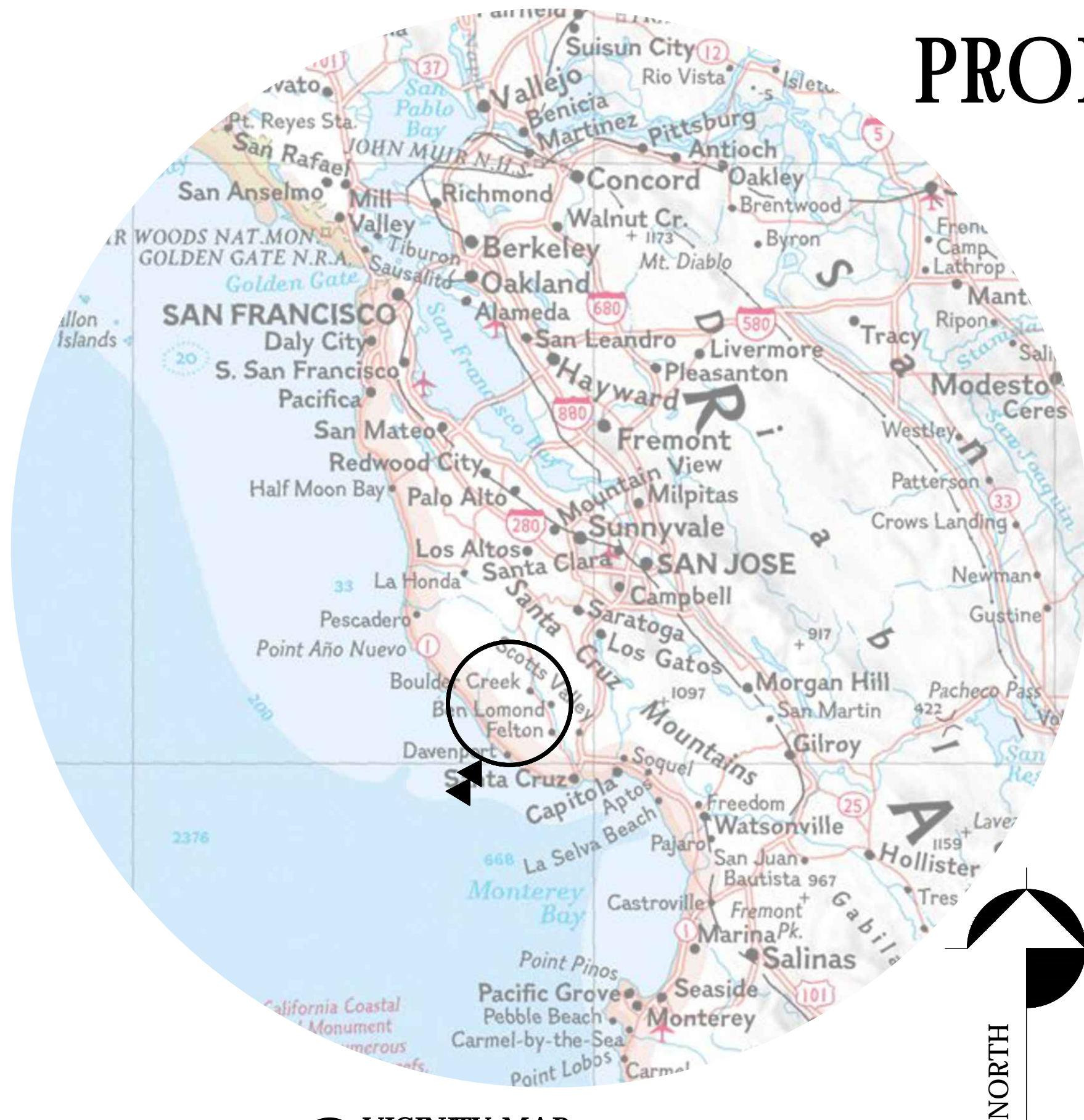
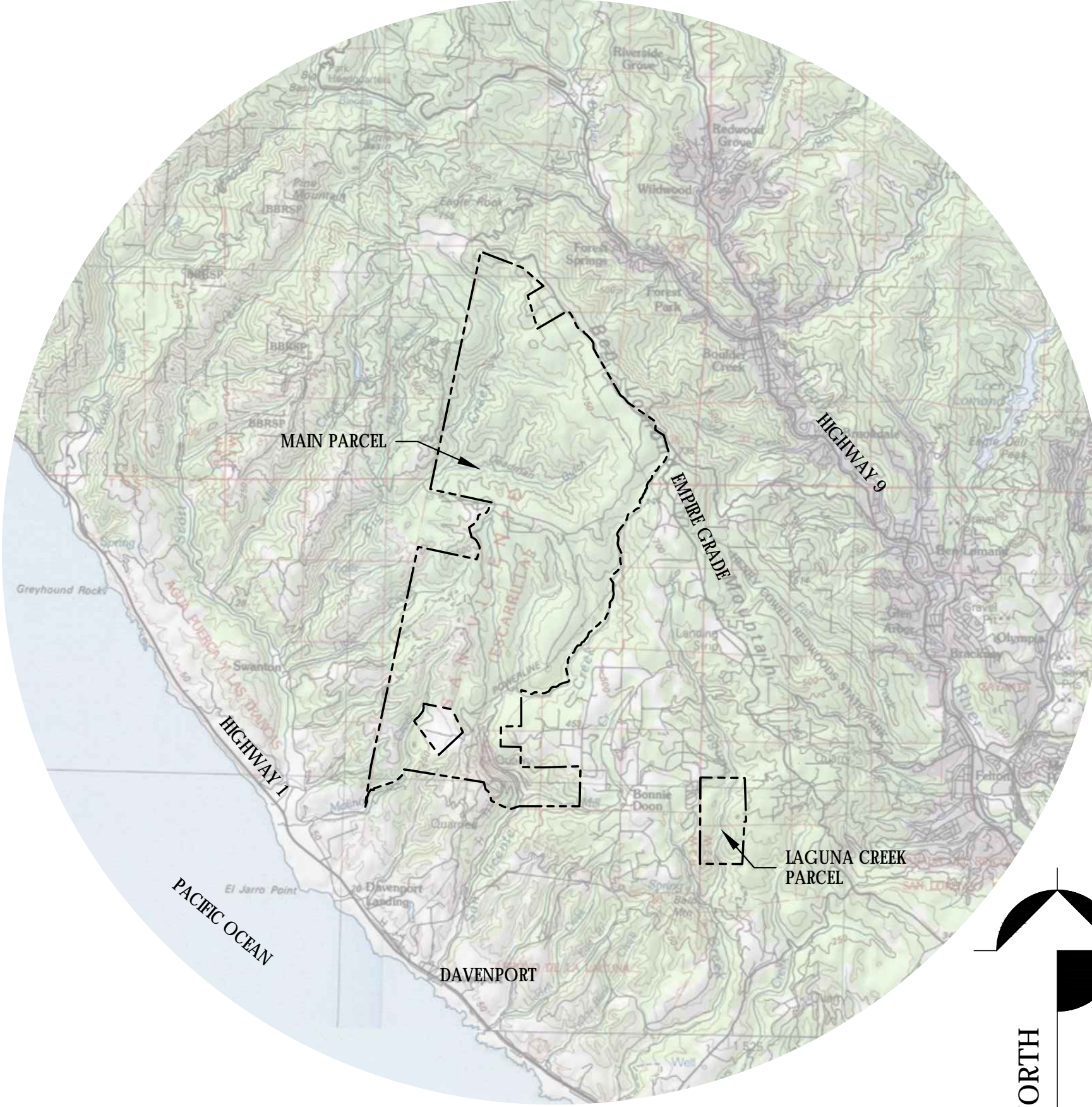

Attachment 3

Trails and Staging Area Plan

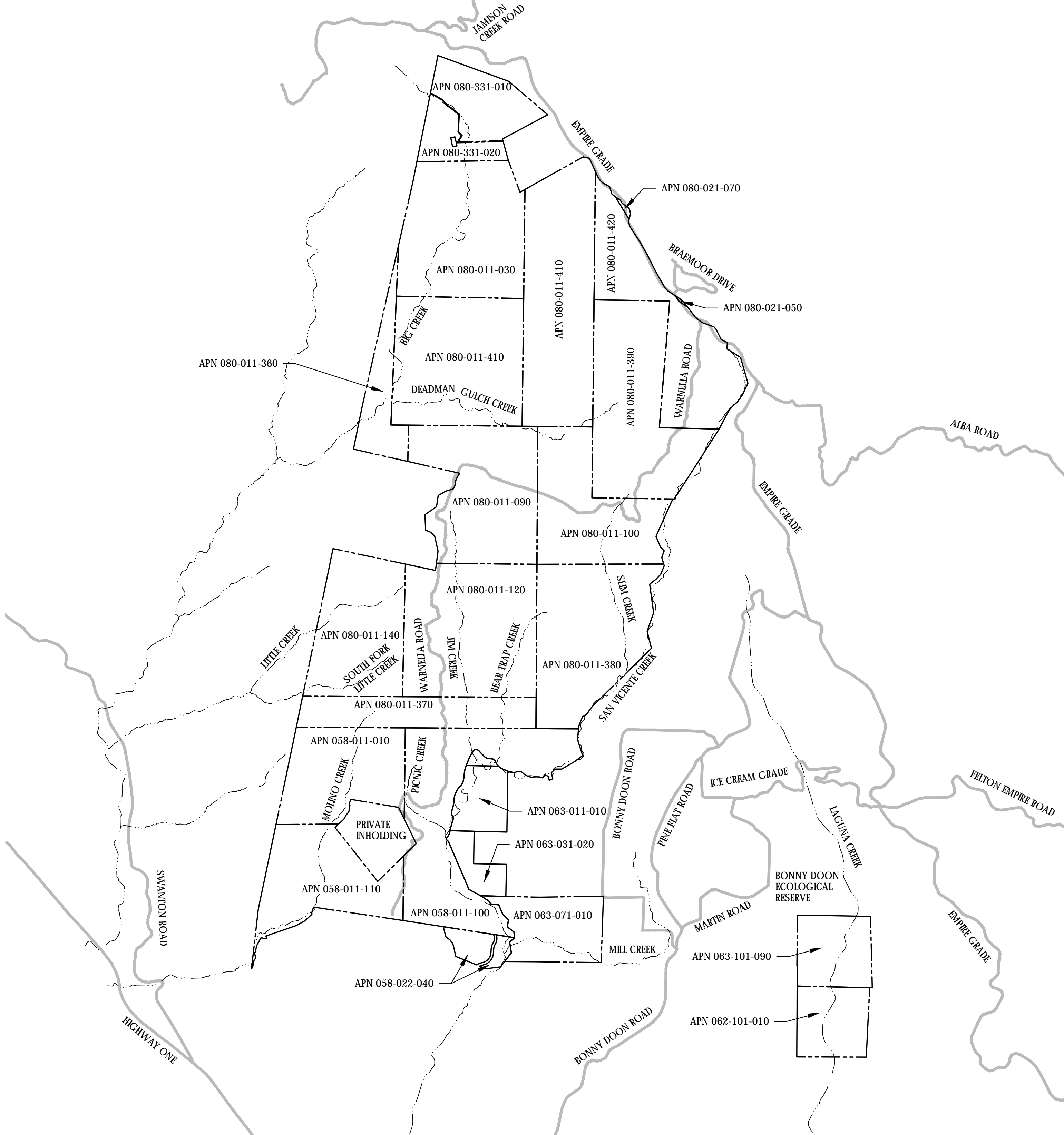
SAN VICENTE REDWOODS
SANTA CRUZ COUNTY, CALIFORNIA
PROPOSED TRAIL NETWORK AND STAGING AREA
CONDENSED PERMITTING SET



1 VICINITY MAP



2 PROJECT LOCATION MAP



3 EXISTING SITE LAYOUT

PRELIMINARY DRAWINGS NOT FOR CONSTRUCTION

SHEET TITLE:
COVER SHEET

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: RYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CEMEX PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.
Consulting Engineers
Civil • Environmental • Water Resources
1525 SEABRIGHT AVE.
SANTA CRUZ, CA 95062
TEL (831) 426-9054

DRAWN BY: SIS
CHECKED BY: RLC
DATE: AUGUST 2018
JOB NO: 21514/21633
SCALE: AS SHOWN
SHEET:
C0.0
1 OF 17

PROJECT CONTACTS

CLIENT

LAND TRUST OF SANTA CRUZ COUNTY
617 WATER STREET
SANTA CRUZ, CA 95060
PHONE: 831-429-6116
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CIVIL ENGINEER

FALL CREEK ENGINEERING, INC.
1525 SEABRIGHT AVENUE
SANTA CRUZ, CA 95062
PHONE: 831-426-9054
CONTACT: ROBYN COOPER, P.E.

GEOTECHNICAL ENGINEER

PACIFIC CREST ENGINEERING, INC.
444 AIRPORT BOULEVARD, SUITE 106
WATSONVILLE, CA 95076
PHONE: 831-722-9446
CONTACT: SOMA GORESKY, P.E., G.E.

STRUCTURAL ENGINEER

STREETER GROUP, INC.
2571 MAIN STREET, SUITE C
SOQUEL, CA 95073
PHONE: 831-477-1781
CONTACT: BRAD STREETER, P.E., S.E.

BIOLOGIST









WRA ENVIRONMENTAL CONSULTANTS, INC.
2169-G EAST FRANCISCO BOULEVARD
SAN RAFAEL, CA 94901
PHONE: 415-454-8868
CONTACT: MATT RICHMOND


PLANNER

PLACEWORKS, INC.
1625 SHATTUCK AVE #300
BERKELEY, CA 94709
PHONE: 510-848-3815
CONTACT: ISBY FLEISCHMANN

ABBREVIATIONS LEGEND	
AC	ACRE
¢	CENTERLINE
CDFW	CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
CMP	CORRUGATED METAL PIPE
CY	CUBIC YARDS
DA/Ø	DIAMETER
(E)	EXISTING
EL	ELEVATION
FCE	FALL CREEK ENGINEERING
FT	FOOT
LCT	LAGUNA CREEK TRAIL
LF	LINEAL FOOT
NCAIM	NATIONAL CENTER FOR AIRBORNE LASER MAPPING
MAX	MAXIMUM
MIN	MINIMUM
MP	MAP POINT
N#	NORTH TRAIL #
(N)	NEW
NTS	NOT TO SCALE
OC	ON CENTER
ORAR	OUTDOOR RECREATION ACCESS ROUTE
S#	SOUTH TRAIL #
SCC	SANTA CRUZ COUNTY
SF	SQUARE FEET
STA	STATION
TBR	TO BE REMOVED
TYP	TYPICAL
USACOE	US ARMY CORPS OF ENGINEERS

LINE TYPES	
-----	PROPERTY LINE
-----	STREAMS - MAJOR
-----	STREAMS - MINOR
-----	EXISTING ROAD
-----	PROPOSED TRAIL

SYMBOLS AND MATERIALS LEGEND	
	EXISTING GATE
	SPRING
	WOODRAT NEST
	WILDLIFE TREE
	ANDERSON'S MANZANITA
	WETLAND WITH 100-FOOT BUFFER
	PROPOSED TRAIL CORRIDOR
	PROPOSED CROSSING

DRAWING NOTATION	
DETAIL CALLOUT	

PROJECT DATA	
APNs: 058-011-01, 058-011-100, 058-011-110, 058-022-040, 062-101-010, 063-011-010, 063-011-090, 063-031-020, 063-071-010, 063-101-090, 080-011-030, 080-011-060, 080-011-090, 080-011-100, 080-011-120, 080-011-140, 080-011-360, 080-011-370, 080-011-380, 080-011-390, 080-011-410, 080-011-420, 080-021-050, 080-021-070, 080-331-010, AND 080-331-020	
OWNER: PENINSULA OPEN SPACE TRUST AND SEMPERVIRENS FUND PUBLIC ACCESS MANAGEMENT- LAND TRUST OF SANTA CRUZ COUNTY	
AREA OF DISTURBANCE (AC)	
STAGING AREA	2.6
TRAILS	17.0
CROSSINGS	0.2
TEMPORARY CONSTRUCTION STAGING AREAS	0.1
CONSTRUCTION ACCESS	9.3

PROJECT DESCRIPTION	
THE LAND TRUST OF SANTA CRUZ COUNTY IN COLLABORATION WITH OTHERS PLANS TO CONSTRUCT A NEW TRAIL NETWORK AT SAN VICENTE REDWOODS FOR USE BY HIKERS, BIKE RIDERS, AND HORSEBACK RIDERS.	
THE PROPOSED TRAIL NETWORK AT SAN VICENTE REDWOODS INCLUDES CONSTRUCTION OF APPROXIMATELY 38 MILES OF TRAILS FOR USE BY HIKERS, BIKE RIDERS, AND HORSEBACK RIDERS. APPROXIMATELY 2/3 OF THE TRAIL NETWORK WILL BE CONSTRUCTED AS NEW TRAIL AND APPROXIMATELY 1/3 OF THE TRAIL NETWORK WILL BE CONSTRUCTED ON EXISTING ROADS. THE PROPOSED TRAIL NETWORK INCLUDES 108 DRAINAGE AND CREEK CROSSINGS, MANY OF WHICH RARELY CARRY SURFACE WATER. THE PROPOSED CROSSING IMPROVEMENTS INCLUDE ARMORED CROSSINGS, PUNCHEONS, BRIDGES, IMPROVEMENTS TO EXISTING CULVERTS, AND WAIT AND WATCH CROSSINGS WITH IMPROVEMENTS TO BE INSTALLED IN THE FUTURE AS NEEDED.	
A NEW STAGING AREA IS PROPOSED AT THE TRAIL HEAD OF THE PROPOSED TRAIL NETWORK. THE STAGING AREA INCLUDES SITE CLEARING INCLUDING TREE REMOVAL IN THE AREA OF THE PROPOSED WORK, GRADING, DRAINAGE, AND SITE IMPROVEMENTS INCLUDING 909 PARKING SPACES, 4 ACCESSIBLE PARKING SPACES, 4 HORSE TRAILER PARKING SPACES, A VAULT RESTROOM, EMERGENCY FIRE WATER, AND EMERGENCY ACCESS TO THE STAGING AREA.	
THE LAGUNA CREEK TRAIL WILL BE ACCESSED THROUGH THE EXISTING BONNY DOON ECOLOGICAL PRESERVE TRAIL NETWORK. VISITORS WILL PARK AT THE EXISTING STAGING AREA ON MARTIN ROAD.	

TECHNICAL REFERENCES	
1. BASIS OF DESIGN FOR TRAILS AND DRAINAGE CROSSINGS, SAN VICENTE REDWOODS, PREPARED BY FALL CREEK ENGINEERING, INC., DATED APRIL 21, 2017.	
2. BASIS OF DESIGN FOR STAGING AREA, SAN VICENTE REDWOODS, PREPARED BY FALL CREEK ENGINEERING, INC., DATED JUNE 27, 2017.	
3. HYDROLOGY AND HYDRAULIC ANALYSIS FOR SAN VICENTE REDWOODS, PREPARED BY FALL CREEK ENGINEERING, INC., DATED APRIL 21, 2017.	
4. DRAINAGE ANALYSIS, SAN VICENTE REDWOODS STAGING AREA, APN 080-011-42, EMPIRE GRADE, SANTA CRUZ COUNTY, CALIFORNIA, PREPARED BY FALL CREEK ENGINEERING, DATED AUGUST 2018.	
5. GEOTECHNICAL INVESTIGATION FOR SAN VICENTE REDWOODS STAGING AREA, PREPARED BY PACIFIC CREST ENGINEERING, INC., DATED JANUARY 11, 2018.	
6. SAN VICENTE REDWOODS PUBLIC ACCESS PLAN, PREPARED BY PLACEWORKS, DATED MARCH 20, 2018.	
7. BIOLOGICAL RESOURCES ASSESSMENT, SAN VICENTE REDWOODS PUBLIC ACCESS PLAN, PREPARED BY WRA ENVIRONMENTAL CONSULTANTS, DATED APRIL 10, 2018.	
8. A CULTURAL RESOURCES STUDY FOR THE SAN VICENTE REDWOODS PUBLIC ACCESS PLAN, PREPARED BY TOM ORIGER & ASSOCIATES, DATED NOVEMBER 7, 2016.	
9. CEMEX THP 1-06-080SCR 2008 PHASE 1 ROAD ASSESSMENT PROJECT, SAN VICENTE REDWOODS, PREPARED BY PACIFIC WATERSHED ASSOCIATES, INC., DATED JANUARY 2009 (UNPUBLISHED DRAFT).	
10. FIELD DATA COLLECTED BY PACIFIC WATERSHED ASSOCIATES, INC., DATED 2008 - 2009 (UNPUBLISHED DRAFT).	

GRADING VOLUMES			
GRADING VOLUMES - TRAILS			
CUT	FILL	NET	
12,040 CY	12,389 CY	349 CY FILL	

GRADING VOLUMES - STAGING AREA			
CUT	FILL	NET	
2,791 CY	2,867 CY	76 CY FILL	

GRADING VOLUMES - TOTAL			
CUT	FILL	NET	
14,831 CY	15,256 CY	425 CY FILL	

NOTES:

- THESE GRADING VOLUMES ARE PRELIMINARY.
- NO COMPACTION FACTOR HAS BEEN APPLIED TO THE FILL VOLUMES.
- NO EXPANSION FACTOR HAS BEEN APPLIED TO THE CUT VOLUMES.
- ALL CONSTRUCTED SLOPES SHALL NOT EXCEED 2:1 (H:V) UNLESS STATED OTHERWISE.
- CONTRACTOR SHALL DISPOSE OF SOILS IN A LOCATION SPECIFIED BY THE LAND TRUST'S REPRESENTATIVE.
- ALL GRADING SHALL CONFORM TO SANTA CRUZ COUNTY REQUIREMENTS AND THE CALIFORNIA BUILDING CODE.
- GRADING VOLUMES FOR TRAILS WERE DETERMINED ASSUMING THE FOLLOWING GRADING VOLUMES PER LINEAR FOOT FOR EACH TRAIL TYPE:

UNIT GRADING VOLUMES		
TRAIL TYPE	CUT (CY/LF)	FILL (CY/LF)
ROAD TO TRAIL CONVERSION	0	0
INSTALL TRAIL ON GRADE	0.07	0.07
PARTIAL BENCH	0.02	0.12
FULL BENCH	0.09	0.03
BUTTRESS TRAIL	0	0.2

- GRADING VOLUMES FOR CROSSINGS WERE DETERMINED ASSUMING THE FOLLOWING FOR EACH TYPE:
 - ARMORED CROSSINGS AND ARMORED ROAD CROSSINGS - AREA OF CROSSING PLUS 1 FOOT LENGTH AND WIDTH BY 1 FOOT DEPTH
 - PUNCHEONS AND BRIDGES - AREA OF FOOTING PLUS 1 FOOT LENGTH AND WIDTH BY 5 FOOT DEPTH (ASSUMED DEPTH TO CONSOLIDATED MATERIAL)
 - CULVERTS - AREA OF IMPROVEMENT PLUS 1 FOOT LENGTH AND WIDTH BY 2 FOOT DEPTH
- GRADING VOLUMES DO NOT ACCOUNT FOR ROCK AND OTHER MATERIALS USED IN CONSTRUCTION THAT WILL OFFSET THE VOLUME OF CUT AND FILL.

STANDARD NOTES

- TRAIL CORRIDORS. THE PROPOSED TRAIL NETWORK INCLUDES TRAIL CORRIDORS: 100-FOOT CORRIDORS FOR NEW TRAILS (50-FOOT ON EITHER SIDE OF THE PROPOSED TRAIL ALIGNMENT) AND 50-FOOT CORRIDORS FOR TRAILS TO BE INSTALLED ON EXISTING ROADS (25-FOOT ON EITHER SIDE OF THE PROPOSED TRAIL ALIGNMENT). THESE TRAIL CORRIDORS ALLOW THE TRAIL BUILDERS FLEXIBILITY IN CONSTRUCTING THE FINAL TRAIL ALIGNMENTS IN ORDER TO ALLOW FOR GRADE REVERSALS TO BE CONSTRUCTED ALONG TRAILS FOR PROPER DRAINAGE AND TO AVOID ANY BIOLOGICAL OR CULTURAL RESOURCES THAT MAY EXIST WITHIN THE TRAIL CORRIDOR. IN SOME CASES THE TRAIL CORRIDOR IS RESTRICTED IN ORDER TO MAINTAIN SEPARATION FROM PROPERTY LINES, EXISTING ROADS, OTHER TRAILS, WATERCOURSES, AND AREAS WITH INSTABILITY.
- TRAIL GRADE. THE MAXIMUM TRAIL GRADE IS 15% FOR ANY EXTENDED SECTION OF TRAIL UNLESS OTHERWISE NOTED ON THE TRAIL IMPROVEMENT PLANS. MOST OF THE TRAIL GRADES ARE LESS THAN 10%. STEEPER GRADES ARE ALLOWED ON EXISTING ROADS AND IN SOME CASES ON NEW TRAILS, WHERE INDICATED.

- ORAR REQUIREMENTS. OUTDOOR RECREATION ACCESS ROUTES (ORARS) SHALL FOLLOW THE UNITED STATES ACCESS BOARD REQUIREMENTS, AS FOLLOWS:
 - RUNNING SLOPE: ORARS SHALL HAVE A MAXIMUM RUNNING SLOPE OF 5%. STEEPER SEGMENTS ARE ALLOWED WITH RESTING INTERVALS PROVIDED AT THE SPECIFIED LENGTHS:

ORAR - MAXIMUM RUNNING SLOPE AND SEGMENT LENGTH		
RUNNING SLOPE OF ORAR SEGMENT		MAXIMUM LENGTH OF SEGMENT
STEEPER THAN	BUT NOT STEEPER THAN	
1:20 (5%)	1:12 (8.33%)	50 FEET
1:12 (8.33%)	1:10 (10%)	30 FEET

- CROSS SLOPE: ORARS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2% FOR SURFACES CONSTRUCTED OF CONCRETE, ASPHALT, OR BOARDS AND A MAXIMUM CROSS SLOPE OF 5% FOR SURFACES CONSTRUCTED FROM OTHER MATERIALS.
- RESTING INTERVALS: LEVEL AREAS SHALL BE PROVIDED AT THE TOP AND BOTTOM OF AN ORAR SECTION AND ANY TIME THE RUNNING SLOPE EXCEEDS 5% ACCORDING TO THE TABLE ABOVE. RESTING INTERVALS SHALL BE A MINIMUM OF 60' LONG AND 36" WIDE. THE MAXIMUM SLOPE OF A RESTING AREA SHALL BE 2% IN ANY DIRECTION FOR SURFACES CONSTRUCTED OF CONCRETE, ASPHALT, OR BOARDS AND 5% IN ANY DIRECTION FOR SURFACES CONSTRUCTED OF OTHER MATERIALS.

- TRAIL DRAINAGE. TRAILS SHALL BE OUTSLOPED IN THE DIRECTION OF NATURAL DRAINAGE TO THE EXTENT FEASIBLE. INSLOPING IS ALLOWED IN CERTAIN SITUATIONS AT THE DISCRETION OF THE TRAIL BUILDERS AND APPROVED BY THE CIVIL ENGINEER. GRADE REVERSALS SHALL BE INSTALLED ALONG TRAILS TO MANAGE DRAINAGE. GRADE REVERSALS SHALL BE INSTALLED AT A MINIMUM OF EVERY 150 FEET. FREQUENCY OF GRADE REVERSALS SHALL INCREASE AS THE TRAIL GRADE INCREASES.

- WATERCOURSE SEPARATION. FINAL TRAIL ALIGNMENTS SHALL MAINTAIN SEPARATION FROM WATERCOURSES. FOR CLASS I AND CLASS II WATERCOURSES, TRAILS SHALL MAINTAIN THE FOLLOWING SEPARATION:

SLOPE	CLASS I	CLASS II
<30%	75-FT SEPARATION	50-FT SEPARATION
30 - 50%	100-FT SEPARATION	75-FT SEPARATION
>50%	150-FT SEPARATION	100-FT SEPARATION

FOR CLASS III WATERCOURSES, TRAILS SHALL MAINTAIN A MINIMUM 50-FOOT SEPARATION TO THE EXTENT FEASIBLE UNLESS OTHERWISE SPECIFIED ON THE TRAIL IMPROVEMENT PLANS. TRAILS MAY ENROACH ON THE STREAM SETBACK WHEN APPROACHING AND DEPARTING A CROSSING, AND WHEN ACTIVELY CROSSING. IN CROSSING LOCATIONS, TRAILS SHALL BE ALIGNED TO QUICKLY DEPART THE STREAM SETBACK AS QUICKLY AS POSSIBLE, WHILE ADHERING TO MAXIMUM TRAIL GRADES, AND ALLOWING FOR ADEQUATE DRAINAGE.

- CROSSING NOMENCLATURE. THE RIGHT BANK/LEFT BANK NOMENCLATURE FOR CROSSINGS REFERS TO THE SIDE OF THE CROSSING FROM THE PERSPECTIVE OF THE VIEWER LOOKING UPSTREAM.

- SIGNAGE. EXTENSIVE WAYFINDING SIGNAGE WILL BE INCLUDED WITH IMPLEMENTATION OF THE PROPOSED TRAILS.

- BIOTIC RESOURCES. FINAL TRAIL ALIGNMENTS AND TRAIL CONSTRUCTION SHALL FOLLOW THE RECOMMENDATIONS IN THE BIOLOGICAL RESOURCES ASSESSMENT PREPARED BY WRA ENVIRONMENTAL CONSULTANTS. THE FOLLOWING AVOIDANCE MEASURES SHALL BE FOLLOWED WHEN LAYING OUT THE FINAL TRAIL ALIGNMENTS:

- ANDERSON'S MANZANITA
 - TO THE EXTENT FEASIBLE, TRAILS SHALL BE RE-ROUTED WITHIN THE APPROVED TRAIL CORRIDOR ON AN AS-NEEDED BASIS TO AVOID INDIVIDUALS OF ANDERSON'S MANZANITA.
 - TO THE EXTENT FEASIBLE, NO GRADING SHALL OCCUR WITHIN THE DRIPLINE OF ANY INDIVIDUAL OF ANDERSON'S MANZANITA.
 - WHERE IT IS NOT POSSIBLE TO ROUTE TRAILS AROUND OCCURRENCES OR AVOID GRADING WITHIN THE DRIPLINE, IMPACTS SHALL BE QUANTIFIED AND MITIGATION SHALL BE IMPLEMENTED ACCORDING TO THE REGULATORY AUTHORIZATIONS FOR THE PROJECT.
- OTHER RARE PLANTS
 - OTHER THAN AS DESCRIBED FOR ANDERSON'S MANZANITA, TRAILS SHALL BE RE-ROUTED WITHIN THE APPROVED TRAIL CORRIDOR ON AN AS-NEEDED BASIS TO AVOID OCCURRENCES OF RARE PLANTS.
 - TRAILS SHALL AVOID OCCURRENCES OF RARE PLANTS, OTHER THAN ANDERSON'S MANZANITA, BY A MINIMUM OF 10 FEET.
 - WHERE IT IS NOT POSSIBLE TO PROVIDE A MINIMUM 10-FOOT BUFFER AROUND OCCURRENCES OF RARE PLANTS, OTHER THAN ANDERSON'S MANZANITA, IMPACTS SHALL BE QUANTIFIED AND MITIGATION SHALL BE IMPLEMENTED ACCORDING TO THE REGULATORY AUTHORIZATIONS FOR THE PROJECT.
- WETLANDS
 - TO THE EXTENT FEASIBLE, TRAILS SHALL BE RE-ROUTED WITHIN THE APPROVED TRAIL CORRIDOR ON AN AS-NEEDED BASIS TO AVOID ALL WETLANDS AND 100-FOOT BUFFERS.
 - WHERE WETLANDS OCCUR ON EXISTING ROADS THAT ARE TO BE USED AS TRAILS, THE TRAIL FOOTPRINT WILL BE ROUTED TO AVOID WETLANDS TO THE EXTENT FEASIBLE, WHILE MINIMIZING DISTURBANCE TO SURROUNDING AREAS.
 - TRAILS MAY IMPACT WETLANDS AND 100-FOOT BUFFERS WHERE INDICATED ON THE TRAIL IMPROVEMENT PLANS.
 - TOTAL IMPACTS TO WETLANDS IS ESTIMATED TO BE LESS THAN 0.1 ACRE.
- WOODRAT NESTS
 - TO THE EXTENT FEASIBLE, TRAILS SHALL BE RE-ROUTED WITHIN THE APPROVED TRAIL CORRIDOR TO AVOID WOODRAT NESTS, PROVIDING AS LARGE OF AN UNDISTURBED BUFFER BETWEEN THE TRAIL AND NESTS AS REASONABLY POSSIBLE.
 - WHERE IT IS NOT REASONABLY POSSIBLE TO AVOID WOODRAT NESTS, EACH NEST SHALL BE DISMANTLED BY A QUALIFIED BIOLOGIST FOLLOWING GUIDANCE PROVIDED IN THE REGULATORY AUTHORIZATIONS FOR THE PROJECT.
- WILDLIFE TREES
 - TO THE EXTENT FEASIBLE, TRAILS SHALL BE RE-ROUTED WITHIN THE APPROVED TRAIL CORRIDOR TO BE CONSTRUCTED OUTSIDE THE DRIPLINE OF WILDLIFE TREES.

- ARCHEOLOGICAL RESOURCES. FINAL TRAIL ALIGNMENTS AND TRAIL CONSTRUCTION SHALL FOLLOW THE RECOMMENDATIONS IN THE CULTURAL RESOURCES STUDY PREPARED BY TOM ORIGER & ASSOCIATES.

- GEOTECHNICAL REQUIREMENTS. FINAL TRAIL ALIGNMENTS AND TRAIL CONSTRUCTION SHALL FOLLOW THE RECOMMENDATIONS IN THE FORTHCOMING GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT, TO BE PREPARED BY PACIFIC CREST ENGINEERING, INC.

- COUNTY REQUIREMENTS. TRAIL CONSTRUCTION, GRADING, DRAINAGE, AND EROSION CONTROL SHALL FOLLOW THE REQUIREMENTS OF THE SANTA CRUZ COUNTY DESIGN CRITERIA, DATED FEBRUARY 2017.

- CONSTRUCTION OVERSIGHT. FINAL TRAIL ALIGNMENTS SHALL BE REVIEWED BY FALL CREEK ENGINEERING, INC. PRIOR TO CONSTRUCTION. CONSTRUCTION OF TRAILS SHALL BE OVERSEEN BY FALL CREEK ENGINEERING, INC. AND PACIFIC CREST ENGINEERING, INC.

- EXISTING ROADS. EXISTING ROAD IDENTIFICATION NUMBERS REFER TO THE ROAD IDS IN THE CEMEX ROAD ASSESSMENT COMPLETED BY PACIFIC WATERSHED ASSOCIATES IN 2008 - 2009.

- MAPPING INCONSISTENCIES. THERE ARE SOME MAPPING INCONSISTENCIES DUE TO THE INHERENT ERROR WITH ANY PIECE OF GPS EQUIPMENT BETWEEN SPATIAL DATA COLLECTED BY FCE, WRA ENVIRONMENTAL CONSULTANTS, THE LAND TRUST OF SANTA CRUZ COUNTY, AND OTHER DATA COLLECTORS. IT WAS DECIDED FOR THIS PROJECT TO REPRESENT THE SPATIAL DATA AS PROVIDED BY OTHER DATA COLLECTORS RATHER THAN MANIPULATE THE DATA FOR A MORE ACCURATE REPRESENTATION. DATA INCONSISTENCIES WILL BE IDENTIFIED IN NOTES IN THE TABLES ON THE TRAIL IMPROVEMENT PLANS.

- DESIGN REVISIONS. THE PROJECT CIVIL ENGINEER HAS THE AUTHORITY TO MAKE REVISIONS TO THE TRAIL DESIGN AS NECESSARY DURING CONSTRUCTION.

SHEET TITLE:
SYMBOLS, ABBREVIATIONS,
LEGEND, AND NOTES

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: BRYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CEMEX PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.



Civil • Environmental • Water Resources

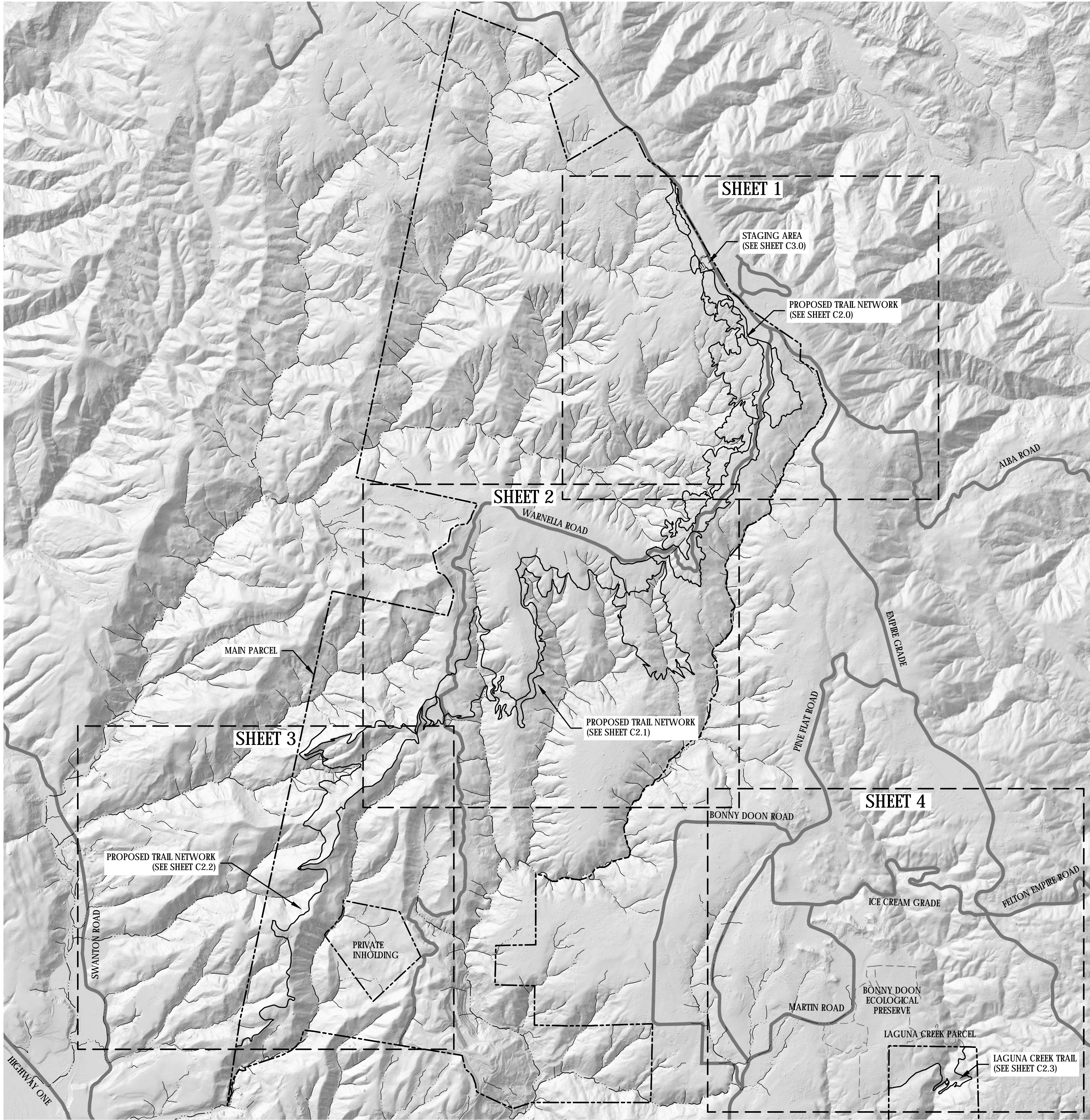
1525 SEABRIGHT AVE.
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DRAWN BY: SIS
CHECKED BY: RLC
DATE: AUGUST 2018
JOB NO: 21514/21633
SCALE: AS SHOWN
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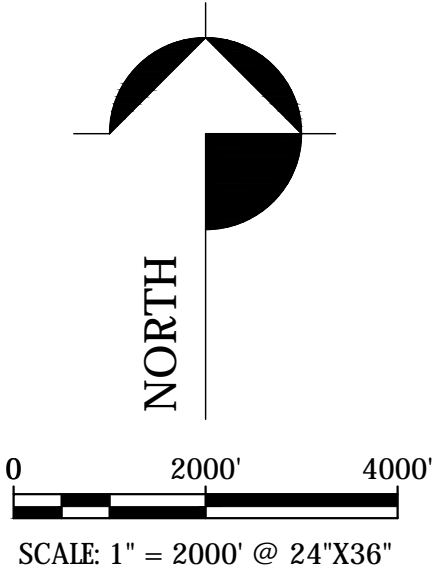
2 OF 17



NOTES:

1. HILLSHADE BACKGROUND IMAGE
EXTRACTED FROM LIDAR CONTOURS
ACQUIRED FROM SANTA CRUZ COUNTY.

- LEGEND:
- PROPERTY LINE
 - STREAM - MAJOR
 - STREAM - MINOR
 - EXISTING ROAD
 - PROPOSED TRAIL ALIGNMENT



1 OVERALL SITE PLAN

SCALE: 1" = 2000' @ 24"X36"

PRELIMINARY DRAWINGS NOT FOR CONSTRUCTION

SHEET TITLE:
OVERALL SITE PLAN

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: BRYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CMEX PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

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TEL: (831) 426-9054



DRAWN BY: SLS
CHECKED BY: RIC
DATE: AUGUST 2018
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SCALE: AS SHOWN
SHEET:

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3 OF 17

24"x36" SHEET. IF SHEET SIZE IS SMALLER, DRAWING HAS BEEN REDUCED.



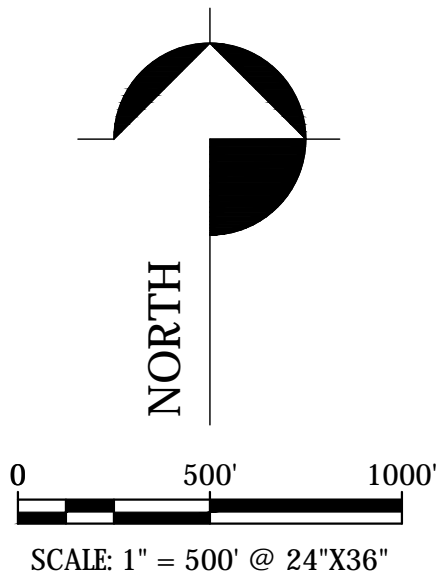
1 SITE PLAN - TRAILS - SHEET 1
SCALE: 1" = 500' @ 24"X36"

PRELIMINARY DRAWINGS NOT FOR CONSTRUCTION

TRAIL NAME	LENGTH (FT)	TREAD WIDTH	INTENDED USE	PHASING
N2	4,745	24"	HIKE, HORSE	PHASE 1
N3	469	24"	HIKE, BIKE	PHASE 1
N4	1,179	36"	HIKE, BIKE, HORSE, DOG	PHASE 1
N5	3,594	24"	HIKE, BIKE	TBD
N6	4,195	24"	HIKE, BIKE	PHASE 1
N7	1,358	24"	HIKE, BIKE	PHASE 1
N8	1,307	24"	HIKE, BIKE	PHASE 1
N11	3,820	24"	HIKE, BIKE	TBD
N12	2,865	24"	HIKE, BIKE	TBD
N13	3,847	36"	HIKE, BIKE, HORSE, DOG	PHASE 1
N14	1,587	24"	HIKE, BIKE	PHASE 1
N16	5,464	24"	HIKE, BIKE	PHASE 2
N17	2,518	24"	HIKE, BIKE	PHASE 1
N19	1,670	24"	HIKE, BIKE	PHASE 1
N20	688	24"	HIKE, BIKE	PHASE 1
N21	1,029	24"	HIKE, BIKE, HORSE, DOG	PHASE 1
N22	3,627	24"	HIKE, BIKE, HORSE, DOG	PHASE 1
N23	2,172	24"	HIKE, BIKE, HORSE, DOG	PHASE 1
N24	8,395	24"	HIKE, HORSE	PHASE 1/2
N25	1,990	24"	HIKE, BIKE	PHASE 1
N26	3,787	24"	HIKE, BIKE	PHASE 1

- NOTES:
- TRAIL CONSTRUCTION SHALL FOLLOW STANDARD NOTES ON SHEET C0.1.
 - HILLSHADE BACKGROUND IMAGE EXTRACTED FROM LIDAR CONTOURS ACQUIRED FROM SANTA CRUZ COUNTY.

- LEGEND:
- PROPERTY LINE
 - STREAM - MAJOR
 - STREAM - MINOR
 - EXISTING ROAD
 - GATE
 - SPRING
 - WOODRAT NEST
 - WILDLIFE TREE
 - ANDERSON'S MANZANITA
 - WETLAND WITH 100-FOOT BUFFER
 - PROPOSED TRAIL ALIGNMENT
 - PROPOSED TRAIL CORRIDOR
 - PROPOSED CROSSING #X ON TRAIL Y (SEE SHEETS C2.5 & C2.6)



SHEET TITLE:
SITE PLAN - TRAILS - SHEET 1

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: BRYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
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CMEY PROPERTY, EMPIRE GRADE
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SHEET:

C2.0

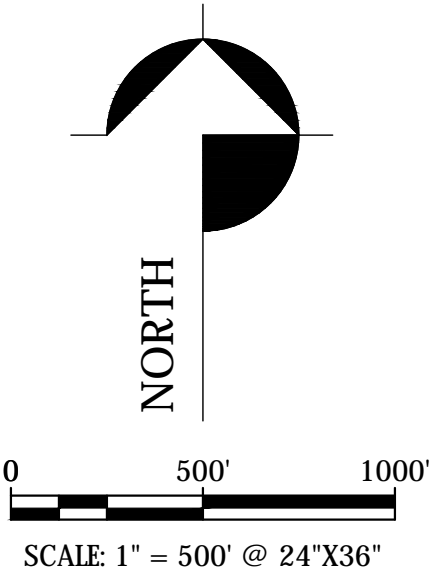
24"x36" SHEET. IF SHEET SIZE IS SMALLER, DRAWING HAS BEEN REDUCED.



TRAIL NAME	LENGTH (FT)	TREAD WIDTH	INTENDED USE	PHASING
N1	3,047	24"	HIKE, BIKE	PHASE 2
N9	5,116	24"	HIKE, HORSE	PHASE 2
N12	2,865	24"	HIKE, BIKE	TBD
N16	5,464	24"	HIKE, BIKE	PHASE 2
N18	4,494	24"	HIKE, BIKE	TBD
N24	8,395	24"	HIKE, HORSE	PHASE 1/2
S1	3,702	24"	HIKE, BIKE	PHASE 2
S2	7,778	24"	HIKE, BIKE	PHASE 3
S3	6,716	24"	HIKE, BIKE	PHASE 2
S4	3,236	24"	HIKE, BIKE, HORSE	PHASE 3
S5	6,998	24"	HIKE, BIKE	PHASE 2
S7	1,832	24"	HIKE, BIKE	PHASE 3
S8	1,081	24"	HIKE	PHASE 3
S9	1,839	24"	HIKE, BIKE	PHASE 3
S10	7,251	24"	HIKE, HORSE	PHASE 3
S12	3,111	24"	HIKE, BIKE	PHASE 3
S13	5,233	24"	HIKE, HORSE	PHASE 3
S14	3,235	24"	HIKE, BIKE	PHASE 3
S14 HORSE ALTERNATE	2,309	24"	HORSE ONLY	PHASE 3
S15	7,958	24"	HIKE, HORSE	PHASE 3
S16	2,481	24"	HIKE, HORSE	PHASE 3
S17	6,713	24"	HIKE, BIKE	PHASE 3
S18	2,830	24"	HIKE, HORSE	PHASE 2
S19	3,903	24"	HIKE, BIKE	PHASE 3
S21	2,575	24"	HIKE, HORSE	PHASE 3
S22	162	24"	HIKE, BIKE, HORSE	PHASE 3

- NOTES:
- TRAIL CONSTRUCTION SHALL FOLLOW STANDARD NOTES ON SHEET C0.1.
 - HILLSHADE BACKGROUND IMAGE EXTRACTED FROM LIDAR CONTOURS ACQUIRED FROM SANTA CRUZ COUNTY.

- LEGEND:
- PROPERTY LINE
 - STREAM - MAJOR
 - STREAM - MINOR
 - EXISTING ROAD
 - GATE
 - SPRING
 - WOODRAT NEST
 - WILDLIFE TREE
 - ANDERSON'S MANZANITA
 - WETLAND WITH 100-FOOT BUFFER
 - PROPOSED TRAIL ALIGNMENT
 - PROPOSED TRAIL CORRIDOR
 - PROPOSED CROSSING #X ON TRAIL Y (SEE SHEETS C2.5 & C2.6)



1 SITE PLAN - TRAILS - SHEET 2
SCALE: 1" = 500' @ 24"X36"

PRELIMINARY DRAWINGS NOT FOR CONSTRUCTION

SHEET TITLE:
SITE PLAN - TRAILS - SHEET 2

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: BRYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CMEX PROPERTY, EMPIRE CRAFT
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.
Consulting Engineers
Civil • Environmental • Water Resources

1525 SEABRIGHT AVE.
SANTA CRUZ, CA 95062
TEL: (831) 426-9054



DRAWN BY: SLS
CHECKED BY: RIC
DATE: AUGUST 2018
JOB NO: 21514/21633
SCALE: AS SHOWN
SHEET:

C2.1



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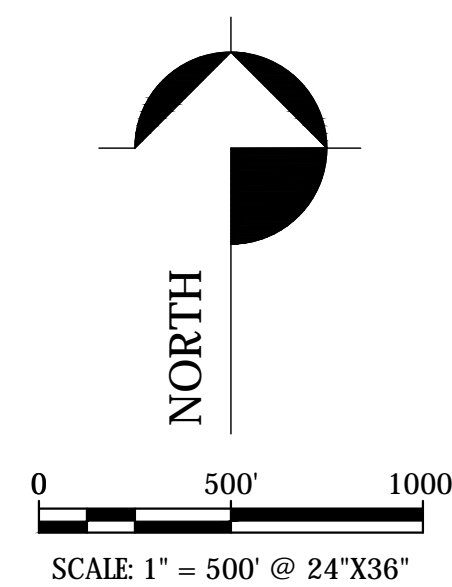
P R E L I M I N A R Y D R A W I N G S N O T F O R C O N S T R U C T I O N

TRAIL NAME	LENGTH (FT)	TREAD WIDTH	INTENDED USE	PHASING
S6	9,787	24"	HIKE, BIKE, HORSE	PHASE 3
S10	7,251	24"	HIKE, HORSE	PHASE 3
S11	1,827	24"	HIKE, BIKE, HORSE	PHASE 3
S17	6,713	24"	HIKE, BIKE	PHASE 3
S20	9,630	24"	HIKE, BIKE, HORSE	PHASE 3
S22	162	24"	HIKE, BIKE, HORSE	PHASE 3

NOTES:

1. TRAIL CONSTRUCTION SHALL FOLLOW STANDARD NOTES ON SHEET C0.1.
2. HILLSHADE BACKGROUND IMAGE EXTRACTED FROM LIDAR CONTOURS ACQUIRED FROM SANTA CRUZ COUNTY.

LEGEND:	
	PROPERTY LINE
	STREAM - MAJOR
	STREAM - MINOR
	EXISTING ROAD
	GATE
	SPRING
	WOODRAT NEST
	WILDLIFE TREE
	ANDERSON'S MANZANITA
	WETLAND WITH 100-FOOT BUFFER
	PROPOSED TRAIL ALIGNMENT
	PROPOSED TRAIL CORRIDOR
	PROPOSED CROSSING #X ON TRAIL Y (SEE SHEETS C2.5 & C2.6)



SHEET TITLE:

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: BRYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA, 95060

PROJECT TITLE:
SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CEMEX PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.



1525 SEABRIGHT AVE.
SANTA CRUZ, CA 95062
TEL. (831) 426-9054



DRAWN BY:	SIS
CHECKED BY:	RLC
DATE:	AUGUST 2018
JOB NO:	21514/21633
SCALE:	AS SHOWN
SHEET:	

C2.2

6 OF 17

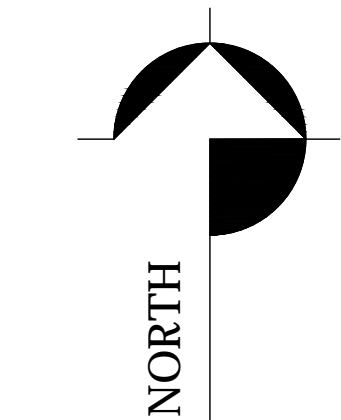
24"x36" SHEET. IF SHEET SIZE IS SMALLER, DRAWING HAS BEEN REDUCED.



TRAIL NAME	LENGTH (FT)	TREAD WIDTH	INTENDED USE	PHASING
LCT	7,577	24"	HIKE ONLY	PHASE 1

- NOTES:
- TRAIL CONSTRUCTION SHALL FOLLOW STANDARD NOTES ON SHEET C0.1.
 - HILSHADE BACKGROUND IMAGE EXTRACTED FROM LIDAR CONTOURS ACQUIRED FROM SANTA CRUZ COUNTY.

- LEGEND:
- PROPERTY LINE
 - STREAM - MAJOR
 - STREAM - MINOR
 - EXISTING ROAD
 - GATE
 - SPRING
 - WOODRAT NEST
 - WILDLIFE TREE
 - ANDERSON'S MANZANITA
 - WETLAND WITH 100-FOOT BUFFER
 - PROPOSED TRAIL ALIGNMENT
 - PROPOSED TRAIL CORRIDOR
 - PROPOSED CROSSING #X ON TRAIL Y (SEE SHEETS C2.5 & C2.6)



0 500' 1000'
SCALE: 1" = 500' @ 24"X36"

SHEET TITLE:
SITE PLAN - TRAILS - SHEET 4

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: BRYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CMEY PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.
 Consulting Engineers
Civil • Environmental • Water Resources

1525 SEABRIGHT AVE.
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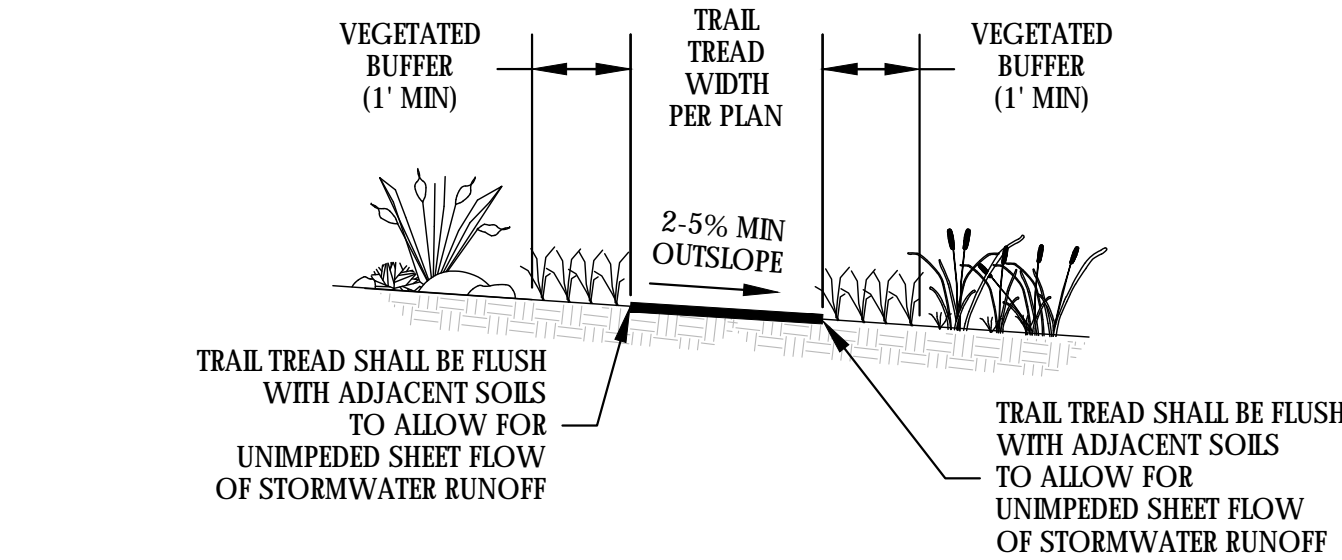


DRAWN BY: SLS
CHECKED BY: RIC
DATE: AUGUST 2018
JOB NO: 21514/21633
SCALE: AS SHOWN
SHEET:

C2.3

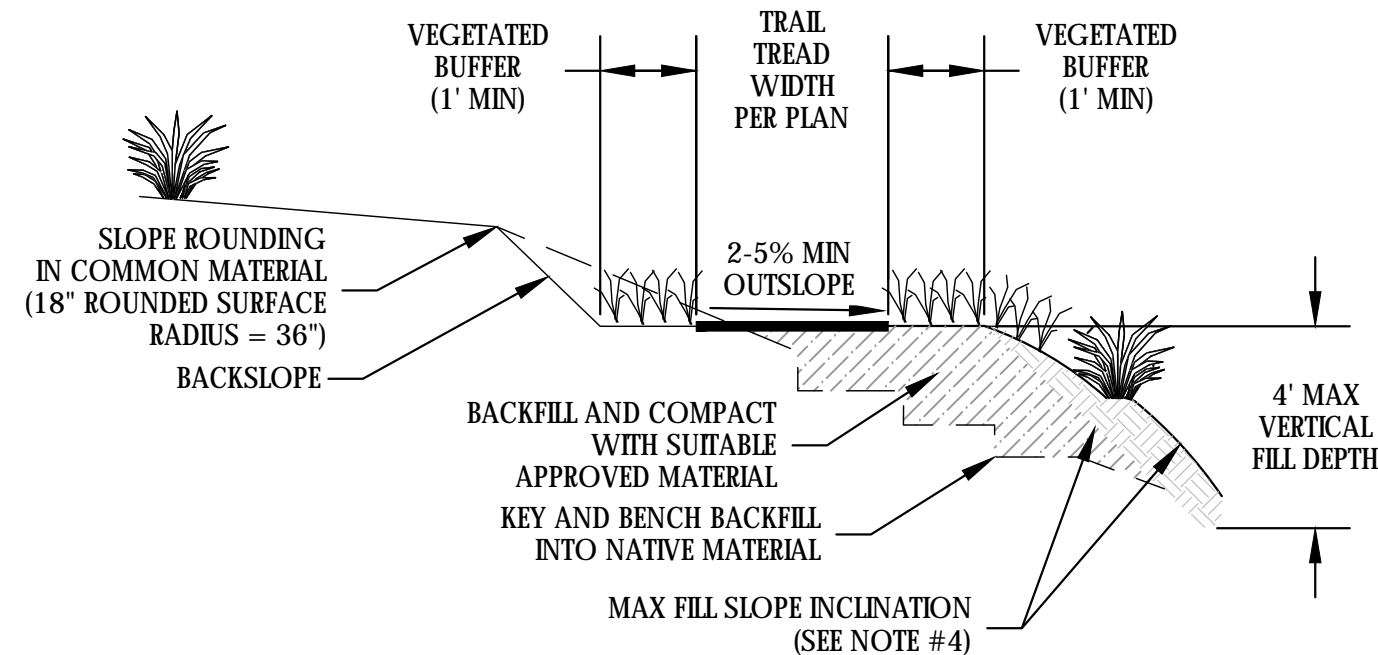
24" X 36" SHEET. IF SHEET SIZE IS SMALLER, DRAWING HAS BEEN REDUCED.

1 TYPICAL TRAIL INSTALLATION DETAILS
SCALE: AS DIMENSIONED



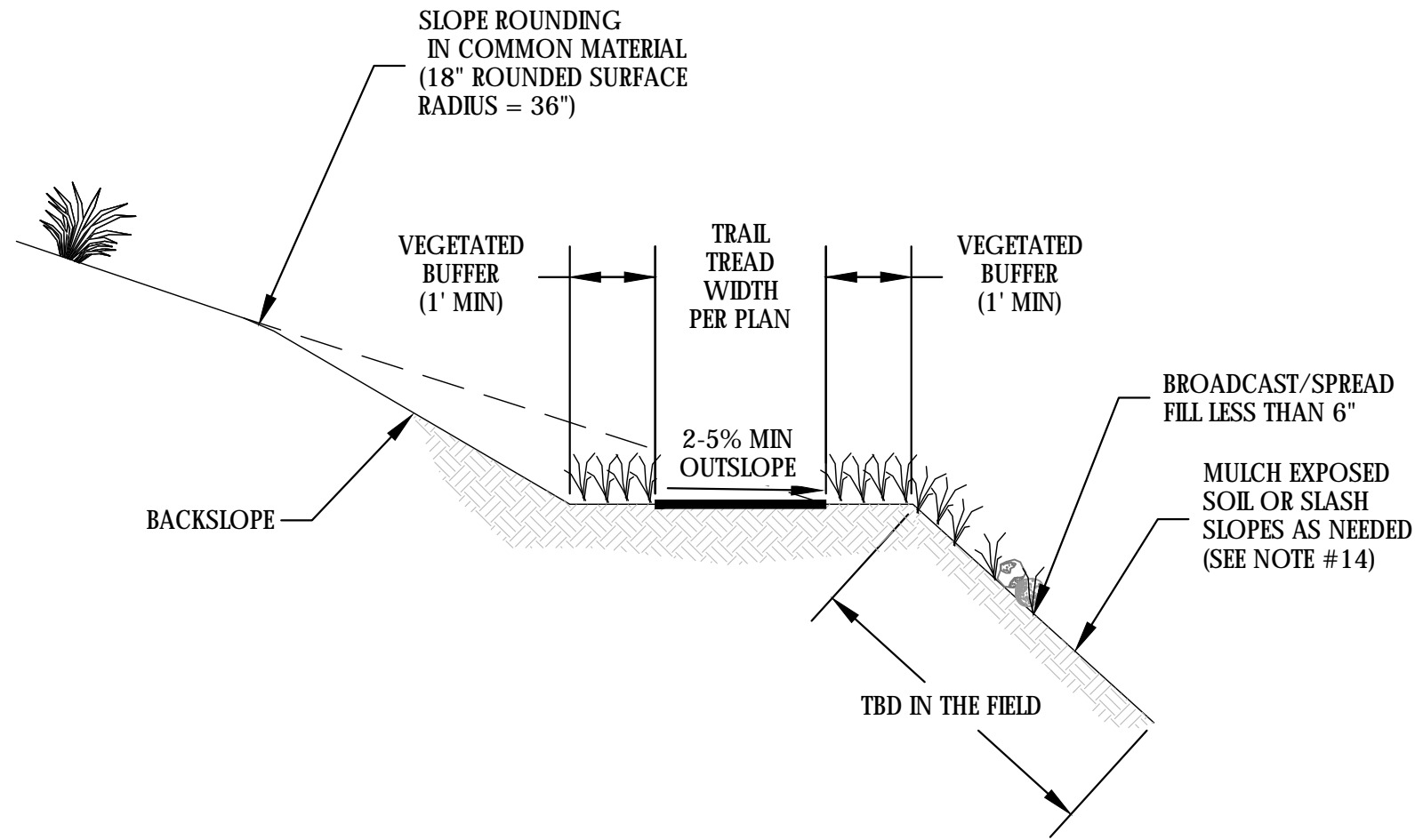
- NOTES:
1. TRAIL INSTALLATION SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
 2. TRAIL TREAD SHALL BE CONSTRUCTED WITH WIDTH PER PLAN WITH 1 FOOT MIN VEGETATED BUFFERS ON BOTH SIDES OF TRAIL.
 3. VERTICAL CLEARANCE SHALL BE A MINIMUM OF 10 FEET FOR ALL TRAILS.
 4. CLEAR BRUSH, TREES AND ROOTS WITHIN LIMITS OF TRAIL INSTALLATION. ROOTS SHALL BE CLEAN CUT TO AVOID TREE DAMAGE.
 5. CLEAR TOP SOIL DOWN TO CONSOLIDATED STABLE SOIL.
 6. BACKFILL TRAIL TREAD TO MATCH EXISTING GRADE. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
 7. FILL ROOT HOLES TO CREATE A SMOOTH OUTSLOPE TRAIL TREAD.
 8. COMPACT TRAIL TREAD.
 9. OUTSLOPE IN DIRECTION OF NATURAL DRAINAGE WITH A MINIMUM OF 5% SLOPE OR 2% FOR ACCESSIBLE TRAILS.
 10. ACCESSIBLE TRAILS MUST MEET ODA/ORAR GUIDELINES.
 11. ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS.
 12. THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

INSTALL TRAIL ON GRADE



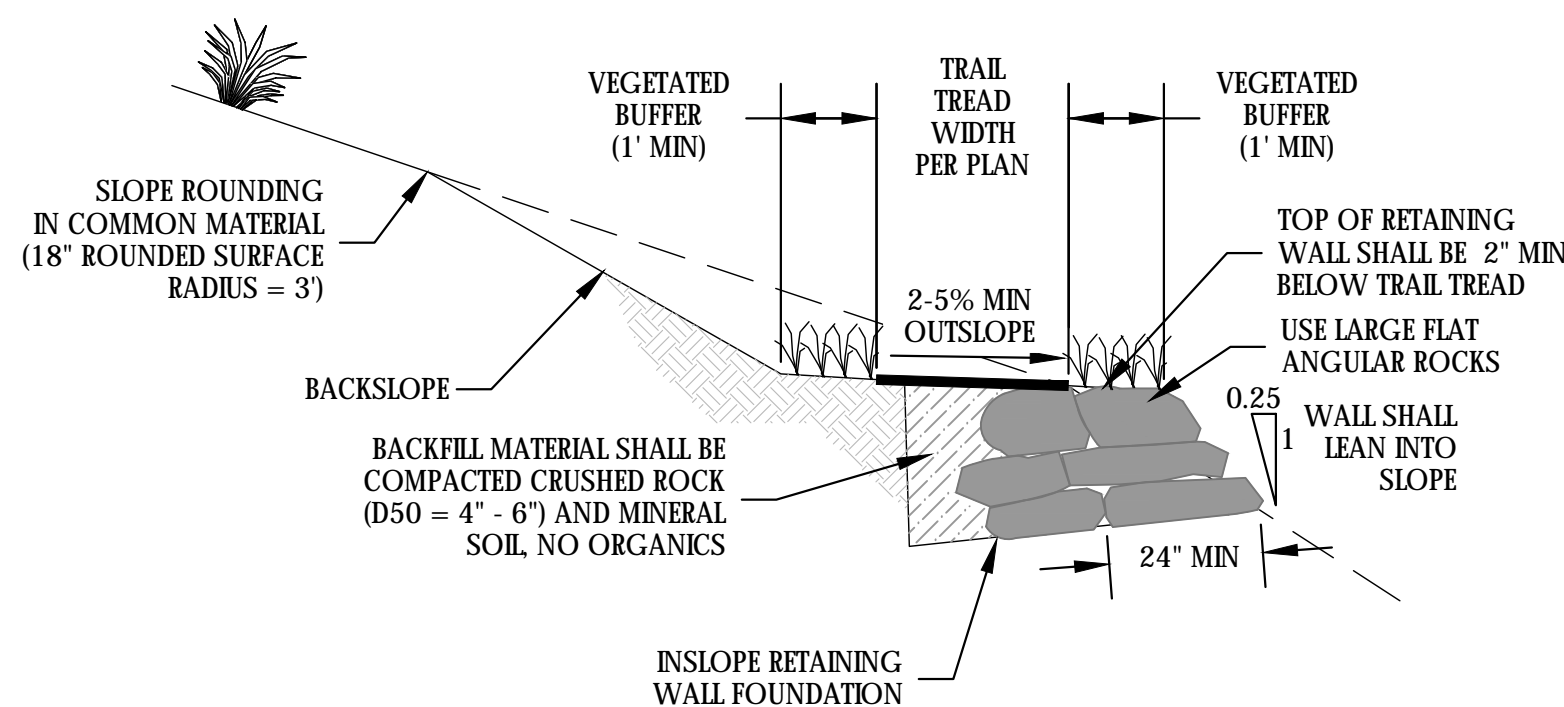
- NOTES:
1. TRAIL INSTALLATION SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
 2. TRAIL TREAD SHALL BE CONSTRUCTED WITH WIDTH PER PLAN WITH 1 FOOT MIN VEGETATED BUFFERS ON BOTH SIDES OF TRAIL.
 3. VERTICAL CLEARANCE SHALL BE A MINIMUM OF 10 FEET FOR ALL TRAILS.
 4. WHERE FILL IS TO BE PLACED ON EXISTING SLOPES STEEPER THAN 5:1 (HORIZONTAL:VERTICAL), KEY AND BENCH INTO EXISTING NATIVE MATERIAL.
 5. SURPLUS MATERIAL FROM PARTIAL BENCH TRAIL INSTALLATION SHALL BE BROADCAST BELOW TRAIL TO A DEPTH LESS THAN 6 INCHES. SOILS SHALL NOT BE BROADCAST WITHIN THE STREAM SETBACKS INDICATED IN STANDARD NOTE #5 ON SHEET C0.1.
 6. MAX CUT SLOPE (BACKSLOPE) AND FILL SLOPE (FRONTSLOPE) INCINATION OF 1:1 (HORIZONTAL:VERTICAL) IN BEDROCK; 2:1 IN SOIL; ALTERNATIVE STEEPER SLOPES MUST BE APPROVED BY CIVIL ENGINEER.
 7. IF THESE CUT SLOPE OR FILL SLOPE INCINATIONS RESULT IN MORE EXTENSIVE GRADING THAN DESIRABLE, AND IF INCREASED TRAIL MAINTENANCE IS ACCEPTABLE, THEN SLOPES COULD BE CONSTRUCTED AT STEEPER INCINATIONS WHEREVER BEDROCK IS ENCOUNTERED.
 8. MINIMUM COMPACTION 85% FOR ALL FILL SLOPES.
 9. CLEAR BRUSH, TREES AND ROOTS WITHIN LIMITS OF TRAIL INSTALLATION. ROOTS SHALL BE CLEAN CUT TO AVOID TREE DAMAGE.
 10. CLEAR TOP SOIL DOWN TO CONSOLIDATED STABLE SOIL.
 11. BACKFILL TRAIL TREAD TO MATCH EXISTING GRADE. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
 12. FILL ROOT HOLES TO CREATE A SMOOTH OUTSLOPE TRAIL TREAD.
 13. COMPACT TRAIL TREAD.
 14. OUTSLOPE IN DIRECTION OF NATURAL DRAINAGE WITH A MINIMUM OF 5% SLOPE, 2% FOR ACCESSIBLE TRAILS.
 15. ACCESSIBLE TRAILS MUST MEET ODA/ORAR GUIDELINES.
 16. ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS. IF BROADCASTED SOILS ARE SPREAD AT A MAXIMUM THICKNESS OF 2" AND THERE IS A VEGETATIVE BUFFER DOWNSLOPE, THEN EROSION CONTROL MEASURES ARE NOT REQUIRED FOR BROADCASTED SOILS.
 17. THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

PARTIAL BENCH



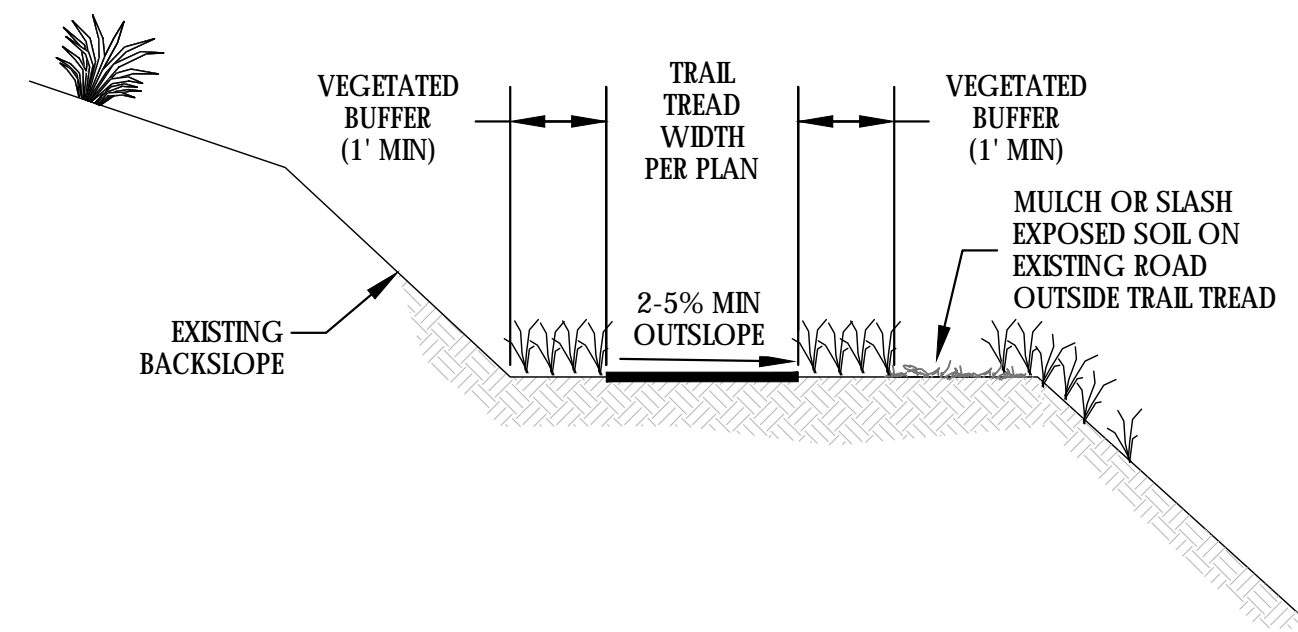
- NOTES:
1. TRAIL INSTALLATION SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
 2. TRAIL TREAD SHALL BE CONSTRUCTED WITH WIDTH PER PLAN WITH 1 FOOT MIN VEGETATED BUFFERS ON BOTH SIDES OF TRAIL.
 3. VERTICAL CLEARANCE SHALL BE A MINIMUM OF 10 FEET FOR ALL TRAILS.
 4. WHERE TRAIL CONSTRUCTED WITH FULL BENCH, BROADCAST EXCAVATED SOILS BELOW TRAIL TO A DEPTH LESS THAN 6 INCHES. SOILS SHALL NOT BE BROADCAST WITHIN THE STREAM SETBACKS INDICATED IN STANDARD NOTE #5 ON SHEET C0.1.
 5. MAX CUT SLOPE (BACKSLOPE) INCINATION OF 1:1 (HORIZONTAL:VERTICAL) IN BEDROCK; 2:1 IN SOIL; ALTERNATIVE STEEPER BACKSLOPES MUST BE APPROVED BY CIVIL ENGINEER.
 6. IF THESE CUT SLOPE INCINATIONS RESULT IN MORE EXTENSIVE GRADING THAN DESIRABLE, AND IF INCREASED TRAIL MAINTENANCE IS ACCEPTABLE, THEN CUT SLOPES COULD BE CONSTRUCTED AT STEEPER INCINATIONS WHEREVER BEDROCK IS ENCOUNTERED.
 7. CLEAR BRUSH, TREES AND ROOTS WITHIN LIMITS OF TRAIL INSTALLATION. ROOTS SHALL BE CLEAN CUT TO AVOID TREE DAMAGE.
 8. CLEAR TOP SOIL DOWN TO CONSOLIDATED STABLE SOIL.
 9. BACKFILL TRAIL TREAD TO MATCH EXISTING GRADE. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
 10. FILL ROOT HOLES TO CREATE A SMOOTH OUTLOPE TRAIL TREAD.
 11. COMPACT TRAIL TREAD.
 12. OUTSLOPE IN DIRECTION OF NATURAL DRAINAGE WITH A MINIMUM OF 5% SLOPE, 2% FOR ACCESSIBLE TRAILS.
 13. ACCESSIBLE TRAILS MUST MEET ODA/ORAR GUIDELINES.
 14. ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS. IF BROADCASTED SOILS ARE SPREAD AT A MAXIMUM THICKNESS OF 2" AND THERE IS A VEGETATIVE BUFFER DOWNSLOPE, THEN EROSION CONTROL MEASURES ARE NOT REQUIRED FOR BROADCASTED SOILS.
 15. THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

FULL BENCH





- NOTES:
1. TRAIL INSTALLATION SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
 2. TRAIL TREAD SHALL BE CONSTRUCTED WITH WIDTH PER PLAN WITH 1 FOOT MIN VEGETATED BUFFERS ON BOTH SIDES OF TRAIL.
 3. VERTICAL CLEARANCE SHALL BE A MINIMUM OF 10 FEET FOR ALL TRAILS.
 4. MAX CUT SLOPE (BACKSLOPE) INCINATION OF 1:1 (HORIZONTAL:VERTICAL) IN BEDROCK; 2:1 IN SOIL; ALTERNATIVE STEEPER BACKSLOPES MUST BE APPROVED BY CIVIL ENGINEER.
 5. IF THESE CUT SLOPE INCINATIONS RESULT IN MORE EXTENSIVE GRADING THAN DESIRABLE, AND IF INCREASED TRAIL MAINTENANCE IS ACCEPTABLE, THEN CUT SLOPES COULD BE CONSTRUCTED AT STEEPER INCINATIONS WHEREVER BEDROCK IS ENCOUNTERED.
 6. LARGE FLAT ANGULAR ROCKS (50-150 POUNDS EACH) SHALL BE USED IN RETAINING WALL.
 7. CUT SLOPE BACKFILL SHALL BE CRUSHED ROCK (D50 = 4" - 6") AND MINERAL SOIL, CONTAINING NO ORGANICS.
 8. CLEAR BRUSH, TREES AND ROOTS WITHIN LIMITS OF TRAIL INSTALLATION. ROOTS SHALL BE CLEAN CUT TO AVOID TREE DAMAGE.
 9. CLEAR TOP SOIL DOWN TO CONSOLIDATED STABLE SOIL.
 10. BACKFILL TRAIL TREAD TO MATCH EXISTING GRADE. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
 11. FILL ROOT HOLES TO CREATE A SMOOTH OUTSLOPE TRAIL TREAD.
 12. COMPACT TRAIL TREAD.
 13. OUTSLOPE IN DIRECTION OF NATURAL DRAINAGE WITH A MINIMUM OF 5% SLOPE, 2% FOR ACCESSIBLE TRAILS.
 14. ACCESSIBLE TRAILS MUST MEET ODA/ORAR GUIDELINES.
 15. ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS.
 16. THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

BUTTRESS TRAIL



- NOTES:
1. TRAIL INSTALLATION SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
 2. TRAIL TREAD SHALL BE CONSTRUCTED WITH WIDTH PER PLAN WITH 1 FOOT MIN VEGETATED BUFFERS ON BOTH SIDES OF TRAIL.
 3. VERTICAL CLEARANCE SHALL BE A MINIMUM OF 10 FEET FOR ALL TRAILS.
 4. TRAIL TREAD SHALL BE LOCATED ON THE CUT SLOPE (BACKSLOPE) SIDE OF THE ROAD SECTION. HOWEVER, TRAIL CAN MEANDER ACROSS EXISTING ROAD AS NEEDED TO FACILITATE DRAINAGE AND AVOID RESOURCES AS LONG AS THE FILL SLOPE SIDE OF THE ROAD IS DETERMINED TO BE STABLE BY THE CIVIL ENGINEER.
 5. CLEAR BRUSH, TREES AND ROOTS WITHIN LIMITS OF TRAIL INSTALLATION. ROOTS SHALL BE CLEAN CUT TO AVOID TREE DAMAGE.
 6. CLEAR TOP SOIL DOWN TO CONSOLIDATED STABLE SOIL.
 7. BACKFILL TRAIL TREAD TO MATCH EXISTING GRADE. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
 8. FILL ROOT HOLES TO CREATE A SMOOTH OUTSLOPE TRAIL TREAD.
 9. COMPACT TRAIL TREAD.
 10. OUTSLOPE WHERE FEASIBLE IN DIRECTION OF NATURAL DRAINAGE WITH A MINIMUM OF 5% SLOPE, 2% FOR ACCESSIBLE TRAILS. WHERE TRAIL IS INSLOPED, ADEQUATE DRAINAGE FEATURES SHALL BE PROVIDED TO PREVENT EROSION AND SEDIMENT TRANSPORT IN INBOARD ROADSIDE DITCHES.
 11. ACCESSIBLE TRAILS MUST MEET ODA/ORAR GUIDELINES.
 12. ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS.
 13. THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

ROAD TO TRAIL CONVERSION

SHEET TITLE: TRAIL INSTALLATION DETAILS	
CLIENT: LAND TRUST OF SANTA CRUZ COUNTY ATTN: RYAN LARGAY 617 WATER STREET SANTA CRUZ, CALIFORNIA 95060	
PROJECT TITLE: SAN VICENTE REDWOODS PROPOSED TRAIL NETWORK AND STAGING AREA CIMEX PROPERTY, EMPIRE GRADE SANTA CRUZ COUNTY, CALIFORNIA	
FALL CREEK ENGINEERING, INC.  Consulting Engineers Civil • Environmental • Water Resources 1525 SEABRIGHT AVE. SANTA CRUZ, CA 95062 TEL (831) 426-9054	
	
DRAWN BY: SIS	
CHECKED BY: RLC	
DATE: AUGUST 2018	
JOB NO: 21514/21633	
SCALE: AS SHOWN	
SHEET: C2.4 8 OF 17	

24" X 36" SHEET. IF SHEET SIZE IS SMALLER, DRAWING HAS BEEN REDUCED.

1 TYPICAL ARMORED CROSSING

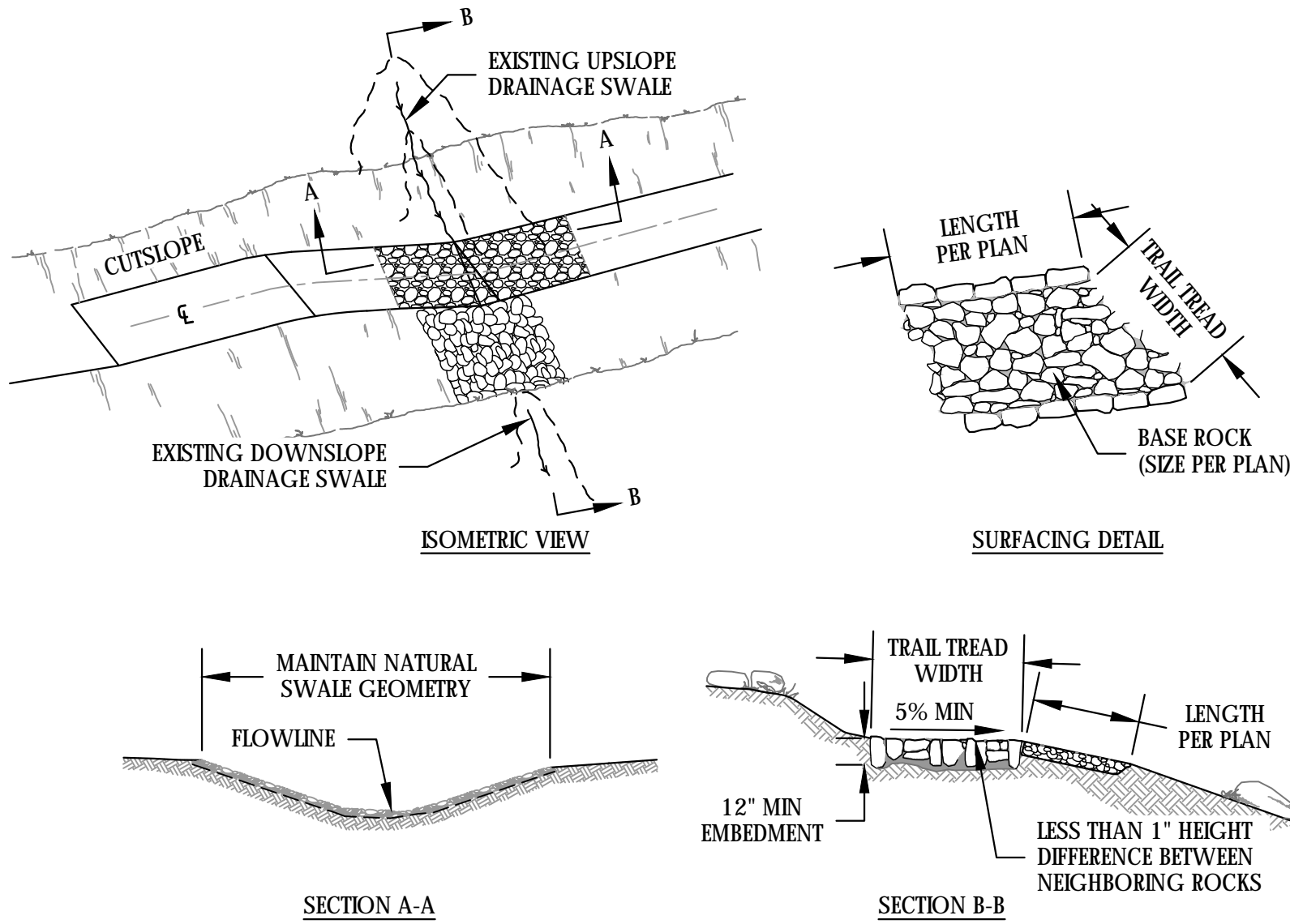
SCALE: AS DIMENSIONED

CROSSING NUMBER	TYPE	CROSSING LENGTH	CROSSING WIDTH	DOWNSTREAM ARMOR LENGTH	DOWNSTREAM ARMOR WIDTH	ROCK SIZE (D50)	25-YEAR FLOW DEPTH (FEET)	NOTES
N1 #1	TYPE 1	12.3'	5'	N/A	N/A	12"	0.39	TRAIL TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW
N1 #2	TYPE 1	10.4'	5'	N/A	N/A	9"	0.253	IMPROVE DRAINAGE ON EXISTING TRAIL BY INSTALLING A GRADE REVERSAL (SEE DETAIL 3 ON SHEET C5.1)
N5 #4	TYPE 1	7.2'	5'	N/A	N/A	6"	0.138	
N6 #3	TYPE 1	6.9'	5'	N/A	N/A	6"	0.365	
N6 #4	TYPE 1	7.7'	5'	N/A	N/A	6"	0.162	
N8 #1	TYPE 1	15.8'	5'	N/A	N/A	6"	0.27	
N8 #2	TYPE 1	6.8'	5'	N/A	N/A	6"	0.398	
N9 #1	TYPE 1	7.4'	5'	N/A	N/A	9"	0.317	
N9 #2	TYPE 1	9.7'	5'	N/A	N/A	6"	0.213	
N11 #1	TYPE 1	7.0'	5'	N/A	N/A	6"	0.303	
N12 #1	TYPE 1	9.9'	5'	N/A	N/A	6"	0.164	
N12 #3	TYPE 1	8.4'	5'	N/A	N/A	9"	0.392	
N12 #4	TYPE 1	8.7'	5'	N/A	N/A	6"	0.278	
N12 #5	TYPE 1	7.6'	5'	N/A	N/A	12"	0.455	
N16 #1	TYPE 1	13.3'	5'	N/A	N/A	6"	0.322	
N17 #2	TYPE 1	6.0'	5'	N/A	N/A	6"	0.333	CHANNEL TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW
N18 #1	TYPE 1	8.0'	5'	N/A	N/A	9"	0.299	
N19 #1	TYPE 1	6.3'	5'	N/A	N/A	6"	0.298	
N21 #1	TYPE 2	13.6'	5'	5'	5'	6"	0.28	
N24 #1	TYPE 1	6.2'	5'	N/A	N/A	9"	0.544	
N25 #1	TYPE 1	6.1'	5'	N/A	N/A	6"	0.206	CHANNEL TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW
N25 #2	TYPE 1	5.3'	5'	N/A	N/A	6"	0.288	
N25 #3	TYPE 1	5.5'	5'	N/A	N/A	9"	0.169	CHANNEL TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW
N26 #1	TYPE 1	6.3'	5'	N/A	N/A	6"	0.309	
N26 #2	TYPE 1	6.8'	5'	N/A	N/A	6"	0.445	CHANNEL TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW
S2 #1	TYPE 1	15.3'	5'	N/A	N/A	6"	0.332	
S2 #2	TYPE 1	10.0'	5'	N/A	N/A	6"	0.212	
S2 #3	TYPE 1	11.5'	5'	N/A	N/A	9"	0.464	
S5 #4	TYPE I	10.9'	5'	N/A	N/A	12"	0.33	
S9 #3	TYPE 1	9.4'	5'	N/A	N/A	6"	0.863	ROAD SIDE DITCH TO BE GRADED TO ACCOMMODATE 25-YEAR DEPTH OF FLOW
S17 #1	TYPE 1	3.9'	5'	N/A	N/A	9"	0.227	
S17 #2	TYPE 1	2.5'	5'	N/A	N/A	6"	0.324	
S19 #2	TYPE 1	14.9'	5'	N/A	N/A	6"	0.321	
S19 #3	TYPE 1	7.6'	5'	N/A	N/A	9"	0.248	
S19 #5	TYPE 1	9.2'	5'	N/A	N/A	6"	0.215	

NOTES:

- CROSSING INSTALLATION SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
- TRAIL SHALL BE INSTALLED TO FOLLOW NATURAL UNDULATION OF SWALE AT CROSSING, AND TO NOT IMPEDE FLOW THROUGH SWALE.
- REMOVE AND DISPOSE OF DUFF AND TOP ORGANIC LAYERS DOWN TO MINERAL SOIL.
- BACKFILL TO PROVIDE LEVELING AND SUPPORT OF BASE ROCK. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
- LAY ROCK WITH A MINIMUM OF 3 POINTS OF CONTACT WITH ADJACENT ROCKS.
- LAY ROCKS IN A RANDOM ARRANGEMENT.
- FILL VOIDS WITH BROKEN ROCK OR SUITABLE BACKFILL. COMPACT BACKFILL TO PROVIDE A STABLE SURFACE.
- ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS.
- THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

TYPE 1 - ARMORED CROSSING



NOTES:

- CROSSING INSTALLATION SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
- TRAIL SHALL BE INSTALLED TO FOLLOW NATURAL UNDULATION OF SWALE AT CROSSING, AND TO NOT IMPEDE FLOW THROUGH SWALE.
- REMOVE AND DISPOSE OF DUFF AND TOP ORGANIC LAYERS DOWN TO MINERAL SOIL.
- BACKFILL TO PROVIDE LEVELING AND SUPPORT OF BASE ROCK. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
- LAY ROCK WITH A MINIMUM OF 3 POINTS OF CONTACT WITH ADJACENT ROCKS.
- LAY ROCKS IN A RANDOM ARRANGEMENT.
- FILL VOIDS WITH BROKEN ROCK OR SUITABLE BACKFILL. COMPACT BACKFILL TO PROVIDE A STABLE SURFACE.
- ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS.
- THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

TYPE 2 - ARMORED CROSSING WITH DOWNSTREAM ARMOR

CROSSING NUMBER	PUNCHEON LENGTH	PUNCHEON WIDTH	PUNCHEON HEIGHT (FEET)	25-YEAR FLOW DEPTH (FEET)	NOTES
LCT #1	14'-0"	5'-0"	1.13	0.91	
LCT #2	14'-0"	5'-0"	0.33	0.31	
LCT #4	22'-0"	5'-0"	0.71	0.7	
N5 #1	8'-0"	5'-0"	0.77	0.27	
N5 #3	8'-0"	5'-0"	1.14	0.1	
N5 #5	8'-0"	5'-0"	0.77	0.16	
N5 #7	10'-0"	5'-0"	1	0.51	
N9 #3	10'-0"	5'-0"	0.25	0.52	
N25 #4	8'-0"	5'-0"	0.77	0.19	
N25 #5	10'-0"	5'-0"	1.39	0.3	
S1 #1	14'-0"	5'-0"	0.8	0.32	
S1 #2	16'-0"	5'-0"	0.4	0.16	
S1 #4	14'-0"	5'-0"	1.83	0.12	
S2 #4	12'-0"	5'-0"	1.02	0.27	
S3 #1	20'-0"	5'-0"	0.57	0.23	
S5 #3	10'-0"	5'-0"	1.72	0.46	
S5 #4	8'-0"	5'-0"	1.72	0.25	INCLUDE ARMORED CROSSING ON RIGHT BANK APPROACH TO CROSSING (SEE DETAIL 1 ON SHEET C5.6)

NOTES:

- FOR TYPICAL PUNCHEON DETAIL, SEE SHEET S2.
- CONSTRUCTION OF PUNCHEONS SHALL FOLLOW STRUCTURAL NOTES AND SPECIFICATIONS AND RECOMMENDATIONS IN THE PROJECT GEOTECHNICAL ENGINEERING REPORT.
- PUNCHEONS ARE INTENDED TO BE MINIMAL STRUCTURES THAT ARE NOT FIXED IN PLACE. DURING LARGE ENOUGH STORM EVENTS, PUNCHEONS MAY BE MOBILIZED.

2 PUNCHEON SCHEDULE

SCALE: AS DIMENSIONED

CROSSING NUMBER	BRIDGE LENGTH	BRIDGE WIDTH	BRIDGE HEIGHT (FEET)	100-YEAR FLOW DEPTH (FEET)	FREEBOARD (FEET)	PLAN AND PROFILE SHEET
N17 #3	26'-0"	5'-0"	3.54	0.56	2.98	C4.0
N17 #4	14'-0"	5'-0"	2.26	0.42	1.84	C4.1
N6 #1	20'-0"	5'-0"	4.84	0.61	4.23	C4.2
N6 #2	14'-0"	5'-0"	2.85	0.6	2.25	C4.3
N6 #5	16'-0"	5'-0"	2.38	1.1	1.28	C4.4
N5 #6	16'-0"	5'-0"	3.13	0.65	2.48	C4.5
N11 #2	18'-0"	5'-0"	2.55	0.9	1.65	C4.6
N12 #2	10'-0"	5'-0"	2.05	0.17	1.88	C4.7
S5 #2	14'-0"	5'-0"	2.1	0.25	1.85	C4.8
S1 #3	14'-0"	5'-0"	1.97	0.24	1.73	C4.9
S19 #1	22'-0"	5'-0"	5.17	0.57	4.6	C4.10
S19 #4	36'-0"	5'-0"	9.81	1.12	8.69	C4.11
S15 #3	22'-0"	5'-0"	3.16	0.77	2.39	C4.12
S15 #4	42'-0"	5'-0"	5.71	1.21	4.5	C4.13
S15 #6	18'-0"	5'-0"	1.63	0.16	1.47	C4.14
S17 #3	20'-0"	5'-0"	5.38	0.53	4.85	C4.15

NOTES:

- FOR TYPICAL BRIDGE DETAILS, SEE SHEET S1.
- CONSTRUCTION OF BRIDGES SHALL FOLLOW STRUCTURAL NOTES AND SPECIFICATIONS AND RECOMMENDATIONS IN THE PROJECT GEOTECHNICAL ENGINEERING REPORT.
- BRIDGES ARE SIZED TO PASS THE 100-YEAR STORM WITH DEBRIS (MINIMUM 1 FOOT FREEBOARD).

3 BRIDGE SCHEDULE

SCALE: AS DIMENSIONED

CROSSING NUMBER	TYPE
LCT #3	SEASONAL ROCK HOP
N5 #2	NO IMPROVEMENT - WAIT AND WATCH
N17 #1	NO IMPROVEMENT - WAIT AND WATCH
N25 #6	NO IMPROVEMENT - WAIT AND WATCH
S2 #5	NO IMPROVEMENT - WAIT AND WATCH
S2 #6	NO IMPROVEMENT - WAIT AND WATCH
S2 #7	NO IMPROVEMENT - WAIT AND WATCH
S6 #1	NO IMPROVEMENT - WAIT AND WATCH
S6 #6	NO IMPROVEMENT - WAIT AND WATCH
S6 #7	NO IMPROVEMENT - WAIT AND WATCH
S15 #1	NO IMPROVEMENT - WAIT AND WATCH
S15 #2	NO IMPROVEMENT - WAIT AND WATCH
S18 #1	NO IMPROVEMENT - WAIT AND WATCH

NOTES:

- WAIT AND WATCH CROSSINGS SHALL BE MONITORED FOR SEDIMENT TRANSPORT AND WET AREAS. THESE CROSSINGS SHALL BE HARDENED IN THE FUTURE, AS NEEDED.

4 NO IMPROVEMENT AND WAIT & WATCH CROSSINGS SCHEDULE

SCALE: AS DIMENSIONED

SHEET TITLE:

TRAIL CROSSING DETAILS

CLIENT:

LAND TRUST OF SANTA CRUZ COUNTY

ATTN: RYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:

SAN VICENTE REDWOODS

PROPOSED TRAIL NETWORK AND STAGING AREA
CEMEX PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.

Consulting Engineers
Civil • Environmental • Water Resources

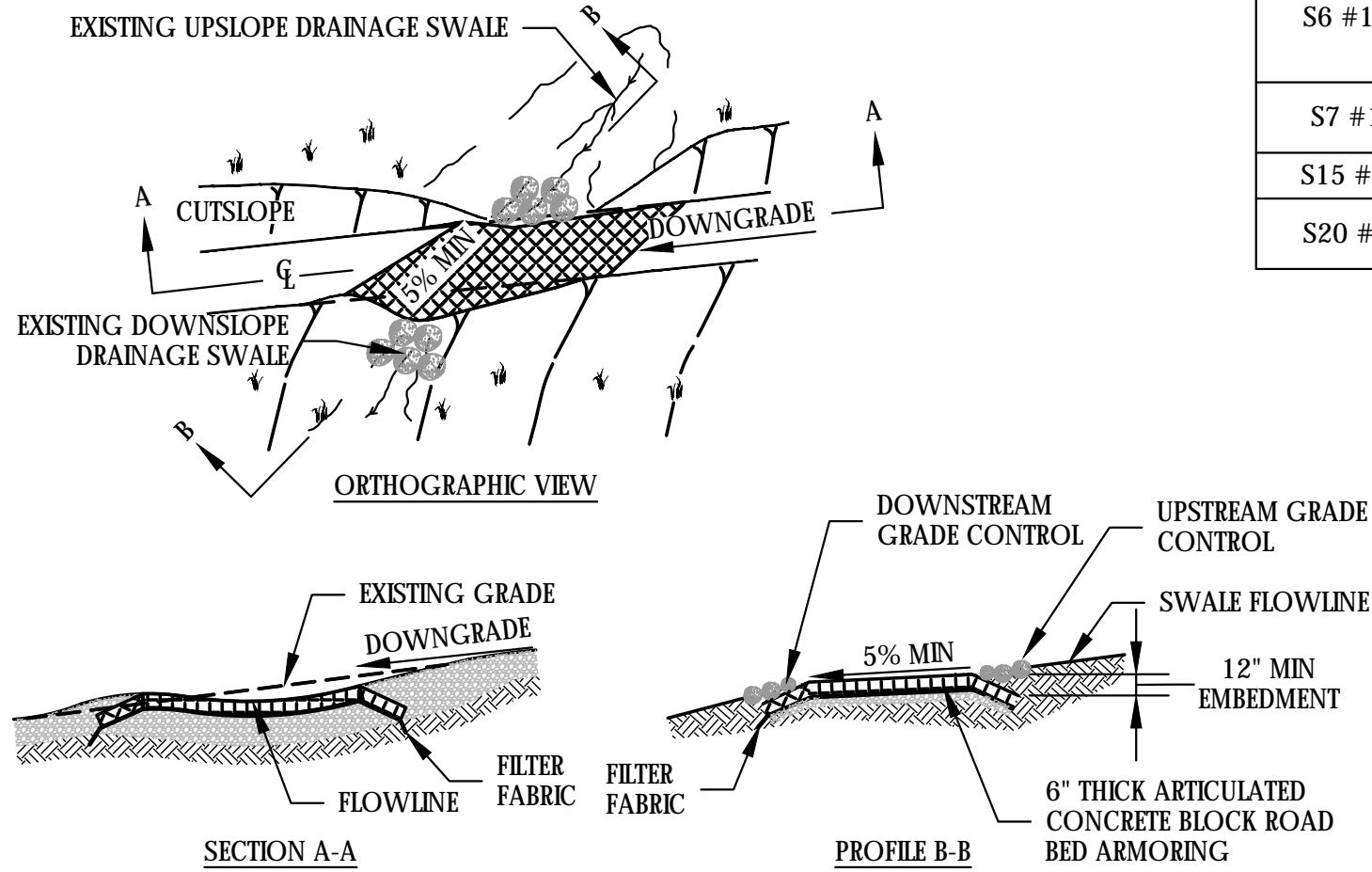
1525 SEABRIGHT AVE.
SANTA CRUZ, CA 95062
TEL (831) 426-9054



DRAWN BY: SIS
CHECKED BY: RLC
DATE: AUGUST 2018
JOB NO: 21514/21633
SCALE: AS SHOWN
SHEET:

C2.5

24" X 36" SHEET. IF SHEET SIZE IS SMALLER, DRAWING HAS BEEN REDUCED.



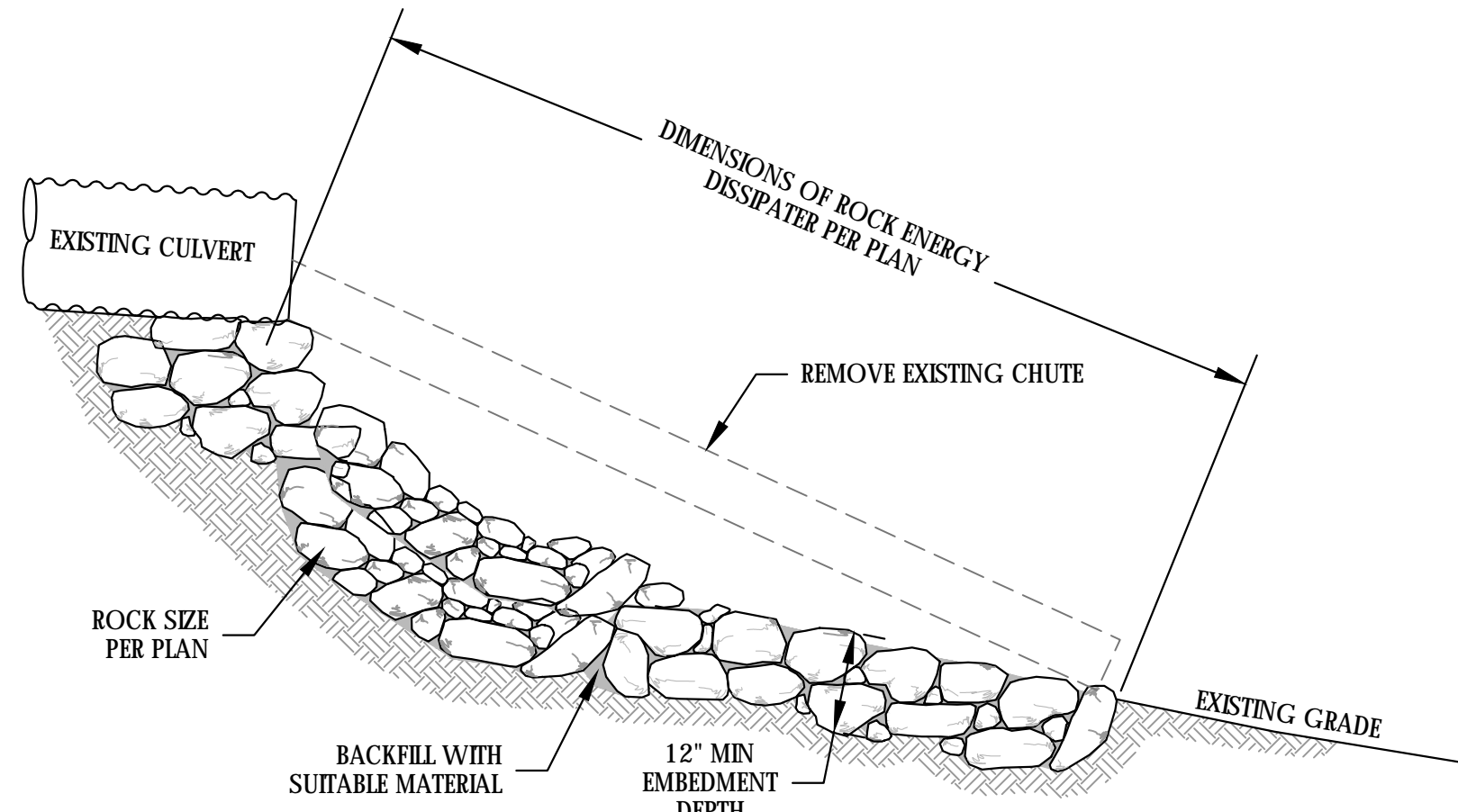
CROSSING NUMBER	TYPE	CLASS	CROSSING LENGTH	CROSSING WIDTH	DOWNSTREAM ARMOR LENGTH	DOWNSTREAM ARMOR WIDTH	ROCK SIZE (D50)	25-YEAR FLOW DEPTH (FEET)	NOTES
S1 #5	TYPE 1	III	11.4'	10'	N/A	N/A	6"	0.403	
S3 #2	TYPE 1	SWALE	19.6'	10'	N/A	N/A	6"	0.116	ROAD TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW
S4 #4	TYPE 1	III	13.1'	10'	N/A	N/A	6"	0.095	ROAD TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW
S4 #5	TYPE 1	III	40'	15'	N/A	N/A	9"	1.39	
S5 #1	TYPE 1	III	50'	10'	N/A	N/A	18"	1.373	
S6 #3	TYPE 2	III	15.2'	10'	7.4'	5'	6"	0.112	
S6 #4	TYPE 1	SPRING	21.5'	10'	N/A	N/A	6"	0.194	
S6 #10	TYPE 1	SWALE	14.6'	10'	N/A	N/A	6"	0.254	ROAD TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW. INSTALL A GRADE REVERSAL TO IMPROVE DRAINAGE ON ROAD (SEE DETAIL 3 ON SHEET C5.1).
S6 #11	TYPE 1	SWALE	6.1'	10'	N/A	N/A	12"	0.374	IMPROVE ROAD DRAINAGE BY OUT-SLOPING ROAD AT 2% AND MAINTAINING A DOWNSTREAM EDGE SO A BERM DOESN'T BUILD UP
S7 #1	TYPE 1	SWALE	7'	20'	N/A	N/A	6"	0.85	ROAD TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW
S15 #5	TYPE 2	III	16.9'	40'	23'	4' - 8'	9"	0.208	
S20 #1	TYPE 2	SWALE	22.8'	17.4'	28'	10'	9"	0.208	ROAD TO BE GRADED TO ACCOMMODATE THE 25-YEAR DEPTH OF FLOW

NOTES:

- CROSSING INSTALLATION SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
- REMOVE AND DISPOSE OF DUFF AND TOP ORGANIC LAYERS DOWN TO MINERAL SOIL.
- SUBGRADE SHALL BE OVEREXCAVATED AND RECOMPACTED TO AVOID SETTLING OF ARTICULATED CONCRETE BLOCKS.
- BACKFILL TO PROVIDE LEVELING AND SUPPORT OF ARTICULATED CONCRETE BLOCKS. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
- COMPACT BACKFILL IN 6 INCH LIFTS TO 95% RELATIVE COMPACTION.
- ARTICULATED CONCRETE BLOCKS TO BE BEDDED AND BACKFILLED WITH COMPACTED FINES TO CREATE A SMOOTH DRIVING SURFACE.
- ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS.
- THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

1 TYPICAL ARMORED ROAD CROSSING

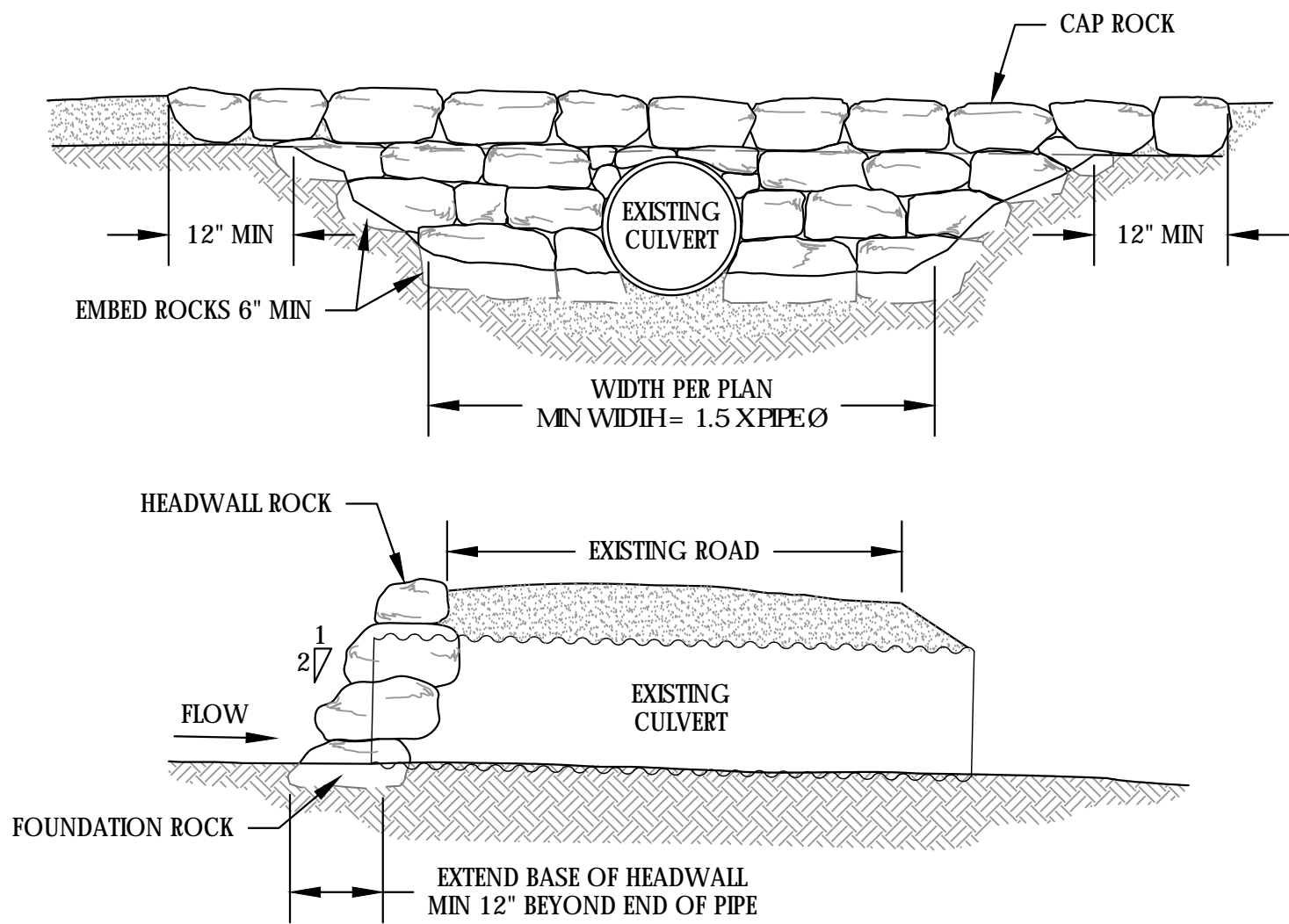
SCALE: AS DIMENSIONED



NOTES:

- CULVERT IMPROVEMENT SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
- ROCK ENERGY DISSIPATER SHALL BE CONSTRUCTED WITH APPROVED, WELL-GRADED, SOUND, DURABLE, ANGULAR ROCK. D50 ROCK SIZE PER PLAN.
- OVEREXCAVATE AND COMPACT BACKFILL TO PROVIDE LEVELING AND SUPPORT OF BASE ROCK. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
- LAY ROCK WITH A MINIMUM OF 3 POINTS OF CONTACT WITH ADJACENT ROCKS.
- LAY ROCKS IN A RANDOM ARRANGEMENT.
- ROCKS SHALL BE KEYED IN PLACE AND VOIDS FILLED WITH FINER MATERIAL.
- FILL VOIDS WITH BROKEN ROCK OR SUITABLE BACKFILL. COMPACT BACKFILL TO LOCK IN PLACE.
- ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS.
- THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

REMOVE CHUTE AND INSTALL ROCK ENERGY DISSIPATER



NOTES:

- CULVERT IMPROVEMENT SHALL FOLLOW DETAIL UNLESS OTHERWISE SPECIFIED ON PLANS OR DIRECTED IN FIELD.
- HEADWALL SHALL BE CONSTRUCTED WITH APPROVED, SOUND, DURABLE, ANGULAR ROCK.
- OVEREXCAVATE AND COMPACT BACKFILL TO PROVIDE LEVELING AND SUPPORT OF HEADWALL. BACKFILL MATERIAL SHALL BE ONSITE SOIL, FREE OF ORGANICS AND AGGREGATE LARGER THAN 2 INCHES.
- COMPACT BACKFILL IN 6 INCH LIFTS UNTIL NO VISUAL DISPLACEMENT.
- ROCKS SHALL BE KEYED IN PLACE AND VOIDS FILLED WITH FINER MATERIAL.
- FILL VOIDS WITH BROKEN ROCK OR SUITABLE BACKFILL. COMPACT BACKFILL TO LOCK IN PLACE.
- ALL DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED WITH EROSION CONTROL MEASURES PER PLANS AND SPECIFICATIONS. INSTALL NATIVE SLASH PERPENDICULAR TO TRAIL IN DISTURBED AREAS.
- THESE DETAILS ARE INTENDED AS A GUIDELINE; MODIFICATIONS MAY BE MADE IN THE FIELD BY ENGINEER.

INSTALL CULVERT HEADWALL

CROSSING NUMBER	PWA ID	CLASS	CULVERT SIZE AND MATERIAL	CULVERT LENGTH	CHUTE LENGTH	IMPROVEMENT
S3 #3	#88	I	24"Ø CMP	40'	N/A	NO IMPROVEMENT - CULVERT REPLACEMENT PLANNING UNDER THE CURRENT THP
S4 #1	#23	II/III	15"Ø CMP	30'	18'	REMOVE CHUTE. GRADE OVER-STEEPENED AREAS TO REDUCE SLOPE. AND INSTALL RIPRAP (11' WIDE BY 17' LONG, D50 = 9") AT CULVERT OUTLET ALONG CHUTE FLOW PATH AND OVER CULVERT. WAIT AND WATCH ROAD CONDITION AND ARMOR ROAD IF NEEDED (SEE DETAIL 1 ON SHEET C5.6)
S4 #2	#2	III	15"Ø CMP	30'	10'	WAIT AND WATCH CULVERT AND REPLACE IF NEEDED. INSTALL RIPRAP (6.2' WIDE BY 7' LONG, D50 = 6") PLUNGE POOL AT CHUTE OUTLET.
S4 #3	#3	III	18"Ø CMP	25'	N/A	WAIT AND WATCH CULVERT AND REPLACE IF NEEDED.
S4 #5	#5	III	18"Ø CMP	40'	N/A	REMOVE CULVERT AND INSTALL ARMORED ROAD CROSSING WITH DOWNSTREAM ARMOR (SEE DETAIL 1 ON SHEET C5.6)
S4 #6	#6	II/III	15"Ø CMP	40'	8'	REMOVE CHUTE AND INSTALL RIPRAP (6' WIDE BY 10' LONG, D50 = 9") AT CULVERT OUTLET
S5 #1	#86	III	18"Ø CMP	40'	N/A	REMOVE CULVERT AND INSTALL ARMORED ROAD CROSSING WITH DOWNSTREAM ARMOR (SEE DETAIL 1 ON SHEET C5.6)
S6 #2	#6	II/III	15"Ø CMP	20'	N/A	WAIT AND WATCH CULVERT AND REPLACE IF NEEDED.
S6 #5	#205	III	36"Ø CMP	30'	N/A	INSTALL HEADWALL AT INLET. INSTALL CONCRETE ALONG FLOWLINE OF CULVERT. INSTALL RIPRAP (10' WIDE BY 5' LONG, D50 = 9") AT CULVERT OUTLET.
S6 #8	#201	III	18"Ø CMP	40'	N/A	WAIT AND WATCH CULVERT AND REPLACE IF NEEDED.
S6 #9	#200	III	15"Ø CMP	20'	N/A	REMOVE FALLEN TREE AND DEBRIS AT INLET OF CULVERT AND REASSESS TO DETERMINE IF CULVERT NEEDS IMPROVEMENT.
S7 #1	#34	III	12"Ø CMP	20'	N/A	REMOVE CULVERT AND INSTALL ARMORED ROAD CROSSING (SEE DETAIL 1 ON SHEET C5.6).
S7 #2	#33	I				NO IMPROVEMENT - CULVERT WAS RECENTLY REPLACED
S7 #3	#32	SWALE	15"Ø CMP	20'	N/A	REMOVE AND REPLACE BROKEN INLET SECTION OF CULVERT. INSTALL RESOURCE PROTECTION FENCING (SEE DETAIL 7 ON SHEET C5.3) TO PREVENT VEHICLES FROM DRIVING OVER INLET SECTION WHERE THERE IS INSUFFICIENT SOIL COVER.
S9 #1	#31	III	15"Ø CMP	20'	N/A	WAIT AND WATCH CULVERT AND REPLACE IF NEEDED.
S9 #2	#44	IV	24"Ø CMP	20'	N/A	WAIT AND WATCH CULVERT AND REPLACE IF NEEDED.
S15 #5	N/A	III	24"Ø CMP	40'	N/A	REMOVE CULVERT AND INSTALL ARMORED ROAD CROSSING WITH DOWNSTREAM ARMOR (SEE DETAIL 1 ON SHEET C5.6)
S20 #1	#154	SWALE	15"Ø CMP	20'	15'	REMOVE CULVERT AND INSTALL ARMORED ROAD CROSSING WITH DOWNSTREAM ARMOR (SEE DETAIL 1 ON SHEET C5.6)
S21 #1	#7	III	15"Ø CMP	40'	N/A	WAIT AND WATCH CULVERT AND REPLACE IF NEEDED. INSTALL RIPRAP (10' WIDE BY 5' LONG, D50 = 9") AT CULVERT OUTLET.
S21 #2	#8	II	15"Ø CMP	40'	8'	REMOVE CHUTE AND INSTALL RIPRAP (10' WIDE BY 7' LONG, D50 = 12") AT CULVERT OUTLET
S21 #3	#9	II	15"Ø CMP	20'	6'	INSTALL HEADWALL AT INLET. REMOVE CHUTE AND INSTALL RIPRAP (15' WIDE BY 7' LONG, D50 = 9") AT CULVERT OUTLET

2 TYPICAL CULVERT IMPROVEMENT

SCALE: AS DIMENSIONED

SHEET TITLE:

ROAD CROSSING DETAILS

CLIENT:

LAND TRUST OF SANTA CRUZ COUNTY

ATTN: RYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:

SAN VICENTE REDWOODS

PROPOSED TRAIL NETWORK AND STAGING AREA
CEMEX PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.

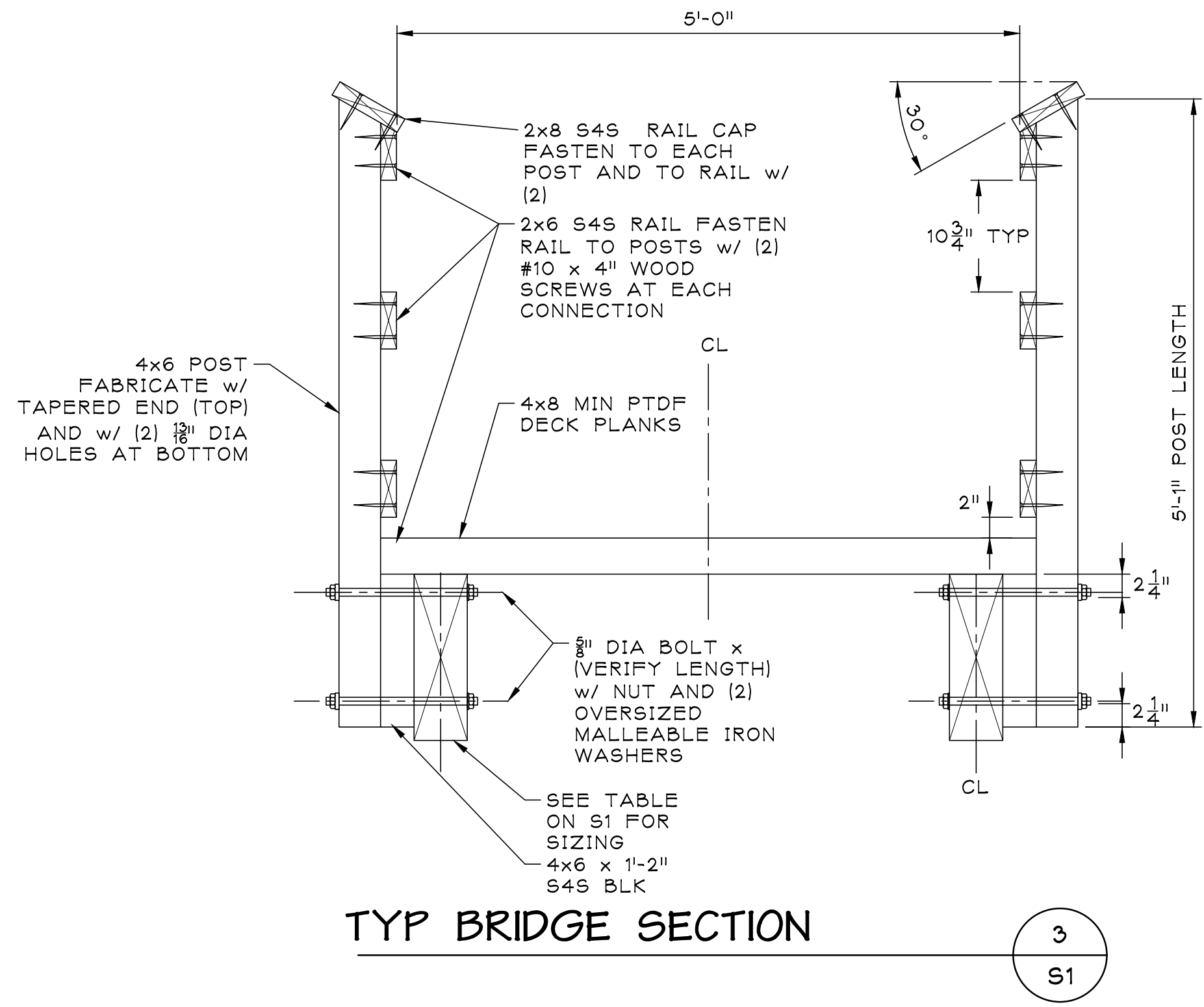


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SANTA CRUZ, CA 95062
TEL (831) 426-9054



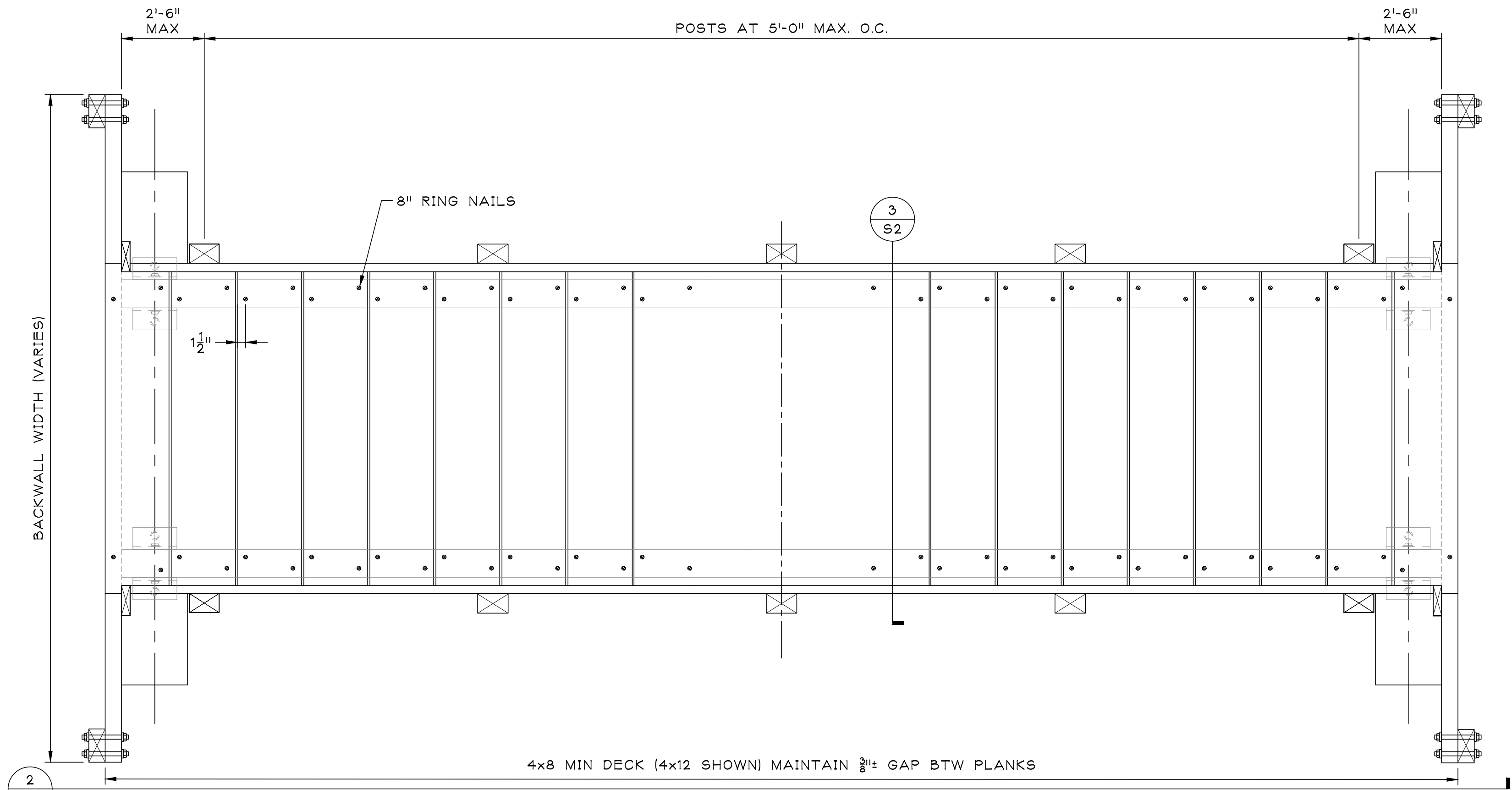
DRAWN BY: SIS
CHECKED BY: RLC
DATE: AUGUST 2018
JOB NO: 21514/21633
SCALE: AS SHOWN
SHEET:

C2.6



San Vicente Trail Bridges			
Trail #	Crossing #	Length (ft)	Bridge Stringer Beam Size
N12	2	10	6x10 PTDF #1 or Better
N6	2	14	
N17	4	14	
S5	2	14	
S1	3	14	
N6	5	16	Glu-lam 5 1/8" x 13 1/2"
N5	6	16	
N11	2	18	
S15	6	18	
N6	1	20	
S17	3	20	Glu-lam 5 1/8" x 16 1/2"
S15	3	22	
S19	1	22	
N17	3	26	Glu-lam 5 1/8" x 24"
S19	4	36	
S15	4	42	Glu-lam 5 1/8" x 27"

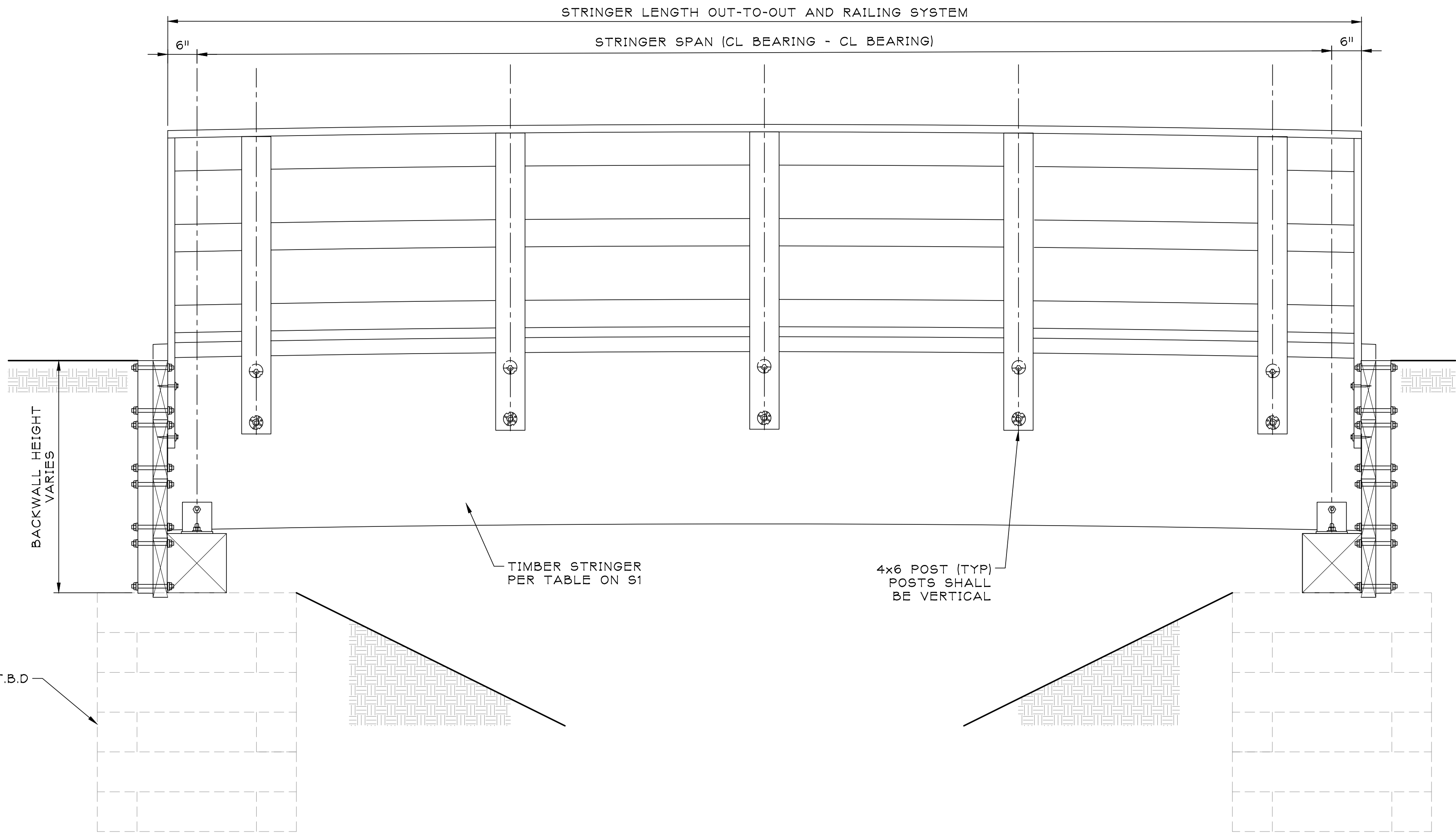
BRIDGE STRINGER BEAM SIZES



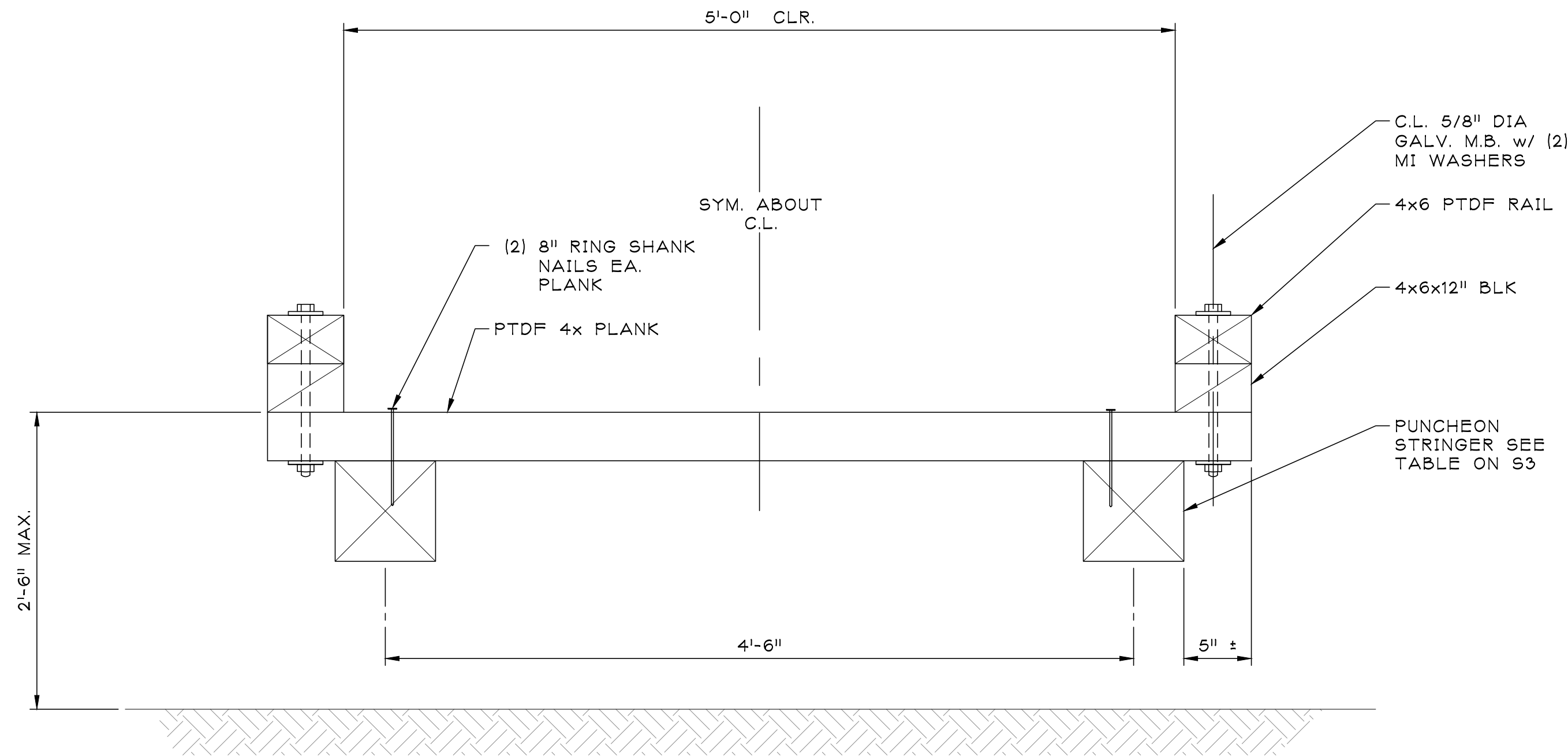
BRIDGE NOTES:

1. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 8" DIA x 7" RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES.
2. SPLICE RAILS AT POSTS. RAILS SHALL BE CONTINUOUS FOR TWO POST SPACES. DO NOT LOCATE MORE THAN ONE RAILS SPLICE AT ANY ONE POSTS

BRIDGE PLAN



BRIDGE ELEVATION

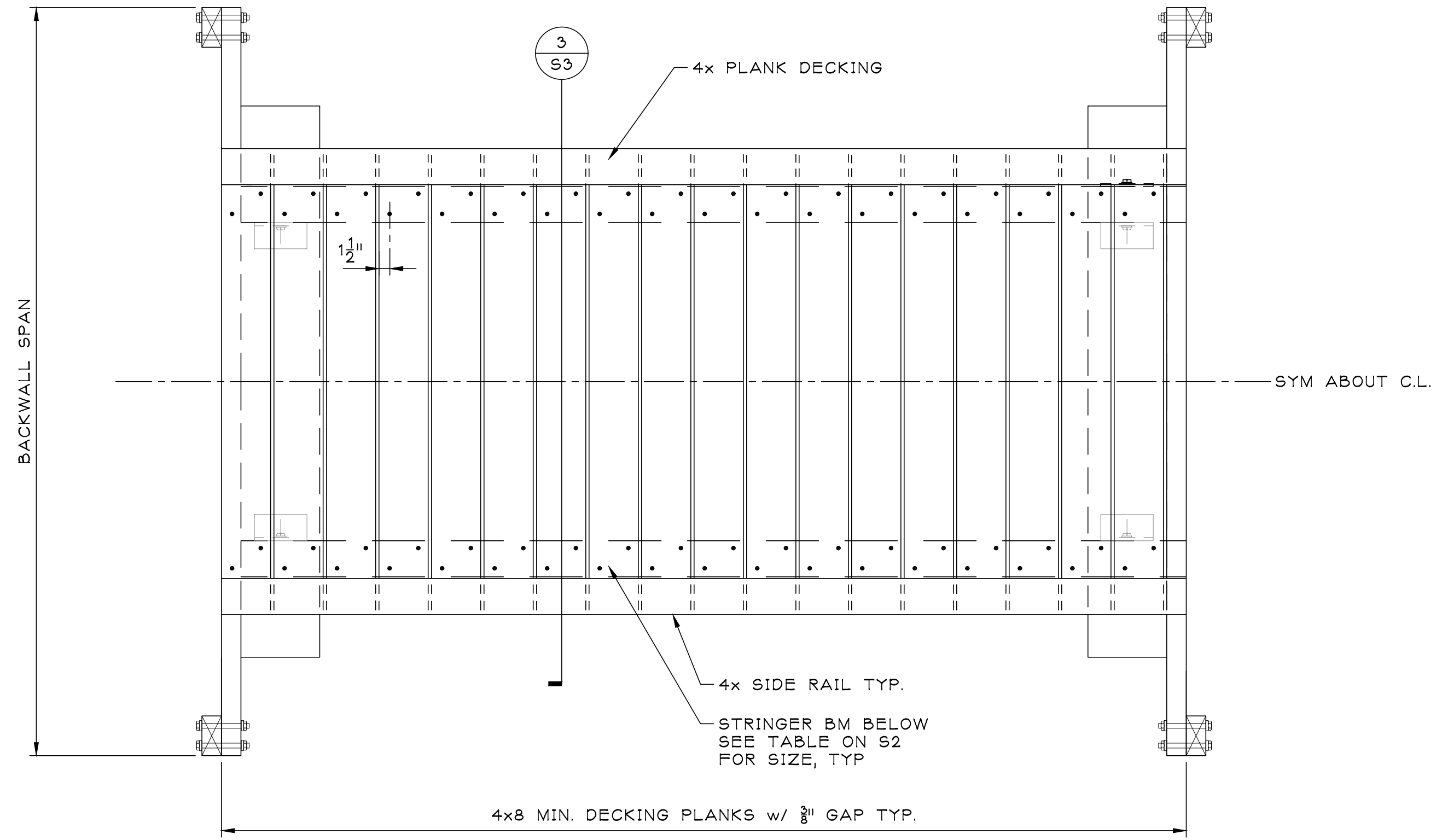


TYP PUNCHEON SECTION

3
S2

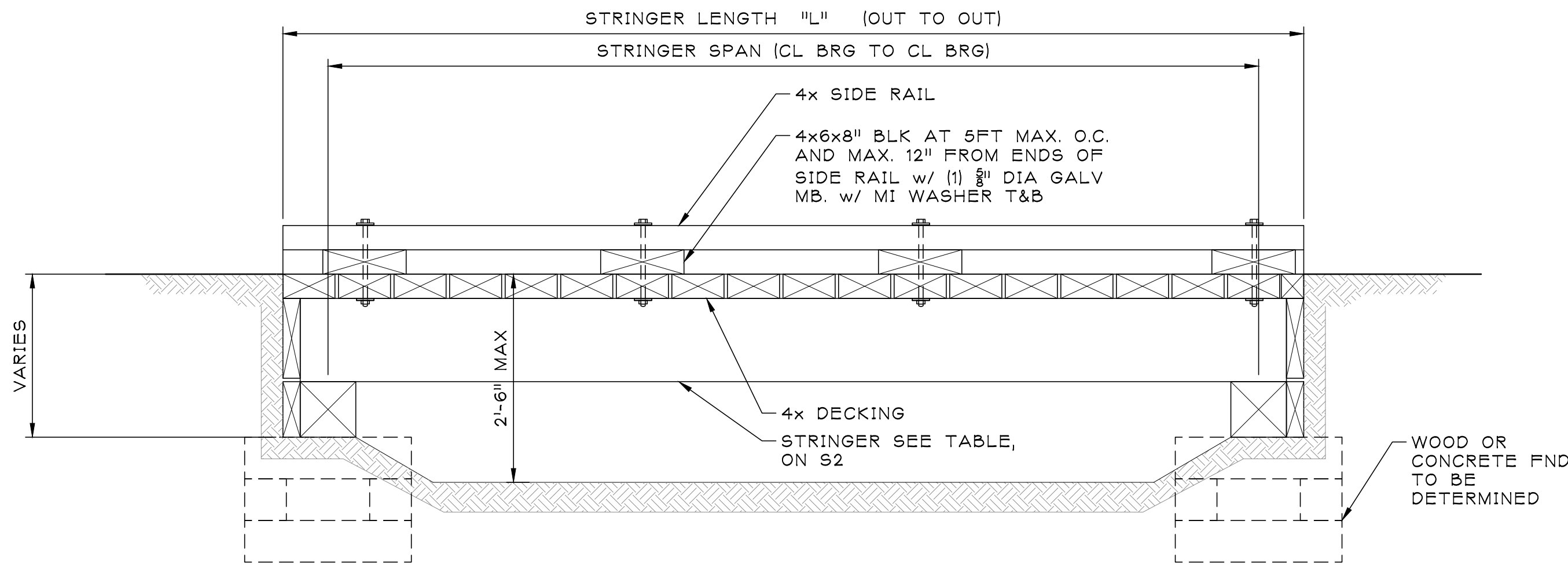
San Vicente Trail Puncheon		
Crossing #	Length (ft)	Bridge Stringer Beam Size
N5 #1	8'-0"	6x10 PTFD #1 or Better
N5 #3	8'-0"	
N5 #5	8'-0"	
N25 #4	8'-0"	
S5 #4	8'-0"	
S5 #3	10'-0"	
S2 #4	12'-0"	
LCT #1	14'-0"	
LCT #2	14'-0"	
S1 #1	14'-0"	
S1 #4	14'-0"	
S1 #2	16'-0"	Glu-lam 5 1/8" x 13 1/2"
S3 #1	20'-0"	
LCT #4	22'-0"	

PUNCHEON STRINGER BEAM SIZES



PUNCHEON PLAN

1
S2

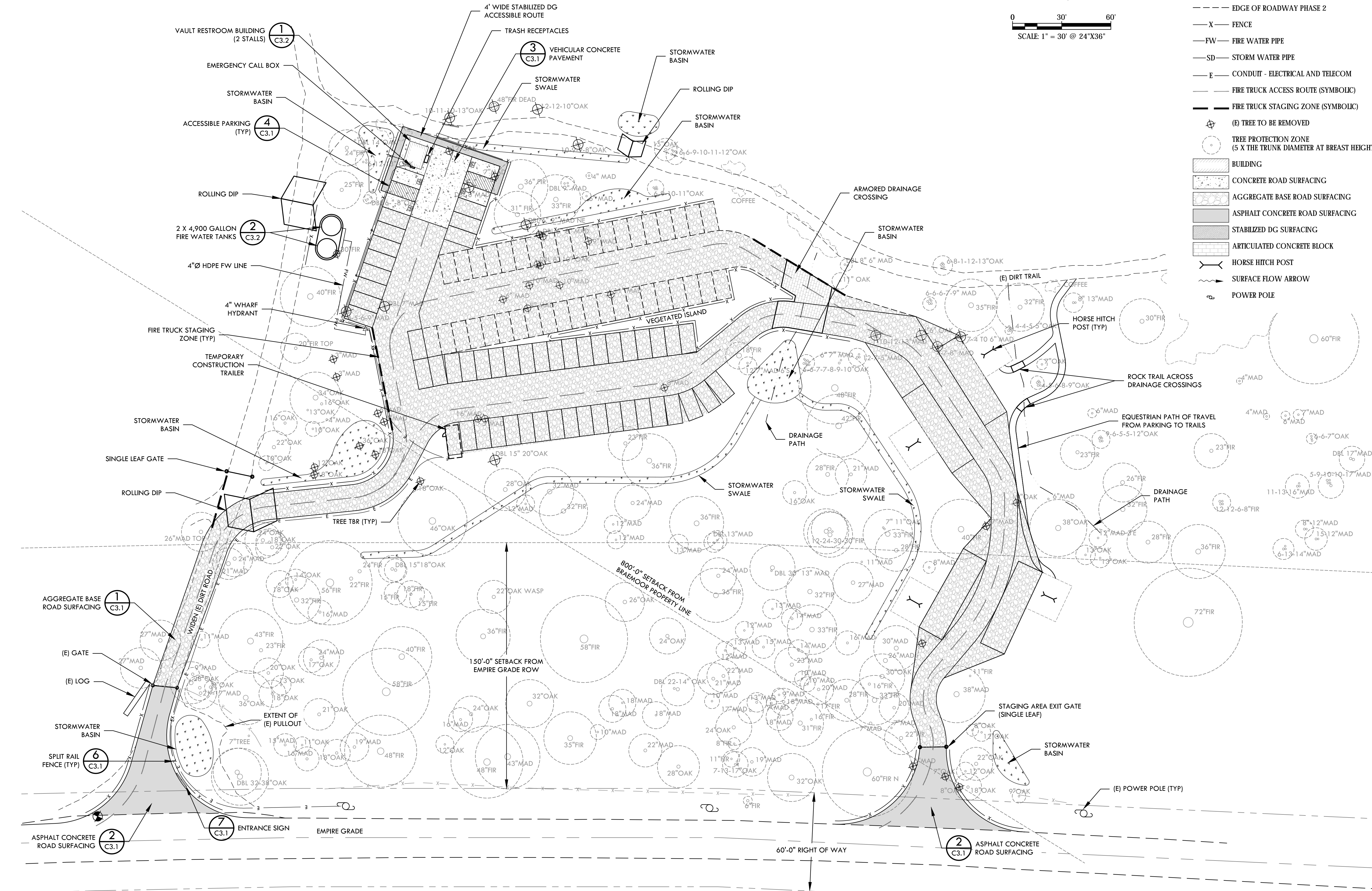


PUNCHEON ELEVATION

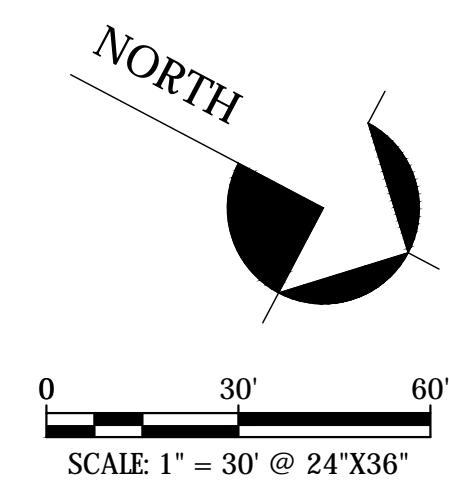
2
S2

- NOTES:
1. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 8/8" DIA x 8" RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES AS SHOWN.
 2. SEE TABLE ON S2 FOR STRINGER SIZE.

24" X 36" SHEET. IF SHEET SIZE IS SMALLER, DRAWING HAS BEEN REDUCED.



- NOTES:
1. TREES TO BE REMOVED DO NOT INCLUDE COULTER PINES ON SITE, WHICH WERE NOT INCLUDED IN THE SURVEY.
 2. FIRE HYDRANT SHALL BE LOCATED A MINIMUM OF 50' AND A MAXIMUM OF 150' FROM THE RESTROOM.
 3. SEE DETAIL 4 ON SHEET C5.0 FOR TYPICAL PARKING SPACE DIMENSIONS.



- LEGEND:
- (E) CONTOUR
 - (E) DIRT ROAD/TRAIL EDGE
 - (E) ASPHALT ROAD EDGE
 - X- (E) FENCE
 - (E) DRAINAGE PATH
 - LIMIT OF DISTURBANCE
 - EDGE OF ROADWAY PHASE 1
 - EDGE OF ROADWAY PHASE 2
 - X- FENCE
 - FW FIRE WATER PIPE
 - SD STORM WATER PIPE
 - E CONDUIT - ELECTRICAL AND TELECOM
 - FIRE TRUCK ACCESS ROUTE (SYMBOLIC)
 - FIRE TRUCK STAGING ZONE (SYMBOLIC)
 - ⊗ (E) TREE TO BE REMOVED
 - TREE PROTECTION ZONE (5 X THE TRUNK DIAMETER AT BREAST HEIGHT)
 - ▨ BUILDING
 - ▨ CONCRETE ROAD SURFACING
 - ▨ AGGREGATE BASE ROAD SURFACING
 - ▨ ASPHALT CONCRETE ROAD SURFACING
 - ▨ STABILIZED DG SURFACING
 - ▨ ARTICULATED CONCRETE BLOCK
 - ⌵ HORSE HITCH POST
 - SURFACE FLOW ARROW
 - ⊕ POWER POLE

1 SITE PLAN - STAGING AREA

SCALE: 1" = 30' @ 24" X 36"

PRELIMINARY DRAWINGS NOT FOR CONSTRUCTION

SHEET TITLE:
SITE PLAN - STAGING AREA

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: RYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CEMEX PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.

Consulting Engineers
Civil • Environmental • Water Resources
1525 SEABRIGHT AVE.
SANTA CRUZ, CA 95062
TEL (831) 426-9054

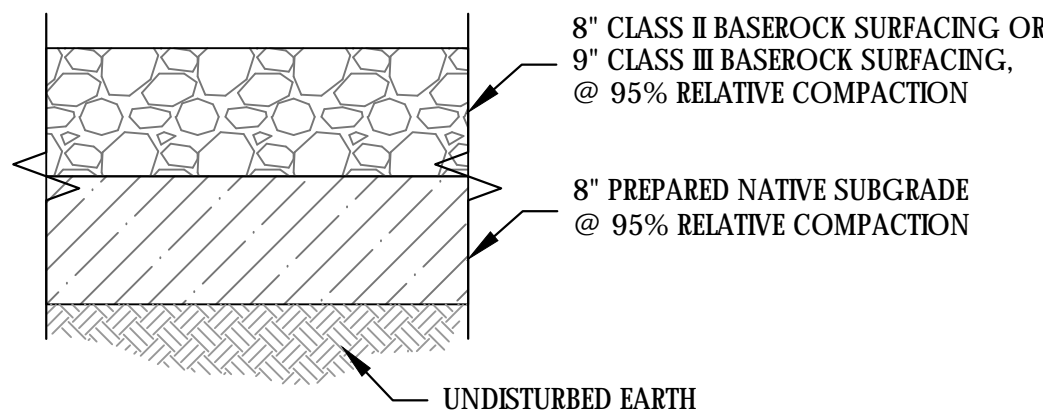


DRAWN BY: SIS
CHECKED BY: RLC
DATE: AUGUST 2018
JOB NO: 21514/21633
SCALE: AS SHOWN
SHEET:

C3.0
13 OF 17

24" X 36" SHEET. IF SHEET SIZE IS SMALLER, DRAWING HAS BEEN REDUCED.

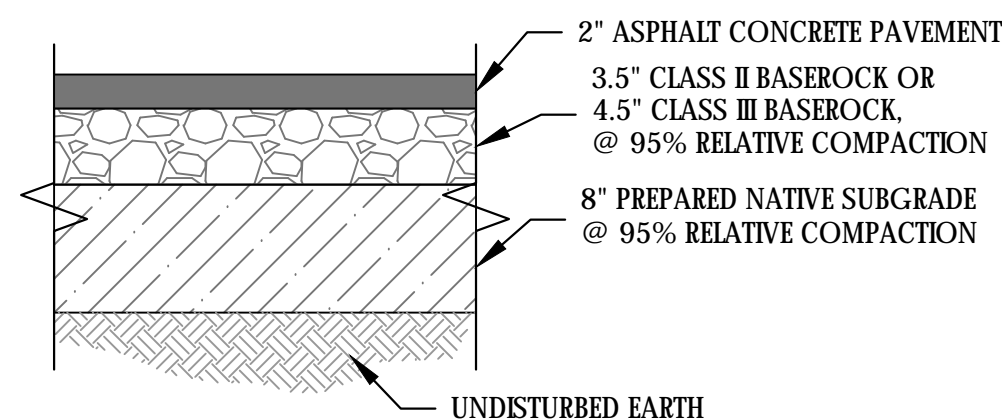
NOTE:
1. FOLLOW RECOMMENDATIONS IN GEOTECHNICAL ENGINEERING REPORT.



1 TYPICAL AGGREGATE BASE PAVEMENT SECTION

SCALE: AS DIMENSIONED

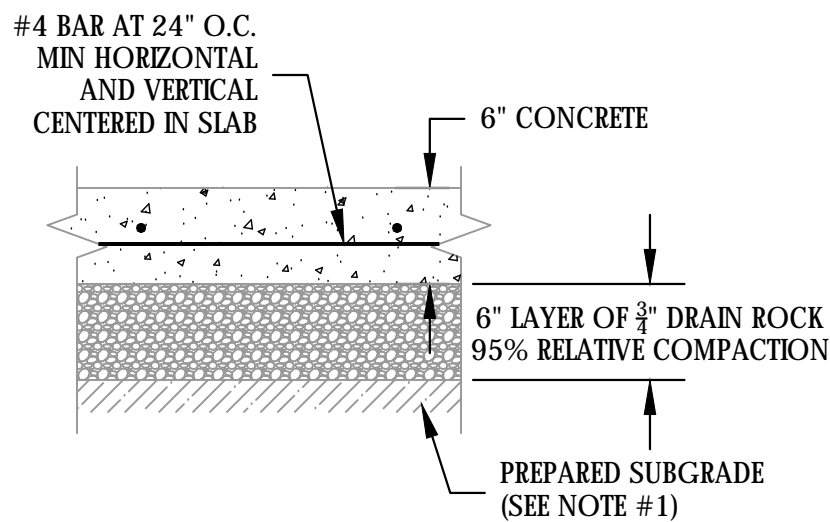
NOTES:
1. FOLLOW RECOMMENDATIONS IN GEOTECHNICAL ENGINEERING REPORT.



2 TYPICAL ASPHALT CONCRETE PAVEMENT SECTION

SCALE: AS DIMENSIONED

NOTES:
1. PREPARE SUBGRADE BY REMOVING ANY LARGE ROCKS AND BY SMOOTHING SUBGRADE.
2. FOLLOW RECOMMENDATIONS IN GEOTECHNICAL ENGINEERING REPORT.



3 TYPICAL VEHICULAR CONCRETE PAVEMENT SECTION

SCALE: AS DIMENSIONED

ACCESSIBLE PARKING AND VAN ACCESSIBLE SIGNS (TYP)
(CA MUTCD SIGN NO. R99 AND R7-8b)

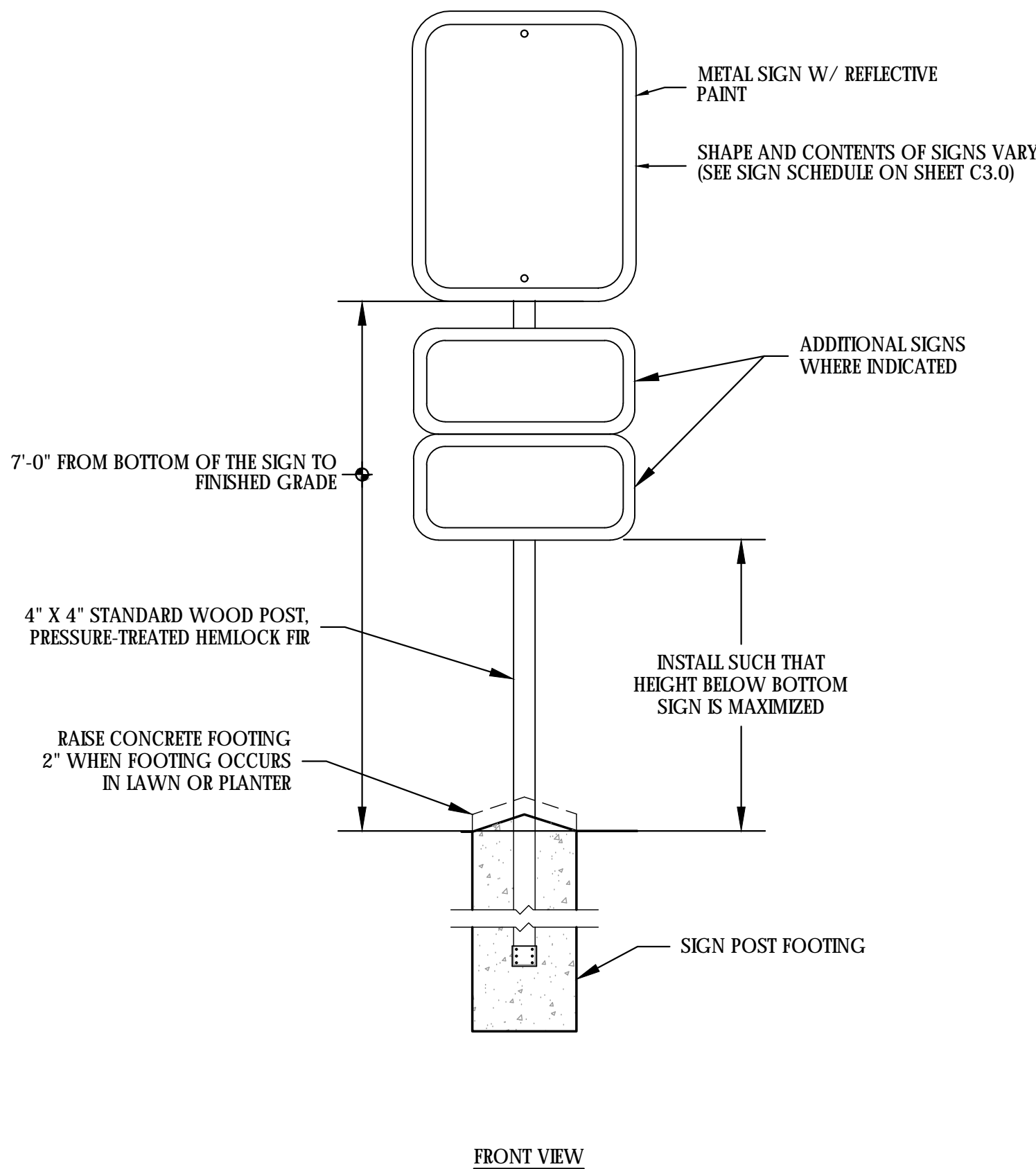
- NOTES:
- PARKING SHALL MEET CURRENT ACCESSIBILITY GUIDELINES FOR DIMENSIONS AND SLOPES.
 - STRIPING SHALL INCLUDE 4" WIDE PAINTED WHITE LINES, TYPICAL.
 - ACCESS AISLE EXTERIOR PAINT TO BE BLUE.
 - 45 DEGREE LINES SHALL BE 36" ON CENTER.

WHITE SYMBOL OF ACCESSIBILITY (TYP)
4" WHITE BORDER WITH BLUE FIELD IN BACKGROUND WITH REFLECTIVE GLASS BEAD SURFACE (TYP)

ALIGN WITH EDGE OF AISLE (TYP)
18'-0" MIN
3'-0"
9'-0" MIN
8'-0" MIN
9'-0" MIN
WHITE LETTERS 12" IN HEIGHT

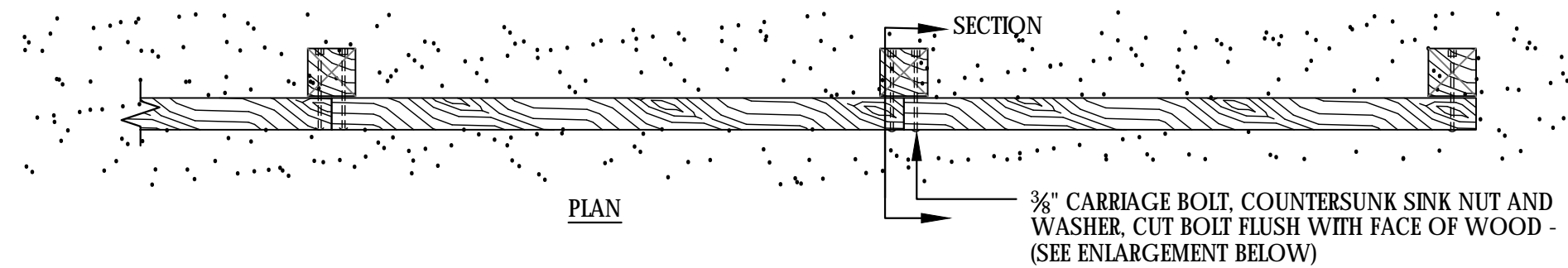
4 TYPICAL ACCESSIBLE PARKING

PER CALIFORNIA BUILDING CODE 11B.501



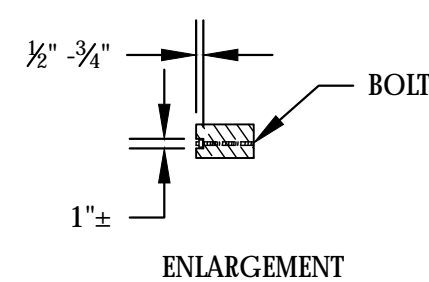
5 TYPICAL SIGN DETAILS

SCALE: AS DIMENSIONED



NOTES:

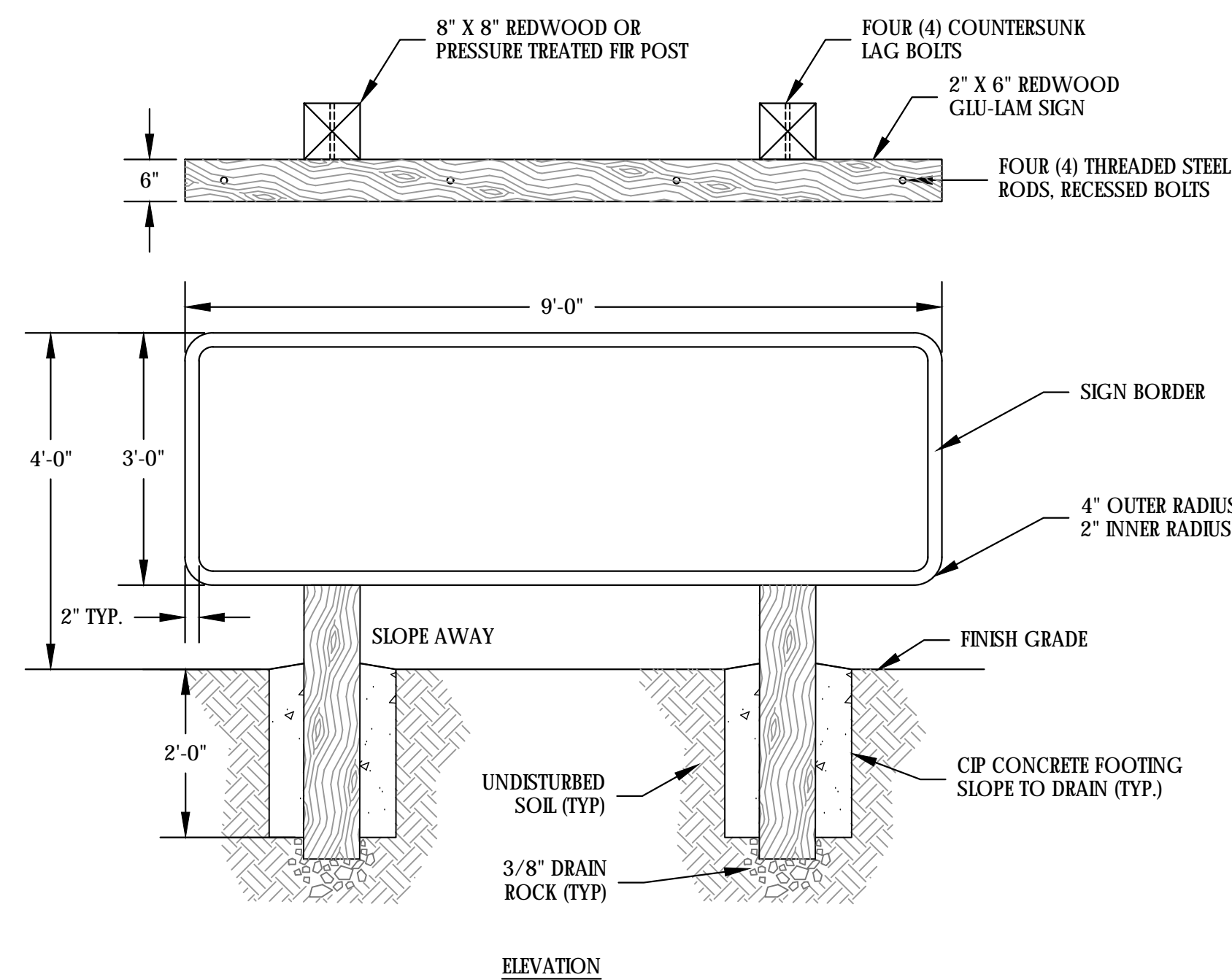
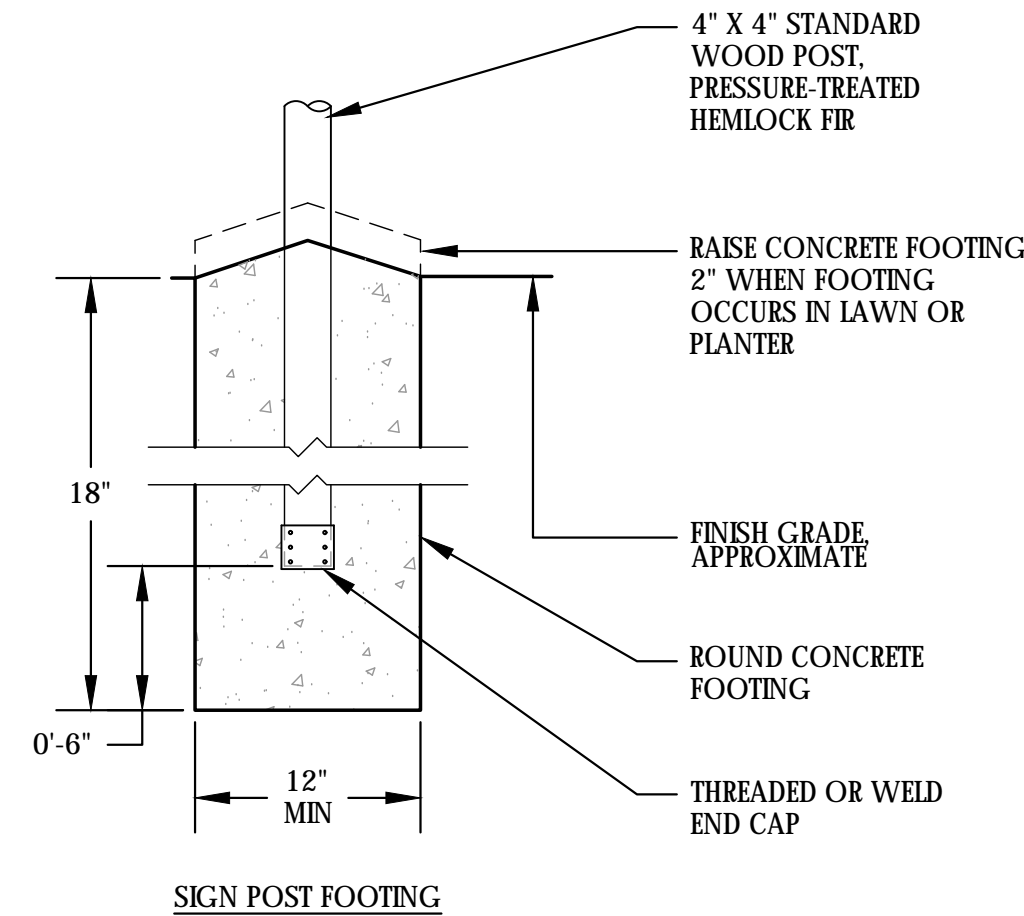
- LUMBER AVAILABLE FROM BIG CREEK LUMBER (831-457-5042) OR EQUIVALENT.
- INSTALL ALL POSTS PLUMB. LOCATE ANY ADJACENT UNDERGROUND UTILITIES PRIOR TO EXCAVATING POST HOLES TO AVOID DAMAGE.
- SPLICE RAILS ON CENTERLINE OF POST ONLY. FACE RAILS OUTWARDS (TOWARDS ROAD OR TRAIL).
- POST MATERIAL TO BE CONSISTENT THROUGHOUT PROJECT.



6 TYPICAL SPLIT RAIL FENCE DETAIL

SCALE: AS DIMENSIONED

- NOTES:
- SIGN POST SHALL BE INSTALLED WITH A 2" MINIMUM LATERAL OFFSET FROM THE EDGE OF SHOULDER OR EDGE OF PAVEMENT IN NO SHOULDER EXISTS.
 - SIGN POST SHALL BE STAINED BROWN BEFORE MOUNTING SIGN PLATES.



NOTES:

- SIGN CONSTRUCTED OF 2" X 6" GLU-LAM REDWOOD. SIGN WIDTH IS 6".
- RAISED LETTERING AND BORDER AS A RESULT OF SAND BLASTING. BORDER PAINTED WHITE.
- LAND TRUST TO SELECT SIGN SIZE PER NEEDS OF SITE.
- LAND TRUST TO SPECIFY TEXT FOR SIGN.
- PROVIDE SHOP DRAWINGS FOR LAND TRUST REVIEW PRIOR TO FABRICATION OR CONSTRUCTION.

7 TYPICAL ENTRANCE SIGN DETAILS

SCALE: AS DIMENSIONED

SHEET TITLE:
STAGING AREA DETAILS

CLIENT:
LAND TRUST OF SANTA CRUZ COUNTY
ATTN: RYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CEMEX PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

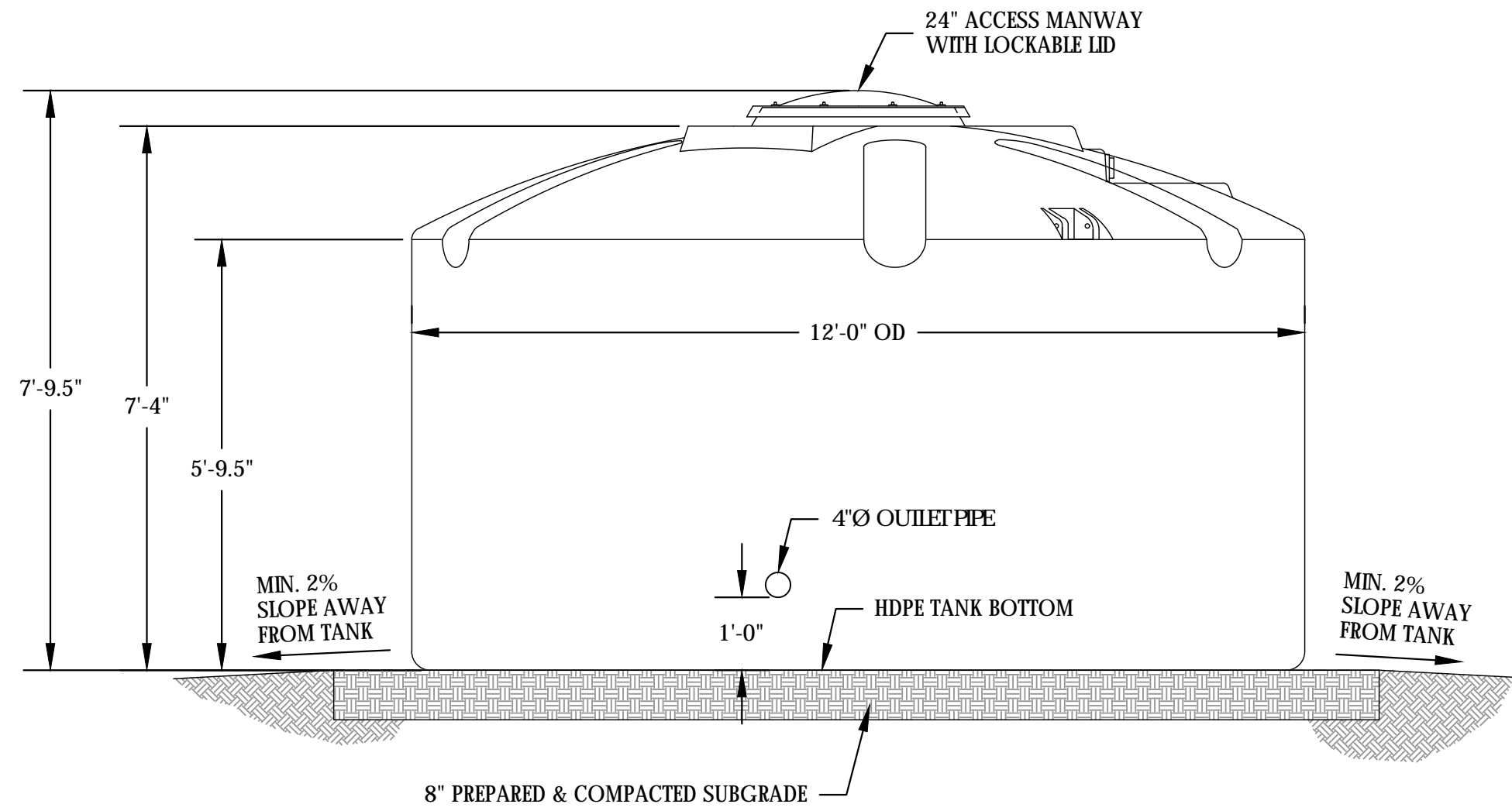
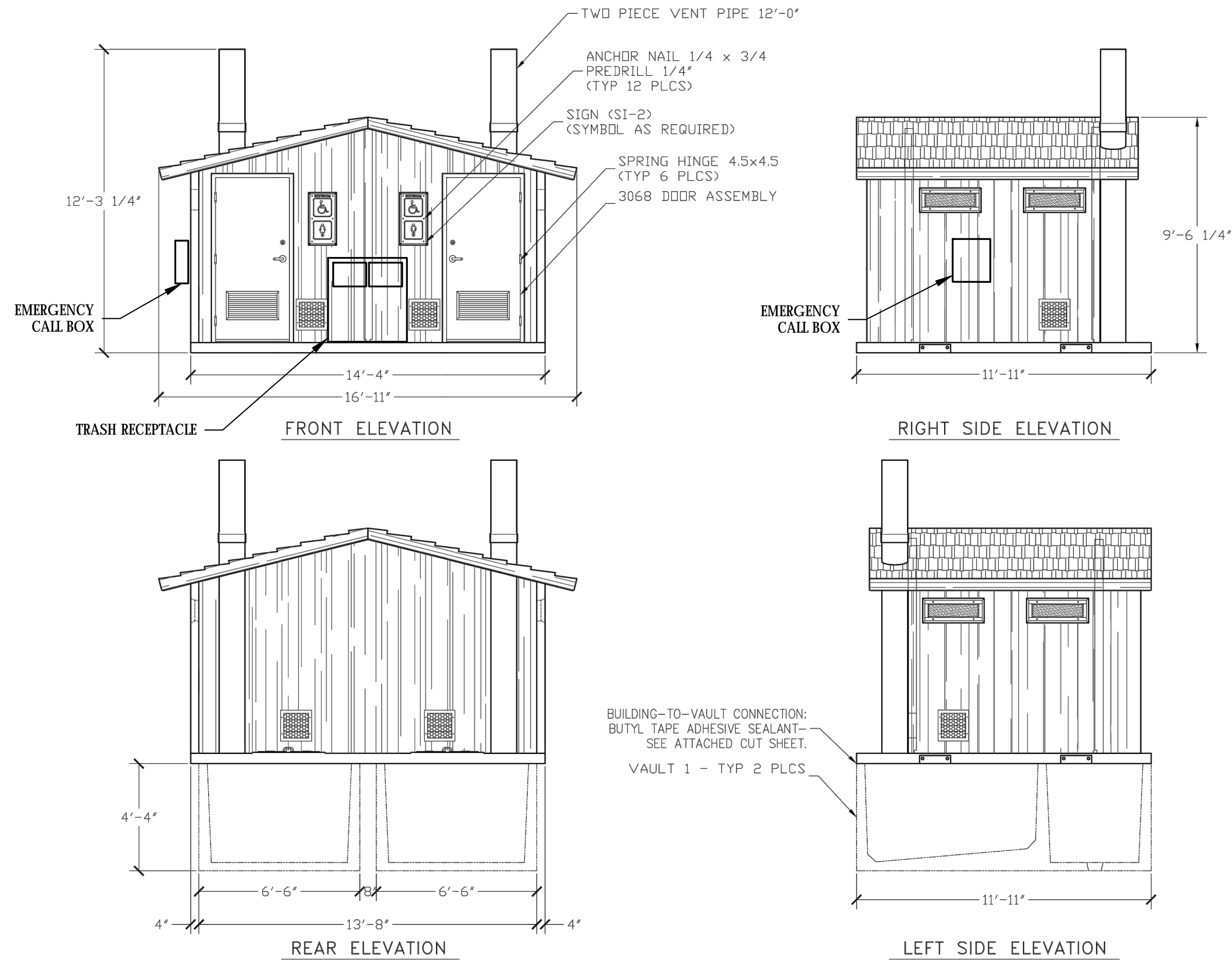
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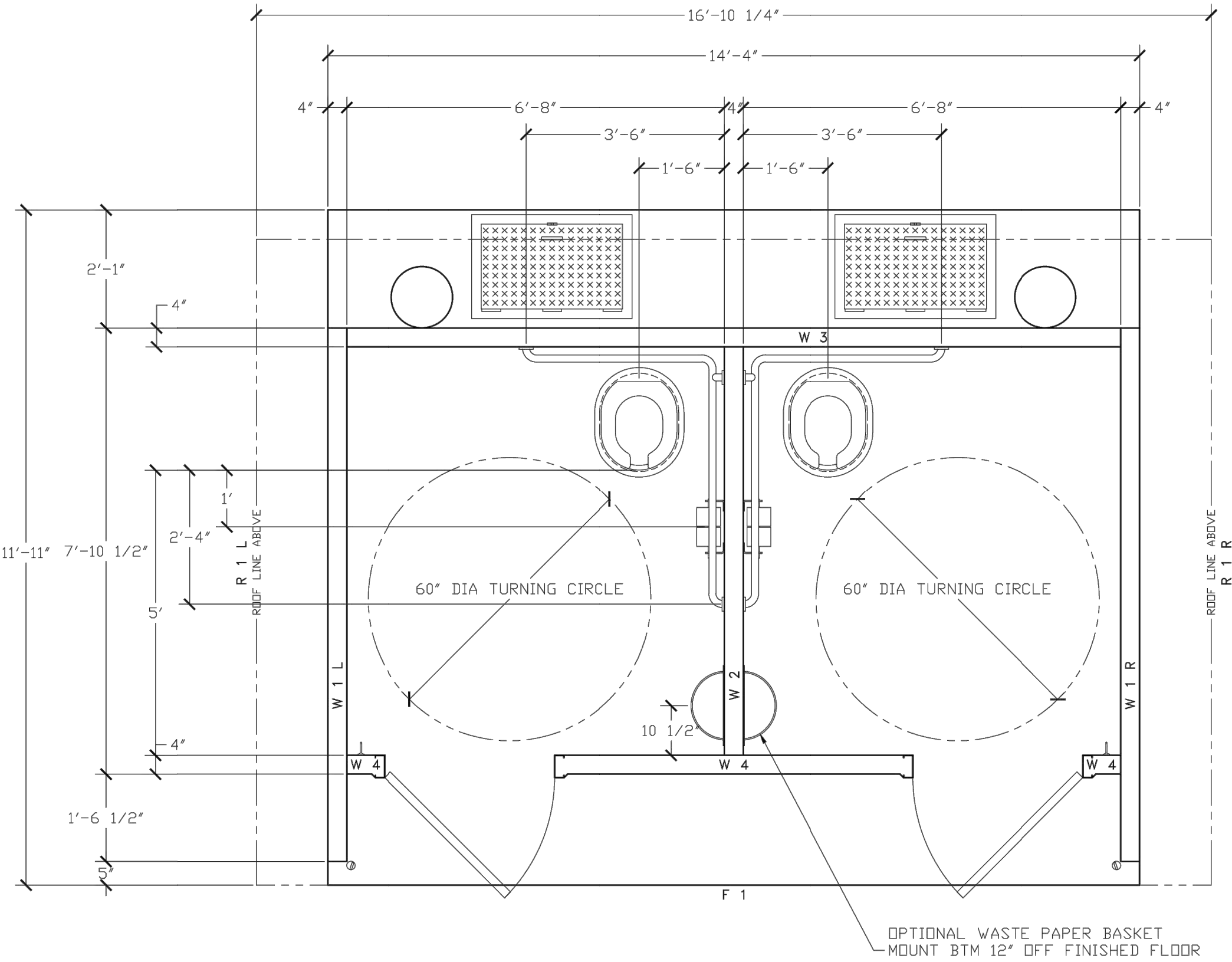
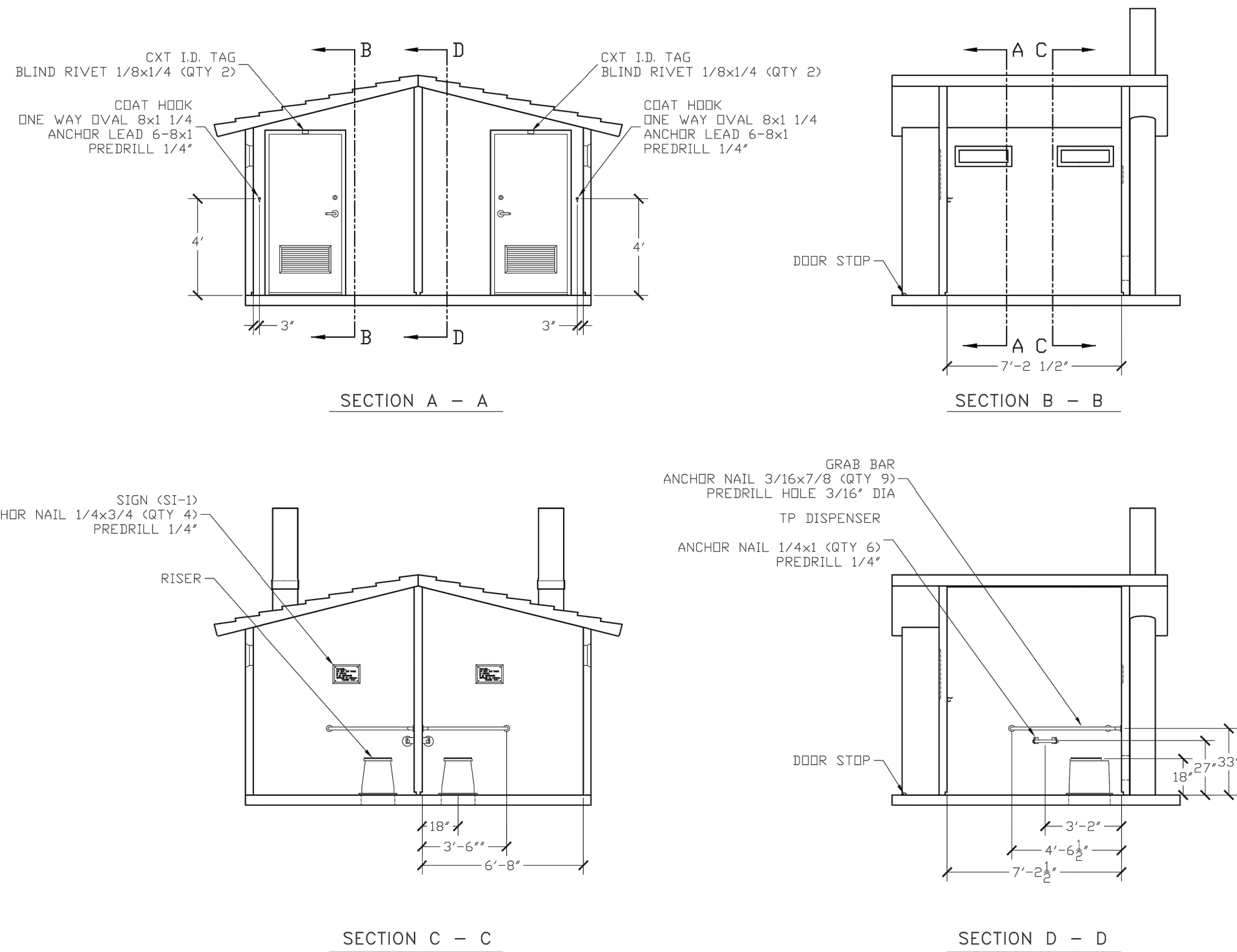
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C3.1



2 4,900 GALLON HDPE WATER TANK
SCALE: AS DIMENSIONED

- NOTES:
1. TANKS SHALL HAVE SCREENED 6" Ø VENT ON TOP OF TANK.
 2. TANKS WILL BE FILLED FROM A WATER TRUCK THROUGH THE ACCESS MANWAY.
 3. TANKS SHALL BE HYDRAULICALLY CONNECTED.



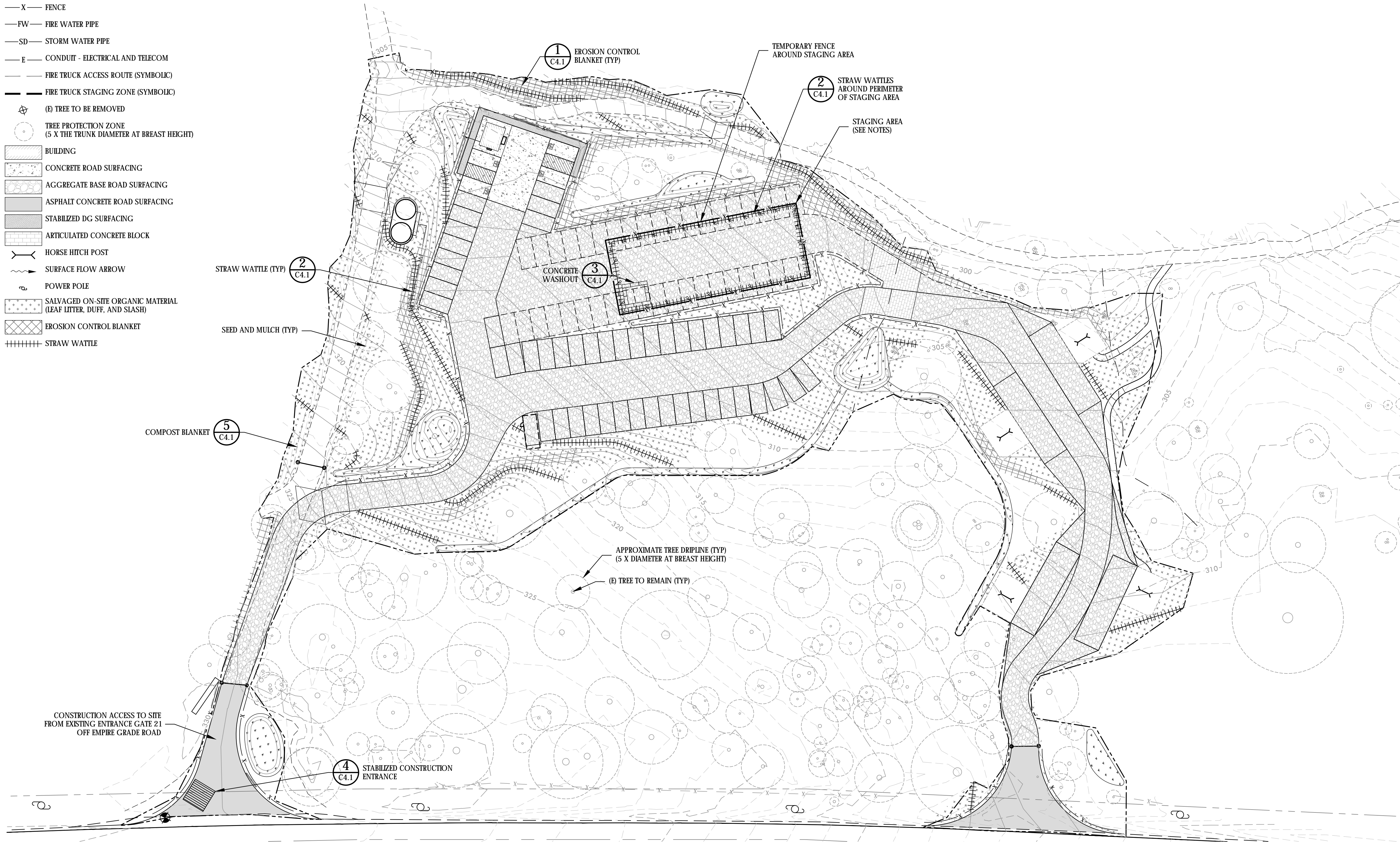
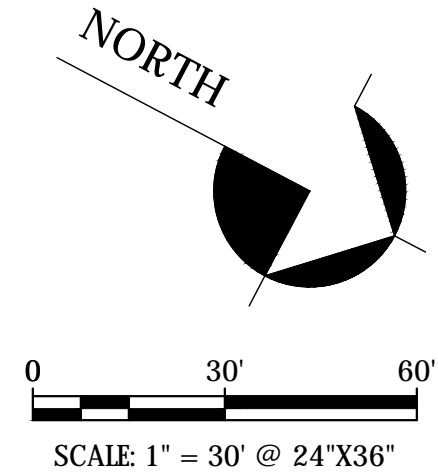
- NOTES:
1. VAULT RESTROOM SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 2. VENTS ON VAULT RESTROOM SHALL BE LOCATED IN THE PREVAILING WIND DIRECTION.

1 VAULT RESTROOM
CXT TIOGA SPECIAL DOUBLE VAULT RESTROOM

- LEGEND:
- (E) CONTOUR
 - (E) DIRT ROAD/TRAIL EDGE
 - (E) ASPHALT ROAD EDGE
 - X (E) FENCE
 - (E) DRAINAGE PATH
 - LIMIT OF DISTURBANCE
 - EDGE OF ROADWAY PHASE 1
 - EDGE OF ROADWAY PHASE 2
 - X FENCE
 - FW FIRE WATER PIPE
 - SD STORM WATER PIPE
 - E CONDUIT - ELECTRICAL AND TELECOM
 - FIRE TRUCK ACCESS ROUTE (SYMBOLIC)
 - FIRE TRUCK STAGING ZONE (SYMBOLIC)
 - (E) TREE TO BE REMOVED
 - TREE PROTECTION ZONE
(5 X THE TRUNK DIAMETER AT BREAST HEIGHT)
 - BUILDING
 - CONCRETE ROAD SURFACING
 - AGGREGATE BASE ROAD SURFACING
 - ASPHALT CONCRETE ROAD SURFACING
 - STABILIZED DG SURFACING
 - ARTICULATED CONCRETE BLOCK
 - HORSE HITCH POST
 - SURFACE FLOW ARROW
 - POWER POLE
 - SALVAGED ON-SITE ORGANIC MATERIAL
(LEAF LITTER, DUFF, AND SLASH)
 - EROSION CONTROL BLANKET
 - STRAW WATTLE

- STAGING AREA NOTES:
- PHASE 1 STAGING AREA TO BE LOCATED IN PHASE 2 PARKING SPACES AND STAGE 2 STAGING AREA TO BE LOCATED IN PHASE 1 PARKING SPACES.
 - EXACT SIZE AND LOCATION OF THE STAGING AREA TO BE APPROVED BY LAND TRUST'S REPRESENTATIVE.
 - TEMPORARY STAGING AREA SHALL BE RESTORED TO PRE-PROJECT CONDITION.
 - ANY EXCESS SOIL RESULTING FROM EXCAVATIONS SHALL BE PLACED IN THE TEMPORARY STAGING AREA.
 - EXACT LOCATION OF SOIL PLACEMENT TO BE APPROVED BY LAND TRUST'S REPRESENTATIVE.

- LANDSCAPING NOTES:
- NO LANDSCAPING IS PROPOSED AT THE SAN VICENTE REDWOODS STAGING AREA. EXISTING VEGETATION NOT IMPACTED BY CONSTRUCTION IS TO REMAIN.
 - TREES TO REMAIN AND THEIR APPROXIMATE DRIPLINES (5 X DIAMETER AT BREAST HEIGHT) ARE SHOWN ON THE PLAN.
 - SEE RE-VEGETATION NOTES ON SHEET C4.1.



1 EROSION CONTROL AND LANDSCAPE PLAN - STAGING AREA

SCALE: 1" = 30' @ 24"X36"

PRELIMINARY DRAWINGS NOT FOR CONSTRUCTION

SHEET TITLE:
EROSION CONTROL AND
LANDSCAPE PLAN -
STAGING AREA

CLIENT:
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ATTN: RYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:
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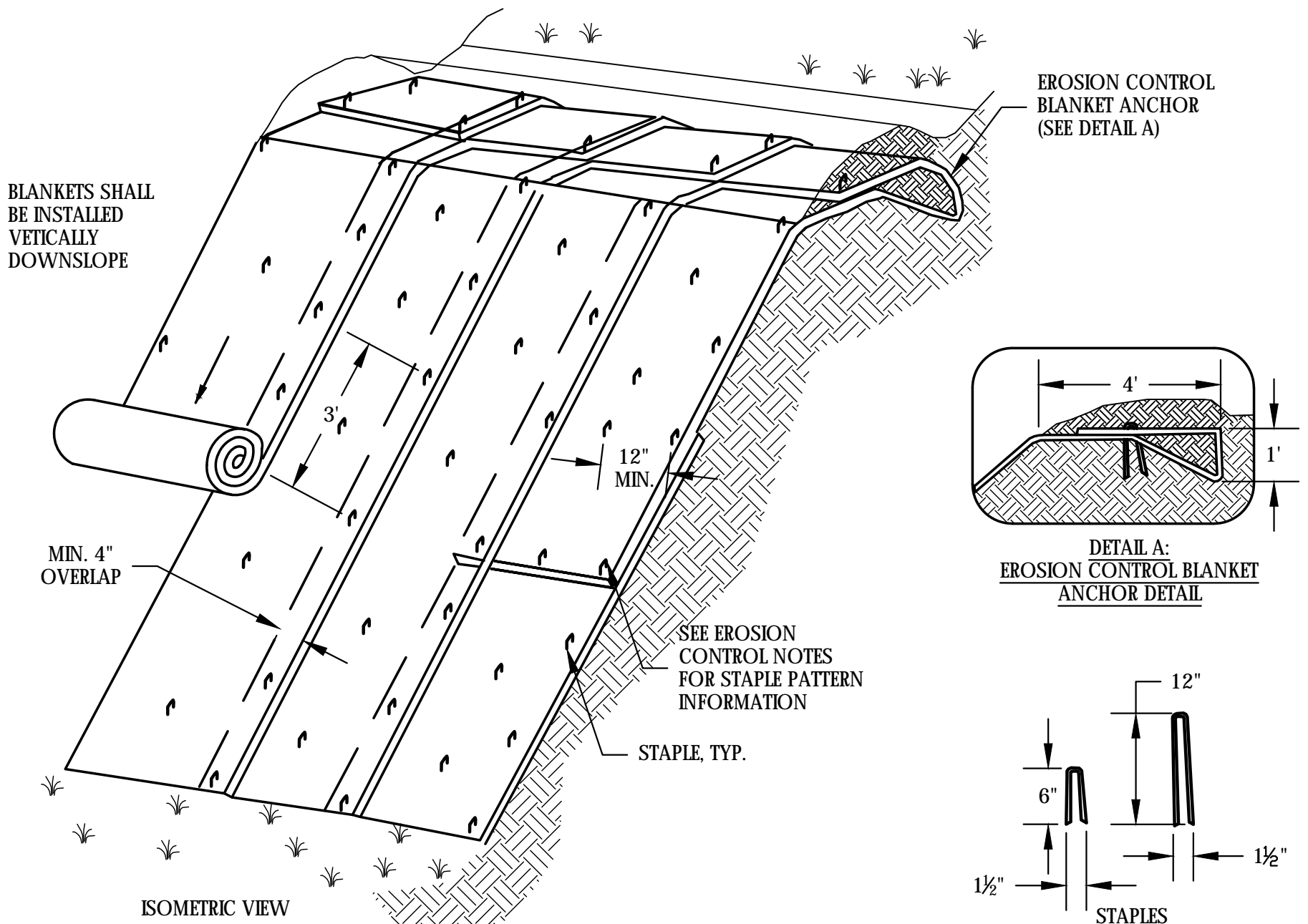
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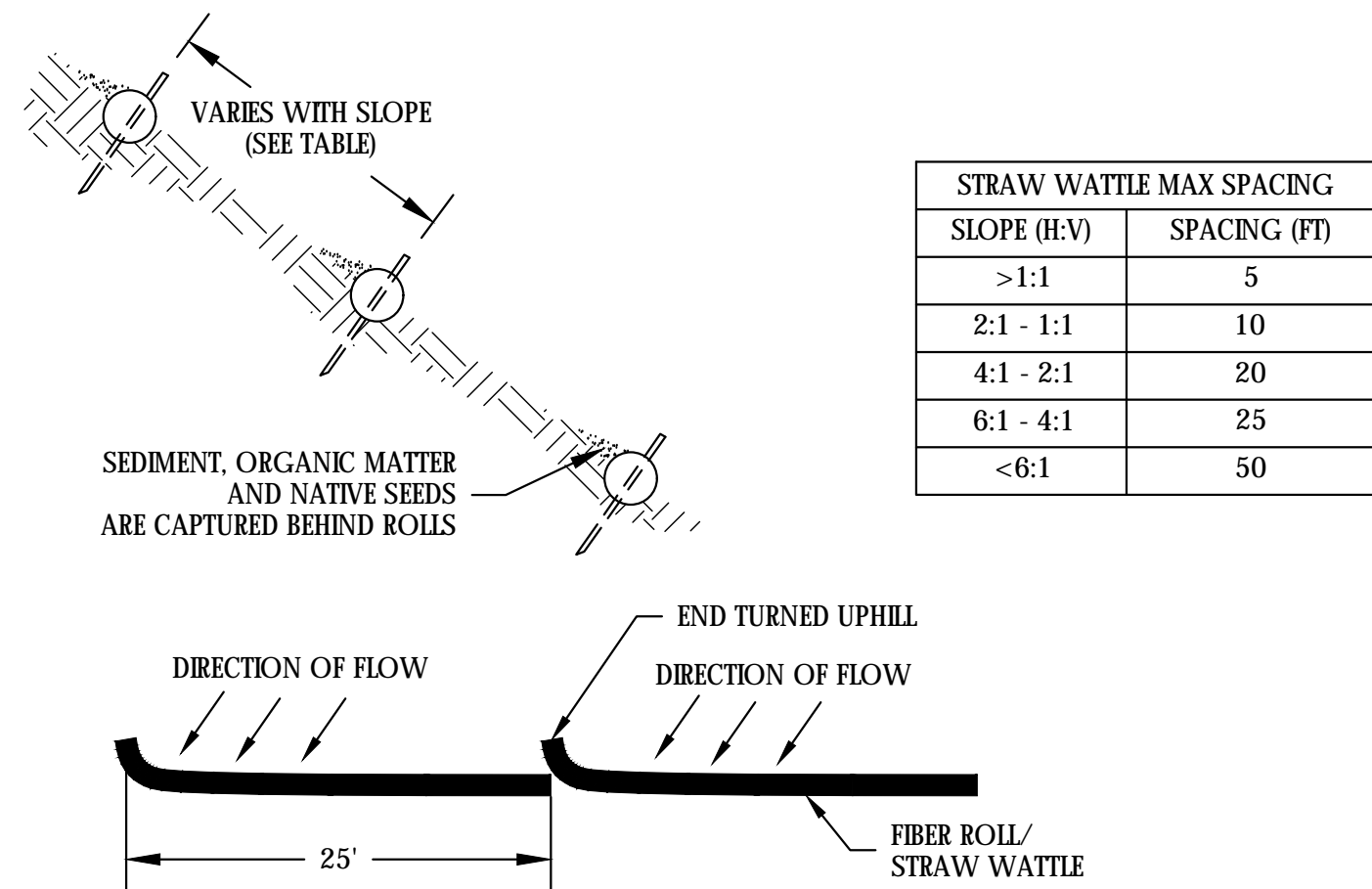
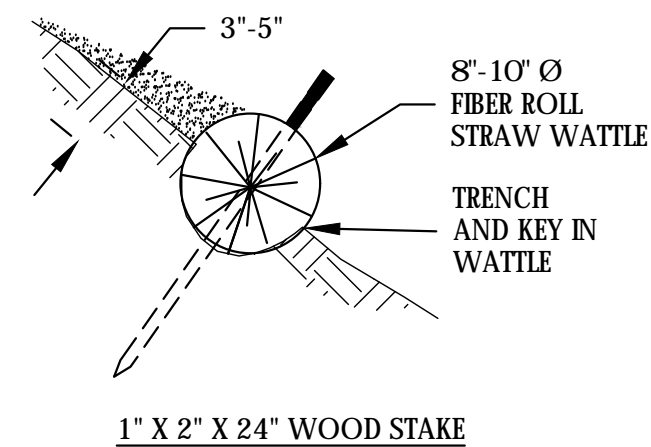
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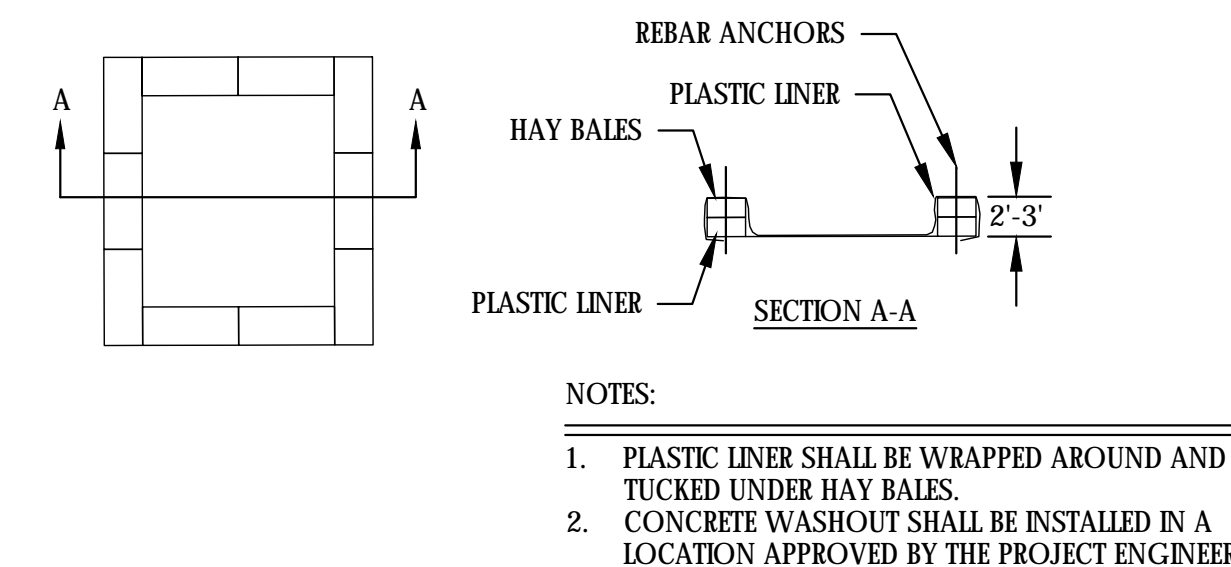
1 EROSION CONTROL BLANKET

SCALE: AS DIMENSIONED



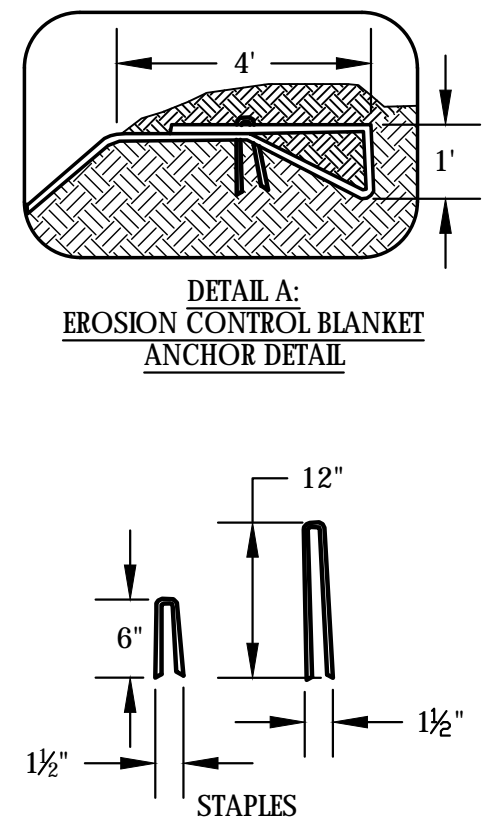
2 STRAW WATTLES

SCALE: AS DIMENSIONED



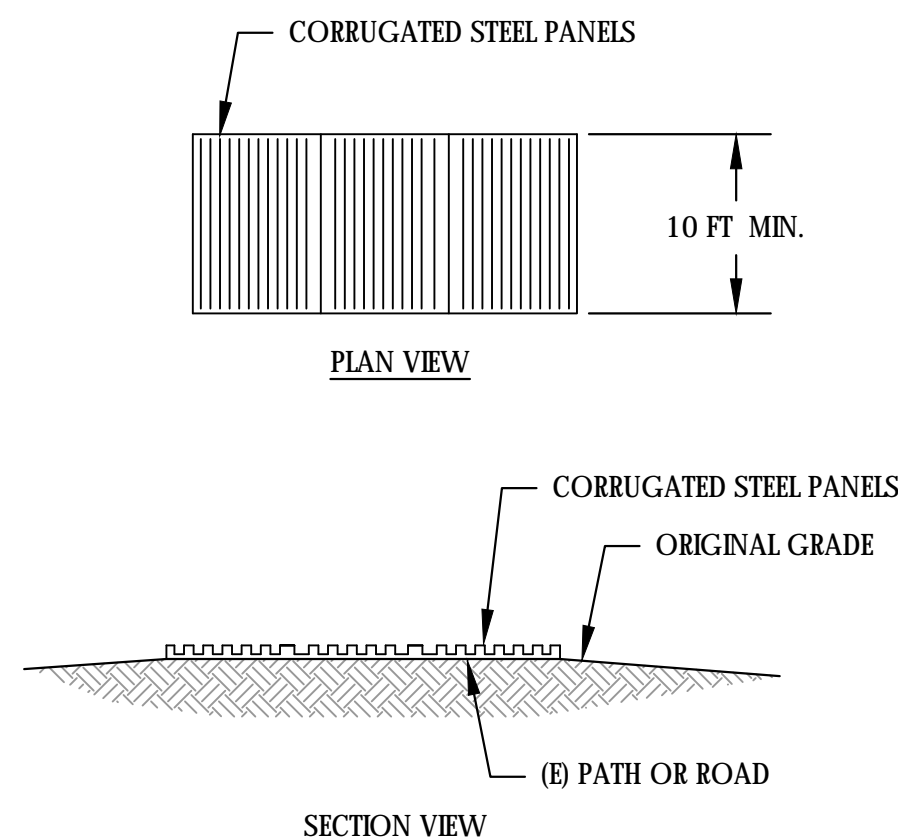
3 CONCRETE WASHOUT

SCALE: AS DIMENSIONED



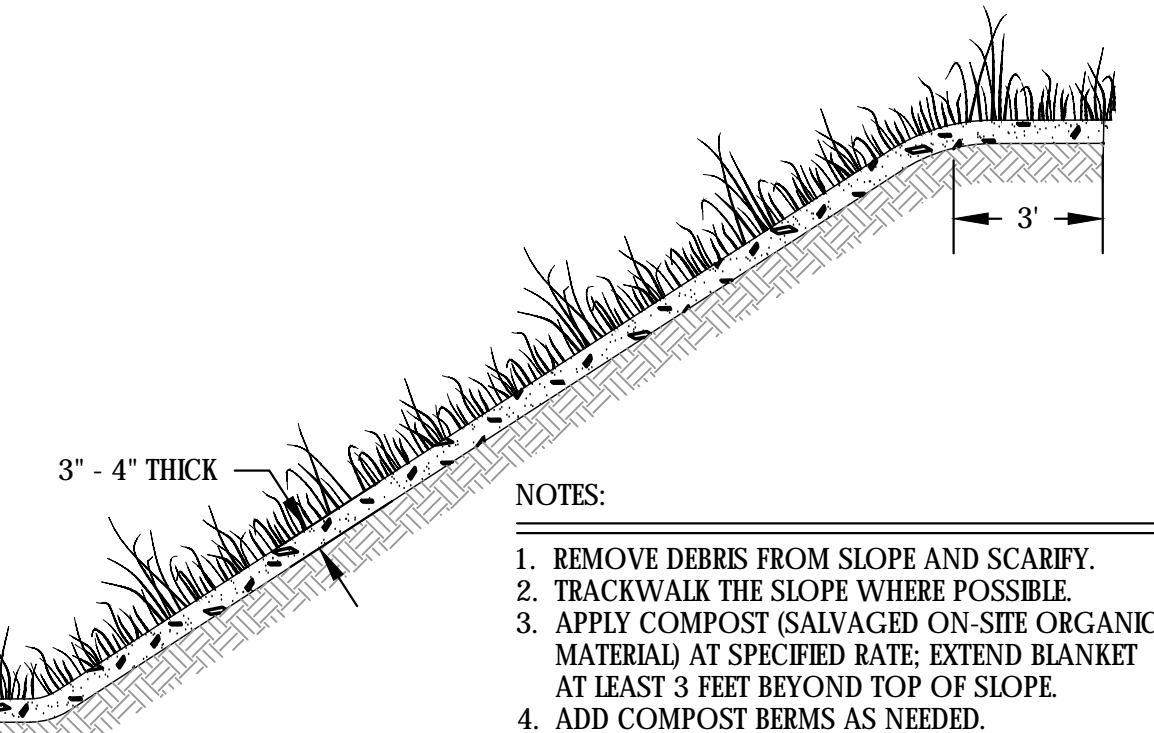
4 STABILIZED CONSTRUCTION ENTRANCE

SCALE: AS DIMENSIONED



5 TYPICAL COMPOST BLANKET

SCALE: AS DIMENSIONED



EROSION CONTROL NOTES:

1. GENERAL. THE CONTRACTOR SHALL INSTALL, MAINTAIN AND INSPECT TEMPORARY EROSION CONTROL AND TEMPORARY STORMWATER CONTROL MEASURES TO CONTROL SEDIMENT AND RUNOFF IN ACCORDANCE WITH THESE PLANS AND THE COUNTY OF SANTA CRUZ COUNTY CODE AND DESIGN CRITERIA AND THE CALIFORNIA BUILDING CODE AS IT APPLIES.

1.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY EROSION AND SEDIMENT CONTROL BMP INSTALLATION AND MAINTENANCE.

1.2. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED IN ALL AREAS WHERE SOIL IS DISTURBED.

1.3. EROSION CONTROL MEASURES SHALL BE IN PLACE AT THE END OF EACH DAY'S WORK.

1.4. EROSION IS TO BE CONTROLLED AT ALL TIMES ALTHOUGH SPECIFIC MEASURES DESCRIBED ARE TO BE IMPLEMENTED AT ANY TIME RAIN IS FORECASTED.

1.5. ALL DISTURBED AREAS NOT PERMANENTLY SURFACED (PERMANENTLY SURFACED AREAS INCLUDE TRAIL BEDS CONSTRUCTED WITH COMPACTED EARTH) SHALL BE COVERED WITH EROSION CONTROL MEASURES AT THE COMPLETION OF THE PROJECT. BEDROCK CUT SLOPES STEEPER THAN 1:1 DO NOT REQUIRE EROSION CONTROL MEASURES.

1.6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ADDITIONAL MEASURES, NECESSARY TO CONTROL SITE EROSION AND PREVENT SEDIMENT TRANSPORT OFF-SITE ARE IMPLEMENTED.

1.7. THE COUNTY INSPECTOR, SUPERVISING PROJECT ENGINEER, OR OWNERS REPRESENTATIVE, SHALL STOP OPERATIONS DURING PERIODS OF INCLEMENT WEATHER IF IT IS DETERMINED THAT EROSION PROBLEMS ARE NOT BEING CONTROLLED ADEQUATELY.

2. WINTER/WET SEASON OPERATIONS - TRAIL CONSTRUCTION IS ANTICIPATED TO OCCUR DURING THE WINTER AND SHOULDER SEASONS AS SOIL MOISTURE RESULTING FROM RAINFALL HELPS WITH THE TRAIL CONSTRUCTION AND COMPACTION. TRAIL CONSTRUCTION SHALL NOT OCCUR DURING ACTUAL RAINFALL, AFTER PERIODS OF HEAVY RAINFALL, OR DURING PERIODS OF GROUND SATURATION/EXCESSIVE RUNOFF/GROUND SEEPAGE.

2.1. TRAIL CONSTRUCTION ACTIVITIES DURING THE WET SEASON SHALL FOLLOW THE FOLLOWING GUIDELINES:

2.1.1. DAILY TRAIL CONSTRUCTION LENGTH SHALL BE LIMITED TO THE AMOUNT OF EROSION CONTROL MATERIAL ON SITE AND THE THE CONTRACTOR'S ABILITY TO INSTALL EROSION CONTROL MATERIAL AT THE END OF EACH DAY.

2.1.2. ALL TRAIL TREAD SHALL BE COMPACTED/STABILIZED AND THE TRAIL SHALL INCLUDE COMPLETED DRAINAGE DIPS, KNICKS, AND GRADE REVERSAIS.

2.1.3. ALL OTHER BARE SOIL SHALL BE COVERED WITH EROSION CONTROL MATERIALS AT THE END OF EACH DAY AND STABILIZED TO PREVENT SOIL FROM LEAVING THE CONSTRUCTION AREA.

2.2. DRAINAGE CROSSING CONSTRUCTION ACTIVITIES DURING THE WET SEASON SHALL FOLLOW THE FOLLOWING GUIDELINES:

2.2.1. DRAINAGE CROSSING CONSTRUCTION SHALL BE LIMITED TO THE AMOUNT OF EROSION CONTROL MATERIAL ON SITE AND THE THE CONTRACTOR'S ABILITY TO INSTALL EROSION CONTROL MATERIAL AT THE END OF EACH DAY.

2.2.2. DRAINAGE CROSSING CONSTRUCTION SHALL NOT TAKE PLACE IN EPHEMERAL CHANNELS WHILE WATER IS FLOWING.

2.2.3. ALL APPROACHES TO DRAINAGE CROSSINGS SHALL BE COMPACTED/STABILIZED AND THE PORTION OF TRAIL LEADING TO THE DRAINAGE CROSSING SHALL INCLUDE COMPLETED DRAINAGE DIPS, KNICKS, AND GRADE REVERSAIS.

2.2.4. ALL OTHER BARE SOIL SHALL BE COVERED WITH EROSION CONTROL MATERIALS AT THE END OF EACH DAY AND STABILIZED TO PREVENT SOIL FROM LEAVING THE CONSTRUCTION AREA. WATTLES SHALL BE INSTALLED AROUND ANY CROSSING CONSTRUCTION AREAS TO PREVENT SOIL FROM LEAVING THE CONSTRUCTION AREA AND/OR ENTERING THE DRAINAGE.

3. SALVAGED ON-SITE ORGANIC MATERIAL. ALL AREAS ON- AND OFF-SITE EXPOSED DURING CONSTRUCTION ACTIVITIES, IF NOT PERMANENTLY SURFACED (PERMANENTLY SURFACED AREAS INCLUDE TRAIL BEDS CONSTRUCTED WITH COMPACTED EARTH), SHALL BE PROTECTED BY COVERING WITH SALVAGED ON-SITE ORGANIC MATERIAL, INCLUDING LEAF LITTER, DUFF, AND SLASH TO A MINIMUM 85% COVERAGE.

3.1. LOCAL LEAF LITTER, DUFF, AND SLASH SHALL BE SALVAGED DURING SITE CLEARING AND GRUBBING OPERATIONS AND STOCKPILED ON SITE FOR USE AS EROSION CONTROL MATERIALS.

3.2. ALL EXCAVATED MATERIAL SHALL BE REMOVED TO AN APPROVED DISPOSAL SITE OR DISPOSED OF ON-SITE IN A MANNER THAT WILL NOT CAUSE EROSION.

3.3. ANY SOIL MATERIAL STOCKPILED ON-SITE SHALL BE COVERED WITH PLASTIC, ESPECIALLY DURING THE WINTER MONTHS OR DURING PERIODS OF RAIN. SALVAGED ON-SITE ORGANIC MATERIAL, INCLUDING LEAF LITTER, DUFF, AND SLASH SHALL BE STOCKPILE ON-SITE AND SHALL NOT BE COVERED.

3.4. EXPOSED SOIL ON SLOPES LESS THAN OR EQUAL TO 10% SHALL BE COVERED WITH 3 - 4 INCHES OF LEAF LITTER AND/OR DUFF (COMPOST BLANKET) TO A MINIMUM 85% COVERAGE.

3.5. EXPOSED SOIL ON SLOPES BETWEEN 10% AND 30% SHALL BE COVERED WITH 3 - 4 INCHES OF LEAF LITTER AND/OR DUFF (COMPOST BLANKET) TO A MINIMUM 85% COVERAGE. WITH SLASH MATERIAL INCORPORATED TO ANCHOR AND HOLD IN PLACE THE ORGANIC MATERIAL.

3.6. EXPOSED SOIL ON SLOPES GREATER THAN 30% SHALL BE COVERED WITH 3 - 4 INCHES OF LEAF LITTER, DUFF (COMPOST BLANKET) TO A MINIMUM 85% COVERAGE. WITH SLASH MATERIAL INCORPORATED TO ANCHOR AND HOLD IN PLACE THE ORGANIC MATERIAL, AND COMPOST BERMS. COMPOST BERMS SHALL BE CONSTRUCTED OF SALVAGED ON-SITE ORGANIC MATERIAL, INSTALLED PERPENDICULAR TO THE SLOPE SO THAT SHEET FLOW RUNOFF MAY BE SLOWED, AND SEDIMENT RETAINED. THE BASE OF THE COMPOST BERM SHALL BE TWICE THE HEIGHT OF THE BERM. COMPOST BERMS SHALL BE INSTALLED AT THE BOTTOM OF THE SLOPE AND AT APPROPRIATE INTERVALS ALONG THE SLOPE TO CAPTURE AND RETAIN SEDIMENT.

3.7. THE SALVAGED ON-SITE ORGANIC MATERIAL SHALL BE EVENLY DISTRIBUTED BY HAND OR MACHINE TO THE DESIRED DEPTH AND SHOULD COVER THE EXPOSED AREA TO A UNIFORM DEPTH.

3.8. AN APPLICATION RATE OF 2,000 POUNDS PER ACRE SHOULD BE USED.

3.9. THERE SHOULD BE A MINIMUM OF 3 - 4 INCHES OF SALVAGED ON-SITE ORGANIC MATERIAL OVER THE SOIL AND NO BARE SOIL SHOULD BE VISIBLE.

3.10. RUNOFF FROM THE SITE SHALL BE DETAINED OR FILTERED BY COMPOST BERMS, VEGETATED FILTER STRIPS, AND/OR OTHER METHODS TO PREVENT THE ESCAPE OF SEDIMENT FROM THE SITE. THESE DRAINAGE CONTROLS SHALL BE MAINTAINED BY THE CONTRACTOR AND/OR PROPERTY OWNER AS NECESSARY TO ACHIEVE THEIR PURPOSE THROUGHOUT THE LIFE OF THE PROJECT.

3.11. AREAS COVERED WITH SALVAGED ON-SITE ORGANIC MATERIAL SHALL BE MONITORED FOR STABILITY. IF MATERIAL IS EVIDENT, THEN ADDITIONAL EROSION CONTROL MEASURES MAY INCLUDE EROSION CONTROL BLANKETS AND/OR STRAW WATTLES. EROSION CONTROL BLANKETS SHALL BE INSTALLED FOLLOWING THE DIRECTIONS IN THE EROSION CONTROL BLANKET SECTION OF THESE NOTES. ADDITIONAL LEAF LITTER AND/OR DUFF SHALL BE PLACED ON TOP OF THE EROSION CONTROL BLANKET TO MAINTAIN THE NATURAL AESTHETIC OF THE SITE. STRAW WATTLES SHALL BE INSTALLED FOLLOWING THE DIRECTIONS IN THE EROSION CONTROL BLANKET SECTION OF THESE NOTES.

4. RE-VEGETATION.

4.1. DURING WINTER CONSTRUCTION, ON-SITE PLANTS WITH SUITABLE SOIL MOISTURE WITHIN AREAS OF CONSTRUCTION SHALL BE SALVAGED AT THE START OF CONSTRUCTION AND REPLANTED FOLLOWING CONSTRUCTION AT THE DISCRETION OF THE PROPERTY OWNER.

4.2. ALL PLANTS SHALL CONFORM TO THE EXISTING SITE ECOLOGY. NO NEW SPECIES SHALL BE INTRODUCED.

4.3. RE-VEGETATION WILL OCCUR BY RECRUITMENT FROM SEED DISPERSAL AND VEGETATIVE GROWTH OF PRESERVED ON-SITE VEGETATION, AND BY THE GERMINATION OF THE SEED BANK ASSOCIATED WITH SALVAGED ON-SITE ORGANIC MATERIAL. MONITORING AND MANAGEMENT WILL PREVENT THE ESTABLISHMENT OF INVASIVE PLANTS.

5. STRAW WATTLES. STRAW WATTLES (OR FIBER ROLLS) SHALL BE INSTALLED ALONG THE CONTOUR OF THE SLOPE TO SLOW RUNOFF VELOCITY AND TRAP SEDIMENT.

5.1. STRAW WATTLES SHALL BE INSTALLED WHEREVER THE DISTURBED SLOPE IS ADJACENT TO A STREAM OR DRAINAGE COURSE.

5.2. TRENCH DEPTH SHALL BE ¼ TO ½ OF THE THICKNESS OF THE WATTLE, AND THE WIDTH SHALL EQUAL THE WATTLE DIAMETER, IN ORDER TO PROVIDE AREA TO BACKFILL THE TRENCH.

5.3. WOOD STAKES SHALL BE INSTALLED EVERY FOUR FEET THROUGH THE WATTLE AND THE END SHALL BE TURNED UP HILL TO PREVENT RUNOFF FORM GOING AROUND THE WATTLE.

5.4. ALL STRAW WATTLES SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

6. EROSION CONTROL BLANKET. THE EROSION CONTROL BLANKET SHALL BE CONSTRUCTED OF JUTE FIBERS, CURLED WOOD FIBERS, STRAW, COCONUT FIBER, OR A COMBINATION OF THESE MATERIALS. NO PLASTIC MATERIAL WILL BE ACCEPTED.

6.1. CONSTRUCTION GUIDELINES

6.1.1. GRADE AND SHAPE AREA OF INSTALLATION

6.1.2. REMOVE ALL ROCK, CLODS, AND VEGETATIVE OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED BLANKET WILL HAVE DIRECT CONTACT WITH THE SOIL.

6.1.3. LOOSEN 2-3 INCHES OF TOPSOIL ABOVE FINAL GRADE

6.1.4. U-SHAPED WIRE STAPLES, METAL GEOTEXTILE STAKE PINS OR TRIANGULAR WOODEN STAKES CAN BE USED TO ANCHOR MATS TO THE GROUND SURFACE. WIRE STAPLES SHOULD BE A MINIMUM OF 11 GALLICE. METAL STAKE PINS SHOULD BE 3/16 INCH DIAMETER STEEL WITH A 1 ½ INCH LUG WASHER AT THE HEAD OF THE PIN. WIRE STAPLES AND METAL STAKES SHOULD BE DRIVEN FLUSH TO THE SOIL SURFACE. ALL ANCHORS SHOULD BE 6-8 INCHES LONG AND HAVE SUFFICIENT GROUND PENETRATION TO RESIST PULLOUT. LONGER ANCHORS MAY BE REQUIRED FOR LOOSE SOILS.

6.2. INSTALLATION ON SLOPE:

6.2.1. BEGIN AT THE TOP OF THE SLOPE AND ANCHOR THE BLANKET IN A 6 INCH DEEP BY 6 INCH WIDE TRENCH. BACKFILL TRENCH AND TAMP EARTH FIRMLY.

6.2.2. UNROLL BLANKET DOWNSLOPE IN THE DIRECTION OF WATER FLOW. BLANKET SHOULD BE UNROLLED SLOWLY IN A CONTROLLED MANNER TO ACHIEVE DIRECT CONTACT WITH THE SOIL.

6.2.3. THE EDGE OF ADJACENT PARALLEL ROLLS MUST BE OVERLAPPED 2-3 INCHES AND BE STAPLED EVERY 3 FEET.

6.2.4. WHEN BLANKETS MUST BE SPICED, PLACE BLANKET END OVER END (SHINGLE STYLE) WITH 6 INCH OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12 INCHES APART.

6.2.5. LAY BLANKET LOOSELY AND MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

6.2.6. BLANKETS SHALL BE STAPLED SUFFICIENTLY TO ANCHOR BLANKET AND MAINTAIN CONTACT WITH THE SOIL. STAPLES SHALL BE PLACED DOWN THE CENTER AND STAGGERED WITH THE STAPLES PLACED ALONG THE EDGES. STEEP SLOPES, 1:1 TO 2:1 REQUIRE 2 STAPLES PER SQUARE YARD. MODERATE SLOPES, 2:1 TO 3:1 REQUIRE 1-2 STAPLES PER SQUARE YARD (1 STAPLE 3 O.C.). GENTLE SLOPES REQUIRE 1 STAPLE PER SQUARE YARD.

7. CONCRETE WASHOUT. TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE LOCATED A MINIMUM OF 50 FEET FROM STORM DRAIN INLETS, OPEN DRAINAGE FACILITIES, AND WATERCOURSES. THE CONCRETE WASHOUT FACILITY SHALL BE BELOW GRADE AND CONSTRUCTED WITH A MINIMUM LENGTH AND MINIMUM WIDTH OF 10 FEET. TEMPORARY CONCRETE FACILITIES SHALL BE CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. THE WASHOUT SHALL HAVE A 10 MIL POLYETHYLENE PLASTIC LINER. WHEN CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE AND MATERIALS FOR THE WASHOUT SHALL BE REMOVED AND DISPOSED OF. HOLES, DEPRESSIONS, OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE CONCRETE WASHOUT SHOULD BE BACKFILLED AND REPAIRED.

8. STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED ON DIRT ROAD JUST PRIOR TO PAVED SURFACE. THE INTENT OF THE STABILIZED CONSTRUCTION ENTRANCE IS TO PREVENT SEDIMENT/SOIL FROM TRACKING ONTO PAVED ROADS. CONTRACTOR IS RESPONSIBLE FOR LOCATING STABILIZED CONSTRUCTION ENTRANCE APPROPRIATELY.

9. OTHER PROVISIONS

9.1. IF CONSTRUCTION OCCURS BETWEEN OCTOBER 1ST AND APRIL 15TH, THE SITE SHALL BE WINTERIZED AS REQUIRED BY THE SANTA CRUZ COUNTY CODE OF ORDINANCES. BETWEEN OCTOBER 1ST AND APRIL 15TH, ALL EXPOSED SOIL NOT INVOLVED IN IMMEDIATE CONSTRUCTION ACTIVITY SHALL BE PROTECTED FROM EROSION AT ALL TIMES. AFTER APRIL 15TH, EROSION CONTROL MEASURES SHALL BE IN PLACE DURING INCLEMENT WEATHER.

9.2. EROSION CONTROL MEASURES SHALL BE KEPT IN PLACE BY THE CONTRACTOR UNTIL NATIVE VEGETATION HAS BEEN ESTABLISHED AND PROVIDES NECESSARY SLOPE COVER (MINIMUM 70% COVER).

SHEET TITLE:

EROSION CONTROL
DETAILS AND NOTES

CLIENT:

LAND TRUST OF SANTA CRUZ COUNTY
ATTN: RYAN LARGAY
617 WATER STREET
SANTA CRUZ, CALIFORNIA 95060

PROJECT TITLE:

SAN VICENTE REDWOODS
PROPOSED TRAIL NETWORK AND STAGING AREA
CEMET PROPERTY, EMPIRE GRADE
SANTA CRUZ COUNTY, CALIFORNIA

FALL CREEK ENGINEERING, INC.

Consulting Engineers
Civil • Environmental • Water Resources

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DRAWN BY: SIS
CHECKED BY: RLC
DATE: AUGUST 2018
JOB NO: 21514/21633
SCALE: AS SHOWN
SHEET:

C4.1

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