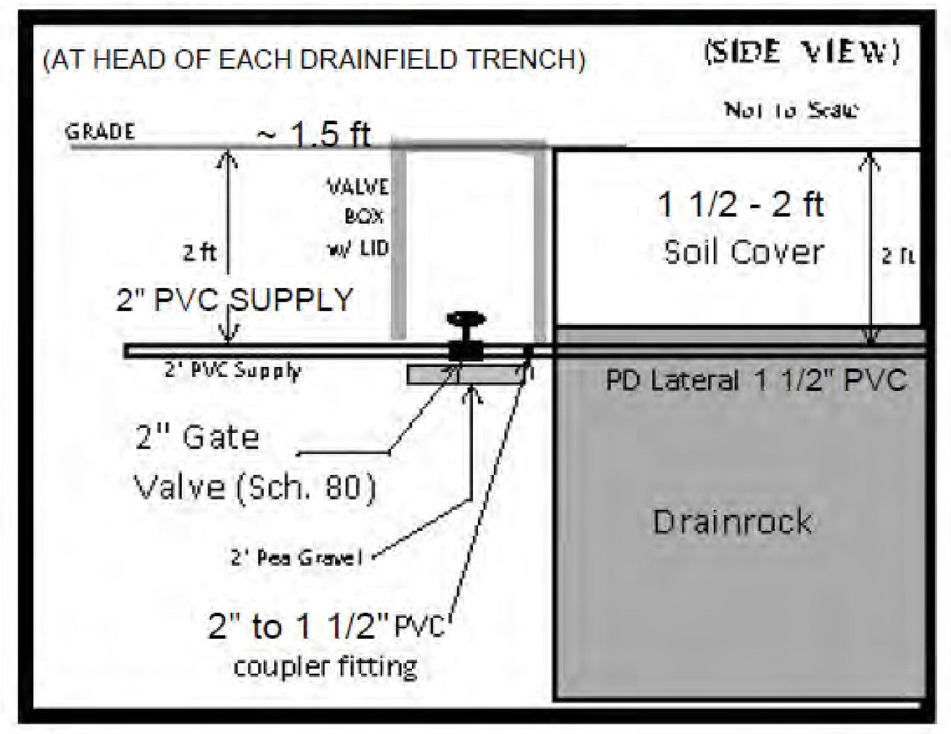
These design points (27 gpm@ 79 ft) are labeled on the pump performance curve for the selected pump.

ORENCO HIGH HEAD EFFLUENT PUMP MODEL PF300712

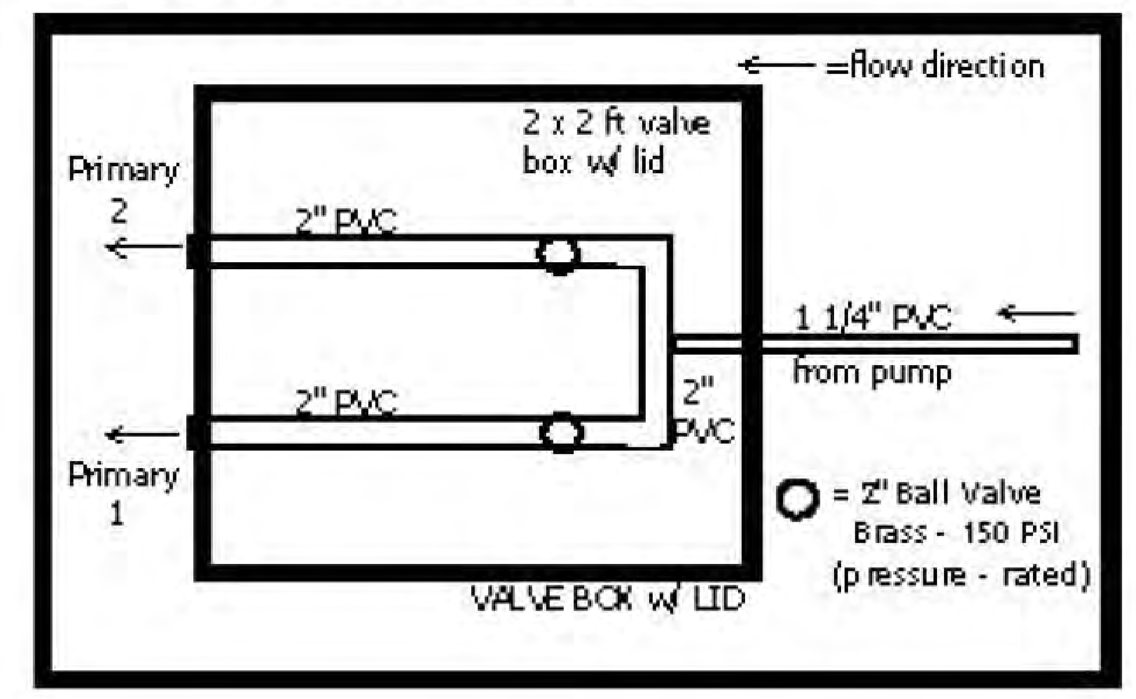
PRESSURE-DOSED TRENCH & LATERALS:



ADJUSTING VALVE DETAIL:



HEADWORKS DETAIL:



PRESSURE-DOSED LATERAL DETAIL:

Pipe: 1 1/2 inch PVC	Orifice Size: 3/16"	Orifice Spacing: 36" o.c.
	Orifice Orientation: 12 O'Clock, except last orifice on each line at 6 O'Clock	

12:00 orientation to minimize clogging // 6:00 orifice allows lateral to drain.

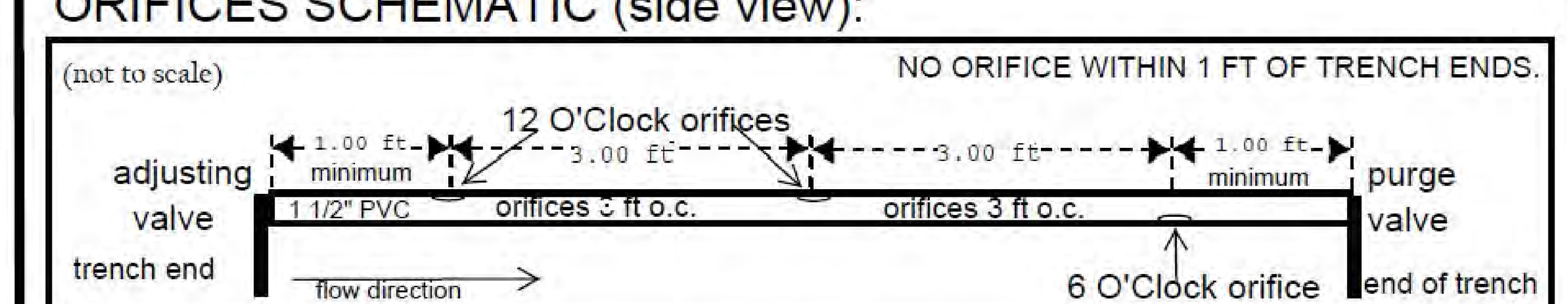
Note: ORIFICES MUST BE DE-BURRED AFTER THEY ARE DRILLED

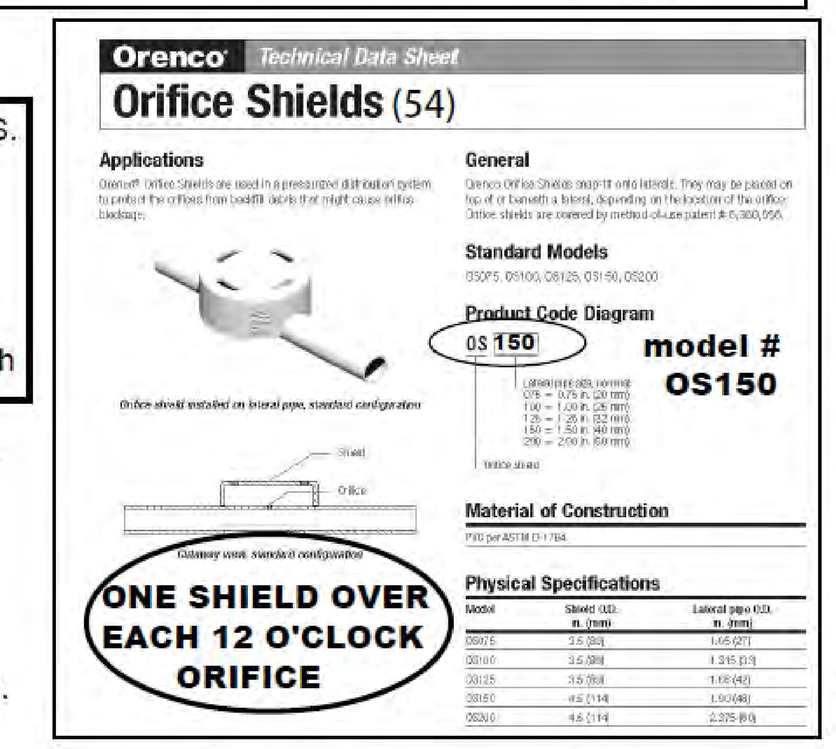
6:00 orifice position (end of line) is least prone to clog.

ORIFICES per LATERAL:

		12 O'Clock	6 O'Clock (last orifice)	1st / Last Distance to Trench/Lateral Ends	Total Orifices
1st side of diverter	90 ft DF TRENCH:	27	1	36"	28
2nd side of diverter	50 ft DF TRENCH:	16	1	24"	17
	40 ft DF TRENCH:	11	1	24"	12
					29

ORIFICES SCHEMATIC (side view):





EXISTING 90 FT DRAINFIELD TRENCH CURRENTLY WAS OBSERVED TO HAVE 3" PERFORATED PVC. THE TRENCH WILL BE EXCAVATED TO REMOVE THE EXISTING PIPE TAKING CARE TO MINIMIZE DIRT THAT MAY FALL INTO THE DRAINROCK BELOW. IF DRAINROCK IS FOUND TO BE DIRTY, FULL OF ROOTS, OR COMPROMISED BY SLUDGE THEN THE ROCK WILL BE EXCAVATED IN ANY SECTION WHERE SUCH CONDITIONS ARE FOUND AND REPLACED WITH NEW CLEAN ROCK. TOP OF DRAINROCK WILL BE LEVELED BEFORE PLACING NEW PRESSURE DOSED PIPE. THE PIPE WILL THEN BE COVERED WITH DRAINROCK AND FILTER FABRIC BEFORE BACKFILLING OF TRENCH.

ORIG 3/7/2020
REV 1: 7/09/2020
REV 2:
PLAN BY: Christopher Day, R.E.H.S.
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Email: christopherday@aol.com
OWNER:
Sanjeet Dutta
Tel. 408-644-4064
Email: sanjeetdutta@yahoo.com

250 Bonita Rd., Portola Valley, CA 94028
APN 080-060-570

DETAIL

NEW PRESSURE-DOSED SEPTIC SYSTEM
(To Serve Existing 4 BR House & Allow Proposed Grading)

OWTS 2