

CALIFORNIA HIGH-SPEED TRAIN

TRACTION POWER

RECORD SET PEPP DESIGN SUBMISSION

Bakersfield to Palmdale

Traction Power

October 2017



CALIFORNIA
High-Speed Rail Authority



GENERAL SHEETS

DRAWING No.	DRAWING DESCRIPTION	SHEET No.
TP-B0001	COVER SHEET	
TP-B0002	ALTERNATIVE 1,2,3,5 - GENERAL - DRAWING INDEX SHEET	
TP-B0003	ALTERNATIVE 1,2,3,5 - GENERAL - ABBREVIATIONS AND LEGEND SHEET 1 OF 4	
TP-B0004	ALTERNATIVE 1,2,3,5 - GENERAL - ABBREVIATIONS AND LEGEND SHEET 2 OF 4	
TP-B0005	ALTERNATIVE 1,2,3,5 - GENERAL - ABBREVIATIONS AND LEGEND SHEET 3 OF 4	
TP-B0006	ALTERNATIVE 1,2,3,5 - GENERAL - ABBREVIATIONS AND LEGEND SHEET 4 OF 4	
TP-B3001	ALTERNATIVE 1,2,3,5 - GENERAL - TYPICAL SECTIONS SHEET 1 OF 5	
TP-B3002	ALTERNATIVE 1,2,3,5 - GENERAL - TYPICAL SECTIONS SHEET 2 OF 5	
TP-B3003	ALTERNATIVE 1,2,3,5 - GENERAL - TYPICAL SECTIONS SHEET 3 OF 5	
TP-B3004	ALTERNATIVE 1,2,3,5 - GENERAL - TYPICAL SECTIONS SHEET 4 OF 5	
TP-B3005	ALTERNATIVE 1,2,3,5 - GENERAL - TYPICAL SECTIONS SHEET 5 OF 5	

TRACTION POWER LAYOUTS, TYPICAL LAYOUTS AND SITE PLANS

DRAWING No.	DRAWING DESCRIPTION	SHEET No.
TP-D0001	ALTERNATIVE 1 - TRACTION POWER FACILITY LAYOUT	
TP-D0002	ALTERNATIVE 2 - TRACTION POWER FACILITY LAYOUT	
TP-D0003	ALTERNATIVE 3 - TRACTION POWER FACILITY LAYOUT	
TP-D0004	ALTERNATIVE 5 - TRACTION POWER FACILITY LAYOUT	
TP-E4001	TYPICAL LAYOUT - TRACTION POWER SUPPLYSTATION - WITH 2 HIGH VOLTAGE TRANSFORMERS	
TP-E4002	TYPICAL LAYOUT - SWITCHING STATION - WITH 4 AUTOTRANSFORMERS	
TP-E4003	TYPICAL LAYOUT - PARALLELING STATION - WITH 2 AUTOTRANSFORMERS	
TP-F4001	ALTERNATIVE 1,3,5 - PROPOSED INTERCONNECT LAMONT SUBSTATION	
TP-F4002	ALTERNATIVE 1,2,3,5 - PROPOSED INTERCONNECT MONOLITH SUBSTATION	
TP-F4003	ALTERNATIVE 1,2,3,5 - PROPOSED INTERCONNECT ANTELOPE VALLEY SUBSTATION	
TP-F4004	ALTERNATIVE 2 - PROPOSED INTERCONNECT LAMONT SUBSTATION	
TP-04001	ALTERNATIVE 1,3,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 1	
TP-04002	ALTERNATIVE 1,3,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 2	
TP-04003	ALTERNATIVE 1,3,5 - TRACTION POWER SITE PLAN - PROPOSED TPSS 14	
TP-04004	ALTERNATIVE 1,3,5 - TRACTION POWER SITE PLAN - PROPOSED SWITCHING STATION 1 - PROPOSED DISPLACED SUPPLY STATION 1	
TP-04005	ALTERNATIVE 1,2,3,5 - TRACTION POWER SITE PLAN - PROPOSED SWITCHING STATION 2	
TP-04006	ALTERNATIVE 1,2,3,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 3	
TP-04007	ALTERNATIVE 1,2,3,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 4	
TP-04008	ALTERNATIVE 1,2,3,5 - TRACTION POWER SITE PLAN - PROPOSED TPSS 15	
TP-04009	ALTERNATIVE 1,2,3,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 5	
TP-04010	ALTERNATIVE 1,2,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 6	
TP-04011	ALTERNATIVE 1,2,5 - TRACTION POWER SITE PLAN - PROPOSED SWITCHING STATION 3	
TP-04012	ALTERNATIVE 1,2,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 7	
TP-04013	ALTERNATIVE 1,2,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 8	
TP-04014	ALTERNATIVE 1,2,3,5 - TRACTION POWER SITE PLAN - PROPOSED TPSS 16	
TP-04015	ALTERNATIVE 1,2,3,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 9	
TP-04016	ALTERNATIVE 1,2,3,5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 10	
TP-04017	ALTERNATIVE 1,2,3 - TRACTION POWER SITE PLAN - PROPOSED SWITCHING STATION 4	
TP-04018	ALTERNATIVE 1,2,3 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 11	
TP-04101	ALTERNATIVE 2 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 1	
TP-04102	ALTERNATIVE 2 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 2	
TP-04103	ALTERNATIVE 2 - TRACTION POWER SITE PLAN - PROPOSED TPSS 14	
TP-04151	ALTERNATIVE 3 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 6	
TP-04152	ALTERNATIVE 3 - TRACTION POWER SITE PLAN - PROPOSED SWITCHING STATION 3	
TP-04153	ALTERNATIVE 3 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 7	
TP-04154	ALTERNATIVE 3 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 8	
TP-04201	ALTERNATIVE 5 - TRACTION POWER SITE PLAN - PROPOSED SWITCHING STATION 4	
TP-04202	ALTERNATIVE 5 - TRACTION POWER SITE PLAN - PROPOSED PARALLELING STATION 11	

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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY S. LANDOLT
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CHECKED BY J. SIHOTA
IN CHARGE S. SMITH
DATE 10/31/2017

**RECORD
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
GENERAL
DRAWING INDEX SHEET

CONTRACT NO. HSR13-44
DRAWING NO. TP-B0002
SCALE AS SHOWN
SHEET NO.

A

AB AGGREGATE BASE
 ABBC ASBESTOS BONDED BITUMINOUS COATED
 ABM AIR-BLOWN MORTAR
 ABN ABANDON
 ABUT ABUTMENT
 AC ASPHALT CONCRETE
 ACB ASPHALT CONCRETE BASE
 ACP ASBESTOS CEMENT PIPE
 ADL ADDED DEAD LOAD
 ADJ ADJUST
 AFES ALTERNATIVE FLARED END SECTION
 AHD AHEAD
 ALT ALTERNATE
 AM TIME FROM MIDNIGHT TO NOON
 AP ALTERNATIVE PIPE
 APC ALTERNATIVE PIPE CULVERT
 APPROX APPROXIMATE
 APU ALTERNATIVE PIPE UNDERDRAIN
 ARS ACCELERATION RESPONSE SPECTRUM
 AR ACCESS RESTRICTION
 AS AGGREGATE SUBBASE
 ASRP ALUMINUM SPIRAL RIB PIPE
 ASSY ASSEMBLY
 ATC AUTOMATIC TRAIN CONTROL
 ATPB ASPHALT TREATED PERMEABLE BASE
 ATPM ASPHALT TREATED PERMEABLE MATERIAL
 AVE AVENUE
 AVG AVERAGE
 @ AT

B

BAGR BRIDGE APPROACH GUARD RAILING
 BB BEGINNING OF BRIDGE
 BC BEGIN HORIZONTAL CURVE
 BCC BALANCED CANTILEVER CONSTRUCTION
 BCR BEGIN CURB RETURN
 BEG BEGIN
 BIT CTD BITUMINOUS COATED
 BK BACK
 BKF BACKFILL
 BLDG BUILDING
 BLM BRIDGE-LOG MILE
 BLVD BOULEVARD
 BM BENCH MARK
 BND BOUND
 BNSF BURLINGTON NORTH & SANTA FE
 BOT BOTTOM
 BR BRIDGE
 BRG BEARING
 BTU BRITISH THERMAL UNIT
 BVC BEGIN VERTICAL CURVE
 BW BARBED WIRE

C

CAA CABLE ANCHOR ASSEMBLY
 CAP CORRUGATED ALUMINUM PIPE
 CAPA CORRUGATED ALUMINUM PIPE ARCH
 CAS CONSTRUCTION AREA SIGN
 CB CONCRETE BARRIER
 CBW CONCRETE BLOCK WALL
 C-C CENTER TO CENTER
 CHSRA CALIFORNIA HIGH SPEED RAIL AUTHORITY
 CHST CALIFORNIA HIGH SPEED TRAIN
 CHSR CALIFORNIA HIGH SPEED RAIL
 CG CENTER OF GRAVITY
 CHNL CHANNEL
 CI CAST IRON
 CIDH CAST-IN-DRILLED-HOLE
 CIP,C-I-P CAST-IN-PLACE, CAST IRON PIPE
 CIPCP CAST IN PLACE CONCRETE PIPE
 CISS CAST-IN-STEEL-SHELL
 CJP COMPLETE JOINT PENETRATION
 CL CENTERLINE, CLASS
 CL2 CLASS 2
 CL-6 CHAIN LINK FENCE (6 FT)
 CLR CLEAR, CLEARANCE
 CM CORRUGATED METAL
 CMP CORRUGATED METAL PIPE
 CO COUNTY
 COL COLUMN
 CONC CONCRETE
 COND CONDUIT
 CONN CONNECTOR
 CONST CONSTRUCT, CONSTRUCTION
 CONT CONTINUOUS
 COORD COORDINATE
 CP CANDLEPOWER
 CR CREEK
 CRCP CONTINUOUS REINFORCED CONCRETE PAVEMENT
 CRSP CONCRETED ROCK SLOPE PROTECTION
 CS CURVE TO SPIRAL
 CSP CORRUGATED STEEL PIPE
 CSPA CORRUGATED STEEL PIPE ARCH
 CTB CEMENT TREATED BASE
 CTPB CEMENT TREATED PERMEABLE BASE
 CTPM CEMENT TREATED PERMEABLE MATERIAL
 CTRS CENTERS
 CVFPB CENTRAL VALLEY FLOOD PROTECTION BOARD
 CULV CULVERT
 C CENTERLINE

D

D DEPTH
 DD DOWNDRAIN, DIRECTIVE DRILLING
 DBL DOUBLE
 DEG DEGREE
 DEL DELINEATOR
 DET DETAIL, DETOUR
 DF DOUGLAS FIR
 DI DRAINAGE INLET, DROP INLET
 DIA DIAMETER
 DIAPH DIAPHRAGM
 DIST DISTANCE, DISTRICT
 DMBB DOUBLE METAL BEAM BARRIER
 DR DRIVE
 DTBB DOUBLE THRIE BEAM BARRIER
 DWP DEPARTMENT OF WATER AND POWER
 DWY DRIVEWAY

E

E EAST, EASTING
 EA ACTUAL SUPERELEVATION
 EU UNBALANCED SUPERELEVATION
 EASE EASEMENT
 EB END OF BRIDGE, EASTBOUND
 EC END HORIZONTAL CURVE
 ECR END CURB RETURN
 ED EDGE DRAIN
 EDC EDGE DRAIN CLEANOUT
 EDO EDGE DRAIN OUTLET
 EDV EDGE DRAIN VENT
 ELEC ELECTROLIER
 ELECT ELECTRIC
 ELEV ELEVATION
 EMB EMBANKMENT
 ENGR ENGINEER
 EOD EDGE OF DECK
 EP EDGE OF PAVEMENT
 EQ EQUATION, EQUAL
 ES EDGE OF SHOULDER
 ETW EDGE OF TRAVELED WAY
 EVC END VERTICAL CURVE
 EW ENDWALL
 EXC EXCAVATION
 EXIST, EX. EXISTING
 EXP EXPANSION
 EXP JT EXPANSION JOINT
 EXWY EXPRESSWAY
 EXT EXTERIOR

F

F & C FRAME AND COVER
 F & G FRAME AND GRATE
 FB FLOOR BEAM
 F-B FRESNO TO BAKERSFIELD
 FDN FOUNDATION
 FEBT FACING EASTBOUND TRAFFIC
 FES FLARED END SECTION
 FF FILTER FABRIC
 FG FINISHED GRADE
 FH FIRE HYDRANT
 FIG FIGURE
 FL FLOW LINE
 FNBT FACING NORTHBOUND TRAFFIC
 FOC FACE OF CONCRETE
 FR RD FRONTAGE ROAD
 FS FAR SIDE, FINISHED SURFACE
 FSBT FACING SOUTHBOUND TRAFFIC
 FT FOOT, FEET
 FTG FOOTING
 FWBT FACING WESTBOUND TRAFFIC
 FWY FREEWAY
 FPLM FULL SPAN PRECAST LAUNCHING METHOD

G

G ACCELERATION DUE TO GRAVITY
 GA GAGE
 GALV GALVANIZED
 GP GRADING PLANE
 GR GUARD RAILING
 GSP GALVANIZED STEEL PIPE
 GTR GUTTER

H

H HEIGHT
 HR HOUR
 HD HORIZONTAL DRAIN
 HDC HIGH DESERT CORRIDOR
 HDWL HEADWALL
 HEX HD HEXAGONAL HEAD
 HMA HOT MIXED ASPHALT
 HORIZ HORIZONTAL
 HP HINGE POINT, HORSEPOWER
 HPS HIGH PERFORMANCE STEEL
 HS HIGH STRENGTH
 HST HIGH SPEED TRAIN
 HSR HIGH SPEED RAIL
 HV HIGH VOLTAGE
 HW HEADWALL, HIGH WATER
 HWM HIGH WATER MARK
 HWY HIGHWAY

REV	DATE	BY	CHK	APP	DESCRIPTION

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 DRAWN BY
A. RIVERA
 CHECKED BY
J. SIHOTA
 IN CHARGE
S. SMITH
 DATE
10/31/2017

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**CALIFORNIA HIGH-SPEED RAIL PROJECT
 BAKERSFIELD TO PALMDALE**
 ALTERNATIVE 1,2,3,5
 GENERAL
 ABBREVIATIONS AND LEGEND
 SHEET 1 OF 4

CONTRACT NO.
HSR13-44
 DRAWING NO.
TP-B0003
 SCALE
AS SHOWN
 SHEET NO.

I

IB IMPORTED BORROW
 ID INSIDE DIAMETER
 IF INSIDE FACE
 IN INCH, INCHES
 INT INTERIOR
 INV INVERT
 IRR IRRIGATION

J

JCT JUNCTION
 JP JOINT POLE
 JPCP JOINTED PLAIN CONCRETE PAVEMENT
 JS JUNCTION STRUCTURE
 JT JOINT

K

K DISTANCE TO ACHIEVE 1% GRADE CHANGE

L

L LENGTH
 LAT LATITUDE
 LCB LEAN CONCRETE BASE
 LGA LOCALLY GENERATED ALTERNATIVE
 LMF LIGHT MAINTENANCE FACILITY
 LN LANE
 LOC LOCATION
 LOL LAYOUT LINE
 LONG LONGITUDE
 LONGIT LONGITUDINAL
 LS LENGTH OF SPIRAL
 LC LENGTH OF CURVE
 LT LEFT
 LV LOW VOLTAGE

M

MAINT MAINTENANCE
 MAX MAXIMUM
 MB METAL BEAM
 MBB METAL BEAM BARRIER
 MBGR METAL BEAM GUARD RAILING
 MED MEDIAN
 MH MANHOLE
 MIN MINIMUM
 MISC MISCELLANEOUS
 MISC I & S MISCELLANEOUS IRON AND STEEL
 MKR MARKER
 M/L MAIN LINE (RAILWAY)
 MOD MODIFIED, MODIFY
 MON MONUMENT
 MOIF MAINTENANCE OF INFRASTRUCTURE FACILITY
 MOIS MAINTENANCE OF INFRASTRUCTURE SIDING
 MP METAL PLATE

M CONTINUED

MPGR METAL PLATE GUARD RAILING
 MPH MILES PER HOUR
 MR MOVEMENT RATING
 MSE MECHANICALLY STABILIZED EARTH
 MTL MATERIAL
 MSS MOVING SCAFFOLDING SYSTEM

N

N NORTH, NORTHING
 NB NORTHBOUND
 NO. NUMBER (MUST HAVE PERIOD)
 NOS. NUMBERS (MUST HAVE PERIOD)
 NPS NOMINAL PIPE SIZE
 NS NEAR SIDE
 NTS NOT TO SCALE
 N/A NOT APPLICABLE

O

OBLR OBLITERATE
 OC OVERCROSSING
 OCS OVERHEAD CONTACT SYSTEM
 OD OUTSIDE DIAMETER
 OF OUTSIDE FACE
 OG ORIGINAL GROUND
 OGAC OPEN GRADED ASPHALT CONCRETE
 OH OVERHEAD
 O-O OUT TO OUT
 OPP OPPOSITE

P

P PAGE
 PAP PERFORATED ALUMINUM PIPE
 PB PULL BOX, PALMDALE TO BURBANK
 PC POINT OF CURVATURE, PRECAST
 PCC POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE
 PCP PERFORATED CONCRETE PIPE, PRESTRESSED CONCRETE PIPE
 PCVC POINT OF COMPOUND VERTICAL CURVE
 PED PEDESTRIAN
 PED OC PEDESTRIAN OVERCROSSING
 PED UC PEDESTRIAN UNDERCROSSING
 PERM MTL PERMEABLE MATERIAL
 PG PROFILE GRADE
 PG&E PACIFIC GAS AND ELECTRIC
 PI POINT OF INTERSECTION
 PJP PARTIAL JOINT PENETRATION
 PL PLATE
 P/L PROPERTY LINE
 PM POST MILE, TIME FROM NOON TO MIDNIGHT
 PN PAVING NOTCH

P CONTINUED

POB POINT OF BEGINNING
 POC POINT OF HORIZONTAL CURVE
 POE POINT OF ENDING
 POT POINT OF TANGENT
 POVC POINT OF VERTICAL CURVE
 PP PIPE PILE, PLASTIC PIPE, POWER POLE
 PPEF PROPOSED PERMANENT ENVIRONMENTAL FOOTPRINT
 PPL PREFORMED PERMEABLE LINER
 PPP PERFORATED PLASTIC PIPE
 PRC POINT OF REVERSE CURVE
 PRF PAVEMENT REINFORCING FABRIC
 PROP PROPOSED
 PRVC POINT OF REVERSE VERTICAL CURVE
 PS&E PLANS, SPECIFICATIONS AND ESTIMATES
 PS, P/S PRESTRESSED, PARALLELING STATION
 PSP PERFORATED STEEL PIPE
 PT POINT OF TANGENCY
 PTEF PROPOSED TEMPORARY ENVIRONMENTAL FOOTPRINT
 PTSW POINT OF TRACK SWITCH
 PVC POLYVINYL CHLORIDE
 PVI POINT OF VERTICAL INTERSECTION
 PVMT PAVEMENT
 PVP MAINTENANCE VEHICLE PULLOUT

Q

QTY QUANTITY

R

R RADIUS
 R & D REMOVE AND DISPOSE
 R & S REMOVE AND SALVAGE
 R/C RATE OF CHANGE
 RCA REINFORCED CONCRETE ARCH
 RCB REINFORCED CONCRETE BOX
 RCP REINFORCED CONCRETE PIPE
 RCPA REINFORCED CONCRETE PIPE ARCH
 RD ROAD
 REINF REINFORCED, REINFORCEMENT, REINFORCING
 REL RELOCATE
 REPL REPLACEMENT
 RET RETAINING
 REV REVISED
 RDWY ROADWAY
 RM ROAD-MIXED
 RP RADIUS POINT, REFERENCE POINT
 RR RAILROAD
 RSP ROCK SLOPE PROTECTION
 RT RIGHT
 RTE ROUTE
 RW REDWOOD, RETAINING WALL

R CONTINUED

R/W RIGHT OF WAY
 RWY RAILWAY

S

S SOUTH, SUPPLEMENT
 SAE STRUCTURE APPROACH EMBANKMENT
 SALV SALVAGE
 SAPP STRUCTURAL ALUMINUM PLATE PIPE
 SB SOUTHBOUND
 SC SPIRAL TO CURVE
 SCE SOUTHERN CALIFORNIA EDISON
 SCSP SLOTTED CORRUGATED STEEL PIPE
 SD STORM DRAIN
 SEC SECOND
 SECT SECTION
 SEP SEPARATION
 SG SUBGRADE
 SHLD SHOULDER
 SHT SHEET
 SIM SIMILAR
 S STATION LINE
 SM SELECTED MATERIAL
 SPEC SPECIAL, SPECIFICATIONS
 SPP SLOTTED PLASTIC PIPE
 SS SLOPE STAKE, SPIRAL TO SPIRAL, SUPPLY STATION
 SSBM STRAP AND SADDLE BRACKET METHOD
 SSD STRUCTURAL SECTION DRAIN
 SSPA STRUCTURAL STEEL PLATE ARCH
 SSPP STRUCTURAL STEEL PLATE PIPE
 SSPPA STRUCTURAL STEEL PLATE PIPE ARCH
 SSRP STEEL SPIRAL RIB PIPE
 SR STATE ROUTE
 ST STREET, SPIRAL TO TANGENT
 STA STATION
 STBB SINGLE THRIE BEAM BARRIER
 STD STANDARD
 STR STRUCTURE
 SRS STAND ALONE RADIO SITE
 SURF SURFACING
 SW SIDEWALK, SOUND WALL
 SWR SEWER
 SWS SWITCHING STATION
 SYM SYMMETRICAL
 S4S SURFACE 4 SIDES
 SJVR SAN JOAQUIN VALLEY RAILROAD

REV	DATE	BY	CHK	APP	DESCRIPTION

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**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
 GENERAL
 ABBREVIATIONS AND LEGEND
 SHEET 2 OF 4

CONTRACT NO.
HSR13-44
 DRAWING NO.
TP-B0004
 SCALE
AS SHOWN
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T

T SEMI-TANGENT
 TAB TABLET
 TAN TANGENT
 TBB THRIE BEAM BARRIER
 TBR TIMBER
 TC TOP OF CURB, TANGENT TO CURVE
 TCB TRAFFIC CONTROL BOX
 TEL TELEPHONE
 TEMP TEMPORARY
 TG TOP OF GRADE
 TM TECHNICAL MEMORANDUM
 TOT TOTAL
 TP TRACTION POWER, TUNNEL PORTAL
 TPB TREATED PERMEABLE BASE
 TPM TREATED PERMEABLE MATERIAL
 TRANS TRANSITION, TRANSVERSE
 TS TRAFFIC SIGNAL, TUBULAR STEEL,
 TANGENT TO SPIRAL
 TOR TOP OF RAIL
 TYP TYPICAL

U

UC UNDERCROSSING
 UD UNDERDRAIN
 UON UNLESS OTHERWISE NOTED
 UP UNDERPASS
 UPRR UNION PACIFIC RAILROAD
 USFWS UNITED STATES FISH AND WILDLIFE
 SERVICE

V

V VALVE, DESIGN SPEED
 VAR VARIABLE
 VC VERTICAL CURVE
 VCP VITRIFIED CLAY PIPE
 VERT VERTICAL
 VIA VIADUCT
 VOL VOLUME

W

W WEST,
 WIDTH
 WB WESTBOUND
 WH WEEP HOLE
 WM WIRE MESH
 WS WATER SURFACE
 WSP WELDED STEEL PIPE
 WT WEIGHT
 WV WATER VALVE
 WW WINGWALL
 WWL WINGWALL LAYOUT LINE
 W/ WITH

X

X SEC CROSS SECTION
 XING CROSSING

Y

YR YEAR
 YRS YEARS

Z

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TYLININTERNATIONAL



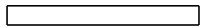
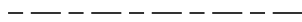

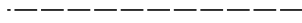
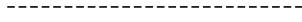

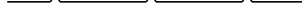












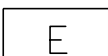



**CALIFORNIA HIGH-SPEED RAIL PROJECT
 BAKERSFIELD TO PALMDALE**
 ALTERNATIVE 1,2,3,5
 GENERAL
 ABBREVIATIONS AND LEGEND
 SHEET 3 OF 4


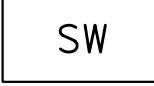

CONTRACT NO.
 HSR13-44
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LEGEND:

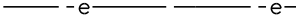


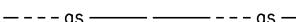

PLAN

-  NORTH ARROW
-  VIADUCT
-  TUNNEL
-  PROPOSED RIGHT OF WAY
-  EXIST RIGHT OF WAY
-  LIMITS OF EXCAVATION (CUT)
-  LIMITS OF EMBANKMENT (FILL)
-  FAULT ZONE
-  EXIST RETAINING WALL
-  PPEF
-  PROPOSED COLUMN
-  PROPOSED FENCE
-  PROPOSED PHASE BREAK
-  PROPOSED RETAINING WALL
-  PROPOSED TUNNEL
-  PTEF
-  PROPOSED TURNOUT
-  SRS
STANDALONE RADIO SITE
-  A
TRAIN CONTROL SYSTEM SITE A
-  B
TRAIN CONTROL SYSTEM SITE B
-  D
TRAIN CONTROL SYSTEM SITE D
-  E
TRAIN CONTROL SYSTEM SITE E
-  TRACK CROSSING PANEL

PLAN

-  SS
SUPPLY STATION
-  SW
SWITCHING STATION
-  PS
PARALLELING STATION

UTILITIES

-  -e- EXISTING ELECTRICAL TRANSMISSION
-  EXISTING ELECTRICAL TRANSMISSION TOWER
-  -E- PROPOSED TRACTION POWER SUPPLY LINE
-  -gs- EXISTING GAS LINE
-  -sd- EXISTING STORM DRAIN

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OJC:ARIVERA

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT

DRAWN BY
A. RIVERA

CHECKED BY
J. SIHOTA

IN CHARGE
S. SMITH

DATE
10/31/2017

**RECORD
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
GENERAL
ABBREVIATIONS AND LEGEND
SHEET 4 OF 4

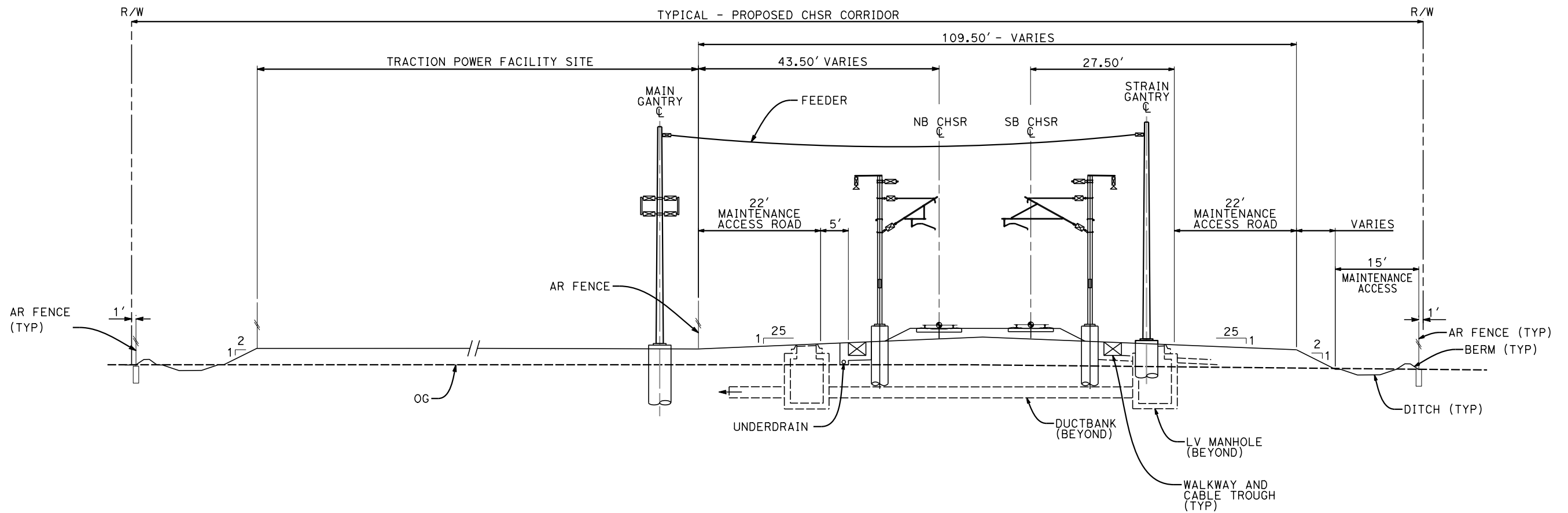
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SHEET NO.

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11/8/2017

OJC:ARIVEGA



NOTES:

1. FOR STRUCTURAL DIMENSIONS
SEE STRUCTURAL CROSS SECTIONS
2. TRACKFORM SHOWN IS INDICATIVE
3. SUPERELEVATION IS NOT SHOWN.
THE AMOUNT OF APPLIED
SUPERELEVATION IS SHOWN IN THE
CURVE TABLES
4. SECTION IS REPRESENTATIVE;
DOES NOT ACCURATELY PORTRAY
TRACK PROFILE RELATIVE TO
EXISTING GROUND.

SECTION A

STA 17824+31.24 SWITCHING STATION (ALT 2)
 STA 17825+96.42 SUPPLY STATION (ALT 1,3,5)
 STA 19449+75.18 PARALLELING STATION (ALT 1,2,5)



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
 DRAWN BY
J. MEREDITH
 CHECKED BY
J. SIHOTA
 IN CHARGE
S. SMITH
 DATE
10/31/2017

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PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

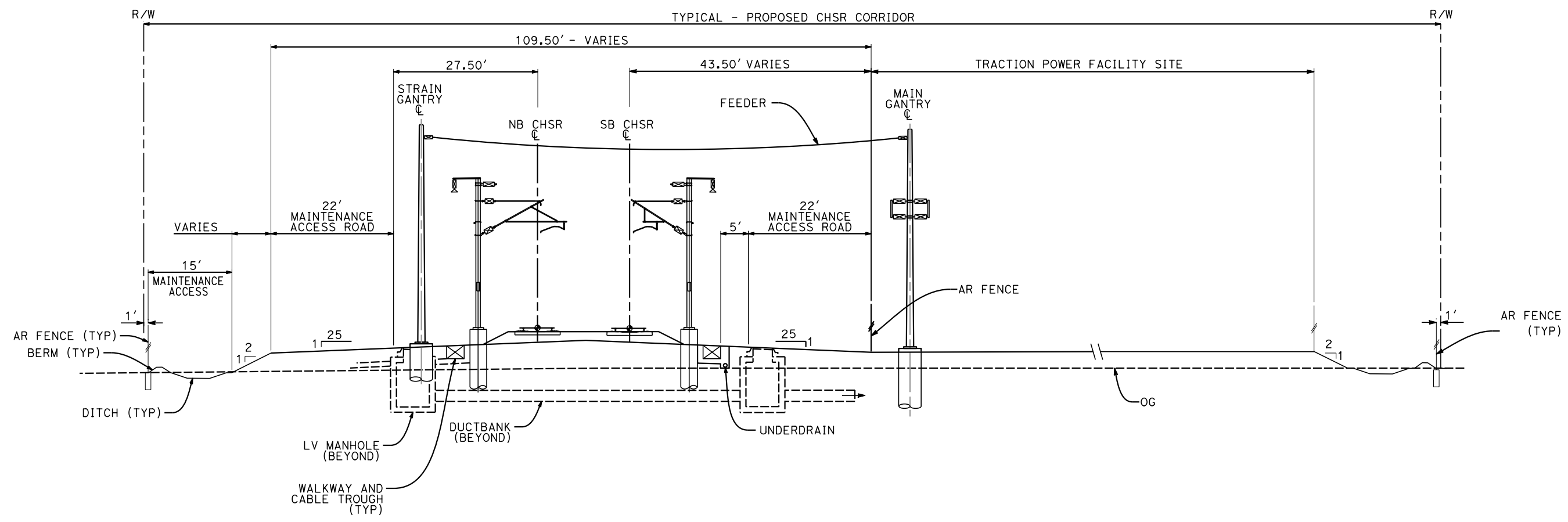
ALTERNATIVE 1,2,3,5
 GENERAL
 TYPICAL SECTIONS
 SHEET 1 OF 5

CONTRACT NO.
HSR13-44
 DRAWING NO.
TP-B3001
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AS SHOWN
 SHEET NO.

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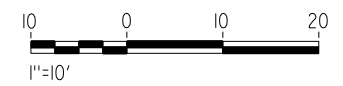
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- NOTES:**
- FOR STRUCTURAL DIMENSIONS SEE STRUCTURAL CROSS SECTIONS
 - TRACKFORM SHOWN IS INDICATIVE
 - SUPERELEVATION IS NOT SHOWN. THE AMOUNT OF APPLIED SUPERELEVATION IS SHOWN IN THE CURVE TABLES
 - SECTION IS REPRESENTATIVE; DOES NOT ACCURATELY PORTRAY TRACK PROFILE RELATIVE TO EXISTING GROUND.

SECTION B

STA 21134+69.88 PARALLELING STATION (ALT 1,2,3)
 STA 19050+36.56 SUPPLY STATION (ALT 1,2,3,5)



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
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DRAWN BY
J. MEREDITH

CHECKED BY
J. SIHOTA

IN CHARGE
S. SMITH

DATE
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CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

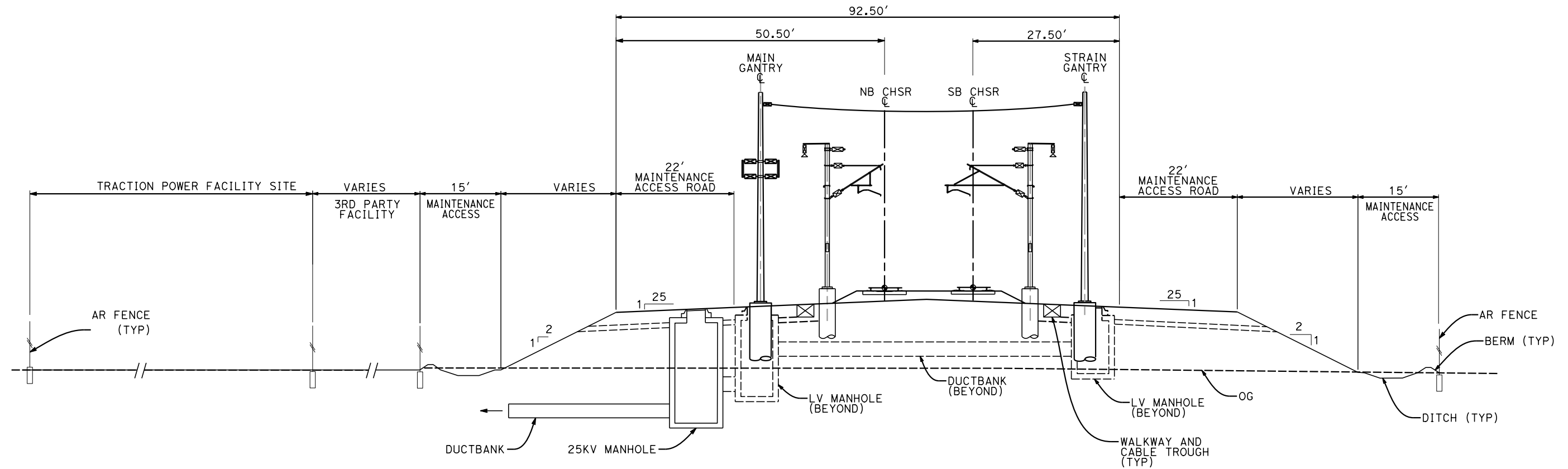
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 GENERAL
 TYPICAL SECTIONS
 SHEET 2 OF 5

CONTRACT NO.
HSR13-44

DRAWING NO.
TP-B3002

SCALE
AS SHOWN

SHEET NO.



NOTES:

1. FOR STRUCTURAL DIMENSIONS
SEE STRUCTURAL CROSS SECTIONS
2. TRACKFORM SHOWN IS INDICATIVE
3. SUPERELEVATION IS NOT SHOWN.
THE AMOUNT OF APPLIED
SUPERELEVATION IS SHOWN IN THE
CURVE TABLES
4. SECTION IS REPRESENTATIVE;
DOES NOT ACCURATELY PORTRAY
TRACK PROFILE RELATIVE TO
EXISTING GROUND.

SECTION C

STA 17592+09.87	PARALLELING STATION (ALT 1,3,5)
STA 19238+03.78	PARALLELING STATION (ALT 1,2,3,5)
STA 19449+75.18	PARALLELING STATION (ALT 1,2,5)
STA 19925+06.76	PARALLELING STATION (ALT 1,2,5)
STA 20607+06.58	PARALLELING STATION (ALT 1,2,3,5)
STA 19766+30.11	PARALLELING STATION (ALT 3)
STA 19927+15.31	PARALLELING STATION (ALT 3)
STA 19639+00.81	SWITCHING STATION (ALT 3)
STA 20077+00.00	SUPPLY STATION (ALT 1,2,3,5)

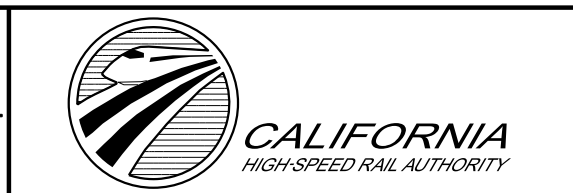


REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY S. LANDOLT
DRAWN BY J. MEREDITH
CHECKED BY J. SIHOTA
IN CHARGE S. SMITH
DATE 10/31/2017

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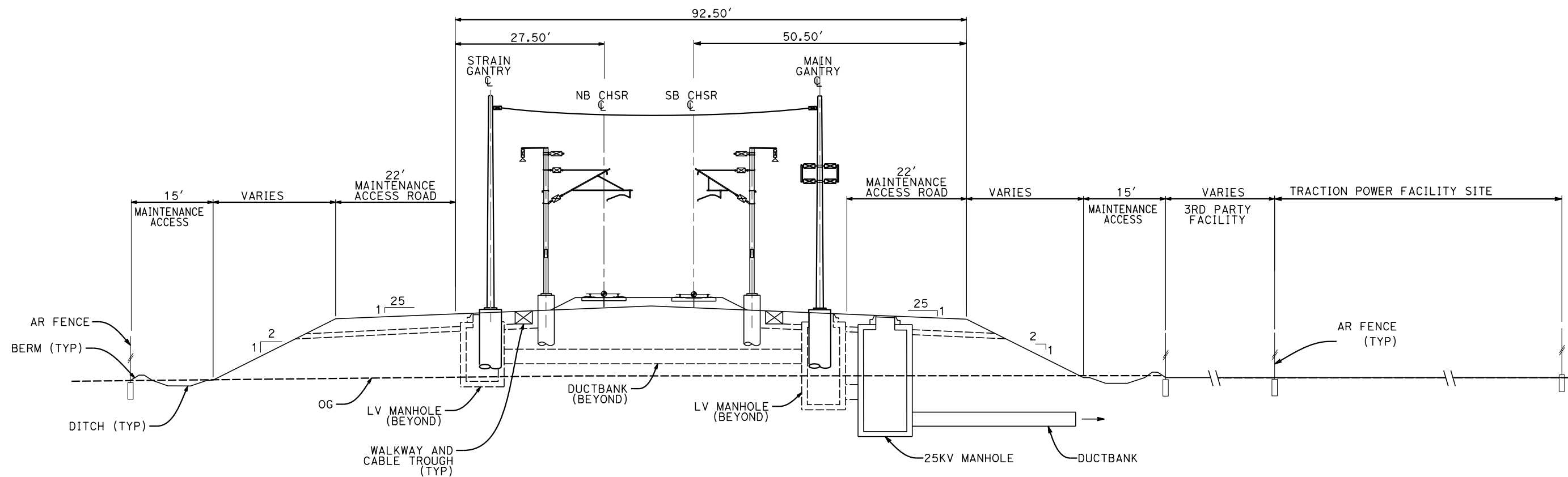
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CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
GENERAL
TYPICAL SECTIONS
SHEET 3 OF 5

CONTRACT NO. HSR13-44
DRAWING NO. TP-B3003
SCALE AS SHOWN
SHEET NO.

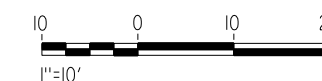


NOTES:

1. FOR STRUCTURAL DIMENSIONS SEE STRUCTURAL CROSS SECTIONS
2. TRACKFORM SHOWN IS INDICATIVE
3. SUPERELEVATION IS NOT SHOWN. THE AMOUNT OF APPLIED SUPERELEVATION IS SHOWN IN THE CURVE TABLES
4. SECTION IS REPRESENTATIVE; DOES NOT ACCURATELY PORTRAY TRACK PROFILE RELATIVE TO EXISTING GROUND.

SECTION D

STA 18549+29.57	PARALLELING STATION	(ALT 1,2,3,5)
STA 18805+62.68	PARALLELING STATION	(ALT 1,2,3,5)
STA 19770+03.84	PARALLELING STATION	(ALT 1,2,5)
STA 20342+21.76	PARALLELING STATION	(ALT 1,2,3,5)
STA 19426+37.00	PARALLELING STATION	(ALT 3)
STA 17590+72.52	PARALLELING STATION	(ALT 2)
STA 21134+18.88	PARALLELING STATION	(ALT 5)
STA 18074+76.92	SWITCHING STATION	(ALT 1,3,5)
STA 18302+00.99	SWITCHING STATION	(ALT 1,2,3,5)
STA 19643+92.00	SWITCHING STATION	(ALT 1,2,5)
STA 20845+91.29	SWITCHING STATION	(ALT 1,2,3)
STA 20845+02.52	SWITCHING STATION	(ALT 5)



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DESIGNED BY
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J. MEREDITH
CHECKED BY
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IN CHARGE
S. SMITH
DATE
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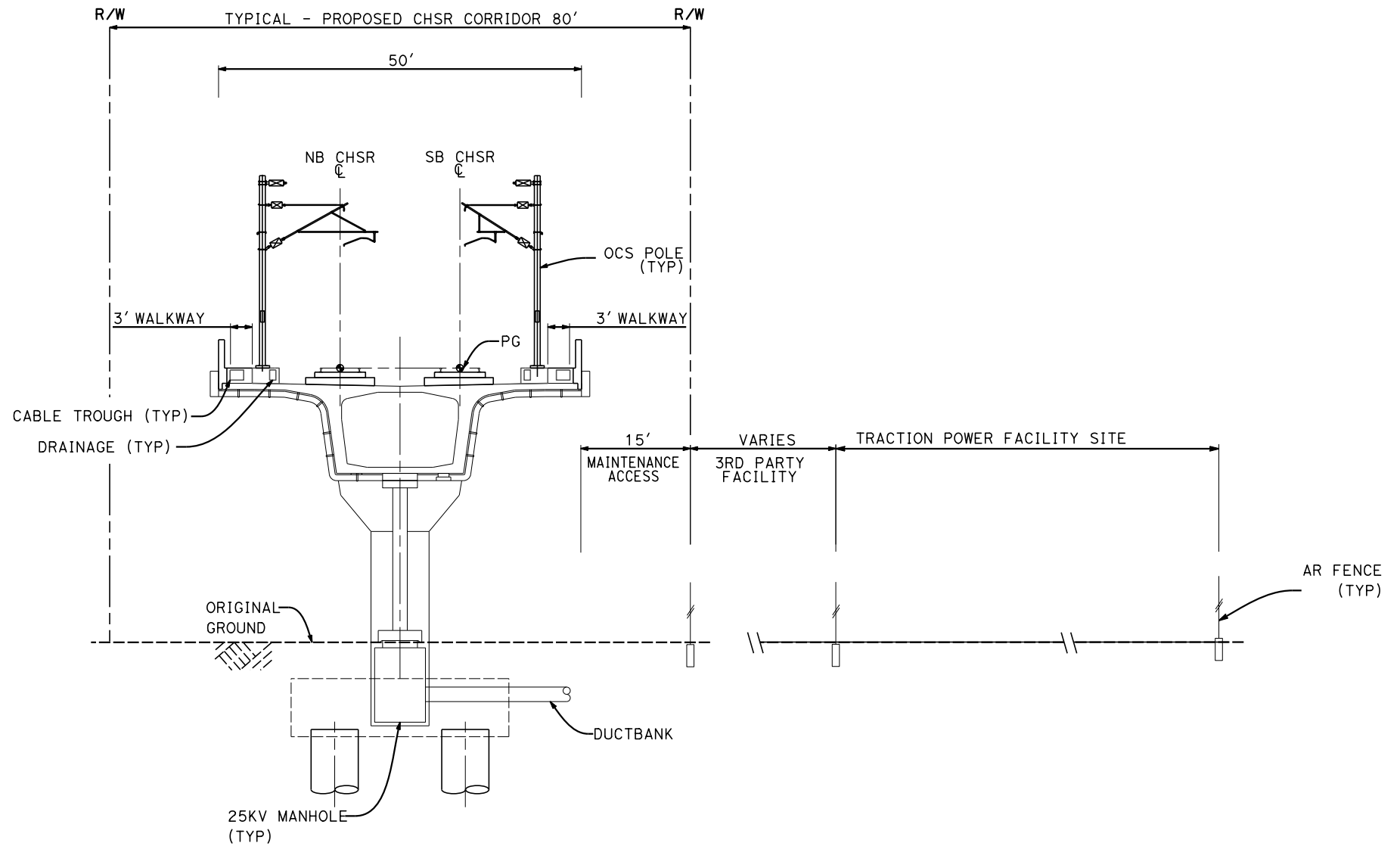
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**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
GENERAL
TYPICAL SECTIONS
SHEET 4 OF 5

CONTRACT NO.
HSR13-44
DRAWING NO.
TP-B3004
SCALE
AS SHOWN
SHEET NO.



SECTION E

STA 17369+07.86 PARALLELING STATION (ALT 1,3,5)
 STA 17369+43.65 PARALLELING STATION (ALT 2)

NOTES:

1. FOR STRUCTURAL DIMENSIONS
SEE STRUCTURAL CROSS SECTIONS
2. TRACKFORM SHOWN IS INDICATIVE
3. SUPERELEVATION IS NOT SHOWN.
THE AMOUNT OF APPLIED
SUPERELEVATION IS SHOWN IN THE
CURVE TABLES
4. SECTION IS REPRESENTATIVE;
DOES NOT ACCURATELY PORTRAY
TRACK PROFILE RELATIVE TO
EXISTING GROUND.

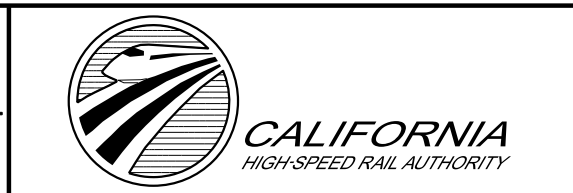


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J. SIHOTA
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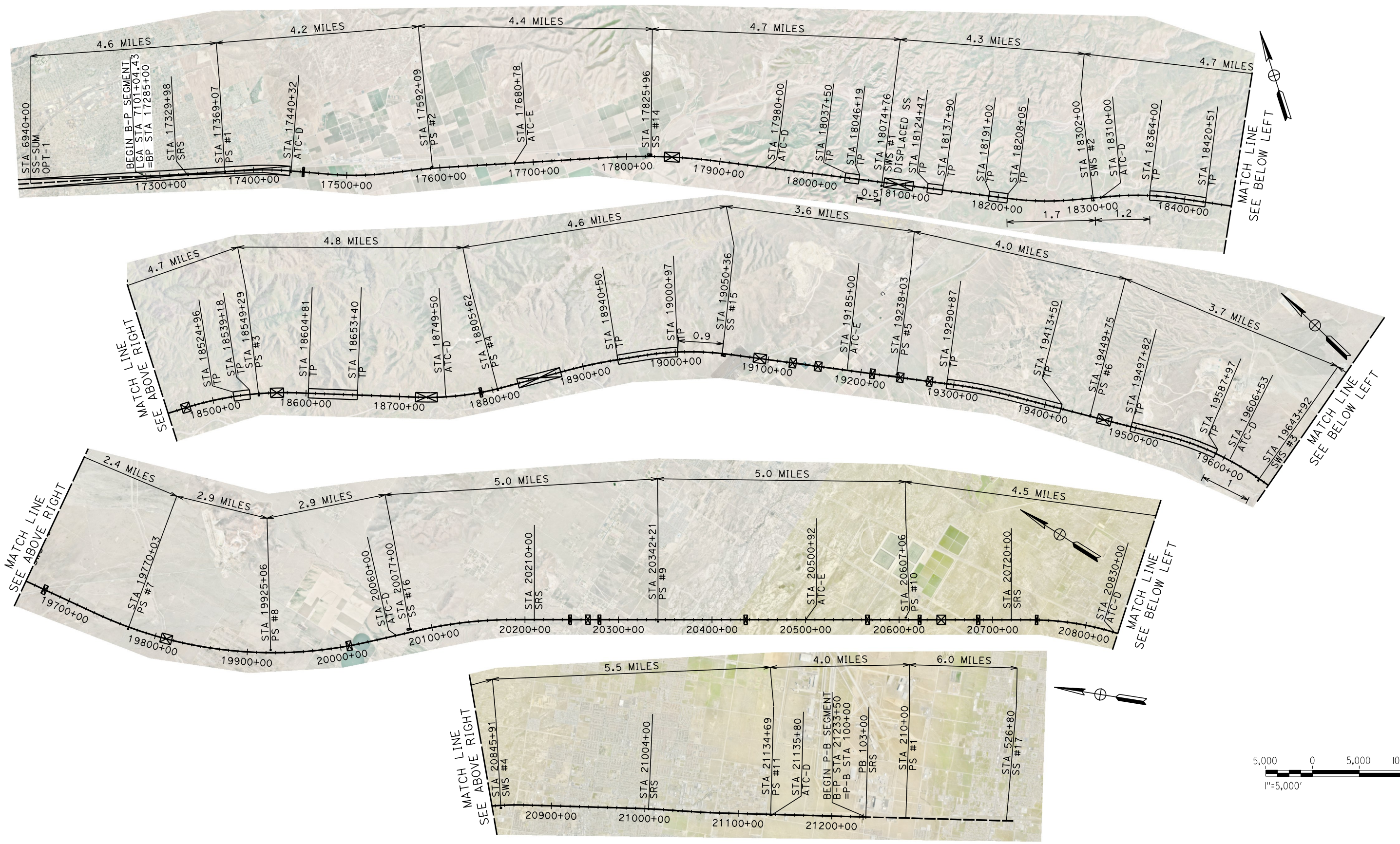
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**CALIFORNIA HIGH-SPEED RAIL PROJECT
 BAKERSFIELD TO PALMDALE**
 ALTERNATIVE 1,2,3,5
 GENERAL
 TYPICAL SECTIONS
 SHEET 5 OF 5

CONTRACT NO.
HSR13-44
 DRAWING NO.
TP-B3005
 SCALE
AS SHOWN
 SHEET NO.



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E. REVOLORIO

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J. SIHOTA

IN CHARGE
S. SMITH

DATE
10/31/2017

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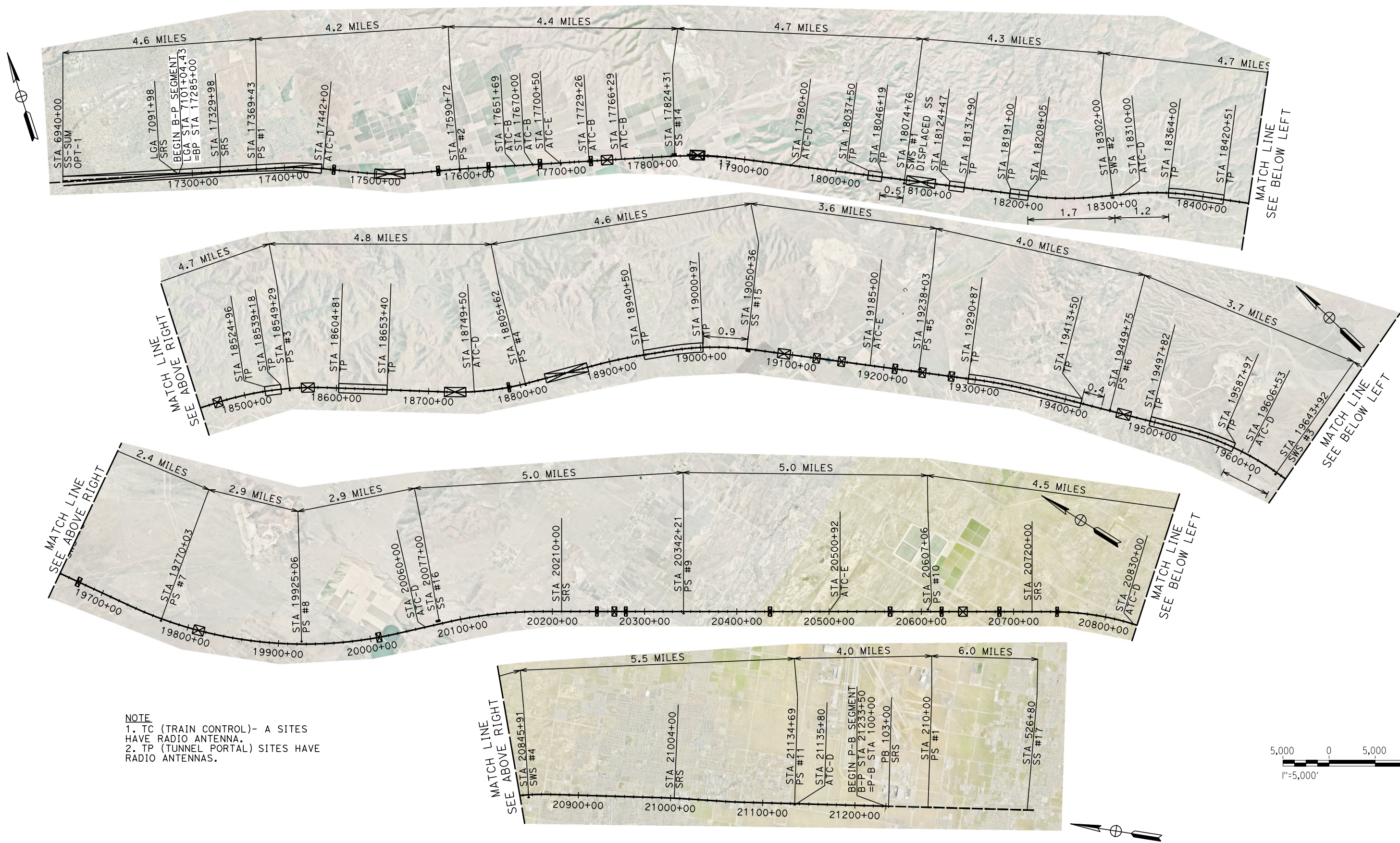
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BAKERSFIELD TO PALMDALE
ALTERNATIVE 1
TRACTION POWER FACILITY LAYOUT

CONTRACT NO.
HSR13-44

DRAWING NO.
TP-D0001

SCALE
AS SHOWN

SHEET NO.



NOTE
 1. TC (TRAIN CONTROL)- A SITES HAVE RADIO ANTENNA.
 2. TP (TUNNEL PORTAL) SITES HAVE RADIO ANTENNAS.

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DESIGNED BY
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J. SIHOTA
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S. SMITH
 DATE
10/31/2017

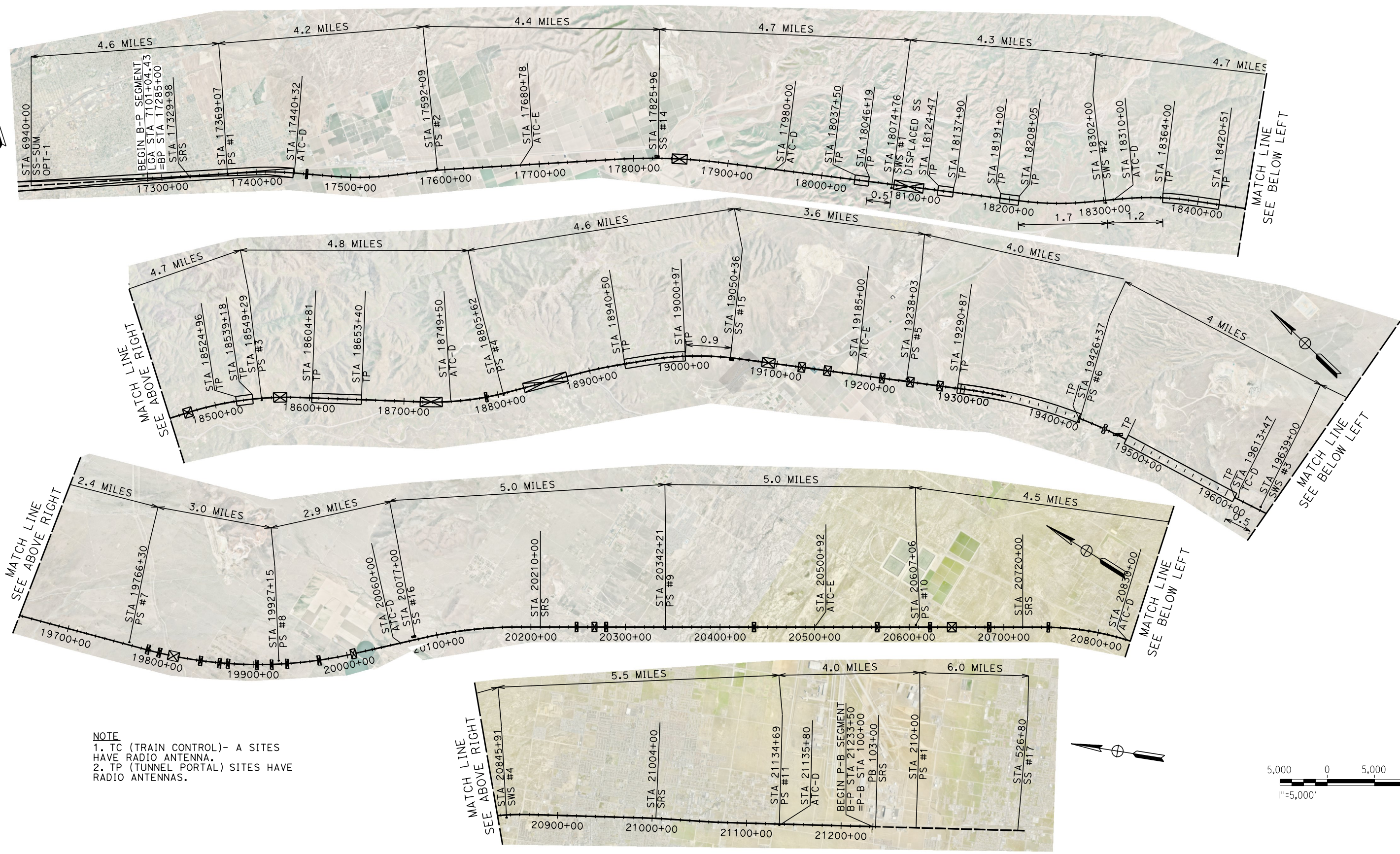
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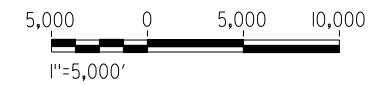


CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
 ALTERNATIVE 2
 TRACTION POWER FACILITY LAYOUT

CONTRACT NO.
HSR13-44
 DRAWING NO.
TP-D0002
 SCALE
AS SHOWN
 SHEET NO.



NOTE
 1. TC (TRAIN CONTROL)- A SITES HAVE RADIO ANTENNA.
 2. TP (TUNNEL PORTAL) SITES HAVE RADIO ANTENNAS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT

DRAWN BY
E. REVOLORIO

CHECKED BY
J. SIHOTA

IN CHARGE
S. SMITH

DATE
10/31/2017

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SUBMITTAL**

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CONSTRUCTION**



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
 ALTERNATIVE 3
 TRACTION POWER FACILITY LAYOUT

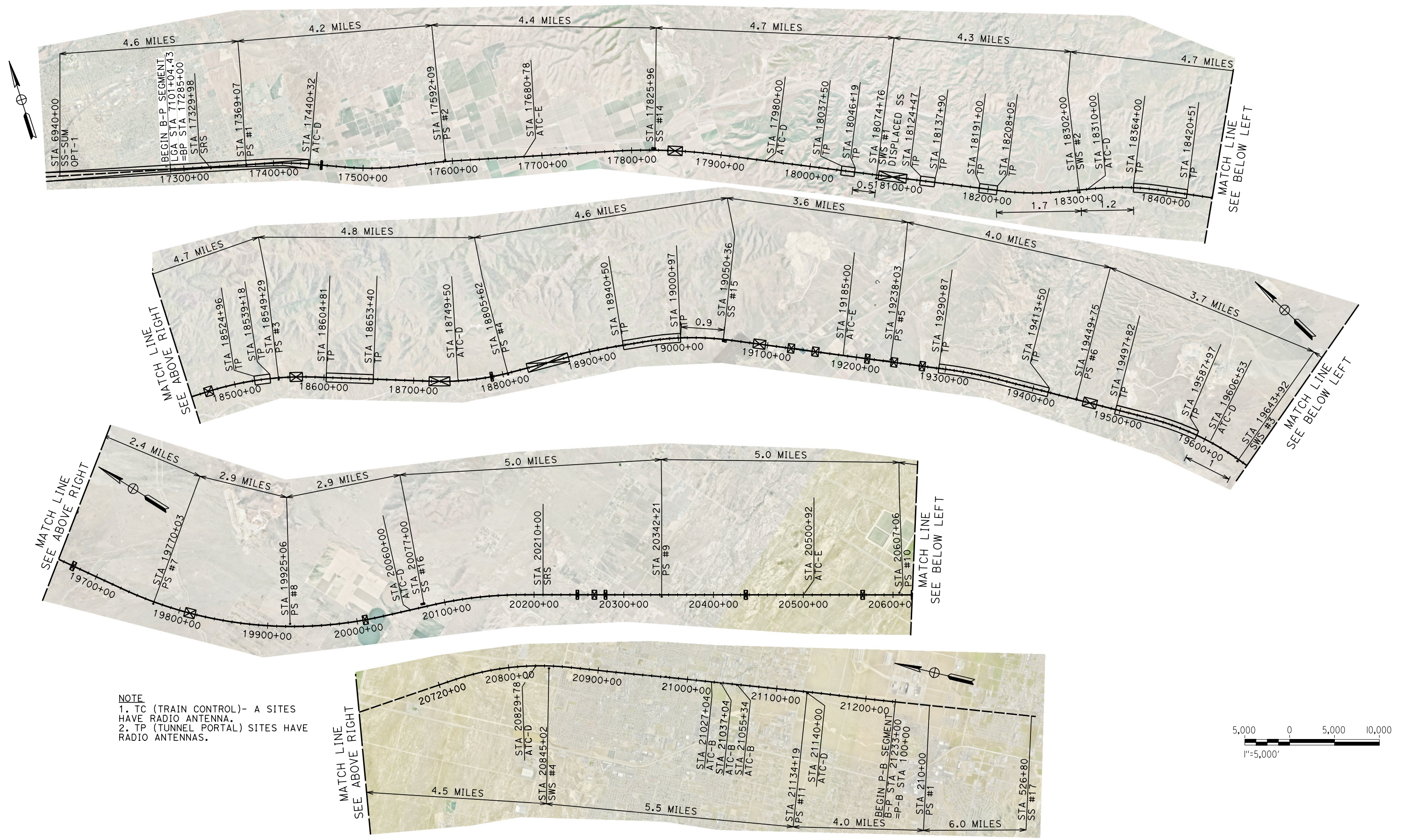
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HSR13-44

DRAWING NO.
TP-D0003

SCALE
AS SHOWN

SHEET NO.

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NOTE
 1. TC (TRAIN CONTROL)- A SITES HAVE RADIO ANTENNA.
 2. TP (TUNNEL PORTAL) SITES HAVE RADIO ANTENNAS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
 DRAWN BY
E. REVOLORIO
 CHECKED BY
J. SIHOTA
 IN CHARGE
S. SMITH
 DATE
10/31/2017

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 PECD
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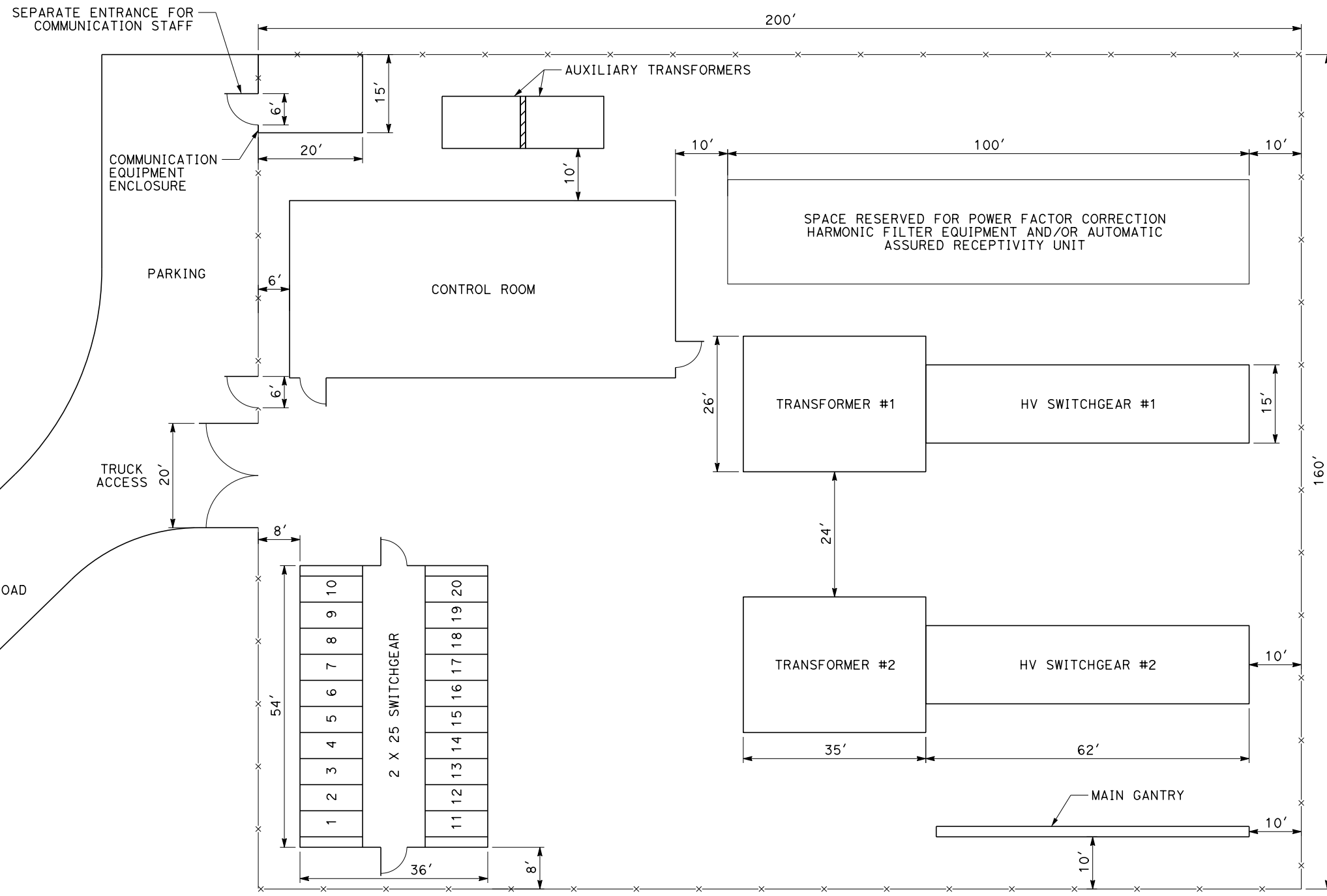
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CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
 ALTERNATIVE 5
 TRACTION POWER FACILITY LAYOUT

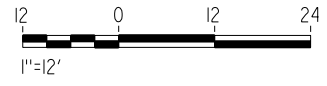
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AS SHOWN
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 OIC:ARIVERA



NOTES:

1. THIS IS A TYPICAL LAYOUT AND THE ORIENTATION OF THE STATION WITH RESPECT TO TRACK, LOCATION OF UTILITY SUPPLY CIRCUITS, EQUIPMENT, AND ROAD ACCESS TO BE DETERMINED ON A SITE-BY-SITE BASIS.
2. THE MAIN GANTRY POSITION SHALL BE PARALLEL AND ADJACENT TO THE TRACK.
3. THERE WILL BE A STRAIN GANTRY LOCATED WITHIN THE RAILROAD R/W, PARALLEL TO AND ON THE OPPOSITE SIDE OF THE TRACK WITH FOOTPRINTS EXACTLY EQUAL TO THAT OF THE MAIN GANTRY.
4. IF THE TPF IS LOCATED AWAY FROM THE TRACK, THE MAIN GANTRY WILL BE LOCATED WITHIN THE RAILROAD R/W, PARALLEL TO AND TOWARDS TPF SIDE OF THE TRACK. IN THIS CASE AN ADDITIONAL 40' WIDE STRIP OF LAND WILL BE REQUIRED FROM THE TPF TO THE RAILROAD R/W FOR LAYING UNDERGROUND DUCT BANKS AND MANHOLES.
5. THE COMMUNICATION EQUIPMENT ROOM SHALL HOUSE COMMUNICATION INTERFACE EQUIPMENT FOR SCADA SYSTEM AND OTHER WAYSIDE COMMUNICATION EQUIPMENT.
6. THE GANTRIES SHALL BE 40' HIGH.
7. THIS LAYOUT IS PER TM 3.1.1.3-A AND SHOWN HERE FOR REFERENCE AND COMPLETENESS



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
 DRAWN BY
A. RIVERA
 CHECKED BY
J. SIHOTA
 IN CHARGE
S. SMITH
 DATE
10/31/2017

**RECORD
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 SUBMITTAL**

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 CONSTRUCTION**



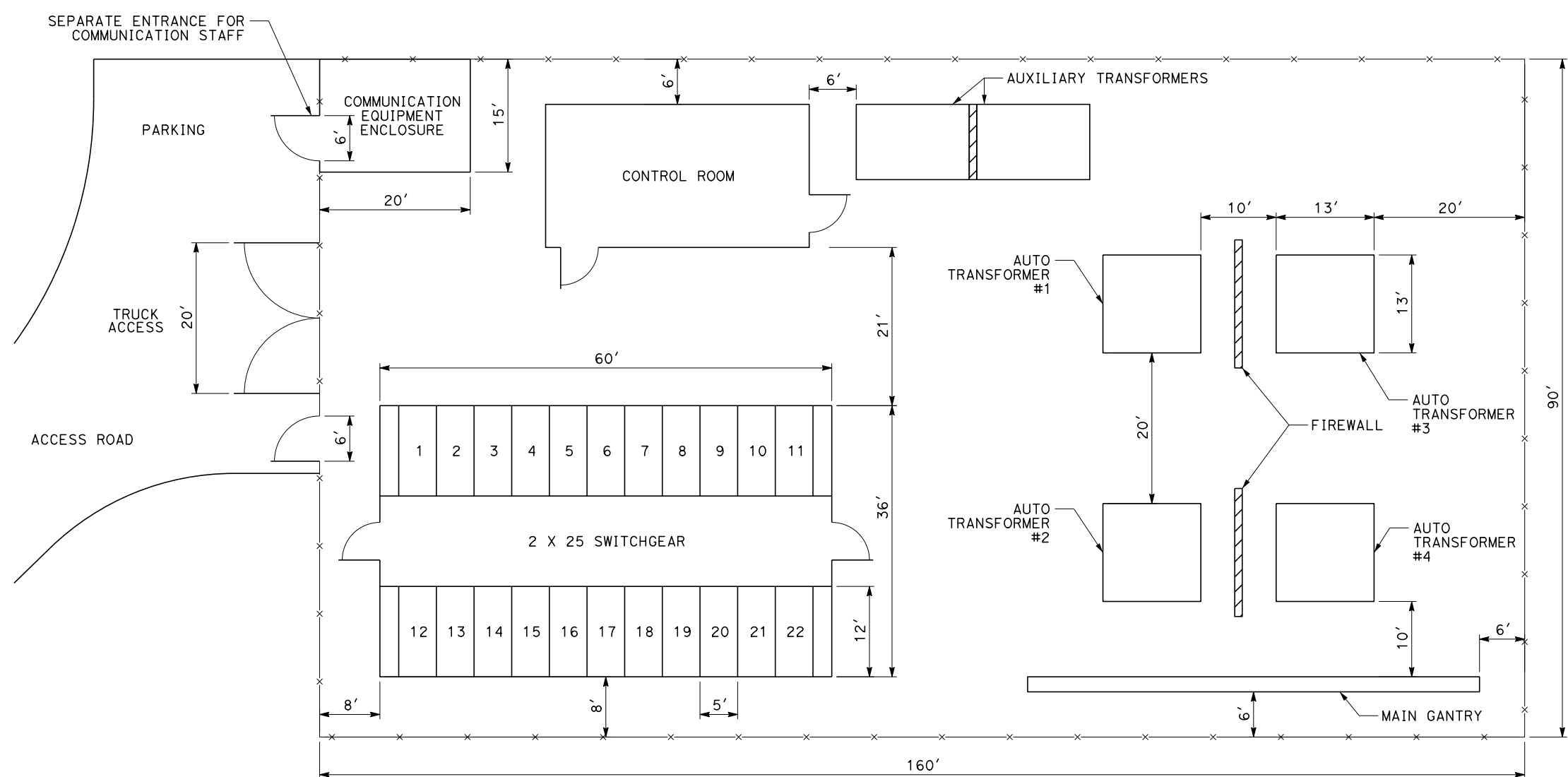
CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
 TYPICAL LAYOUT
 TRACTION POWER SUPPLY STATION
 WITH 2 HIGH VOLTAGE TRANSFORMERS

CONTRACT NO.
HSR13-44
 DRAWING NO.
TP-E4001
 SCALE
AS SHOWN
 SHEET NO.

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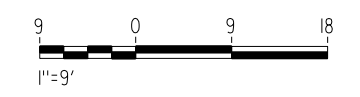
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OIC:ARIVERA



NOTES:

1. THIS IS A TYPICAL LAYOUT AND THE ORIENTATION OF THE STATION WITH RESPECT TO TRACK, LOCATION OF UTILITY SUPPLY CIRCUITS, EQUIPMENT, AND ROAD ACCESS TO BE DETERMINED ON A SITE-BY-SITE BASIS.
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6. THE GANTRIES SHALL BE 40' HIGH.
7. THIS LAYOUT IS PER TM 3.1.1.3-C AND SHOWN HERE FOR REFERENCE AND COMPLETENESS



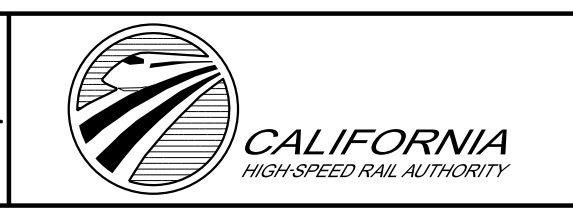
PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
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A. RIVERA
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

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**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

TYPICAL LAYOUT
SWITCHING STATION
WITH 4 AUTOTRANSFORMERS

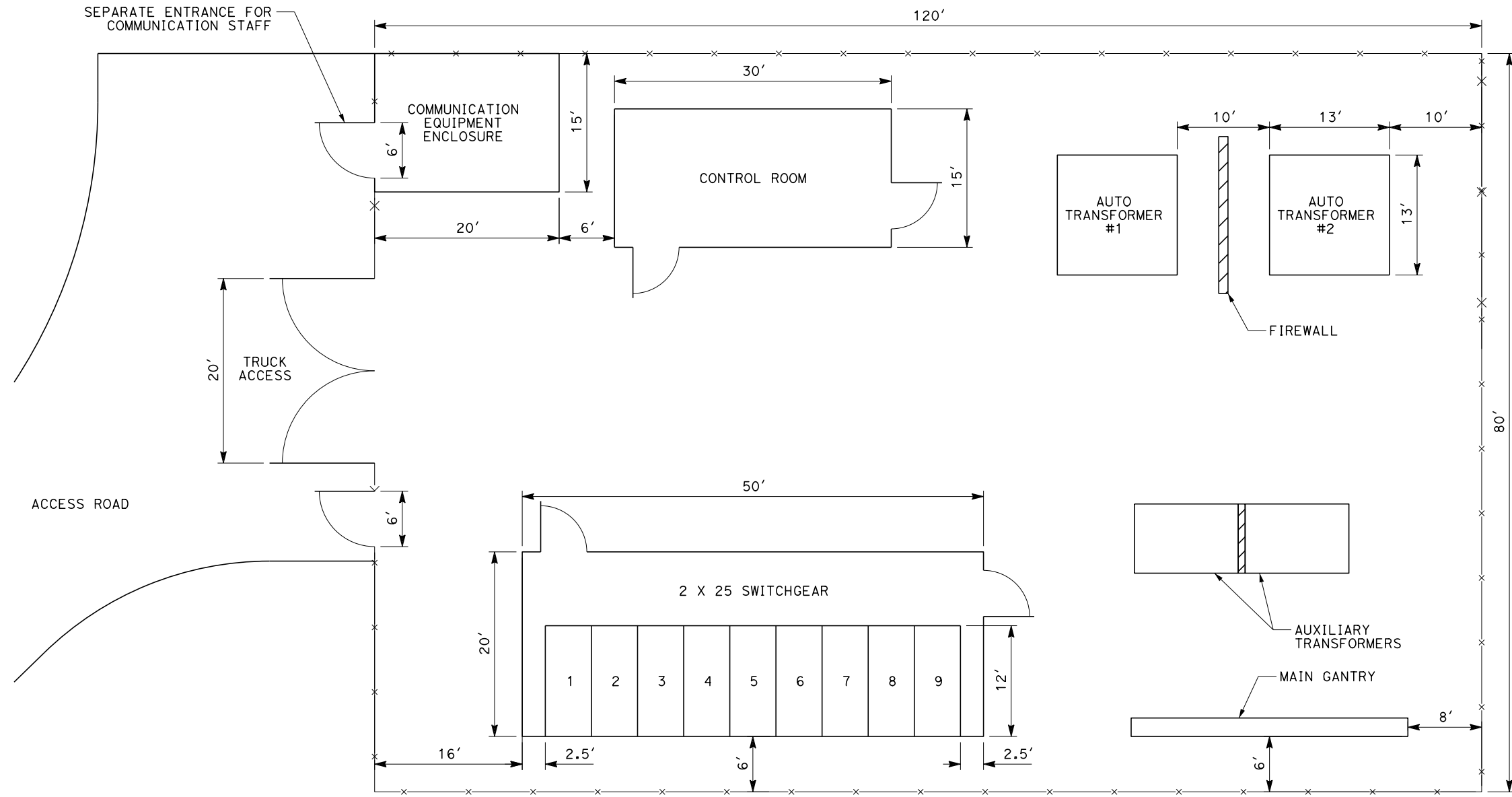
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DRAWING NO.
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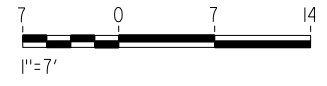
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O.I.C.:ARIVERA



NOTES:

1. THIS IS A TYPICAL LAYOUT AND THE ORIENTATION OF THE STATION WITH RESPECT TO TRACK, LOCATION OF UTILITY SUPPLY CIRCUITS, EQUIPMENT, AND ROAD ACCESS TO BE DETERMINED ON A SITE-BY-SITE BASIS.
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6. THE GANTRIES SHALL BE 40' HIGH.
7. THIS LAYOUT IS PER TM 3.1.1.3-D AND SHOWN HERE FOR REFERENCE AND COMPLETENESS



PLAN

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A. RIVERA
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J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

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CONSTRUCTION**

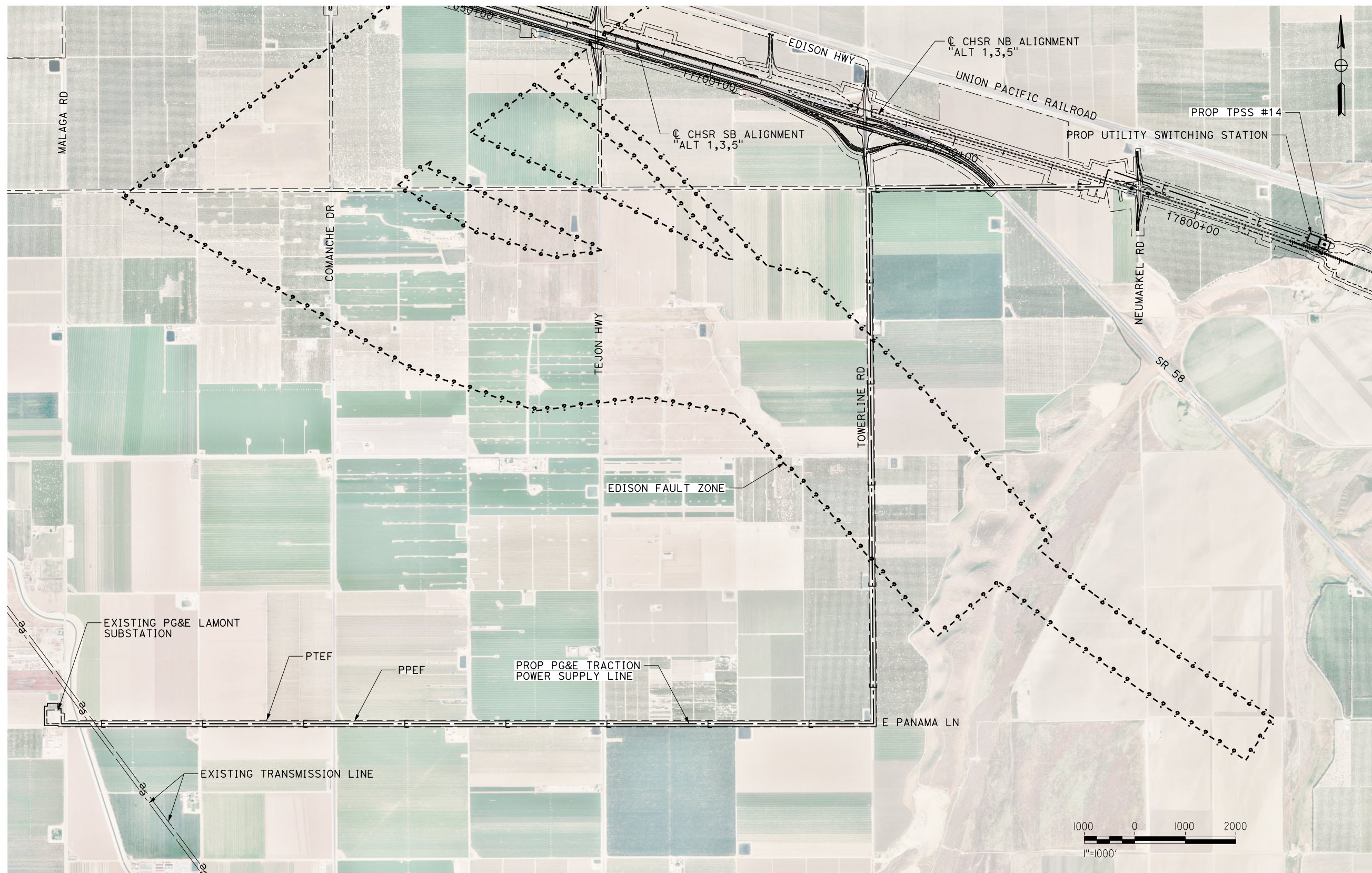


**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

TYPICAL LAYOUT
PARALLELING STATION
WITH 2 AUTOTRANSFORMERS

CONTRACT NO.
HSR13-44
DRAWING NO.
TP-E4003
SCALE
AS SHOWN
SHEET NO.

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PLAN

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DESIGNED BY
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E. REVOLORIO
 CHECKED BY
J. SIHOTA
 IN CHARGE
S. SMITH
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10/31/2017

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CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
 ALTERNATIVE 1,3,5
 PROPOSED INTERCONNECT LAMONT SUBSTATION

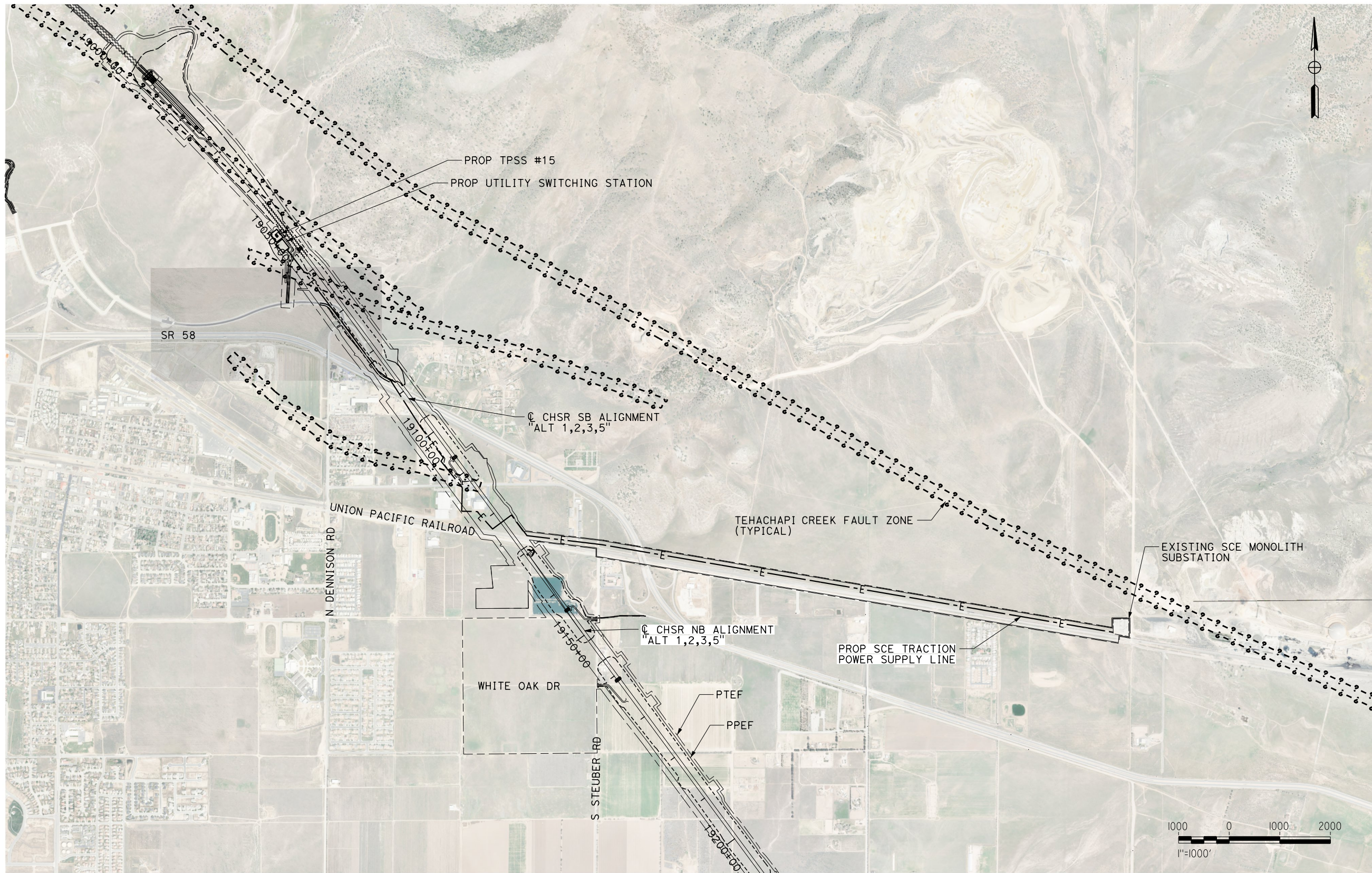
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PLAN

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DESIGNED BY
S. LANDOLT
DRAWN BY
E. REVOLORIO
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

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SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**
ALTERNATIVE 1,2,3,5
PROPOSED INTERCONNECT MONOLITH SUBSTATION

CONTRACT NO.
HSR13-44
DRAWING NO.
TP-F4002
SCALE
AS SHOWN
SHEET NO.

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PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
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E. REVOLORIO
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IN CHARGE
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CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**
ALTERNATIVE 1,2,3,5
PROPOSED INTERCONNECT ANTELOPE VALLEY SUBSTATION

CONTRACT NO.
HSR13-44
DRAWING NO.
TP-F4003
SCALE
AS SHOWN
SHEET NO.

Projects\701206.00_CHSRBP\00_CADD\Sheet_Files\TP\BP-TP-F4004

9/28/2017 4:18:51 PM

9/28/2017

OIC:ARivera



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
DRAWN BY
E. REVOLORIO
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

**RECORD
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



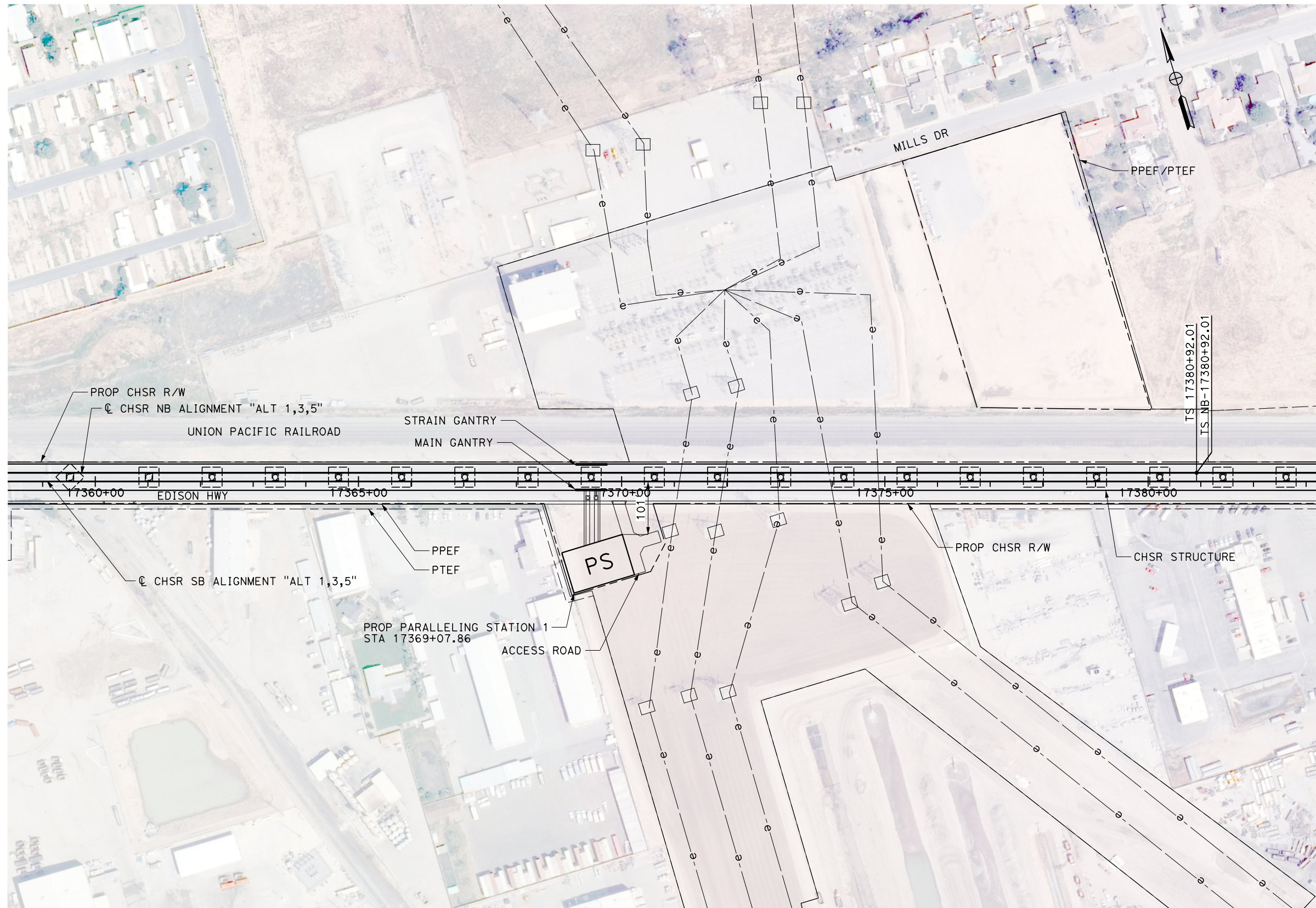
CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
ALTERNATIVE 2
PROPOSED INTERCONNECT LAMONT SUBSTATION

CONTRACT NO.
HSR13-44
DRAWING NO.
TP-F4004
SCALE
AS SHOWN
SHEET NO.

Project: s701206_00_CHSRBP_00_CADD_Sheet_Files_TP_VBP-TP-04001

9/28/2017 4:16:05 PM

OIC: ARIVERGA



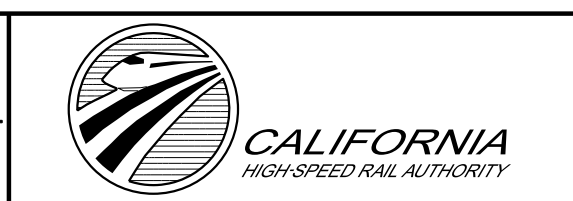
PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
DRAWN BY
E. REVOLORIO
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

**RECORD
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



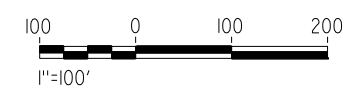
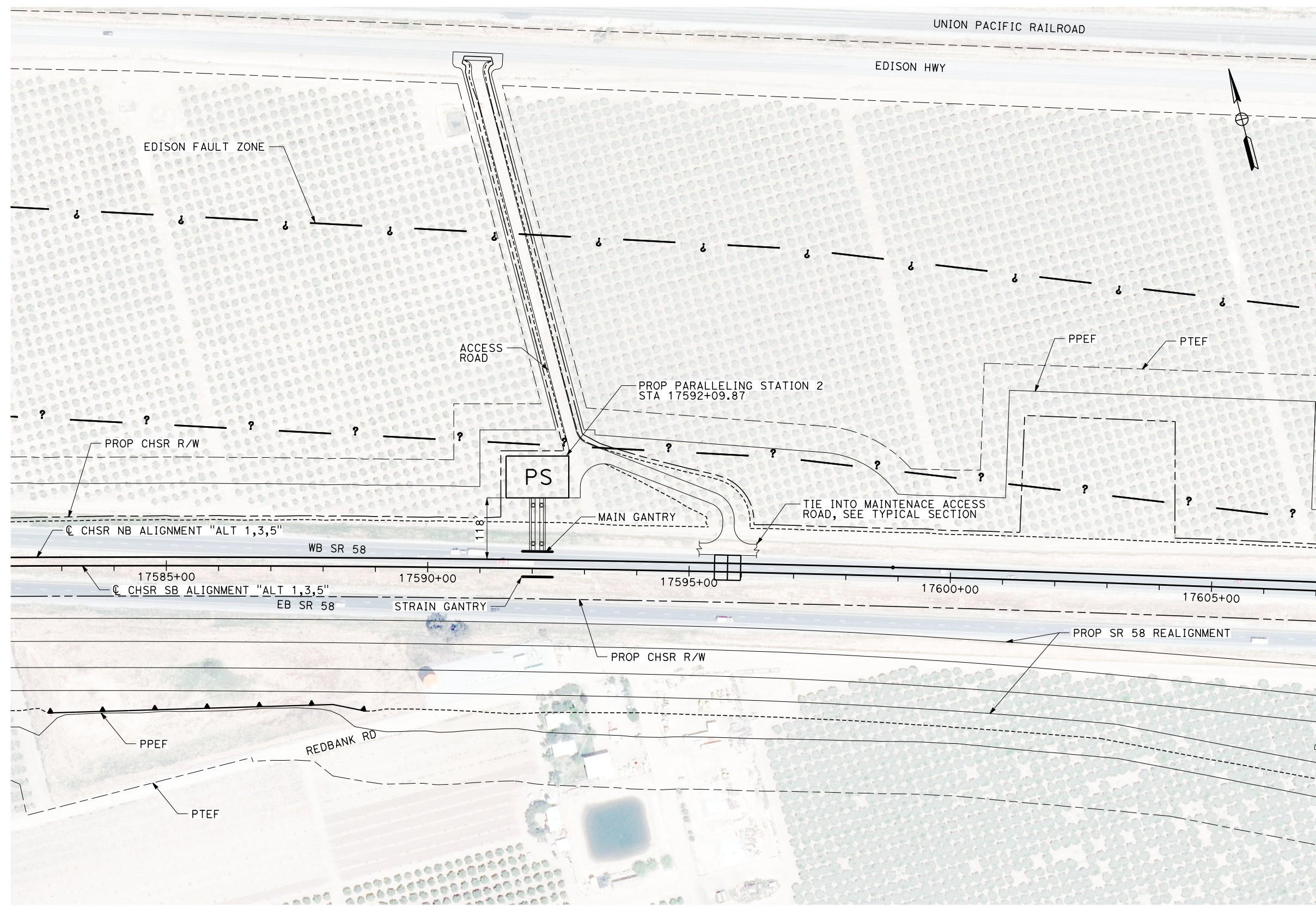
**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**
ALTERNATIVE 1,3,5
TRACTION POWER SITE PLAN
PROPOSED PARALLELING STATION 1

CONTRACT NO.
HSR13-44
DRAWING NO.
TP-04001
SCALE
AS SHOWN
SHEET NO.

Projects\701206_00_CHSRBP\00_CADD\Sheet_Files\TP\BP-TP-04002

9/28/2017 4:14:50 PM

9/28/2017



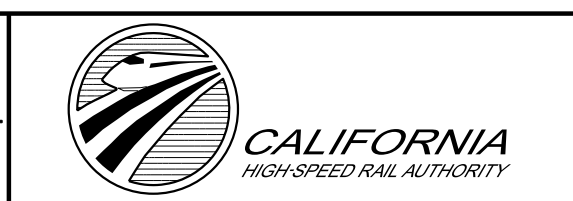
PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
DRAWN BY
E. REVOLORIO
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

**RECORD
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,3,5
TRACTION POWER SITE PLAN
PROPOSED PARALLELING STATION 2

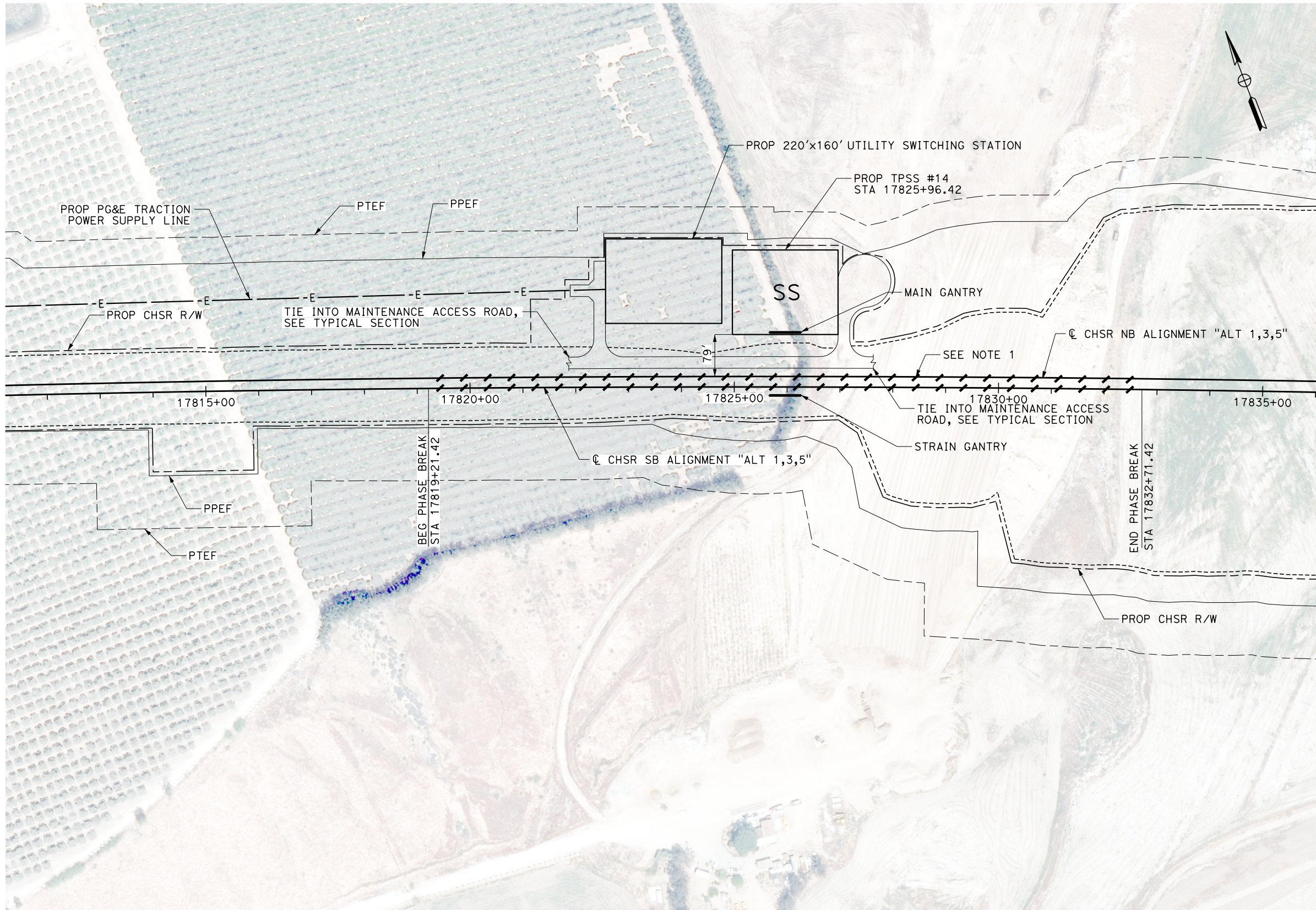
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DRAWING NO.
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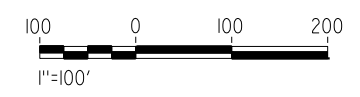
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9/28/2017 4:15:43 PM

OIC:ARIVERA



NOTES
 1. PROPOSED TRACK GRADE THROUGH PHASE BREAK IS 1.16%.



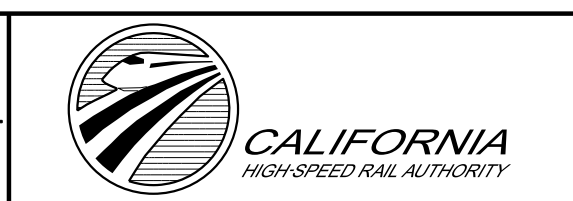
PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
 DRAWN BY
E. REVOLORIO
 CHECKED BY
J. SIHOTA
 IN CHARGE
S. SMITH
 DATE
10/31/2017

**RECORD
 PEPD
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**NOT FOR
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**CALIFORNIA HIGH-SPEED RAIL PROJECT
 BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,3,5
 TRACTION POWER SITE PLAN
 PROPOSED TPSS #14

CONTRACT NO.
HSR13-44

DRAWING NO.
TP-04003

SCALE
AS SHOWN

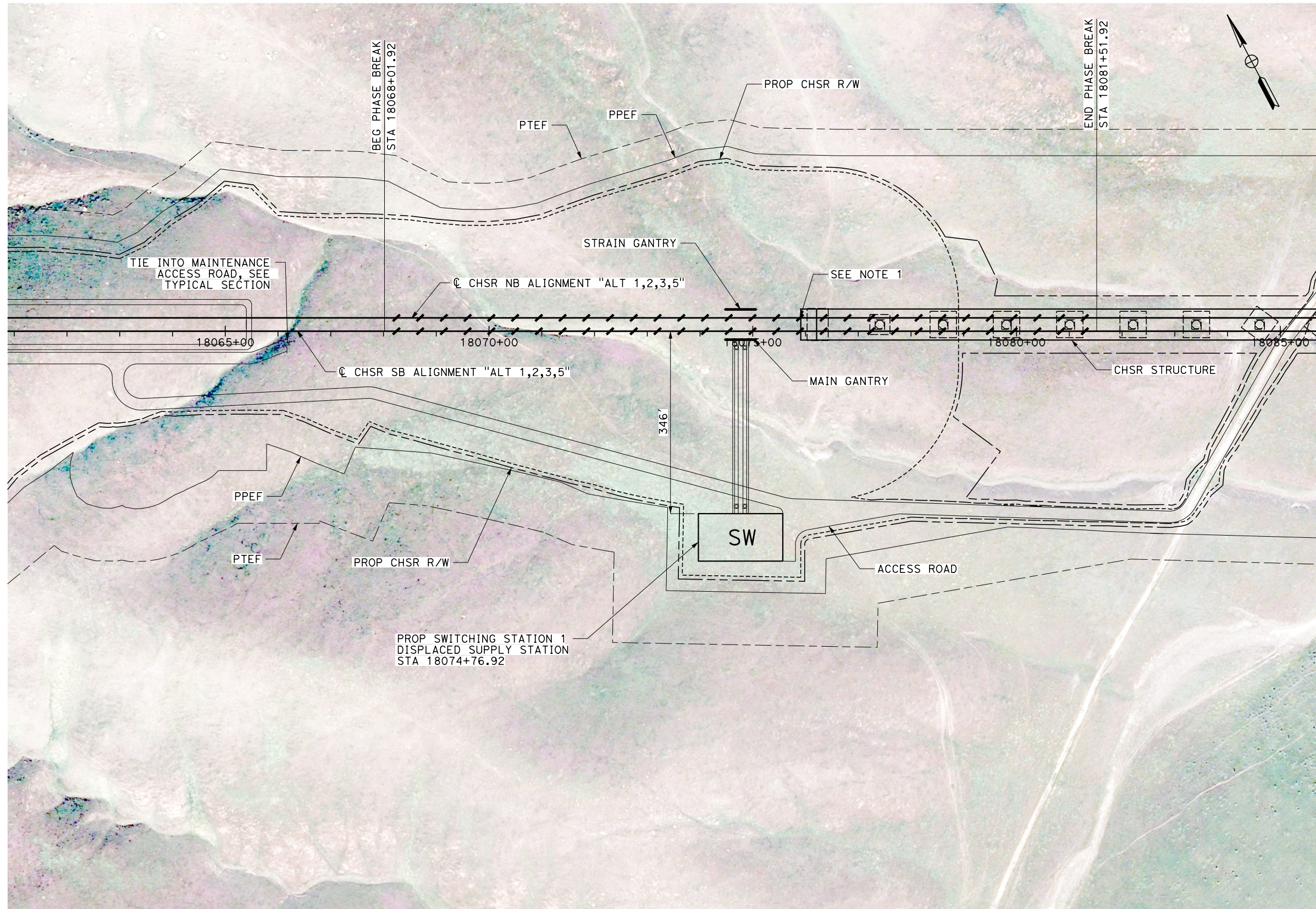
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OIC:ARIVEGA



NOTES
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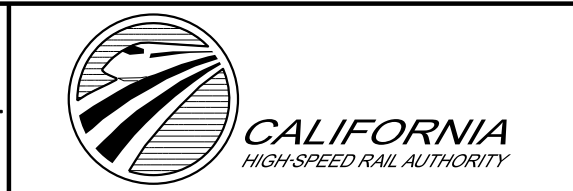
PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
 DRAWN BY
E. REVOLORIO
 CHECKED BY
J. SIHOTA
 IN CHARGE
S. SMITH
 DATE
10/31/2017

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**CALIFORNIA HIGH-SPEED RAIL PROJECT
 BAKERSFIELD TO PALMDALE**
 ALTERNATIVE 1,2,3,5
 TRACTION POWER SITE PLAN
 PROPOSED SWITCHING STATION 1
 PROPOSED DISPLACED SUPPLY STATION 1

CONTRACT NO.
HSR13-44
 DRAWING NO.
TP-04004
 SCALE
AS SHOWN
 SHEET NO.

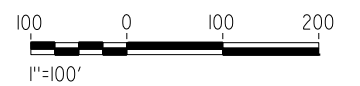
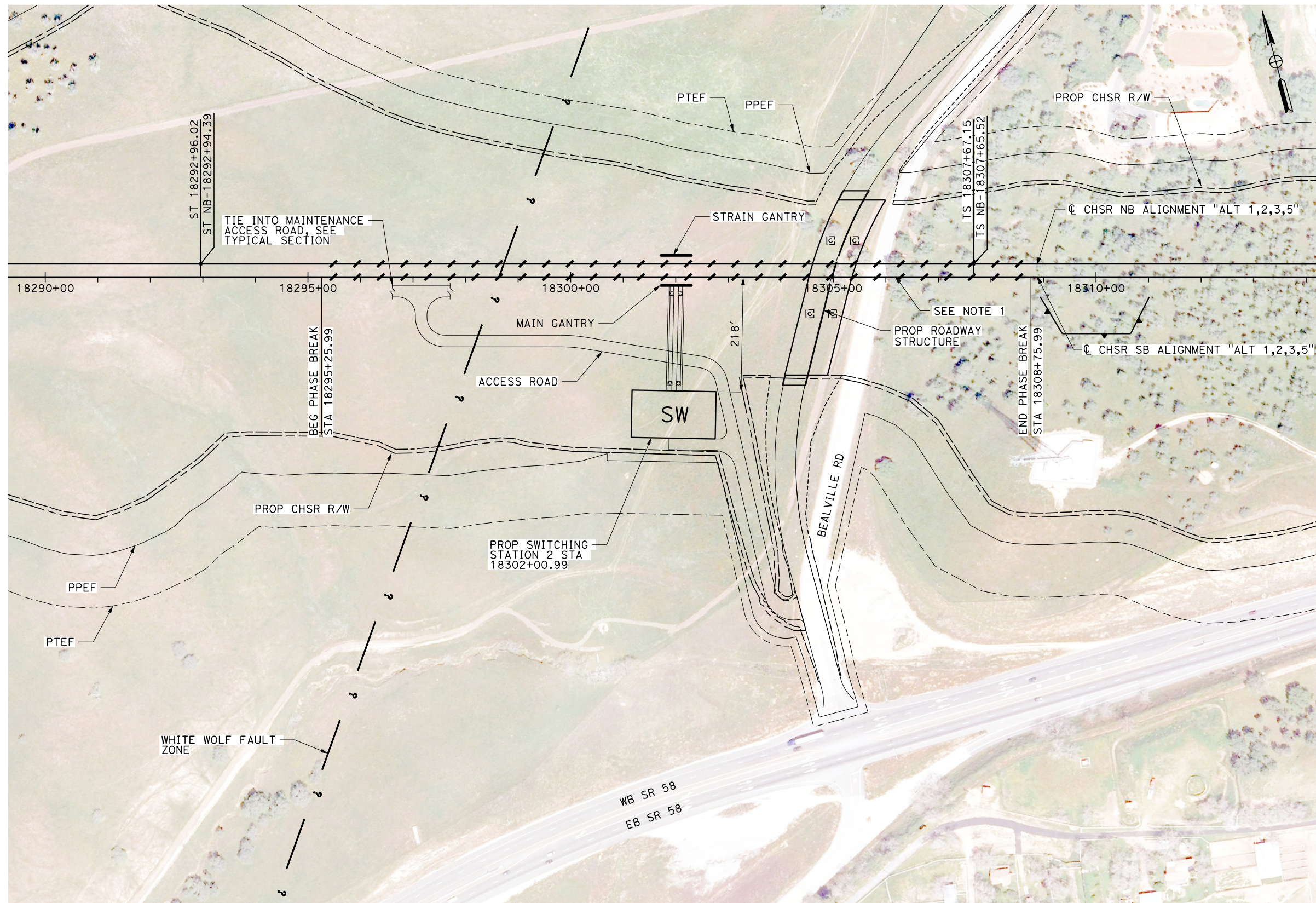
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9/28/2017

OJC:ARIVEGA

NOTES
 1. PROPOSED TRACK GRADE THROUGH PHASE BREAK IS 2.80%.



PLAN

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S. SMITH
 DATE
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CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
 ALTERNATIVE 1,2,3,5
 TRACTION POWER SITE PLAN
 PROPOSED SWITCHING STATION 2

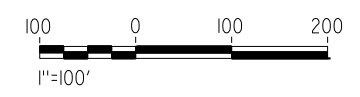
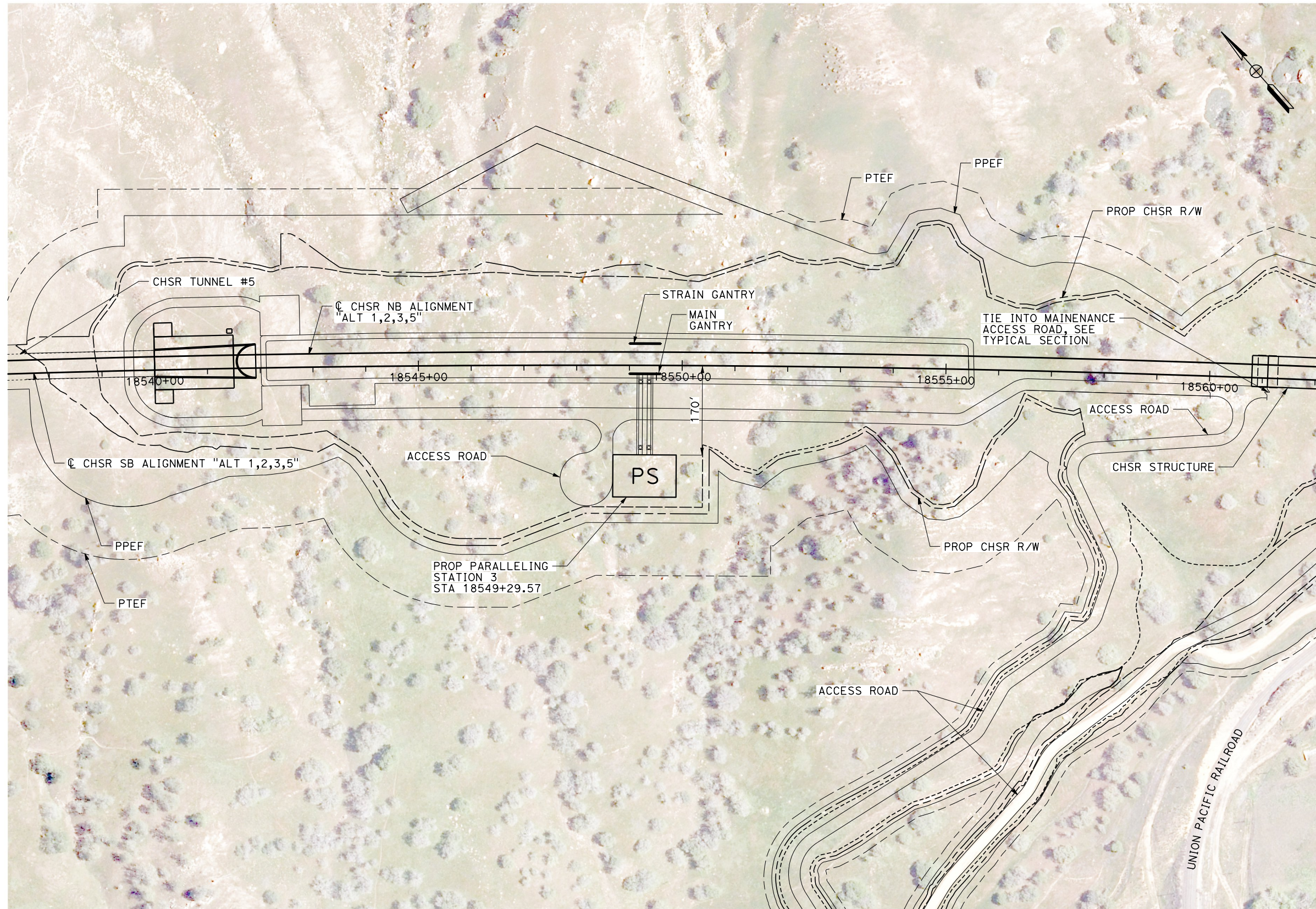
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HSR13-44
 DRAWING NO.
TP-04005
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Projects\701206.00_CHSRBP\00_CADD\Sheet_Files\TP\BP-TP-04006

9/28/2017 4:18:50 PM

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PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
DRAWN BY
E. REVOLORIO
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

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**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
TRACTION POWER SITE PLAN
PROPOSED PARALLELING STATION 3

CONTRACT NO.
HSR13-44

DRAWING NO.
TP-04006

SCALE
AS SHOWN

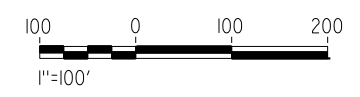
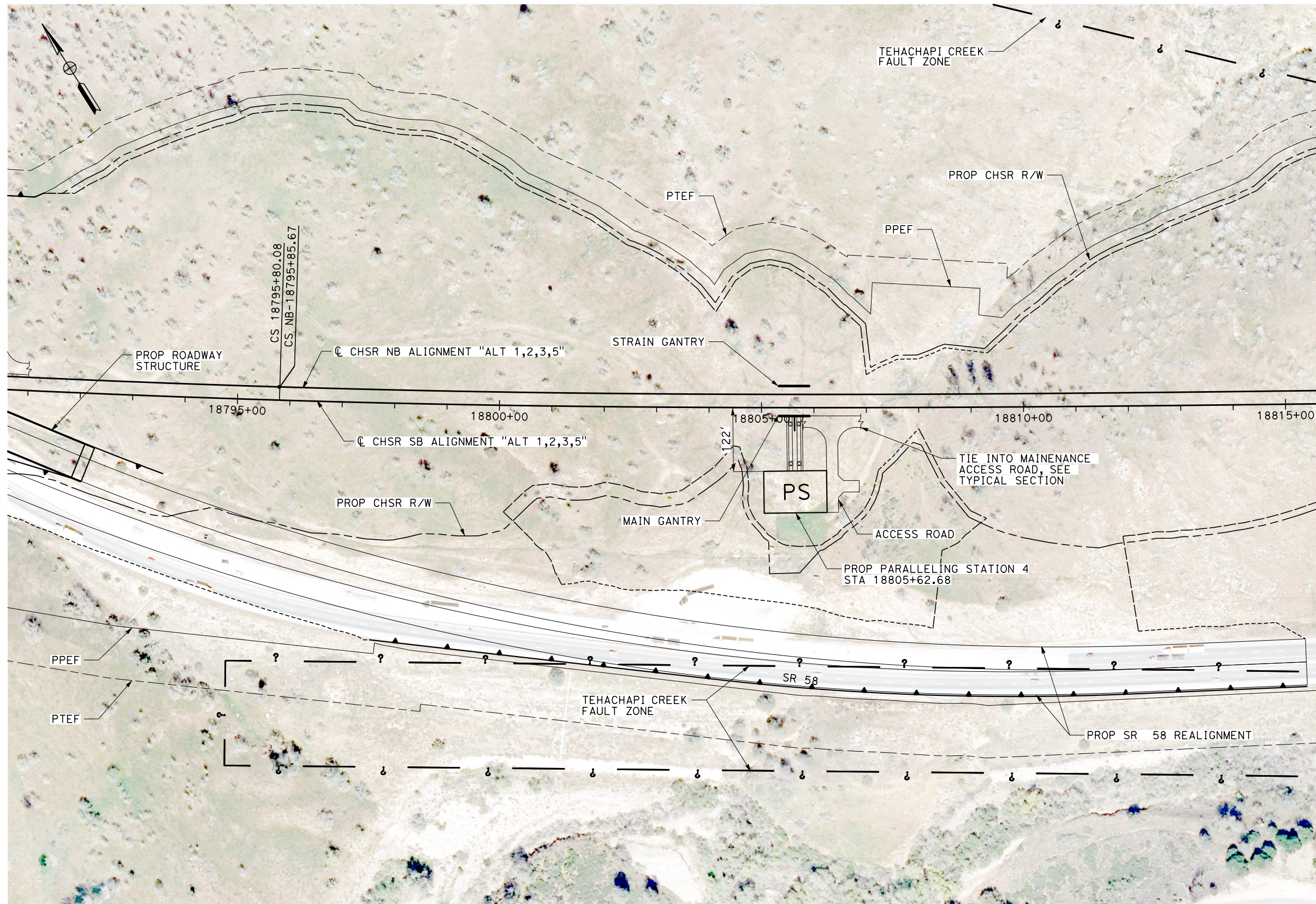
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Projects\701206.00_CHSRBP\00_CADD\Sheet_Files\TP\BP-TP-04007

9/28/2017 4:16:01 PM

9/28/2017

OIC:ARIVEGA



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
DRAWN BY
E. REVOLORIO
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

**RECORD
PEPD
SUBMITTAL**

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CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
TRACTION POWER SITE PLAN
PROPOSED PARALLELING STATION 4

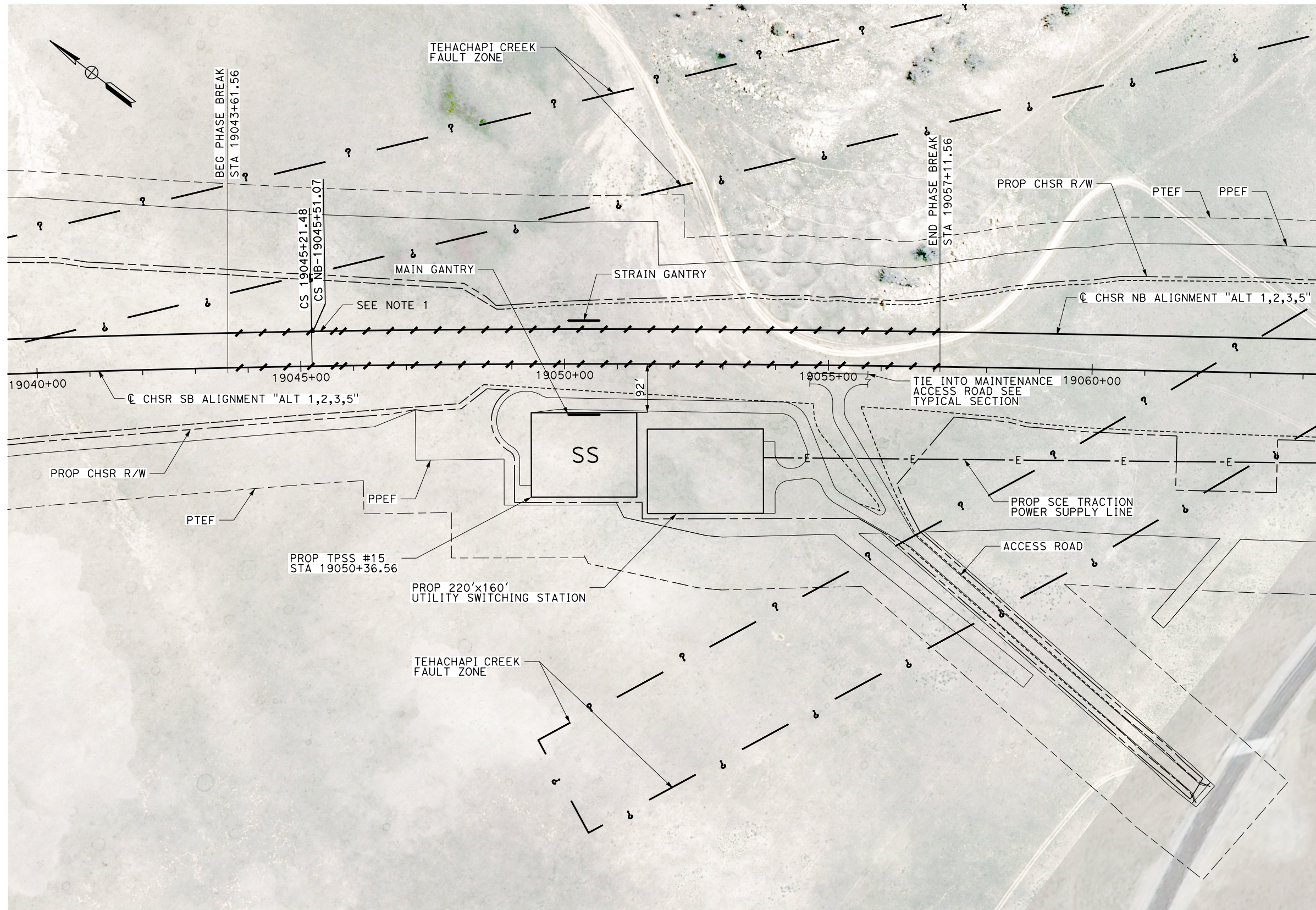
CONTRACT NO.
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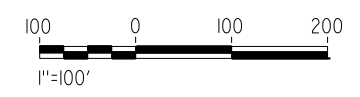
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9/28/2017

OIC:ARIVEGA



NOTES
 1. PROPOSED TRACK GRADE THROUGH PHASE BREAK IS 0.99%.



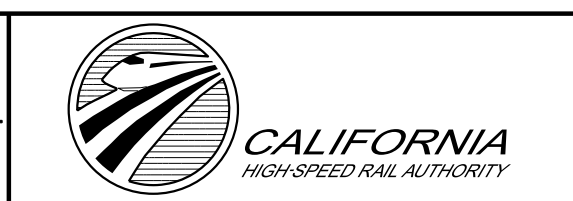
PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
 DRAWN BY
E. REVOLORIO
 CHECKED BY
J. SIHOTA
 IN CHARGE
S. SMITH
 DATE
10/31/2017

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**CALIFORNIA HIGH-SPEED RAIL PROJECT
 BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
 TRACTION POWER SITE PLAN
 PROPOSED TPSS #15

CONTRACT NO.
HSR13-44

DRAWING NO.
TP-04008

SCALE
AS SHOWN

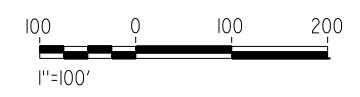
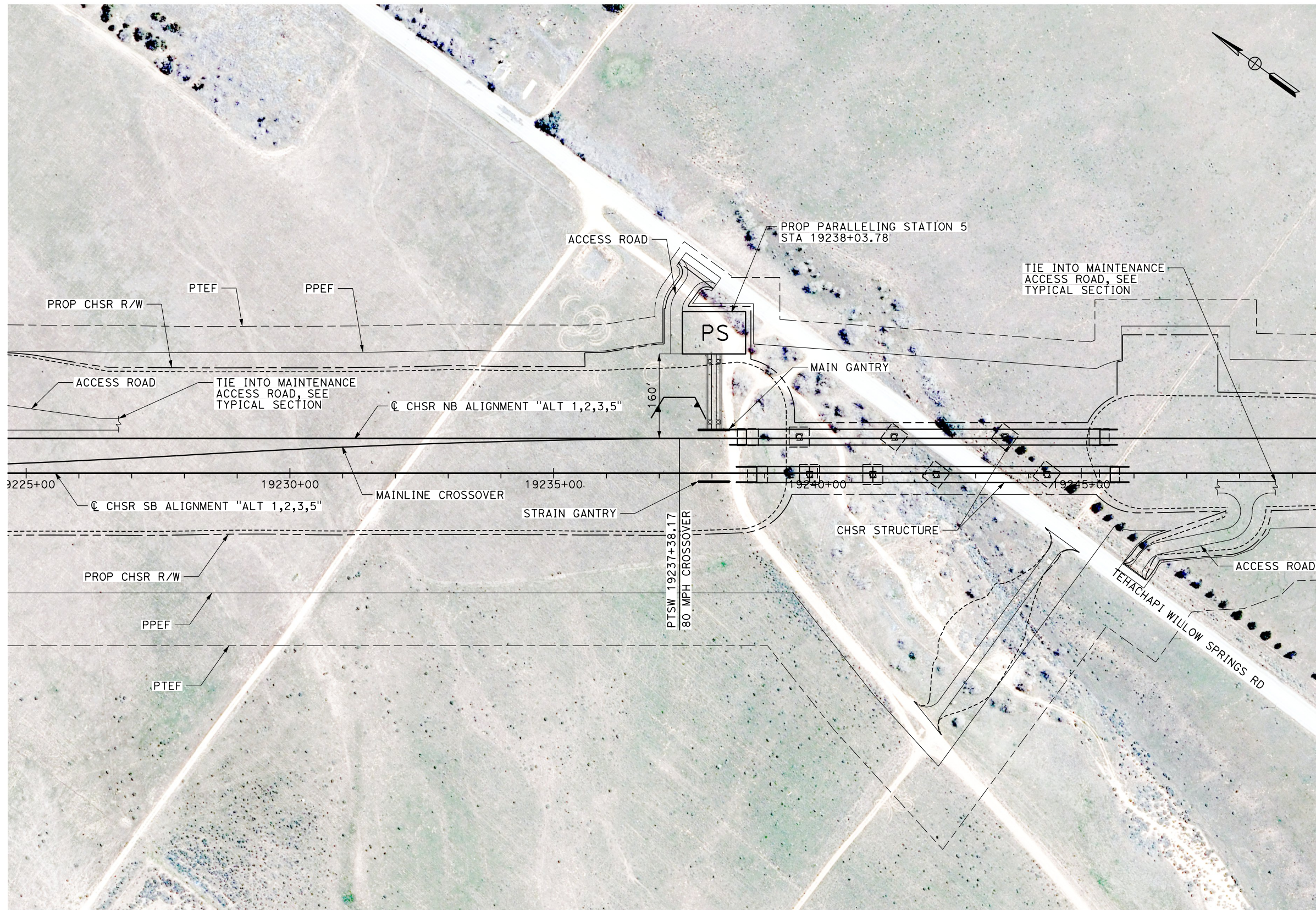
SHEET NO.

Projects\701206.00_CHSRBP\00_CADD\Sheet Files\TP\BP-TP-04009

4:17:02 PM

9/28/2017

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PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
DRAWN BY
E. REVOLORIO
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

**RECORD
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,3,5
TRACTION POWER SITE PLAN
PROPOSED PARALLELING STATION 5

CONTRACT NO.
HSR13-44

DRAWING NO.
TP-04009

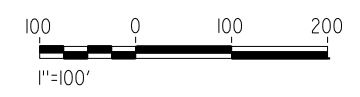
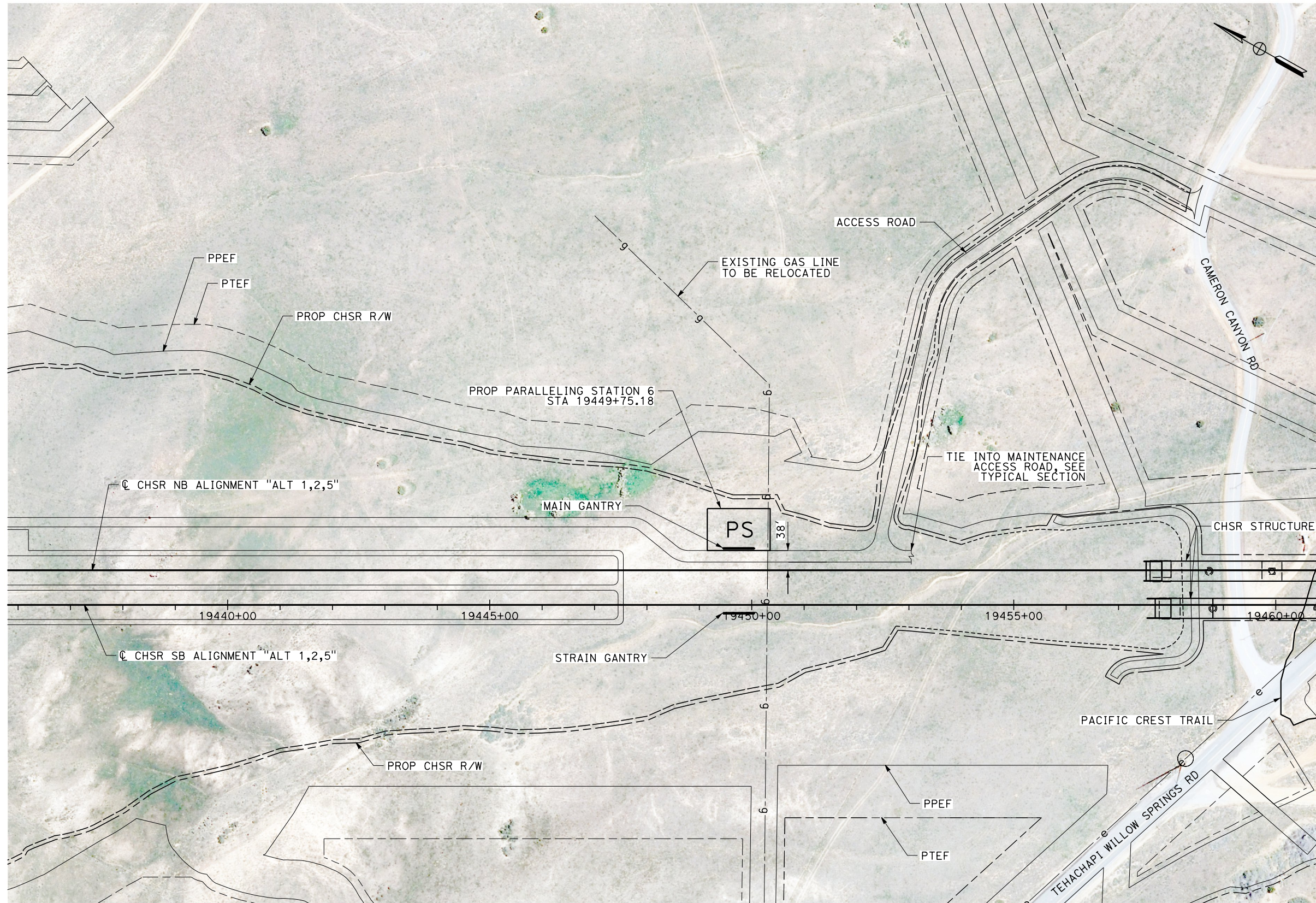
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9/28/2017 4:17:04 PM

9/28/2017



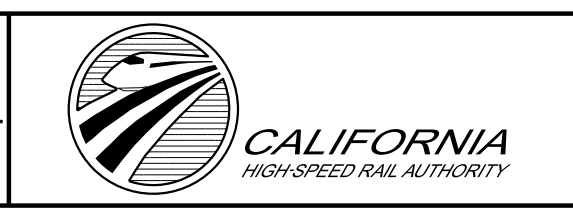
PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
S. LANDOLT
DRAWN BY
E. REVOLORIO
CHECKED BY
J. SIHOTA
IN CHARGE
S. SMITH
DATE
10/31/2017

**RECORD
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALTERNATIVE 1,2,5
TRACTION POWER SITE PLAN
PROPOSED PARALLELING STATION 6

CONTRACT NO.
HSR13-44
DRAWING NO.
TP-04010
SCALE
AS SHOWN
SHEET NO.