October 7, 2014 Ref: 8411197

Ms. Kelsey Ducklow
NOAA Coastal Management Fellow
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

RE: Application No. 2-14-1340 – Response to Letter of August 28, 2014

Dear Ms. Ducklow:

On behalf of the San Mateo County Harbor District, we are providing the following feedback to the letter referenced above. Items 1 through 5 presented in that letter are paraphrased and addressed below, followed by updated project information.

1. ***Erosion Analysis and Description of Project Alternatives.*** *A key component of the proposed project is the placement of rock slope protection (RSP) and construction of a soldier pile wall to protect the (proposed) replaced culvert and trail in that location from erosion. However, the project materials do not include a detailed analysis of the past and current erosion at site, nor is there any consideration of the potential for future sea level rise impacts. Please submit an analysis that clearly identifies erosion hazards in the area both as they currently exist and how they may impact the site in the future given sea level rise. Please also include an analysis of potential alternatives to the proposed project. This analysis should include, at a minimum, the following: a) need for RSP and soldier pile wall in this location and analysis of potential for these structures to result in increased erosion to adjacent areas; b) consideration of alternative measures including a "no project" alternative and possible "soft" solutions; and c) description of potential resource impacts and effectiveness of each alternative including potential for sea level rise.*

Additional Project Background and Existing Conditions

The overall intent of the Pillar Point Harbor West Trail Culvert Repair Project (project) in Half Moon Bay, CA is to preserve future coastal access provided by West Trail. The proposed project will replace the two existing culverts with a single pipe culvert, add a wall to the face of the slope at the edge of the trail to prevent future erosion, and add rock slope protection (RSP) to the area below the stormwater outfall to prevent beach erosion.

The existing culverts cross under the existing trail perpendicularly and originally outletted past the face of the shoreline slope below the mean high water line. The higher culvert is 12-inch corrugated metal pipe (CMP) and the lower culvert is 18-inch inner diameter reinforced concrete pipe (RCP). Due to the mean high water line's elevation of 5.5 feet, which is two-thirds of the height of the end of the lower pipe, we believe that the tide has washed rounded rocks and sediment in, thus reducing the capacity of the culvert. During heavier storm events, it is possible that the culvert cannot convey the necessary volume of stormwater due to its diminished capacity and tidal intrusion. The 18-inch RCP culvert has come apart at the last three joints, causing stormwater to flow out of the pipe prior to the outlet and consequently undermine and erode the slope at the edge of the trail.

a) Need for RSP and Soldier Pile Wall and Potential for Increased Erosion in Adjacent Areas

RSP is specified at the sandy area below the new culvert outlet to prevent scouring and undermining of the soldier pile wall. The RSP will dissipate the existing stormwater's outfall energy and reduce erosion at the location of the wall and the adjacent shoreline.

b) Consideration of Alternative Measures including a "No Project" Alternative and "Soft" Solutions

Soft Alternatives

A future project will consider alternatives to repair the shoreline and protect it from further erosion. Alternatives for consideration include soldier pile walls, placement of dredged materials, and use of a living shoreline. Placement of dredged materials was not a feasible alternative for this proposed project because the culvert repair is urgent to provide continued and safe coastal access – the Harbor District would not be able to wait until a future date when harbor maintenance dredging is proposed (and permits secured).

No Project

Slope erosion has occurred along the entire shoreline adjacent to the West Trail. If no repair measures are undertaken, use of the trail by pedestrians and emergency vehicles will cease at some undetermined point in time.

c) Potential Resource Impacts and Sea-Level Rise

The alternative chosen for slope restoration and protection at the culvert repair location is a soldier pile wall. It will provide the highest likelihood of retaining compacted fill in the eroded area and will conform to with adjacent slopes to minimize negative impacts to the surrounding shoreline. Less intrusive alternatives; like placement of dredged materials, use of a living shoreline, or no shoreline protective structures, have a much higher probability of future failure (e.g., shoreline erosion) at the culvert outlet and surrounding areas.

In order to mitigate some of the tidal effects on the new pipe culvert, the outlet end of the new pipe culvert will conform to the face of the trail slope adjacent to the presently eroded area. This new outlet location eliminates the last 20 linear feet of existing culvert and raises the outlet invert of the pipe by approximately 2.0 feet from elevation 4.5 to elevation 6.5, which brings the pipe invert above the mean high water line (MHWL)elevation of 5.5. The current high water line (HWL) elevation of 8.0 is approximately equal to the centerline of the proposed culvert. A Tideflex slip-in style inline Checkmate check valve will be installed in the new culvert to prevent tidal and rock intrusion and to reduce impacts of sea level rise on the new culvert.

To review this project relative to potential sea-level rise, data generated by the San Francisco Bay Conservation and Development Commission (BCDC) was assumed for Pillar Point Harbor. The BCDC's projected 2050 sea level rise is 16 inches, which would raise the MHWL elevation to 6.8, 2.0 inches above the pipe invert, and the HWL elevation to 9.3, 4.0 inches below the top of the inside of pipe. For the projected 55-inch sea level rise in 2099, the MHWL elevation would be 10.1, nearly 6 inches above the top of the inside of pipe, and the HWL would be 12.6, which results in submerging the pipe and the trail. The Tideflex slip-in style inline Checkmate check valve would prevent sea water from entering the pipe during conditions when sea level is higher than the pipe invert.

Two additional alternative designs were described in the project description submitted on July 30. The first alternative – connection of existing 24-inch CMP into an enclosed buried concrete junction box -- was not selected as this "closed" system posed greater effort and potential challenges for adequate and

efficient maintenance. The other alternative proposed capping or abandonment [in-place] of the existing culverts under West Trail and construction of a concrete apron across the surface of the trail. The existing 24-inch CMP traversing down the adjacent hillside would discharge onto the apron, which would be pitched such to allow the stormwater flow to cross the trail and empty directly into the harbor. This alternative scenario was not selected due to accessibility and compliance issues vis-à-vis the Americans with Disability Act (ADA) requirements.

2. ***Revised Construction Timeline.*** *The project details state that construction will occur prior to the onset of the rainy season on October 15 so as to avoid potential for water quality contamination from runoff and to avoid potential California red-legged frog dispersal events. Given that you submitted this CDP application on July 31st and it is currently incomplete, it seems unlikely that you will be able to obtain your CDP and complete construction before October 15, 2014. Therefore, please submit a revised project timeline that includes any additional measures necessary to protect water quality and avoid impacts tot the California red-legged frog.*

The Harbor District would like to proceed with construction as soon as possible after all permits are secured. At this time it is difficult to estimate when that would occur, but it may be in late 2014 or early 2015. The second bullet of "Measures to Protect Special-status Wildlife Species, Nesting Birds, and Sensitive Habitat," states that a biologist will inspect the site each morning to prevent take of individuals. The measures included in the project description for California red-legged frog (CRLF) are avoidance and minimization measures. The first measure is revised to state that ground disturbance would be limited to the dry season if feasible (see below). Therefore, the Project will be in compliance with the stated measures, and even if ground disturbance occurs during potential dispersal events, the daily site inspections, as well as implementation of the other 17 avoidance and minimization measures, will avoid significant adverse impacts to CRLF if they are present.

The avoidance and mitigation measures included in "staging and fueling" and "construction best management practices", including erosion and sediment control measures, would still be applicable during the rainy season and would serve to protect water quality during construction.

California red-legged frog (CRLF): The following avoidance measures, adopted from the *Programmatic Biological Opinion* (USFWS 1999), will be implemented to prevent mortality of individuals:

1. If feasible, ~~G~~ground disturbing construction activities will be limited to the dry season period from May 1 through October 15, to avoid potential CRLF dispersal events.

With these revisions, the project would successfully avoid adverse impacts to CLRF and protect water quality during construction.

3. ***Other Agency Approvals****. The proposed project includes the placement of 205 square feet of fill (the proposed rock slope protection and soldier pile wall) into jurisdictional waters. Please provide us with any approval obtained from State Lands Commission or US Army Corps of Engineers, or updates on approval requirements, when they are available.*

This project is not subject to a lease from the State Land Commission, because the project site is on a land grant issued to the San Mateo County Harbor District, and the project does not include dredging. An application has been submitted with the Army Corps of Engineers and the Regional Water Quality Control Board (RWQB). For the RWQCB, our assigned staff person is Eileen Leung, 510-622-2316, Eileen.Leung@waterboards.ca.gov and the file number is 808145. For the Army Corps, our assigned staff

person is Alisha Kerschbaum, 415-503-6783, alisha.s.kerschbaum@usace.army.mil, file number 2014-00294.

4. ***Reduced and Electronic Copies****. Please provide copies of the project plans that have been reduced to 8.5 x 11" in size. Please also submit electronic copies of the project materials.*

Reduced plans are attached. Electronic copies are also included with this submittal.

5. ***Inconsistencies in Application.*** *Item 8 on page 3 of the application says that no grading is proposed for the project. However, Keynote 3 on item 2 of drawing C-501 refers to grading of the hillslope. Please clarify this discrepancy.*

No grading is proposed. The eroded shoreline would be recontoured where it meets the soldier pile wall to match and conform to existing grade. The updated plan sheet is included with this application.

If you have additional questions or require additional information, please do not hesitate in contacting me at 707-523-1010 or dave.davis@ghd.com. We look forward to continue working with you on this – and future – important Harbor District projects.

Sincerely,
GHD Inc.

David D. Davis, AICP
Senior Planner

Enc.

c: P. Grenell, San Mateo County Harbor District
S. Grindy, San Mateo County Harbor District
E. Leung, RWQCB
A. Kershbaum, Army Corps of Engineers

ATTACHMENT #5

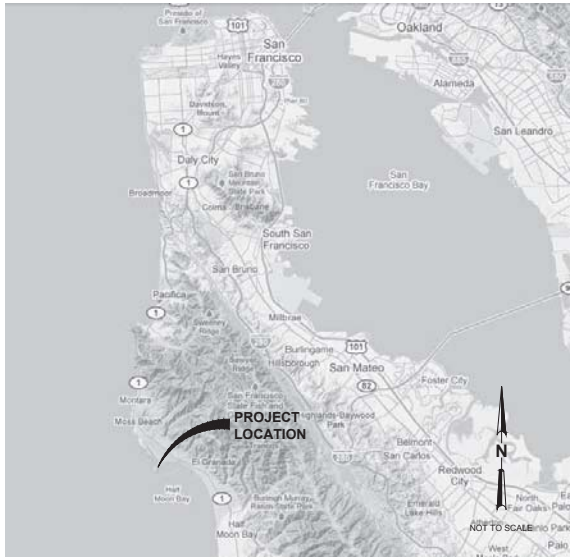
SAN MATEO COUNTY HARBOR DISTRICT

PILLAR POINT HARBOR

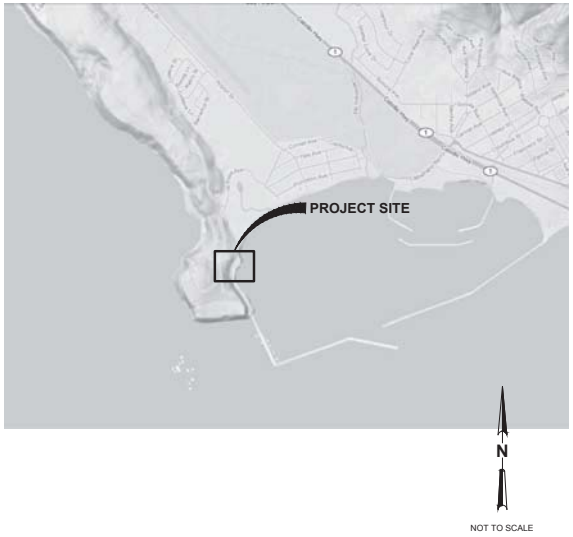
WEST TRAIL CULVERT REPAIR

JULY 2014

AREA MAP



LOCATION MAP



SHEET INDEX

No.	Revision	Drawn	Job Manager	Project Director	Date
-	-	-			-

Drawing Revisions
Note: * indicates signatures on original issue of drawing or last revision of drawing

100% SUBMITTAL

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Client: SAN MATEO COUNTY HARBOR DISTRICT
Project: PILLAR POINT HARBOR
WEST TRAIL CULVERT REPAIR

Title: TITLE SHEET, LOCATION MAP, AREA MAP, SHEET INDEX

Scale	AS SHOWN	Project No.	8411197
Drawn	PS	Designer	CL
Drafting Check	SD	Design Check	MM
Approved (Project Director)			
Date	JULY 2014		

This Drawing must not be used for Construction unless Signed and Sealed as Approved

Drawing No. G-001
Sht 1 of 7
Original Size ANSI D
Rev.

Plot Date: 8 July 2014 - 3:26 PM Plotted by: Michael Friedler Cad File No: G:\10449 San Mateo County Harbor District\8411197 SMCHD - West Trail Culvert Repairs\06-CAD\Sheets\8411197 G-001.dwg

ABBREVIATIONS

Ø	DIAMETER
AB	AGGREGATE BASE
ABDN	ABANDONED
AC	ACRE, ASPHALT CONCRETE
ACM	ASBESTOS CONTAINING MATERIAL
AD	AREA DRAIN
ADA	AMERICANS WITH DISABILITIES ACT
ASB	AGGREGATE SUBBASE
ASPH	ASPHALT
BC	BEGIN CURVE
BFP	BACK FLOW PREVENTER
BLDC	BUILDING CORNER
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICES
BOD	BOTTOM OF DOCK
BOL	BOLLARD
BSW, BW	BACK OF SIDEWALK
BVC	BEGIN VERTICAL CURVE
C	CONCRETE OR CIVIL
CB	CATCH BASIN
C&G	CURB AND GUTTER
CG&S/W	CURB, GUTTER & SIDEWALK
CI	CAST IRON OR CURB INLET
CIP	CAST IRON PIPE
CL	CENTERLINE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
CONC	CONCRETE
CONF	CONFORM TO EXISTING
CONST	CONSTRUCTION OR CONSTRUCT
CU	CUBIC
CY	CUBIC YARD
D=	DELTA (CURVE)
DBE	DESIGN BUILD ENTITY
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
DET	DETAIL
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DOM	DOMESTIC
DPW	DEPARTMENT OF PUBLIC WORKS
DW	DOMESTIC WATER
DWG	DRAWING
E	EAST, ELECTRIC
EC	END CURVE
EL, ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EVA	EMERGENCY VEHICLE ACCESS
EX	EXISTING
EXIST, (E)	EXISTING
F/C,F/C	FACE OF CURB
FD	FOUND
FDC	FIRE DEPARTMENT CONNECTION
FF,FFE	FINISHED FLOOR ELEVATION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FOUND	FOUNDATION
FS	FINISHED SURFACE
FT	FOOT, FEET
FW	FIRE WATER
G	GAS, GROUND ELEVATION
GB	GRADE BREAK
GI	GALVANIZED IRON
GRD, G	GROUND
GV	GATE VALVE
HCR	HANDICAP ACCESSIBLE RAMP
HMA	HOT MIX ASPHALT
HP	HIGH POINT
HT	HEIGHT
ID	INTERNAL DIAMETER
INST	INSTALL
INV	INVERT
JP	JOINT POLE
JT	JOINT TRENCH
L	LEFT
L=	LENGTH (CURVE)
LF	LINEAR FEET
LIP	LIP OF GUTTER
LP	LIGHT POLE, LOW POINT
LS	LANDSCAPE
LSA	LANDSCAPE ARCHITECT
MAX	MAXIMUM
MEP	MECHANICAL/ELECTRICAL/PLUMBING
MH	MANHOLE
MIN	MINIMUM
MLLW	MEAN LOWER LOW WATER
MON	MONUMENT
MPVC	MIDPOINT OF VERTICAL CURVE
N	NORTH
(N)	NEW
NIC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
O.R.	OFFICIAL RECORDS
P	PAVEMENT ELEVATION
PA	PLANTER AREA
PCC	POINT OF COMPOUND CURVATURE PORTLAND CEMENT CONCRETE
PED	PEDESTRIAN
PH	POTHOLE
PID	POINT ID
PIV	POST INDICATOR VALVE
PL	PROPERTY LINE
PM	PARKING METER
PMH	POWER MANHOLE
POC	POINT ON CURVE
POI	POINT OF INTERSECTION
PP	POWER POLE
PRC	POINT OF REVERSE CURVATURE
PRUE	PRIVATE UTILITY EASEMENT
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE PIPE
R	RIGHT
R=	RADIUS (CURVE)
RC	RELATIVE COMPACTION
RCP	REINFORCED CONCRETE PIPE
RP	RADIUS POINT
RPPA	REDUCED PRESSURE PRINCIPLE ASSEMBLY
R/W, ROW	RIGHT OF WAY
S	SOUTH, SLOPE
S.A.D.	SEE ARCHITECTURAL DRAWINGS
SB	SEDIMENT BASIN
SD	STORM DRAIN
SDI	STORM DRAIN INLET
SDMH	STORM DRAIN MANHOLE
S.E.D.	SEE ELECTRICAL DRAWINGS
SF	SILT FENCE
SG	SUBGRADE
SHLDR	SHOULDER
SL	STREETLIGHT
S.L.D.	SEE LANDSCAPE DRAWINGS
SMH	SIGNAL MANHOLE
S.P.D.	SEE PLUMBING DRAWINGS
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
STA	STATION
STD	STANDARD
S/W	SIDEWALK
T	TELEPHONE
TC	TOP OF CURB
TD	TRENCH DRAIN
TFC	TOP FACE OF CURB
TOD	TOP OF DOCK
TOE	TOE OF SLOPE
TW,TOW	TOP OF WALL
TS	TOP OF SLAB
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
U/G	UNDERGROUND
VC	VERTICAL CURVE
W	WEST, WATER
WM	WATER METER
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
W/	WITH
YDS	YARDS

LEGEND

SYMBOLS

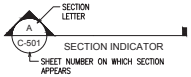
6" CURB & GUTTER	IRRIGATION BOX
EDGE OF AC PAVEMENT	GAS METER
6" VERTICAL CURB	GAS VALVE
OH — OVERHEAD WIRES	WATER METER
OHE — OVERHEAD ELECTRIC WIRES	WATER VALVE
OHT — OVERHEAD TELEPHONE WIRES	WATER VALVE
UGE — UNDERGROUND ELECTRIC LINE	FIRE HYDRANT
E — ELECTRIC LINE	FIRE DEPARTMENT CONNECTION
SL — STREET LIGHT CONDUIT	WATER TAPPING SADDLE
G — GAS LINE	SEWER MANHOLE
SS — SANITARY SEWER LINE	SEWER CLEANOUT
SD — STORM DRAIN LINE	SEWER LAMP HOLE
T — TELEPHONE LINE	SEWER VENT
TV — TELEVISION LINE	STORM DRAIN MANHOLE
W — WATER LINE	CATCH BASIN
FW — FIRE WATER MAIN	CURB INLET
DW — DOMESTIC WATER MAIN	DRAINAGE INLET
CHWR — CHILLED WATER RETURN	STORM DRAIN CLEANOUT
CHWS — CHILLED WATER SUPPLY	RAIN WATER LEADER
HWS — HOT WATER SUPPLY	ELECTRIC VAULT COVER
HWR — HOT WATER SUPPLY	ELECTRIC PULLBOX
STM — STEAM LINE	TELEVISION PULLBOX
SWTR — SOFT WATER MAIN	TELEPHONE PULLBOX
CR — CONDENSATE RETURN	HIGH VOLTAGE ELECTRIC
MA — MEDICAL AIR	TELEPHONE MANHOLE
IRR — IRRIGATION LINE	POWER POLE
TRENCH DRAIN	GUY WIRE & ANCHOR
METAL BEAM GUARD RAIL	JOINT POLE WITH (2) RISERS
SILT FENCE	JOINT POLE
CHAIN LINK FENCE	STREET LIGHT
FLOW LINE	ELECTROLIER
89 — CONTOUR ELEVATION LINE	TRAFFIC SIGNAL
CENTER LINE	TRAFFIC SIGNAL
EXISTING PROPERTY LINE	PEDESTRIAN LIGHT
MONUMENT LINE	PEDESTRIAN PUSH BUTTON
EXISTING EASEMENT LINE	CROSSWALK DETECTOR
TC 24.52 — FINISH GRADE	STREET LIGHT PULLBOX
2.0% — SURFACE DRAINAGE SLOPE	SIGN (AS NOTED)
x 95.94 — SPOT ELEVATION	WHEELCHAIR RAMP

ANNOTATION

1 KEYNOTE

1 DEMOLITION NOTE

DETAIL INDICATOR



SECTION INDICATOR

GENERAL NOTES

CONSTRUCTION NOTES

1. ALL OFF-SITE CONSTRUCTION MATERIAL AND METHODS SHALL COMPLY WITH THE LATEST EDITION OF THE COUNTY OF SAN MATEO STANDARD PLANS & SPECIFICATIONS.
2. CONTRACTOR SHALL POST ON THE SITE, EMERGENCY TELEPHONE NUMBERS FOR LOCAL PUBLIC WORKS, AMBULANCE, SHERIFF, AND FIRE DEPARTMENTS.
   - SAN MATEO PUBLIC WORKS 650-522-7300
   - AMBULANCE 911
   - SAN MATEO SHERIFF'S OFFICE 650-726-8288
   - SAN MATEO COUNTY FIRE DEPARTMENT 650-573-3842
   - SAN MATEO HARBOR PATROL 650-726-4382
3. CONTRACTOR SHALL LEAVE AN EMERGENCY PHONE NUMBER WITH THE LOCAL SHERIFF'S OFFICE AND FIRE DEPARTMENT.
4. CONTRACTOR SHALL NOTIFY ALL PUBLIC OR PRIVATE UTILITY OWNERS 48 HOURS PRIOR TO COMMENCEMENT OF WORK ADJACENT TO THE UTILITY UNLESS AN EXCAVATION PERMIT SPECIFIES OTHERWISE.
5. EXISTING UTILITIES AND UNDERGROUND FACILITIES INDICATED ARE FOR INFORMATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND DEPTH. NEITHER THE OWNER NOR THE DESIGN PROFESSIONAL ASSUMES RESPONSIBILITY THAT THE UTILITIES AND UNDERGROUND FACILITIES INDICATED WILL BE THE UTILITIES AND UNDERGROUND FACILITIES ENCOUNTERED.
6. CONTRACTOR TO CONTACT UNDERGROUND SERVICE ALERT U.S.A. 800-227-2600 FORTY-EIGHT (48) HOURS PRIOR TO BEGINNING WORK TO HAVE THE LOCATION OF EXISTING UNDERGROUND UTILITIES MARKED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY, LOCATE, AND PROTECT ALL UNDERGROUND FACILITIES.
7. THE CONTRACTOR SHALL HIRE A STREET CLEANING CONTRACTOR TO CLEAN UP DIRT AND DEBRIS FROM LOCAL STREETS THAT ARE ATTRIBUTABLE TO THE PROJECT'S CONSTRUCTION ACTIVITIES.
8. ALL WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO COMPLY WITH THE STANDARDS ESTABLISHED BY THE PROJECT SPECIFICATIONS AND AGENCIES HAVING JURISDICTION FOR AIRBORNE PARTICULATES (DUST).
9. ALL MATERIALS, REQUIRED FOR THE COMPLETE EXECUTION OF THE PROJECT, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMEN OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY DURING THE CONSTRUCTION PERIOD.
11. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE ANY EXISTING IMPROVEMENTS OR UNDERGROUND FACILITIES DAMAGED DURING THE CONSTRUCTION PERIOD.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL ENCROACHMENT, EXCAVATION, BUILDING, ETC. PERMITS NECESSARY PRIOR TO BEGINNING CONSTRUCTION FOR ANY WORK, AND COMPLY WITH CURRENT COUNTY OF SAN MATEO REQUIREMENTS.
13. THE CONTRACTOR SHALL HAVE A SUPERINTENDENT OR REPRESENTATIVE ON SITE AT ALL TIMES DURING CONSTRUCTION.
14. STORAGE OF CONSTRUCTION MATERIAL AND EQUIPMENT ON STREETS WILL NOT BE PERMITTED.
15. CONSTRUCTION EQUIPMENT SHALL BE PROPERLY MUFFLED. UNNECESSARY IDLING OF GRADING CONSTRUCTION EQUIPMENT IS PROHIBITED.
16. CONSTRUCTION EQUIPMENT, TOOLS, ETC. SHALL NOT BE CLEANED OR RINSED INTO A STREET, GUTTER OR STORM DRAIN.
17. A CONTAINED AND COVERED AREA ON-SITE SHALL BE USED FOR STORAGE OF CEMENT BAGS, PAINTS, FLAMMABLE, OILS, FERTILIZERS, PESTICIDES, OR ANY OTHER MATERIALS THAT MAY HAVE POTENTIAL FOR BEING DISCHARGED TO THE STORM DRAIN SYSTEM BY WIND OR IN THE EVENT OF A MATERIAL SPILL.
18. ALL CONSTRUCTION DEBRIS SHALL BE GATHERED ON A REGULAR BASIS AND PLACED IN A DUMPSTER WHICH IS EMPTIED OR REMOVED WEEKLY. WHEN FEASIBLE, TARPS SHALL BE USED ON THE GROUND TO COLLECT FALLEN DEBRIS OR SPLATTERS THAT COULD CONTRIBUTE TO STORM WATER POLLUTION.
19. ANY TEMPORARY ON-SITE CONSTRUCTION STOCKPILES SHALL BE SECURELY COVERED WITH A TARP OR OTHER DEVICE TO CONTAIN DEBRIS.
20. CONCRETE TRUCKS AND CONCRETE FINISHING OPERATIONS SHALL NOT DISCHARGE WASH WATER INTO THE STREET GUTTERS OR DRAINS.
21. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY IF EXISTING UTILITIES WITHIN THE PROJECT LIMITS ARE SERVING EXISTING FACILITIES OR NOT. THOSE THAT SERVE EXISTING FACILITIES SHALL BE RELOCATED IN SUCH A MANNER AS TO MAINTAIN UNINTERRUPTED SERVICE. ANY EXISTING UTILITIES WITHIN THE PROJECT LIMITS THAT DO NOT SERVE ANY OTHER EXISTING FACILITIES TO REMAIN SHALL BE DEMOLISHED OR ABANDONED IN PLACE AS INDICATED ON THE PLANS.
22. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THE REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT, EXCEPTING LIABILITY ARISING FROM SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.
23. CONTRACTOR SHALL MAINTAIN SAFE PUBLIC ACCESS ALONG WEST TRAIL DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE SAFETY BARRICADES AS NEEDED. A MINIMUM 8-FOOT TRAIL WIDTH MUST BE MAINTAINED FOR EMERGENCY VEHICLES ACCESS.
24. IF ANY ITEMS OF POTENTIAL CULTURAL OR ARCHEOLOGICAL SIGNIFICANCE ARE ENCOUNTERED DURING EXCAVATION OPERATIONS, CONSTRUCTION WITHIN THIS AREA SHALL BE HALTED IMMEDIATELY, AND THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER.

No.	Revision	Drawn	Job Manager	Project Director	Date
-	-		-		-

Drawing Revisions
Note: * indicates signatures on original issue of drawing or last revision of drawing

100% SUBMITTAL

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Client **SAN MATEO COUNTY HARBOR DISTRICT**

Project **PILLAR POINT HARBOR**
WEST TRAIL CULVERT REPAIR

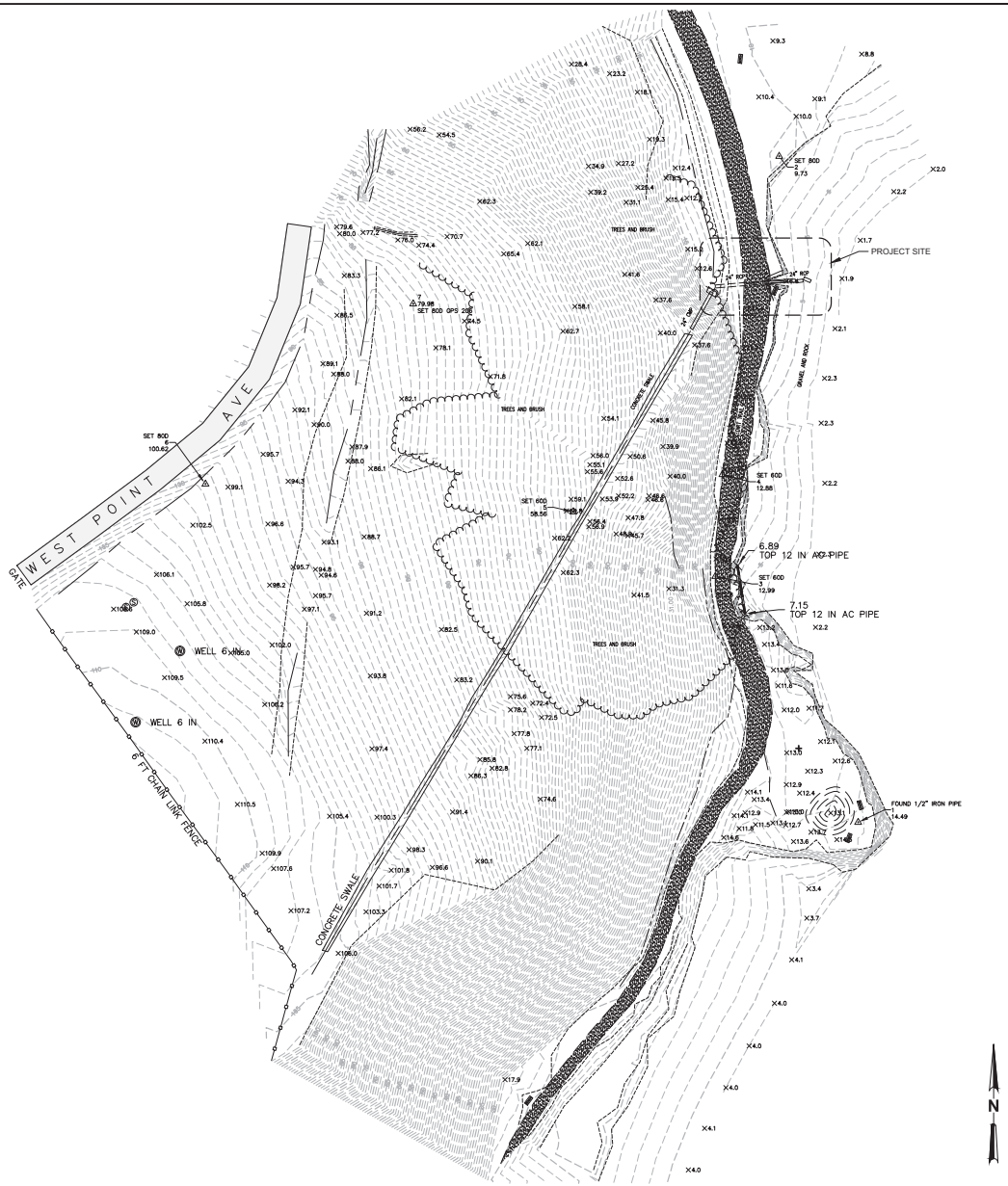
Title **GENERAL NOTES, LEGEND, AND ABBREVIATIONS**

Scale	AS SHOWN	Project No.	8411197
Drawn	PS	Designer	MM
Drafting Check	SD	Design Check	CL
Approved (Project Director)			
Date	JULY 2014		

This Drawing must not be used for Construction unless Signed and Sealed as Approved

Drawing No. **G-002**
Sht 2 of 7
Original Size **ANSI D**
Rev.

Plot Date: 11 July 2014 - 10:26 AM Plotted by: Pat Scheetz Cad File No: N:\US\San Francisco\Projects\10449 San Mateo County Harbor District\8411197 SMCHD - West Trail Culvert Repairs\06-CAD\Sheets\8411197 G-002.dwg



1 EXISTING SITE PLAN AND SURVEY CONTROL

1"=40' 0 40' 80'

SURVEY CONTROL NOTES

TOPOGRAPHIC SURVEY PREPARED BY GHD INC.,
2235 MERCURY WAY, SUITE 150, SANTA ROSA, CA 95407.

BENCHMARK:

DESIGNATION - 941 4129 TIDAL 5
PID - HT0455
STATE / COUNTY - CALIFORNIA / SAN MATEO
USGS QUAD - MONTARA MOUNTAIN (1997)

HORIZONTAL DATUM: NAD83 (1986) 37° 30' 13.3"
(N) 122° 29' 07.7" (W)

VERTICAL DATUM: NAVD 88 4.337(METERS) 14.22 (FEET)
ADJUSTED

GEOID HEIGHT: -33.00 (METERS) GEOID09
DYNAMIC HEIGHT: 4.332 (METERS) 14.21 (FEET) COMP
MODELED GRAV: 979,968.5 (MGAL) NAVD 88
VERT ORDER: FIRST CALSS 1

No.	Revision	Drawn	Job Manager	Project Director	Date
-	-	-			-

Drawing Revisions
Note: * indicates signatures on original issue of drawing or last revision of drawing

100% SUBMITTAL

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Client **SAN MATEO COUNTY HARBOR DISTRICT**
Project **PILLAR POINT HARBOR**
WEST TRAIL CULVERT REPAIR

Title **EXISTING SITE PLAN AND SURVEY CONTROL**

Scale	AS SHOWN	Project No.	8411197
Drawn	PS	Designer	MM
Drafting Check	SD	Design Check	CSS
Approved (Project Director)			
Date	JULY 2014		

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Drawing No. **C-101**
Sht 3 of 7
Original Size **ANSI D**
Rev.

Plot Date: 11 July 2014 - 10:51 AM Plotted by: Pat Scheetz Cad File No: N:\US\San Francisco\Projects\10449 San Mateo County Harbor District\8411197 SMCHD - West Trail Culvert Repairs\06-CAD\Sheets\8411197 C-101.dwg

1 C-102 **CONTRACTOR STAGING PLAN**

SHEET NOTES

1. REFER TO THE CONSTRUCTION NOTES ON SHEET G-002 FOR SPECIFIC INFORMATION REGARDING CONTRACTOR RESPONSIBILITIES AND SITE ACCESS DETAILS.

No.	Revision	Drawn	Job Manager	Project Director	Date
-	-	-			-

Drawing Revisions
Note: * indicates signatures on original issue of drawing or last revision of drawing

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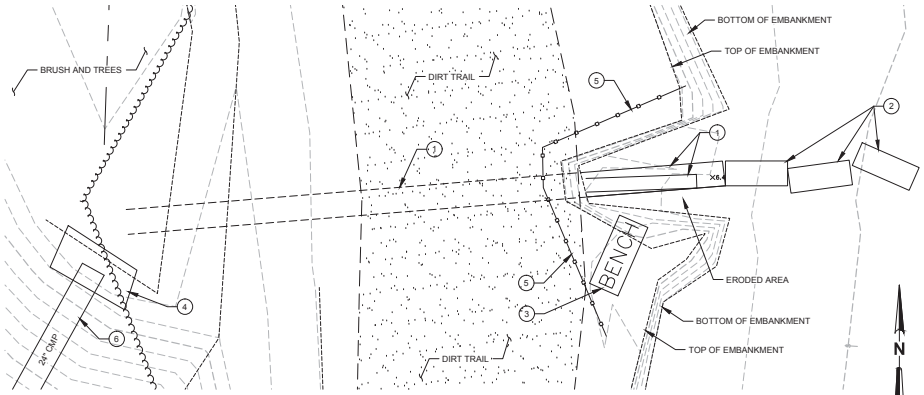
Client **SAN MATEO COUNTY HARBOR DISTRICT**
Project **PILLAR POINT HARBOR**
WEST TRAIL CULVERT REPAIR

Title **CONTRACTOR STAGING PLAN**

Scale AS SHOWN	Project No. 8411197
Drawn PS	Designer MM
Drafting Check	Design Check
Approved (Project Director)	
Date JULY 2014	

This Drawing must not be used for Construction unless Signed and Sealed as Approved

Drawing No. **C-102** Sht 4 of 7
Original Size **ANSI D**
Rev.

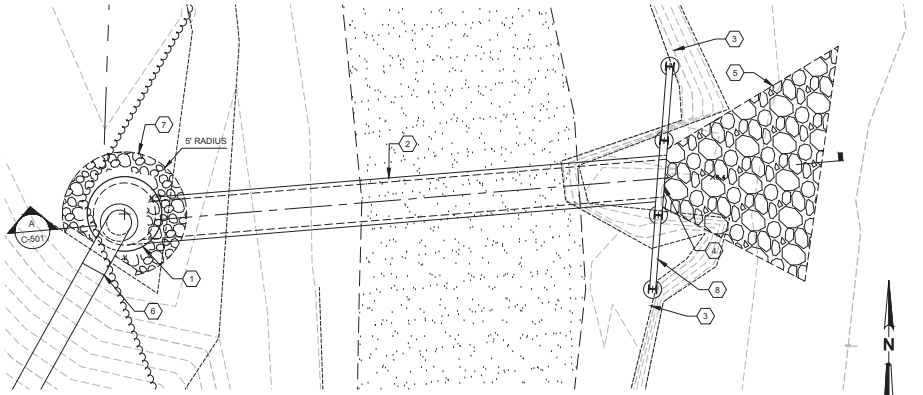


1 C-501 **SITE DEMOLITION PLAN**

1"=5' 0 5' 10'

DEMOLITION NOTES

1. REMOVE AND DISPOSE OF EXISTING BURIED 18" RCP AND 12" CMP PIPES AND SEPARATED PIPE SEGMENTS. (APPROXIMATELY 48 LF EACH)
2. REMOVE AND DISPOSE OF EXISTING EXPOSED AND SEPARATED 18" RCP PIPE SEGMENTS.
3. EXISTING BENCH AND CONCRETE FOUNDATION TO BE REMOVED. SALVAGE BENCH AND RETURN TO SAN MATEO COUNTY HARBOR DISTRICT.
4. EXISTING CONCRETE SLAB AT OUTFALL OF EXISTING 24" CMP TO REMAIN IN PLACE.
5. REMOVE AND DISPOSE OF EXISTING CONSTRUCTION FENCE FABRIC AND METAL STAKES.
6. EXISTING 24" CMP AT GRADE TO REMAIN IN PLACE.

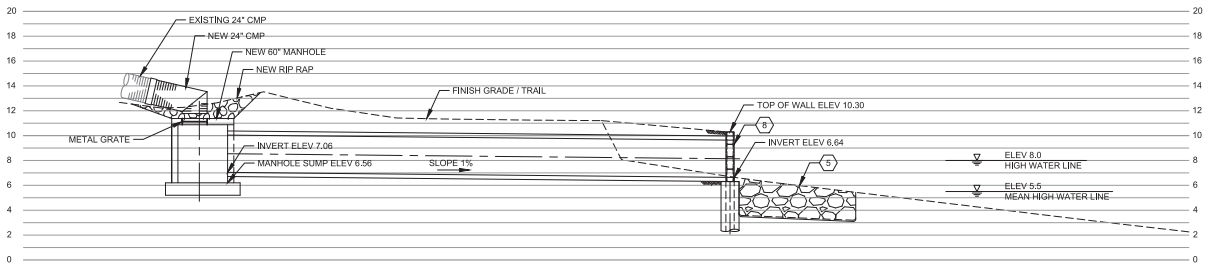


2 C-501 **IMPROVEMENTS SITE PLAN**

1"=5' 0 5' 10'

KEYNOTES

1. INSTALL 60 INCH ID FLAT TOP MANHOLE WITH 36 INCH DIAMETER ROUND GRATED LID. CONTRACTOR SHALL POTHOLE TO CONFIRM ORIENTATION AND INVERT ELEVATIONS OF EXISTING 18 INCH RCP AND 12 INCH CMP. PROVIDE EXISTING PIPE INFORMATION TO ENGINEER TO CONFIRM MANHOLE SIZE AND PIPE CONNECTIONS PRIOR TO ORDERING MANHOLE.
2. INSTALL 42 LF 36 INCH RCP FROM NEW MANHOLE ALONG ROUTE OF EXISTING 18 INCH RCP AND 12 INCH CMP (TO BE REMOVED). TRENCH DIMENSIONS AND BEDDING SHALL BE IN ACCORDANCE WITH SAN MATEO DPW STANDARD PLAN W-10. TRENCH BACKFILL SHALL BE CLSM AND SHALL BE 6" DEEP OVER PIPE.
3. RECOUNTOUR EMBANKMENT FACE AT NEW WALL ENDS TO MATCH AND CONFORM TO EXISTING GRADE.
4. INSTALL TIDEFLEX SLIP-IN STYLE INLINE CHECKMATE CHECK VALVE OR APPROVED EQUAL.
5. INSTALL 1/4 TON ROCK APRON AT PIPE OUTFALL IN ACCORDANCE WITH CALTRANS SPECIFICATION SECTION 72 PLACEMENT METHOD B. 1/4 TON ROCK DEPTH SHALL BE 3.3 FEET WITH 1.25 FEET OF UNDERLYING BACKING NO. 2 AND TYPE A RSP FABRIC. APRON SHALL EXTEND TO THE MEAN HIGH WATER LINE AT ELEVATION 5.5.
6. CLAMP 3 LF OF 24 INCH CMP AND 90 DEGREE CMP ELBOW TO EXISTING 24 INCH CMP. NEW SECTION AND ELBOW SHALL BE REMOVABLE FOR MANHOLE MAINTENANCE. ELBOW SHALL BE CENTERED OVER NEW ROUND GRATED LID OF NEW MANHOLE.
7. INSTALL BACKING NO. 2 RIP RAP PROTECTION IN A 5' RADIUS FROM THE CENTER OF THE NEW MANHOLE. DEPTH SHALL BE 1.25 FEET AND RSP FABRIC SHALL BE TYPE A. RIP RAP SHALL BE PLACED IN ACCORDANCE WITH CALTRANS SPECIFICATION SECTION 72 PLACEMENT METHOD B.
8. INSTALL SOLDIER PILE/CONCRETE LAGGING WALL AS SHOWN ON SHEET S-501.



A C-501 **SECTION**

1"=5' HORIZONTAL 1"=5' VERTICAL

1"=5' 0 5' 10'

No.	Revision	Drawn	Job Manager	Project Director	Date
-	-				-

Drawing Revisions
Note: * indicates signatures on original issue of drawing or last revision of drawing

PROFESSIONAL ENGINEER — MARK MYERS — No. C82941 Exp. 9/30/14 — CIVIL — STATE OF CALIFORNIA

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Client **SAN MATEO COUNTY HARBOR DISTRICT**
Project **PILLAR POINT HARBOR**
WEST TRAIL CULVERT REPAIR

Title **CIVIL DETAILS**

Scale	AS SHOWN	Project No.	8411197
Drawn	PS	Designer	MM
Drafting Check	SD	Design Check	CSS
Approved (Project Director)			
Date	SEPTEMBER 2014		

This Drawing must not be used for Construction unless Signed and Sealed as Approved

Drawing No. **C-501** Sht 5 of 7
Original Size **ANSI D**
Rev.

Plot Date: 16 September 2014 - 10:11 AM Plotted by: Pat Scheetz
Cad File No: N:\US\San Francisco\Projects\10449 San Mateo County Harbor District\8411197 SMCHD - West Trail Culvert Repairs\06-CAD\Sheets\8411197 C-501.dwg

STRUCTURAL GENERAL NOTES

1. GENERAL

A. THE CONTRACTOR SHALL CAREFULLY EXAMINE ALL CONTRACT DOCUMENTS AND SITE CONDITIONS AND UNDERSTAND THE CHARACTER, QUALITY AND QUANTITY OF WORK CALLED FOR INCLUDING ALL CONDITIONS OF THE CONTRACT. THE CONTRACTOR SHALL CAREFULLY COMPARE AND CHECK ALL CONTRACT DOCUMENTS FOR OMISSIONS AND DISCREPANCIES AND SHALL REPORT THESE TO THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.

B. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. THE OWNER AND ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.

C. VERTICAL DATUM: ELEV. = 0.0' AT MLLW.

D. THE EXISTING CONDITIONS AND DIMENSIONS SHOWN HEREIN ARE SUBSTANTIALLY DERIVED FROM SURVEYS AND OBSERVATIONS OF EXISTING CONDITIONS AT THE TIME. THE ACCURACY AND COMPLETENESS OF THE DRAWINGS, INCLUDING AS-BUILT DIMENSIONS, ARE NOT GUARANTEED. DIMENSIONS SHOWN ON THE DRAWINGS MAY NOT BE EXACT. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE COMMENCING WITH THE WORK.

E. DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON DRAWINGS.

F. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

G. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE AND ADJACENT PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR LOADS DURING CONSTRUCTION OR CAUSED BY REMOVAL OF CAPACITY TO SUPPORT DEAD AND/OR LIVE LOADS BY DEMOLITION, SEQUENCING OR OTHER CONSTRUCTION OPERATIONS, ETC.

H. ASTM SPECIFICATIONS NOTED ON THE DRAWINGS SHALL BE THE LATEST REVISION.

I. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PORTION OF THE WORK, SUCH DETAILS SHALL BE THE SAME AS FOR SIMILAR WORK SHOWN ON THE DRAWINGS.

J. NO DEBRIS SHALL BE ALLOWED TO ENTER THE WATER DURING THE CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL PROVIDE DEBRIS BOOMS, SILT CURTAINS OR OTHER SUITABLE MEANS OF CAPTURING DEBRIS FROM CONSTRUCTION AND DEMOLITION OPERATIONS. THESE FACILITIES SHALL BE IN PLACE PRIOR TO STARTING DEMOLITION WORK. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS REGARDING THE PROTECTION AND FILTERING OF FOREIGN DEBRIS FROM THE WATER. ALL CONSTRUCTION DEBRIS SHALL BE CONTAINED AND REMOVED FROM THE SITE.

K. PILE DRILLING AND DRIVING EQUIPMENT SHALL BE CAPABLE OF INSTALLING THE PILES TO THE SPECIFIED TIP ELEVATIONS. VISUAL MONITORING OF VIBRATIONS DURING PILE INSTALLATION SHALL BE PERFORMED BY THE CONTRACTOR WHERE SUCH VIBRATIONS WOULD BE DETRIMENTAL TO ADJACENT STRUCTURES. CONTRACTOR SHALL PROTECT ADJACENT STRUCTURES FROM DAMAGE DUE TO DRILLING AND PILE DRIVING OPERATIONS.

2. DESIGN BASIS

A. ALL WORK SHOWN ON DRAWINGS AND DESCRIBED IN SPECIFICATIONS SHALL CONFORM TO THE MINIMUM STANDARDS OF THE 2013 CALIFORNIA BUILDING CODE.

B. STRUCTURAL DESIGN SHALL BE BASED ON THE APPLICABLE PROVISIONS AND REQUIREMENTS OF THE 2013 CALIFORNIA BUILDING CODE AND ALL CODES AND STANDARDS LISTED IN THESE NOTES AND SPECIFICATIONS.

C. LIVE LOADS:
TRAIL = VEHICLE LOADS: HS-20 OR 250 PSF.

3. CONCRETE

A. CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY AND ARE SUBJECT TO REVIEW AND APPROVAL OF THE ENGINEER.

B. MATERIALS:

1. PORTLAND CEMENT: ASTM C 150, TYPE II
2. AGGREGATE: ASTM C 33, GRANITE OR LIMESTONE

C. SCHEDULE OF STRUCTURAL CONCRETE:

	f'c @28 DAYS psi	CEMENT lb/yd	FLY ASH lb/yd	WATER lb/yd	SLUMP IN.
CAST-IN-PLACE CONCRETE	5,000 MIN	559	99	220	3 TO 4
PRECAST CONCRETE	5,000 MIN	559	99	220	3 TO 4
DRILLED PILES	4,000 MIN	TBD	TBD	TBD	3 TO 4

D. WHERE NEW CONCRETE IS CAST AGAINST EXISTING CONCRETE, THE EXISTING CONCRETE SURFACE SHALL BE ROUGHENED TO A MINIMUM ¼" AMPLITUDE BY SANDBLASTING OR OTHER METHOD SUBJECT TO THE APPROVAL OF THE ENGINEER. THE ROUGHENED SURFACE SHALL BE CLEANED OF ALL LOOSE MATERIAL THAT INTERFERES WITH BONDING OF NEW CONCRETE.

E. MINIMUM CLEAR COVER UNO:
- OVER PRIMARY LONGITUDINAL REINFORCEMENT: 3.0 INCHES (PRECAST = 2.0 INCHES)
- OVER OTHER REINFORCEMENT: 2.5 INCHES (PRECAST = 1.5 INCHES)

F. ALL REINFORCING BARS AND OTHER CONCRETE INSERTS SHALL BE SECURED IN POSITION PRIOR TO PLACING CONCRETE.

G. CONCRETE SHALL BE CURED WITHIN 12 HOURS FOLLOWING COMPLETION OF PLACEMENT BY APPLICATION OF A LIQUID MEMBRANE-FORMING CURING COMPOUND.

H. CONCRETE SHALL BE PLACED IN A CONTINUOUS OPERATION UNTIL THE SECTION IS COMPLETE.

I. DRYING SHRINKAGE OF THE DRYING SHRINKAGE TEST SPECIMEN, AFTER 7 DAYS OF MOIST CURING AND THEN 21 DAYS DRYING, SHALL BE 0.045 TO 0.050%. SEE SPECIFICATIONS.

J. ALL NEW CONCRETE SHALL BE REINFORCED.

K. TREMIE CONCRETE SHALL CONTAIN ANTI-WASHOUT ADMIXTURE.

4. REINFORCING STEEL

A. ALL NEW REINFORCING BARS SHALL BE EPOXY COATED PER ASTM A 775.

B. REINFORCING SHALL CONFORM TO THE FOLLOWING:

LOCATION	TYPE	EPOXY COATED
NONWELDED REINFORCEMENT	A615	YES
WELDED REINFORCEMENT	A706	YES
WELDED WIRE FABRIC	A185	YES

C. DETAIL, FABRICATE, LABEL, SUPPORT, AND SPACE ALL CONCRETE REINFORCEMENT IN ACCORDANCE WITH ACI 315.

D. ALL REINFORCING BAR HOOKS AND BENDS SHALL BE STANDARD HOOKS CONFORMING TO THE PROVISIONS OF THE AMERICAN CONCRETE INSTITUTE (ACI 318-11). ALL BENDS SHALL BE MADE COLD. FIELD BENDING OF REINFORCEMENT IS PROHIBITED.

E. CONTRACTOR SHALL SUBMIT REINFORCING BAR LAYOUTS AND DETAILS FOR APPROVAL PRIOR TO FABRICATION. FABRICATION SHALL BE FROM APPROVED DRAWINGS ONLY.

F. REINFORCING BARS SHALL ONLY BE SPLICED WHERE SHOWN ON THE DRAWINGS.

G. WELDED REINFORCING BAR SPLICES SHALL CONFORM TO THE REQUIREMENTS OF "STRUCTURAL WELDING CODE - REINFORCING STEEL (AWS D1.4)" OF THE AMERICAN WELDING SOCIETY.

4. EPOXY GROUTING

A. WHERE EPOXY EMBEDMENT FOR REINFORCING BARS IS INDICATED ON DRAWINGS OR OTHERWISE USED, CONTRACTOR SHALL USE SIMPSON STRONG-TIE, SET-XP ADHESIVE FOR USE IN CONCRETE. CONTRACTOR MAY SUBMIT OTHER EPOXY SYSTEMS FOR APPROVAL ALONG WITH AN ICBO EVALUATION REPORT FOR THE SPECIFIC PRODUCT.

5. FABRICATED STEEL COMPONENTS

A. ALL STRUCTURAL STEEL SHAPES, PLATES, AND FASTENERS SHALL CONFORM TO ASTM A 36, U.O.N. CONTRACTOR SHALL SUBMIT TO THE HARBOR DISTRICT EVIDENCE OF CONFORMANCE TO THE REFERENCED STANDARD.

B. ALL STEEL FASTENERS SUCH AS NUTS, BOLTS, LAG SCREWS, ETC. SHALL BE HOT-DIP GALVANIZED PER ASTM A 153.

C. STEEL COATING SHALL BE WASSER THREE-COAT SYSTEM OR APPROVED EQUAL. ALL COATING SHALL BE DONE IN THE SHOP AND ONLY AFTER ALL FABRICATION INCLUDING WELDING, DRILLING, CUTTING, ETC. IS COMPLETE. PRIOR TO COATING, ALL SURFACES SHALL BE PREPARED IN ACCORDANCE WITH SSPC-SP10 NEAR WHITE BLAST. CONTRACTOR SHALL CONSULT "WASSER APPLICATION GUIDES" OR A TECHNICAL REPRESENTATIVE FOR SPECIFIC SYSTEM RECOMMENDATIONS. ALL SURFACES MUST BE CLEAN AND DRY BEFORE APPLYING EACH COAT. USE WASSER MC-MIOZINC, OR PROVEN EQUIVALENT PRIMER, 3.0 TO 4.0 MILS DRY FILM THICKNESS (DFT). USE WASSER MC-FERROX B, OR EQUIVALENT, AS INTERMEDIATE COAT, 3.0 TO 5.0 MILS DFT. USE WASSER MC-FERROX A, OR EQUIVALENT, FOR TOPCOAT, 2.5 TO 3.5 MILS DFT.

7. BACKFILL

A. GRAVEL FILL SHALL BE IMPORTED MATERIAL. THE MATERIAL SHALL BE WELL GRADED AND NOT EXHIBIT EXCESSIVE SHRINKAGE OR SWELLING BEHAVIOR WHEN SUBJECTED TO CHANGES IN WATER CONTENT. NO PARTICLES SHALL BE LARGER THAN 4 INCHES IN ANY DIMENSION NOR SMALLER THAN 1-1/2 INCHES IN THE LEAST DIMENSION. CONTRACTOR SHALL CERTIFY THAT THE MATERIAL IS FREE OF CONTAMINANTS. THE APPROVED FILL MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 12 INCHES.

B. AGGREGATE BASE SHALL CONFORM TO CALTRANS CLASS 2 AGGREGATE BASE AND SHALL BE PLACED ACCORDINGLY.

C. FILTER FABRIC SHALL CONSIST OF A NON-WOVEN FABRIC COMPOSED OF A STRONG, ROT-PROOF POLYMETRIC YARN OR FIBER ORIENTED INTO A STABLE NETWORK WHICH RETAINS ITS RELATIVE STRUCTURE DURING HANDLING, PLACEMENT, AND LONG-TERM SERVICE. THE FABRIC SHALL BE EQUALLY DIMENSIONALLY STABLE AND CHEMICALLY INERT TO SEAWATER. THE FABRIC SHALL HAVE COMPLETE RESISTANCE TO DETERIORATION FROM AMBIENT TEMPERATURES, ACID AND ALKALINE CONDITIONS, AND SHALL BE INDESTRUCTIBLE BY MICROORGANISMS AND INSECTS. THE FABRIC SHALL BE RESISTANT TO SHORT-TERM (UNTIL PLACEMENT) DETERIORATION BY ULTRAVIOLET LIGHT OR PROTECTED UNTIL PLACEMENT AS RECOMMENDED BY THE MANUFACTURER SUCH THAT NO DETERIORATION OCCURS. THE FILTER FABRIC SHALL CONFORM TO THE FOLLOWING MINIMUM AVERAGE ROLL VALUES:

PROPERTY	SPECIFICATIONS	TEST METHOD
SPECIFIC GRAVITY	1.2 MINIMUM (MIN)	- -
EQUIVALENT OPENNG SIZE (U.S. STANDARD SIEVE)	80 TO 170	ASTM D 4751
PERMITIVITY	0.4 SEC-1 MIN	ASTM D 4491
GRAB TENSILE STRENGTH	500 LB MIN	ASTM D 4632
GRAB TENSILE ELONGATION	50-100%	ASTM D 4632
PUNCTURE STRENGTH	195 LB MIN	ASTM D 4833
MULLEN BURST	800 PSI MIN	ASTM D 3786

THE FILTER FABRIC SHALL BE PLACED LOOSELY, BEING ALLOWED TO CONFORM TO ANY IRREGULARITIES ALONG ITS LENGTH. THE FABRIC SHALL BE JOINED BY EITHER OVERLAPPING OR SEWING USING A DOUBLE-SEAM-SEWN JOINT. OVERLAPPED JOINTS SHALL HAVE A MINIMUM OVERLAP OF AT LEAST 3 FEET. OVERLAPPED JOINTS SHALL BE SECURED USING METAL PINS. THE PINS SHALL BE 3/16-INCH NOMINAL DIAMETER, 6-INCHES LONG, POINTED AT ONE END, AND FILLED WITH A 1 1/2-INCH WASHER AT THE OTHER END. FABRIC PLACED UNDER WATER SHALL BE WEIGHTED AT THE BOTTOM USING GRAVEL FILL. CONTRACTOR SHALL SUBMIT TO THE HARBOR DISTRICT COMPLETE MANUFACTURER'S SPECIFICATIONS, CERTIFIED TEST DATA, AND SAMPLES FOR REVIEW AND APPROVAL PRIOR TO DELIVERY OF THE MATERIAL TO THE JOB SITE. CONTRACTOR SHALL ALSO SUBMIT TO THE HARBOR DISTRICT A PROPOSED DETAILED METHOD OF FILTER FABRIC PLACEMENT.

No.	Revision	Drawn	Job Manager	Project Director	Date
-	-	-			-

Drawing Revisions
Note: * indicates signatures on original issue of drawing or last revision of drawing

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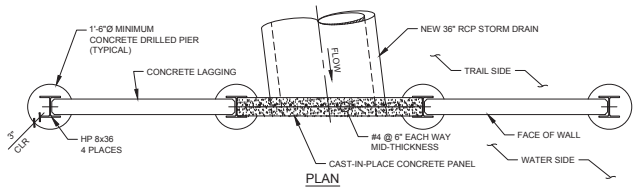
Client: SAN MATEO COUNTY HARBOR DISTRICT
Project: PILLAR POINT HARBOR
WEST TRAIL CULVERT REPAIR
Title: STRUCTURAL GENERAL NOTES

Scale	AS SHOWN	Project No.	8411197
Drawn	PS	Designer	CSS
Drafting Check	SD	Design Check	CL
Approved (Project Director)			
Date	JULY 2014		

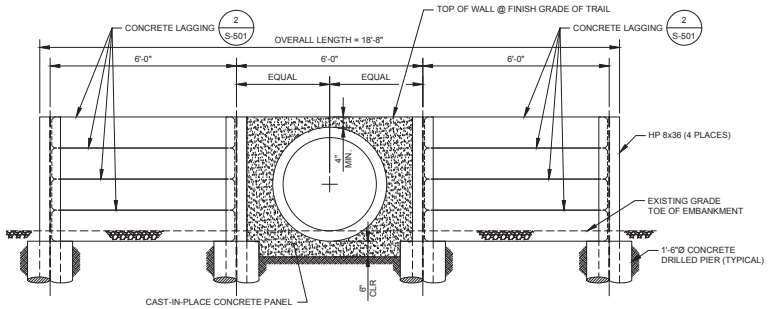
This Drawing must not be used for Construction unless Signed and Sealed as Approved

Drawing No. S-001
Sht 6 of 7
Original Size ANSI D
Rev.

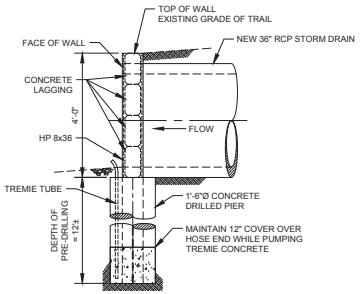
Plot Date: 11 July 2014 - 10:30 AM Plotted by: Pat Scheetz Cad File No: N:\US\San Francisco\Projects\10449 San Mateo County Harbor District\8411197 SMCHD - West Trail Culvert Repairs\06-CAD\Sheets\8411197 S-001.dwg



PLAN



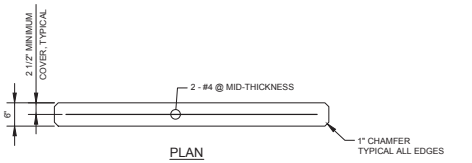
ELEVATION



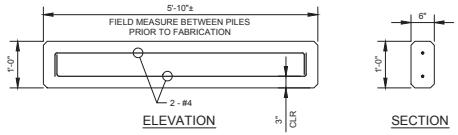
SECTION

1 S-501 SOLDIER PILE WALL AND STORM DRAIN PIPE DETAIL

1/2"=1'-0" (0, 1', 2', 4')



PLAN



ELEVATION SECTION

2 S-501 CONCRETE LAGGING DETAIL

3/4"=1'-0" (0, 1', 2', 3')

SHEET NOTES

1. ALL EXPOSED CONCRETE SHALL HAVE SMOOTH-FORMED FINISH. SEE SPECIFICATIONS.
2. ALL NEW REINFORCEMENT SHALL BE ASTM A615, GRADE 60, EPOXY COATED PER ASTM A775.

No.	Revision	Drawn	Job Manager	Project Director	Date
-	-	-			-

Drawing Revisions
Note: * indicates signatures on original issue of drawing or last revision of drawing

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Client: SAN MATEO COUNTY HARBOR DISTRICT
Project: PILLAR POINT HARBOR
WEST TRAIL CULVERT REPAIR

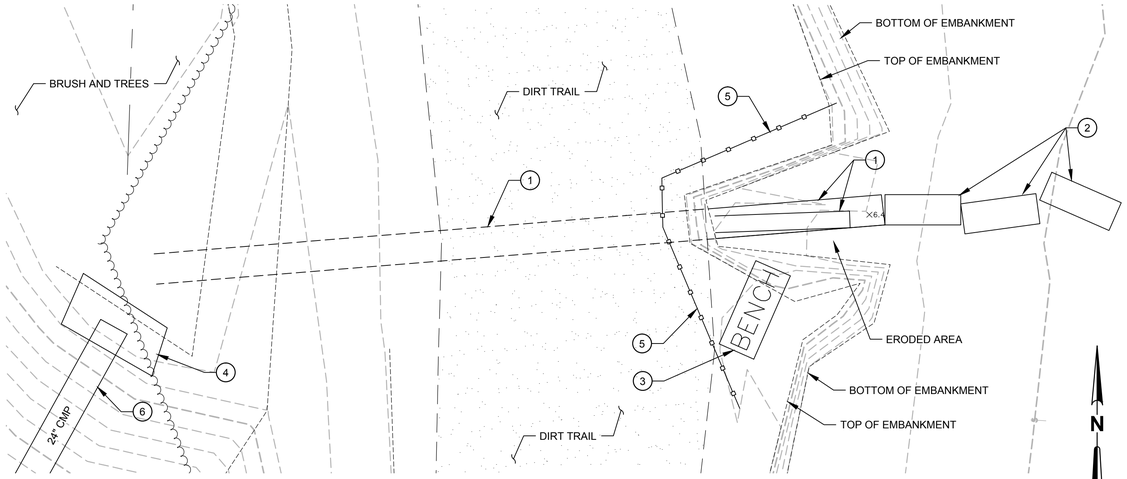
Title: STRUCTURAL SECTIONS AND DETAILS

Scale	AS SHOWN	Project No.	8411197
Drawn	PS	Designer	CSS
Drafting Check	SD	Design Check	CL
Approved (Project Director)			
Date	JULY 2014		

This Drawing must not be used for Construction unless Signed and Sealed as Approved

Drawing No. S-501 Sht 7 of 7
Original Size ANSI D
Rev.

Plot Date: 11 July 2014 - 10:37 AM Plotted by: Pat Scheetz Cad File No: N:\US\San Francisco\Projects\10449 San Mateo County Harbor District\8411197 SMCHD - West Trail Culvert Repairs\06-CAD\Sheets\8411197 S-501.dwg

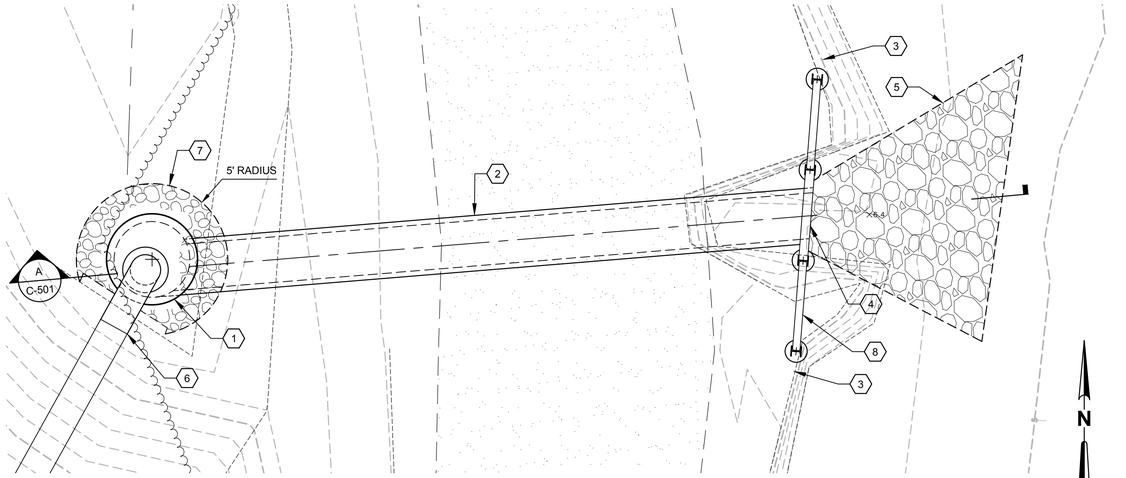


1 C-501 **SITE DEMOLITION PLAN**

1"=5' 0 5' 10'

DEMOLITION NOTES

1. REMOVE AND DISPOSE OF EXISTING BURIED 18" RCP AND 12" CMP PIPES AND SEPARATED PIPE SEGMENTS. (APPROXIMATELY 48 LF EACH)
2. REMOVE AND DISPOSE OF EXISTING EXPOSED AND SEPARATED 18" RCP PIPE SEGMENTS.
3. EXISTING BENCH AND CONCRETE FOUNDATION TO BE REMOVED. SALVAGE BENCH AND RETURN TO SAN MATEO COUNTY HARBOR DISTRICT.
4. EXISTING CONCRETE SLAB AT OUTFALL OF EXISTING 24" CMP TO REMAIN IN PLACE.
5. REMOVE AND DISPOSE OF EXISTING CONSTRUCTION FENCE FABRIC AND METAL STAKES.
6. EXISTING 24" CMP AT GRADE TO REMAIN IN PLACE.

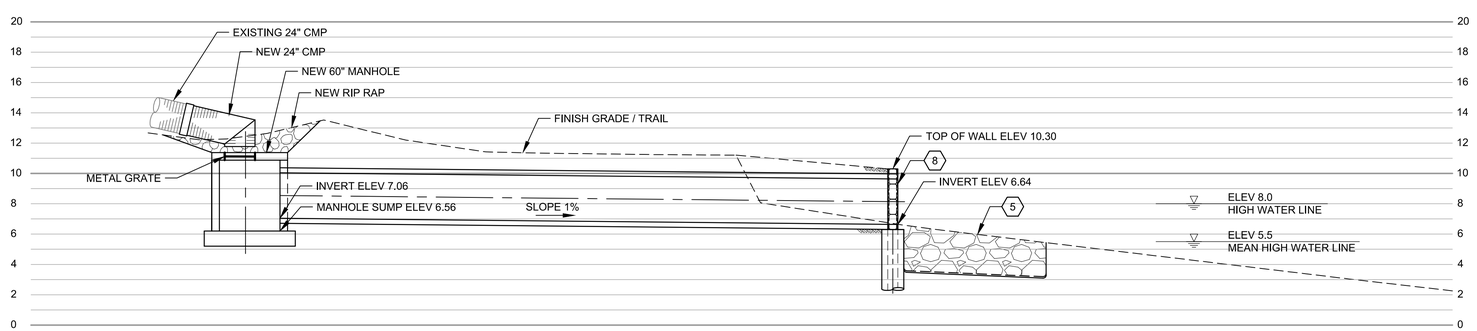


2 C-501 **IMPROVEMENTS SITE PLAN**

1"=5' 0 5' 10'

KEYNOTES

1. INSTALL 60 INCH ID FLAT TOP MANHOLE WITH 36 INCH DIAMETER ROUND GRATED LID. CONTRACTOR SHALL POTHOLE TO CONFIRM ORIENTATION AND INVERT ELEVATIONS OF EXISTING 18 INCH RCP AND 12 INCH CMP. PROVIDE EXISTING PIPE INFORMATION TO ENGINEER TO CONFIRM MANHOLE SIZE AND PIPE CONNECTIONS PRIOR TO ORDERING MANHOLE.
2. INSTALL 42 LF 36 INCH RCP FROM NEW MANHOLE ALONG ROUTE OF EXISTING 18 INCH RCP AND 12 INCH CMP (TO BE REMOVED). TRENCH DIMENSIONS AND BEDDING SHALL BE IN ACCORDANCE WITH SAN MATEO DPW STANDARD PLAN W-10. TRENCH BACKFILL SHALL BE CLSM AND SHALL BE 6" DEEP OVER PIPE.
3. RECOUNTOUR EMBANKMENT FACE AT NEW WALL ENDS TO MATCH AND CONFORM TO EXISTING GRADE.
4. INSTALL TIDEFLEX SLIP-IN STYLE INLINE CHECKMATE CHECK VALVE OR APPROVED EQUAL.
5. INSTALL 1/4 TON ROCK APRON AT PIPE OUTFALL IN ACCORDANCE WITH CALTRANS SPECIFICATION SECTION 72 PLACEMENT METHOD B. 1/4 TON ROCK DEPTH SHALL BE 3.3 FEET WITH 1.25 FEET OF UNDERLYING BACKING NO. 2 AND TYPE A RSP FABRIC. APRON SHALL EXTEND TO THE MEAN HIGH WATER LINE AT ELEVATION 5.5.
6. CLAMP 3 LF OF 24 INCH CMP AND 90 DEGREE CMP ELBOW TO EXISTING 24 INCH CMP. NEW SECTION AND ELBOW SHALL BE REMOVABLE FOR MANHOLE MAINTENANCE. ELBOW SHALL BE CENTERED OVER NEW ROUND GRATED LID OF NEW MANHOLE.
7. INSTALL BACKING NO. 2 RIP RAP PROTECTION IN A 5' RADIUS FROM THE CENTER OF THE NEW MANHOLE. DEPTH SHALL BE 1.25 FEET AND RSP FABRIC SHALL BE TYPE A. RIP RAP SHALL BE PLACED IN ACCORDANCE WITH CALTRANS SPECIFICATION SECTION 72 PLACEMENT METHOD B.
8. INSTALL SOLDIER PILE/CONCRETE LAGGING WALL AS SHOWN ON SHEET S-501.



A C-501 **SECTION**

1"=5' HORIZONTAL 1"=5' VERTICAL

1"=5' 0 5' 10'

No.	Revision	Drawn	Job Manager	Project Director	Date
-	-	-			-

Drawing Revisions

Note: * indicates signatures on original issue of drawing or last revision of drawing

PROFESSIONAL ENGINEER — MARSHALL MADRONE — No. C82941 Exp. 9/30/14 — CIVIL — STATE OF CALIFORNIA

100% SUBMITTAL

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Client **SAN MATEO COUNTY HARBOR DISTRICT**

Project **PILLAR POINT HARBOR**
WEST TRAIL CULVERT REPAIR

Title **CIVIL DETAILS**

Scale	AS SHOWN	Project No.	8411197
Drawn	PS	Designer	MM
Drafting Check	SD	Design Check	CSS
Approved (Project Director)			
Date	SEPTEMBER 2014		

This Drawing must not be used for Construction unless Signed and Sealed as Approved

Drawing No. **C-501** Sht 5 of 7

Original Size **ANSI D**

Rev.