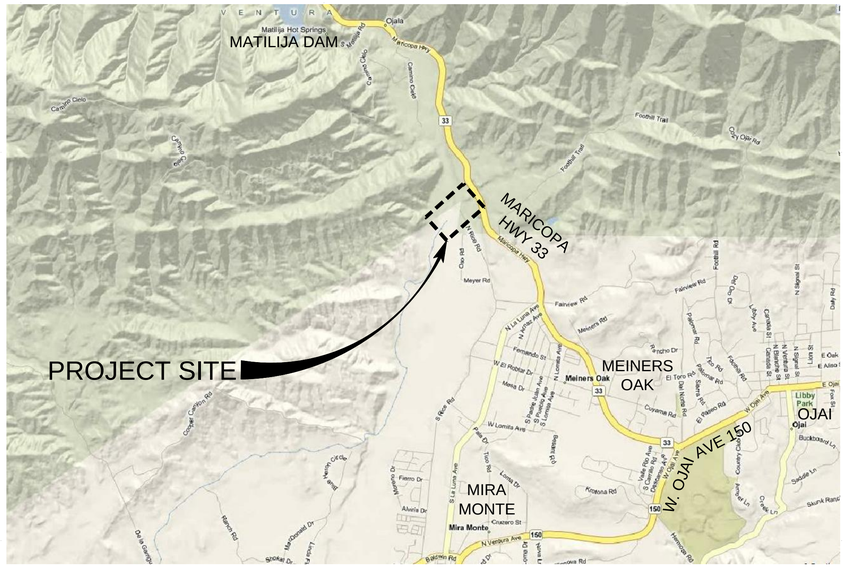
MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

VICINITY MAP

NTS



PROJECT LOCATION

NTS

DIGALERT® 811

VENTURA COUNTY WATERSHED PROTECTION DISTRICT

APPROVED BY: _____ DATE: _____

JEFF PRATT, DIRECTOR

CASITAS MUNICIPAL WATER DISTRICT

APPROVED BY: _____ DATE: _____

XXXX XXXXXXXX, DIRECTOR

UNITED STATES BUREAU OF RECLAMATION

APPROVED BY: _____ DATE: _____

XXXX XXXXXXXX, DIRECTOR

90% DESIGN SUBMITTAL
NOT FOR CONSTRUCTION

SHEET INDEX — SHEET NO.

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

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PREPARED UNDER THE DIRECT SUPERVISION OF:
DISTRICT ENGINEER
DISTRICT FILE NO.

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO.

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

FILE NAME: T22635C001TL.DWG

SCALE: AS SHOWN

SHEET: C-001

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA
ROBLES DIVERSION DAM RESTORATION
TITLE SHEET

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GENERAL NOTES

1. EXISTING UTILITIES INFORMATION WAS ASSEMBLED FROM EXISTING UTILITY COMPANY MAPS. THE LOCATION AND ELEVATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE BASED ON THE BEST AVAILABLE INFORMATION. UTILITY INFORMATION IS NOT INTENDED TO BE EXACT OR COMPLETE. NEITHER THE USACE NOR THE ENGINEER CAN GUARANTEE THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. THE CONTRACTOR SHALL CONTACT 1-800-227-2600 AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION WORK TO ALLOW UTILITY OPERATORS TO VERIFY AND MARK LOCATIONS OF EXISTING FACILITIES. THE CONTRACTOR SHALL PROTECT UTILITIES NEAR CONSTRUCTION ACTIVITIES AND COORDINATE WITH UTILITY COMPANIES FOR REMOVAL OR RELOCATION OF INTERFERING FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR COMPARING THE PLANS TO EXISTING CONDITIONS AND FOR VERIFYING ACTUAL FIELD CONDITIONS. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES IN PLACE, UNLESS OTHERWISE NOTED OR SPECIFIED.
2. REFERENCE DRAWINGS LISTED ON THE PLANS ARE AVAILABLE TO THE CONTRACTOR (SEE SPECIFICATIONS). THESE REFERENCE DOCUMENTS ARE NOT CONSIDERED EXHAUSTIVE AND COMPLETE, AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT THOROUGH AND COMPLETE RESEARCH ON EXISTING CONDITIONS PRIOR TO COMMENCING WORK. THE REFERENCED INFORMATION IS PROVIDED FOR GENERAL GUIDANCE AND IS NOT A PART OF THE CONSTRUCTION DOCUMENTS OR CONTRACT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE ACCURACY AND COMPLETENESS OF THIS INFORMATION.
3. CONTRACTOR SHALL VERIFY SITE CONDITIONS AND LOCATION AND SIZE OF UNDERGROUND UTILITIES AS SHOWN ON THE DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCING WORK.
4. ALL FEES AND PERMITS SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR.
5. FOR BORING LOGS AND OTHER GEOTECHNICAL INFORMATION, SEE PROJECT GEOTECHNICAL REPORTS BY AMEC GEOMATRIX, INC. DATED MARCH 30, 2009. CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL GEOTECHNICAL REPORT UPDATES.
6. NEITHER THE USACE NOR THE ENGINEER WARRANT OR GUARANTEE THE RESULTS OF ANY GEOTECHNICAL OR SUBSURFACE INVESTIGATIONS AS BEING REPRESENTATIVE OF THE SITE, BEYOND THE ACTUAL LOCATION OF THE TEST SPECIMEN(S) LOCATION AND ASSUME NO RESPONSIBILITY FOR THE MANNER IN WHICH THIS INFORMATION MAY BE USED OR THE CONCLUSIONS REACHED IN UTILIZING THE INFORMATION CONTAINED IN THE CONTRACT DOCUMENTS. FURTHER, THE USACE AND THE ENGINEER NEITHER WARRANT NOR GUARANTEE THE CONCLUSIONS REACHED, RECOMMENDATIONS MADE OR TEST RESULTS PRESENTED AS PART OF THE GEOTECHNICAL OR SUBSURFACE INVESTIGATION AS BEING REPRESENTATIVE OF THE ENTIRE SITE. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO SUPPLEMENT ANY INFORMATION PROVIDED WITH ADDITIONAL SUBSURFACE INVESTIGATIONS AND TESTING, AT THEIR EXPENSE, IN ORDER TO ASSURE THE INFORMATION PROVIDED IN THE CONSTRUCTION DOCUMENTS IS REPRESENTATIVE OF THE CONDITIONS TO BE ENCOUNTERED WITHIN THE LIMITS OF THE PROJECT AT THE TIME OF CONSTRUCTION. GEOTECHNICAL OR SUBSURFACE INFORMATION REFERENCED IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND IS NOT TO BE CONSIDERED A PART OF THE CONSTRUCTION DOCUMENTS OR CONTRACT.
7. CONTRACTOR IS ADVISED ADDITIONAL WORK BY OTHER CONTRACTORS WILL TAKE PLACE WITHIN AND ADJACENT TO THE PROJECT LIMITS. CONTRACTOR IS TO COORDINATE AND COOPERATE WITH OTHER CONTRACTORS AND GOVERNING AGENCIES AS REQUIRED. IF REQUESTED, THE CONTRACTOR SHALL FURNISH WRITTEN EVIDENCE THAT THE CONTRACTOR HAS MADE THE NECESSARY ARRANGEMENTS WITH THE OTHER CONTRACTORS FOR THE SUCCESSFUL PROSECUTION OF THE WORK FOR THE BENEFIT OF ALL PARTIES. EACH CONTRACTOR SHALL ASSUME ALL LIABILITY, FINANCIAL OR OTHERWISE, IN CONJUNCTION WITH ITS CONTRACT AND SHALL INDEMNIFY, DEFEND, AND HOLD HARMLESS THE USACE AND ENGINEER FROM ANY AND ALL DAMAGES OR CLAIMS THAT MAY ARISE DUE TO INCONVENIENCE, DELAY OR LOSS EXPERIENCED BY IT BECAUSE OF THE PRESENCE AND OPERATIONS OF OTHER CONTRACTORS WORKING WITHIN THE LIMITS OF THE SAME PROJECT. THE CONTRACTOR SHALL ARRANGE ITS WORK AND SHALL PLACE AND DISPOSE OF MATERIALS SO AS NOT TO INTERFERE WITH THE OPERATIONS OF OTHER CONTRACTORS WITHIN THE LIMITS OF THE SAME OR ADJOINING PROJECTS. THE CONTRACTOR SHALL MATCH ITS WORK WITH THAT OF OTHER CONTRACTORS IN AN ACCEPTABLE MANNER AND SHALL PERFORM ITS WORK IN PROPER SEQUENCE TO THAT OF THE OTHER CONTRACTORS.
8. SITE SECURITY DURING CONSTRUCTION SHOULD CONSIST OF TEMPORARY FENCING TO BE INSTALLED AND MAINTAINED BY THE CONTRACTOR DURING THE ENTIRE CONSTRUCTION OF THE PROJECT.

ENVIRONMENTAL CONTROL AND MAINTENANCE OF SITE CONDITIONS

(THE FOLLOWING NOTES APPLY TO ALL PHASES OF THE PROJECT)

1. THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL AS REQUIRED THROUGHOUT CONSTRUCTION AND INSPECT EROSION CONTROLS ON A MINIMUM WEEKLY BASIS AND AFTER ANY RAINFALL EVENT.
2. PRIOR TO THE BEGINNING OF ANY CONSTRUCTION PHASE THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL AND MAKE ANY REPAIRS REQUIRED AS WELL AS CONFIRM THE INSTALLATION OF ANY ADDITIONAL EROSION CONTROL WHICH IS SPECIFIC TO ANY CONSTRUCTION PHASE.
3. THE CONTRACTOR'S STAGING AND STORAGE AREA SHALL CONFORM TO ALL EROSION CONTROL DETAILS AND SPECIFICATIONS. IF TEMPORARY DRAINAGE IS REQUIRED WITHIN THE STAGING AND STORAGE AREA IT SHALL CONFORM TO ALL EROSION CONTROL SPECIFICATIONS AND DETAILS AND APPROVED BY THE GOVERNING AGENCY PRIOR TO INSTALLATION.
4. ALL SOILS STORED WITHIN THE CONTRACTOR STAGING AND STORAGE AREA SHALL BE SURROUNDED BY A SINGLE ROW OF STAKED HAY BALES AND COVERED TO PREVENT WIND EROSION.
5. ALL TREE PROTECTION SHALL BE MAINTAINED AND INSPECTED THROUGHOUT CONSTRUCTION.
6. ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED AS SOON AS POSSIBLE. CONTRACTOR SHALL WATER AS REQUIRED BY CONTRACT DOCUMENTS TO ASSURE PROPER GROWTH.
7. PRECAUTIONS SHALL BE TAKEN TO PREVENT AND CONTROL DUST FROM CONSTRUCTION OPERATIONS BECOMING A NUISANCE TO ADJACENT AREAS. SURROUNDING STREETS AND WALKWAYS SHALL BE SWEPT AND WASHED CLEAN ON A DAILY BASIS OR AS DIRECTED BY GOVERNING AGENCY. STOCKPILES AND UNSTABILIZED SURFACES SHALL BE KEPT MOIST.
8. CONTRACTOR SHALL MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
9. UPON COMPLETION OF TRENCH BACKFILLING OR OTHER INDIVIDUAL ITEMS OF CONSTRUCTION, ALL SURPLUS MATERIALS AND EQUIPMENT NO LONGER NEEDED SHALL BE IMMEDIATELY REMOVED, LEAVING THE CONSTRUCTION SITE AND SURROUNDINGS FREE OF ANY OBSTRUCTION AND CLEAN.
10. AFTER WORK IS COMPLETE, SEWERS, DRAINS, MANHOLES, CATCH BASINS AND OTHER STRUCTURES SHALL BE CAREFULLY CLEANED OF DIRT, BROKEN MASONARY, MORTAR AND OTHER DEBRIS AND LEFT READY FOR USE.

CONSTRUCTION PHASING

PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL:

1. INSTALL VERTICAL AND HORIZONTAL SURVEY CONTROL IN ACCORDANCE WITH THE SPECIFICATIONS. CONTRACTOR SHALL PROVIDE LOCATIONS AND ELEVATIONS OF ALL SURVEY CONTROL IN A ELECTRONIC CAD FORMAT.
2. SUBMIT PLAN OF PROPOSED CONTRACTOR STAGING AND STORAGE AREA FOR REVIEW AND APPROVAL BY GOVERNING AGENCY.
3. SUBMIT FOR APPROVAL A TRAFFIC PLAN SHOWING HOW ALL TRUCK MOVEMENTS TO AND FROM THE SITE ARE TO BE ACCOMPLISHED.
4. REVIEW ALL EXISTING UTILITY INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS AND CONDUCT ALL OTHER ADDITIONAL RESEARCH REQUIRED TO CONFIRM EXISTING UTILITIES. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED.
5. MARK OUT ALL EXISTING UTILITIES ON THE SITE AND COORDINATE WITH EACH UTILITY OWNER OR OPERATOR ON THE WORK THAT WILL AFFECT EACH UTILITY. THE GOVERNING AGENCY SHALL BE NOTIFIED THAT THE UTILITY OWNERS/OPERATORS HAVE BEEN CONTACTED AND SHALL BE PRESENT FOR ALL SITE MEETINGS.
6. SUBMIT TO THE GOVERNING AGENCY COMPLETE PHASING PLANS FOR REVIEW AND APPROVAL.

SITE PREPARATION AND DEMOLITION

1. CONTRACTOR SHALL DISPOSE OF ALL DEMOLISHED MATERIAL AND DEBRIS IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS HAVING JURISDICTION.
2. CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION ANY AREAS ADJACENT TO AND OUTSIDE THE LIMIT OF WORK WHICH ARE DISTURBED DURING CONSTRUCTION, AT THE CONTRACTOR'S OWN EXPENSE.
3. CONTRACTOR SHALL SAW CUT PAVEMENT TO PROVIDE A STRAIGHT, VERTICAL FACE WHERE PAVEMENT TO BE REMOVED ABUTS PAVEMENT WHICH IS TO REMAIN.
4. CONTRACTOR SHALL STOCKPILE ALL STRIPPED TOPSOIL OFFSITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SECURE A SITE AND PAY ALL APPLICABLE FEES OR RENT AT NO ADDITIONAL COST TO THE USACE.
5. UTILITY SERVICES SHALL BE MAINTAINED TO ALL BUILDINGS BEING OCCUPIED AT ALL TIMES.
6. CONTRACTOR SHALL PROVIDE ADEQUATE DRAINAGE AT ALL TIMES WITHIN THE LIMIT OF WORK. THERE SHALL BE NO PONDING OF WATER OR EROSION OF LANDSCAPED AREAS AT ANY TIME.
7. EXISTING UTILITIES, INDICATED TO REMAIN, SHALL BE PROTECTED IN PLACE, AND MAINTAINED IN GOOD WORKING CONDITION.

LAYOUT

1. THE CONTRACTOR SHALL MAINTAIN ALL HORIZONTAL AND VERTICAL CONTROL THROUGHOUT CONSTRUCTION. ALL INITIAL CONTROL, AS WELL AS ANY ADDITIONAL CONTROL OR RE-ESTABLISHING OF DISTURBED CONTROL, SHALL BE PROVIDED TO THE GOVERNING AGENCY IN ELECTRONIC CAD FORMAT WITHIN 24 HOURS OF THE COMPLETION OF THE WORK. SEE SPECIFICATIONS FOR DETAILED REQUIREMENTS RELATED TO ESTABLISHING AND MAINTIANING SURVEY AND LAYOUT CONTROL ON THE SITE.
2. LABELED DIMENSIONS SUPERSEDE SCALED DIMENSIONS FOR ALL LAYOUT WORK.
3. AT ALL LOCATIONS, STATION AND OFFSETS ARE GIVEN TO REVEAL SIDE OF CURB OR EDGE OF PAVEMENT AS APPROPRIATE.
4. ALL LINES ARE PARALLEL OR PERPENDICULAR UNLESS OTHERWISE INDICATED.
5. ALL HORIZONTAL DRAWING DIMENSIONS SHALL BE MEASURED IN A TRUE VERTICAL PLANE, EXCEPT AS OTHERWISE NOTED.

GRADING

1. THE CONTRACTOR SHALL PROVIDE UNIFORM SLOPE BETWEEN SPOT GRADES AND CONTOURS.
2. THE CONTRACTOR SHALL ADJUST ALL EXISTING UTILITY CASTINGS TO LINE AND GRADE, UNLESS OTHERWISED NOTED.
3. THE CONTRACTOR SHALL CRETE POSITIVE DRAINING SLOPES AS NEEDED.

UTILITY

1. CONTRACTOR SHALL VERIFY LOCATIONS, ELEVATIONS AND SIZES OF ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. CALL 48-HOUR DIG ALERT, A MINIMUM OF TWO (2) FULL WORKING DAYS PRIOR TO EXCAVATING.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING SEWER AND STORM DRAIN ELEVATIONS WHICH MAY REQUIRE POT-HOLING.
3. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS.
4. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL UTILITY WORK WITH THE APPROPRIATE GOVERNING AGENCIES.

STRUCTURAL NOTES

1. REINFORCED CONCRETE MEMBERS ARE DESIGNED IN ACCORDANCE WITH "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", AMERICAN CONCRETE INSTITUTE, (ACI 318M) STRENGTH DESIGN METHOD.
2. STRUCTURAL STEEL MEMBERS ARE DESIGNED IN ACCORDANCE WITH "MANUAL OF STEEL CONSTRUCTION, ALLOWABLE STRESS DESIGN", AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
3. DESIGN LOADS:

DEAD LOADS/MATERIAL DENSITIES	
NORMAL WEIGHT CONCRETE	150 PCF
STRUCTURAL STEEL	490 PCF
BACKFILLED SOIL	120 PCF
WATER AND BUOYANCY	62.4 PCF
ALUMINUM	170 PCF
VEHICULAR LIVE LOADS:	AASHTO HS-20 VEHICLE
	AASHTO HS-25 VEHICLE

4. FOR GEOTECHNICAL DATA, SEE PROJECT GEOTECHNICAL REPORTS FROM AMEC GEOMATRIX, INC. DATED MARCH 30, 2009.
5. ALL DIMENSIONS TO REINFORCING SHOWN ON THE DRAWINGS ARE TO CENTERLINES OF BARS UNLESS OTHERWISE NOTED.

FOUNDATIONS:

1. ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER PRIOR TO ANY CONSTRUCTION OR BACKFILL.
2. BACKFILL SHALL BE PLACED AND COMPACTED ON SIDES OF STRUCTURES SIMULTANEOUSLY IN ACCORDANCE WITH THE SPECIFICATIONS.
3. TOP OF ROCK ELEVATION IS DEFINED BY THE GEOTECHNICAL DATA REPORT AT DISCRETE BORING LOCATIONS ONLY.

CONCRETE

1. STRUCTURAL CONCRETE, INCLUDING ALL PRECAST COMPONENTS, SHALL REFER TO SHEET S-001 AND TO THE REQUIREMENTS OF SPECIFICATION 03310.
2. PROVIDE A 3/4" CHAMFER AT ALL EXPOSED CONCRETE EDGES UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
3. CONCRETE WORK SHALL BE COORDINATED AND VERIFIED WITH ALL OTHER WORK TO ENSURE PROPER PROVISIONS FOR DOWELS, INSERTS, EMBEDMENTS, PIPING AND MANHOLE REQUIREMENTS PRIOR TO CONCRETE PLACEMENT.
4. CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS SHALL NOT BE OMITTED WITHOUT PRIOR APPROVAL.
5. CONSTRUCTION JOINTS, IN ADDITION TO THOSE SHOWN ON THE DRAWINGS, SHALL NOT BE PERMITTED UNLESS ACCEPTED IN WRITING BY THE GOVERNING AGENCY.

REINFORCEMENT

1. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60 UNLESS OTHERWISE NOTED.
2. WELDED BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM, A706, GRADE 60.
3. EPOXY-COATED REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A775.
4. THE MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL REFER TO SHEET S-001.
5. SEE STRUCTURAL SPECIFICATIONS FOR SPECIFIC REINFORCEMENT GUIDELINES
6. BARS SHALL BE MECHANICALLY SPLICED WHERE INDICATED ON THE DRAWINGS AND AS OTHERWISE REQUIRED TO ACCOMMODATE CONSTRUCTION SEQUENCING. MECHANICAL SPLICES SHALL DEVELOP 125% OF THE YIELD STRENGTH OF THE BAR.
7. MECHANICAL SPLICES SHALL BE STAGGERED A MINIMUM OF 12" ADJACENT BARS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STREEL FOR BUILDINGS AND THE CODE OF STANDARD PRACTICE FOR BUILDING.
2. ALL STRUCTURAL STEEL SHAPES, PLATES AND BARS SHALL CONFORM TO ASTM A36, YIELD STRENGTH 36 KSI, UNLESS OTHERWISE NOTED. ALL TUBES SHALL CONFORM TO ASTM A500 COLD FORMED, ASTM A501 HOT FORMED, YIELD STRENGTH 50 KSI.
3. ALL WELDING SHALL CONFORM TO ANSI/AWS D1.1-90 "STRUCTURAL WELDING CODE".
4. ALL WELDING SHALL BE DONE BY APPROVED CERTIFIED WELDERS WITH E70XX ELECTRODES. WELDS SHALL DEVELOP THE FULL STRENGTH OF THE MATERIALS BEING CONNECTED UNLESS NOTED OTHERWISE. FILLET WELDS SHALL BE A MINIMUM OF 5mm.
5. ALL BOLTS AND RELATED HARDWARE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325 AND SHALL BE IN STANDARD HOLES UNLESS OTHERWISE NOTED.
6. ALL STEEL TO BE INSTALLED IN THE UTILITY CHASE, SHALL BE PREPARED AND FINISHED IN ACCORDANCE WITH SPECIFICATION 05501.
7. ALL ANCHOR BOLTS AND RELATED HARDWARE SHALL BE ASTM F1554, YIELD STRENGTH 55KSI, UNLESS OTHERWISE NOTED.
8. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED.

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	KIPS	KILOPOUNDS PER SQUARE INCH
ABAND.	ABANDONED	LBS	POUNDS
ABC	AGGREGATE BASE COURSE	LF	LINEAR FEET
AC	ASPHALTIC CONCRETE	MAX	MAXIMUM
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	MH	MANHOLE
		MIN	MINIMUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MWD	METROPOLITAN WATER DISTRICT
		N	NORTH, NORTHING
APPROX.	APPROXIMATE	NAD	NORTH AMERICAN DATUM
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS	NAVD	NORTH AMERICAN VERTICAL DATUM
		NTS	NOT TO SCALE
AVE	AVENUE	OC	ON CENTER
AWS	AMERICAN WELDING SOCIETY	PCF	POUNDS PER CUBIC FOOT
BLDG	BUILDING	PED	PEDESTRIAN
CF	CUBIC FEET	PERF.	PERFORATED
CFS	CUBIC FEET PER SECOND	PI	POINT OF INTERSECTION
CH	CHANNEL	PIP	PROTECT IN PLACE
C.J.	CONSTRUCTION JOINT	PROP	PROPOSED
CL	CENTER LINE	PSI	POUNDS PER SQUARE INCH
CLR	CLEAR	PVC	POLYVINYL CHLORIDE
CMP	CORRUGATED METAL PIPE	R	RADIUS
COE	CORPS OF ENGINEERS	RCP	REINFORCED CONCRETE PIPE
CONC	CONCRETE	RD	ROAD
CONST.	CONSTRUCT	RET	RETAINING
CY	CUBIC YARD	ROW	RIGHT-OF-WAY
DIA	DIAMETER	S	SOUTH
DR	DRIVE	SD	STORM DRAIN
E	EAST, EASTING	SDMH	STORM DRAIN MANHOLE
EA	EACH	SF	SQUARE FEET
EG	EXISTING GRADE	SHT	SHEET
EL	ELEVATION	SS	SANITARY SEWER
EX	EXISTING	STA	STATION
EOP	EDGE OF PAVEMENT	STD	STANDARD
FG	FINISH GRADE	STR	STRUCTURE
FL	FLOWLINE	TBD	TO BE DETERMINED
FS	FINISH SURFACE	TF	TOP OF FOOTING
FT	FEET	TOB	TOP OF BANK
FWY	FREEWAY	TW	TOP OF WALL
GALV	GALVANIZED	TYP	TYPICAL
GB	GRADE BREAK	UG	UNDERGROUND
HDPE	HIGH DENSITY POLYETHYLENE PIPE	U.S.	UNITED STATES
		USACE	UNITED STATES ARMY CORP OF ENGINEERS
HOR	HORIZONTAL	VERT	VERTICAL
HT	HEIGHT	VLF	VERTICAL LINEAR FEET
INV	INVERT ELEVATION	W	WEST
		WS	WATER SURFACE

LEGEND & SYMBOLS

- G — GAS
- IRR — IRRIGATION
- UT — UNDERGROUND TELEPHONE
- UE — UNDERGROUND ELECTRIC
- W — WATER
- SD — STORM DRAIN
- SS — SANITARY SEWER
- CENTERLINE
- EXISTING
- ABANDONED IN PLACE
- CONTOUR GRADE LINE
- RIP-RAP
- PROP. CONCRETE
- SOIL
- CLASS II PERMEABLE MATERIAL
- CL II BASE
- GRAVEL
- FILL
- WATER SURFACE
- SLOPE
- TMH TELEPHONE MANHOLE
- CENTERLINE
- FIRE HYDRANT
- EMH ELECTRICAL MANHOLE
- SDMH STORM DRAIN MANHOLE
- 985 EXISTING ELEVATION
- SSMH SANITARY SEWER MANHOLE

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VENTURA COUNTY, CALIFORNIA
ROBLES DIVERSION DAM RESTORATION

NOTES, ABBREVIATIONS & SYMBOLS

DESIGNED BY:	A.M.T.
DRAWN BY:	A.G.
CHECKED BY:	Y.H.C.
APPROVED:	DATE:
CHIEF, ENGINEERING DIVISION	
FILE NAME: T22635C002NT.DWG	

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

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PREPARED UNDER THE DIRECT SUPERVISION OF:
DISTRICT ENGINEER
DISTRICT FILE NO.

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SCALE: AS SHOWN
SHEET: C-002

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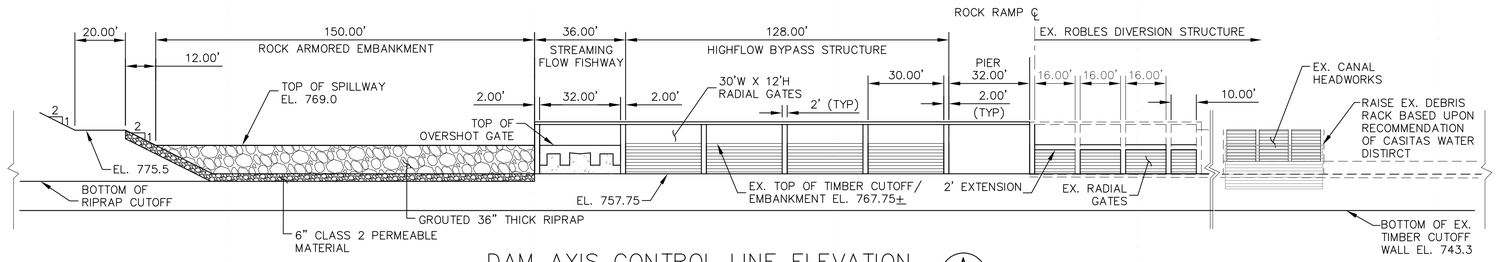

DAM AXIS CONTROL LINE ELEVATION

NOT TO SCALE

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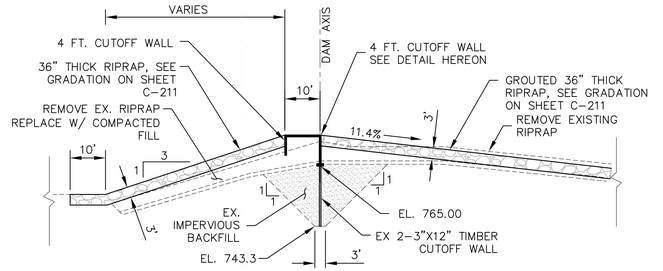

ROCK ARMORED EMBANKMENT ELEVATION

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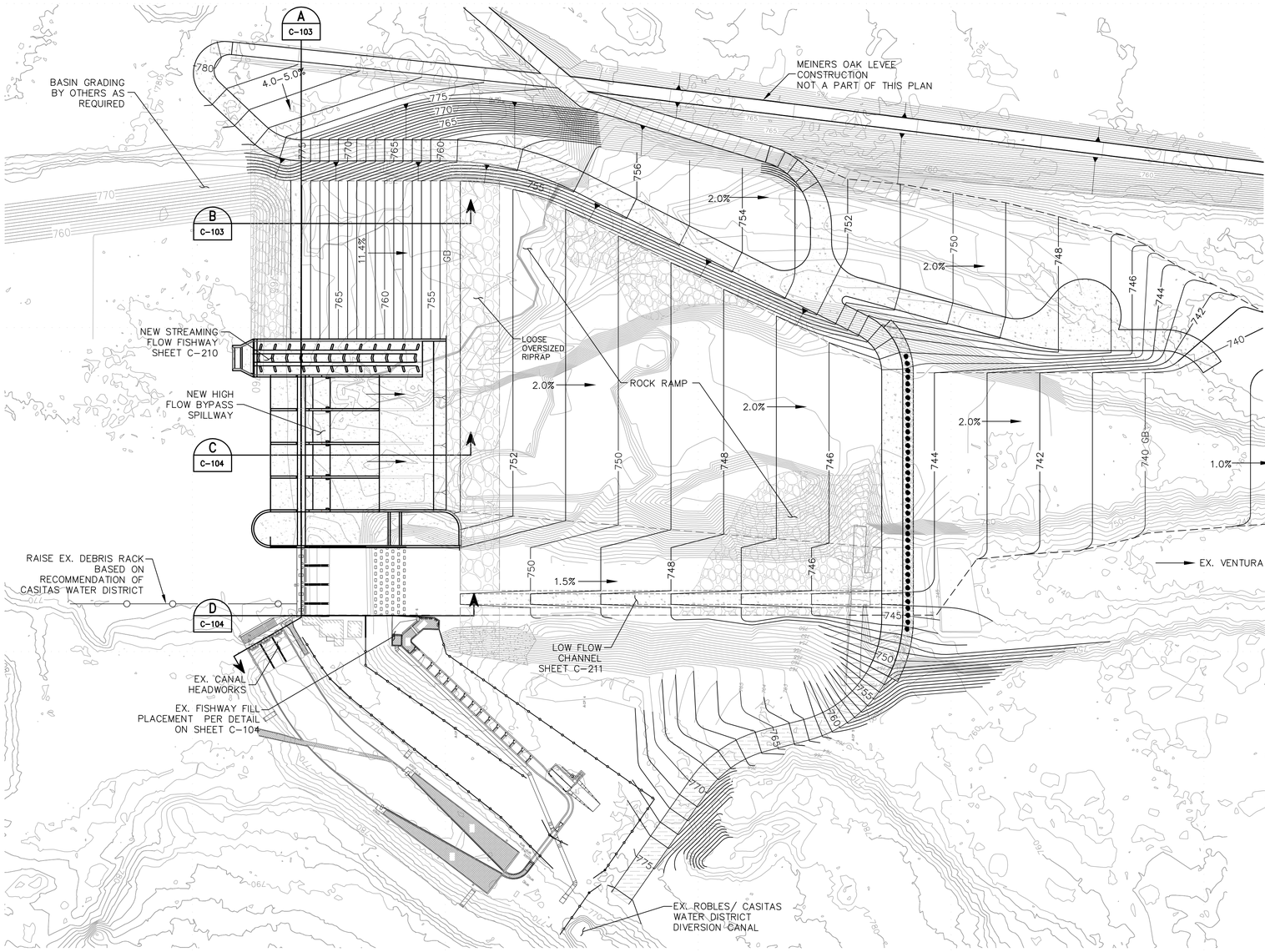

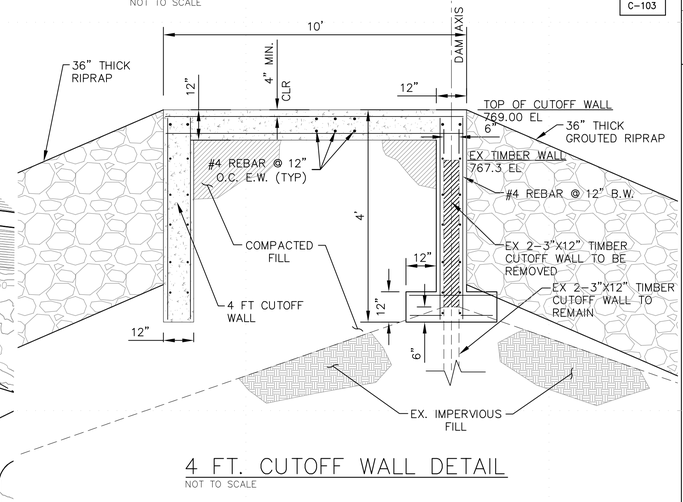

4 FT. CUTOFF WALL DETAIL

NOT TO SCALE

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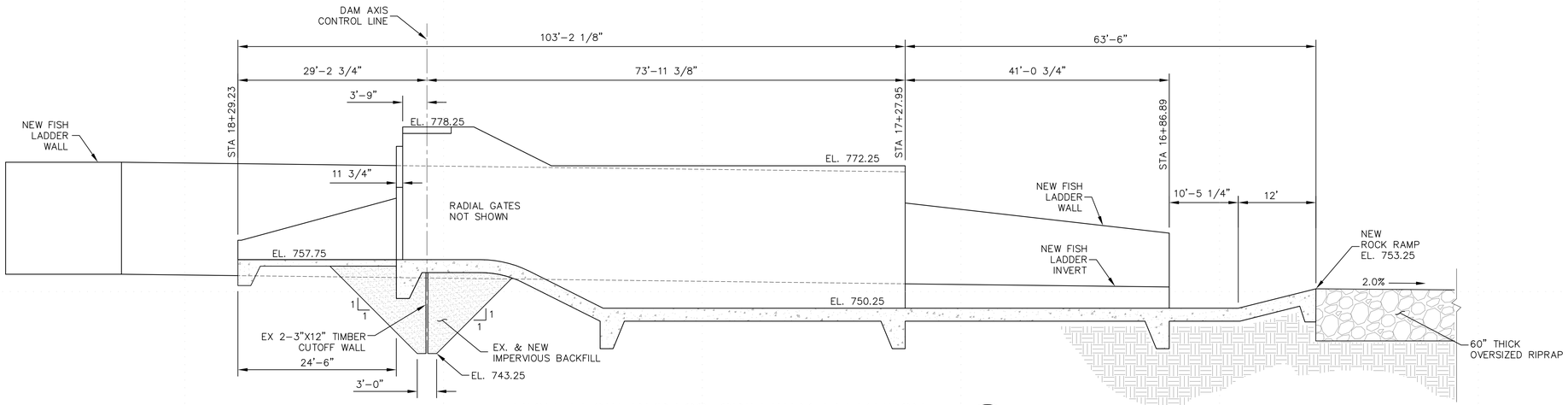


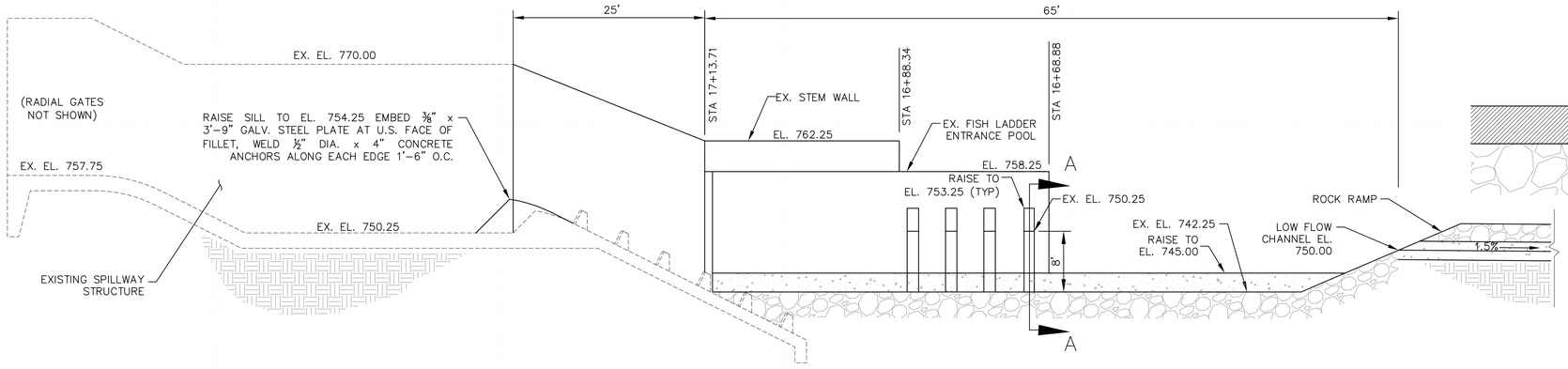
HIGH FLOW BYPASS SPILLWAY ELEVATION

NOT TO SCALE

C / C-104

NOTES

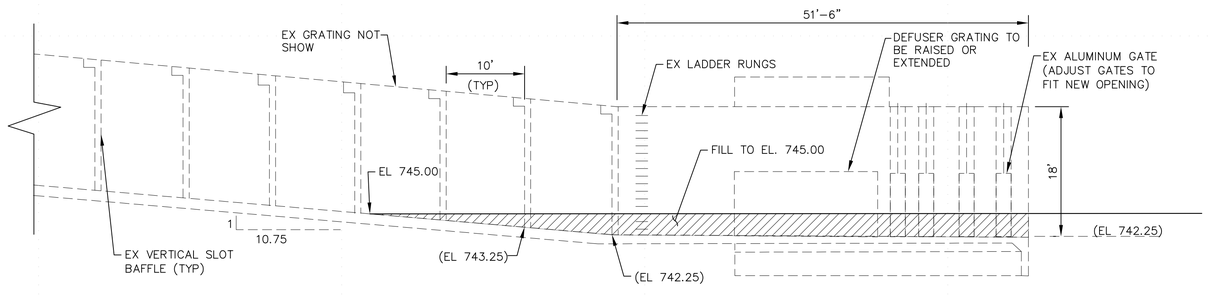
1. ELEVATION SHOWN IS TYPICAL FOR ALL FOUR SPILLWAY CHUTES
2. SEE STRUCTURAL SHEETS AND DETAILS FOR REINFORCEMENT, GEOMETRY, AND LAYOUT.



DIVERSION STRUCTURE ELEVATION

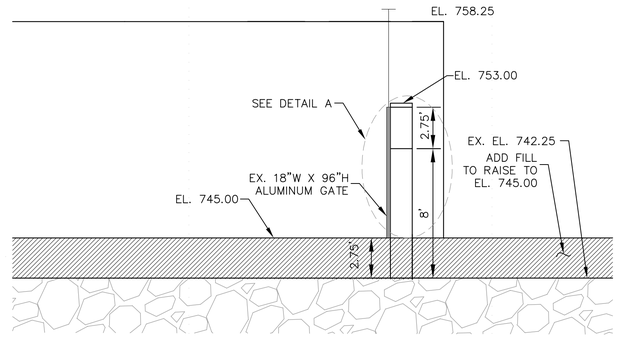
NOT TO SCALE

D / C-104



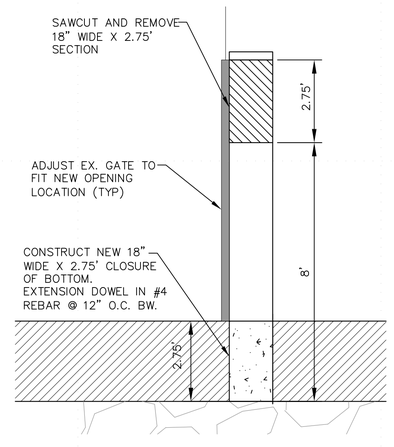
EX. FISHWAY FILL PLACEMENT

NOT TO SCALE



SECTION A–A

NOT TO SCALE



DETAIL A

NOT TO SCALE

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

PROJECT LAYOUT ELEVATIONS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110–1–8152.

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DISTRICT ENGINEER
DISTRICT FILE NO.

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

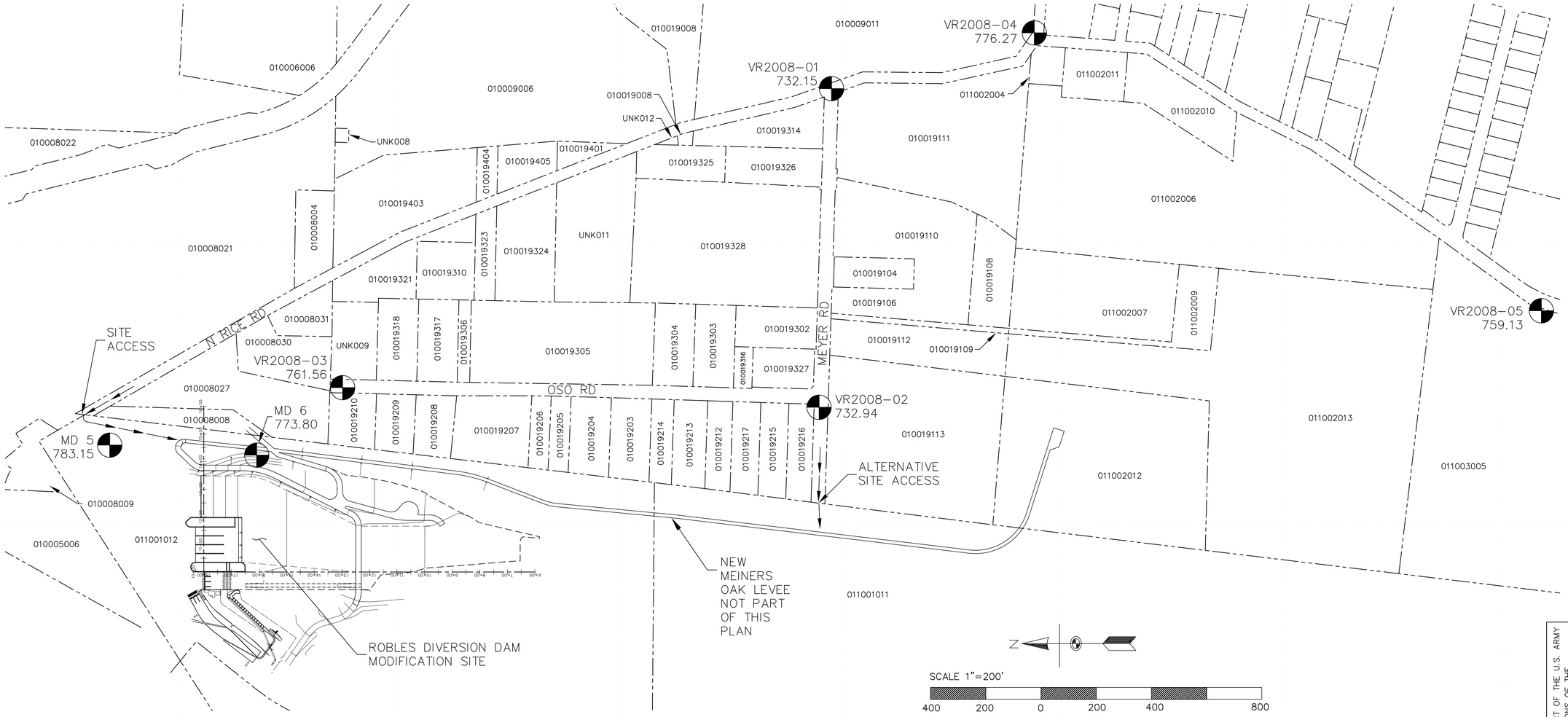
SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO.

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.
APPROVED: DATE:
CHIEF, ENGINEERING DIVISION
FILE NAME: T226350104GL.DWG

SCALE: AS SHOWN

SHEET: C-104

P:\WATR\T226350 ROBLES DIVERSION DAM\06_DESIGN\CADD\T226350104GL.DWG 2/6/2013 4:53 PM



N

SCALE 1"=200'

400 200 0 200 400 800

SURVEY CONTROL MONUMENTS				
POINT NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
MD 5	1 994 421.38	6 173 195.33	783.15'	COPPERWELD ROD STAMPED MD 5.
MD 6	1 993 889.07	6 173 158.97	773.80'	COPPERWELD ROD STAMPED MD 6.
VR2008-01	1 991 806.60	6 174 486.80	732.15'	1 INCH IRON PIPE WITH NAIL AND TAG ILLEGIBLE
VR2008-02	1 991 851.78	6 173 332.40	732.94'	GEAR SPIKE AND 2 INCH ALUMINUM WASHER STAMPED "USCE LA DIST. VR2008-02 BY JOHNSON-FRANK"
VR2008-03	1 993 577.85	6 173 403.71	761.56'	GEAR SPIKE AND 2 INCH ALUMINUM WASHER STAMPED "USCE LA DIST. VR2008-03 BY JOHNSON-FRANK"
VR2008-04	1 991 071.89	6 174 688.62	776.27'	3 ½ INCH DISK STAMPED "VENTURA COUNTY SURVEYOR BENCH MARK 70-1 RM-1 1987"
VR2008-05	1 989 234.98	6 173 682.07	759.13'	1 ½ INCH IRON PIPE WITH A MAG NAIL AND 2 INCH ALUMINUM WASHER STAMPED "USCE LA DIST. VR2008-05 BY JOHNSON-FRANK"

SURVEY CONTROL NOTES

1. HORIZONTAL CONTROL IS BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83), 1986 ADJUSTMENT, CALIFORNIA TRANSVERSE MERCATOR PROJECTION, EAST ZONE. VERTICAL CONTROL IS BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
2. TOPOGRAPHY BASED ON LIDAR METHOD BY AIRBORNE 1 ON FEBUARY 8, 2005.
3. UTILITIES ARE SHOWN AS KNOWN TO EXIST AT TIME OF SURVEY. UTILITIES MAY HAVE BEEN OMITTED, MISPLACED, AND/OR RELOCATED. CONTRACTOR SHALL EXERCISE CARE DURING EXCAVATION AND SHALL PROTECT ALL UTILITES. ALL UTILITIES SHALL BE FIELD VERIFIED.
4. EXISTING IMPROVEMENTS WITHIN THE RIGHT OF WAY AND WORK AREAS SHALL REMAIN AND SHALL BE PROTECTED UNLESS OTHERWISE NOTED. DAMAGED IMPROVEMENTS SHALL BE REPLACED IN KIND TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
5. ALL DIMENSIONS PRESENTED ON THIS SET OF DRAWINGS ARE IN FEET UNLESS OTHERWISE NOTED.
6. ADDITIONAL SURVEY DATA COMPILED BY PENFIELD & SMITH ENGINEERS, INC. DATED MARCH, 2009. THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM NAD83, ZONE 5 (EPOCH 2003.5) BASED ON CONVENTIONAL TIES TO UNITED STATES ARMY CORP. OF ENGINEERS (USACE) CONTROL STATIONS MD 5 AND MD 6 AS DESCRIBED ON THE DEPARTMENT OF ARMY (DA) FORMS 1959 ENTITLED "DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION"
7. THE VERTICAL DATUM FOR THE PENFIELD & SMITH ENGINEERS, INC. SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88) PER TIES TO VENTURA COUNTY PUBLIC WORKS BENCHMARK STAMPED "VENTURA COUNTY SURVEYOR BENCHMARK 70-1 RM-1 1987" SET IN A HEADWALL AT THE NORTHEASTERLY INTERSECTION OF RICE ROAD AND FAIRVIEW ROAD, HAVING AN ELEVATION OF 776.271'. CONTROL STATION MD 5 WAS ESTABLISHED AS A LOCAL BENCHMARK WITH AN ELEVATION OF 783.15' BASED ON GPS TIES.
8. SURFACE UTILITY FEATURES SHOWN HAVE BEEN LOCATED IN A FIELD SURVEY PERFORMED BY PENFIELD & SMITH ENGINEERS, INC. BASED ON VISIBILITY ON THE DATE OF THE SURVEY. NO RESEARCH OR MAPPING OF SUBSURFACE UTILITIES HAS BEEN PERFORMED.

LEGEND

PROPERTY LINE

MD 5 SURVEY CONTROL POINT NUMBER

SURVEY CONTROL POINT LOCATION

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
REVISIONS			

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

SURVEY CONTROL

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

TETRA TECH
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FAX. (213) 612-0246

PREPARED UNDER THE DIRECT SUPERVISION OF:

DISTRICT ENGINEER

DISTRICT FILE NO.

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:

CHIEF, DESIGN BRANCH

SPEC. NO.

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

APPROVED: DATE:

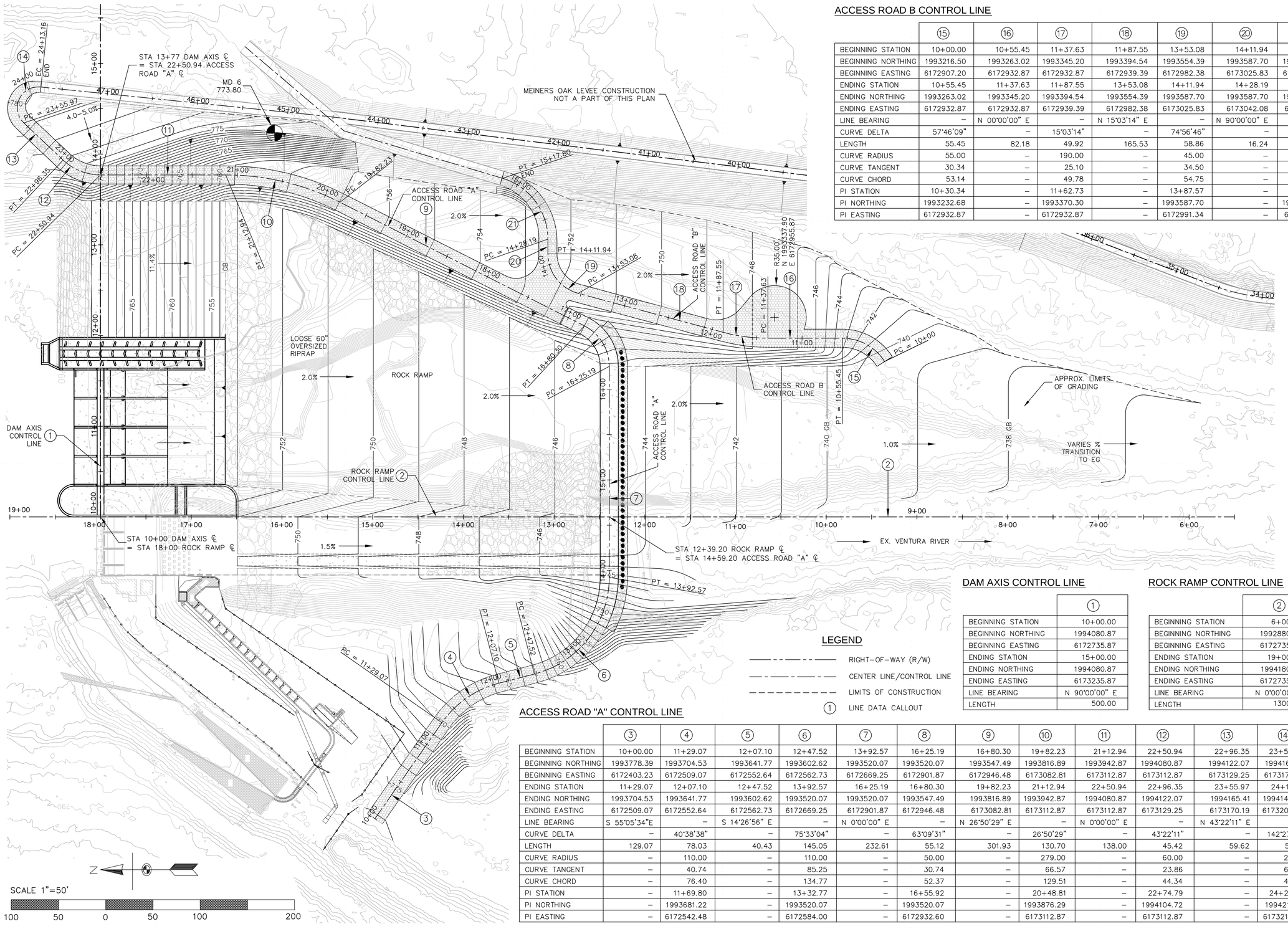
CHIEF, ENGINEERING DIVISION

FILE NAME: T22635C105SC.DWG

SCALE: AS SHOWN

SHEET: C-105

P:\WATR\T22635 ROBLES DIVERSION DAM\06_DESIGN\CADD\T22635C105SC.DWG 2/6/2013 4:53 PM



ACCESS ROAD B CONTROL LINE

	⑮	⑯	⑰	⑱	⑲	⑳	㉑
BEGINNING STATION	10+00.00	10+55.45	11+37.63	11+87.55	13+53.08	14+11.94	14+28.19
BEGINNING NORTHING	1993216.50	1993263.02	1993345.20	1993394.54	1993554.39	1993587.70	1993587.70
BEGINNING EASTING	6172907.20	6172932.87	6172932.87	6172939.39	6172982.38	6173025.83	6173042.08
ENDING STATION	10+55.45	11+37.63	11+87.55	13+53.08	14+11.94	14+28.19	15+17.80
ENDING NORTHING	1993263.02	1993345.20	1993394.54	1993554.39	1993587.70	1993587.70	1993637.65
ENDING EASTING	6172932.87	6172932.87	6172939.39	6172982.38	6173025.83	6173042.08	6173109.14
LINE BEARING	–	N 00°00'00" E	–	N 15°03'14" E	–	N 90°00'00" E	–
CURVE DELTA	57°46'09"	–	15°03'14"	–	74°56'46"	–	73°21'05"
LENGTH	55.45	82.18	49.92	165.53	58.86	16.24	89.62
CURVE RADIUS	55.00	–	190.00	–	45.00	–	70.00
CURVE TANGENT	30.34	–	25.10	–	34.50	–	52.13
CURVE CHORD	53.14	–	49.78	–	54.75	–	83.62
PI STATION	10+30.34	–	11+62.73	–	13+87.57	–	14+80.32
PI NORTHING	1993232.68	–	1993370.30	–	1993587.70	–	1993587.70
PI EASTING	6172932.87	–	6172932.87	–	6172991.34	–	6173094.21

DAM AXIS CONTROL LINE

	①
BEGINNING STATION	10+00.00
BEGINNING NORTHING	1994080.87
BEGINNING EASTING	6172735.87
ENDING STATION	15+00.00
ENDING NORTHING	1994080.87
ENDING EASTING	6173235.87
LINE BEARING	N 90°00'00" E
LENGTH	500.00

ROCK RAMP CONTROL LINE

	②
BEGINNING STATION	6+00.00
BEGINNING NORTHING	1992880.87
BEGINNING EASTING	6172735.87
ENDING STATION	19+00.00
ENDING NORTHING	1994180.87
ENDING EASTING	6172735.87
LINE BEARING	N 0°00'00" E
LENGTH	1300.00

LEGEND

- RIGHT-OF-WAY (R/W)
- CENTER LINE/CONTROL LINE
- LIMITS OF CONSTRUCTION
- ① LINE DATA CALLOUT

ACCESS ROAD "A" CONTROL LINE

	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
BEGINNING STATION	10+00.00	11+29.07	12+07.10	12+47.52	13+92.57	16+25.19	16+80.30	19+82.23	21+12.94	22+50.94	22+96.35	23+55.97
BEGINNING NORTHING	1993778.39	1993704.53	1993641.77	1993602.62	1993520.07	1993520.07	1993547.49	1993816.89	1993942.87	1994080.87	1994122.07	1994165.41
BEGINNING EASTING	6172403.23	6172509.07	6172552.64	6172562.73	6172669.25	6172901.87	6172946.48	6173082.81	6173112.87	6173112.87	6173129.25	6173170.19
ENDING STATION	11+29.07	12+07.10	12+47.52	13+92.57	16+25.19	16+80.30	19+82.23	21+12.94	22+50.94	22+96.35	23+55.97	24+13.16
ENDING NORTHING	1993704.53	1993641.77	1993602.62	1993520.07	1993520.07	1993547.49	1993816.89	1993942.87	1994080.87	1994122.07	1994165.41	1994147.28
ENDING EASTING	6172509.07	6172552.64	6172562.73	6172669.25	6172901.87	6172946.48	6173082.81	6173112.87	6173112.87	6173129.25	6173170.19	6173209.79
LINE BEARING	S 55°05'34"E	–	S 14°26'56" E	–	N 0°00'00" E	–	N 26°50'29" E	–	N 0°00'00" E	–	N 43°22'11" E	–
CURVE DELTA	–	40°38'38"	–	75°33'04"	–	63°09'31"	–	26°50'29"	–	43°22'11"	–	142°27'49"
LENGTH	129.07	78.03	40.43	145.05	232.61	55.12	301.93	130.70	138.00	45.42	59.62	57.19
CURVE RADIUS	–	110.00	–	110.00	–	50.00	–	279.00	–	60.00	–	23.00
CURVE TANGENT	–	40.74	–	85.25	–	30.74	–	66.57	–	23.86	–	67.69
CURVE CHORD	–	76.40	–	134.77	–	52.37	–	129.51	–	44.34	–	43.55
PI STATION	–	11+69.80	–	13+32.77	–	16+55.92	–	20+48.81	–	22+74.79	–	24+23.66
PI NORTHING	–	1993681.22	–	1993520.07	–	1993520.07	–	1993876.29	–	1994104.72	–	1994214.61
PI EASTING	–	6172542.48	–	6172584.00	–	6172932.60	–	6173112.87	–	6173112.87	–	6173216.67

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECT SUPERVISION OF:
DISTRICT ENGINEER
DISTRICT FILE NO.

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FAX. (213) 612-0246

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO.

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

FILE NAME: T22635C106HC.DWG

SCALE: AS SHOWN

SHEET: C-106

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

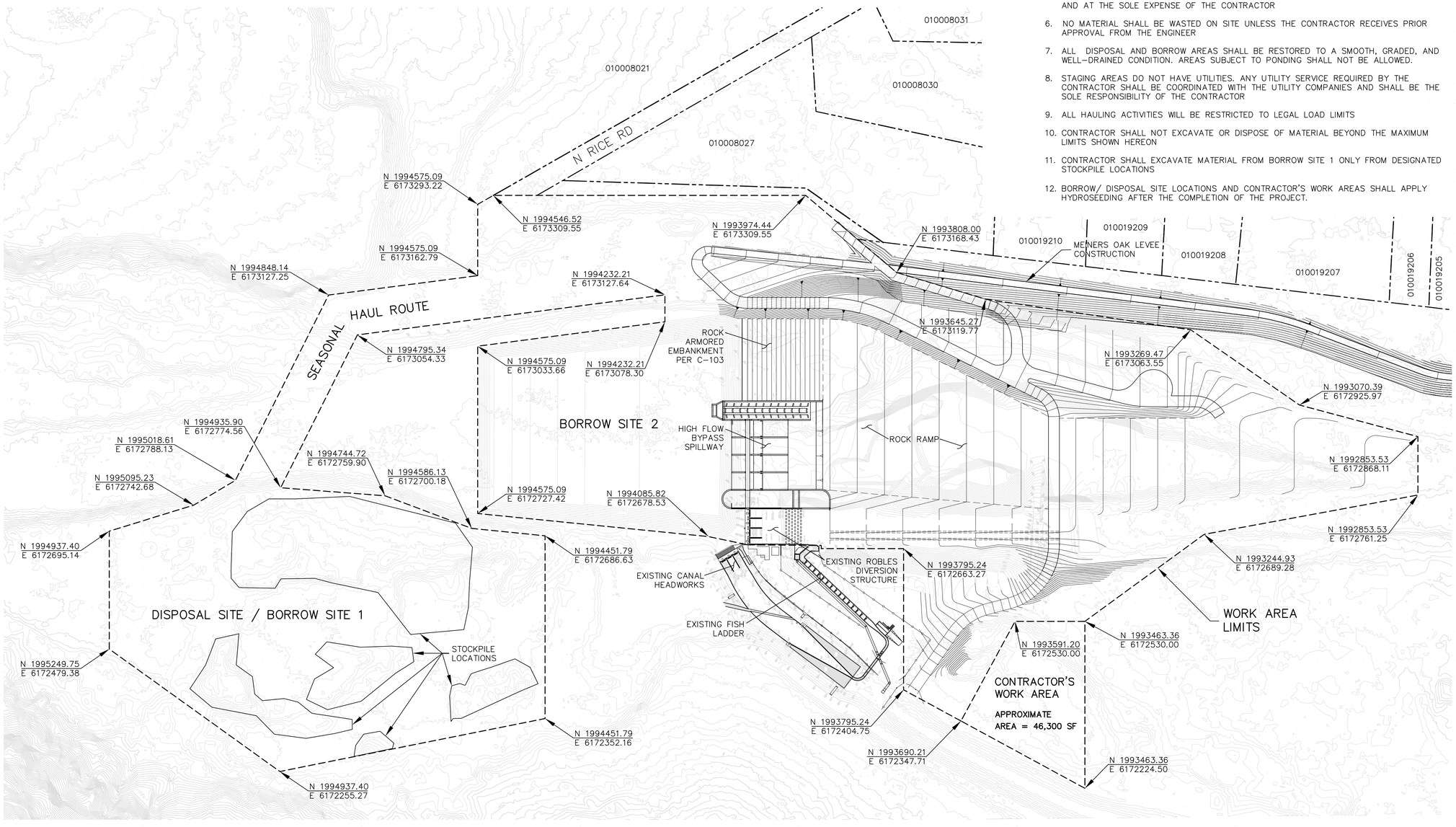
ROBLES DIVERSION DAM RESTORATION

HORIZONTAL CONTROL

P:\WATR\T22635 ROBLES DIVERSION DAM\06_DESIGN\CADD\T22635C106HC.DWG 2/6/2013 4:54 PM

BORROW/DEPOSIT NOTES

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBLITY TO COORDINATE OFF-SITE HAUL ROUTES WITH THE APPROPRIATE OWNERS HAVING JURISDICTION OVER THE AFFECTED ROUTES
2. ON-SITE HAUL ROUTES SHALL BE MAINTAINED BY THE CONTRACTOR AND SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UPON COMPLETION OF WORK
3. THE CONTRACTOR IS RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED DURING HAULING
4. THE CONTRACTOR SHALL PROVIDE A STREET SWEEPER TO CLEAN HAUL ROUTES ON A DAILY BASIS AS NECESSARY OR AS DIRECTED BY THE ENGINEER
5. CONCRETE RUBBLE AND EXCAVATION WASTE MATERIAL REMOVED FROM THE CONSTRUCTION AREA SHALL BE DISPOSED OF OFF THE CONSTRUCTION SITE AT AN APPROVED LOCATION AND AT THE SOLE EXPENSE OF THE CONTRACTOR
6. NO MATERIAL SHALL BE WASTED ON SITE UNLESS THE CONTRACTOR RECEIVES PRIOR APPROVAL FROM THE ENGINEER
7. ALL DISPOSAL AND BORROW AREAS SHALL BE RESTORED TO A SMOOTH, GRADED, AND WELL-DRAINED CONDITION. AREAS SUBJECT TO PONDING SHALL NOT BE ALLOWED.
8. STAGING AREAS DO NOT HAVE UTILITIES. ANY UTILITY SERVICE REQUIRED BY THE CONTRACTOR SHALL BE COORDINATED WITH THE UTILITY COMPANIES AND SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR
9. ALL HAULING ACTIVITIES WILL BE RESTRICTED TO LEGAL LOAD LIMITS
10. CONTRACTOR SHALL NOT EXCAVATE OR DISPOSE OF MATERIAL BEYOND THE MAXIMUM LIMITS SHOWN HEREON
11. CONTRACTOR SHALL EXCAVATE MATERIAL FROM BORROW SITE 1 ONLY FROM DESIGNATED STOCKPILE LOCATIONS
12. BORROW/ DISPOSAL SITE LOCATIONS AND CONTRACTOR'S WORK AREAS SHALL APPLY HYDROSEEDING AFTER THE COMPLETION OF THE PROJECT.



N

SCALE 1"=100'

200 100 0 100 200 400

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

BORROW / DISPOSAL SITE LOCATIONS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

PREPARED UNDER THE DIRECT SUPERVISION OF:
DISTRICT ENGINEER

SUBMITTED BY:
CHIEF, DESIGN BRANCH
DATE:

APPROVED:
CHIEF, ENGINEERING DIVISION
DATE:

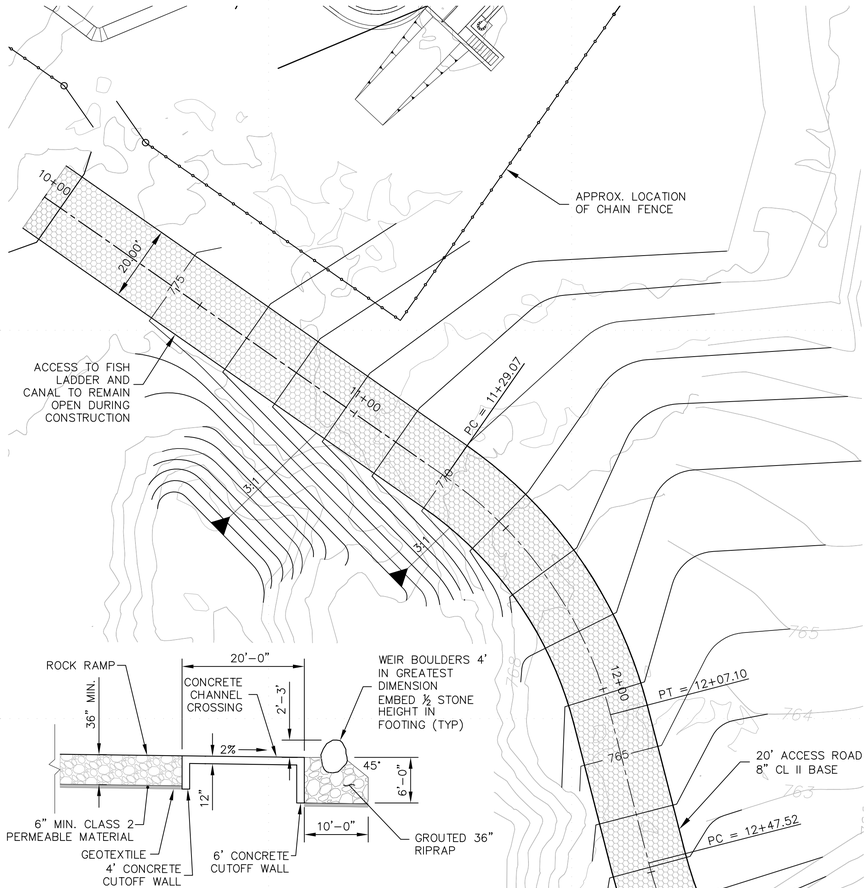
DISTRICT FILE NO.
SPEC. NO.
FILE NAME: T226350107BR.DWG

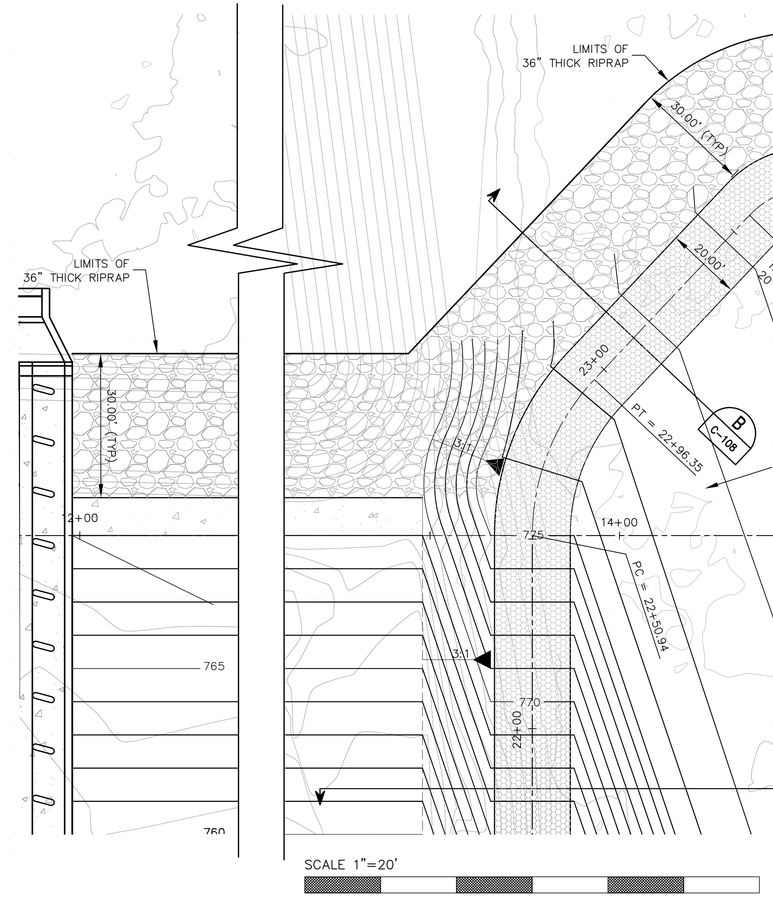
SCALE: AS SHOWN

SHEET: C-107

P:\MATR\T22635 ROBLES DIVERSION DAM\06_DESIGN\CADD\T226350107BR.DWG 2/6/2013 4:55 PM

8 7 6 5 VALUE ENGINEERING PAYS 4 3 2 1



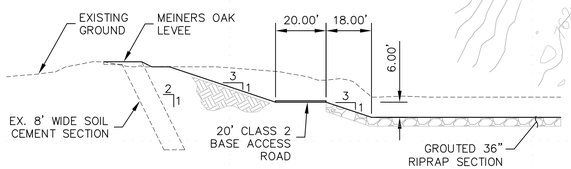


UPPER ACCESS ROAD CUTOFF WALL SECTION
NOT TO SCALE
B C-108

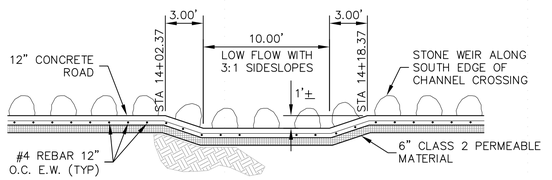
SCALE 1"=20'
40 20 0 20 40 80

ACCESS ROAD/MEINERS OAK LEVEE CONNECTION

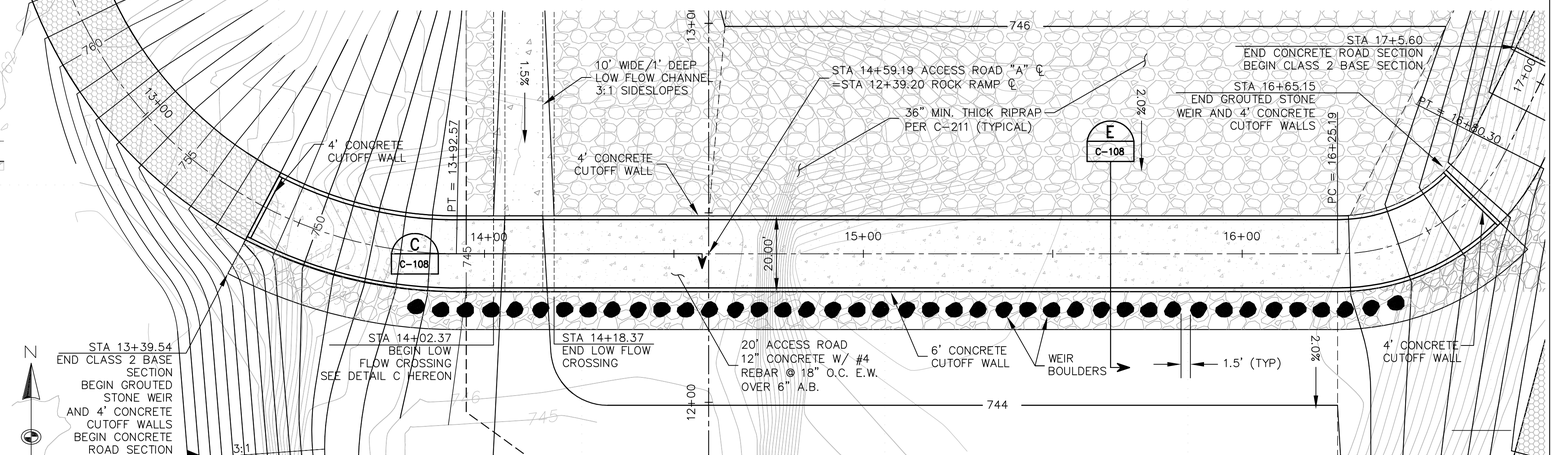
STONE WEIR SECTION
NOT TO SCALE
E C-108



ACCESS ROAD SECTION
NOT TO SCALE
D C-108



LOW FLOW CHANNEL CROSSING ELEVATION
NOT TO SCALE
C C-108



SCALE 1"=20'
40 20 0 20 40 80

ACCESS ROAD/CHANNEL CROSSING

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

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PREPARED UNDER THE DIRECT SUPERVISION OF:
DISTRICT ENGINEER

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

SPEC. NO.
DISTRICT FILE NO.
FILE NAME: T226350108PL.DWG

SCALE: AS SHOWN
SHEET: C-108

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

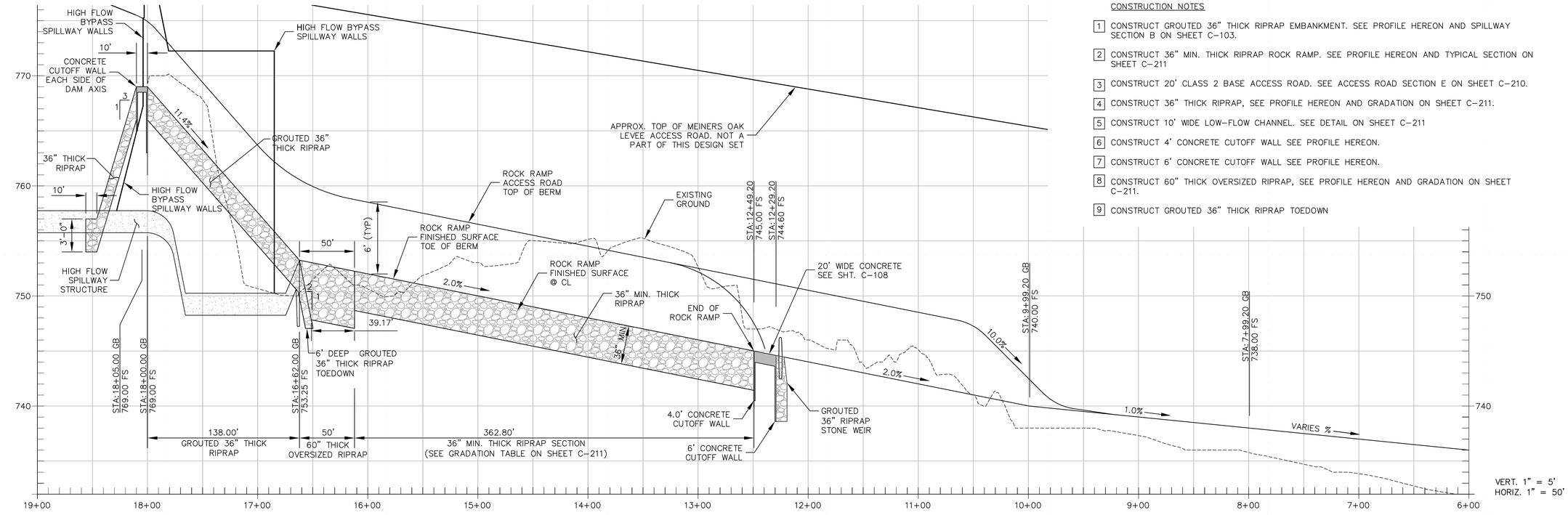
ROBLES DIVERSION DAM RESTORATION

ACCESS ROAD PLANS & SECTIONS

8 7 6 SAFETY PAYS 5 4 3 2 1

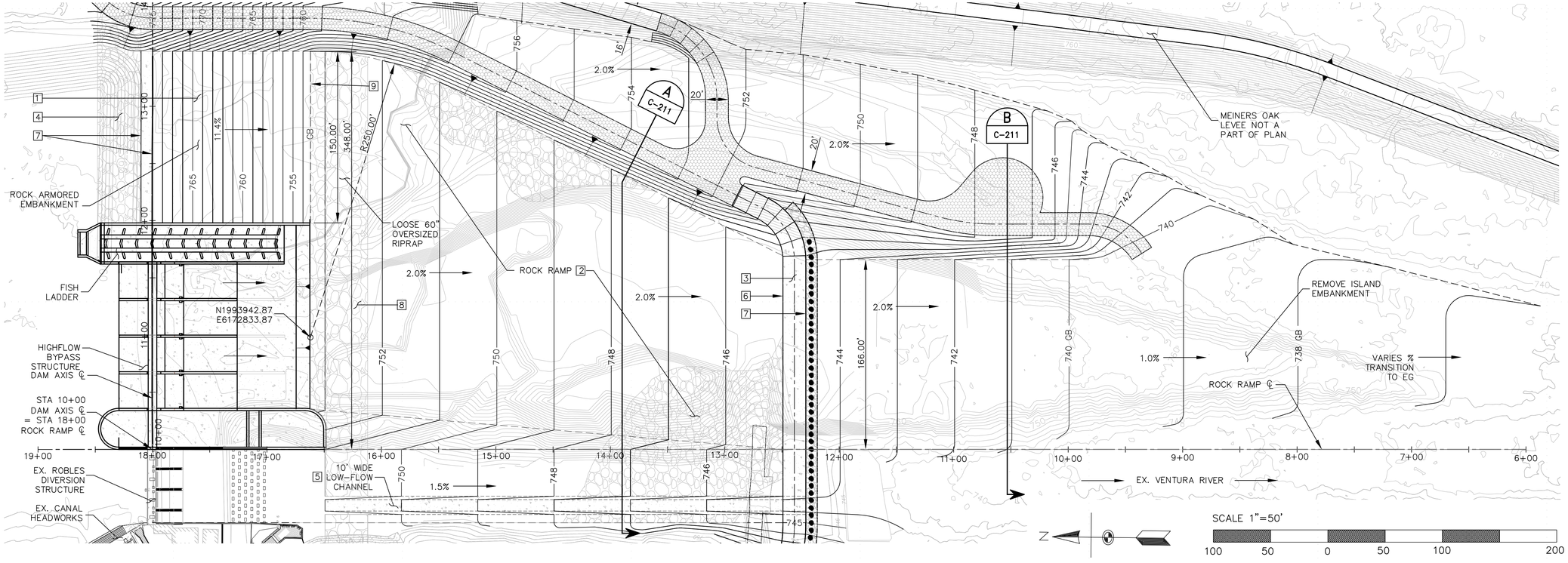
P:\WATR\T22635 ROBLES DIVERSION DAM\06_DESIGN\CADD\T226350108PL.DWG 2/6/2013 4:56 PM

8 7 6 5 VALUE ENGINEERING PAYS 4 3 2 1



CONSTRUCTION NOTES

1. CONSTRUCT GROUTED 36" THICK RIPRAP EMBANKMENT. SEE PROFILE HEREON AND SPILLWAY SECTION B ON SHEET C-103.
2. CONSTRUCT 36" MIN. THICK RIPRAP ROCK RAMP. SEE PROFILE HEREON AND TYPICAL SECTION ON SHEET C-211
3. CONSTRUCT 20' CLASS 2 BASE ACCESS ROAD. SEE ACCESS ROAD SECTION E ON SHEET C-210.
4. CONSTRUCT 36" THICK RIPRAP, SEE PROFILE HEREON AND GRADATION ON SHEET C-211.
5. CONSTRUCT 10' WIDE LOW-FLOW CHANNEL. SEE DETAIL ON SHEET C-211
6. CONSTRUCT 4' CONCRETE CUTOFF WALL SEE PROFILE HEREON.
7. CONSTRUCT 6' CONCRETE CUTOFF WALL SEE PROFILE HEREON.
8. CONSTRUCT 60" THICK OVERSIZED RIPRAP, SEE PROFILE HEREON AND GRADATION ON SHEET C-211.
9. CONSTRUCT GROUTED 36" THICK RIPRAP TOEDOWN



THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECT SUPERVISION OF:
DISTRICT ENGINEER
DISTRICT FILE NO.

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FAX. (213) 612-0246

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO.

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

FILE NAME: T22635C209PP.DWG

SCALE: AS SHOWN

SHEET: C-209

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

ROCK RAMP PLAN & PROFILE

8 7 6 5 SAFETY PAYS 4 3 2 1

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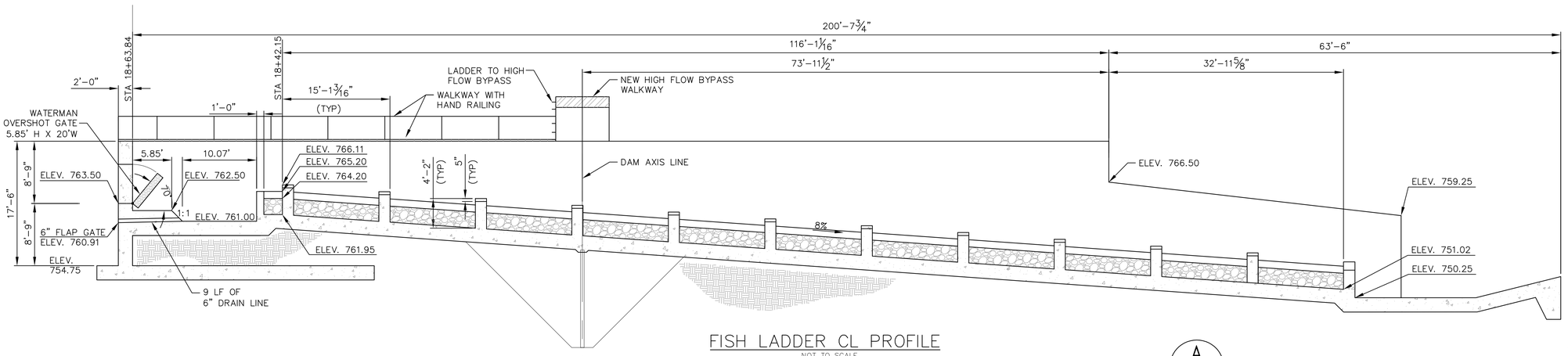
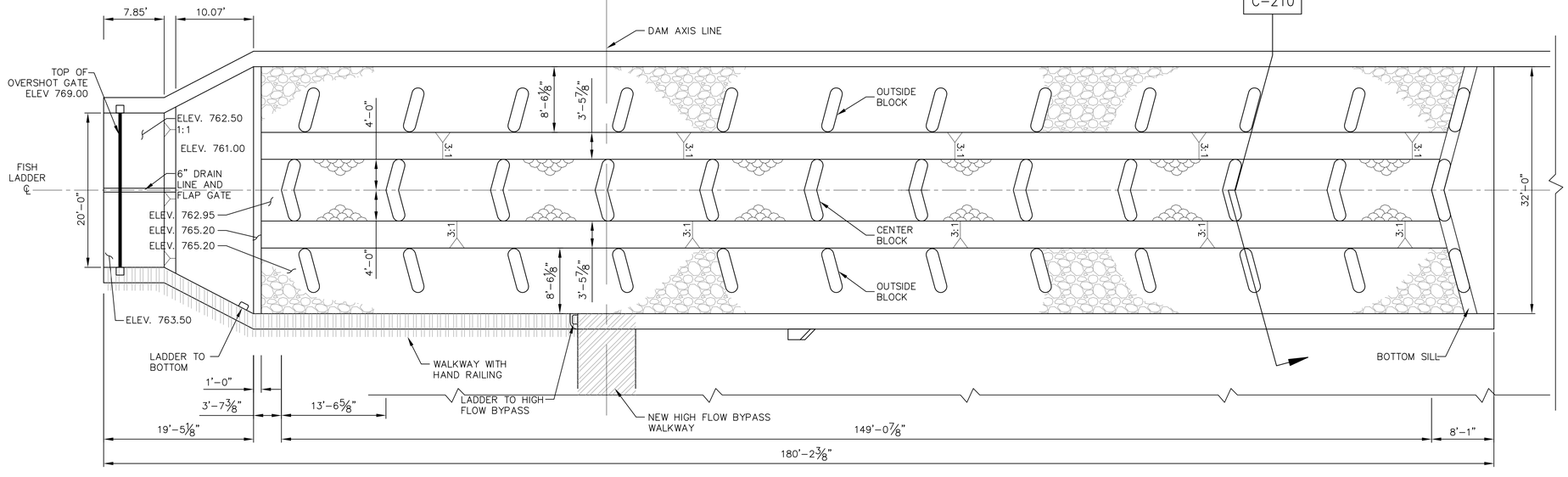


FISH LADDER CL PROFILE

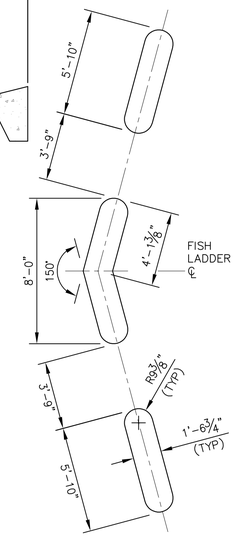
NOT TO SCALE



FISH LADDER PLAN

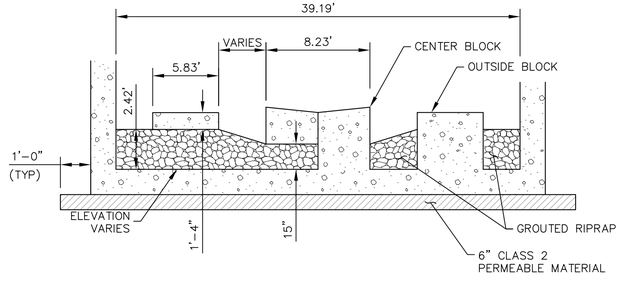
NOT TO SCALE

NOTE: GEOMETRY AND LAYOUT FOR ALL STEEL REINFORCEMENT AND MATERIALS CAN BE FOUND ON STRUCTURAL SHEETS



TYPICAL BLOCK LAYOUT

NOT TO SCALE



FISH LADDER SECTION A C-210

NOT TO SCALE

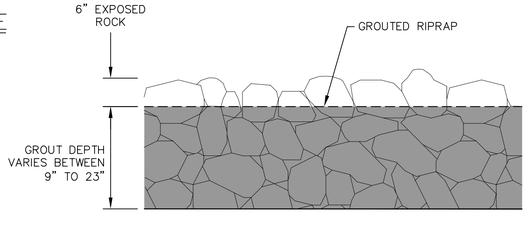
RIPRAP GRADATION TABLE

(FOR FISH LADDER ONLY)

D50 = 8"
D100 = 12"
D30 MIN = 0.48' (9.6 LB.)
D90 MIN = 0.70' (29.7 LB.)

SPECIFIC WEIGHT = 155.0 PCF

PERCENT LIGHTER BY WEIGHT (%)	LIMITS OF STONE WEIGHT (LB)
100	86-35
50	26-17
15	13-5



GROUTED RIPRAP SECTION IN FISH LADDER

NOT TO SCALE

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

FISH LADDER PLAN & PROFILE

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PREPARED UNDER THE DIRECT SUPERVISION OF:

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DISTRICT FILE NO.

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:

CHIEF, DESIGN BRANCH

SPEC. NO.

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

APPROVED: DATE:

CHIEF, ENGINEERING DIVISION

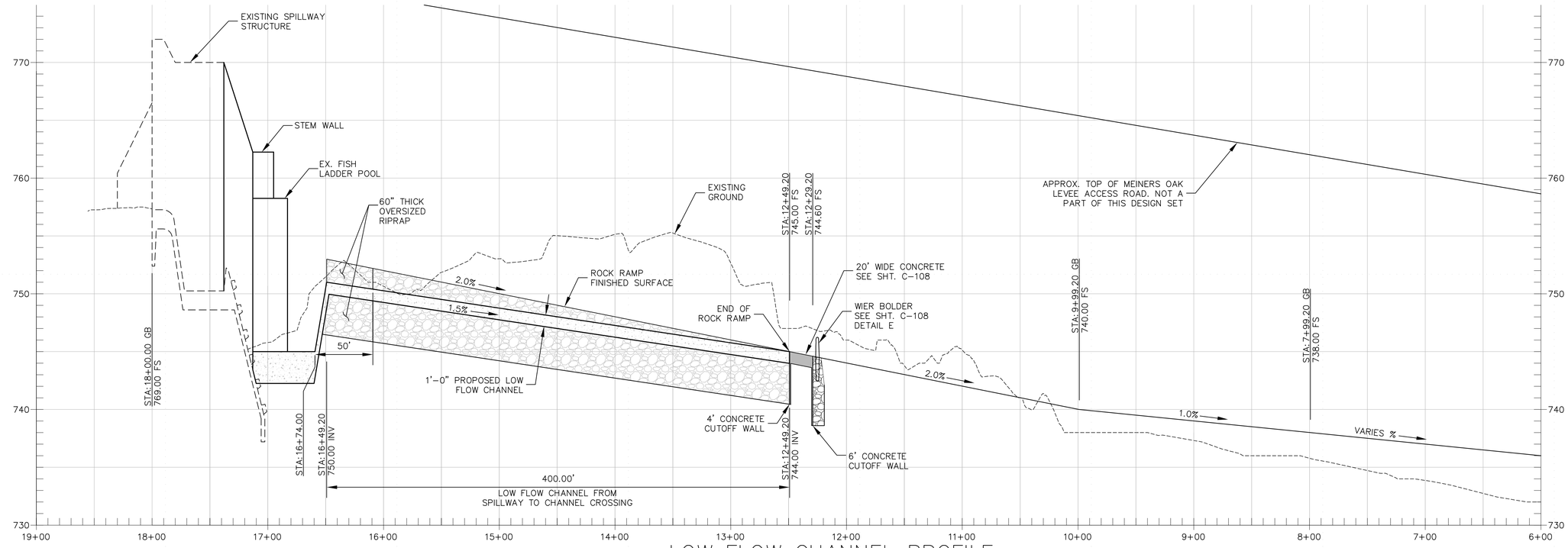
FILE NAME: T22635C210PP.DWG

SCALE: AS SHOWN

SHEET: C-210

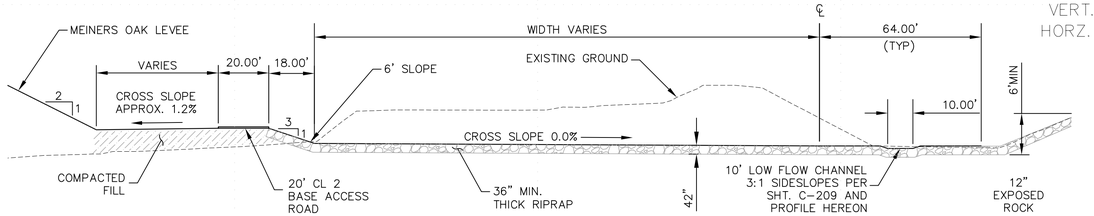
P:\WATR\T22635 ROBLES DIVERSION DAM\06_DESIGN\CADD\T22635C210PP.DWG 2/6/2013 4:57 PM

8 7 6 5 VALUE ENGINEERING PAYS 4 3 2 1



LOW FLOW CHANNEL PROFILE

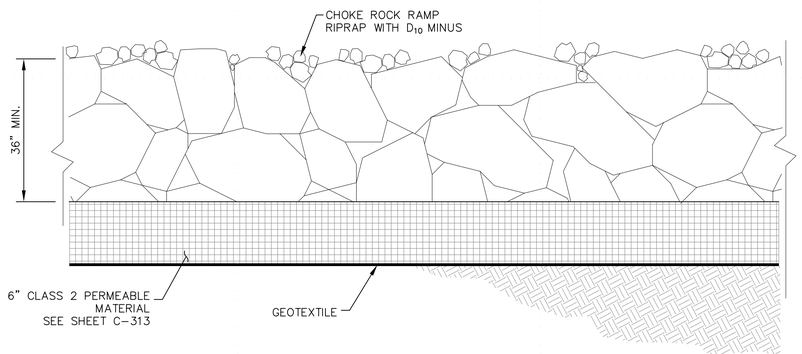
VERT. 1" = 5'
HORZ. 1" = 50'



TYPICAL ROCK RAMP SECTION

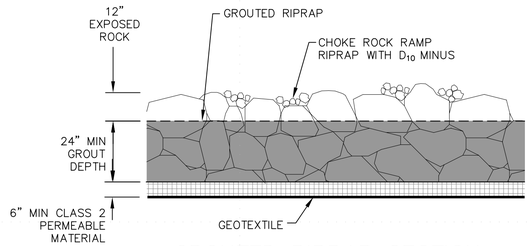
NOT TO SCALE

A C-209



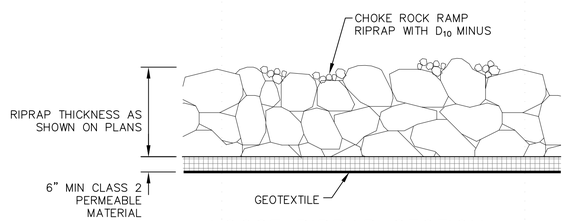
ROCK RAMP RIPRAP SECTION

NOT TO SCALE



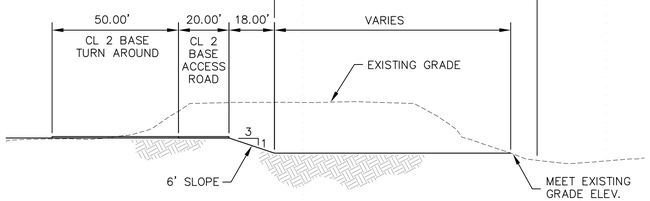
GROUTED RIPRAP SECTION

NOT TO SCALE



LOOSE RIPRAP SECTION

NOT TO SCALE



TYPICAL NON-RIPRAP SECTION

NOT TO SCALE

B C-209

60" THICK OVERSIZED RIPRAP GRADATION

D_{100} = 60"
D_{90} = 42.2" (3,654 LBS)
D_{50} = 40"
D_{30} = 29.2" (1,202 LBS)
SPECIFIC WEIGHT = 160.0 PCF

PERCENT LIGHTER BY WEIGHT (%)	LIMITS OF STONE WEIGHT (LB)
100	10,800–4,320
50	3,195–2,155
15	1,598–673

36" THICK RIPRAP GRADATION

D_{100} = 36"
D_{90} = 25.3" (787 LBS)
D_{50} = 24"
D_{30} = 17.5" (261 LBS)
SPECIFIC WEIGHT = 160.0 PCF

PERCENT LIGHTER BY WEIGHT (%)	LIMITS OF STONE WEIGHT (LB)
100	2,331–933
50	691–467
15	346–146

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PREPARED UNDER THE DIRECT SUPERVISION OF:
DISTRICT ENGINEER

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

DISTRICT FILE NO.

SPEC. NO.

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

FILE NAME: T22635C211PP.DWG

SCALE: AS SHOWN

SHEET: C-211

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

LOW FLOW CHANNEL PROFILE & SECTIONS

8 7 6 5 SAFETY PAYS 4 3 2 1

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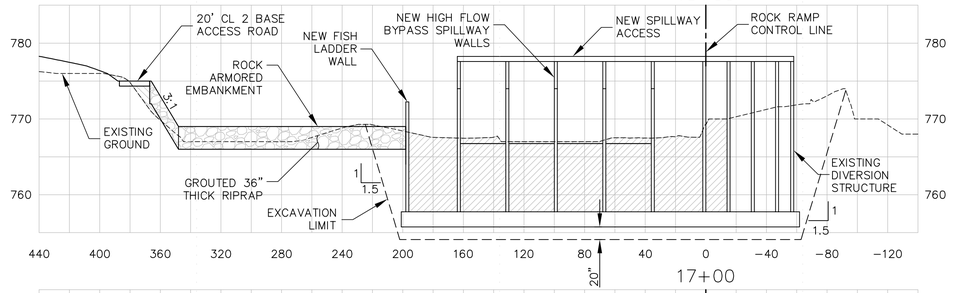
CROSS SECTIONS TAKEN ARE LOOKING DOWNSTREAM.

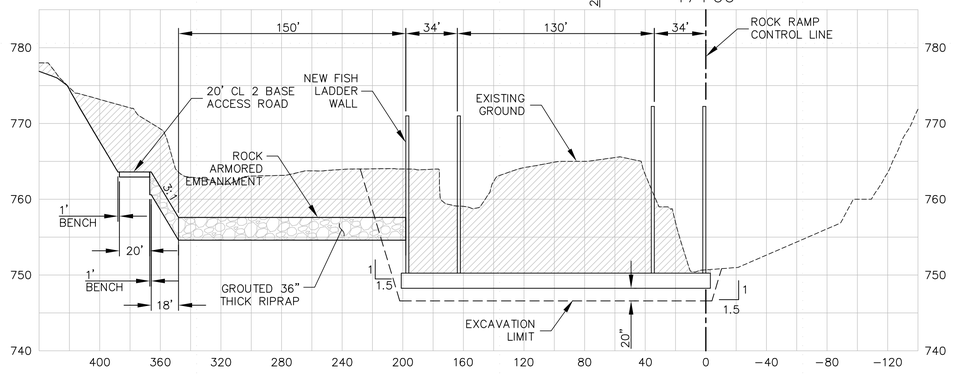
VALUE ENGINEERING PAYS

SAFETY PAYS

18+00



17+00



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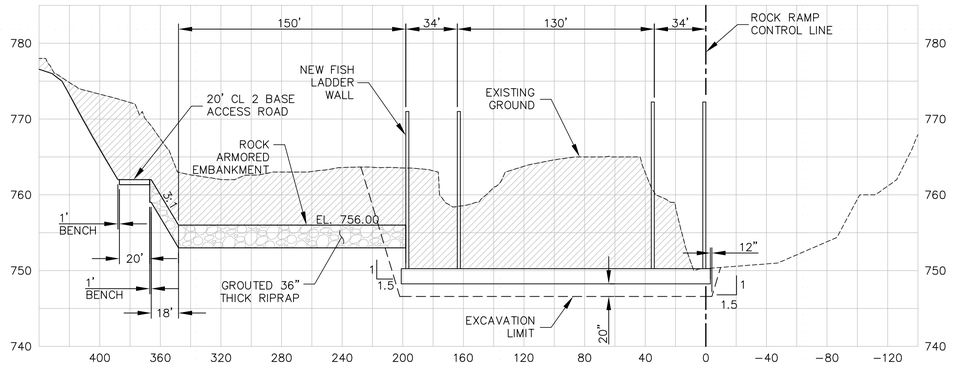

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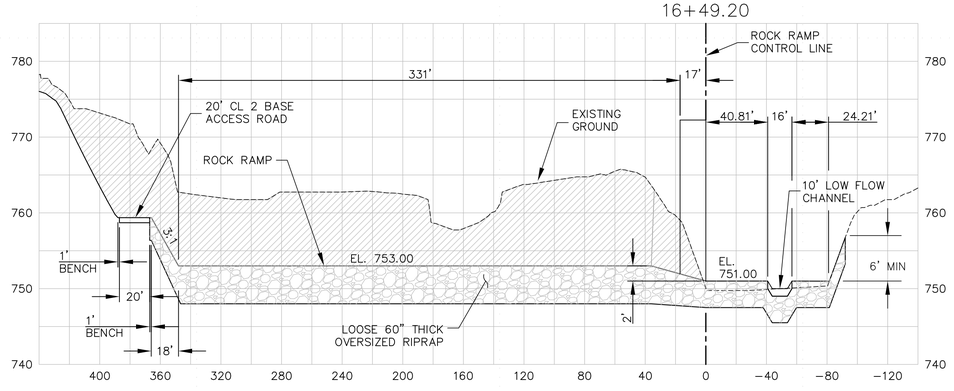

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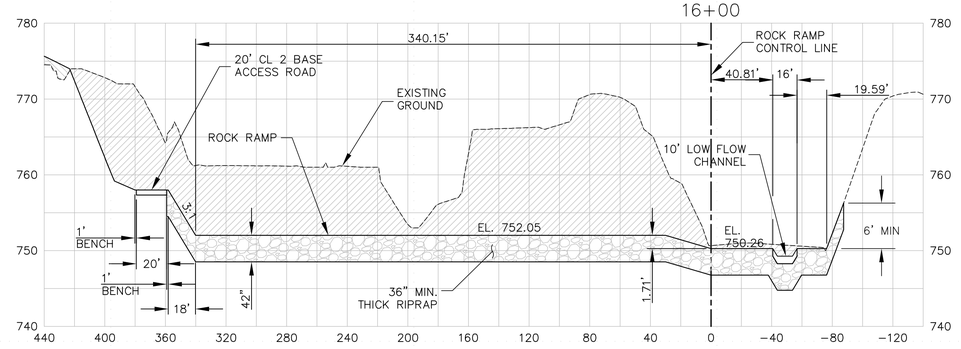

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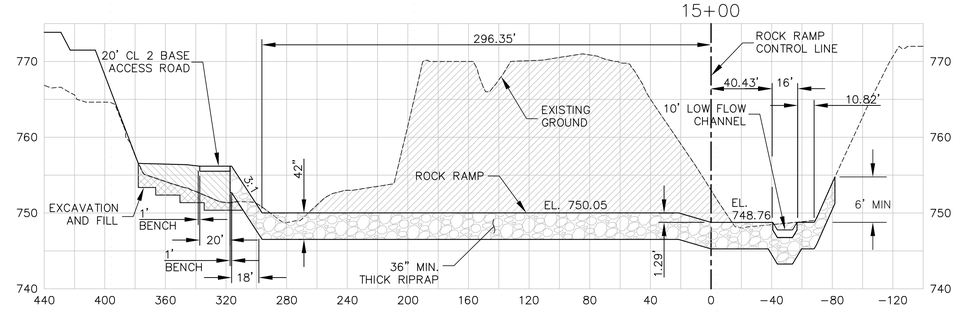

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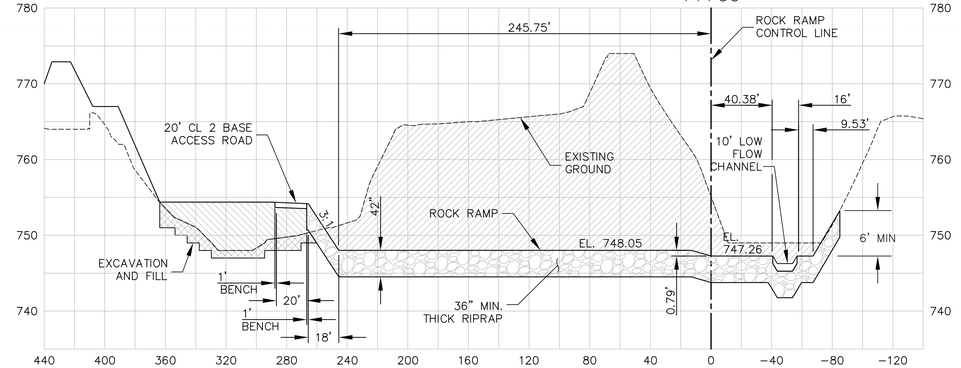
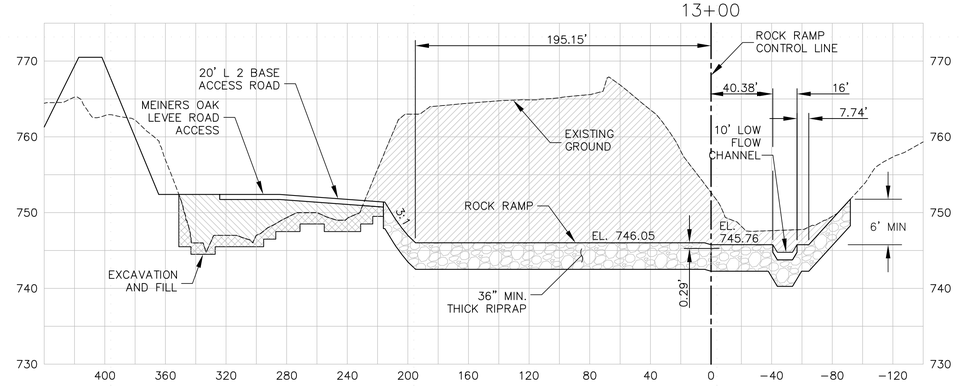


13+00



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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

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CHIEF, DESIGN BRANCH
SPEC. NO.

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

FILE NAME: T226353C3123C.DWG

SCALE: AS SHOWN

SHEET: C-312

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

CROSS SECTIONS

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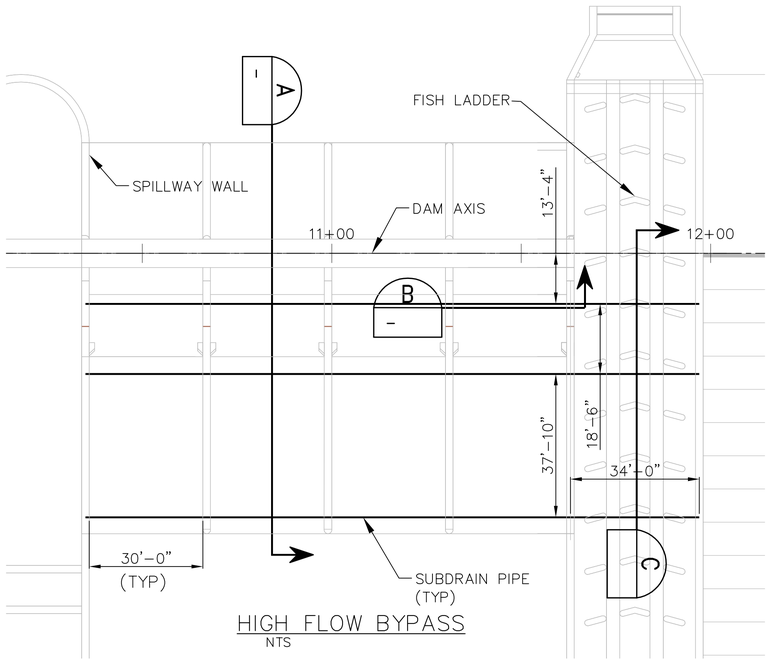
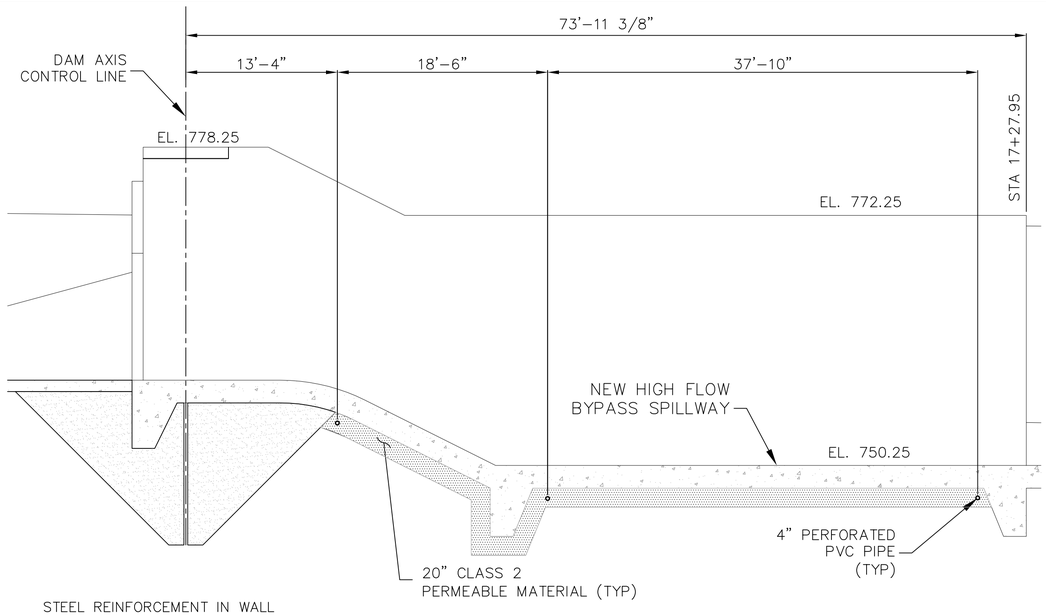
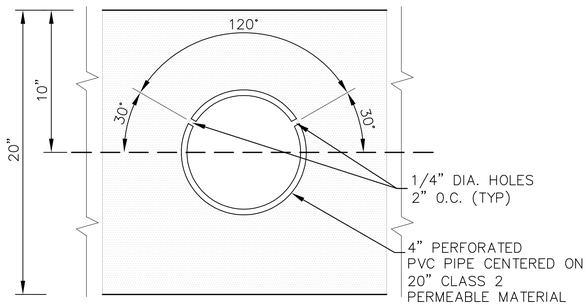


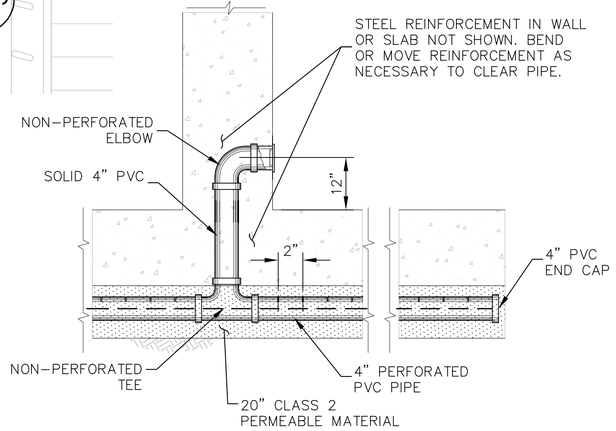
HIGH FLOW BYPASS
NTS



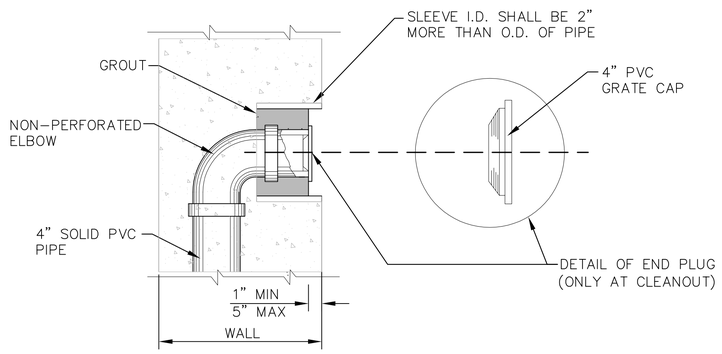
SECTION A-A
NTS



4" PERFORATED PVC PIPE DETAIL
NTS



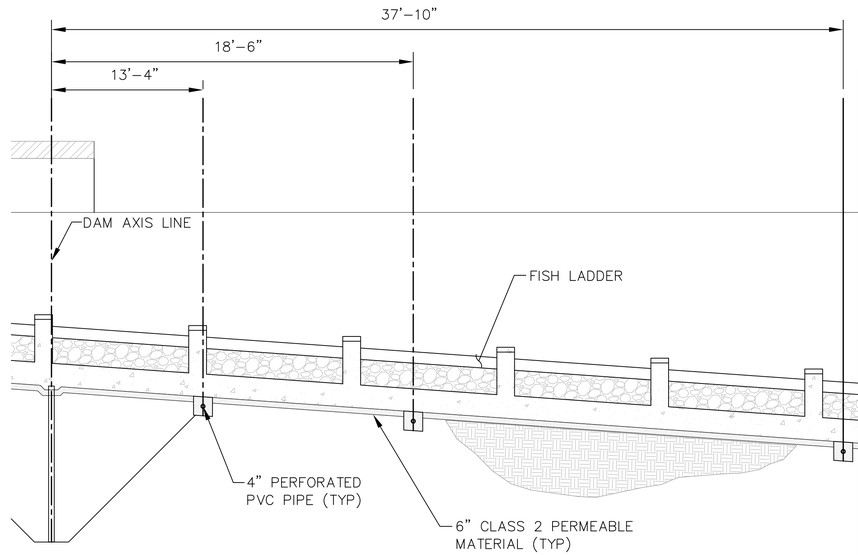
SECTION B-B
NTS



SUBDRIAN OUTLET DETAIL
NTS

CLASS 2 PERMEABLE MATERIAL GRADATION TABLE

SIEVE SIZES	PERCENTAGE PASSING
1	100
3/4	90-100
3/8	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3



SECTION C-C
NTS

REVISIONS

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM RESTORATION

SUBDRAIN DETAILS

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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: A.M.T.
DRAWN BY: A.G.
CHECKED BY: Y.H.C.

PREPARED UNDER THE DIRECT SUPERVISION OF:
DISTRICT ENGINEER

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

DISTRICT FILE NO.

SPEC. NO.

FILE NAME: T22635C210PP.DWG

SCALE: AS SHOWN

SHEET: C-313

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GENERAL NOTES

A. THESE GENERAL STRUCTURAL NOTES PERTAIN TO THE GATE STRUCTURE, U.N.O. TO SUMMARIZE KEY PROJECT INFORMATION FOR THE DRAWING READER'S CONVENIENCE. SEE ALSO INDIVIDUAL DRAWING NOTES AND PROJECT SPECIFICATIONS FOR FURTHER DETAILS AND REQUIREMENTS.

B. ALL REFERENCES TO REFERENCE STANDARDS HEREIN ARE TO MOST RECENT ISSUE IN EFFECT AS OF THE DATE OF THESE DOCUMENTS, UNLESS NOTED OTHERWISE IN PROJECT SPECIFICATIONS OR ON THE DRAWINGS.

C. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONTRACTING OFFICER.

E. SUBMIT SHOP DRAWINGS, PROJECT DATA AND SAMPLES AS SPECIFIED IN PROJECT SPECIFICATIONS.

F. REFERENCES:

1. ICC INTERNATIONAL BUILDING CODE, 2009 EDITION
2. ACI 318-08, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
3. ACI 350-06, CODE REQUIREMENTS FOR ENVIRONMENTAL CONCRETE AND COMMENTARY
4. ASCE/SEI 7, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
5. ER 1110-2-1806, EARTHQUAKE DESIGN AND ELEVATION FOR CIVIL WORKS PROJECT, 31 JULY, 1995
6. EM 1110-2-2100, STABILITY ANALYSIS OF CONCRETE STRUCTURES, 1 DEC,2005
7. EM 1110-2-2104, STRENGTH DESIGN FOR REINFORCED CONCRETE HYDRAULIC STRUCTURES, 30 JUNE, 1992, 20 AUG, 2003 (CHANGE 1)
8. ER 1110-2-8152, PLANNING AND DESIGN OF TEMPORARY COFFERDAMS AND BRACED EXCAVATIONS.

G. DEAD LOAD:
DEAD LOAD (SELF WEIGHT)

H. LIVE LOAD (U.N.O.):
ELEVATED SLABS, WALKWAYS AND PLATFORMS = 100 PSF
HOIST CAPACITY = 7.5 TONS
MAX WIRE ROPE TENSION FROM HOIST PER SIDE (JAMMED CONDITION) = 74 KIPS
MAX TRUNNION REACTION (6 FT OVER TOPPING): HORIZ = 136 Kips
VERT = 9 Kips

I. SNOW LOAD:
GROUND SNOW LOAD, Pg = 0 PSF

J. WIND LOAD:
BASIC WIND SPEED, V = 85 MPH.
WIND IMPORTANCE FACTOR, I = 1.0
WIND EXPOSURE = C
DIRECTIONALITY FACTOR, Ka = 0.85
TOPOGRAPHY = FLAT
INTERNAL PRESSURE COEFFICIENT, GCpi = ± 0
BUILDING ENCLOSURE CLASSIFICATION = OPEN

K. SEISMIC DESIGN:
DEEMED 'NORMAL STRUCTURE' PER EM 1110-2-2100
OBE = 0.318g (PGA)
MDE = 0.633g (PGA)
SITE CLASS = C

REFER TO GROUND MOTION HAZARD EVALUATION FOR ROBLES DIVERSION DAM MODIFICATION PROJECT PREPARED BY AMEC, PROJECT NO. 9993.003.2, DATED: JANUARY 19, 2009

L. FLOOD DESIGN

MDF HEADWATER	WSE = 775.75	NR HEADWATER	WSE = 757.75
MDF TAILWATER	WSE = 760.00	NR TAILWATER	WSE = NONE
IF HEADWATER	WSE = 769.00		
IF TAILWATER	WSE = 753.50		

TEMPORARY COFFERDAM AND EXCAVATIONS

A. EXCAVATIONS WILL LIKELY ENCOUNTER GENERALLY COURSE-GRAINED ALLUVIUM THAT CONTAINS COBBLES AND BOULDERS. THE EXTENT AND CONDITION OF THE EXISTING CUTOFF TRENCH AND TIMBER CUTOFF WALL IS UNKNOWN. A LIMITED INVESTIGATION HAS BEEN CONDUCTED BY USACE TO CONFIRM THE NATURE AND EXTEND OF THE IMPERVIOUS FILL AT THE CUTOFF TRENCH. EXCAVATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CAL/OSHA SAFETY REGULATIONS.

B. IF REQUIRED, THE CONTRACTOR SHALL CONSTRUCT A COFFERDAM TO CONTROL THE INFLOW OF SURFACE WATER FROM THE VENTURA RIVER AND GROUNDWATER AROUND THE CONSTRUCTION SITE. DEWATERING EFFORTS SHALL BE DESIGNED TO PREVENT MIGRATION AND PUMPING OF SOIL FINES WITH DISCHARGE WATER TO MAINTAIN STABLE AND DRY EXCAVATIONS. THE DESIGN OF TEMPORARY COFFERDAMS AND BRACED EXCAVATIONS SHALL BE CONDUCTED IN ACCORDANCE WITH ER 1110-2-8152. SUBMIT A SHORING AND DEWATERING PLAN WITH CALCULATIONS FOR THE TEMPORARY COFFERDAM SYSTEM, PREPARED BY A LICENSED ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.

C. FOR CONSTRUCTION ADJACENT TO THE EXISTING SPILLWAY, THE CONTRACTOR SHALL SUBMIT AN UNDERPINNING PLAN FOR REVIEW PRIOR TO CONSTRUCTION; PLAN SHALL BE PREPARED BY A LICENSED ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.

D. TEMPORARY EXCVATIONS SHALL BE DESIGNED AND MAINTAINED TO MEET ALL LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. GROUND SETTLEMENT SHALL BE AVOIDED ADJACENT TO EXISTING SPILLWAY AND OTHER STRUCTURES. ALL EXCAVATIONS SHALL BE ADEQUATELY BRACED TO PREVENT DAMAGE TO EXISTING STRUCTURES.

FOUNDATIONS

A. REFER TO GEOTECHNICAL/SUBSURFACE INVESTIGATION REPORT PREPARED BY AMEC, PROJECT NO. 9993.003.2, DATED AUGUST 2, 2012. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHETHER OR NOT ADDITIONAL GEOTECHNICAL INFORMATION IS REQUIRED AND TO PROVIDE SUCH INFORMATION AS DEEMED NECESSARY.

B. NET ALLOWABLE BEARING PRESSURES AS FOLLOWS:

FOUNDATIONS CONSTRUCTED ABOVE THE EXISTING CUTOFF TRENCH (IMPERVIOUS FILL) = 3000 PSF

FOUNDATIONS CONSTRUCTED ABOVE COURSE-GRAINED SAND AND GRAVEL ALLUVIAL DEPOSITS = 4000 PSF

C. A LICENSED GEOTECHNICAL ENGINEER SHALL BE RETAINED BY THE CONTRACTOR TO PROVIDE OBSERVATION AND TESTING SERVICES DURING THE GRADING AND FOUNDATION PHASE OF CONSTRUCTION. INSPECTION AND TESTING REPORTS SHALL BE SUBMITTED TO THE CONTRACTING OFFICE. ALL OPEN FOUNDATION EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE CONTRACTOR'S LICENSED GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE.

D. THERE WILL BE NO BACKFILLING OPERATIONS UNTIL THE CONCRETE WALLS HAVE REACHED THEIR 28 DAY DESIGN STRENGTH, UNLESS NOTED OTHERWISE OR APPROVED BY THE CONTRACTING OFFICER.

E. FOR STRUCTURES WITH CONCRETE TOP SLABS, THERE WILL BE NO BACKFILLING OPERATIONS UNTIL THE TOP SLAB IS IN PLACE, HAS BEEN CURED A MINIMUM OF 7 DAYS, AND HAS REACHED 70% OF ITS 28 DAY DESIGN STRENGTH, UNLESS NOTED OTHERWISE OR APPROVED BY THE CONTRACTING OFFICER.

STRUCTURAL CONCRETE

A. REFERENCES:

1. ACI 318-08 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
2. ACI 350-06 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
3. ACI SP-66 ACI DETAILING MANUAL
4. CRSI MSP-2-01 MANUAL OF STANDARD PRACTICE
5. CRSI REINFORCING BAR DETAILING
6. CRSI PLACING REINFORCING BARS

B. MATERIALS:

1. STRUCTURAL CONCRETE:

MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (f'c)

FOUNDATIONS AND APRONS	5000 PSI
SLAB AND WALLS	5000 PSI
ALL OTHER CONCRETE	4000 PSI

ALL CONCRETE EXPOSED TO THE ELEMENTS SHALL BE AIR-ENTRAINED IN ACCORDANCE WITH ASTM C260 SEE SPECIFICATIONS. ALL CONCRETE AGGREGATE SHALL COMPLY WITH ASTM C33 (NORMAL WEIGHT)

2. ALL CONCRETE IN 8" WALLS OR COLUMNS WITH TWO PLANES OF REINFORCEMENT SHALL HAVE MAXIMUM 3/4" AGGREGATE. IT IS RECOMMENDED THAT THE CONTRACTOR CONSIDER SUPER-PLASTICIZED CONCRETE PER SPECIFICATIONS.

3. REINFORCEMENT:

a. REINFORCING BARS: ASTM A615, GRADE 60
b. WELDED SMOOTH WIRE FABRIC - ASTM A185 (SHEETS ONLY, ROLL FABRIC NOT ALLOWED)
c. SMOOTH DOWELS: ASTM A1035, GRADE 100

4. ACCESSORIES:

a. BAR SUPPORTS CLASS 1, MAXIMUM PROTECTION (CRSI MANUAL OF STANDARD PRACTICE) FOR ALL SLABS AND BEAMS WITH SOFFITS EXPOSED TO VIEW

5. ANCHOR RODS:

a. SHALL BE STAINLESS STEEL, FURNISHED WITH CHAMFERED ENDS, AND SHALL MEET STRENGTH AND DUCTILITY REQUIREMENTS EQUIVALENT ASTM A36 MATERIAL.

STRUCTURAL CONCRETE CONT.

6. ADHESIVE (EPOXY) ANCHOR SYSTEM:

APPROVED SYSTEMS INCLUDE HILTI RE 500-SD (ICC ESR 2322) OR HY 150 MAX-SD (ICC ESR 3013) OR EQUAL CONSIDERING LOAD RESISTANCE, IN-SERVICE AND INSTALLATION TEMPERATURE, AVAILABILITY OR COMPREHENSIVE INSTALLATION INSTRUCTIONS, AND CREEP. ADHESIVE ANCHORS SHALL BE APPROVED FOR USE WITH CRACKED CONCRETE PER AC 308. CURRENT ICC-ESR SHALL BE SUBMITTED. ALL PERSONNEL INSTALLING ANCHORS SHALL BE TRAINED BY THE MANUFACTURE ON PROPER INSTALLATION TECHNIQUE. TRAINING DOCUMENTATION FROM THE MANUFACTURE SHALL BE AVAILABLE ON REQUEST.

7. MECHANICAL ANCHORS:

APPROVED SYSTEMS INCLUDE HILTI KWIK BOLT TZ (ICC ESR 1917) OR HILTI KWIK HUS-EZ (ICC ESR 3027) OR EQUAL CONSIDERING LOAD RESISTANCE. MECHANICAL ANCHORS SHALL BE APPROVED FOR USE WITH CRACKED CONCRETE PER AC 193. CURRENT ICC-ESR SHALL BE SUBMITTED. (NOTE: HILTI'S HSL-3 AND HDA ALSO MEET THESE CRITERIA). ALL PERSONNEL INSTALLING ANCHORS SHALL BE TRAINED BY THE MANUFACTURE ON PROPER INSTALLATION TECHNIQUE. TRAINING DOCUMENTATION FROM THE MANUFACTURE SHALL BE AVAILABLE ON REQUEST

8. GROUT:

a. HIGH STRENGTH, NON-SHRINK STRUCTURAL GROUT. SEE SPECIFICATIONS.

C. REINFORCEMENT DETAILING:

1. ALL REINFORCING STEEL DETAILS SHALL BE IN ACCORDANCE WITH THE ACI CODE REQUIREMENTS (ACI 318 OR 350 - CURRENT EDITIONS)

2. REINFORCING STEEL PLACING DRAWINGS AND BAR LISTS SHALL BE CONFORM TO THE ACI OF CRSI DETAILING MANUALS. ALL BAR AND MESH SUPPORTS MUST BE CLEARLY DETAILED.

3. CONCRETE COVER FOR REINFORCING SHALL BE INDICATED ON THE APPLICABLE REINFORCING STEEL SHOP DRAWINGS; HOWEVER, NO REINFORCING IN AREAS EXPOSED TO EARTH, WEATHER, SEWAGE, OR WATER SHALL HAVE COVER LESS THEN TWO INCHES.

SPECIFIED COVER FOR REINFORCING

FORMED WALLS (GREATER THAN 12")	3.0"
FORMED WALLS EXPOSED TO EARTH (12" OR LESS)	2.0"
FORMED WALLS EXPOSED TO HYDRAULIC FLOW (12" OR LESS)	2.5"
UNFORMED FOUNDATIONS CAST AGAINST EARTH	4.0"
UNFORMED SLABS CAST AGAINST EARTH (12" OR LESS)	3.0"
UNFORMED SLABS CAST AGAINST EARTH (GREATER THAN 12")	3.0"
SLABS EXPOSED TO HYDRAULIC FLOW	4.0"
SLABS NOT EXPOSED TO HYDRAULIC FLOW (12" OR LESS)	2.0"

ALL OTHER MEMBER TYPES PER ACI 350

4. REINFORCEMENT IN WALLS SHALL BE CONTINUOUS. HORIZONTAL BAR LAP SPLICES SHALL BE STAGGERED.

5. PROVIDE CORNER BARS AT ALL CONCRETE WALL CORNERS TO BE LAPPED WITH THE HORIZONTAL BARS. CORNER BARS ARE TO MATCH THE HORIZONTAL BARS I SIZE, GRADE, AND SPACING UNLESS OTHERWISE SHOWN.

6. HOOKS AND BENDS SHALL BE ACI STANDARD UNLESS OTHERWISE NOTED.

7. SPLICES: CONTINUOUS REINFORCING BARS SHALL BE PROVIDED WITH TENSION LAPS AT ALL SPLICES, UNLESS NOTED OTHERWISE, INCLUDING CORNER BARS. ALL STEEL REINFORCING LAPS SHALL BE TENSION B LAPS UNLESS NOTED OTHERWISE.

8. MECHANICAL SPLICES SHALL NOT BE PERMITTED UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER.

9. REINFORCING STEEL FABRICATION AND PLACEMENT SHALL BE IN ACCORDANCE WITH CRSI MANUAL OF STANDARD PRACTICE AND CRSI PLACING REINFORCING BARS (LATEST EDITIONS).

10. REINFORCING STEEL IN FOOTINGS SHALL BE ASSEMBLED IN MAT GRILLES EQUALLY SPACED AND SECURELY WIRED TOGETHER BEFORE THE CONCRETE IS POURED.

11. WALL FOOTING DOWELS ARE TO HAVE A CLASS 'B' TENSION LAP SPLICE WITH THE WALL STEEL UNLESS NOTED OTHERWISE.

12. PIER REINFORCEMENT SHALL BE DOWELED TO THE FOOTING. PROVIDE DOWELS EQUAL IN SIZE, NUMBER AND GRADE TO THE PIER REINFORCEMENT UNLESS OTHERWISE INDICATED. DOWELS SHALL BE HOOKED 90 DEGREES AT THE BOTTOM LEVEL OF FOOTING REINFORCEMENT. DOWELS SHALL BE LAPPED WITH THE PIER REINFORCEMENT.

13. SLIP DOWELS SHALL CONSIST OF 1 1/4" DIA. x24" (ASTM A1035) LONG SMOOTH DOWELS AT NOTED LOCATIONS. BASIS OF DESIGN FOR DOWEL SLEEVES ARE GREENSTREAK SPEED DOWEL

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL GENERAL NOTES

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY:	DATE:	APPROVED:	DATE:
CHIEF, DESIGN BRANCH		CHIEF, ENGINEERING DIVISION	
SPEC: NO. --		FILE NAME: S-001.DGN	

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
DATE:

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
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LOS ANGELES, CA 90017
TEL (213) 327-0800, FAX (213) 612-0246

DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
S-001

Plot Date: $date$

STRUCTURAL CONCRETE CONT.

14. SPREAD BARS AROUND SMALL OPENINGS AND SLEEVES IN SLABS AND WALLS WHERE POSSIBLE AND WHERE BAR SPACING WILL NOT EXCEED 1.5 TIMES THE NORMAL SPACING. DISCONTINUE BARS AT LARGE OPENINGS WHERE NECESSARY AND PROVIDE AN AREA OF REINFORCEMENT EQUAL TO THE INTERRUPTED REINFORCEMENT DISTRIBUTING ONE-HALF OF THIS REINFORCEMENT EACH SIDE OF THE OPENING (TENSION LAP SPLICED). HOLES LARGER THAN 12 INCHES IN ANY DIRECTION SHALL HAVE (1) #6 X 4'-0" DIAGONAL BARS IN BOTH FACES AT EACH CORNER, UNLESS NOTED OTHERWISE.

15. VERTICAL AND HORIZONTAL CONSTRUCTION JOINTS AND EXPANSION JOINTS FOR CONCRETE WALLS AND SLABS SHALL NOT EXCEED 35 FEET SPACING, UNLESS NOTED OTHERWISE. NOT LESS THAN 48 HOURS SHALL ELAPSE BETWEEN CASTING OF ADJOINING UNITS UNLESS THESE REQUIREMENTS ARE WAIVED BY THE CONTRACTING OFFICER. THE STEEL REINFORCING SHOP DRAWINGS SHALL INDICATE THE LOCATIONS OF ALL PROPOSED JOINTS.

16. ALL REINFORCING SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONFORMANCE WITH CRSI MANUAL OF STANDARD PRACTICE DURING THE PLACING OF CONCRETE.

17. NO REINFORCING STEEL SHALL BE FIELD BENT WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER. FIELD BENDING OF PLAIN REINFORCEMENT, IF PERMITTED, SHALL BE PERFORMED USING AN APPROVED AND APPROPRIATE SIZED PORTABLE HYDRAULIC DEVICE THAT MAKES ACI STANDARD RADIUS BENDS. NO OTHER FIELD BENDING METHOD SHALL BE PERMITTED.

18. WELDING, INCLUDING TACK WELDING, FOR REINFORCING STEEL IS PROHIBITED. WELDING OF REINFORCING STEEL AND HIGH STRENGTH BOLTS (A325, A490) WILL BE PERMITTED ONLY BY WRITTEN APPROVAL OF THE ENGINEER.

19. ALL OPENINGS THROUGH WALLS, SLABS OR OTHER STRUCTURAL ELEMENTS NOT DETAILED ON THE STRUCTURAL DRAWINGS MUST BE LOCATED BY THE CONTRACTOR AND SHOWN ON THE APPLICABLE REINFORCING STEEL SHOP DRAWINGS. THE FINAL LOCATION OF ALL OPENINGS MUST BE REVIEWED BY THE ENGINEER BEFORE THE CONCRETE IS POURED.

20. MODIFICATION AND REPAIR TO EXISTING CONCRETE: (A) SEE CONCRETE SPECIFICATIONS FOR COMPLETE EXPLANATION. (B) CONNECTION METHODS - METHOD A - BONDING TO SATURATED SURFACE METHOD B - BONDING BY USING BONDING AGENT METHOD C - DOWELS USING EPOXY BONDING AGENT

D. FOOTINGS

1. PROVIDE SHEAR KEYS IN THE TOPS OF WALL FOOTINGS SUPPORTING CONCRETE WALLS AND IN THE TOPS OF COLUMN FOOTINGS AT CONCRETE WALLS.
2. CENTER ALL FOOTINGS ON WALL, PIER OR COLUMN ABOVE UNLESS OTHERWISE INDICATED.
3. UNLESS OTHERWISE INDICATED, CONTINUOUS WALL FOOTINGS SHALL BE TWICE THE WIDTH OF THE WALL ABOVE AND THE FOOTING DEPTH SHALL BE EQUAL TO THE WIDTH OF THE WALL ABOVE. THE MINIMUM FOOTING DEPTH SHALL BE ONE FOOT. PROVIDE (3) #4 BOTTOM BARS, CONTINUOUS IN FOOTINGS UNDER WALLS UNLESS SHOWN OTHERWISE. MINIMUM OF 3 TIMES DIAMETER ON CENTER.

E. FORMWORK:

1. SEE SPECIFICATIONS.
2. KEYS INDICATED ARE TO BE 2x4 NOMINAL CONTINUOUS, U.N.O.
3. CAMBER: PROVIDE CAMBER TO COMPENSATE FOR DISPLACEMENT OF FORMS (SEE ALSO SPECS.) AND TO PROVIDE AS-CAST MEMBER CAMBER AS NOTED ON DRAWINGS.
4. PROVIDE 3/4" CHAMFER AT ALL EXPOSED CORNERS OF BEAMS, WALLS ETC. UNLESS OTHERWISE NOTED.
5. OPENINGS FOR MEP TRADES ARE TO BE INCLUDED IN THE BID. ALL HOLES FOR OTHER TRADES WHICH MUST BE CUT OR FORMED AND WHICH ARE NOT SHOWN ON THE STRUCTURAL DESIGN(S) DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER DESIGNER FOR REVIEW AND APPROVAL. ANY STRENGTHENING OR ADDITIONAL REINFORCEMENT REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.

F. CONCRETE FINISHES: SEE SPECIFICATIONS.

1. FORMED SURFACES:
   a. EXPOSED TO VIEW: APPLY THOROSEAL OR APPROVED EQUAL (CEMENT BASED COATING) OVER GROUT-CLEANED FINISH TO ALL EXPOSED CONCRETE SURFACES PER MANUFACTURER'S SPECIFICATIONS.

2. FLATWORK SURFACES:
   a. ALL EXPOSED CONCRETE SHALL HAVE A CLASS 'A' FINISH, BROOMED.

G. CURING AND PROTECTION: SEE SPECIFICATIONS.

H. SEE THE MECHANICAL, ELECTRICAL AND SUPPLIERS DRAWINGS AND THE SPECIFICATIONS FOR THE LOCATIONS OF SPECIAL ANCHORS, CHAMFERS, SLEEVES, PIPES, CONDUITS AND OTHER DETAILS NOT SHOWN ON THE STRUCTURAL DRAWINGS.

J. EMBEDDED PIPES OR CONDUIT. MAXIMUM DIAMETER ONE THIRD x SLAB OR WALL THICKNESS, SPACED MINIMUM OF 3 TIMES DIAMETER ON CENTER.

STRUCTURAL CONCRETE CONT.

K. SIZE AND LOCATION OF EQUIPMENT PADS AND ANCHOR BOLTS SHALL BE AS REQUIRED BY THE EQUIPMENT MANUFACTURER.

L. PROVIDE WATERSTOPS IN CONSTRUCTION JOINTS WHERE INDICATED. WATERSTOPS SHALL BE COMPRISED OF THE FOLLOWING TYPES:

TYPE 1 - 9" PVC RIBBED WITH CENTERBULB, GREENSTREAK 696 OR EQUIVALENT IN STRENGTH ELONGATION CHARACTERISTICS, MATERIAL PROPERTIES AND GEOMETRY

TYPE 2 - 6" PVC RIBBED, GREENSTREAK 783 OR EQUIVALENT IN STRENGTH ELONGATION CHARACTERISTICS, MATERIAL PROPERTIES AND GEOMETRY

TYPE 3 - 6" PVC RIBBED WITH CENTERBULT, GREENSTREAK 705 OR EQUIVALENT IN STRENGTH ELONGATION CHARACTERISTICS, MATERIAL PROPERTIES AND GEOMETRY

TYPE 4 - PVC RETROFIT WATERSTOP, GREENSTREAK 609 OR EQUIVALENT IN STRENGTH ELONGATION CHARACHITERISTICS MATERIAL PROPERTIES AND GEOMETRY

TENSION DEVELOPMENT / LAP SPLICE SCHEDULE (UNCOATED BARS)

DEVELOPMENT / LAP SPLICE LENGTH IN CONCRETE (f'c = 4000 PSI)				
BAR SIZE	DEVELOPMENT LENGTH (IN)		CLASS 'B' LAP SPLICE LENGTH (IN)	
	BAR TYPE 1	BAR TYPE 2	BAR TYPE 1	BAR TYPE 2
3	15	22	19	28
4	19	29	25	37
5	24	36	31	47
6	29	43	37	56
7	42	63	54	81
8	48	72	62	93
9	54	81	70	105
10	61	91	79	118
11	74	111	97	145

BAR TYPE 1 - CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN Db, CLEAR COVER NOT LESS THAN Db, AND STIRRUPS OR TIES THROUGHOUT Ld NOT LESS THAN CODE MINIMUM OR CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESSTHAN 2*Db AND CLEAR COVER NOT LESS THAN Db.

BAR TYPE 2 - TOP BARS WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW AND OTHER CASES

MISCELLANEOUS METALS

A. REFERENCES:

1. AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION
2. AWS D1.1 STRUCTURAL WELDING CODE - STEEL

B. MATERIALS:

1. GRADE STEEL:

WIDE FLANGES	ASTM A992, (GRADE 50)
CHANNELS, ANGLES AND PLATES	ASTM A36
SHEAR CONNECTOR PLATESASTM	A572, GRADE 50
STRUCTURAL PIPE	ASTM A 53, GRADE B, Fy=35 KSI
ROUND HSS:	ASTM A500, GRADE B, Fy=42 KSI
SQUARE OR RECTANGLE HSS:	ASTM A500, GRADE B, Fy=46 KSI

2. WELDED STUDS: ASTM A108, GRADE 60
3. ANCHOR RODS: ASTM F593
4. STRUCTURAL BOLTS: ASTM A325-N
5. WELDS: E70XX ELECTRODES

C. SHOP DRAWINGS.

1. SUBMIT ERECTION AND FABRICATION SHOP DRAWINGS. SEE SPECS.

D. COATINGS :

1. ALL STEEL MATERIAL SHALL BE HOT-DIPPED GALVANIZED, UNLESS NOTED OTHERWISE.

ABBREVIATIONS

A.B.	- ANCHOR BOLT	F.F.	- FAR FACE	N.T.S.	- NOT TO SCALE
ADD'L	- ADDITIONAL	FLG.	- FLANGE	OBE	- OPERATIONAL BASIS EARTHQL
A.R.	- ANCHOR ROD	FLR.	- FLOOR	O/C	- ON CENTER
ALT.	- ALTERNATIVE	FDN.	- FOUNDATION	OPG'N	- OPENING
ALUM	- ALUMINUM	F.S.	- FAR SIDE	PL.	- PLATE
APPROX.	- APPROXIMATE	FT.	- FOOT	PLF	- POUNDS PER LINEAR FOOT
@	- AT	FTG.	- FOOTING	PSF	- POUNDS PER SQUARE FOOT
BLDG.	- BUILDING	GA.	- GAGE	PSI	- POUNDS PER SQUARE INCH
BM.	- BEAM	GALV.	- GALVANIZED	RAD.	- RADIUS
BNT.	- BENT	GR.	- GRADE	RE	- REFER TO
B.O.	- BOTTOM OF	GRTG.	- GRATING	REINF.	- REINFORCEMENT
c/c	- CENTER TO CENTER	H.F.B.	- HIGH FLOW BYPASS	REQ'D	- REQUIRED
CFS	- COLD FORMED STEEL	HORIZ.	- HORIZONTAL	REV.	- REVISED/REVISION
C.J.	- CONTROL JOINT	H.P.	- HIGH POINT	SEC.	- SECTION
C/L	- CENTERLINE	H.R.	- HANDRAIL	SCHED.	- SCHEDULE
CLR.	- CLEAR	HT.	- HEIGHT	SHT	- SHEET
COL.	- COLUMN	I.D.	- INSIDE DIAMETER	SIM.	- SIMILAR
CONC.	- CONCRETE	I.F.	- INSIDE FACE	SPA.	- SPACE
CONST.	- CONSTRUCTION	I.J.	- ISOLATED JOINT	SPEC.	- SPECIFICATION
CONT.	- CONTINUOUS	IN.	- INCH	SQ.	- SQUARE
CTR.	- CENTER	INV.	- INVERT	S.S.	- STAINLESS STEEL
DBA.	- DEFORMED BAR ANCHOR	JNT.	- JOINT	S.G.	- SLUICE GATE
DET.	- DETAIL	JST.	- JOIST	STD.	- STANDARD
DEMO	- DEMOLITION	L	- ANGLE	STL.	- STEEL
DIA.	- DIAMETER	LLH	- LONG LEG HORIZ.	STRUCT.	- STRUCTURAL
DIM.	- DIMENSION	LLV	- LONG LEG VERT.	S.W.	- SHEAR WALL
DN	- DOWN	LG.	- LONG	TEMP.	- TEMPERATURE
do	- DITTO	L.P.	- LOW POINT	T/	- TOP OF.
DWG	- DRAWING	LYR.	- LAYER	T.O.C.	- TOP OF CONCRETE
DWL.	- DOWEL	LWR.	- LOWER	T.O.S.	- TOP OF SLAB
EA.	- EACH	MAT'L.	- MATERIAL	T.O.W.	- TOP OF WALL
E.F.	- EACH FACE	MAX.	- MAXIMUM	TRANSV.	- TRANSVERSE
E.J.	- EXPANSION JOINT	MECH.	- MECHANICAL	TYP.	- TYPICAL
EL./ELEV.	- ELEVATION	MFR.	- MANUFACTURER	U.N.O.	- UNLESS NOTED OTHERWISE
ELEC.	- ELECTRICAL	MID.	- MIDDLE / MIDPOINT	VERT.	- VERTICAL
EMB.	- EMBED / EMBEDMENT	MIN.	- MINIMUM	V.I.F.	- VERIFY IN FIELD
EQ.	- EQUAL	MISC.	- MISCELLANEOUS	w/	- WITH
E.W.	- EACH WAY	MTL.	- METAL	WD.	- WOOD
EXP.	- EXPANSION	NEC.	- NECESSARY	W/O	- WITHOUT
EXIST.	- EXISTING	N.F.	- NEAR FACE	W.P.	- WORK POINT
F.F.	- FAR FACE			WSE	- WATER SURFACE ELEVATION
				WWF	- WELDED WIRE FABRIC

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

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VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL GENERAL NOTES

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PREPARED UNDER THE DIRECTION OF:
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DISTRICT FILE NO. 214/

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

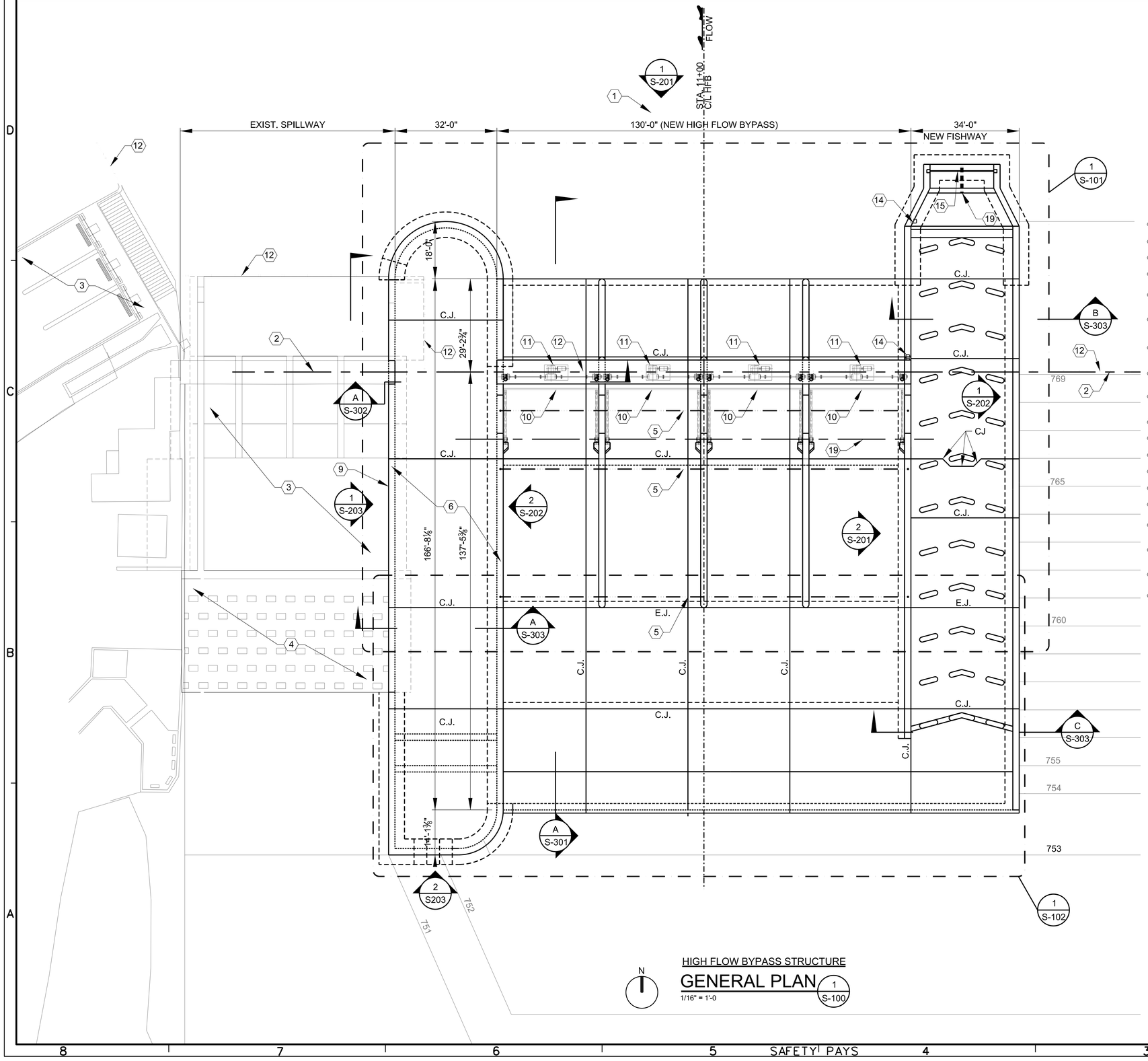
SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION
SPEC. NO. --
FILE NAME: S-001.DGN

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
DATE:

Scale: AS SHOWN

SHEET
S-002

Plot Date: $date$



HIGH FLOW BYPASS STRUCTURE

GENERAL PLAN

1/16" = 1'-0

SCALE: 1/16" = 1'-0"

1'0 8' 16' 24'

SHEET NOTES:

1. REFER TO SHEETS S-001 AND S-002 FOR EXCAVATION AND FOUNDATION CRITERIA.
2. REFER TO SHEET S-501 FOR TYPICAL CONCRETE DETAILS.
3. REFER TO SHEET S-502 FOR TYPICAL GUARD RAIL DETAILS
3. REFER TO MECHANICAL DRAWINGS FOR TAINTER GATE LAYOUT
4. REFER TO CIVIL DRAWINGS FOR HFB LAYOUT AND FINISH GRADING.
5. C.J. - DENOTES CONSTRUCTION JOINT. REFER TO SHEET S-501 FOR DETAILS.
6. E.J. - DENOTES EXPANSION JOINT. REFER TO SHEET S-501 FOR DETAILS.
7. REFER TO SHEET S-102 FOR THE FOOTING SCHEDULE.

KEYNOTE LEGEND

1. CENTERLINE TRUNNION
2. DAM AXIS CONTROL LINE (EXISTING SPILLWAY REFERENCE LINE).
3. EXISTING DIVERSION DAM STRUCTURE.
4. EXISTING BAFFELED APRON STRUCTURE.
5. SUBDRAIN COLLECTOR SYSTEM. REFER TO SHEET C-313 FOR DETAILS OF SYSTEM.
6. ADD BACKFILL BETWEEN NEW AND EXISTING WALLS. CAP WITH 12" THICK CLASS 2 AGGREGATE AND NEW 8" SLAB-ON-GRADE w/ #5@12" O.C E.W., MID-DEPTH.
7. GUARD RAIL. ALL STEEL METALWORK SHALL CONFORM TO ASTM A36 AND SHALL BE HOT-DIPPED GALVANIZED. REFER TO SHEET S-502.
8. CONCRETE CORBEL SUPPORT FOR TAINTER GATE TRUNION. REFER TO SHEET S-302.
9. PARTIALLY DEMO EXISTING SPILWAY WALL AND REPLACE WITH NEW. REFER TO SHEET S-204.
10. TAINTER GATE. REFER TO MECHANICAL.
11. 15 TON TAINTER GATE HOIST. REFER TO MECHANICAL.
12. C/L EXIST. TIMBER CUTOFF WALL BELOW GRADE.
13. CAST-IN-PLACE LADDER RUNGS (SS) PER CAL/OSHA.
14. LADDER SAFETY GATE WITH SELF CLOSING HINGES.
15. OVERSHOT GATE. REFER TO MECHANICAL.
16. EXISTING TIMBER WALL AND IMPERVIOUS FILL AT CUTOFF TRENCH. REPLACE MISSING OR DAMAGED TRENCH MATERIAL WITH CLSM.
17. 12" THICK CLASS 2 AGGREGATE BASE PER CALTRANS SPEC SECTION 26. TYPICAL UNDER ALL FOUNDATIONS.
18. 20" THICK CLASS 2 PERMEABLE MATERIAL PER CALTRANS SPEC SECTIOI 68. TYPICAL UNDER ALL SLABS.
19. 9 LINEAR FEET OF 6" PVC DRAIN LINE WITH FLAP GATE. REFER TO SHEE C-210.

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL GENERAL ARRANGEMENT PLAN

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
350 SOUTH FIGUEROA STREET, SUITE 380
LOS ANGELES, CA 90071
TEL (213) 327-0800, FAX (213) 612-0246

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
DISTRICT FILE NO. 214/

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION
SPEC. NO. --

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
DATE:
FILE NAME: S-100.DGN

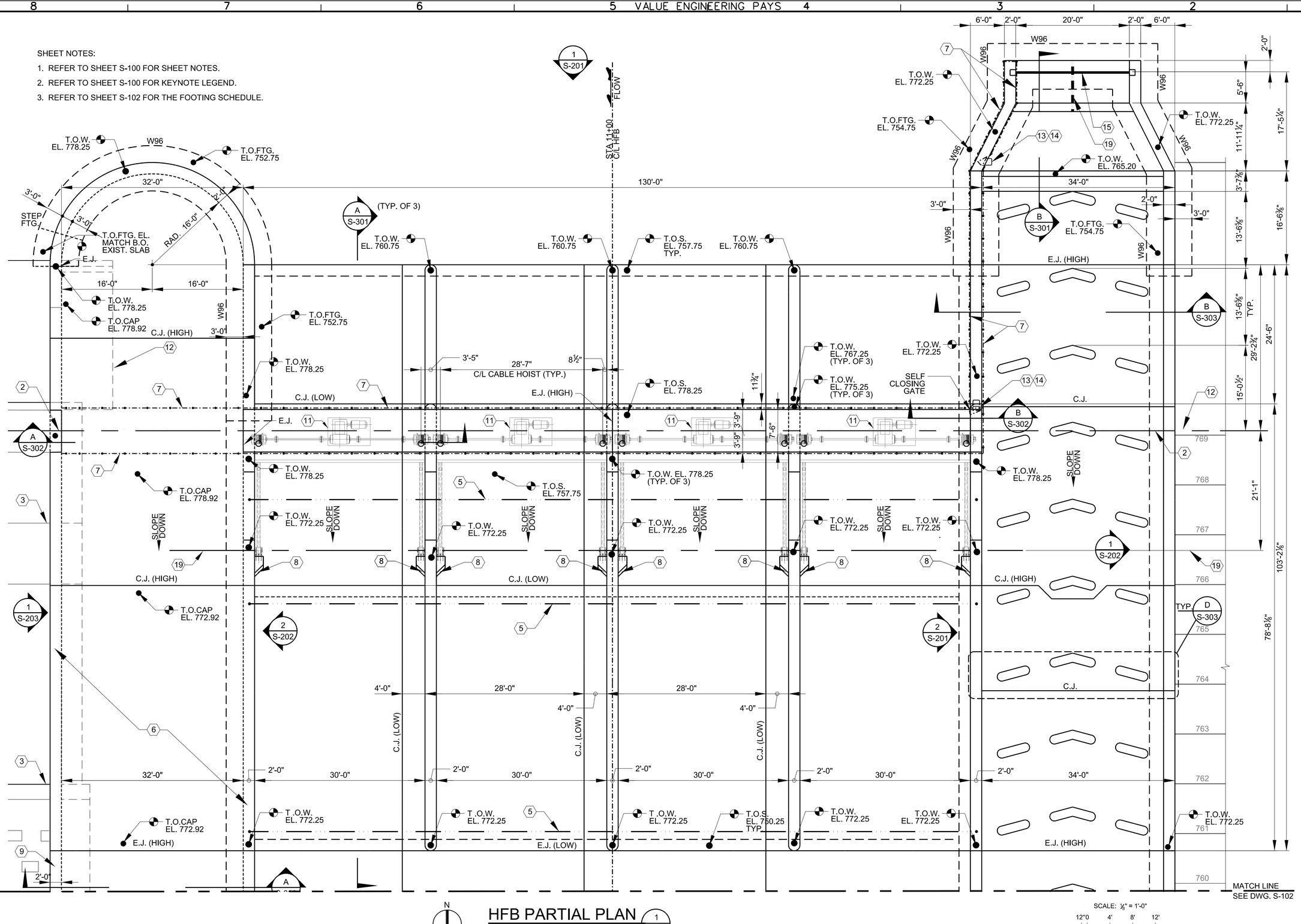
Scale: AS SHOWN

SHEET
S-100

Plot Date: $date$

SHEET NOTES:

1. REFER TO SHEET S-100 FOR SHEET NOTES.
2. REFER TO SHEET S-100 FOR KEYNOTE LEGEND.
3. REFER TO SHEET S-102 FOR THE FOOTING SCHEDULE.



HFB PARTIAL PLAN

1/8" = 1'-0

1 S-101

SCALE: ⅛" = 1'-0"

12"0 4' 8' 12'

N

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

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MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL GENERAL ARRANGEMENT
PARTIAL PLAN

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
1000 S. FREMONT, SUITE 300
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TEL (213) 327-0800, FAX (213) 612-0246

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
DISTRICT FILE NO. 214/

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION
SPEC. NO. --

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P. DATE:
FILE NAME: S-101.DGN

Scale: AS SHOWN

SHEET
S-101

Plot Date: $date$

VALUE ENGINEERING PAYS

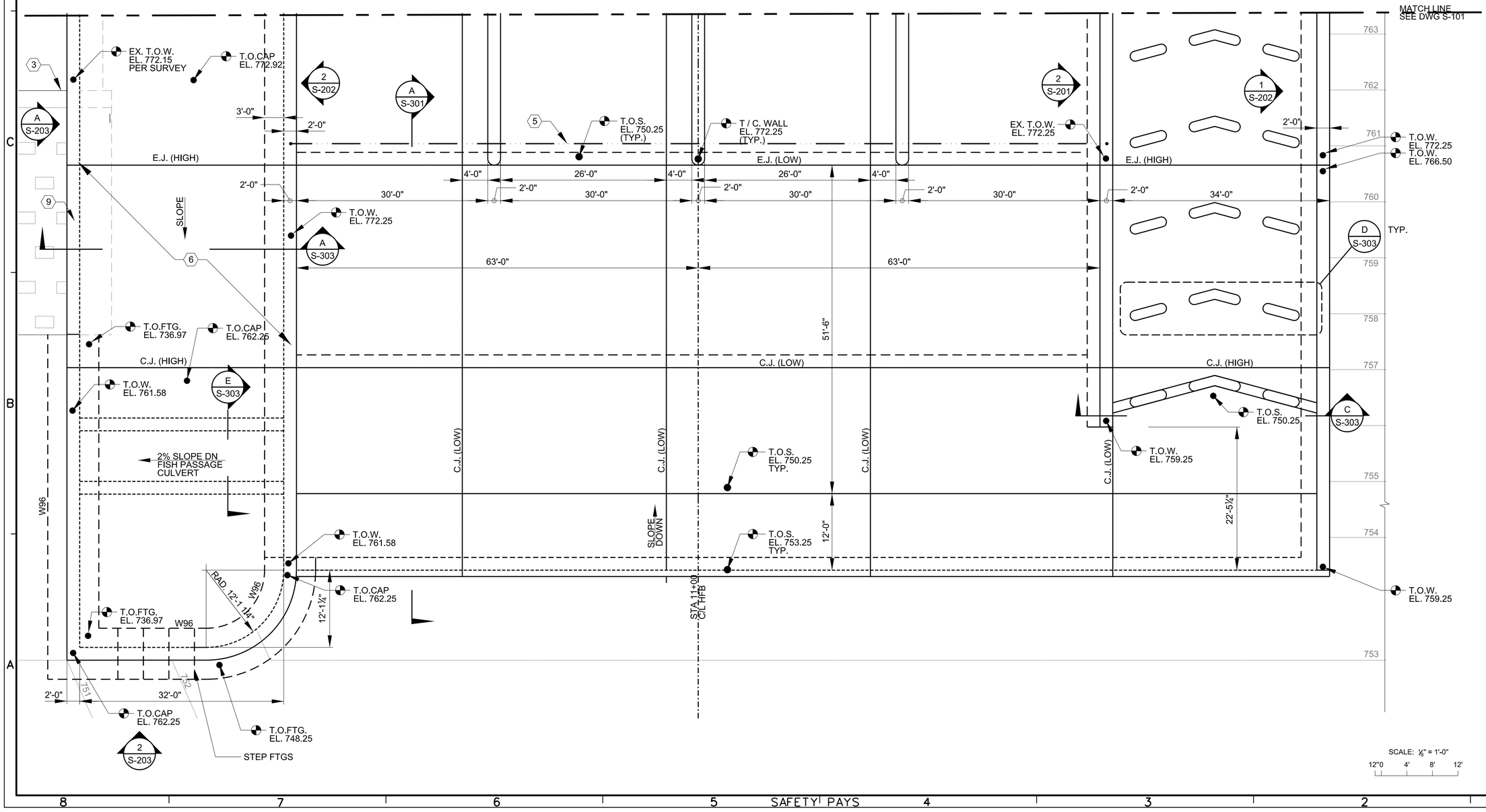
SAFETY PAYS

SHEET NOTES:

1. REFER TO SHEET S-100 FOR SHEET NOTES.
2. REFER TO SHEET S-100 FOR KEYNOTE LEGEND.

FOOTING SCHEDULE

MARK	SIZE	THICKNESS	REINFORCEMENT FOR ONE FOOTING			
			NO.	SIZE	LENGTH	REMARKS
W96	8'-0" CONT.	2'-0"	24	#7	CONT.	1/2 EACH (TOP & BOTTOM)
				#5	7'-4"	18" O.C. (TOP & BOTTOM)



PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL GENERAL ARRANGEMENT
PARTIAL PLAN

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TETRA TECH
300 NORTH LAKE AVENUE, SUITE 300
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TEL (213) 327-0800, FAX (213) 612-0246

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.

SPEC. NO.
FILE NAME: S-101.DGN

DISTRICT FILE NO. 214/

Scale: AS SHOWN

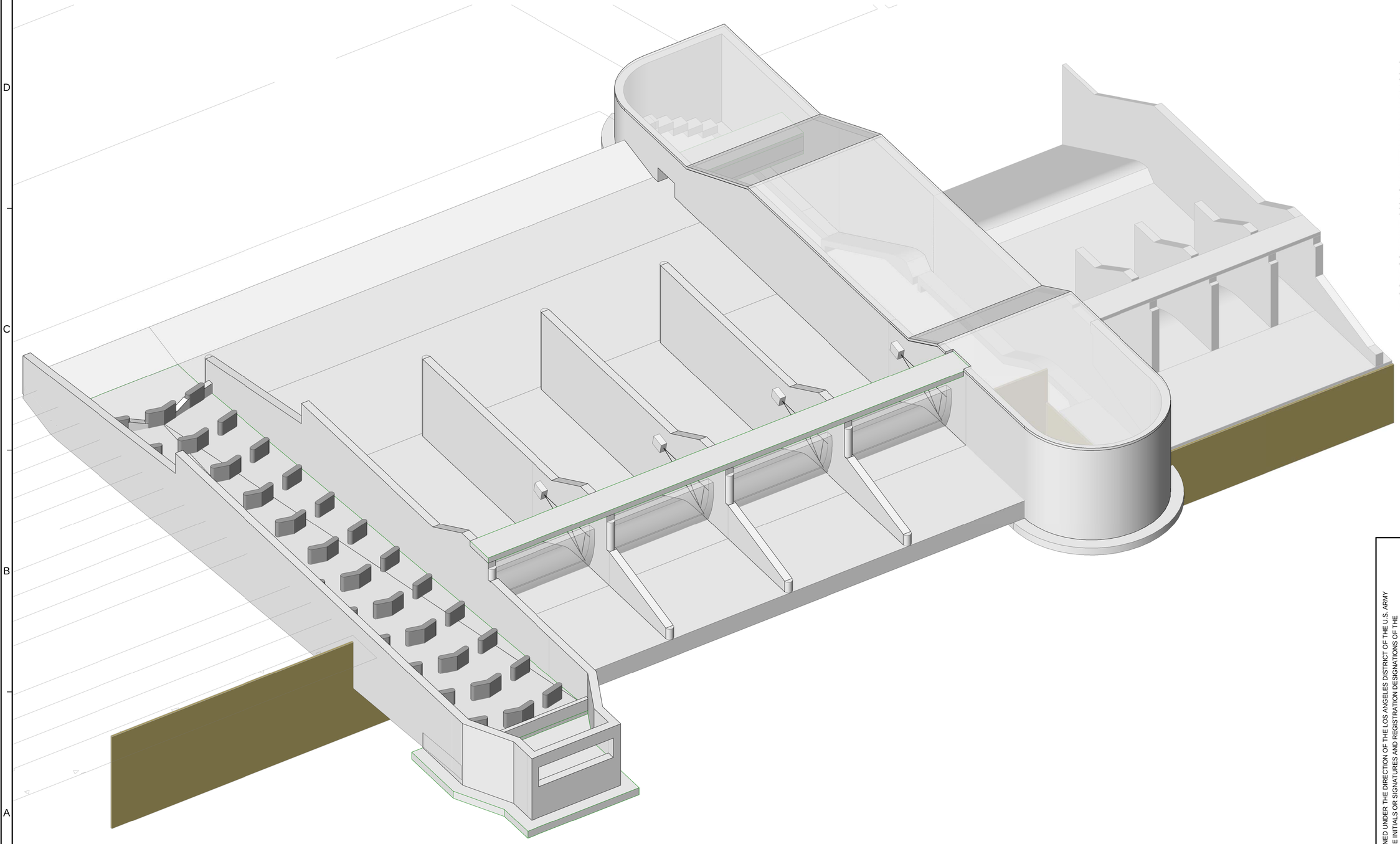
SHEET
S-102

Plot Date: $date$

VALUE ENGINEERING PAYS

SAFETY PAYS

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013



1 S-200 HSB ISOMETRIC VIEW

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

ISOMETRIC VIEWS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
350 WEST COLORADO STREET, SUITE 300
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TEL (213) 327-0600 FAX (213) 612-0548

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION

DESIGNED BY: Designer
DRAWN BY: Author
CHECKED BY: Checker
DATE:

SPEC. NO.
FILE NAME:

DISTRICT FILE NO.

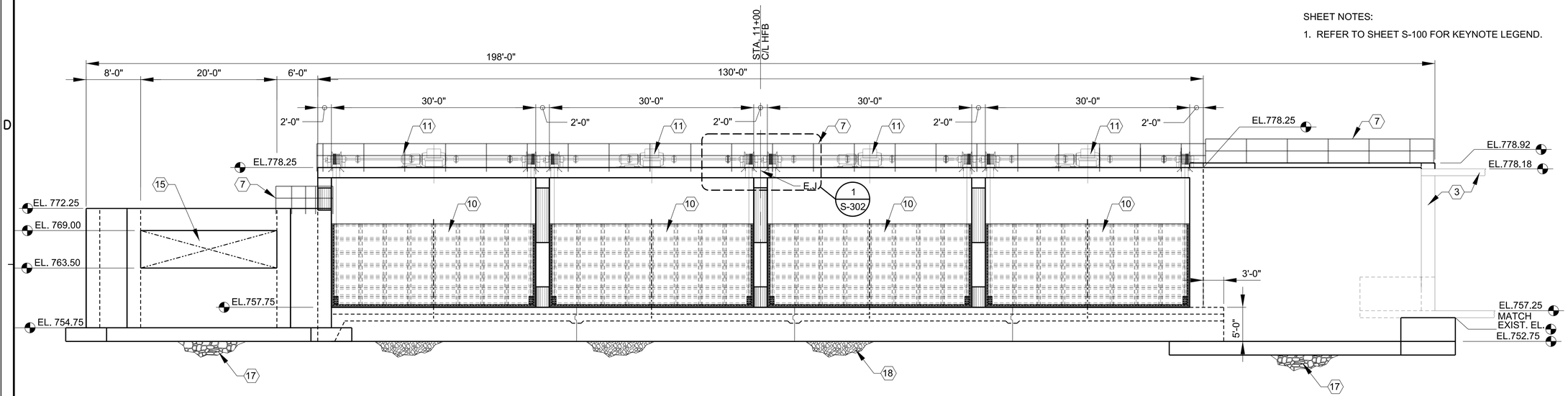
Scale: AS SHOWN

SHEET
S-200

Plot Date:

SHEET NOTES:

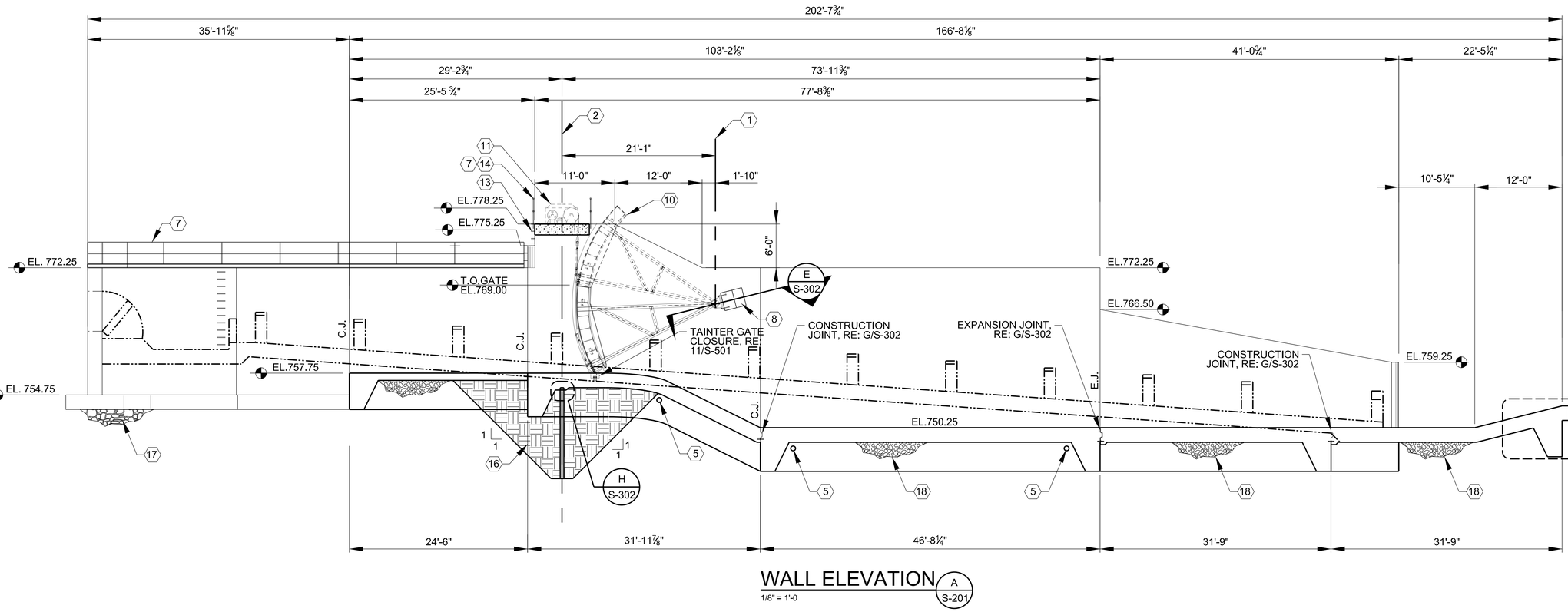
1. REFER TO SHEET S-100 FOR KEYNOTE LEGEND.



UPSTREAM ELEVATION

1/8" = 1'-0

1 S-201



WALL ELEVATION

1/8" = 1'-0

A S-201

SCALE: ⅛" = 1'-0"

12"0 4' 8' 12'

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL CONCRETE OUTLINE
ELEVATION & SECTIONS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

TETRA TECH
300 NORTH LAKE AVENUE, SUITE 300
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PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO.
DISTRICT FILE NO. 214/

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
FILE NAME: S-201.DGN

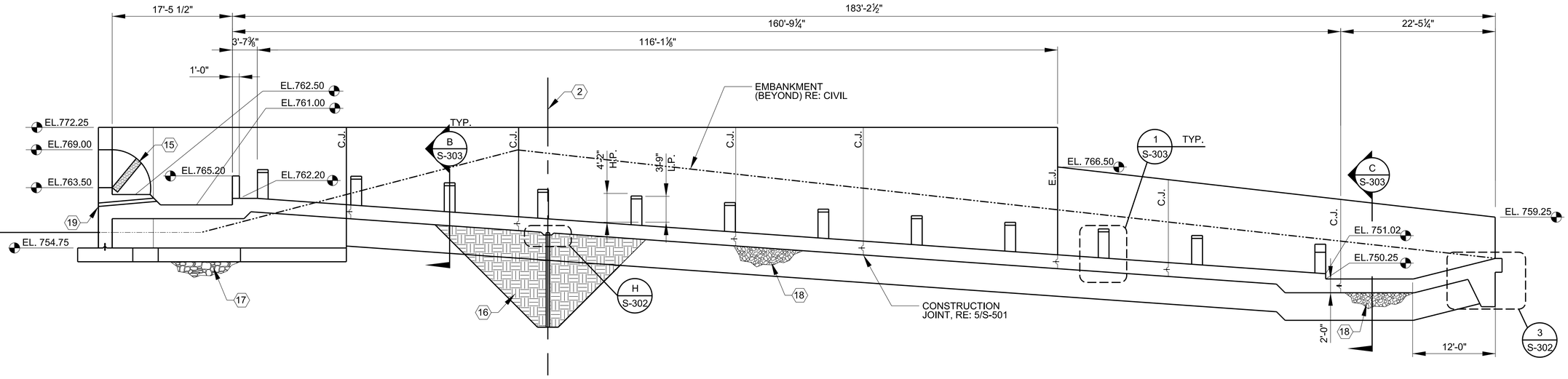
Scale: AS SHOWN

SHEET
S-201

Plot Date: $date$

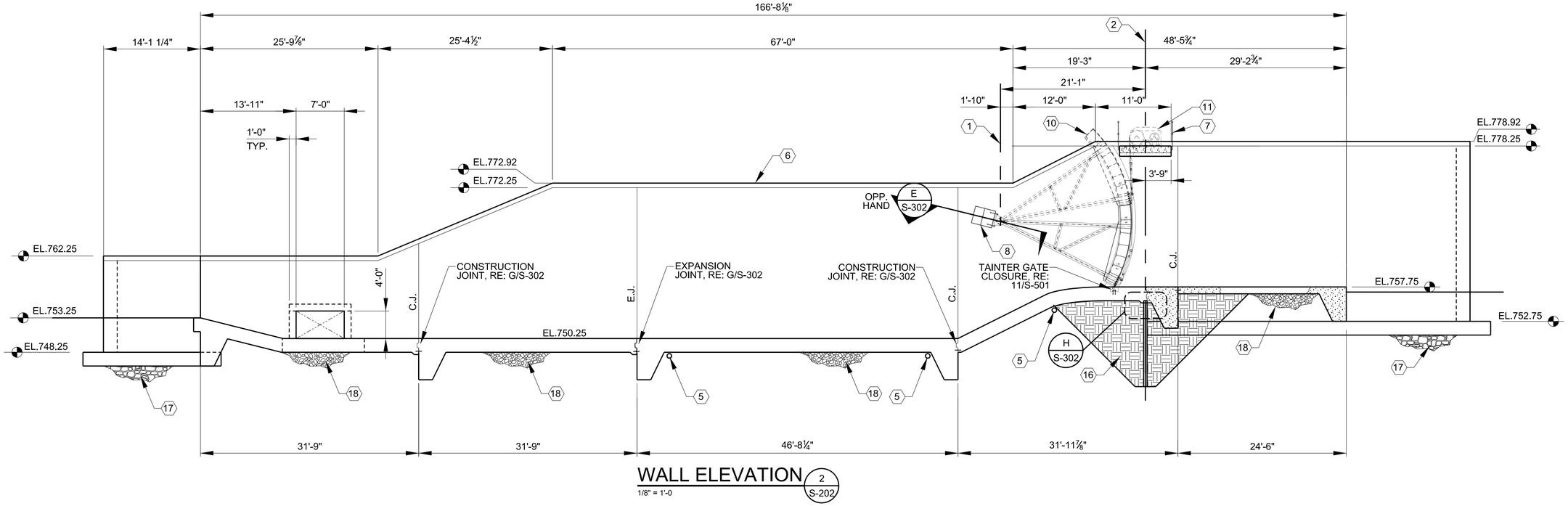
SHEET NOTES:

1. REFER TO SHEET S-100 FOR KEYNOTE LEGEND.



WALL ELEVATION 1/S-202

1/8" = 1'-0



WALL ELEVATION 2/S-202

1/8" = 1'-0

SCALE: ⅛" = 1'-0"

12"0 4' 8' 12'

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

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	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

HFB STRUCTURAL CONCRETE OUTLINE
ELEVATION & SECTIONS

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TETRA TECH
350 S. GRAND AVENUE, SUITE 1300
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TEL (213) 327-0800, FAX (213) 687-0246

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

SPEC. NO.

DISTRICT FILE NO. 214/

FILE NAME: S-201.DGN

Scale: AS SHOWN

SHEET
S-202

Plot Date: $date$

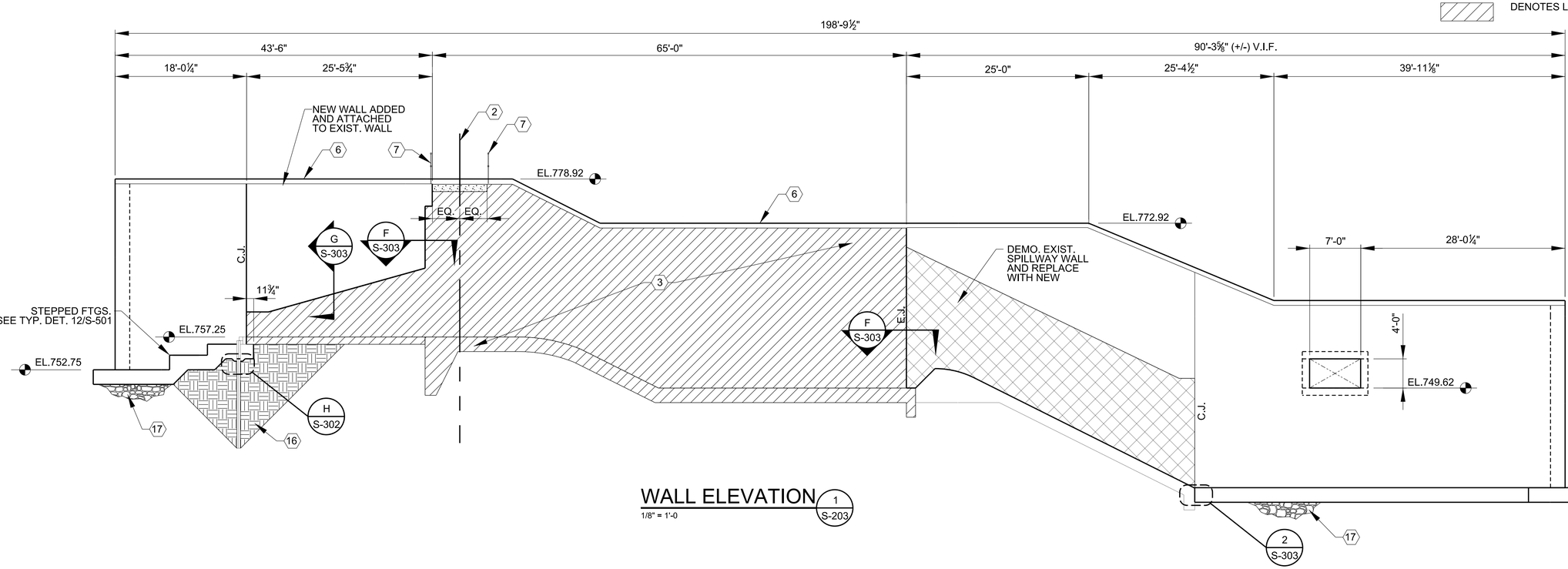
SHEET NOTES:

1. REFER TO SHEET S-100 FOR KEYNOTE LEGEND.

LEGEND:

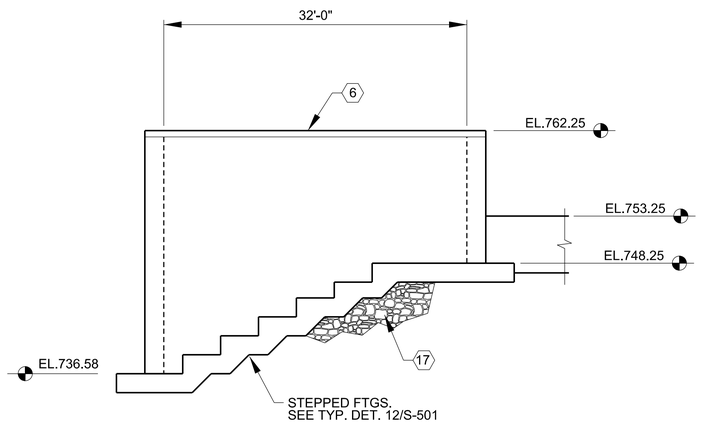
DENOTES LIMITS OF WALL DEMOLTION

DENOTES LIMITS OF EXISTING WALL



WALL ELEVATION 1 S-203

1/8" = 1'-0



PARTIAL WALL ELEVATIION 2 S-203

1/8" = 1'-0

SCALE: ⅛" = 1'-0"

12"0 4' 8' 12'

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL CONCRETE OUTLINE
SECTION

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PREPARED UNDER THE DIRECTION OF:
COL THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
350 SOUTH GRAND AVE., SUITE 350
LOS ANGELES, CA 90071
TEL (213) 327-0800, FAX (213) 620-0246

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

SPEC. NO.
FILE NAME: S-203.DGN
DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
S-203

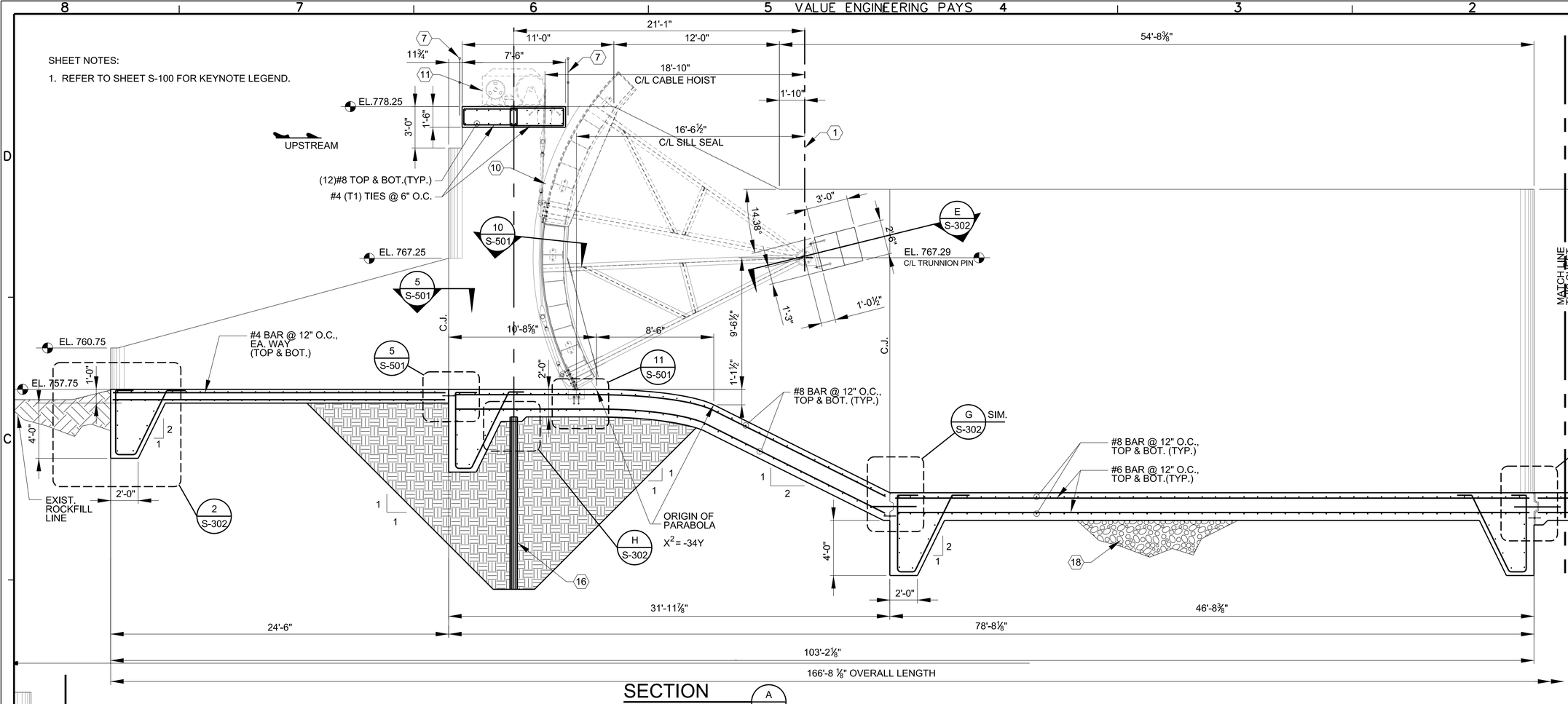
Plot Date: $date$

VALUE ENGINEERING PAYS

SAFETY! PAYS

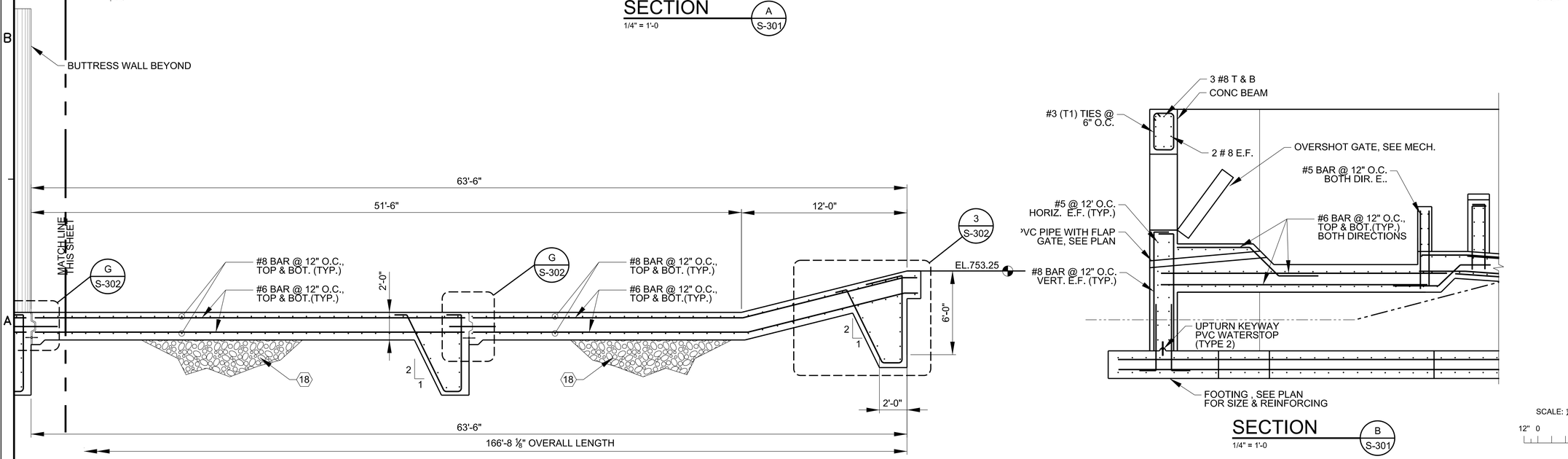
SHEET NOTES:

1. REFER TO SHEET S-100 FOR KEYNOTE LEGEND.



SECTION

1/4" = 1'-0 — A S-301



SECTION

1/4" = 1'-0 — B S-301

SCALE: ¼" = 1'-0"

12" 0 4'

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SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL REINFORCEMENT
SECTIONS

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
DATE:

SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION
SPEC. NO.
FILE NAME: S-301.DGN
DISTRICT FILE NO. 214/

TETRA TECH
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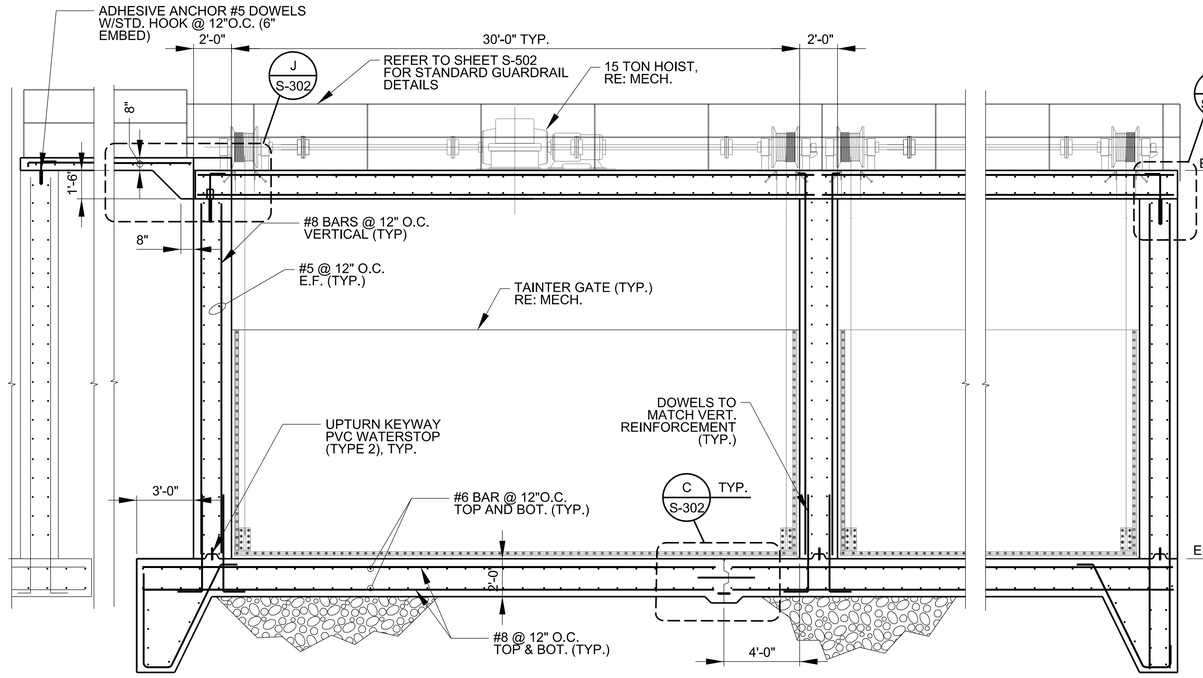
PASADENA, CALIFORNIA 91101
TEL (626) 351-4664 FAX (626) 351-5291

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

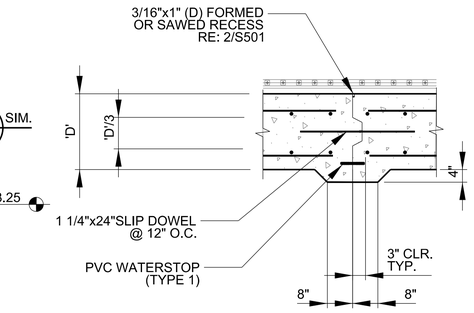
Scale: AS SHOWN

SHEET
S-301

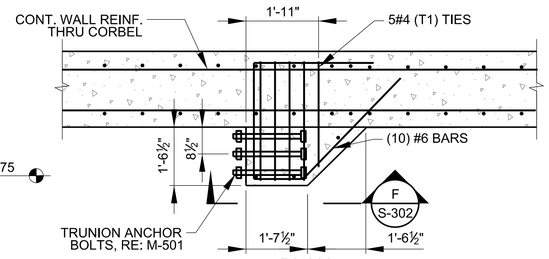
Plot Date: $date$



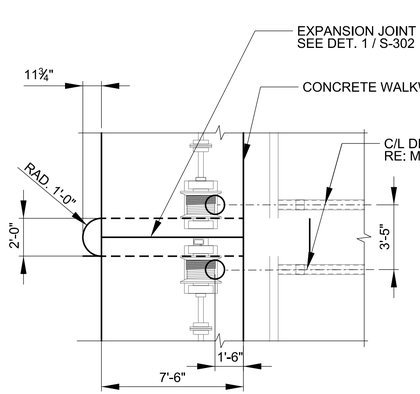
SECTION
A S-302
1/4" = 1'-0



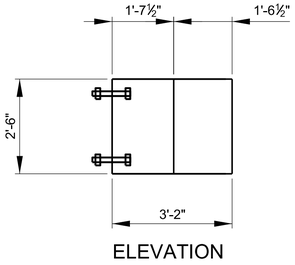
SLAB SECTION CONSTRUCTION JOINT (CJ)
C S-302
1/2" = 1'-0



PLAN



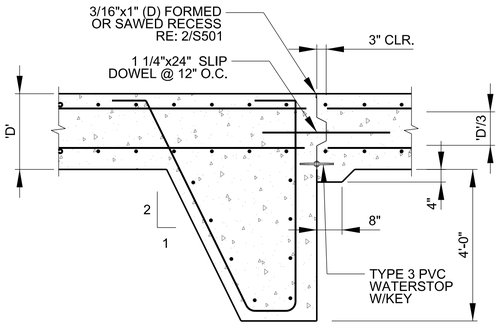
SECTION
D S-302
1/4" = 1'-0

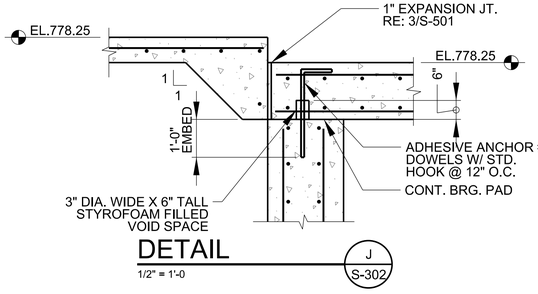


ELEVATION

SECTION
F S-302
1/2" = 1'-0

SECTION
B S-302
1/4" = 1'-0

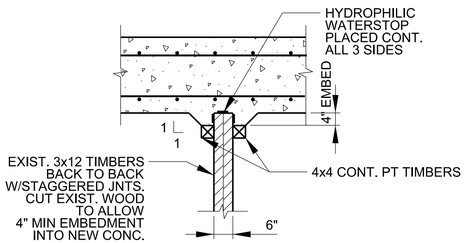




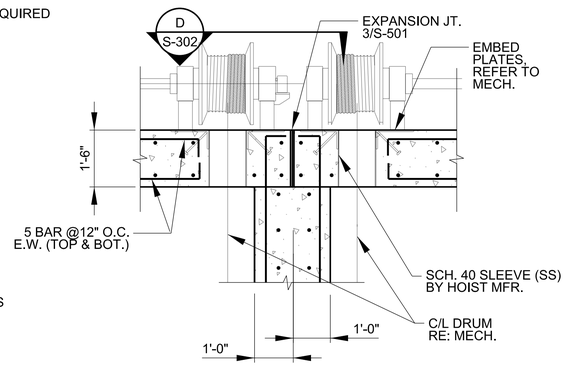
DETAIL
J S-302
1/2" = 1'-0

NOTE: REFER TO DETAIL 5/S-501 WHEN EXPANSION JOINT IS REQUIRED

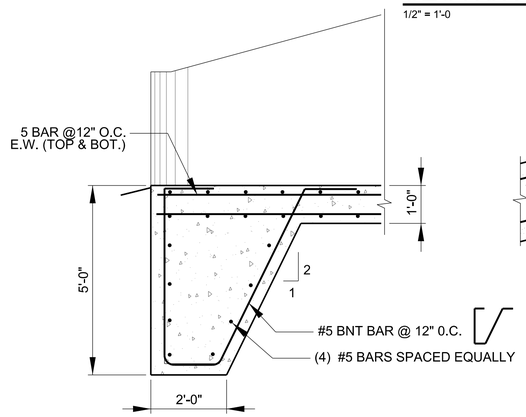
SLAB SECTION
G S-302
1/2" = 1'-0



DETAIL
H S-302
1/2" = 1'-0

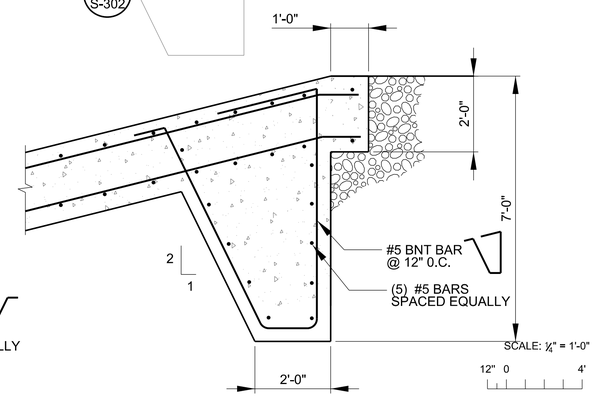


DETAIL
1 S-302
1/2" = 1'-0



DETAIL
2 S-302
1/2" = 1'-0

SECTION
E S-302
1/2" = 1'-0



DETAIL
3 S-302
1/2" = 1'-0

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL CONCRETE OUTLINE ELEVATION & SECTIONS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
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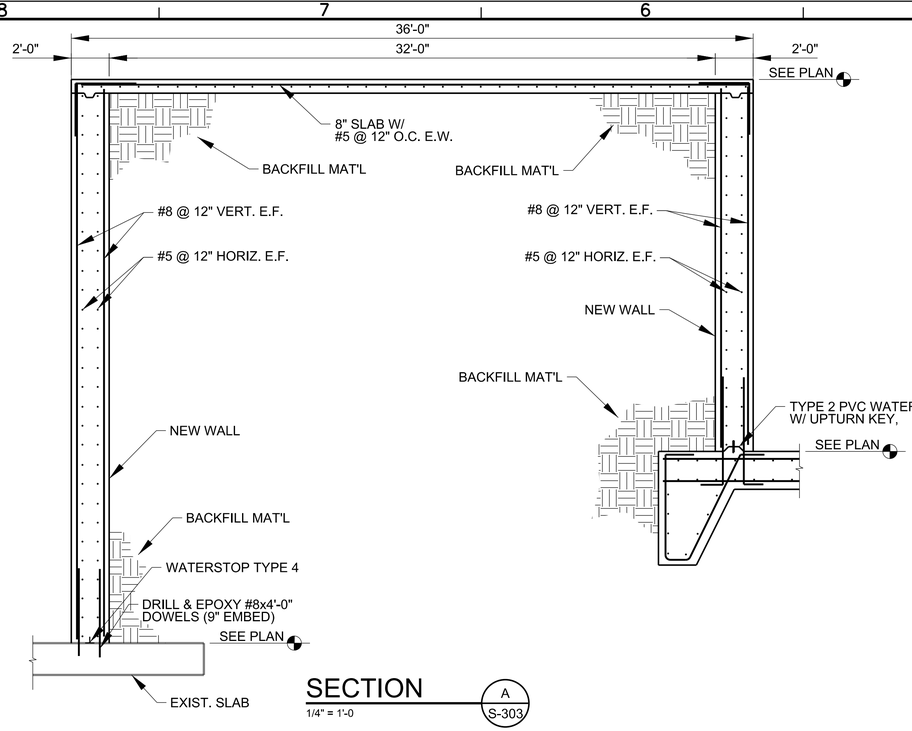
LOS ANGELES, CA 90071
TEL (213) 327-0800, FAX (213) 612-0246

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

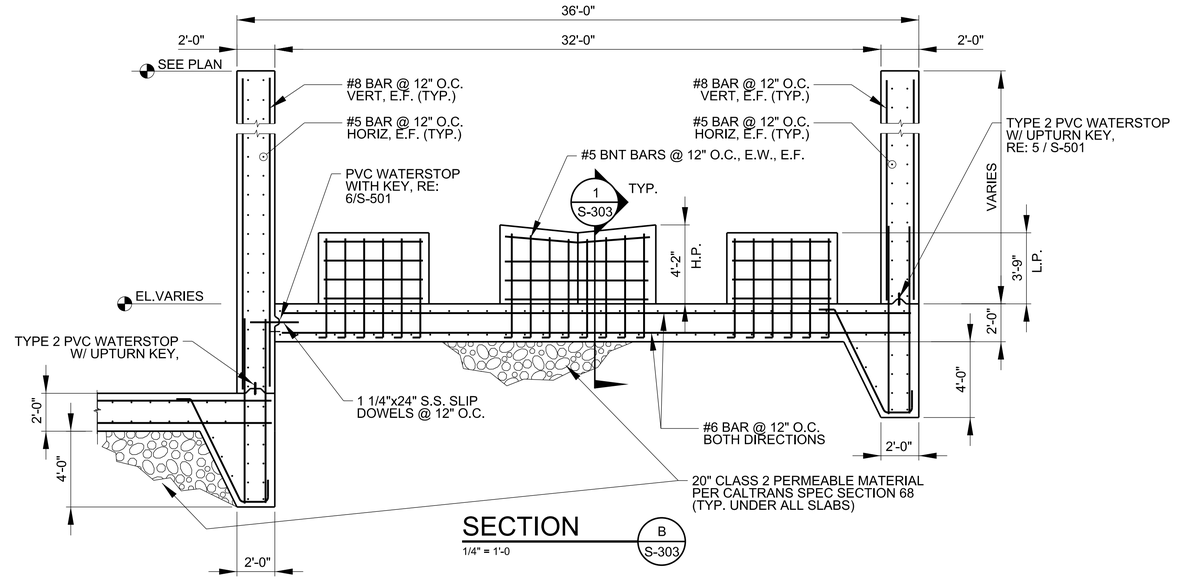
SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION
DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
SPEC. NO.
FILE NAME: S-302.DGN
DISTRICT FILE NO. 214/

Scale: AS SHOWN
SHEET
S-302

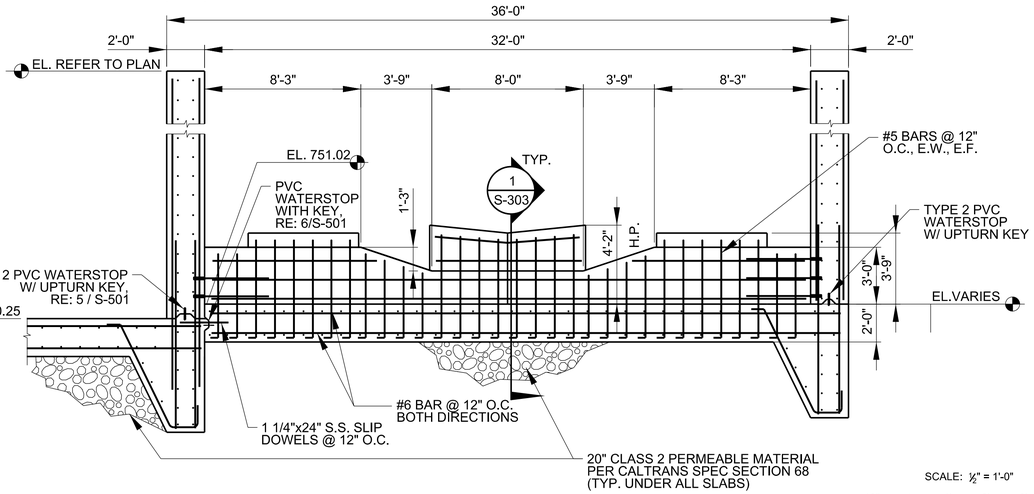
Plot Date: $date$



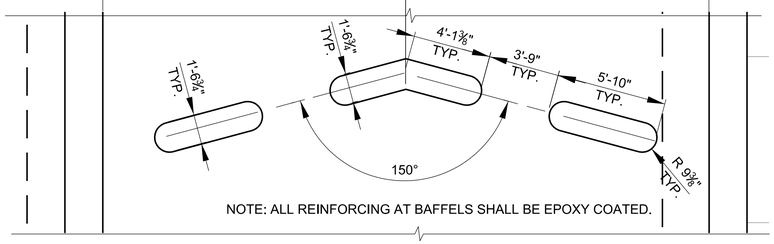
SECTION A S-303
1/4" = 1'-0



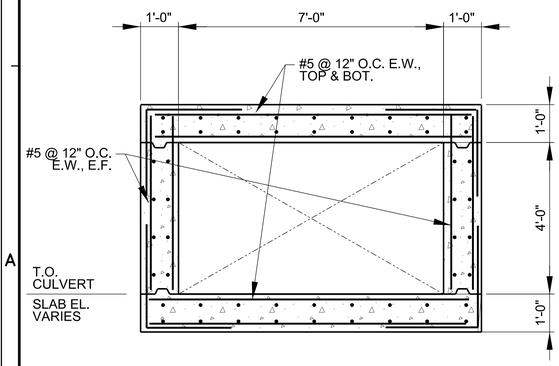
SECTION B S-303
1/4" = 1'-0



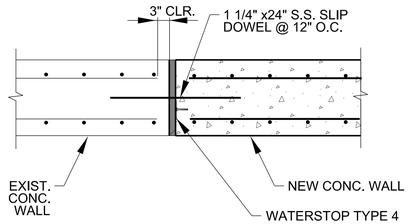
SECTION C S-303
1/4" = 1'-0



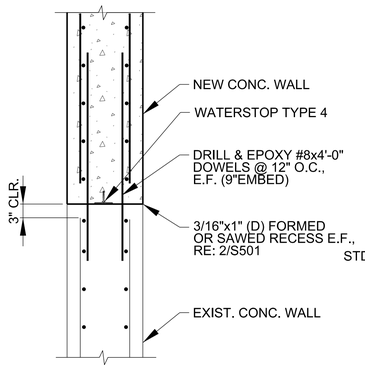
PARTIAL PLAN @ BAFFELS D S-303
1/4" = 1'-0



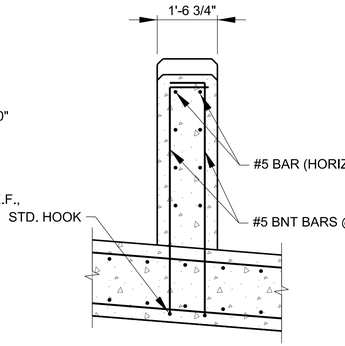
SECTION @ FISH
PASSAGE CULVERT E S-303
1/2" = 1'-0



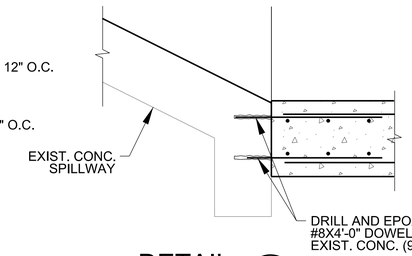
SECTION F S-303
1" = 1'-0



SECTION G S-303
1" = 1'-0



DETAIL 1 S-303
1/2" = 1'-0



DETAIL 2 S-303
1/2" = 1'-0

SCALE: ½" = 1'-0
12" 0 1' 2' 3' 4'

SCALE: ¼" = 1'-0
12" 0 4'

SCALE: ⅛" = 1'-0
12"0 4' 8' 12'

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL CONCRETE OUTLINE ELEVATION & SECTIONS

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY:	DATE:	APPROVED:	DATE:
CHIEF, DESIGN BRANCH		CHIEF, ENGINEERING DIVISION	
SPEC. NO.		FILE NAME:	S-303.DGN

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
350 SOUTH GRAND AVENUE, SUITE 300
LOS ANGELES CA 90071
TEL (213) 327-0800, FAX (213) 612-0246

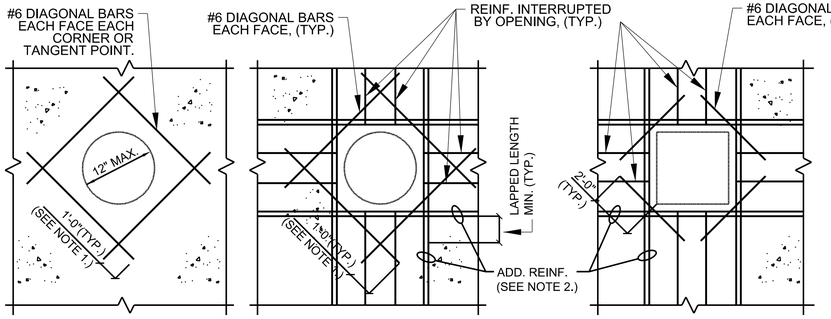
DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
S-303

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

Plot Date: $date$



OPENINGS UP TO 12"

NOTE 1:

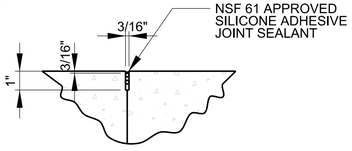
WHERE REQUIRED LAPS ARE NOT POSSIBLE DUE TO PRESENCE OF ADJACENT HOLES OR CORNERS, PROVIDE STANDARD END HOOK.

OPENINGS GREATER THAN 12"

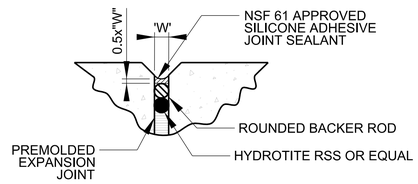
NOTE 2:

PROVIDE ADD. BARS W/AREA EQUAL TO INTERRUPTED REINF. PLACE 1/2 EACH SIDE OF OPENING (2 BARS MIN.) (TYP.)

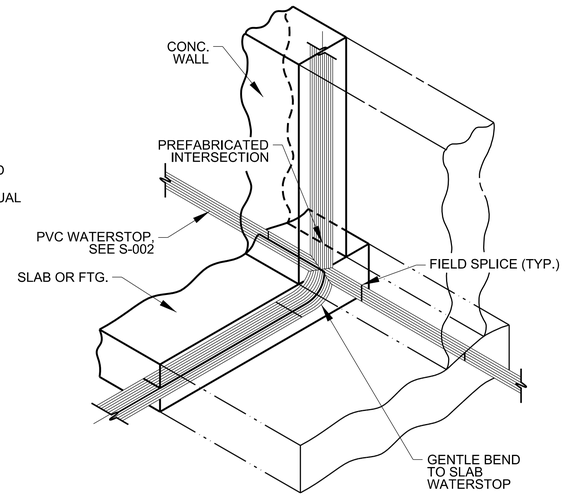
REINF. AT OPENING DETAILS
1 / S-501
N.T.S.



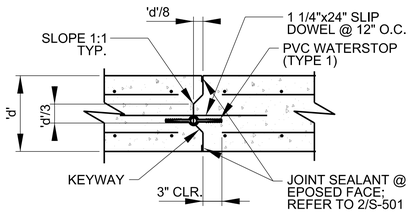
CONSTRUCTION JOINT DETAIL
2 / S-501
3" = 1'-0



EXPANSION JOINT DETAIL
3 / S-501
3" = 1'-0

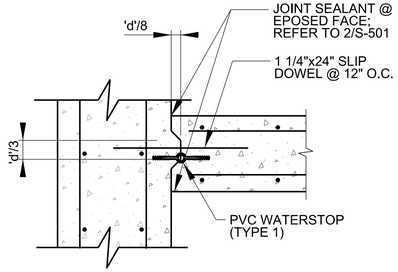


TYP. PVC / WATERSTOP AT SLAB AND WALLS
4 / S-501
N.T.S.

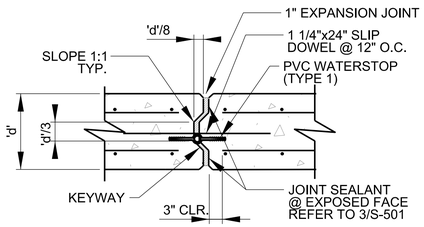


NOTE: EXCLUDE WATERSTOP FOR 8" SLAB-ON-GRADE CAP

TYP. CONSTRUCTION JOINT (CJ) FOR SLABS AND WALLS
5 / S-501
N.T.S.

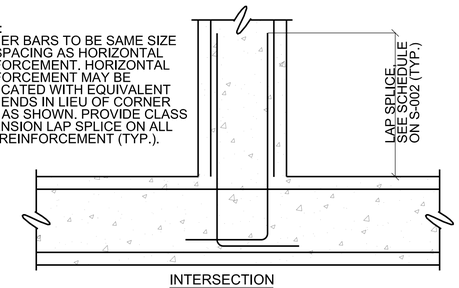


ALT. CONSTRUCTION JOINT (CJ) FOR SLABS AND WALLS
6 / S-501
N.T.S.

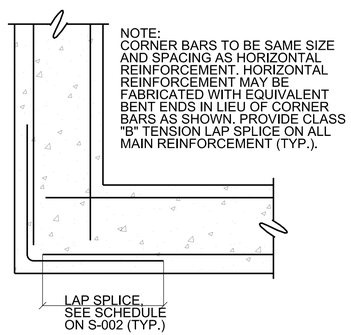


TYP. EXPANSION JOINT (E.J.) FOR SLABS AND WALLS
7 / S-501
N.T.S.

NOTE:
CORNER BARS TO BE SAME SIZE AND SPACING AS HORIZONTAL REINFORCEMENT. HORIZONTAL REINFORCEMENT MAY BE FABRICATED WITH EQUIVALENT BENT ENDS IN LIEU OF CORNER BARS AS SHOWN. PROVIDE CLASS "B" TENSION LAP SPLICE ON ALL MAIN REINFORCEMENT (TYP.).

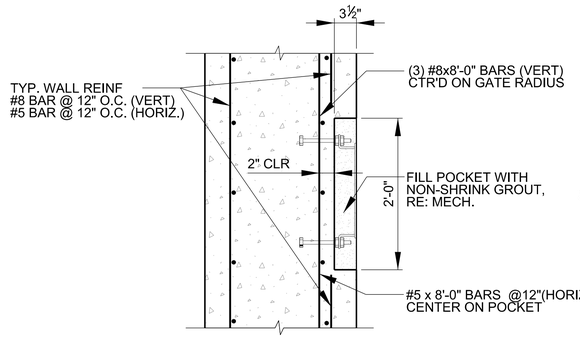


TYP. WALL & FOOTING, INTERSECTION BAR DETAIL
8 / S-501
N.T.S.

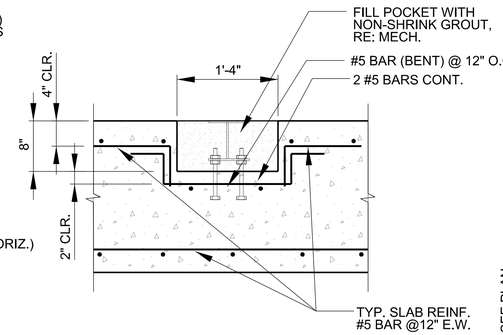


CORNER

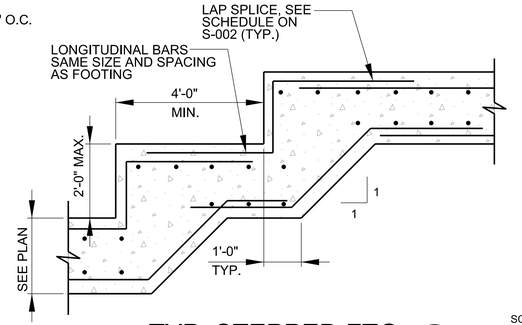
TYP. WALL & FOOTING, CORNER BAR DETAIL
9 / S-501
N.T.S.



TYP. SIDE CLOSURE AT TAINTER GATE
10 / S-501
1" = 1'-0"



TYP. BOTTOM CLOSURE @ TAINTER GATE
11 / S-501
1" = 1'-0"



TYP. STEPPED FTG.
12 / S-501
N.T.S.

SCALE: ¼" = 1'-0"
SCALE: 1" = 1'-0"
SCALE: 3" = 1'-0"

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL STANDARD DETAILS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION

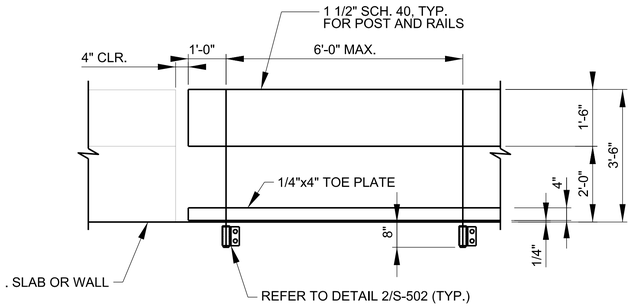
DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.
DATE:

DISTRICT FILE NO. 214/
SPEC. NO.
FILE NAME: S-501.DGN

Scale: AS SHOWN

SHEET
S-501

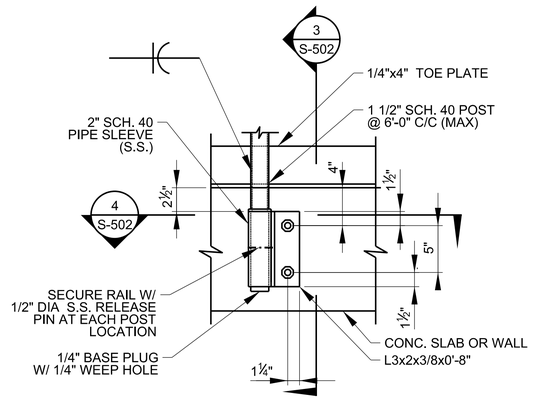
Plot Date: $date$



TYP. GUARDRAIL DETAIL

1/2" = 1'-0

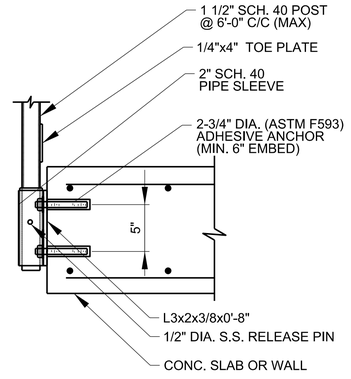
1 S-502



TYP. GUARDRAIL CONN.

1 1/2" = 1'-0

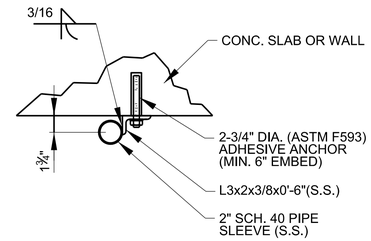
2 S-502



GUARDRAIL SECTION

1 1/2" = 1'-0

3 S-502



GUARDRAIL SECTION

1 1/2" = 1'-0

4 S-502

PROGRESS PRINT 90% SUBMITTAL JANUARY 2013

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
HFB STRUCTURAL STANDARD DETAILS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

SCALE: ¼" = 1'-0"
12" 0 4'
SCALE: 1" = 1'-0"
1' 0 1'
SCALE: 3" = 1'-0"
0 3" 6" 12"

PREPARED UNDER THE DIRECTION OF:
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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO.

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION
FILE NAME: S-501.DGN

DESIGNED BY: M.P.
DRAWN BY: B.F.
CHECKED BY: M.P.

DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
S-502

Plot Date: $date$

ELECTRICAL SYMBOLS FOR DIAGRAMS

ONE LINE	CONTROL WIRING	DESCRIPTION
R	R T	INDICATING LIGHT: PRESS TO TEST, W/ XFMR FOR 6 VAC LAMP OR LAMP FOR DC VOLTS AS NOTED. R-RED, G-GREEN, W-WHITE, A-AMBER
3	3	HEATER, NUMBER INDICATES KILOWATTS
5	5 MTR CR	MOTOR: NUMBER INSIDE CIRCLE INDICATES HORSEPOWER
FS	FS	SWITCH AS NOTED ON PLAN, LETTERS INDICATE: FS-FLOW SW., LLS-LIQUID LEVEL SW., TS-TEMPERATURE SW., PS-PRESSURE SW., OS-OVERSPEED SW., LIS-LIMIT SW., DPS-DIFFERENTIAL PRESSURE SW.
TD	TD	TIME DELAY RELAY: TDPU-TIME DELAY ON PICKUP TDDO-TIME DELAY ON DROPOUT
CR	CR	CONTROL RELAY
T	TS	T-THERMOSTAT, TS-TEMPERATURE SWITCH
		DISCONNECT SWITCH HEAVY DUTY HP RATED
		THERMAL DISCONNECT SWITCH(MOTORS)
		ALARM HORN
	LOS	PUSH BUTTON LOCKOUT STOP
	START	PUSH BUTTON LETTER ADJACENT INDICATES O-OPEN, C-CLOSE, F-FAST, S-SLOW, T-TEST, SP-STOP, ST-START, MSLOS-MAINTAINED START/LOCKOUT STOP
	H O A	SELECTOR SWITCH, HAND-OFF-AUTO, OR AS NOTED
	M	M-MOTOR MAGNETIC STARTER COIL (NUMBER INDICATES SIZE) C-CONTACTOR
		NORMALLY OPEN CONTACT (LETTER INDICATES OPERATING COIL). CONTACTS ARE SHOWN WITH RELAY COILS DEENERGIZED.
		NORMALLY CLOSED CONTACT (LETTER INDICATES OPERATING COIL)
		OVERLOAD HEATER
		FUSE WITH BLOWN FUSE INDICATION DEVICE DRAW OUT TYPE DOOR MOUNTED, BOLTED CONNECTIONS
		TRANSFORMER (SIZE AND RATING AS SHOWN ON DRAWING)
		CONNECTION TO GROUND

ONE LINE	CONTROL WIRING	DESCRIPTION
		WIRE TAPED FOR FUTURE CONNECTION
		MATING CONTACTS (DRAW OUT EQUIPMENT)
H	H	METER: A AMMETER, V VOLTMETER, GVM GROUND VOLTMETER, KW KILOWATTS, H ELAPSED TIME
	RES	RESISTOR
		POTENTIOMETER
CT	CT	CURRENT TRANSFORMER
	12	EQUIPMENT TERMINAL NUMBER
	7 A7	TERMINAL BLOCK TERMINATION INDENTIFICATION MARKER ON BLOCK DISCONNECT ISOLATING TERM BLOCK
		SILICON DIODE RECTIFIER 100 PIV I A UNLESS OTHERWISE NOTED
	5 5	WIRE MARKING NUMBER
		WIRES NOT CONNECTED
		WIRES CONNECTED
		LOCATED AT NEW CONTROL PANEL
		LOCATED AT EXISTING CONTROL PANEL
		LOCATED AT STARTER PANEL
		FIELD DEVICE TERMINAL
		PLC INPUT OR OUTPUT
		CONTROL PANEL OR MCC SECTION TERMINAL POINT TO INTERFACE WITH EXTERNAL WIRING.
SV	SV	RELAY COIL OR SOLENOID: SV-SOLENOID VALVE, CR-CONTROL RELAY, TD-TIME DELAY RELAY, TM-TIMER MOTOR
		CIRCUIT BREAKER (RATING AND NUMBER OF POLES AS INDICATED), MCP-MOTOR CIRCUIT PROTECTOR, THER MAG-THERMAL AND MAGNETIC TRIP
		CARTRIDGE FUSE AND FUSE HOLDER

ELECTRICAL SYMBOLS FOR PLANS

SYMBOL	DESCRIPTION
b A	LIGHTING FIXTURE LETTER INSIDE CIRCLE INDICATES FIXTURE TYPE. LOWER CASE LETTER IDENTIFIES SWITCH. SEE FIXTURE SCHEDULE
	CONDUIT WITH EXPLOSION PROOF SEALING FITTING
	CONTROL STATION (FIELD)
	ALARM HORN
	CONCEALED, EMBEDDED OR UNDERGROUND CONDUIT (SITE OR BLDG. PLANS) OR FIELD WIRING (SCHEMATICS)
	GROUND ELECTRODE
	ELECTRODE GROUND ROD
	COMPRESSION TYPE MECHANICAL GROUND CONNECTION
	EXPOSED CONDUIT (OR ABOVE FINISHED CEILING)
A-5	SINGLE RECEPTACLE GROUNDING TYPE
A-1	DUPLEX RECEPTACLE GROUNDING TYPE, A-1:PANEL A, CIRCUIT #1
3 PH,9	SPECIAL PURPOSE RECEPTACLE 3 PHASE USE. USE AS NOTED ON PLAN, NUMBER INDICATES AMPERES
FR	DOUBLE DUPLEX (FOURPLEX) RECEPTACLE
c	SINGLE POLE SWITCH, LOWER CASE LETTER IDENTIFIES SWITCH
3 b	THREE WAY SWITCH, LOWER CASE LETTER IDENTIFIES SWITCH
JB OR J	JUNCTION BOX
LIS	LIMIT SWITCH; - T(TORQUE OPERATED)
LT	LEVEL TRANSMITTER
TS T	TEMPERATURE SWITCH/THERMOSTAT
60AS/ 50AF	FUSED DISCONNECT SWITCH, 60A SWITCH, 50A FUSE
	UNFUSED DISCONNECT SWITCH,
S SV	SOLENOID VALVE
	PANEL
	CONDUIT BANK BURIED IN SLAB
	CONDUIT BENT DOWN OR AWAY
	CONDUIT BENT UP OR TOWARD
	CONDUIT SEAL
A 1,2,3	HOME RUN 4 CONDUCTORS, PANEL-A, CIRCUITS 1,2,3
G	GROUND WIRE
M	MOTOR (OR OUTLINE OF MOTOR DRAWN TO SCALE)
WP	ADJACENT TO SYMBOL INDICATES WEATHER PROOF
XP	ADJACENT TO SYMBOL INDICATES EXPLOSION PROOF

SYMBOL	DESCRIPTION
	INSTRUMENTATION DEVICE/STATION
	SITE LIGHT WITH RECEPTACLE
PB OR IPB	PULL OR INSTRUMENT PULL BOX
	NEW EQUIPMENT
	EXISTING EQUIPMENT

ABBREVIATIONS

AF	AMPS FRAME
AT	AMPS TRIP SETTING
AUX	AUXILIARY
BLK	BLACK
CR	CONTROL RELAY
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DWG	DRAWING
(E)	EXISTING
EGC	EQUIPMENT GROUNDING CONDUCTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
HOA	HAND-OFF-AUTO
I	CURRENT
J-BOX	JUNCTION BOX
KW	KILOWATT
LS	LIMIT SWITCH
LTG	LIGHTING
MC	MOTOR CONTROL
(N)	NEW
N	NORMAL
OH	OVERHEAD
OL	OVERLOAD
PB	PUSH BUTTON, PULL BOX
PLC	PROGRAMMABLE LOGIC CONTROLLER
PR	PAIR
PWR	POWER
RCPT	RECEPTACLE
REQD	REQUIRED
S	STANDBY
SH, SHLD	SHIELD
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTABLE POWER SUPPLY
VAC	VOLTS AC
VDC	VOLTS DC
WHT	WHITE
WP	WEATHER PROOF
XFMR	TRANSFORMER

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

ELECTRICAL LEGEND

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY:	DATE:	APPROVED:	DATE:
CHIEF, DESIGN BRANCH		CHIEF, ENGINEERING DIVISION	
SPEC. NO. --		FILE NAME: E-001.DGN	

DESIGNED BY: C.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.
DATE:

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TEL (213) 327-0800, FAX (213) 612-0246

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
E-001

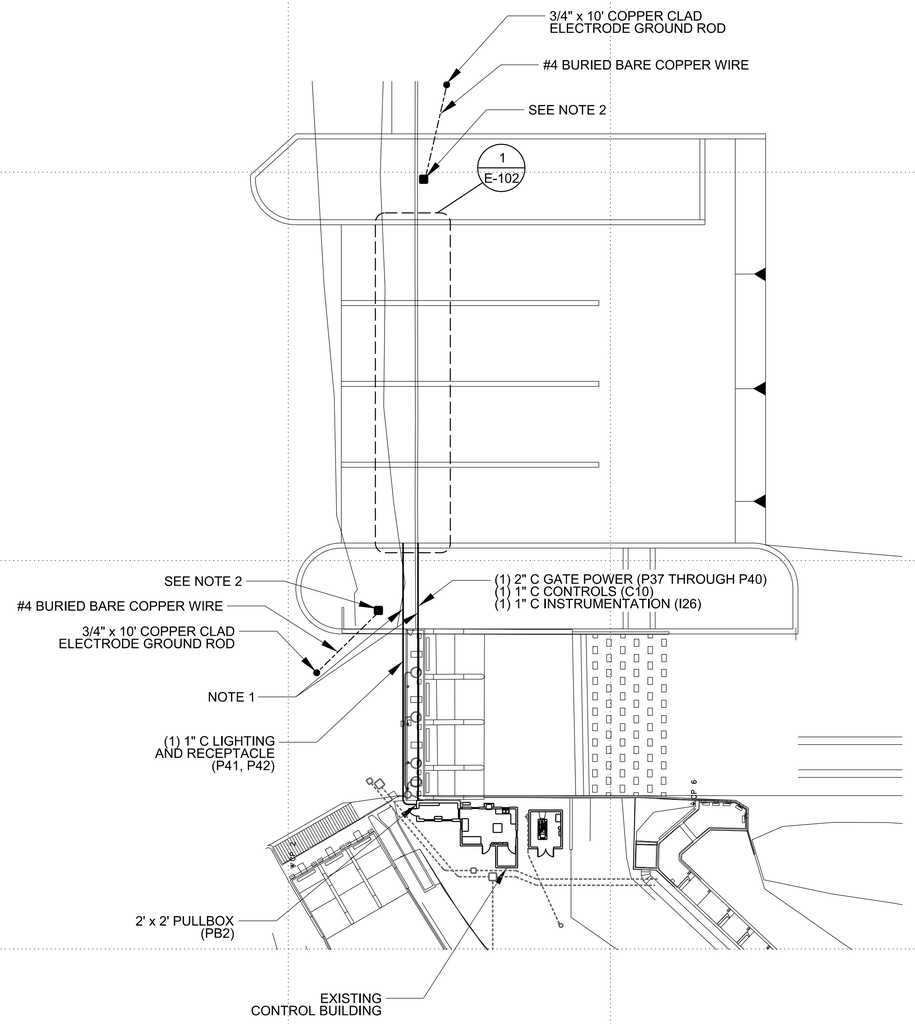
REGISTERED PROFESSIONAL ENGINEER
ALBERT J. BARNES
E 19001
EXP. ____
ELECTRICAL
STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

Plot Date: 11/5/2012

NOTES:

1. CONTRACTOR TO RUN CONDUITS ALONGSIDE EXISTING AND NEW HANDRAILS.
2. CONTRACTOR TO CONNECT GROUND ELECTRODE TO STRUCTURAL REBAR IN DAM.



ELECTRICAL SITE PLAN

1" = 30'

30' 20' 10' 0 30'

SCALE: 1" = 30'-0"

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
NEW SPILLWAY POWER AND CONTROL PLAN

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER
ALBERT J. BARNES
E 19001
EXP. _____
ELECTRICAL
STATE OF CALIFORNIA

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PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: _____ DATE: _____
CHIEF, DESIGN BRANCH

APPROVED: _____ DATE: _____
CHIEF, ENGINEERING DIVISION

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.

SPEC. NO. --

FILE NAME: E-101.DGN

DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
E-101

Plot Date: 11/5/2012

VALUE ENGINEERING PAYS

SAFETY! PAYS

N

WP

WP

WP

FLOW

WP

2
-

A
TYP

WP

LIMIT SWITCH J-BOX, TYP

ENCODER J-BOX, TYP

LIGHTING AND RECEPTACLE J-BOX, TYP

POWER J-BOX, TYP
LOCAL DISCONNECT SWITCH, TYP

C10

P41, P42

P37 THROUGH P40

I26

TAINTER GATE POWER AND CONTROL PLAN

1
-

⅛" = 1'-0"

1"C, 1PR #18 W/ SHLD, 1 #14 EGC NOTE 1

1
E-502
A

WP

LIGHTING J-BOX

1"C, 3#12 W/ SHLD, 1 #12 EGC

1"C, 2PR#18 W/ SHLD, 3 #14 EGC NOTE 1

2"C, 6 #12 EGC

1"C, 4#14, 1#14 EGC

LIMIT SWITCH J-BOX

A
-

ENCODER J-BOX

POWER J-BOX
LOCAL DISCONNECT SWITCH

C10
1"C, 18 #14
NOTE 1

P37 THROUGH P40
2"C, 9#12, 3#12 EGC

I26
1"C, 3PR #18 W/ SHLD, 3 #14 EGC
NOTE 1

P41, P42
1"C, 4#12, 2#12 EGC

ENLARGED POWER AND CONTROL PLAN

2
-

¼" = 1'-0"

NOTES:

1. COORDINATE ACTUAL QUANTITY AND SIZE OF ENCODER WIRING AND CONDUIT WITH ACTUAL ENCODER TO BE INSTALLED.

RAILING

WP RECEPTACLE

UNISTRUT

LIGHT POLE INTEGRATED INTO RAILING SYSTEM

LIGHTING & RECEPTACLE CONDUITS

48

POWER, CONTROL, & INSTRUMENTATION CONDUITS

RAILING AND CONDUIT INSTALLATION SECTION

A
-

½" = 1'-0"

SCALE: ⅛" = 1'-0"
12"0 4' 8' 12'

SCALE: ¼" = 1'-0"
12" 0 4'

SCALE: ½" = 1'-0"
12" 0 1' 2' 3' 4'

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

GENERAL ARRANGEMENT OF TAINTER GATES

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER
ALBERT J. BARNES
E 19001
EXP. _____
ELECTRICAL
STATE OF CALIFORNIA

TETRA TECH
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PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: V.R.G.
DRAWN BY: S.S.
CHECKED BY: P.R.C.
DATE:

SUBMITTED BY: DATE: APPROVED: DATE:

CHIEF, DESIGN BRANCH — CHIEF, ENGINEERING DIVISION

DISTRICT FILE NO. 214/ SPEC. NO. -- FILE NAME: E-102.DGN

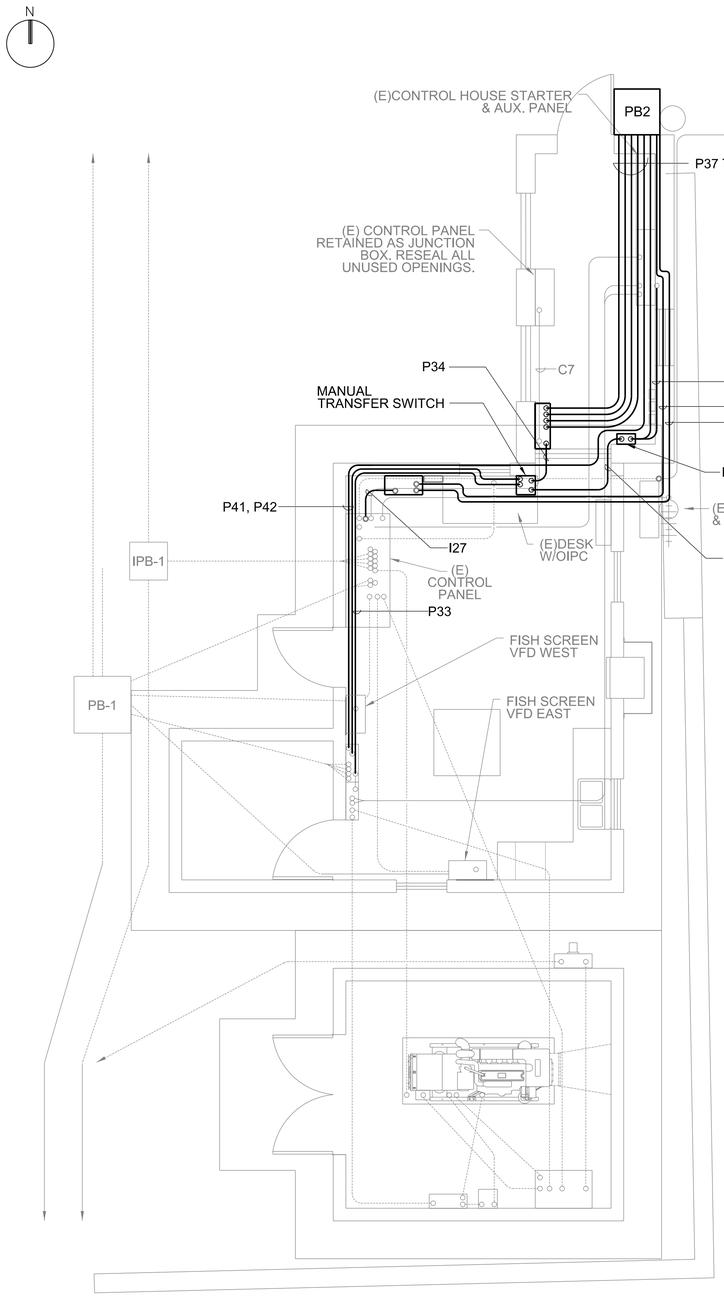
Scale: AS SHOWN

SHEET
E-102

Plot Date: 11/5/2012

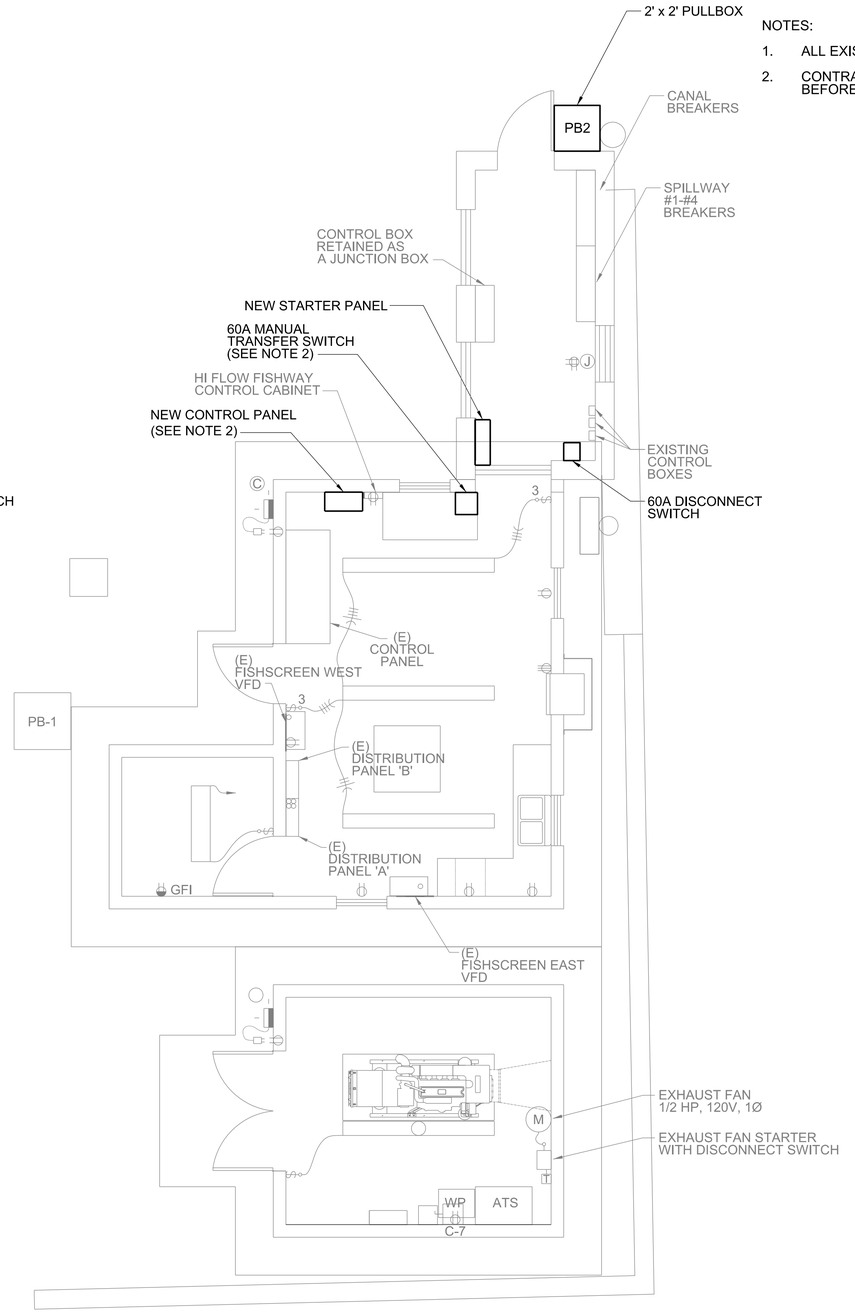
VALUE ENGINEERING PAYS

SAFETY! PAYS



CONDUIT LAYOUT 1

SCALE: ¼" = 1'-0"



EQUIP LAYOUT 2

SCALE: ¼" = 1'-0"

NOTES:

1. ALL EXISTING EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO MOVE OFFICE FURNITURE PRESENTLY IN LOCATION BEFORE INSTALLING EQUIPMENT.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

CONTROL BUILDING POWER AND CONTROL PLAN

SCALE: ¼" = 1'-0"
12" 0 4'

REGISTERED PROFESSIONAL ENGINEER
ALBERT J. BARNES
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STATE OF CALIFORNIA

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LOS ANGELES
CORPS OF ENGINEERS

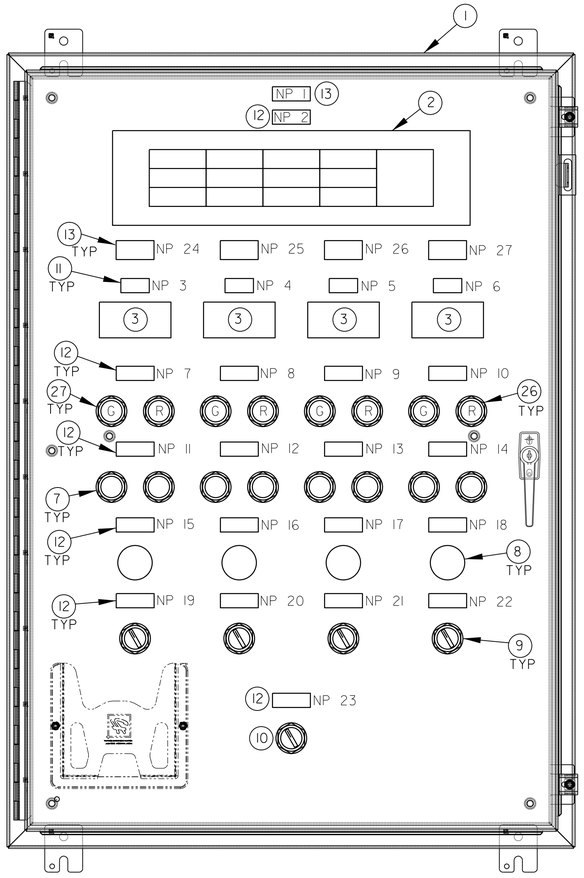
SUBMITTED BY: _____ DATE: _____
CHIEF, DESIGN BRANCH
SPEC. NO. --
DISTRICT FILE NO. 214/

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.
APPROVED: _____ DATE: _____
CHIEF, ENGINEERING DIVISION
FILE NAME: E-103.DGN

Scale: AS SHOWN

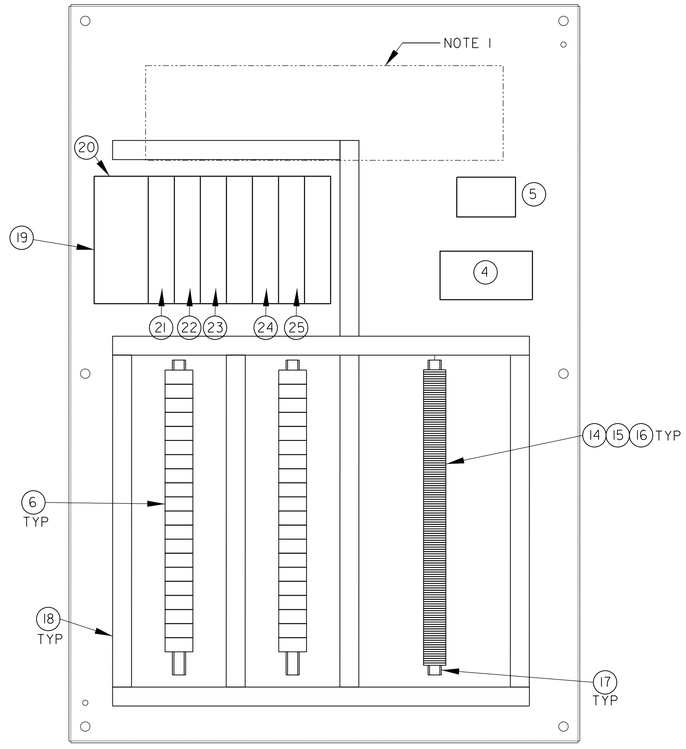
SHEET
E-103

Plot Date: 11/5/2012



CONTROL PANEL DOOR ELEVATION

SCALE: NONE



CONTROL PANEL INNER PANEL ELEVATION

SCALE: 3" = 1'-0"

PANEL NAMEPLATE SCHEDULE	
NP 1	SPILLWAY GATES 5-8 CONTROL PANEL
NP 2	ALARMS ANNUNCIATOR
NP 3	SPILLWAY GATE #5 PERCENT OPEN
NP 4	SPILLWAY GATE #6 PERCENT OPEN
NP 5	SPILLWAY GATE #7 PERCENT OPEN
NP 6	SPILLWAY GATE #8 PERCENT OPEN
NP 7	SPILLWAY GATE #5 OPENED - CLOSED
NP 8	SPILLWAY GATE #6 OPENED - CLOSED
NP 9	SPILLWAY GATE #7 OPENED - CLOSED
NP 10	SPILLWAY GATE #8 OPENED - CLOSED
NP 11	SPILLWAY GATE #5 OPEN - CLOSE
NP 12	SPILLWAY GATE #6 OPEN - CLOSE
NP 13	SPILLWAY GATE #7 OPEN - CLOSE
NP 14	SPILLWAY GATE #8 OPEN - CLOSE
NP 15	SPILLWAY GATE #5 LOCKOUT/STOP
NP 16	SPILLWAY GATE #6 LOCKOUT/STOP
NP 17	SPILLWAY GATE #7 LOCKOUT/STOP
NP 18	SPILLWAY GATE #8 LOCKOUT/STOP
NP 19	SPILLWAY GATE #5 HAND-OFF-AUTO
NP 20	SPILLWAY GATE #6 HAND-OFF-AUTO
NP 21	SPILLWAY GATE #7 HAND-OFF-AUTO
NP 22	SPILLWAY GATE #8 HAND-OFF-AUTO
NP 23	MASTER AUTOMATION SELECTOR SWITCH
NP 24	SPILLWAY GATE #5
NP 25	SPILLWAY GATE #6
NP 26	SPILLWAY GATE #7
NP 27	SPILLWAY GATE #8

NAMEPLATE SCHEDULE

SCALE: NONE

SPILLWAY GATE #5 SELECTOR SWITCH NOT IN AUTO	SPILLWAY GATE #6 SELECTOR SWITCH NOT IN AUTO	SPILLWAY GATE #7 SELECTOR SWITCH NOT IN AUTO	SPILLWAY GATE #8 SELECTOR SWITCH NOT IN AUTO
SPILLWAY GATE #5 TRAVEL FAILURE	SPILLWAY GATE #6 TRAVEL FAILURE	SPILLWAY GATE #7 TRAVEL FAILURE	SPILLWAY GATE #8 TRAVEL FAILURE
SPILLWAY GATE #5 OVERLOAD/ LOCKOUT	SPILLWAY GATE #6 OVERLOAD/ LOCKOUT	SPILLWAY GATE #7 OVERLOAD/ LOCKOUT	SPILLWAY GATE #8 OVERLOAD/ LOCKOUT

ANNUNCIATOR LEGEND SCHEDULE

SCALE: NONE

NOTES

1. AREA OF ANNUNCIATOR IN DOOR. DO NOT PERMIT ANY EQUIPMENT TO EXTEND INTO AREA OF ANNUNCIATOR PROJECTION.
2. CONTRACTOR TO PROVIDE AN EQUIPMENT BONDING CONDUCTOR TO CONNECT TO EXISTING GROUND GRID.

CONTROL PANEL - BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOG NO.	COMMENT
1	1	ENCLOSURE, 42"Hx30"Wx12"D, NEMA 12 W/PANEL, 39"x27"	HOFFMAN	A42301 2LP & A42P30	
2	1	ANNUNCIATOR, 12 POINT (4x3), 120V AC	AMETEK	AN-3100D-LC-PM-1H-4W-INTB--12-W-TP3	SEE ANNUNCIATOR LEGEND SCHEDULE FOR DETAILS
3	4	PANEL DISPLAY, 4-20mA INPUT, 24V DC, 3 1/2 DIGIT	OMEGA	DPI8-P5-A01	
4	1	24V DC POWER SUPPLY, 4.2A, 100W	SOLA	SDP4-24-100RT	
5	1	INDUSTRIAL 6 PORT INDUSTRIAL UNMANAGED ETHERNET SWITCH	N-TRON	306TX-N	
6	36	ICECUBE RELAY, 24VDC OPERATION, 10A CONTACTS, W/BASE	ALLEN-BRADLEY	700-HA322Z24 & 700-HN101	
7	8	MOMENTARY CONTACT PUSHBUTTON, 1NO & 1NC CONTACTS, NEMA 4	SQUARE D	9001KR1BH13	
8	4	MAINTAINED CONTACT PUSHBUTTON, RED, NEMA RATED, 2 NC CONTACTS	SQUARE D	9001KR8RH25	
9	4	MAINTAINED CONTACT SELECTOR SWITCH, 3-POSITION, NEMA RATED	SQUARE D	9001KS49BH2	
10	1	MAINTAINED CONTACT SELECTOR SWITCH, 2-POSITION, NEMA RATED	SQUARE D	9001KS11BH2	
11	AR	3/4"x1 3/4" LEGEND PLATE, WHITE W/BLACK CORE			SEE NAMEPLATE SCHEDULE FOR ENGRAVING DETAILS
12	AR	1"x3" LEGEND PLATE, WHITE W/ BLACK CORE			SEE NAMEPLATE SCHEDULE FOR ENGRAVING DETAILS
13	AR	1 1/2"x3" LEGEND PLATE, WHITE W/ BLACK CORE			SEE NAMEPLATE SCHEDULE FOR ENGRAVING DETAILS
14	AR	FEED THROUGH TERMINAL, 600V RATED	ALLEN-BRADLEY	1492-J4	
15	AR	TERMINAL END BARRIER	ALLEN-BRADLEY	1492-EBJ3	
16	AR	TERMINAL ANCHOR	ALLEN-BRADLEY	1492-ERL35	
17	AR	DIN RAIL	ALLEN-BRADLEY	1492-DR1	
18	AR	2"x3" WIREWAY W/COVER	PANDUIT	G2X3LGB, C2LG6	
19	1	7 SLOT I/O RACK	ALLEN-BRADLEY	1746-A7	
20	1	POWER SUPPLY	ALLEN-BRADLEY	1746-P2	
21	1	CENTRAL PROCESSING UNIT	ALLEN-BRADLEY	1747-L553	
	1	FLASH MEMORY	ALLEN-BRADLEY	1747-M12	
22	1	ANALOG INPUT MODULE	ALLEN-BRADLEY	1746NI4	
23	1	ANALOG OUTPUT MODULE	ALLEN-BRADLEY	1746-NO4I	
24	1	DISCRETE INPUT MODULE	ALLEN-BRADLEY	1746-IB32	
25	1	DISCRETE OUTPUT MODULE	ALLEN-BRADLEY	1746-OBI6	
26	4	PILOT LIGHT, RED LED, NEMA 4, 24VDC OPERATION	SQUARE D	9001KP35LRR3I	
27	4	PILOT LIGHT, GREEN LED, NEMA 4, 24VDC OPERATION	SQUARE D	9001KP35LGG3I	
	1	700VA UPS, 120VAC, 60HZ	SOLA	S3K700	

SCALE: 3" = 1'-0"

0 3" 6" 12"

REGISTERED PROFESSIONAL ENGINEER ALBERT J. BARROS E 19001 EXP. ELECTRICAL STATE OF CALIFORNIA

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PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
NEW SPILLWAY GATE CONTROL PANEL

U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS	DESIGNED BY: G.D.C. DRAWN BY: S.S. CHECKED BY: D.S. DATE:
SUBMITTED BY: DATE:	APPROVED: DATE:
CHIEF, DESIGN BRANCH	CHIEF, ENGINEERING DIVISION
SPEC. NO. --	FILE NAME: E-602.DGN

PREPARED UNDER THE DIRECTION OF:
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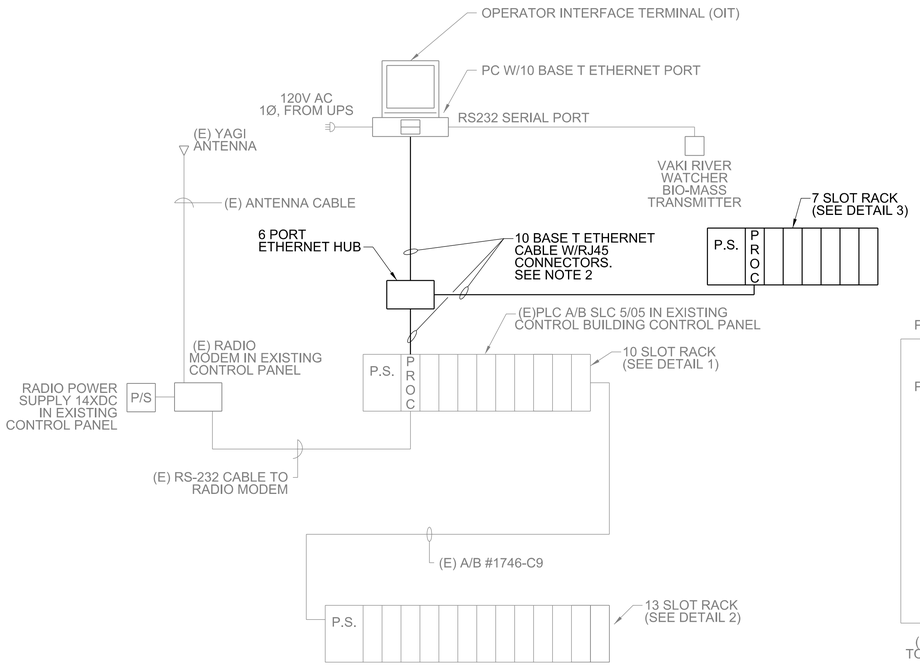
DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
E-201

Plot Date: 11/5/2012



CONTROL PANEL PLC COMMUNICATION DIAGRAM

SCALE: NONE

POWER SUPPLY	RACK #2 SLOT #0	#1	#2	#3	#4	#5	#6
POWER SUPPLY 120V AC INPUT	CENTRAL PROCESSOR UNIT (CPU) SLC 5/05 W/ FLASH MEMORY	ANALOG INPUT MODULE	ANALOG OUTPUT MODULE	SPACE	24 VDC DISCRETE INPUT MODULE	24 VDC DISCRETE OUTPUT MODULE	SPACE

NEW ALLEN BRADLEY SLC REMOTE I/O RACK

SCALE: NONE

3 -

POWER SUPPLY	RACK #1 SLOT #0	#1	#2	#3	#4	#5	#6	#7	#8	#9
POWER SUPPLY 120V AC INPUT #1746-P2	CENTRAL PROCESSOR UNIT (CPU) SLC 5/05 #1747-L553 W/ #1747-M12 FLASH MEMORY	ANALOG INPUT MODULE #1746-NI4	ANALOG INPUT MODULE #1746-NI4	ANALOG INPUT MODULE #1746-NI4	ANALOG INPUT MODULE #1746-NI4	ANALOG INPUT MODULE #1746-NI4	ANALOG OUTPUT MODULE #1746-NO4I	ANALOG OUTPUT MODULE #1746-NO4I	SPACE	SPACE

(E) RS232 CABLE TO RADIO MODEM

(E) 10 BASE T ETHERNET CABLE

10 SLOT #1746-A10

TO OIPC

EXISTING ALLEN BRADLEY SLC 5/05 PROGRAMMABLE LOGIC CONTROLLER RACK

SCALE: NONE

1 -

POWER SUPPLY	RACK #1 SLOT #11	#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23
POWER SUPPLY 120V AC INPUT #1746-P2	SCANNER MODULE	DISCRETE INPUT MODULE #1746-IB32 24V DC	DISCRETE INPUT MODULE #1746-IB32 24V DC	DISCRETE INPUT MODULE #1746-IB32 24V DC	DISCRETE INPUT MODULE #1746-IB32 24V DC	SPACE	SPACE	DISCRETE OUTPUT MODULE #1746-OB16 24V DC	DISCRETE OUTPUT MODULE #1746-OB16 24V DC	DISCRETE OUTPUT MODULE #1746-OB16 24V DC	DISCRETE OUTPUT MODULE #1746-OB16 24V DC	SPACE	SPACE

13 SLOT #1746-A13

EXISTING ALLEN BRADLEY SLC REMOTE I/O RACK

SCALE: NONE

2 -

1. ALL EQUIPMENT IS EXISTING AND TO REMAIN UNO.
2. CONTRACTOR TO REPLACE EXISTING 10 BASE T ETHERNET CABLES WITH NEW CABLES WHEN ETHERNET HUB IS INSTALLED.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DATE	APPROVAL
		DESCRIPTIONS
		REVISIONS

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

PLC DETAILS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER
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PREPARED UNDER THE DIRECTION OF
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

DISTRICT FILE NO. 214/

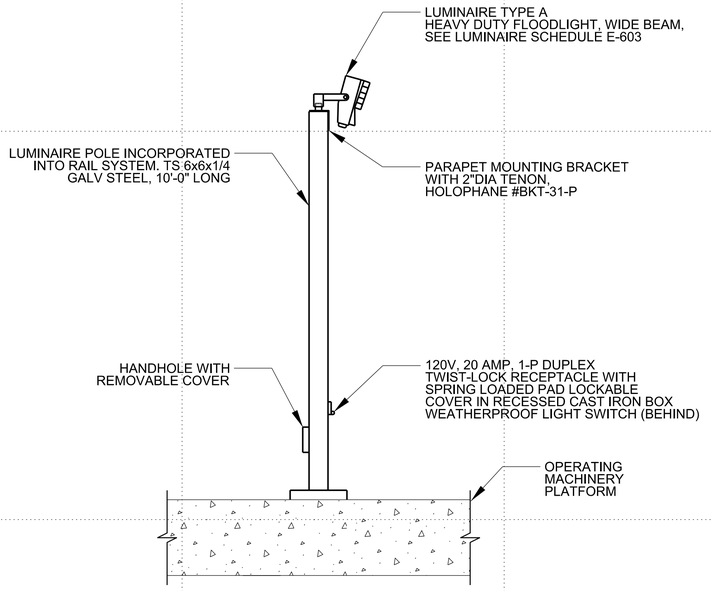
U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.
SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION
SPEC. NO. --
FILE NAME: E-501.DGN

Scale: AS SHOWN

SHEET
E-501

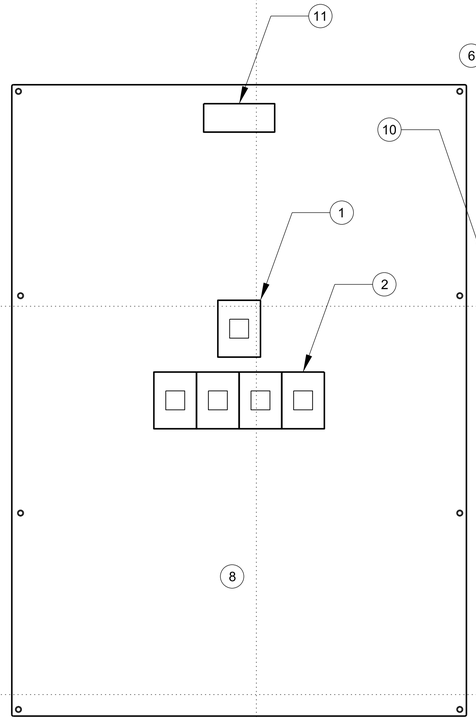
Plot Date: 11/5/2012



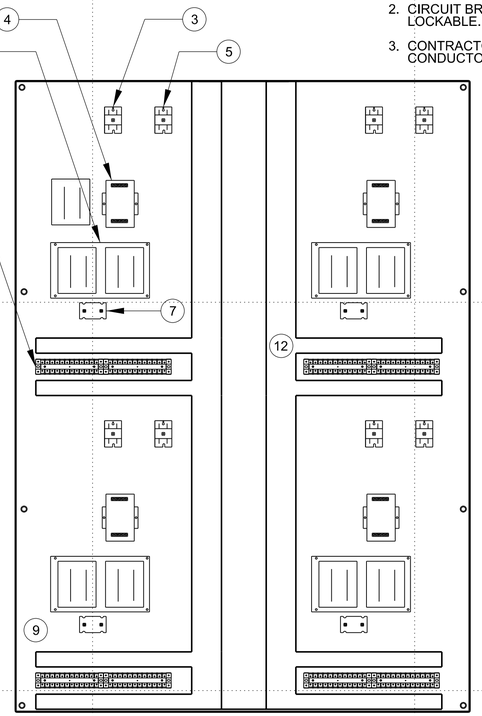
LUMINAIRE LIGHT DETAIL

SCALE: NONE

(1) E-102



EXTERIOR VIEW



INTERIOR VIEW

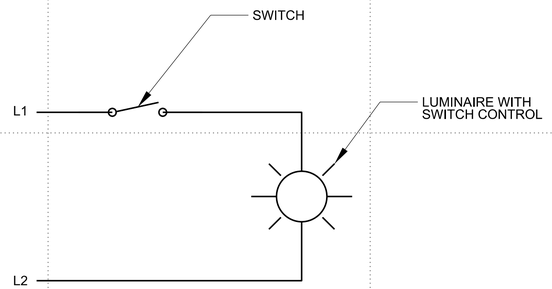
NOTES:

1. CONTRACTORS TO PROVIDE ALL FUSES, DIN RAIL, END PLATES, END BRACKETS AND LABELS AS REQUIRED FOR A COMPLETE TERMINAL SYSTEM.
2. CIRCUIT BREAKERS IN NEW STARTER PANEL SHALL BE LOCKABLE.
3. CONTRACTOR TO PROVIDE AN EQUIPMENT BONDING CONDUCTOR TO CONNECT TO EXISTING GROUND GRID.

STARTER PANEL

SCALE: 1½" = 1'-0"

(2) E-103



LIGHTING CIRCUIT SCHEMATIC

SCALE: NONE

STARTER PANEL - BILL OF MATERIALS

No	ITEM	QTY	COMMENT
(1)	BREAKER, 240 VAC 50 AMP	1	SEE NOTE 2
(2)	BREAKERS, 240 VAC, 15 AMP	4	SEE NOTE 2
(3)	FUSES, PRIMARY CONTROL POWER	8	
(4)	CONTROL TRANSFORMER, 240V / 120 VAC	4	
(5)	FUSES, SECONDARY CONTROL POWER	4	
(6)	CONTRACTORS 240V FVR, NEMA RATED WITH 120V COIL & AUX CONTACTS	4	
(7)	OVERLOAD	4	
(8)	PANEL, NEMA 4	1	
(9)	BACK PANEL	1	
(10)	TERMINALS	AR	SEE NOTE 1
(11)	NAMEPLATES	AR	
(12)	WIREWAYS	AR	

SCALE: 1 ½" = 1'-0"

12" 9" 6" 3" 0 1'

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

LIGHTING DETAILS

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.
DATE:
SUBMITTED BY: DATE:
APPROVED:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION
SPEC. NO. --
FILE NAME: E-502.DGN

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PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
E-502

REGISTERED PROFESSIONAL ENGINEER
ALBERT J. BARNES
E 19001
EXP. _____
ELECTRICAL
STATE OF CALIFORNIA

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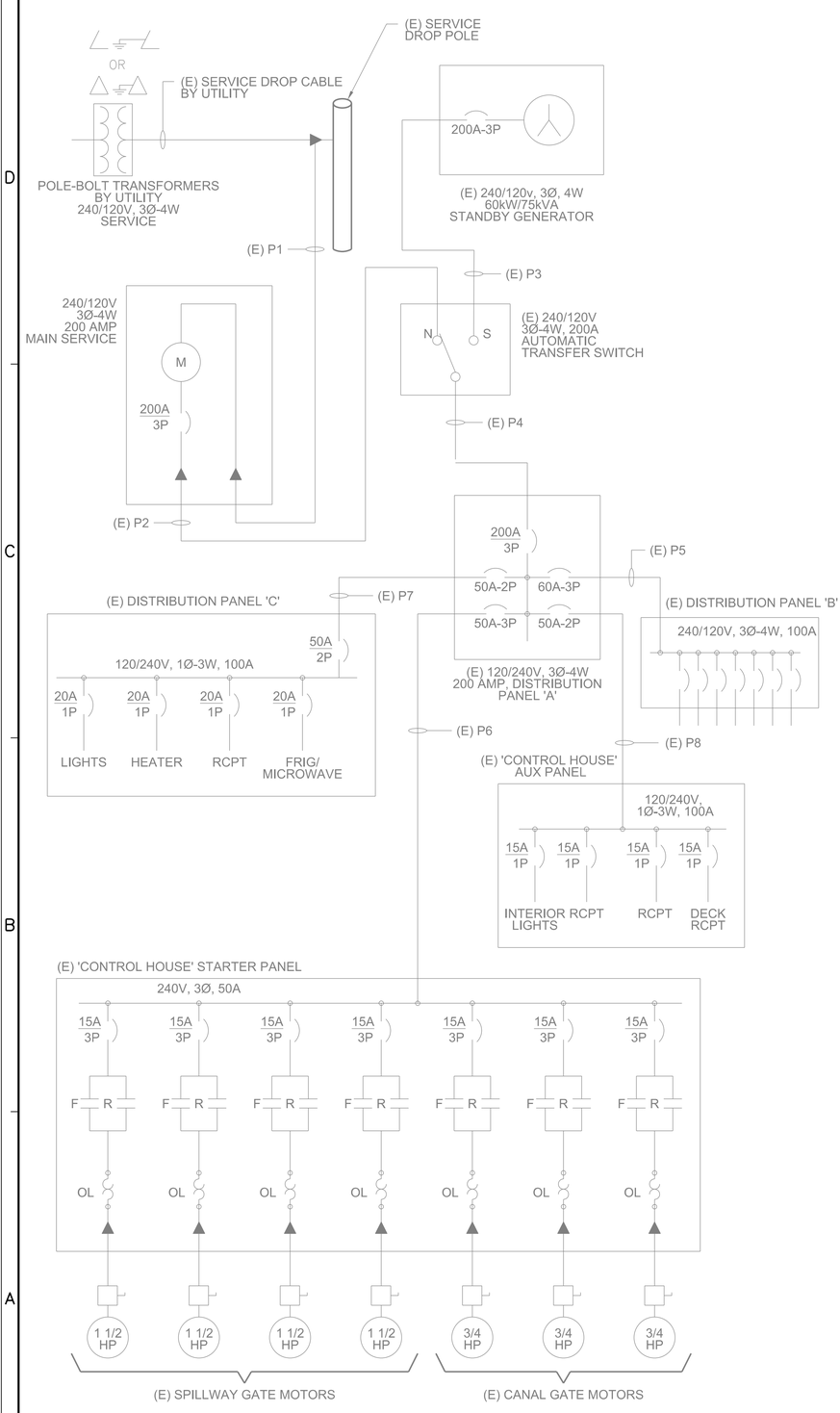
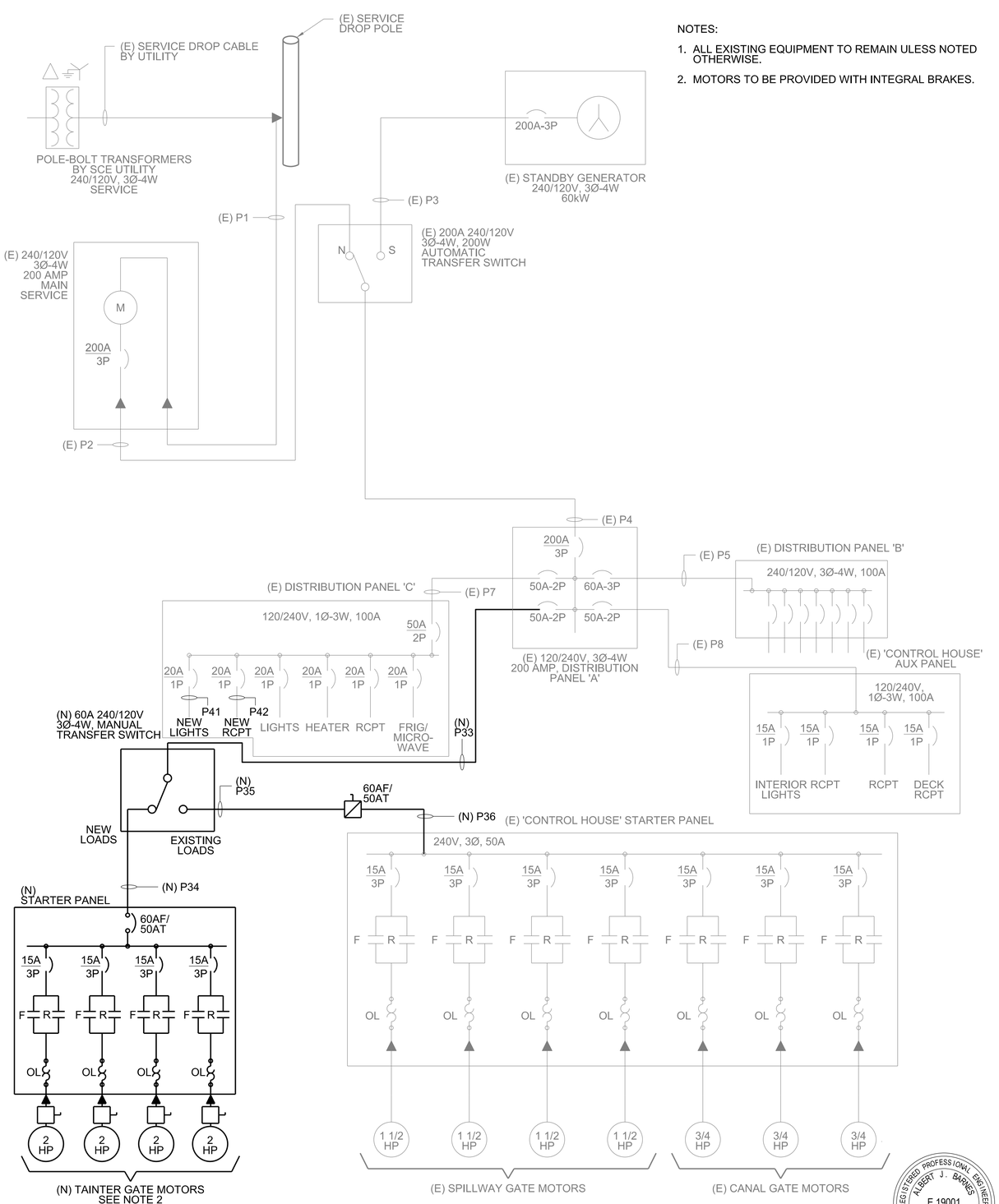
Plot Date: 11/5/2012



EXISTING SYSTEM ONE-LINE DIAGRAM

SCALE: NONE



NEW SYSTEM ONE-LINE DIAGRAM

SCALE: NONE

NOTES:

1. ALL EXISTING EQUIPMENT TO REMAIN ULESS NOTED OTHERWISE.
2. MOTORS TO BE PROVIDED WITH INTEGRAL BRAKES.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

EXISTING AND PROPOSED ONE-LINE DIAGRAMS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER ALBERT J. BARNES E 19001 EXP. ELECTRICAL STATE OF CALIFORNIA

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PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO. --

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.
APPROVED: DATE:
CHIEF, ENGINEERING DIVISION
FILE NAME: E-601.DGN

DISTRICT FILE NO. 214/

Scale: AS SHOWN
SHEET
E-601

Plot Date: 11/5/2012

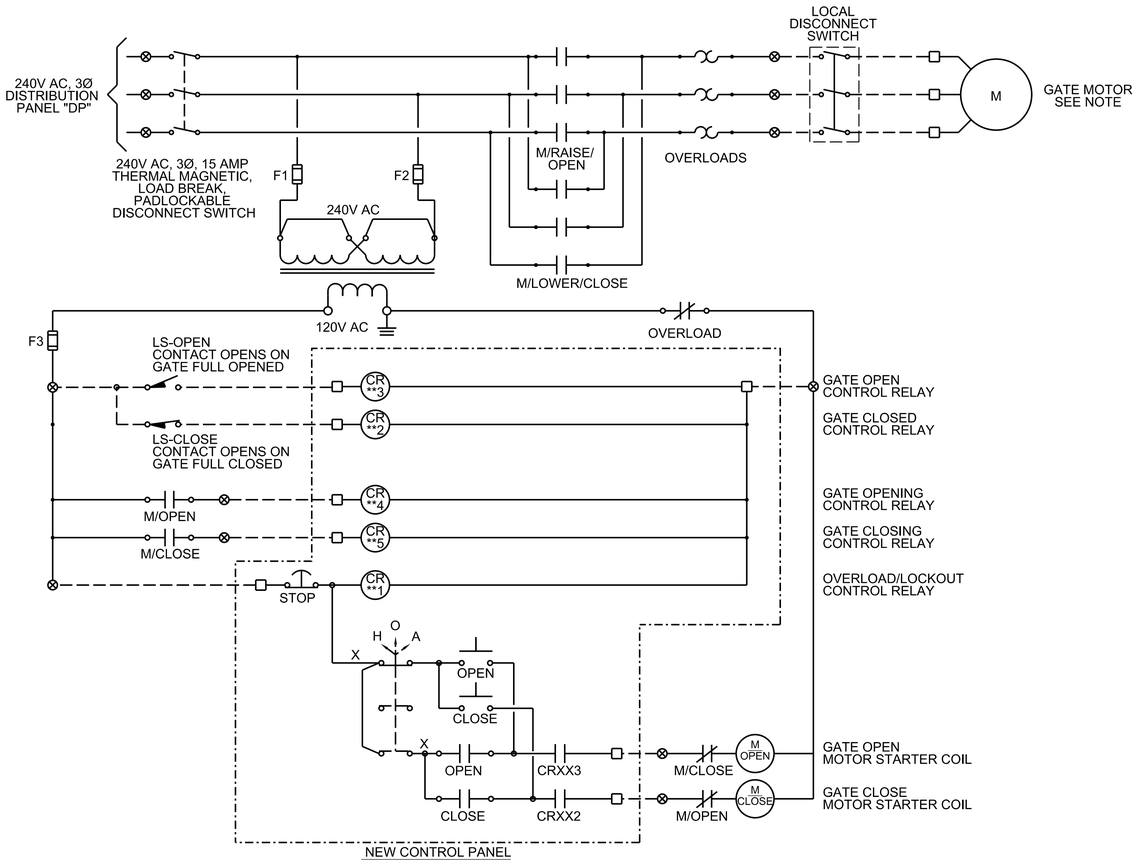
NOTES:

1. MOTOR TO BE PROVIDED WITH INTEGRAL BRAKE.

LEGEND:

5 FOR SPILLWAY GATE #5
6 FOR SPILLWAY GATE #6
7 FOR SPILLWAY GATE #7
8 FOR SPILLWAY GATE #8

— — — = FIELD WIRING
——— = CONTROL OR STARTER PANEL WIRING



SPILLWAY GATE CONTROL SCHEMATICS

SCALE: NONE

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

NEW SPILLWAY GATE CONTROL SCHEMATIC

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER ALBERT J. BARNES E 19001 EXP. ELECTRICAL STATE OF CALIFORNIA

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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION
SPEC. NO. --
FILE NAME: E-602.DGN

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.

Scale: AS SHOWN

SHEET
E-602

Plot Date: 11/5/2012

CONDUIT NUMBER	FROM	TO	CONDUIT SIZE	CONDUCTORS / NOTES
		CONTROL		
C10	NEW CONTROL PANEL	SPILLWAY GATES #5 TO #8 LIMIT SWITCHES	1"	8/C #14 CU. THHN/THWN & (1) #14 CU EGC CONTROL, SPARE & GROUND
C2				
C3				
C4				
C5				
C6				
C7				
C8				
C9				
C10				
P33	DISTRIBUTION PANEL 'A'	MANUAL TRANSFER SWITCH	1"	3/C #6 XHHW-2 & 1 #10 CU EGC
P34	MANUAL TRANSFER SWITCH	NEW STARTER PANEL	1"	3/C #6 XHHW-2 & 1 #10 CU EGC
P35	MANUAL TRANSFER SWITCH	50A DISCONNECT SWITCH	1"	3/C #6 XHHW-2 & 1 #10 CU EGC
P36	50A DISCONNECT SWITCH	EXISTING STARTER PANEL	1"	3/C #6 XHHW-2 & 1 #10 CU EGC
P37	NEW STARTER PANEL	SPILLWAY GATE #5 MOTOR	2"	3/C #12 XHHW-2 & 1 #12 CU EGC
P38	NEW STARTER PANEL	SPILLWAY GATE #6 MOTOR	2"	3/C #12 XHHW-2 & 1 #12 CU EGC
P39	NEW STARTER PANEL	SPILLWAY GATE #7 MOTOR	2"	3/C #12 XHHW-2 & 1 #12 CU EGC
P40	NEW STARTER PANEL	SPILLWAY GATE #8 MOTOR	2"	3/C #12 XHHW-2 & 1 #12 CU EGC
P41	DISTRIBUTION PANEL 'A'	NEW GATES LIGHTING	1"	2/C #12 XHHW-2 & 1 #12 CU EGC
P42	DISTRIBUTION PANEL 'A'	NEW GATE RECEPTACLES	1"	2/C #12 XHHW-2 & 1 #12 CU EGC

CONDUIT NUMBER	FROM	TO	CONDUIT SIZE	CONDUCTORS / NOTES
		INSTRUMENTATION		
I26	NEW CONTROL PANEL	SPILLWAY GATES #5 TO 8 POS. TRANSMITTER	1"	4 PR #18 CU W/SHLD & (4) #14 EGC
I27	EXISTING CONTROL PANEL	ETHERNET HUB	3/4"	CAT 6 ETHERNET CABLE
I28	ETHERNET HUB	OPERATOR INTERFACE TERMINAL		CAT 6 ETHERNET CABLE
I29	ETHERNET HUB	NEW CONTROL PANEL		CAT 6 ETHERNET CABLE

TWSP = TWISTED SHIELDED PAIR
TWST = TWISTED SHIELDED TRIAD
*= PVC COATED GALVANIZED RIGID STEEL

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	LAMPS	VOLTS	MOUNTING	MOUNTING
A	HOLOPHANE	PD-175MH-24-K-W-3-B-F2-PDWG-08657	(1) 175W METAL HALIDE	240 V	2" TENON	WIDE ANGLE FLOOD, BRONZE FINISH WITH WIRE GUARD. STAINLESS STEEL YOKE PLATE AND 2" TENON ADAPTER PROVIDE WITH WALL BRACKET. PROVIDE WITH 15'x6" SQUARE STEEL POLE WITH MOUNTING BASE AND HANDHOLE. POLE TO BE MOUNTED WITH RECEPTACLES AND LIGHT SWITCH AS SHOWN ON DRAWING DETAILS. PROVIDE FULL CUT OFF. SEE DRAWING E-502.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
POWER, CONTROL, AND INSTRUMENTATION
CONDUIT AND CONDUCTOR SCHEDULE

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-815.2.

REGISTERED PROFESSIONAL ENGINEER ALBERT J. BARRIS E 19001 EXP. _____ ELECTRICAL STATE OF CALIFORNIA

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DISTRICT FILE NO. 214/

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: _____ DATE:
APPROVED: _____ DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.

SPEC. NO. --
FILE NAME: E-603.DGN

Scale: AS SHOWN
SHEET
E-603

Plot Date: 11/5/2012

AI / AO AND DI / DO LISTING

PLC POINT #	DEVICE	DESCRIPTION
AI-11	ZT151	SPILLWAY GATE #5 POS. TRANSMITTER
AI-12	ZT161	SPILLWAY GATE #6 POS. TRANSMITTER
AI-13	ZT171	SPILLWAY GATE #7 POS. TRANSMITTER
AI-14	ZT181	SPILLWAY GATE #8 POS. TRANSMITTER
AO-8	ZT151	SPILLWAY GATE #5 POS. IND. DISPLAY
AO-9	ZT161	SPILLWAY GATE #6 POS. IND. DISPLAY
AO-10	ZT171	SPILLWAY GATE #7 POS. IND. DISPLAY
AO-11	ZT181	SPILLWAY GATE #8 POS. IND. DISPLAY

PLC POINT #	DEVICE	DESCRIPTION
DO-48	DOX-48	SPILLWAY GATE #5 AUTO OPEN COMMAND
DO-49	DOX-49	SPILLWAY GATE #5 AUTO CLOSE COMMAND
DO-50	DOX-50	SPILLWAY GATE #5 OVERLOAD/LOCKEDOUT
DO-51	DOX-51	SPILLWAY GATE #5 TRAVEL FAILURE
DO-52	DOX-52	SPILLWAY GATE #6 AUTO OPEN COMMAND
DO-53	DOX-53	SPILLWAY GATE #6 AUTO CLOSE COMMAND
DO-54	DOX-54	SPILLWAY GATE #6 OVERLOAD/LOCKEDOUT
DO-55	DOX-55	SPILLWAY GATE #6 TRAVEL FAILURE
DO-56	DOX-56	SPILLWAY GATE #7 AUTO OPEN COMMAND
DO-57	DOX-57	SPILLWAY GATE #7 AUTO CLOSE COMMAND
DO-58	DOX-58	SPILLWAY GATE #7 OVERLOAD/LOCKEDOUT
DO-59	DOX-59	SPILLWAY GATE #7 TRAVEL FAILURE
DO-60	DOX-60	SPILLWAY GATE #8 AUTO OPEN COMMAND
DO-61	DOX-61	SPILLWAY GATE #8 AUTO CLOSE COMMAND
DO-62	DOX-62	SPILLWAY GATE #8 OVERLOAD/LOCKEDOUT
DO-63	DOX-63	SPILLWAY GATE #8 TRAVEL FAILURE

PLC POINT #	DEVICE	DESCRIPTION
DI-232	SS151	SPILLWAY GATE #5 'HOA' SW. IN 'AUTO'
DI-233	SS151	SPILLWAY GATE #5 'HOA' SW. IN 'OFF'
DI-234	SS151	SPILLWAY GATE #5 'HOA' SW. IN 'HAND'
DI-235	CR554	SPILLWAY GATE #5 OPENING
DI-236	CR555	SPILLWAY GATE #5 CLOSING
DI-237	CR/PB551	SPILLWAY GATE #5 OVERLOAD/LOCKED OUT
DI-238	CR553	SPILLWAY GATE #5 OPEN
DI-239	CR552	SPILLWAY GATE #5 CLOSED
DI-240	SS161	SPILLWAY GATE #6 'HOA' SW. IN 'AUTO'
DI-241	SS161	SPILLWAY GATE #6 'HOA' SW. IN 'OFF'
DI-242	SS161	SPILLWAY GATE #6 'HOA' SW. IN 'HAND'
DI-243	CR664	SPILLWAY GATE #6 TRAVELING OPENING
DI-244	CR665	SPILLWAY GATE #6 TRAVELING CLOSING
DI-245	CR/PB661	SPILLWAY GATE #6 OVERLOAD/LOCKED OUT
DI-246	CR663	SPILLWAY GATE #6 OPEN
DI-247	CR662	SPILLWAY GATE #6 CLOSED
DI-248	SS171	SPILLWAY GATE #7 'HOA' SW. IN 'AUTO'
DI-249	SS171	SPILLWAY GATE #7 'HOA' SW. IN 'OFF'
DI-250	SS171	SPILLWAY GATE #7 'HOA' SW. IN 'HAND'
DI-251	CR774	SPILLWAY GATE #7 TRAVELING OPENING
DI-252	CR775	SPILLWAY GATE #7 TRAVELING CLOSING
DI-253	CR/PB771	SPILLWAY GATE #7 OVERLOAD/LOCKED OUT
DI-254	CR773	SPILLWAY GATE #7 OPEN
DI-255	CR772	SPILLWAY GATE #7 CLOSED
DI-256	SS181	SPILLWAY GATE #8 'HOA' SW. IN 'AUTO'
DI-257	SS181	SPILLWAY GATE #8 'HOA' SW. IN 'OFF'
DI-258	SS181	SPILLWAY GATE #8 'HOA' SW. IN 'HAND'
DI-259	CR884	SPILLWAY GATE #8 TRAVELING OPENING
DI-260	CR885	SPILLWAY GATE #8 TRAVELING CLOSING
DI-261	CR/PB881	SPILLWAY GATE #8 OVERLOAD/LOCKED OUT
DI-262	CR883	SPILLWAY GATE #8 OPEN
DI-263	CR882	SPILLWAY GATE #8 CLOSED

SEE SHEET E-605 FOR CONTINUATION

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

AI/AO AND DI/DO LISTING

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER
ALBERT J. BARNES
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ELECTRICAL
STATE OF CALIFORNIA

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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: _____ DATE: _____
CHIEF, DESIGN BRANCH
SPEC. NO. --

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.
APPROVED: _____ DATE: _____
CHIEF, ENGINEERING DIVISION
FILE NAME: E-604.DGN

Scale: AS SHOWN

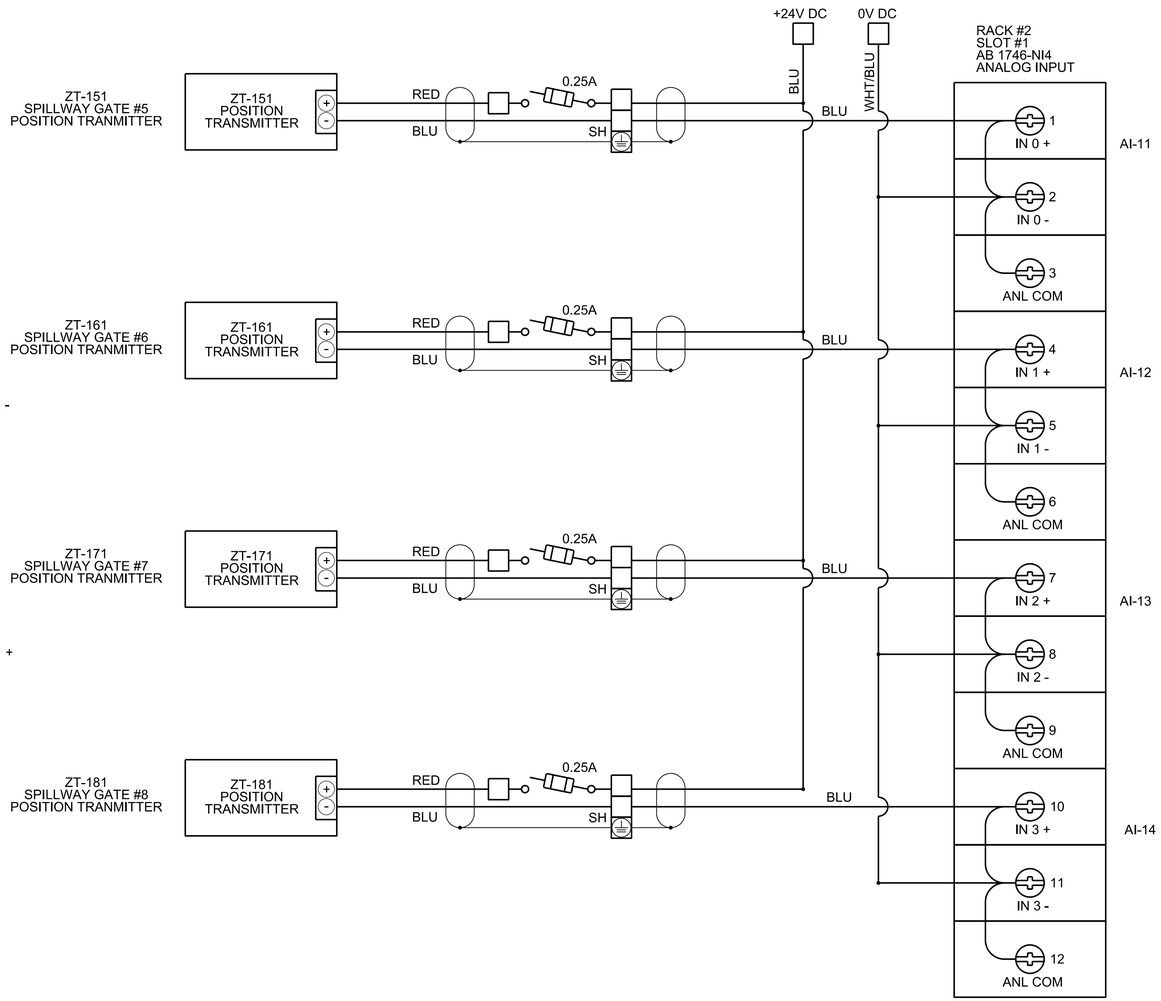
SHEET
E-604

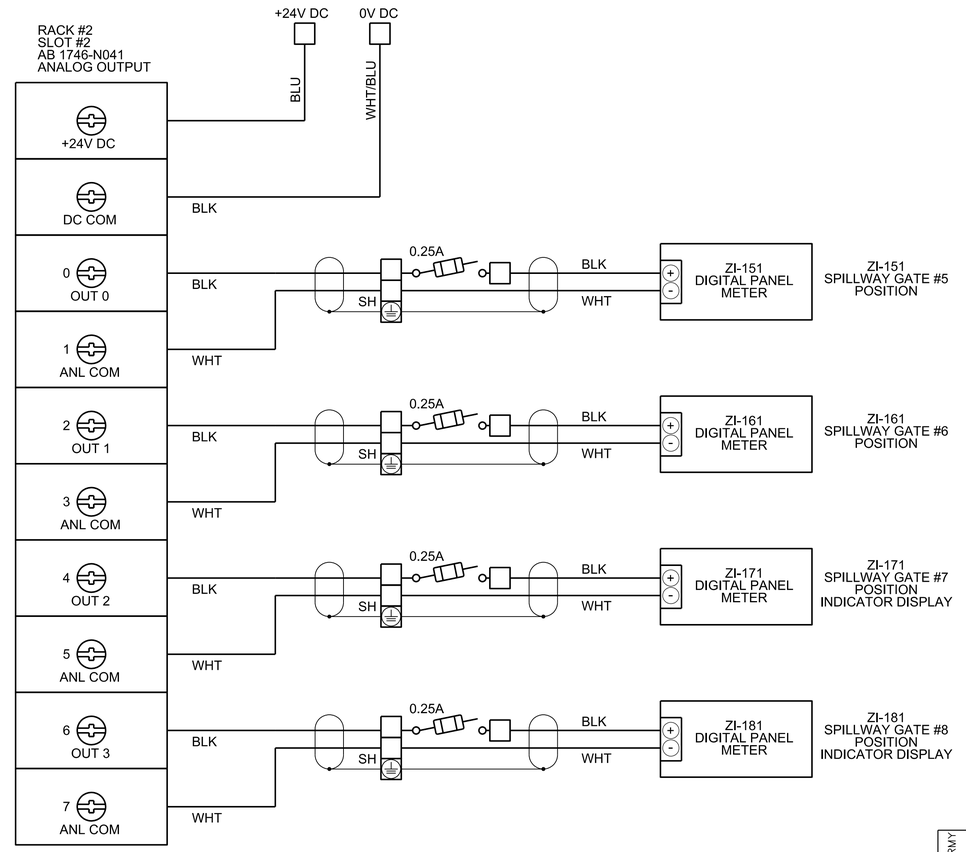
Plot Date: 11/5/2012

VALUE ENGINEERING PAYS

SAFETY! PAYS

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012





SPILLWAY GATES #5, #6, #7, #8 BCD POSITION PLC AI AND AO MODULES SCHEMATICS

SCALE: NONE

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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: _____ DATE: _____
CHIEF, DESIGN BRANCH

APPROVED: _____ DATE: _____
CHIEF, ENGINEERING DIVISION

SPEC. NO. --

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.

FILE NAME: E-606.DGN

Scale: AS SHOWN

SHEET
E-606

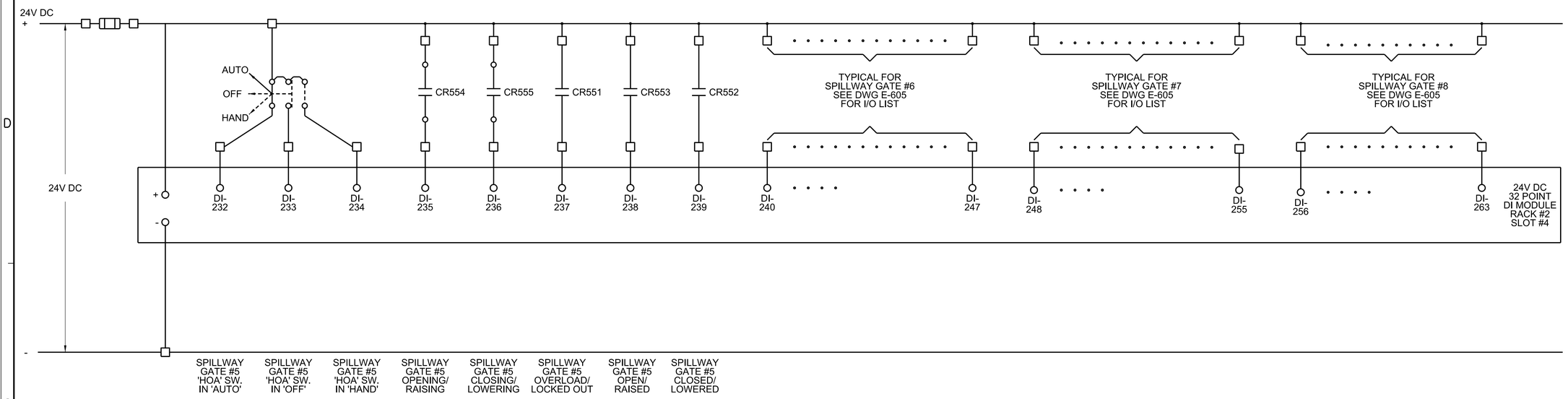
SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

PLC DI MODULE SCHEMATICS (1 OF 2)

Plot Date: 11/5/2012



SPILLWAY GATE #5, #6, #7, AND #8 PLC DI MODULE SCHEMATIC

SCALE: NONE

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
PLC DI MODULE SCHEMATICS (2 OF 2)

U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS	DESIGNED BY: G.D.C. DRAWN BY: S.S. CHECKED BY: D.S.
SUBMITTED BY: DATE:	APPROVED: DATE:
CHIEF, DESIGN BRANCH	CHIEF, ENGINEERING DIVISION
SPEC. NO. --	FILE NAME: E-607.DGN

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DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
E-607

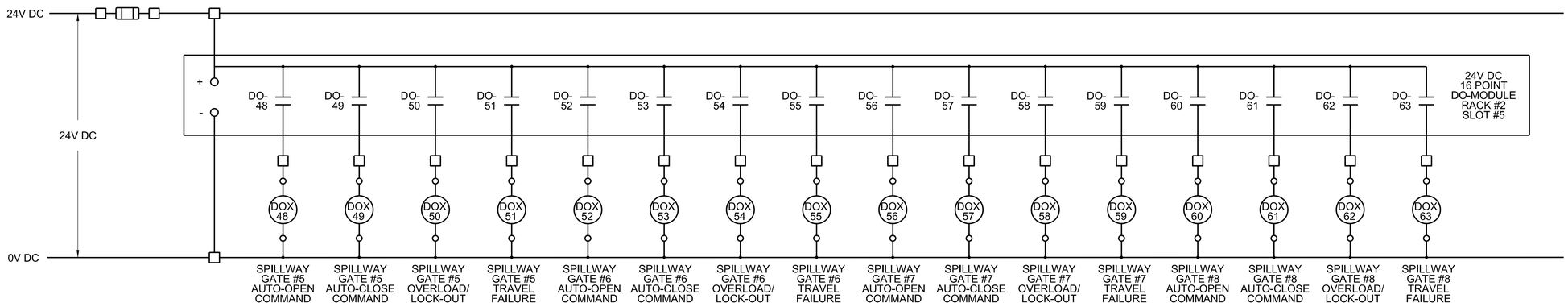
THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER
ALBERT J. BARNES
E 19001
EXP. _____
ELECTRICAL
STATE OF CALIFORNIA

Plot Date: 11/5/2012

NOTES:

1. USE SPARE DO MODULE FOR SPILLWAY GATES #5, 6, 7, 8 OUTPUTS.



SPILLWAY GATE #5, #6, #7, AND #8 PLC DO MODULE SCHEMATIC

SCALE: NONE

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

PLC DO MODULE SCHEMATICS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

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LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: _____ DATE:
CHIEF, DESIGN BRANCH
SPEC. NO. --

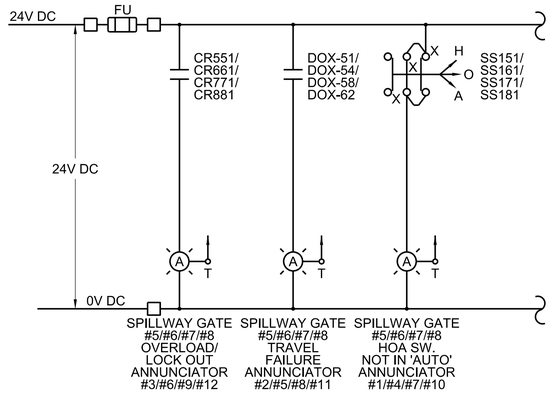
APPROVED: _____ DATE:
CHIEF, ENGINEERING DIVISION

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.
FILE NAME: E-608.DGN

Scale: AS SHOWN

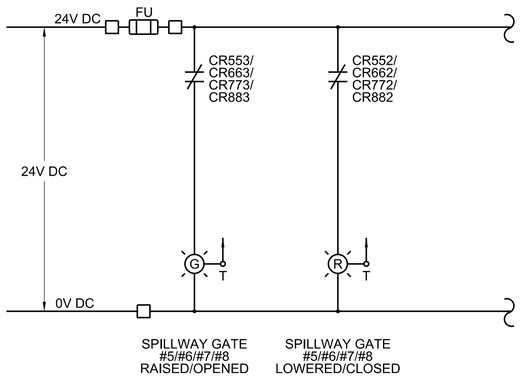
SHEET
E-608

Plot Date: 11/5/2012



SPILLWAY GATES #5, #6, #7 AND #8 ANNUNCIATOR SCHEMATIC

SCALE: NONE



SPILLWAY GATES #5, #6, #7 AND #8 PILOT LIGHTS SCHEMATIC

SCALE: NONE

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

ANNUNCIATOR LAYOUT AND SCHEMATIC

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER
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U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO. --

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION
FILE NAME: E-609.DGN

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.

DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
E-609

Plot Date: 11/5/2012

VALUE ENGINEERING PAYS

SAFETY! PAYS

PLC OUTPUTS

CR ⊥/T ◊ SPILLWAY GATE #5/#6/#7/#8 TRAVELING OPEN
PLC DI-235/243/251/259 → NOT → AND → T.D. 5 SECS → SPILLWAY GATE FAIL TO TRAVEL OPEN

PLC LOGIC CALL TO OPEN SPILLWAY GATE #5/#6/#7/#8

A ◊ SPILLWAY GATE #5/#6/#7/#8 SWITCH IN 'AUTO'
PLC DI-232/240/248/256

AND → ENERGIZE SPILLWAY GATE #5/#6/#7/#8 AUTO CONTACTOR OPEN
PLC DOX-48/52/56/60 → M OPEN

(1) GATE FULL OPEN → NOT → AND (OPEN INTERLOCKS OK)

NOT

CR ⊥/T ◊ SPILLWAY GATE #5/#6/#7/#8 OVERLOAD/LOCKED OUT
PLC DI-237/243/253/261

SPILLWAY GATE #5/#6/#7/#8 OVERLOAD/LOCKED OUT
PLC DOX-50/54/58/62 → HMI, ANN

NOT → AND (OPEN INTERLOCKS OK)

(2) GATE FULL CLOSED → NOT

A ◊ SPILLWAY GATE #5/#6/#7/#8 SWITCH IN 'AUTO'
PLC DI-232/240/248/256

AND → ENERGIZE SPILLWAY GATE #5/#6/#7/#8 AUTO CONTACTOR CLOSE
PLC DOX-49/53/57/61 → M CLOSE

PLC LOGIC CALL TO CLOSE SPILLWAY GATE #5/#6/#7/#8

CR ⊥/T ◊ SPILLWAY GATE #5/#6/#7/#8 TRAVELING CLOSED
PLC DI-236/244/252/260 → NOT → AND → T.D. 5 SECS → SPILLWAY GATE FAIL TO TRAVEL CLOSE

OR → ENERGIZE SPILLWAY GATE #5/#6/#7/#8 FAIL TO TRAVEL ALARM
PLC DOX-51/55/59/63 → OI-PC, ANN

BCD ◊ SPILLWAY GATE #5/#6/#7/#8 POSITION
PLC DI-158 THRU 183
PLC DI-184 THRU 199
PLC DI-200 THRU 215
PLC DI-216 THRU 231

⊥/T → SPILLWAY GATE #5/#6/#7/#8 FULL OPEN → (1)

⊥/T → SPILLWAY GATE #5/#6/#7/#8 FULL CLOSED → (2)

PLC INPUTS

(2T) ◊ SPILLWAY GATE #5 POSITION
PLC AI-11 (4-20mA DC)

(2T) ◊ SPILLWAY GATE #6 POSITION
PLC AI-12 (4-20mA DC)

(2T) ◊ SPILLWAY GATE #7 POSITION
PLC AI-13 (4-20mA DC)

(2T) ◊ SPILLWAY GATE #8 POSITION
PLC AI-14 (4-20mA DC)

A ◊ SPILLWAY GATE #5/#6/#7/#8 HOA SW IN 'AUTO'
PLC DI-232/240/248/256

O ◊ SPILLWAY GATE #5/#6/#7/#8 HOA SW IN 'OFF'
PLC DI-233/241/249/257

H ◊ SPILLWAY GATE #5/#6/#7/#8 HOA SW IN 'HAND'
PLC DI-234/242/250/258

CR ⊥/T ◊ SPILLWAY GATE #5/#6/#7/#8 AUTO OPEN COMMAND
PLC DI-235/243/251/259

CR ⊥/T ◊ SPILLWAY GATE #5/#6/#7/#8 AUTO CLOSE COMMAND
PLC DI-236/244/252/260

CR ⊥/T ◊ SPILLWAY GATE #1/#2/#3/#4 OVERLOAD/LOCKED OUT
PLC DI-237/245/253/261

OI-PC

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
PLC LOGIC INPUT

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER
ALBERT J. BARNES
E 19001
EXP. ——
ELECTRICAL
STATE OF CALIFORNIA

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: G.D.C.
DRAWN BY: S.S.
CHECKED BY: D.S.
DATE:

SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION
SPEC. NO. --
FILE NAME: E-610.DGN

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
800 WILSHIRE BLVD., SUITE 880
LOS ANGELES, CA 90017
TEL (213) 327-0800, FAX (213) 612-0246

DISTRICT FILE NO. 214/

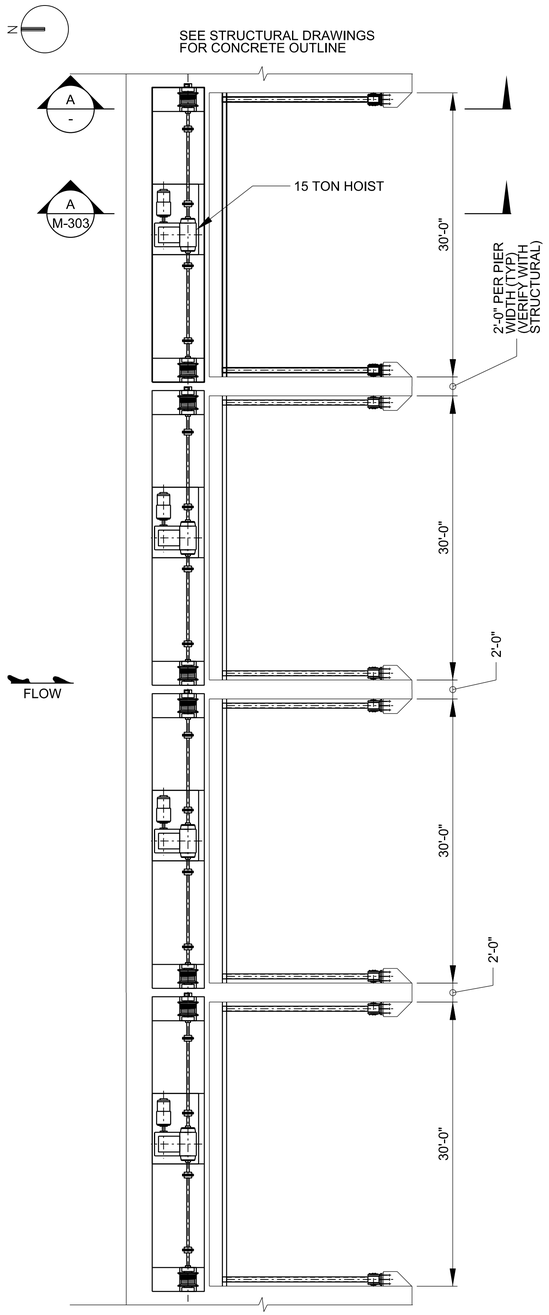
Scale: AS SHOWN

SHEET
E-610

Plot Date: 11/5/2012

VALUE ENGINEERING PAYS

SAFETY! PAYS



PLAN

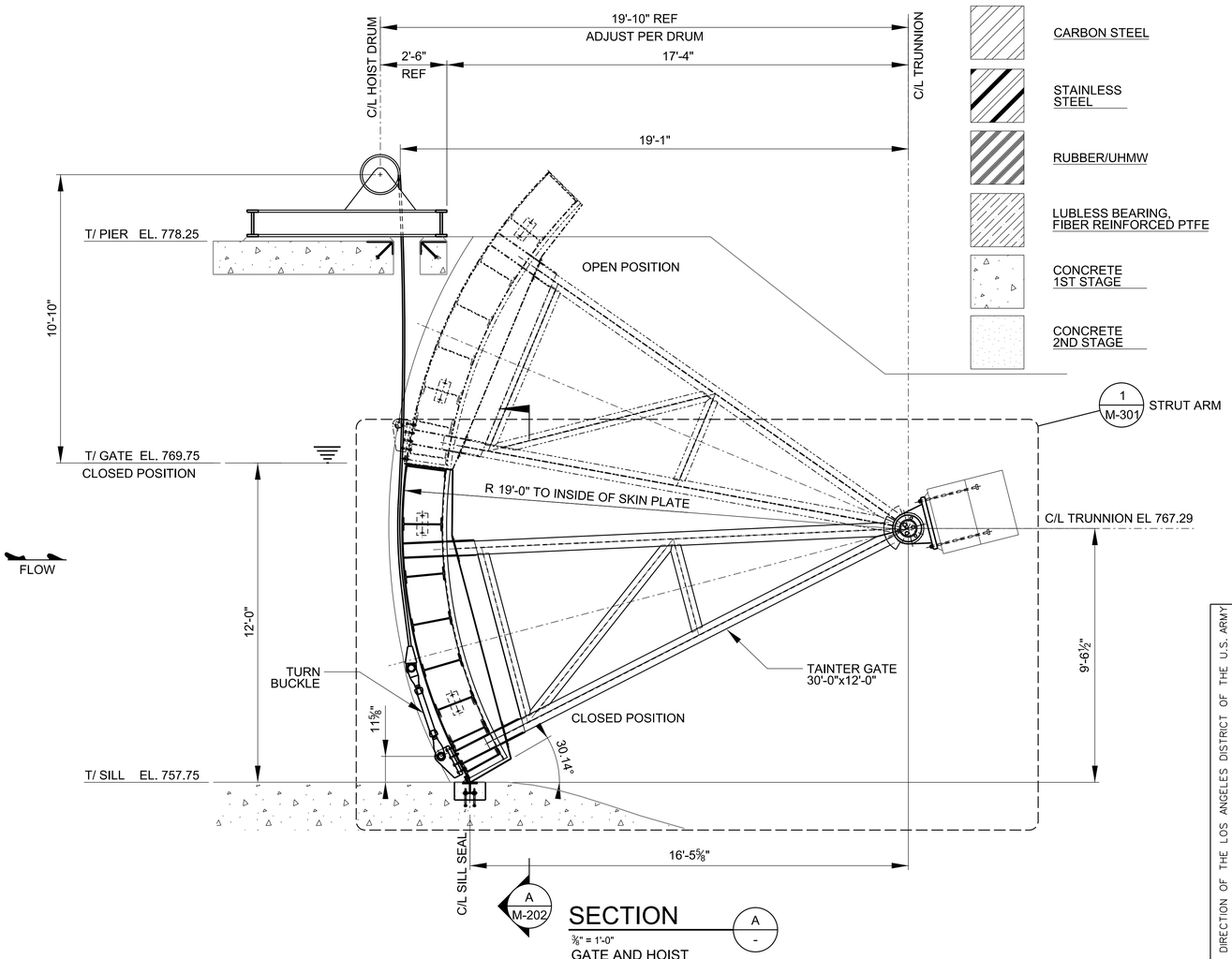
⅛" = 1'-0"

NOTES:

1. REF SHT. M-102 FOR HOIST SYSTEM LAYOUT
2. REF SHT. M-202 FOR GATE FRAME LAYOUT
3. REF SHT. M-302 FOR SEAL LAYOUT
4. REF SHT. M-501 FOR TRUNNION ASSEMBLY
5. REF SHT M-503 FOR GUIDE SHOE
6. REF SHT. M-505 FOR TAINTER GATE LIFTING BRACKET
7. SEE STRUCTURAL DRAWINGS FOR SPILWAY STRUCTURE
8. DIMENSIONS NOTED AS "REF" ARE APPROXIMATE , DO NOT CONTROL THE DESIGN AND ARE SUPPLIED FOR COMPARISON ONLY.

LEGEND

- CARBON STEEL
- STAINLESS STEEL
- RUBBER/UHMW
- LUBLESS BEARING, FIBER REINFORCED PTFE
- CONCRETE 1ST STAGE
- CONCRETE 2ND STAGE



SECTION

⅜" = 1'-0"

GATE AND HOIST

A
-

SCALE: ⅛" = 1'-0"
12"0 4' 8' 12'

SCALE: ¾" = 1'-0"
12" 0 2' 4' 6'

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GAJERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE APPROVAL
	REVISIONS	

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

GENERAL ARRANGEMENT OF TAINTER GATES

TETRA TECH
350 SOUTH FIGUEROA STREET, SUITE 380
LOS ANGELES, CA 90017
TEL.(213) 327-0800, FAX.(213) 892-0246

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

PREPARED UNDER THE DIRECTION OF	SUBMITTED BY:	DATE:	APPROVED:
COL. THOMAS H. MAGNESS	CHIEF, DESIGN BRANCH		CHIEF, ENGINEERING DIVISION
DISTRICT ENGINEER	DISTRICT FILE NO. 2147		SPEC. NO. --

DESIGNED BY: M.J.C.
DRAWN BY: V.R.
CHECKED BY: V.R.G.
DATE:
FILE NAME: M-101.DGN

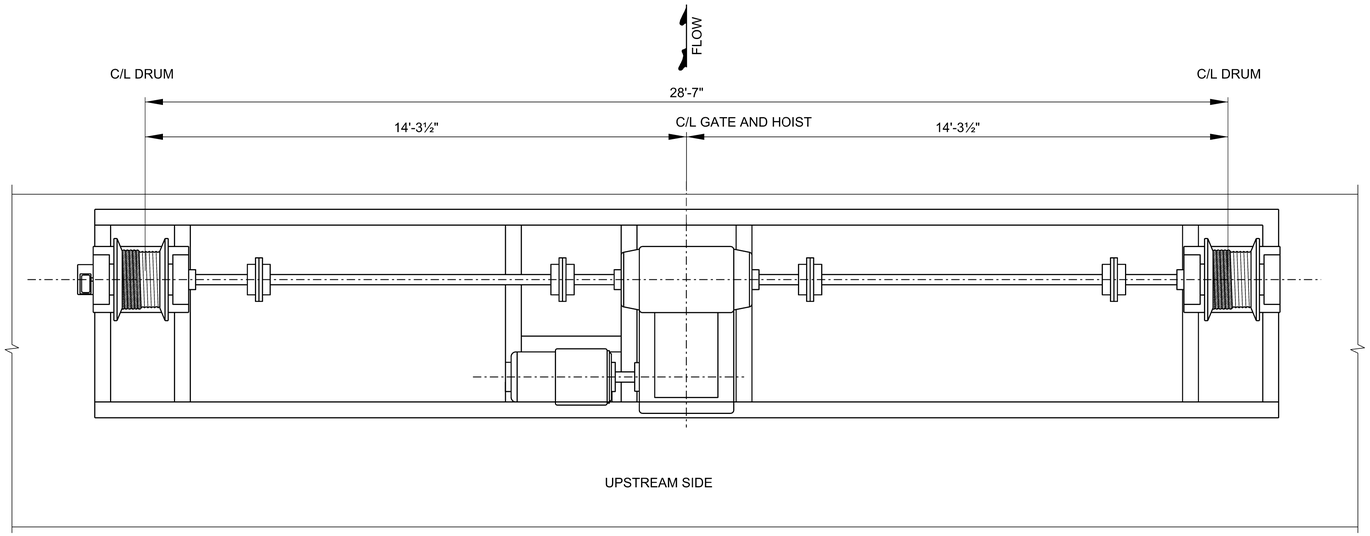
Scale: AS SHOWN

SHEET
M-101

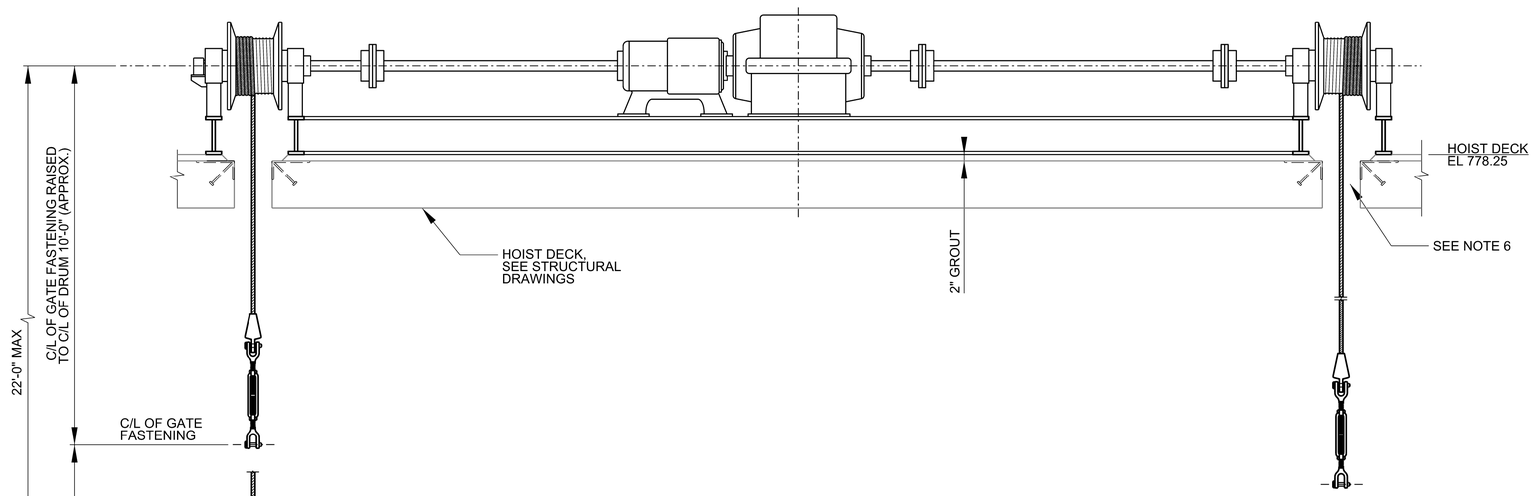
Plot Date: 11/5/2012

NOTES:

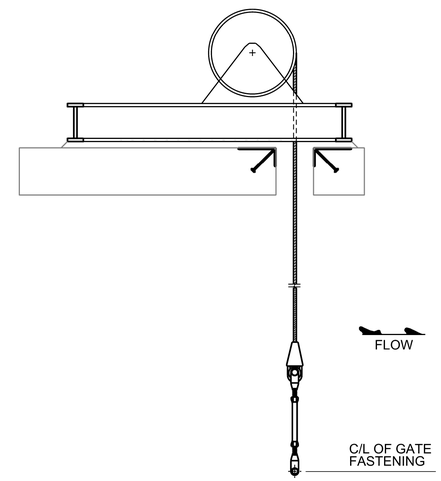
1. REF. DWG M-101 FOR GENERAL ARRANGEMENT
2. A TOTAL OF FOUR HOISTS REQUIRED
3. 15 TON HOIST, 12ft MINIMUM LIFT, LIFTING SPEED 1.75 FPM
4. LAYOUT SHOWN IS FOR CONCEPT ONLY. ACTUAL CONFIGURATION, COMPONENTS, & MOUNTING WILL BE PER APPROVED HOIST MANUFACTURER. ADDITIONAL REQUIREMENTS ARE MENTIONED IN THE SPECIFICATION.
5. HOIST MANUFACTURER TO PROVIDE MOUNTING PLAN OF THE HOIST FOR THE EXACT LOCATIONS OF SUPPORTS AND ANCHOR BOLTS.
6. DIMENSIONS TO BE PROVIDED BY HOIST MANUFACTURER.
7. HOIST MANUFACTURER TO PROVIDE CLEVIS AND TURNBUCKLE.
8. TURNBUCKLE TO MATCH WITH LIFTING BRACKET. SEE SHT M-505 FOR LIFTING BRACKET DETAILS.



PLAN
½" = 1'-0"



ELEVATION
½" = 1'-0"



SIDE VIEW
½" = 1'-0"

SCALE: ½" = 1'-0
12" 0 1' 2' 3' 4'

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GALERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

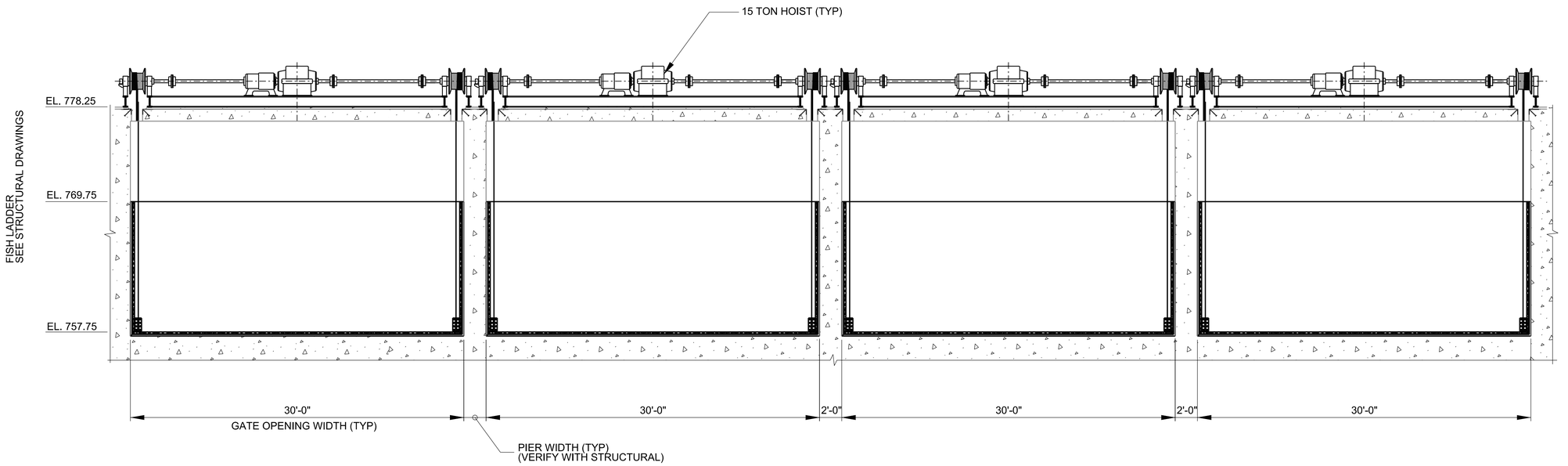
ROBLES DIVERSION DAM MODIFICATION PROJECT
TAINTER GATE HOIST SYSTEM LAYOUT

TETRA TECH 350 W. 5TH STREET, SUITE 300 LOS ANGELES, CA 90071 TEL (213) 327-0800, FAX (213) 892-0246	U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS	DESIGNED BY: M.J.C. DRAWN BY: V.R. CHECKED BY: V.R.G.	
PREPARED UNDER THE DIRECTION OF	SUBMITTED BY: DATE:	APPROVED: DATE:	
COL. THOMAS H. MAGNESS DISTRICT ENGINEER	CHIEF, DESIGN BRANCH	CHIEF, ENGINEERING DIVISION	
	DISTRICT FILE NO. 214/	SPEC. NO. --	FILE NAME: M-102.DGN

Scale: AS SHOWN
SHEET
M-102

Plot Date: 11/6/2012

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012



UPSTREAM ELEVATION

3/16" = 1'-0"

SCALE: 3/16" = 1'-0"

12" 0 2' 5' 10'

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GALERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

GENERAL ARRANGEMENT OF TAINTER GATES

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: M.J.C.
DRAWN BY: V.R.
CHECKED BY: V.R.G.

SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION

TETRA TECH
800 WILSHIRE BLVD., SUITE 380
LOS ANGELES, CA 90017
TEL (213) 327-0800, FAX (213) 612-0246

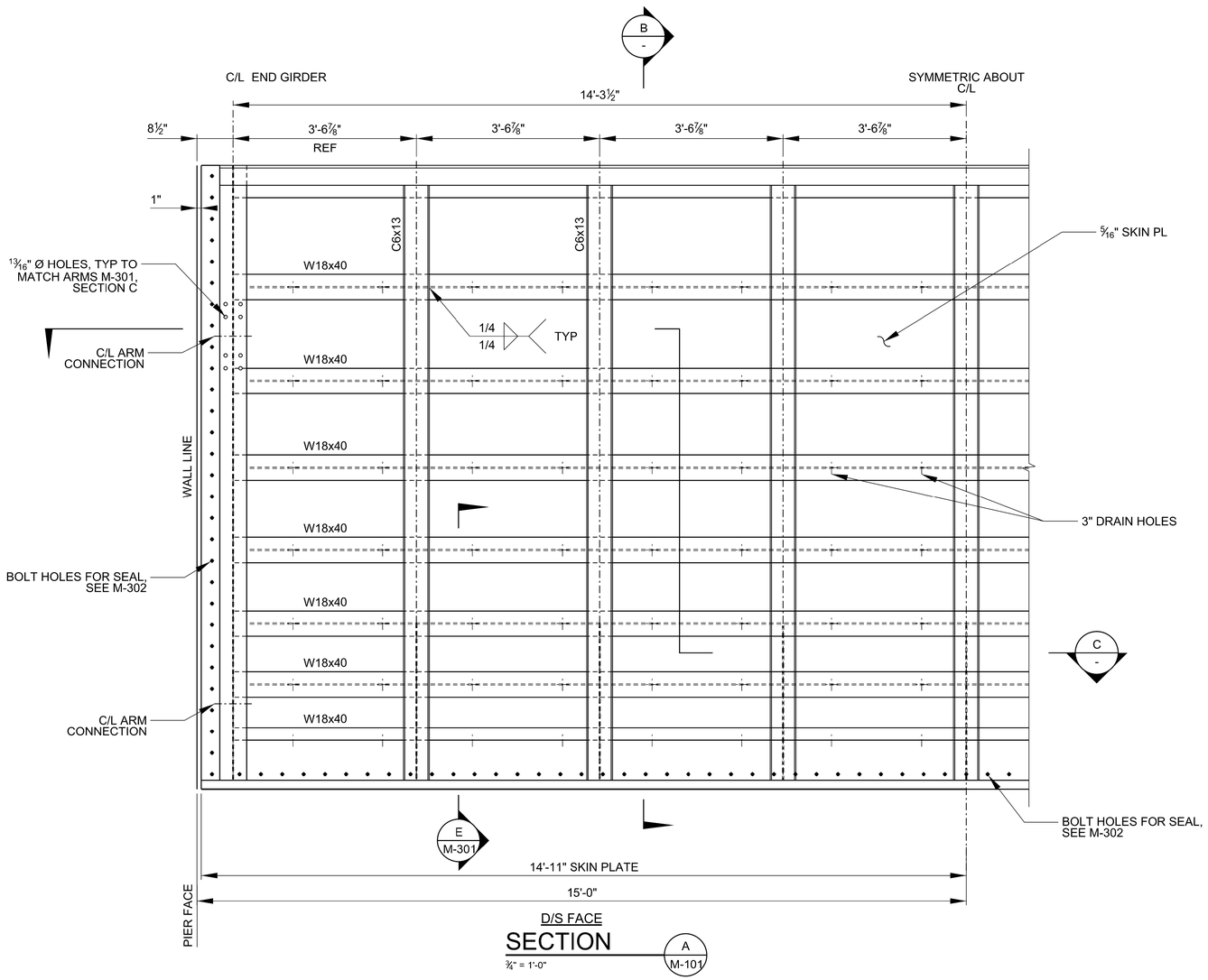
PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

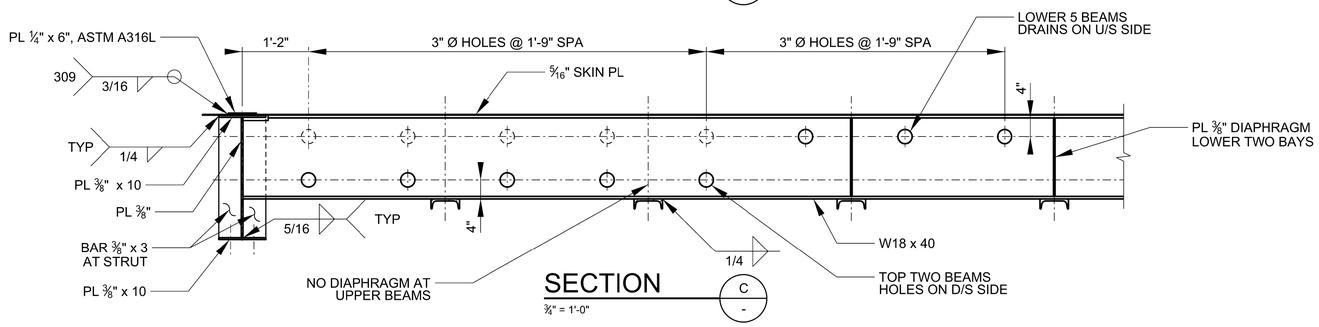
SPEC. NO. --
FILE NAME: M-201.DGN
DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
M-201

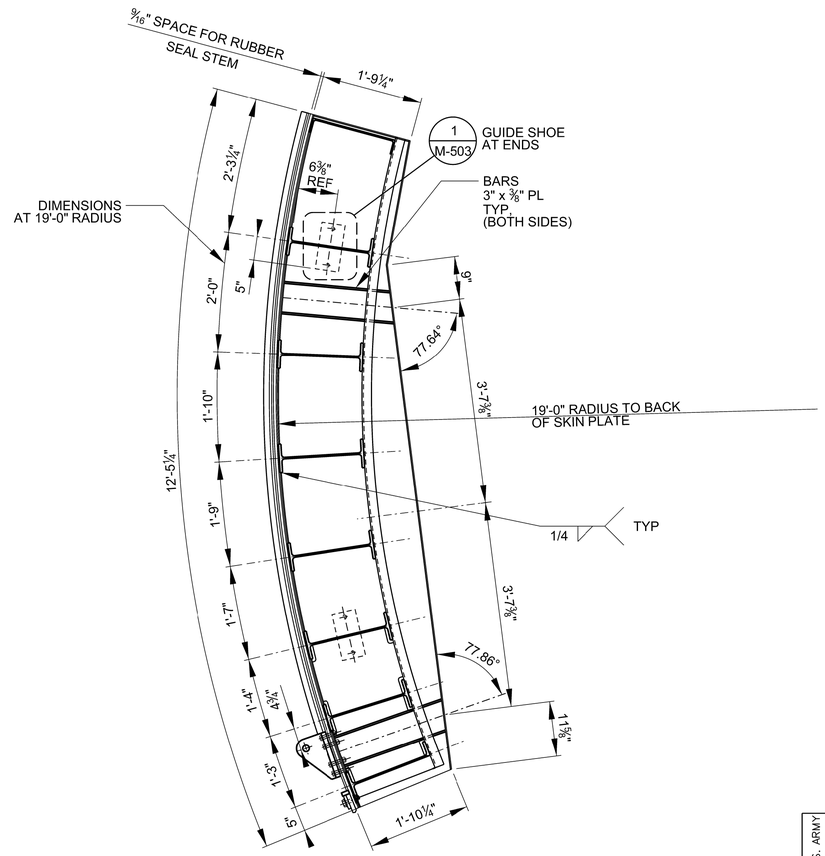
Plot Date: 11/5/2012





NOTES:

1. WELDS SHALL BE CONTINUOUS, WATERTIGHT AND SEALED ALL AROUND.



PART	MATERIAL	DESCRIPTION
HORIZONTAL GIRDERS	ASTM A709 GRADE 50	W 18 X 40
TOP GIRDER	ASTM A709 GRADE 50	¼" THICK BUILT UP CHANNEL
STRUT ARMS	ASTM A709 GRADE 50	W 6 X 25
STRUT ARM BRACING	ASTM A709 GRADE 50	W 5 X 19
END GIRDERS	ASTM A709 GRADE 50	3/8" THICK BUILT UP SECTION
DOWN STREAM VERTICAL RIBS	ASTM A709 GRADE 50	C 6 X 13
SKIN PLATE	ASTM A709 GRADE 50	5/16" THICK PLATE

SCALE: ¾" = 1'-0"

12" 6" 0 1' 2'

REGISTERED PROFESSIONAL ENGINEER VISHAL RATILAL GALERA M 35993 MECHANICAL STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

GATE FRAMING LAYOUT

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: M.J.C.
DRAWN BY: V.R.
CHECKED BY: V.R.G.
DATE:

SUBMITTED BY: DATE:
APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

CHIEF, DESIGN BRANCH
SPEC. NO. --
FILE NAME: M-202.DGN

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

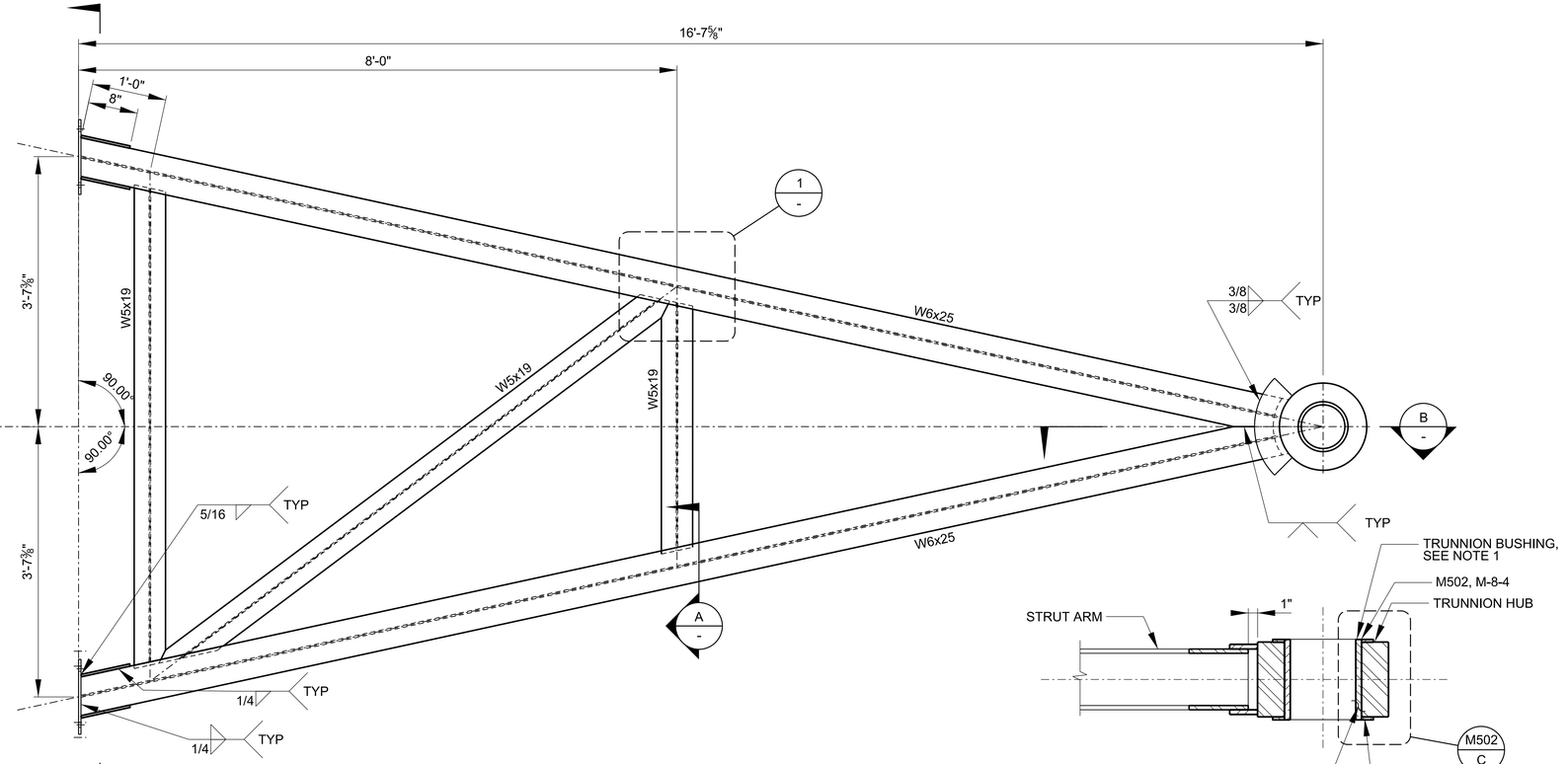
DISTRICT FILE NO. 214/

TETRA TECH
800 WILSHIRE BLVD., SUITE 380
LOS ANGELES, CA 90017
TEL (213) 327-0800, FAX (213) 612-0246

Scale: AS SHOWN

SHEET
M-202

Plot Date: 11/6/2012



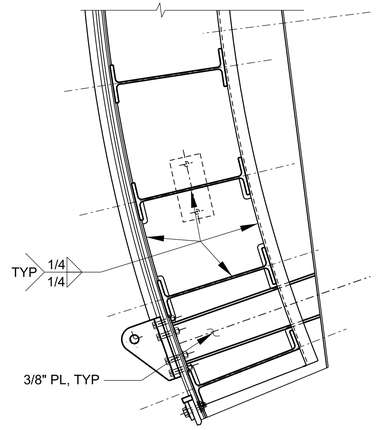
STRUT ARM

1" = 1' — 1 / M-101

SECTION

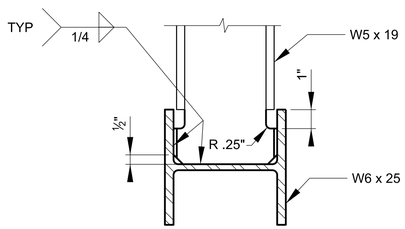
1 1/2" = 1' — B / -

NOTES:
1. SEE SHEET M-501 FOR TRUNNION ASSEMBLY.



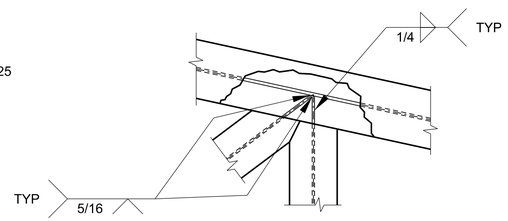
SECTION

1" = 1' — E / M-202



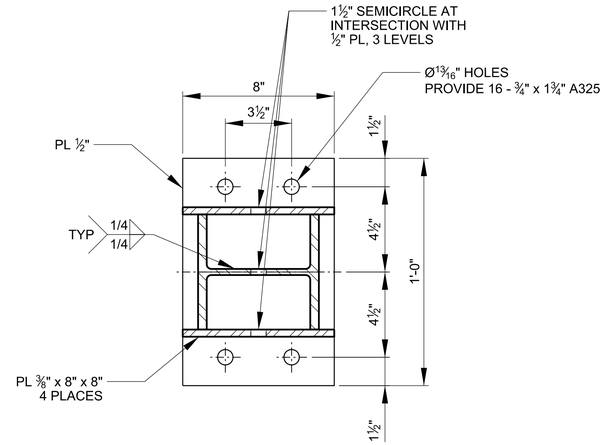
SECTION

3" = 1' — A / -



DETAIL

1 1/2" = 1' — 1 / -



SECTION

3" = 1' — C / -

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
MECHANICAL SECTIONS AND DETAILS

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GAJERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

TETRA TECH
800 WEST 6TH STREET, SUITE 380
LOS ANGELES CA 90017
TEL (213) 327-0800, FAX (213) 612-0246

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

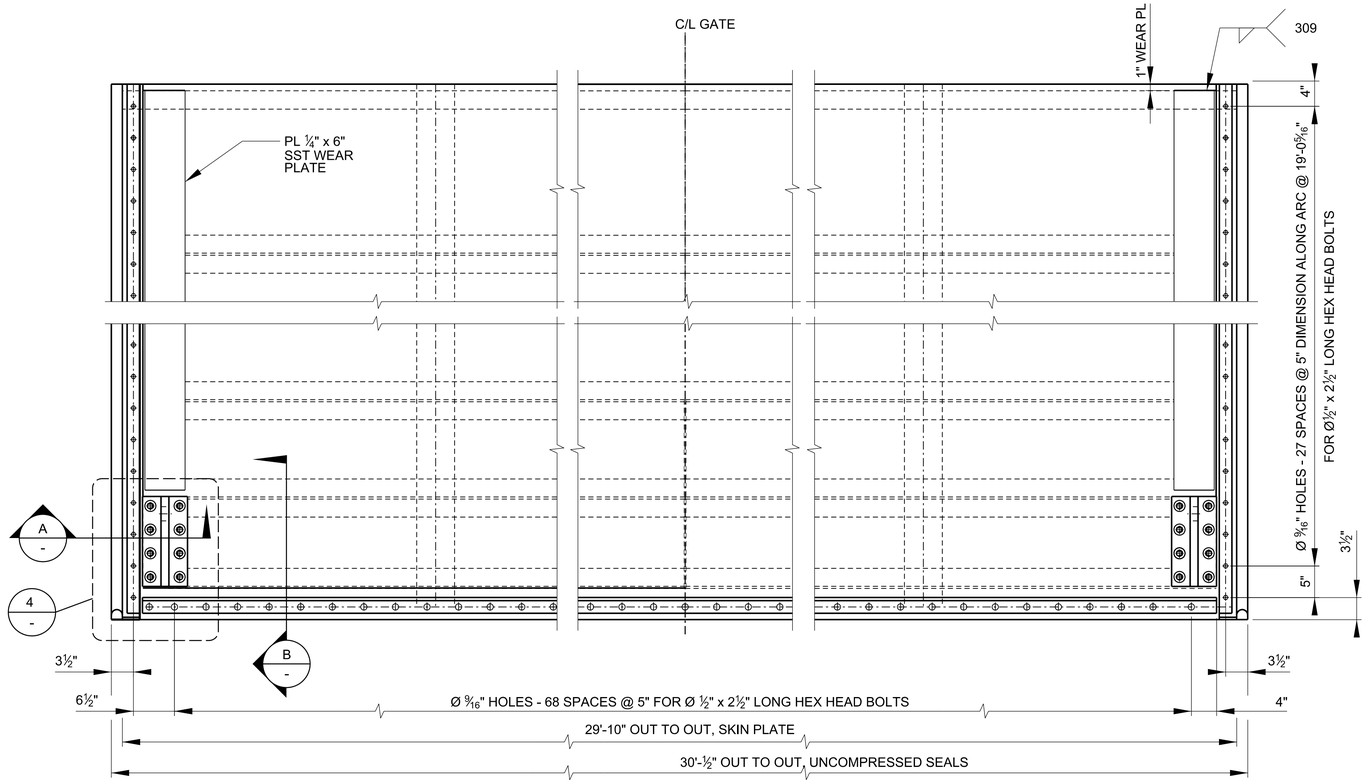
SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
DISTRICT FILE NO. 214/

DESIGNED BY: V.R.G.
DRAWN BY: S.S.
CHECKED BY: P.R.C.
APPROVED: DATE:
CHIEF, ENGINEERING DIVISION
SPEC. NO. --
FILE NAME: M-301.DGN

Scale: AS SHOWN

SHEET
M-301

Plot Date: 11/5/2012



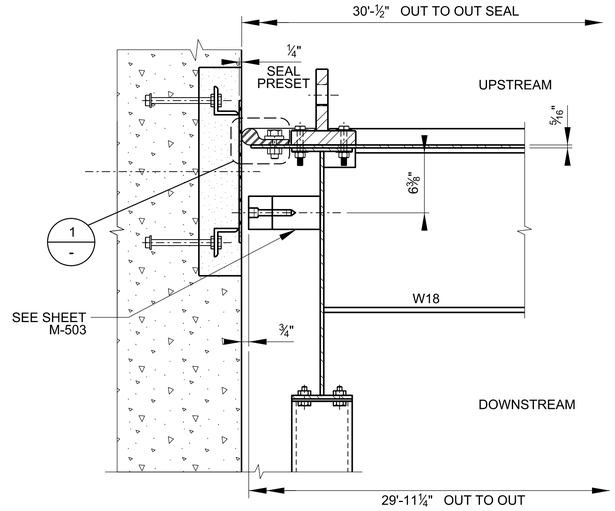
GATE FRAMING (TYP)
UPSTREAM ELEVATION

1" = 1'-0"

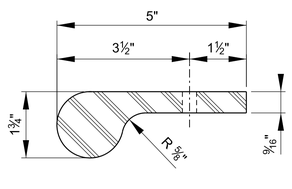
NOTES:

1. RUBBER SEAL CORNERS ARE MOLDED. SPLICE IN SEAL ARE 12" MIN. FROM SEAL CORNERS.
2. SPLICES IN RUBER SEAL SHOULD BE IN ACCORDANCE WITH SPECIFICATIONS.
3. SEAL CLAMP BOLTS ARE SNUG TIGHT WITHOUT CAUSING SEAL TO BULGE. USE LOCTITE BLUE.

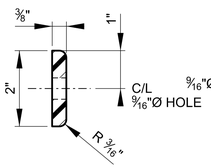
PART	MATERIAL	COMMENTS
SIDE AND BOTTOM SEAL	NATURAL RUBBER/POLYISOPRENE	
CLAMP BAR	ASTM A276, UNS S30400, SST	STEEL, 2" WIDE X 3/8" THICK
HEX BOLTS FOR SEAL	ASTM A193, UNS S30400, SST	HEX BOLTS WITH BRONZE NUTS AND NYLON WASHERS



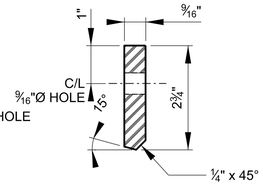
SECTION
A
-
1 1/2" = 1'-0"



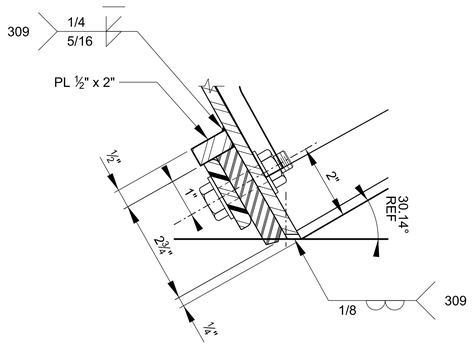
SEAL
1
-
6" = 1'-0"



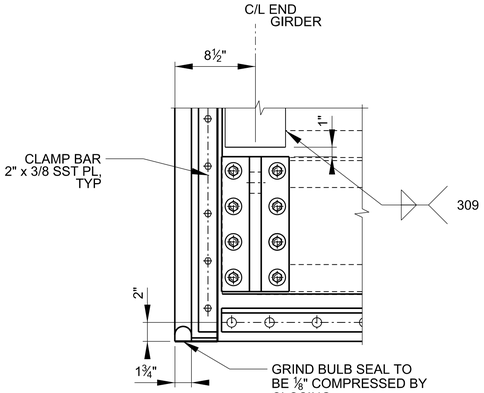
SEAL CLAMP
2
-
6" = 1'-0"



SEAL
3
-
6" = 1'-0"



SECTION
B
-
6" = 1'-0"



ORTHOGONAL VIEW

DETAIL
4
-
1 1/2" = 1'-0"

SCALE: 6" = 1'-0"
0 1" 2" 3" 6"

SCALE: 1 ½" = 1'-0"
12" 9" 6" 3" 0 1'

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

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GAJJRA
M 35993
MECHANICAL
STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS; THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
800 WILSHIRE BLVD., SUITE 380
LOS ANGELES, CA 90017
TEL (213) 327-0800, FAX (213) 612-0246

SUBMITTED BY: DATE:
CHIEF, DESIGN BRANCH
SPEC. NO. --
DISTRICT FILE NO. 214/

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

APPROVED: DATE:
CHIEF, ENGINEERING DIVISION

DESIGNED BY: M.J.C.
DRAWN BY: V.R.
CHECKED BY: V.R.G.
DATE:
FILE NAME: M-302.DGN

Scale: AS SHOWN
SHEET
M-302

SYMBOL	DESCRIPTIONS	DATE APPROVAL
	REVISIONS	

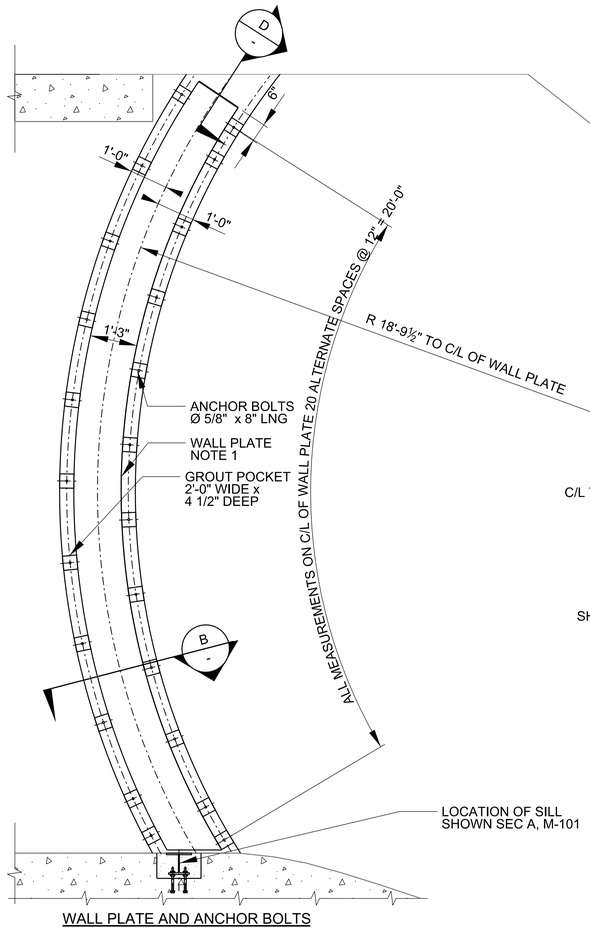
PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

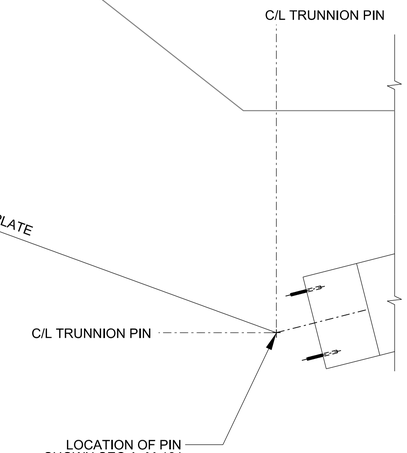
ROBLES DIVERSION DAM MODIFICATION PROJECT

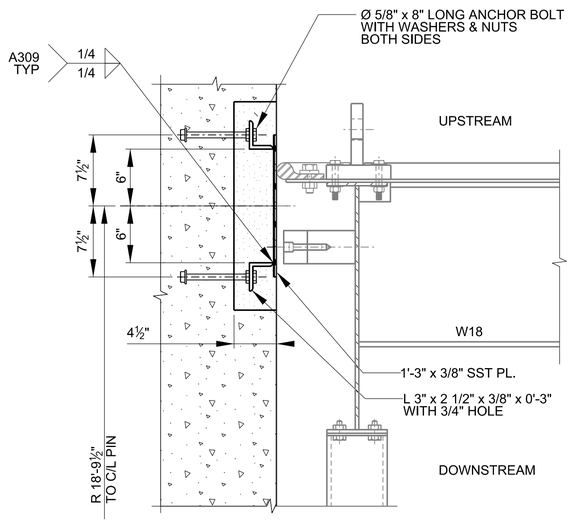
SEAL LAYOUT

Plot Date: 11/5/2012

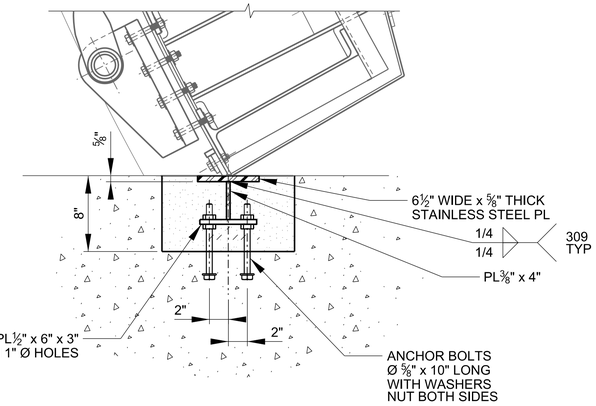


WALL PLATE AND ANCHOR BOLTS





SECTION B
1 1/2" = 1'-0"

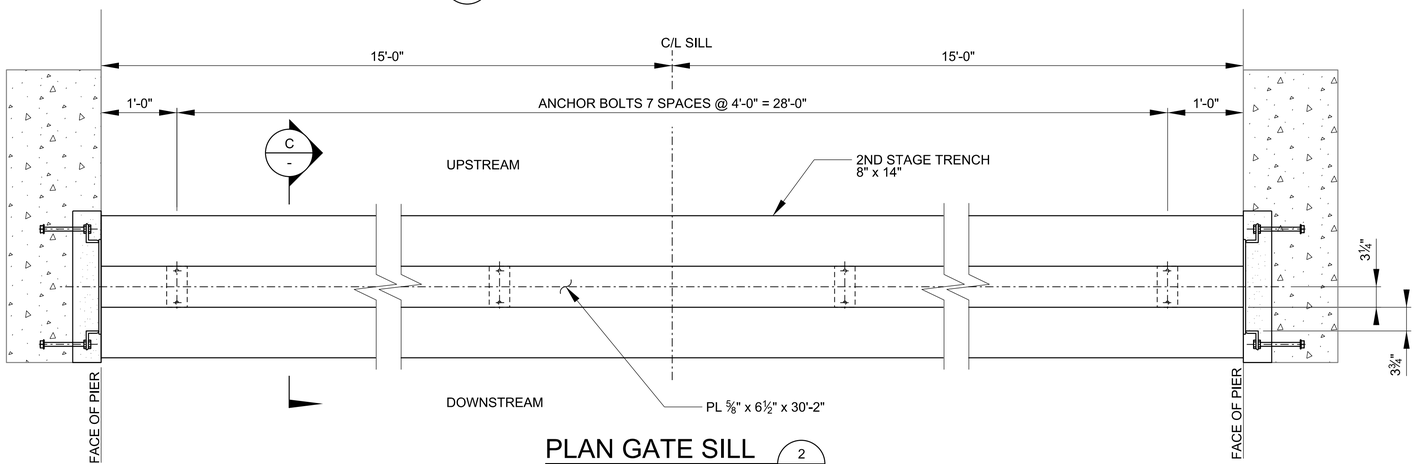


SECTION C
1½" = 1'-0"

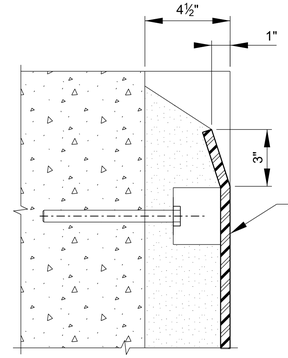
NOTES:

1. WALL PLATE TO BE STRAIGHT AND SET PERPENDICULAR (PLUMB) TO SILL. DISTANCE BETWEEN WALL PLATES TO BE 30'-0"±1/16" AT THE SILL AND 30'-0"±1/16" AT THE TOP BUT NOT MORE THAN HALF OF THE ALLOWANCE ON EITHER SIDE.
2. GATE SILL TO BE STRAIGHT AND SET LEVEL ±1/16".
3. ANCHOR BOLTS SHALL BE LOCATED ±⅛" OF DIMENSION SHOWN ON DRAWING. ANCHOR BOLT CLIP ANGLE SHALL BE LOCATED ±1/16" OF DIMENSION SHOWN ON DRAWING.

SECTION A
1/2" = 1'-0"
M-101



PLAN GATE SILL
1" = 1'-0"



SECTION D
3" = 1'-0"

SCALE: 1 ½" = 1'-0" 12" 9" 6" 3" 0 1'
SCALE: 1" = 1'-0" 1' 0 1'
SCALE: ⅜" = 1'-0" 12" 0 2' 4' 6'
SCALE: ½" = 1'-0" 12" 0 1' 2' 3' 4'

REGISTERED PROFESSIONAL ENGINEER VISHAL RATILAL GANDHI M 35993 MECHANICAL STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

TETRA TECH
350 S. GRAND AVENUE, SUITE 380
LOS ANGELES, CA 90071
TEL (213) 327-0800, FAX (213) 612-0246

SUBMITTED BY: DATE:

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: M.J.C.
DRAWN BY: V.R.
CHECKED BY: V.R.G.
APPROVED: DATE:

CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION

SPEC. NO. --
FILE NAME: M-303.DGN

DISTRICT FILE NO. 214/

Scale: AS SHOWN

SHEET
M-303

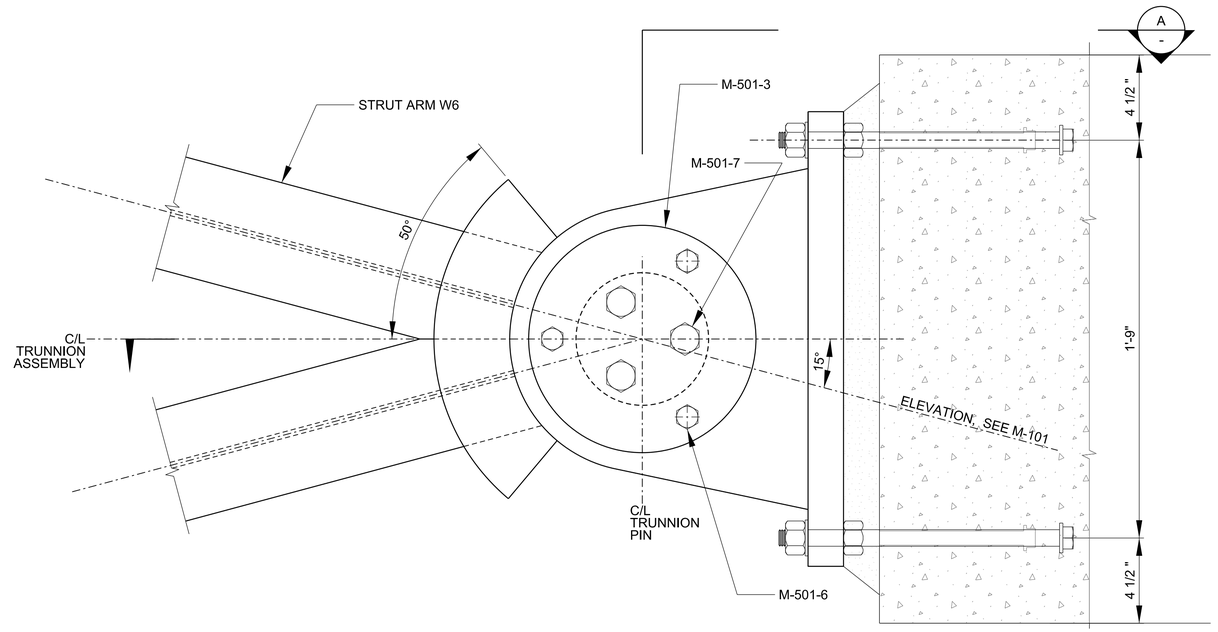
SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT
MECHANICAL EMBEDMENTS

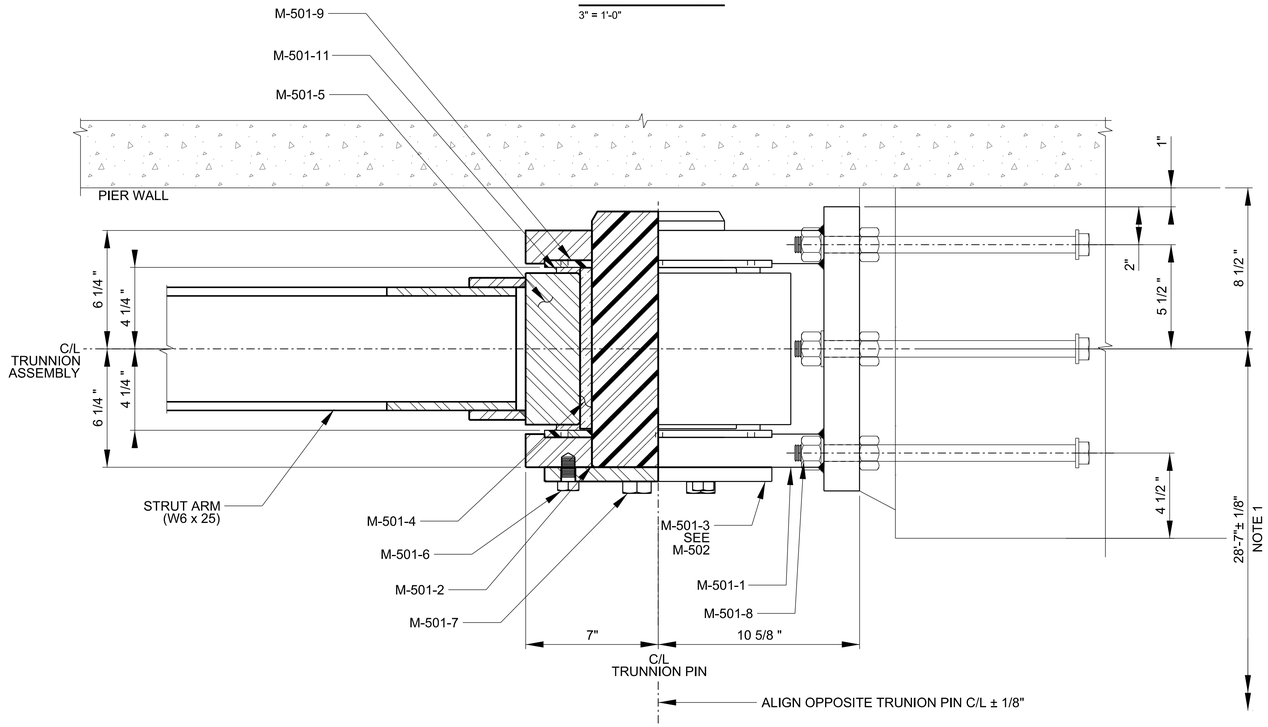
Plot Date: 11/5/2012



ROTATED 15° CW

ELEVATION

3" = 1'-0"



SECTION

3" = 1'-0"

NOTES:

1. QUANTITIES TABULATED ARE FOR FOUR TAINTER GATES.
2. SEE SHT M-502 & M-503 FOR DETAILS.

MARK NO.	QTY.	NAME	MATERIAL	COMMENTS	WEIGHT /ITEM
M-501-1	8	TRUNNION YOKE	ASTM A 709 GR. 50	HIGH STRENGTH LOW ALLOY STRUCTURAL STEEL	366 LBS
M-501-2	8	TRUNNION PIN	ASTM A 705, TYPE 630, UNS S17400, COND. H 1150	AGE - HARDENING STAINLESS STEEL FORGING	146 LBS
M-501-3	8	COVER PLATE	ASTM A 709 GR. 50	HIGH STRENGTH LOW ALLOY STRUCTURAL STEEL	24 LBS
M-501-4	16	BUSHING	ORKOT C378	FN2 FIT	5 LBS
M-501-5	8	TRUNNION HUB	ASTM A 668, CLASS D GR. X1 WITH A709 FLANGE	CARBON STEEL FORGING, NORMALIZED & TEMPERED	226 LBS
M-501-6	24	COVER PLATE-YOKE BOLT	ASTM F 593, ALLOY GROUP 5 (410), COND. H	¾" - 1½" HEX HEAD CAP SCREW	0.4 LBS
M-501-7	24	COVER PLATE-PIN BOLT	ASTM F 593, ALLOY GROUP 5 (410), COND. H	1" - 2 ½" FULL THREADED HEX HEAD CAP SCREW	0.6 LBS
M-501-8	48	TRUNNION YOKE ANCHOR BOLT	ASTM F1554 GR. 105	¾" - 12 " LNG, 5" THREAD LENGTH ROD WITH NUT AND WASHER	4 LBS
M-501-9	16	THRUST PAD	ASTM A240 TYPE 316 PL 3/8" x 12"	32 RMS FINISH ONE SIDE USE LOCTITE 5203	7.7 LBS
M-501-10	58	THRUST PAD SCREWS CTR SUNK Ø 3/8" x 1¼"	18-8 FF-P-35	USE LOCTITE BLUE	.3 LBS
M-501-11	16	THRUST WASHER	ORKOT C320	LC4 WITH M-8-4	.5 LBS

INSTALLATION SEQUENCE:

1. ALIGN THE TRUNNION YOKES AND HOLD IN PLACE BEFORE GROUTING. FASTEN THE TRUNNION YOKES TO THE EMBEDDED ANCHOR BOLTS. THE HORIZONTAL DISTANCE BETWEEN TRUNNION YOKES SHALL NOT VARY MORE THAN 1/8 INCH FROM THE DRAWING DIMENSION.
2. ALIGN TRUNNION HUBS, WHICH ARE WELDED TO THE TAINTER GATE STRUT ARMS AND COMPRISED OF PRESS FITTED SELF LUBRICATING BUSHINGS, WITH THE CENTER LINE OF TRUNNION YOKE PIN HOLES.
3. INSERT THE TRUNNION PIN WITH THE BOLTED COVER PLATE THROUGH THE YOKE AND HUB ASSEMBLY. THE ECCENTRICITY OF THE ACTUAL CENTERLINE OF EACH TRUNNION PIN WITH RESPECT TO THE ESTABLISHED HORIZONTAL LINE SHALL NOT BE MORE THAN 1/32 INCH.
4. SECURE THE TRUNNION PINS BY BOLTING THE COVER PLATES TO THE TRUNNION YOKES.

SCALE: 3" = 1'-0"

0 3" 6" 12"

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

MECHANICAL TRUNNION ASSEMBLY

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: M.J.C.
DRAWN BY: V.R.
CHECKED BY: V.R.G.
APPROVED:
DATE:
CHIEF, ENGINEERING DIVISION
FILE NAME: M-501.DGN

SUBMITTED BY:
DATE:
CHIEF, DESIGN BRANCH
SPEC. NO. --

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER
DISTRICT FILE NO. 214/

TETRA TECH
800 WILSHIRE BLVD., SUITE 380
LOS ANGELES, CA 90017
TEL: (213) 327-0800, FAX: (213) 612-0246

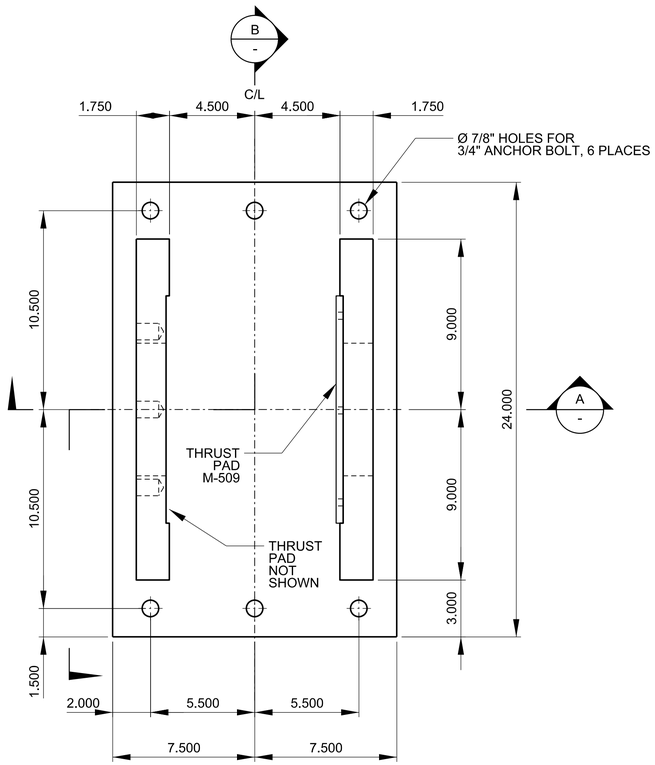
Scale: AS SHOWN

SHEET
M-501

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GALERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

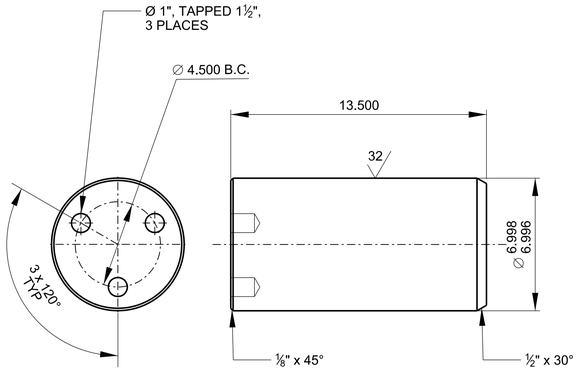
THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

Plot Date: 11/5/2012



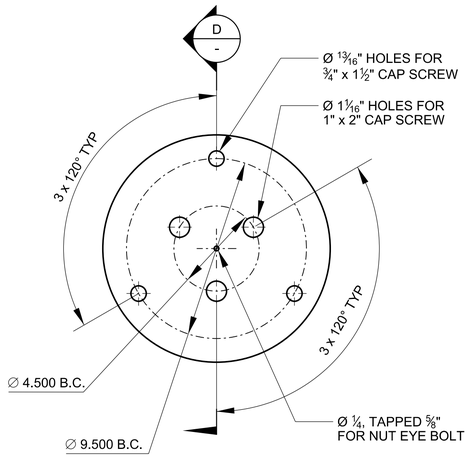
PLAN

3" = 1'-0" MARK: M-501-3



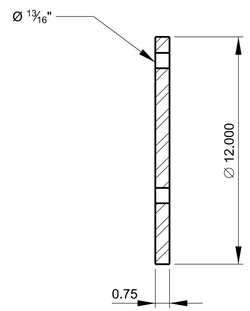
TRUNNION PIN

3" = 1'-0" MARK: M-501-2



TRUNNION COVER PLATE

3" = 1'-0" MARK: M-501-3

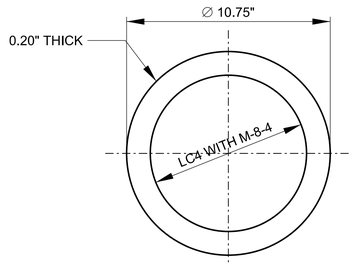


SECTION

3" = 1'-0" D -

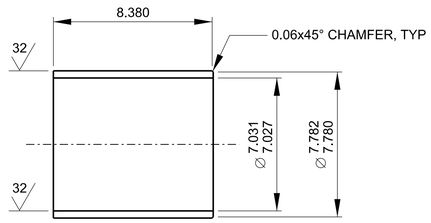
NOTES:

1. ALL MACHINING TO BE DONE AFTER WELDING & HEAT TREATMENT. PRE AND POST WELD HEAT TREATMENT REQUIRED.
2. BOLTS ARE NOT DRAWN. SEE CALL OUTS M-501



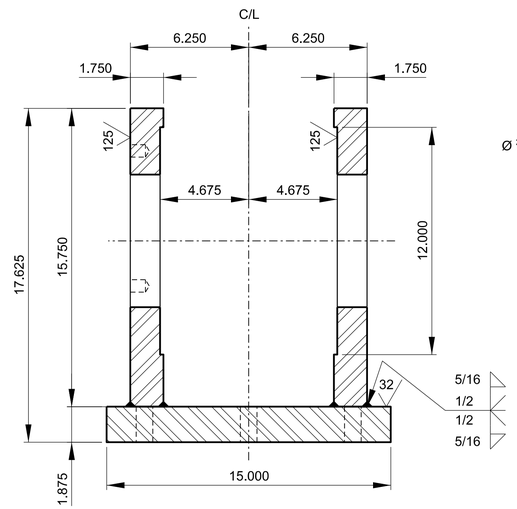
THRUST WASHER, ORKOT

3" = 1'-0" MARK: M-501-11



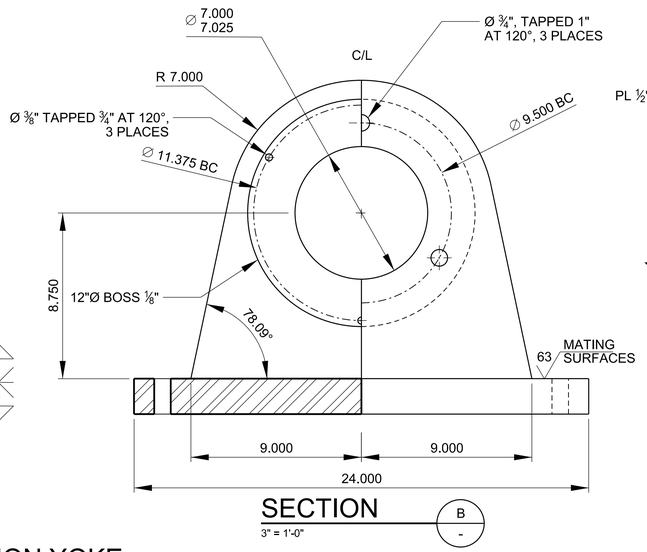
TRUNNION BUSHING, ORKOT

3" = 1'-0" MARK: M-501-4



SECTION

3" = 1'-0" A -

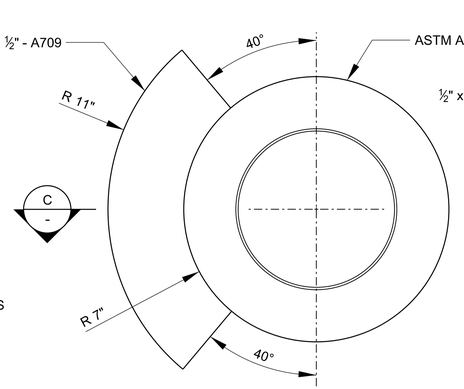


SECTION

3" = 1'-0" B -

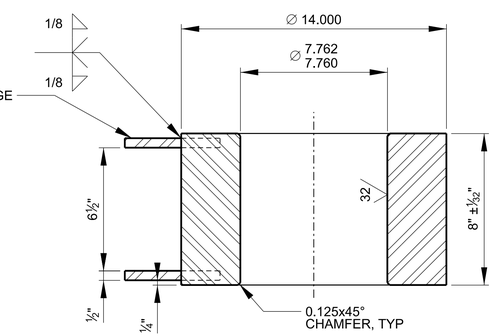
TRUNNION YOKE

MARK: M-501-1



TRUNNION HUB

3" = 1'-0" MARK: M-501-5



SECTION

3" = 1'-0" SEE NOTE 1 C -

SCALE: 3" = 1'-0"

0 3" 6" 12"

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GALERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

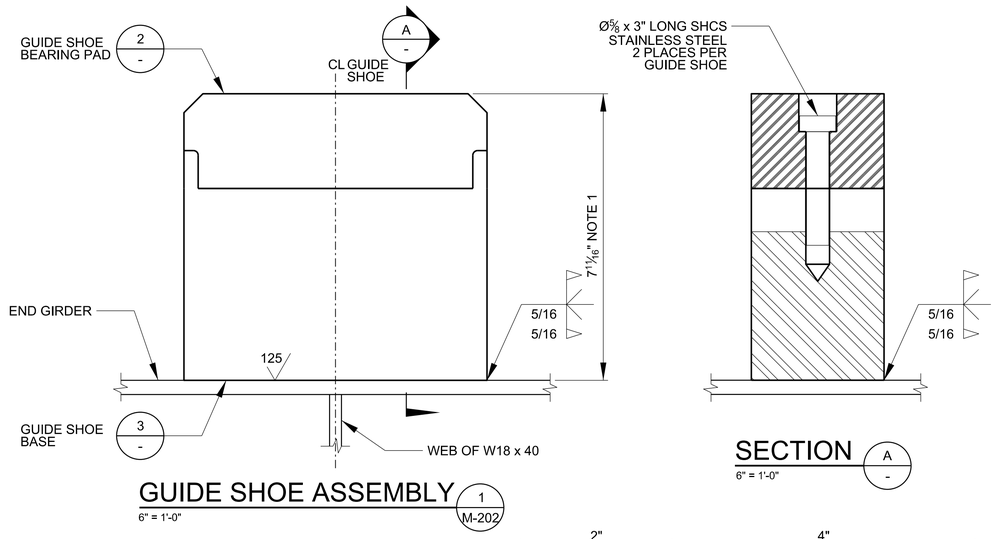
ROBLES DIVERSION DAM MODIFICATION PROJECT
MECHANICAL TRUNNION DETAILS

TETRA TECH 180 N. ASHWILL STREET, SUITE 380 LOS ANGELES CA 90017 TEL (213) 327-0800, FAX (213) 632-0246	U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS	DESIGNED BY: M.J.C. DRAWN BY: V.R. CHECKED BY: V.R.G. DATE:
PREPARED UNDER THE DIRECTION OF:	SUBMITTED BY: DATE:	APPROVED: DATE:
COL. THOMAS H. MAGNESS DISTRICT ENGINEER	CHIEF, DESIGN BRANCH	CHIEF, ENGINEERING DIVISION
DISTRICT FILE NO. 214/	SPEC. NO. --	FILE NAME: M-502.DGN

Scale: AS SHOWN

SHEET
M-502

Plot Date: 11/5/2012



GUIDE SHOE ASSEMBLY 1 M-202

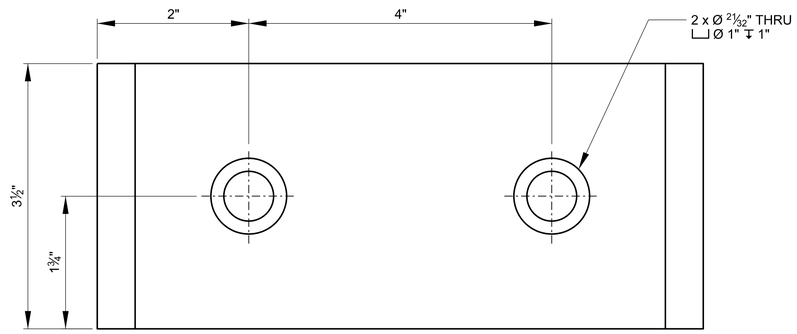
6" = 1'-0"

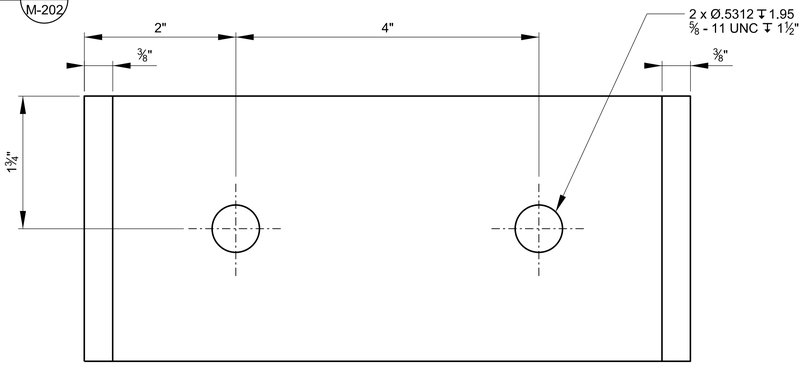
SECTION A -

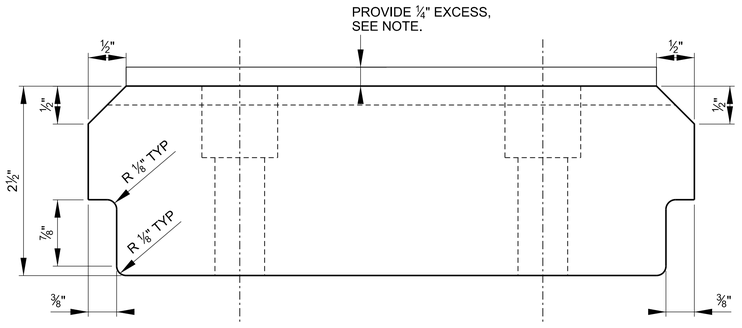
6" = 1'-0"

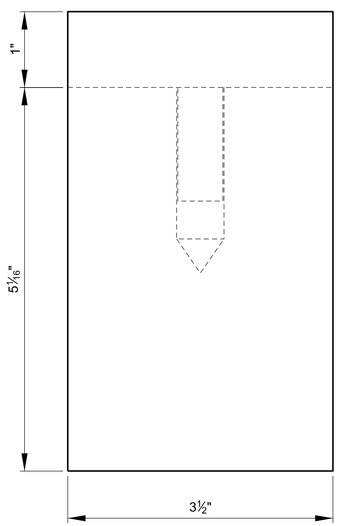
NOTES:

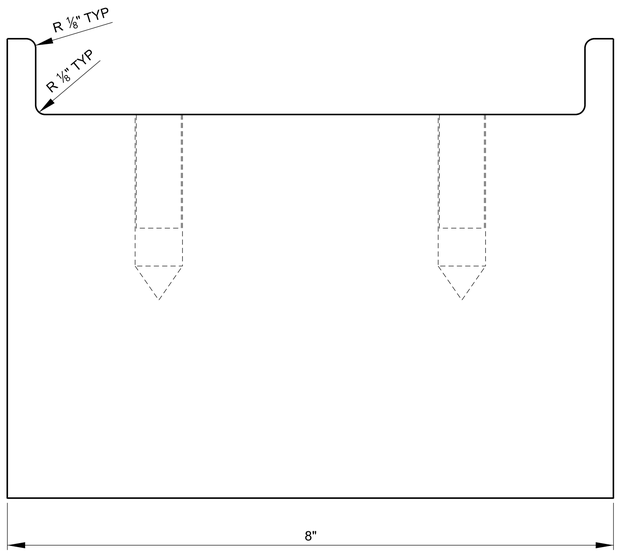
1. AFTER WELDING AND STRESS RELIEF IS COMPLETE, MACHINE GUIDE SHOE TO 29'-11¼" OUT TO OUT ±1/16".









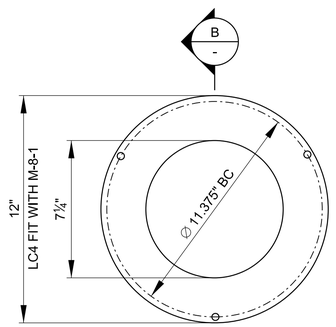


GUIDE BASE SHOE 3 -

FULL SIZE
MATERIAL: A36

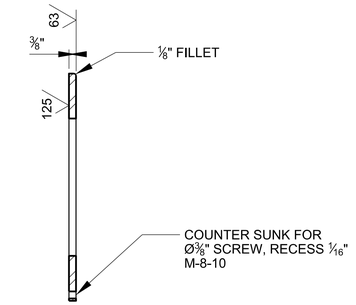
GUIDE SHOE - BEARING PAD 2 -

FULL SIZE
MATERIAL: ORKOT-SL



THRUST PAD

3" = 1'-0" M-501-9



SECTION B -

3" = 1'-0"

SCALE: 3" = 1'-0"
0 3" 6" 12"

SCALE: FULL
0 1" 2" 3"

SCALE: 6" = 1'-0"
0 1" 2" 3" 6"

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REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GAJERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

MECHANICAL GUIDE SHOE

TETRA TECH
350 SOUTH FIGUEROA STREET, SUITE 380
LOS ANGELES CA 90017
TEL (213) 327-0800, FAX (213) 612-0246

PREPARED UNDER THE DIRECTION OF
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

DISTRICT FILE NO. 214/

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: E.O.F.
DRAWN BY: V.R.
CHECKED BY: M.J.C.
DATE:

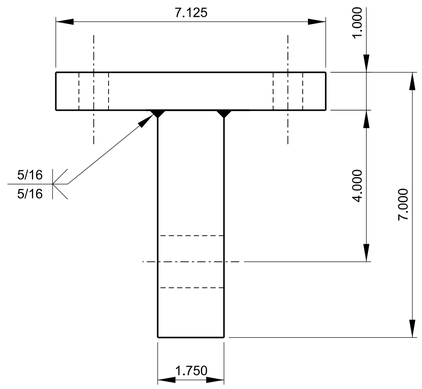
SUBMITTED BY: DATE:
APPROVED:
CHIEF, DESIGN BRANCH
CHIEF, ENGINEERING DIVISION

SPEC. NO. --
FILE NAME: M-503.DGN

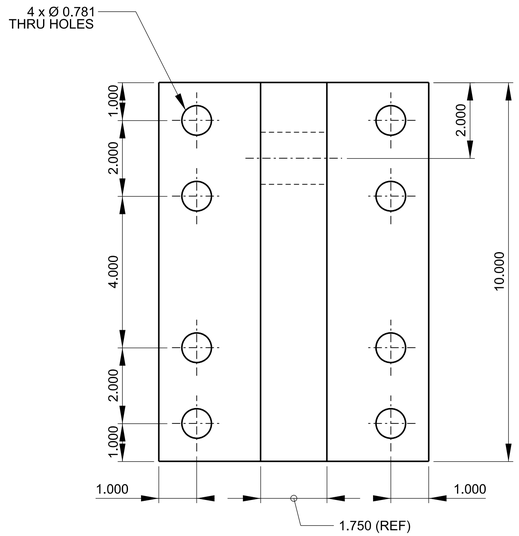
Scale: AS SHOWN

SHEET
M-503

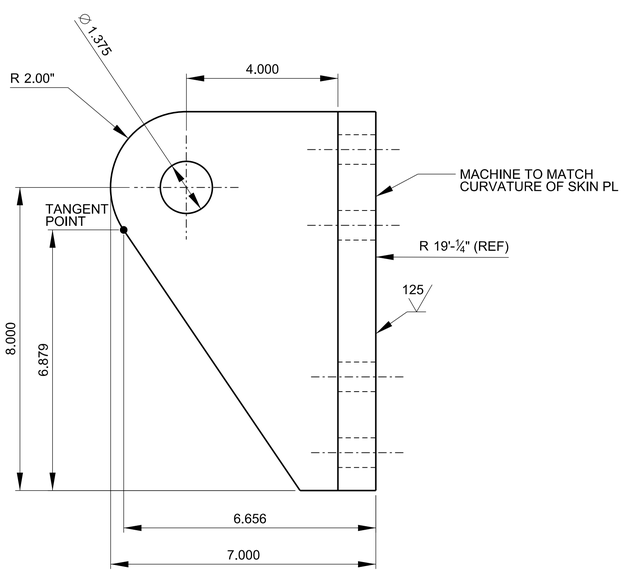
Plot Date: 11/5/2012



PLAN VIEW



ELEVATION VIEW



SIDE VIEW

LIFTING BRACKET

3" = 1'-0"

MATL: ASTM A514, GRADE B
MAKE: 8

SCALE: 1 ½" = 1'-0"

12" 9" 6" 3" 0 1'

SCALE: 3" = 1'-0"

0 3" 6" 12"

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GAJERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

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PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

TAINTER GATE LIFTING BRACKET

U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS	DESIGNED BY: E.O.F. DRAWN BY: V.R. CHECKED BY: M.J.C.
SUBMITTED BY: DATE:	APPROVED: DATE:
CHIEF, DESIGN BRANCH	CHIEF, ENGINEERING DIVISION
SPEC. NO. --	FILE NAME: M-505.DGN
DISTRICT FILE NO. 214/	Scale: AS SHOWN

TETRA TECH
800 WILSHIRE BLVD., SUITE 380
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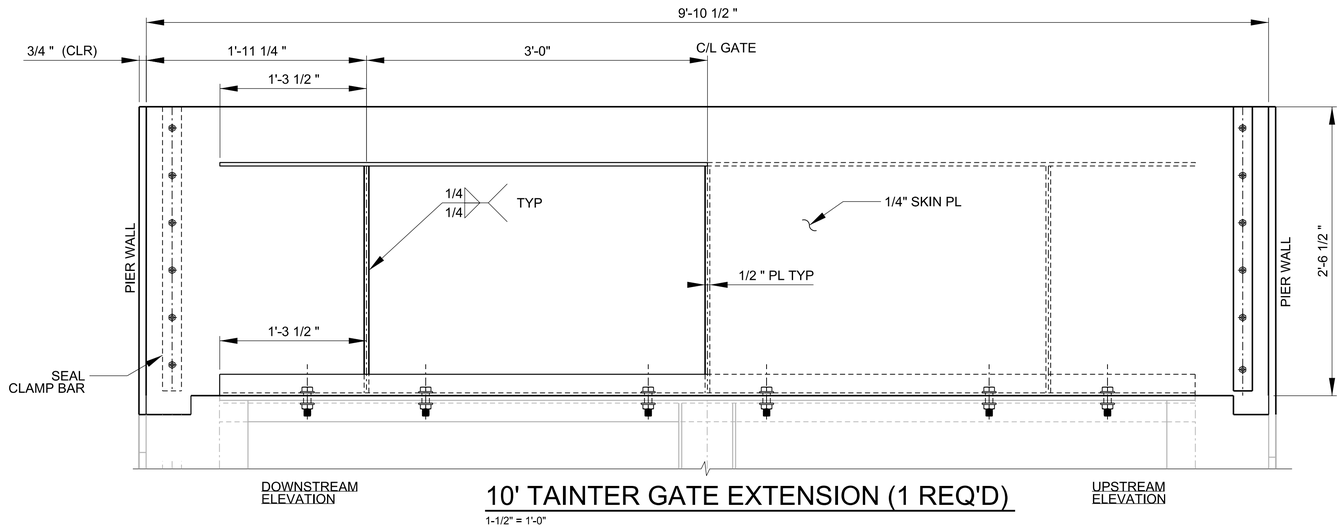
TEL (213) 327-0800, FAX (213) 612-0246

PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

SHEET
M-505

Plot Date: 11/5/2012



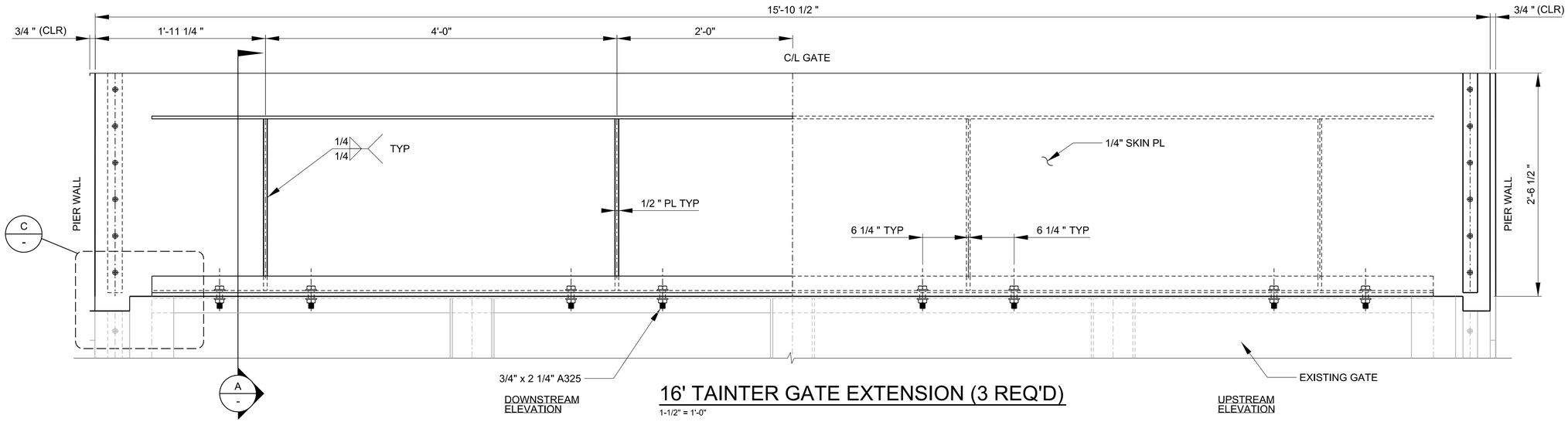
10' TAINTER GATE EXTENSION (1 REQ'D)

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

NOTES:

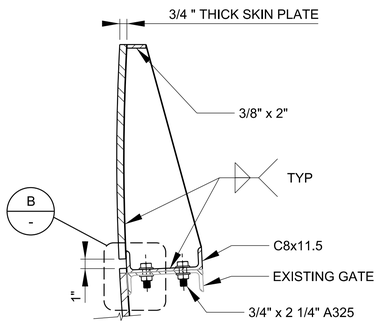
1. NEW SEAL TO EXTEND 2 1/2" ONTO EXISTING GATE. CUT TO FIT. GLUE FIELD SPLICE.
2. REF SHEET M-302 FOR SEAL DETAIL.
3. NOTE THAT EXISTING CHANNEL IS BELOW TOP OF GATE, NOMINALLY 3/8", FLUSH GRIND OF EXISTING MAY BE REQUIRED. TOUCH UP WITH PAINT.

PART	MATERIAL	DESCRIPTION
SKIN PLATE	ASTM A709 GRADE 50	1/4" THICK PLATE
HORIZONTAL GIRDER	ASTM A709 GRADE 50	C 8X11.5
VERTICAL STIFFINER PLATES	ASTM A709 GRADE 50	1/2" THICK PLATE
CLAMP BAR	ASTM A240, UNS S30400 SST.	CORROSION RESISTANT STEEL, 2" WIDE X 3/8" THICK PLATES
CLAMP BAR BOLTS	ASTM A193, UNS S30400, SST.	CORROSION RESISTANT STEEL. HEX BOLTS WITH BRONZE NUTS AND NYLON WASHERS
SIDE SEAL	NATURAL RUBBER/ POLYISOPRENE	
JOINT BOLTS	ASTM A325	3/4" A325 X 2 1/4"

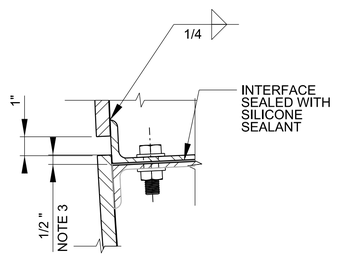


16' TAINTER GATE EXTENSION (3 REQ'D)

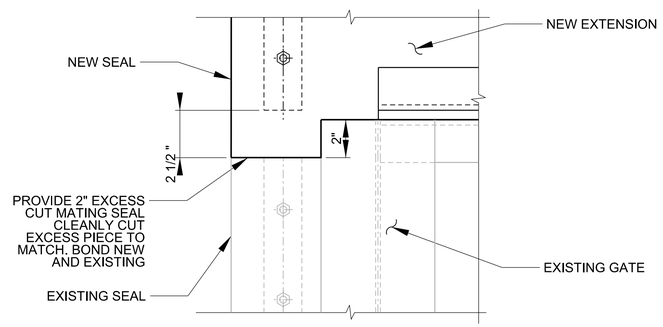
1-1/2" = 1'-0"



SECTION A - / 1-1/2" = 1'-0"



DETAIL B - / 3" = 1'-0"



DETAIL C - / 3" = 1'-0"

SCALE: 3" = 1'-0"

0 3" 6" 12"

SCALE: 1 ½" = 1'-0"

12" 9" 6" 3" 0 1'

REGISTERED PROFESSIONAL ENGINEER
VISHAL RATILAL GAJERA
M 35993
MECHANICAL
STATE OF CALIFORNIA

THIS PROJECT WAS DESIGNED UNDER THE DIRECTION OF THE LOS ANGELES DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF THE INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY E.R. 1110-1-8152.

PRELIMINARY 90% SUBMITTAL 6 NOVEMBER 2012

SYMBOL	DESCRIPTIONS REVISIONS	DATE	APPROVAL

MATILIJA DAM ECOSYSTEM RESTORATION
VENTURA COUNTY, CALIFORNIA

ROBLES DIVERSION DAM MODIFICATION PROJECT

EXISTING SPILLWAY TAINTER GATE EXTENSION

U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS	DESIGNED BY: E.O.F. DRAWN BY: V.R. CHECKED BY: V.R.G.	
SUBMITTED BY: DATE:	APPROVED: DATE:	CHIEF, ENGINEERING DIVISION
CHIEF, DESIGN BRANCH	SPEC. NO. --	FILE NAME: M-506.DGN
DISTRICT ENGINEER	DISTRICT FILE NO. 214/	Scale: AS SHOWN

TETRA TECH
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PREPARED UNDER THE DIRECTION OF:
COL. THOMAS H. MAGNESS
DISTRICT ENGINEER

SHEET
M-506

Plot Date: 11/5/2012