

Bakersfield to Palmdale

**TUNNELS
RECORD SET PEPD
DESIGN SUBMISSION
January 2021**



Projects\701206_00_CHSRBP\00_CADD\Sheet Files\TNBP-TN-B0003

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1/20/2021

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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
 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
 BFFSA BAKERSFIELD F STREET STATION ALIGNMENT
 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

C CUT
 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 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
 D & B DRILL AND BLAST
 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
 DS DESIGN SPEED
 DTBB DOUBLE THRIE BEAM BARRIER
 DWG DRAWING
 DWP DEPARTMENT OF WATER AND POWER
 DWY DRIVEWAY

E

E EAST, EASTING, ELECTRICAL
 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 FILL, FIXED BEARING
 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
 FLS FIRE AND LIFE SAFETY
 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, NATURAL GAS
 GA GAGE
 GALV GALVANIZED
 GP GRADING PLANE
 GR GUARD RAILING
 GSP GALVANIZED STEEL PIPE
 GTR GUTTER

H

H HEIGHT
 HR HOUR
 HD HORIZONTAL DRAIN
 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
 HW HEADWALL, HIGH WATER
 HWM HIGH WATER MARK
 HWY HIGHWAY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDU
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

CONTRACT NO.
HSR13-44
 DRAWING NO.
TN-B0003
 SCALE
AS SHOWN
 SHEET NO.
3

Projects\701206_00_CHSRBP\00_CADD\Sheet Files\TNBP-TN-B0004

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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
 LID BMP LOW IMPACT DEVELOPMENT BEST MANAGEMENT PRACTICES
 LN LANE
 LOC LOCATION
 LOL LAYOUT LINE
 LONG LONGITUDE
 LONGIT LONGITUDINAL
 LS LENGTH OF SPIRAL
 LC LENGTH OF CURVE
 LT LEFT

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
 MPGR METAL PLATE GUARD RAILING
 MPH MILES PER HOUR

M CONTINUED

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
 OSS ONSITE STORMWATER DETENTION

P

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

P CONTINUED

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
 PRVC POINT OF REVERSE VERTICAL CURVE
 PS&E PLANS, SPECIFICATIONS AND ESTIMATES
 PS, P/S PRESTRESSED, PARALLEL STATION
 PSP PERFORATED STEEL PIPE
 PT POINT OF TANGENCY
 PTEF PROPOSED TEMPORARY ENVIRONMENTAL FOOTPRINT
 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/W RIGHT OF WAY
 RWY RAILWAY

S

S SOUTH, SUPPLEMENT, SLOPE, STATION LINE, SEWER
 SAE STRUCTURE APPROACH EMBANKMENT
 SALV SALVAGE
 SAPP STRUCTURAL ALUMINUM PLATE PIPE
 SB SOUTHBOUND
 SC SPIRAL TO CURVE
 SCSP SLOTTED CORRUGATED STEEL PIPE
 SD STORM DRAIN
 SEC SECOND
 SECT SECTION
 SEP SEPARATION
 SG SUBGRADE
 SHLD SHOULDER
 SHT SHEET
 SIM SIMILAR
 SM SELECTED MATERIAL
 SPEC SPECIAL, SPECIFICATIONS
 SPP SLOTTED PLASTIC PIPE
 SS SLOPE STAKE, SPIRAL TO SPIRAL,
 SWITCHING 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

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDU
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

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 CONSTRUCTION**



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

CONTRACT NO.
HSR13-44
 DRAWING NO.
TN-B0004
 SCALE
AS SHOWN
 SHEET NO.
4

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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
 TF TOP OF FOOTING
 TG TOP OF GRADE
 TM TECHNICAL MEMORANDUM
 TOR TOP OF RAIL
 TOT TOTAL
 TP TELEPHONE POLE
 TPB TREATED PERMEABLE BASE
 TPF TRACTION POWER FACILITY
 TPM TREATED PERMEABLE MATERIAL
 TPS TRACTION POWER SUPPLY SYSTEM
 TPSS TRACTION POWER SUBSTATION
 TRANS TRANSITION, TRANSVERSE
 TS TRAFFIC SIGNAL, TUBULAR STEEL,
 TANGENT TO SPIRAL
 TSMF TERMINAL STORAGE AND MAINTENANCE FACILITY
 TW TOP OF WALL
 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, WATER
 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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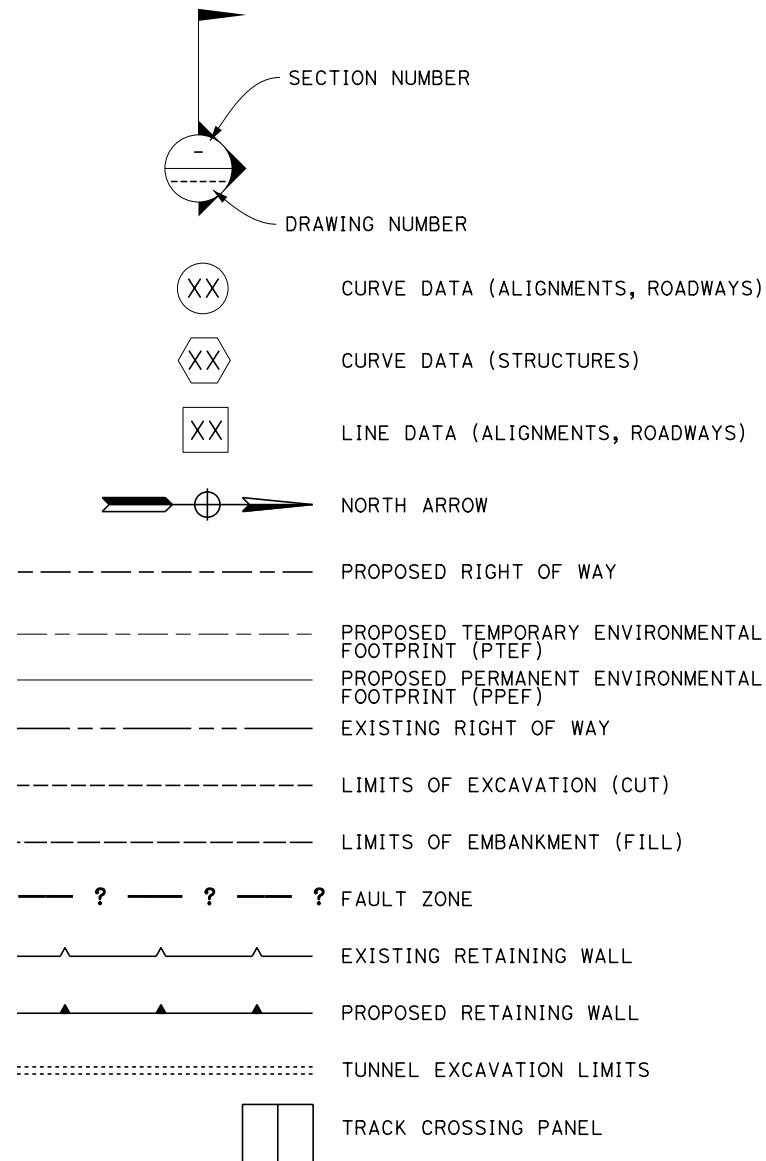


**CALIFORNIA HIGH-SPEED RAIL PROJECT
 BAKERSFIELD TO PALMDALE**
 ALTERNATIVE 1, 2, 3, 5
 GENERAL
 ABBREVIATIONS AND LEGENDS
 SHEET 3 OF 4

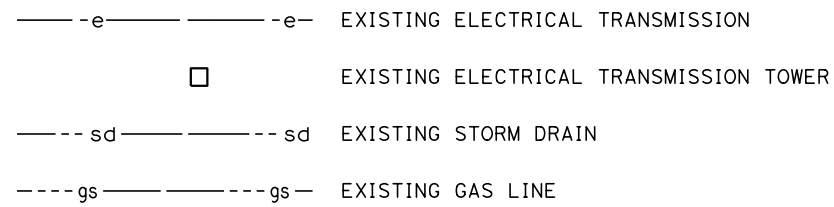
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5

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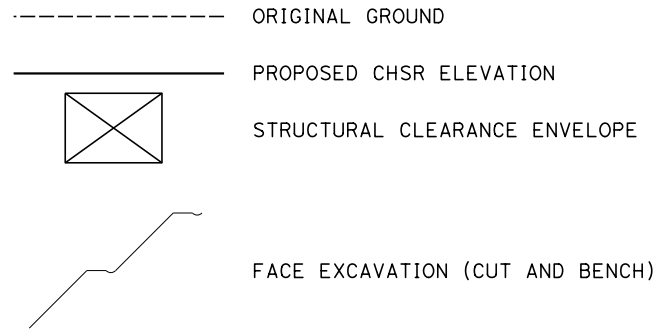
PLAN



UTILITIES



PROFILE



GENERAL NOTES

- ROADWAY IMPROVEMENTS NOT PART OF THIS SET.
- FOR PROPOSED RETAINING WALL SEE SHEET SERIES ST-G.

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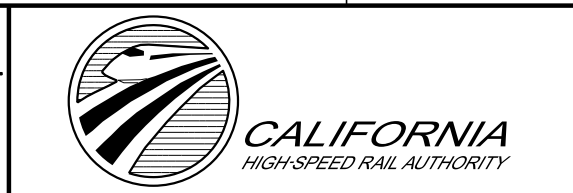
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**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

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

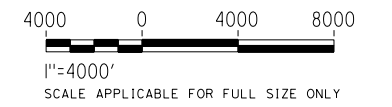
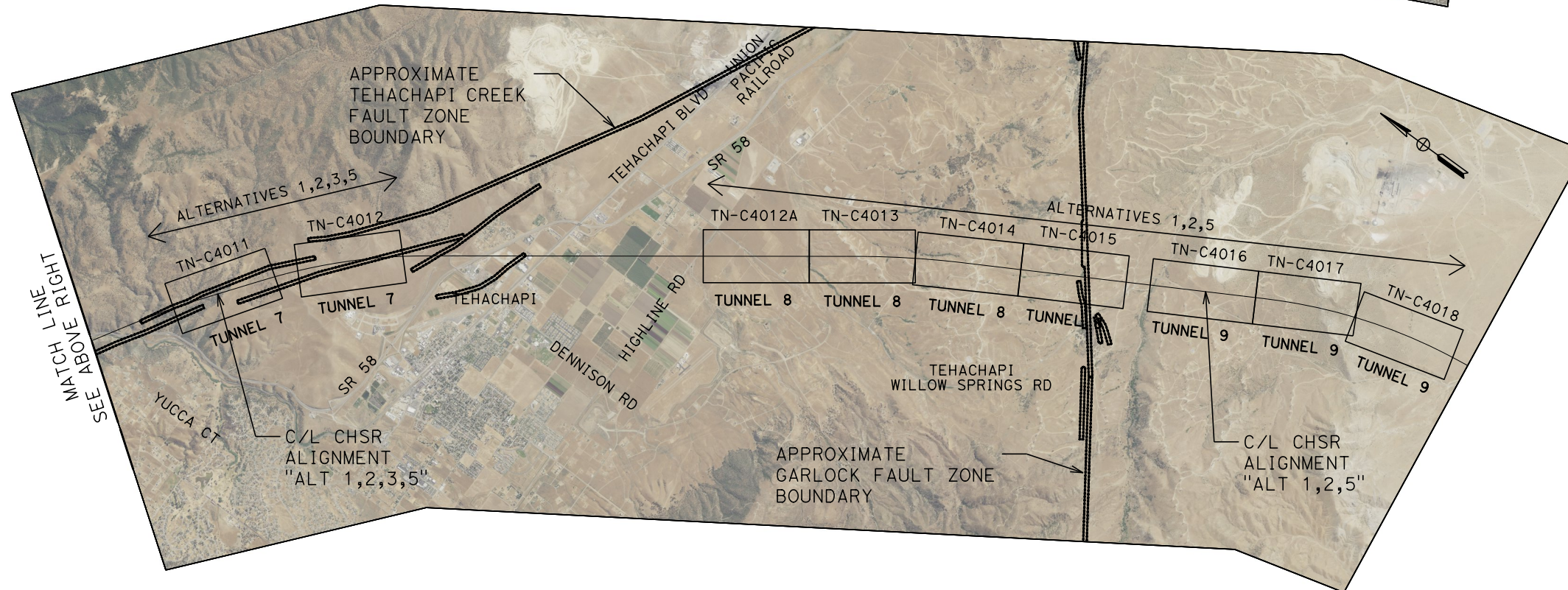
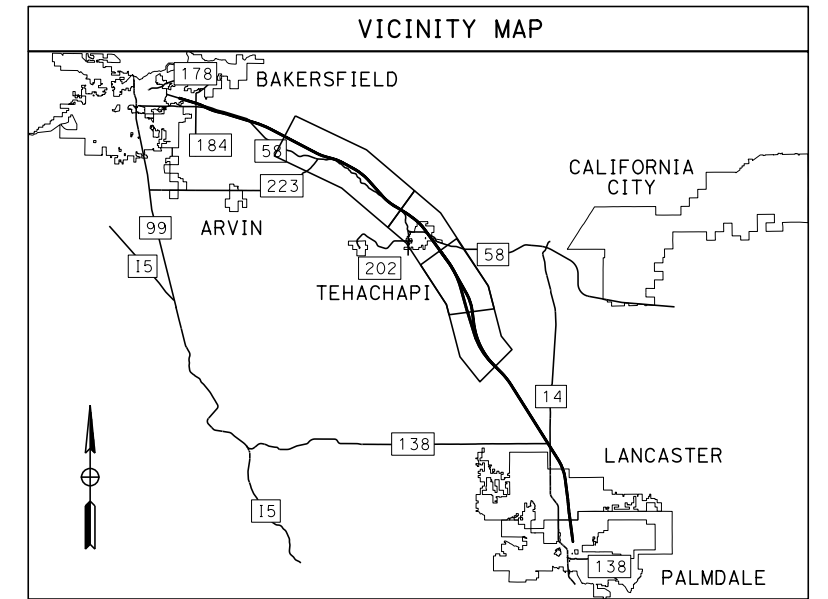
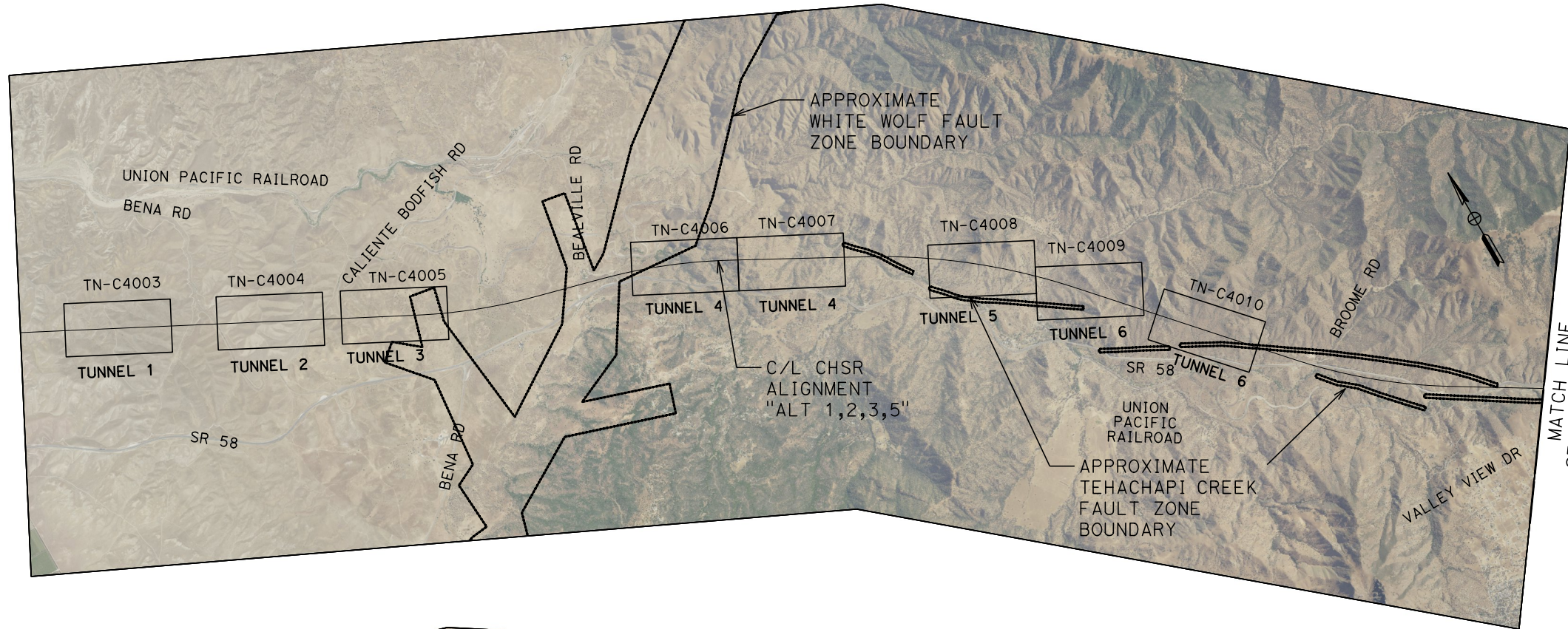
CONTRACT NO.
HSR13-44

DRAWING NO.
TT-B0006

SCALE
AS SHOWN

SHEET NO.
6

ALIGNMENT "ALTERNATIVES 1,2,3,5"



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

ALTERNATIVE 1, 2, 3, 5

TUNNELS KEY MAP
SHEET 1 OF 1

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B0007

SCALE
AS SHOWN

SHEET NO.
7

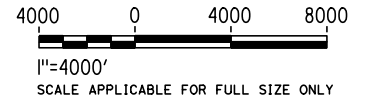
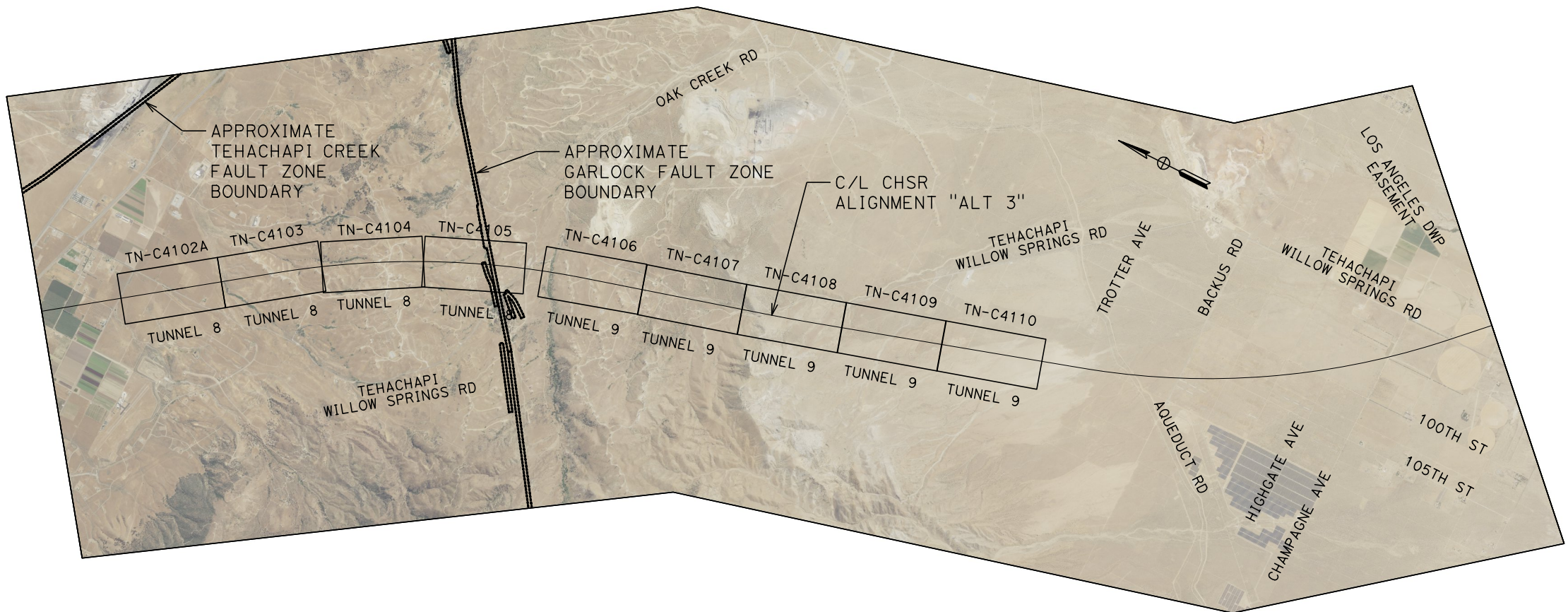
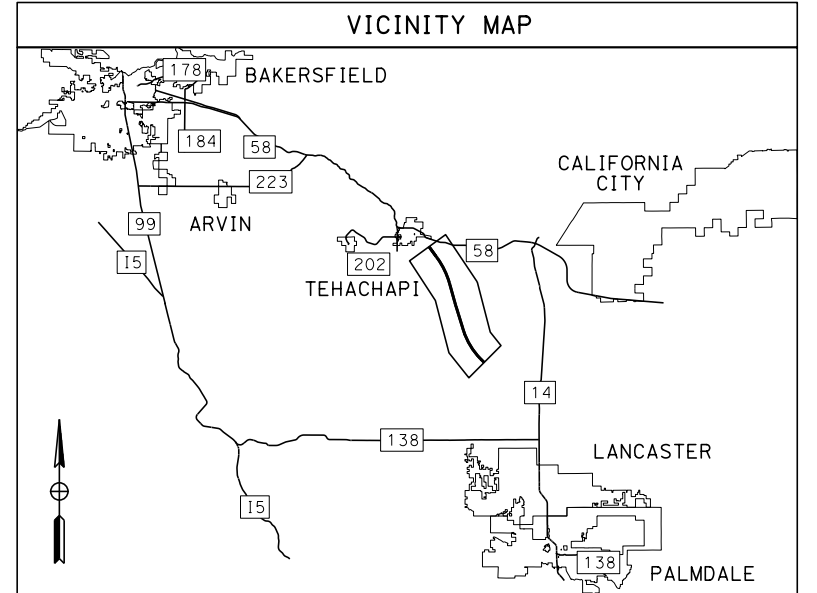
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ALIGNMENT "ALTERNATIVE 3"



REV	DATE	BY	CHK	APP	DESCRIPTION

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

TUNNELS KEY MAP
SHEET 1 OF 1

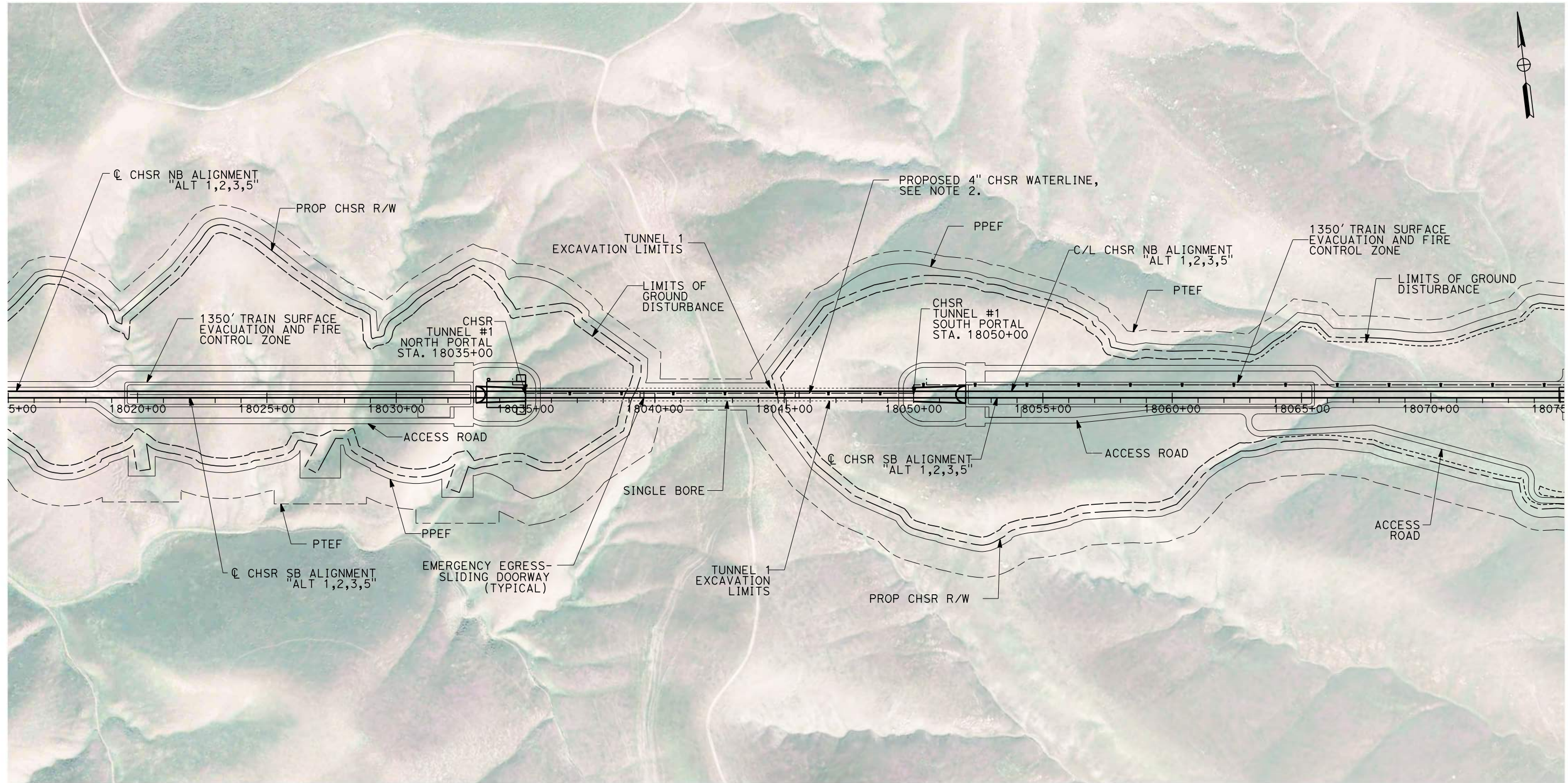
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SCALE
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SHEET NO.
8

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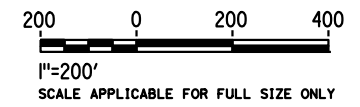
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GENERAL NOTES:

1. FOR PROFILE INFORMATION, SEE SHEET TN-Y1001.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN

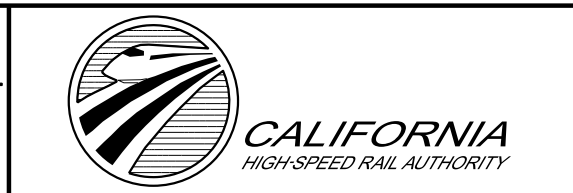


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**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALIGNMENT ALT 1, 2, 3, 5
TUNNEL 1
STATION 18015+00 TO 18075+00

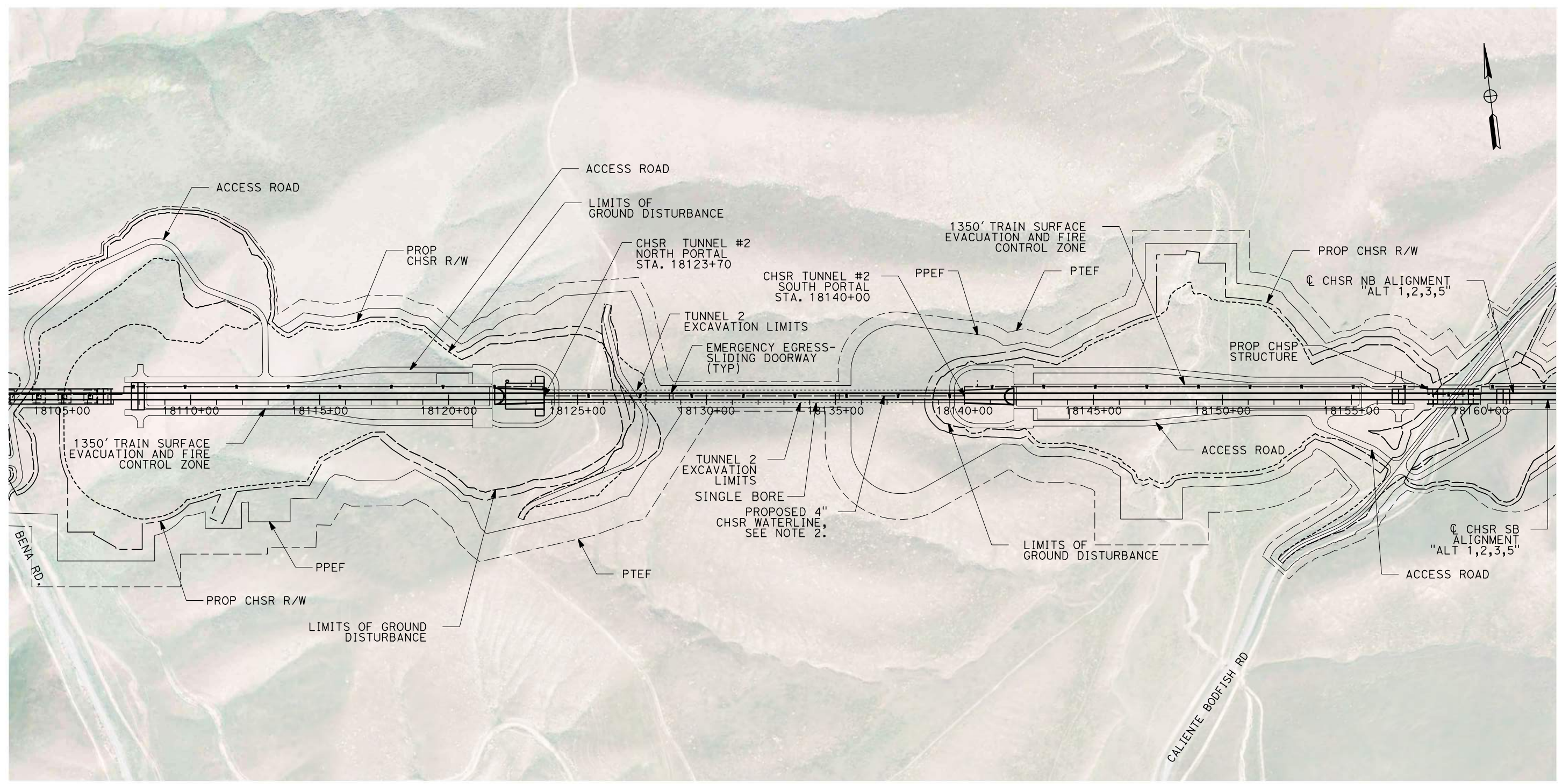
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9

Projects\701206_00_CHSRBP\00_CADD\Sheet_Files\TN\BP-TN-C4004

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1/27/2021

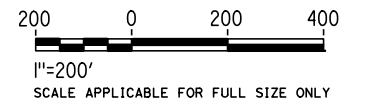
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GENERAL NOTES:

1. FOR PROFILE INFORMATION, SEE SHEET TN-Y1001.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



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

ALIGNMENT ALT 1, 2, 3, 5
TUNNEL 2
STATION 18103+00 TO 18163+00

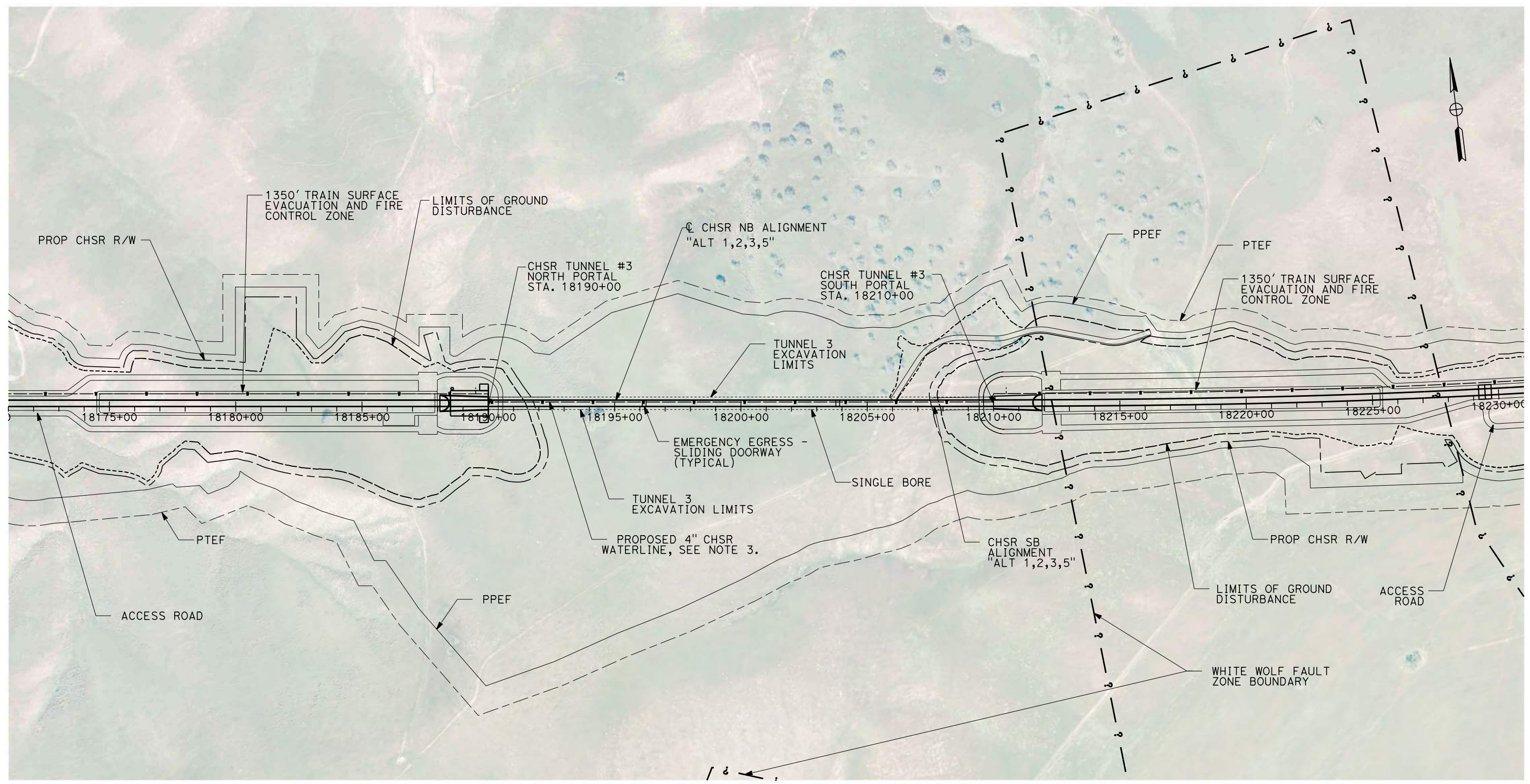
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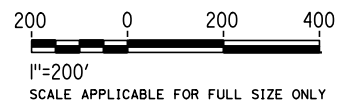
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GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1002.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 1, 2, 3, 5
TUNNEL 3
STATION 18171+00 TO 18231+00

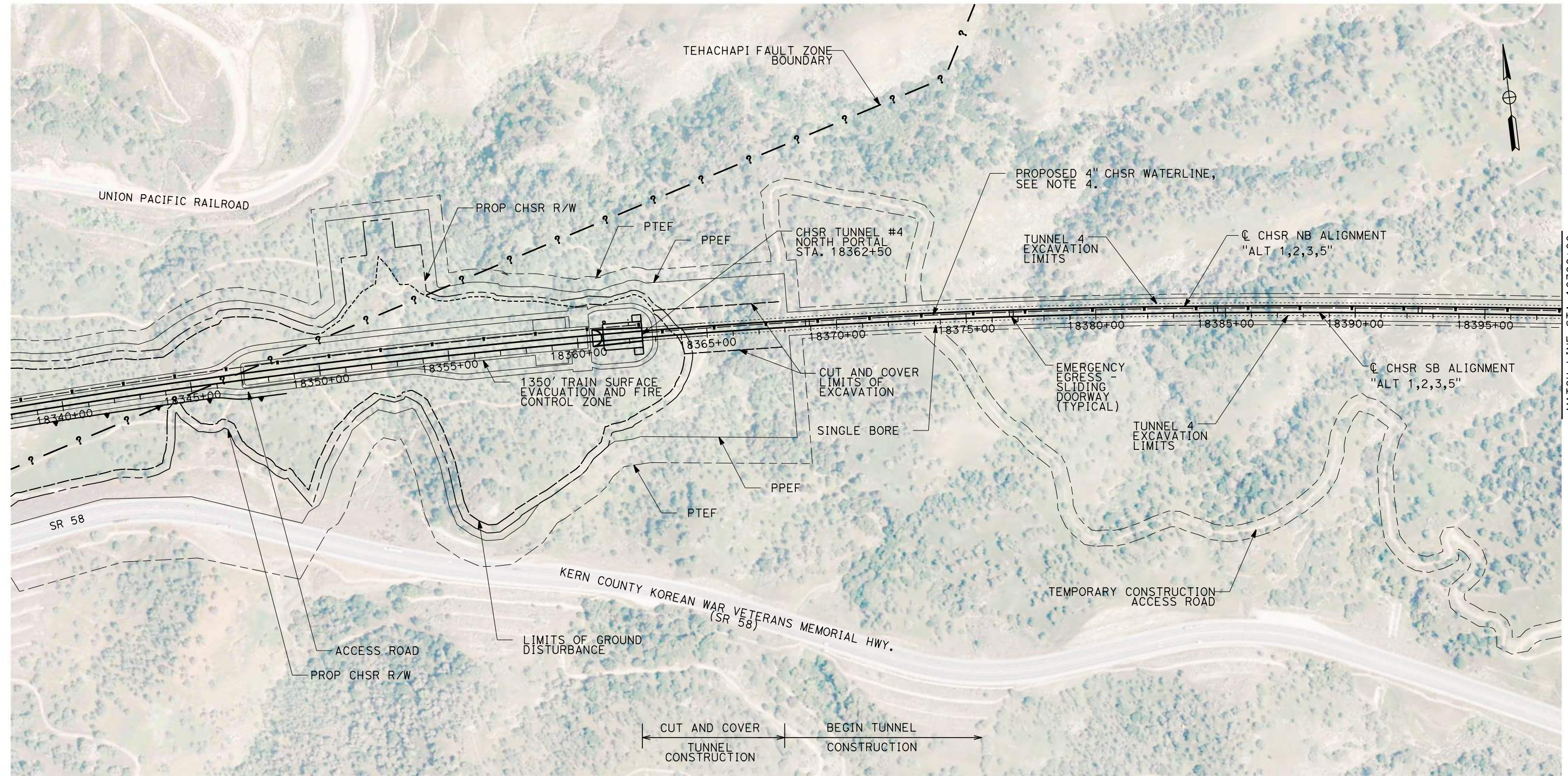
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1/27/2021

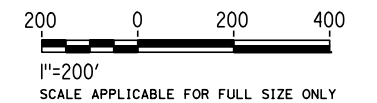
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GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEETS TN-Y1002, TN-Y1003.
3. TUNNEL 4 WILL BE CONSTRUCTED BY CUT AND COVER METHODS BETWEEN STATION 18362+50 TO 18368+00.
4. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
5. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

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

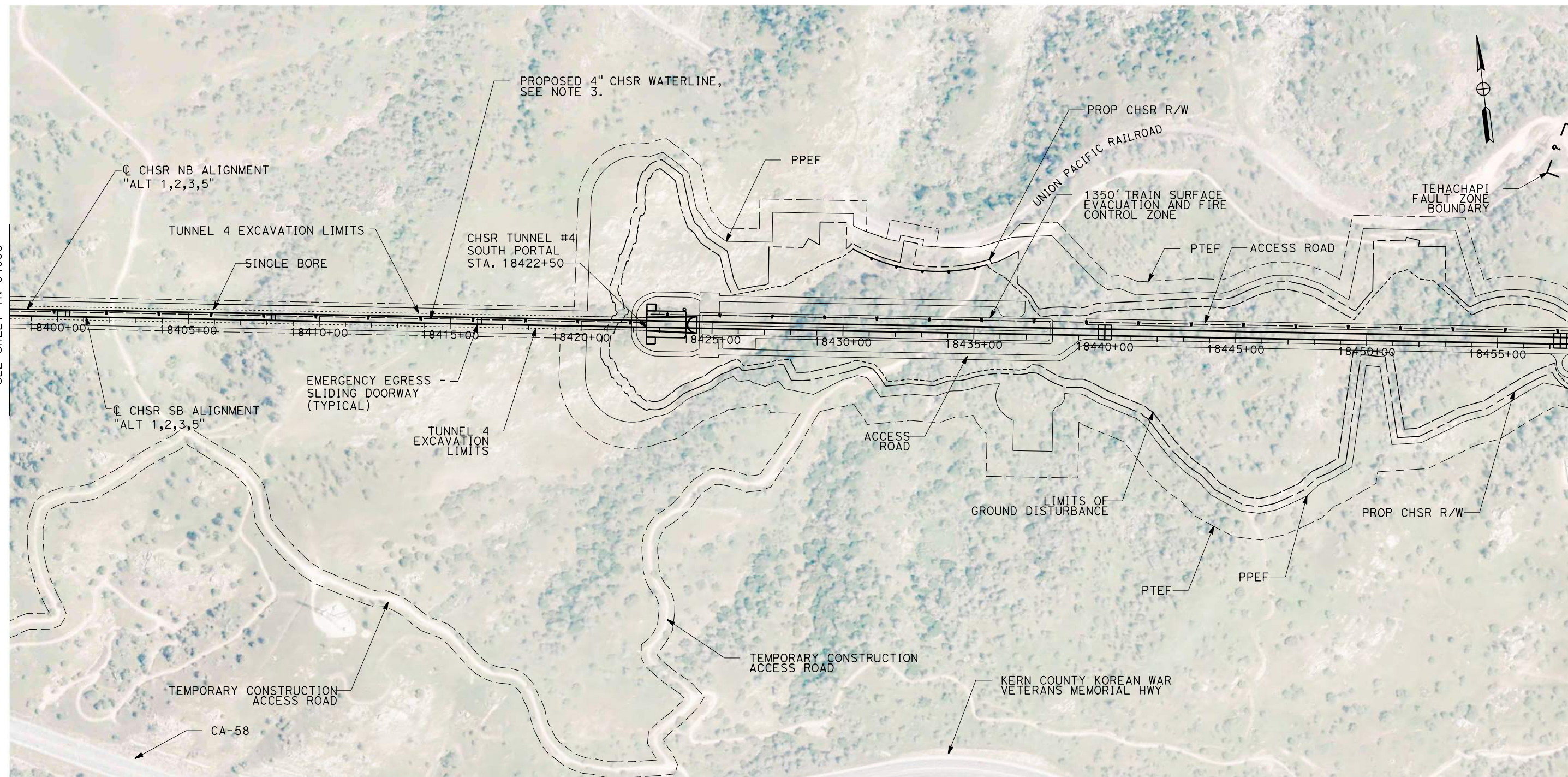
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TUNNEL 4
STATION 18338+00 TO 18398+00

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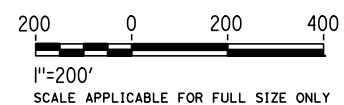
1/27/2021



GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1003.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
DRAWN BY K. BUNGER
CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

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PEPD
SUBMITTAL**

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CONSTRUCTION**

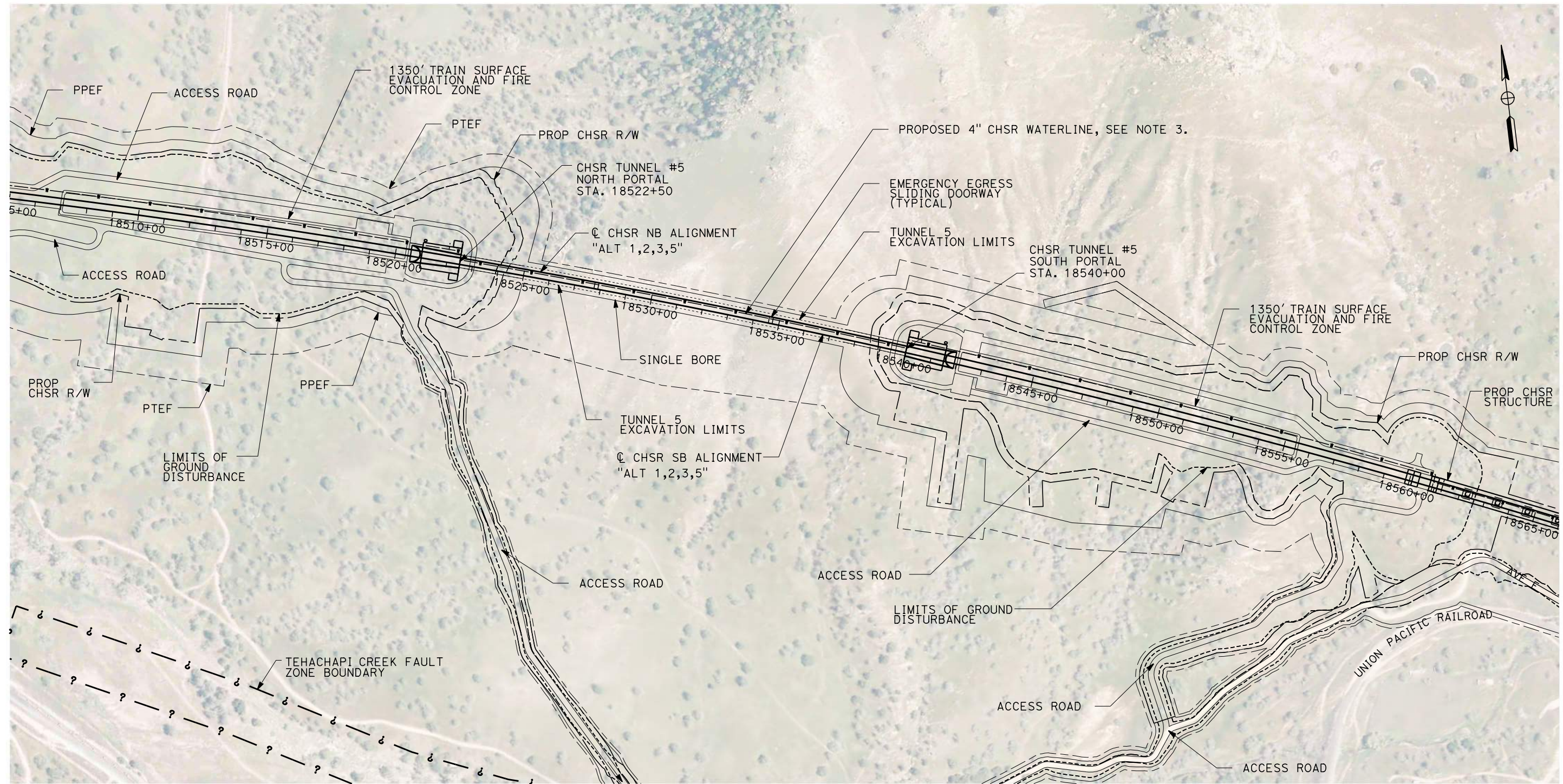


**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALIGNMENT ALT 1, 2, 3, 5
TUNNEL 4
STATION 18398+00 TO 18458+00

CONTRACT NO. HSR13-44
DRAWING NO. TN-C4007
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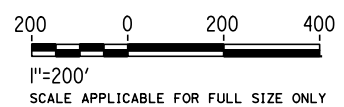
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GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1003.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDU
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

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 CONSTRUCTION**



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

ALIGNMENT ALT 1, 2, 3, 5
 TUNNEL 5
 STATION 18505+00 TO 18566+00

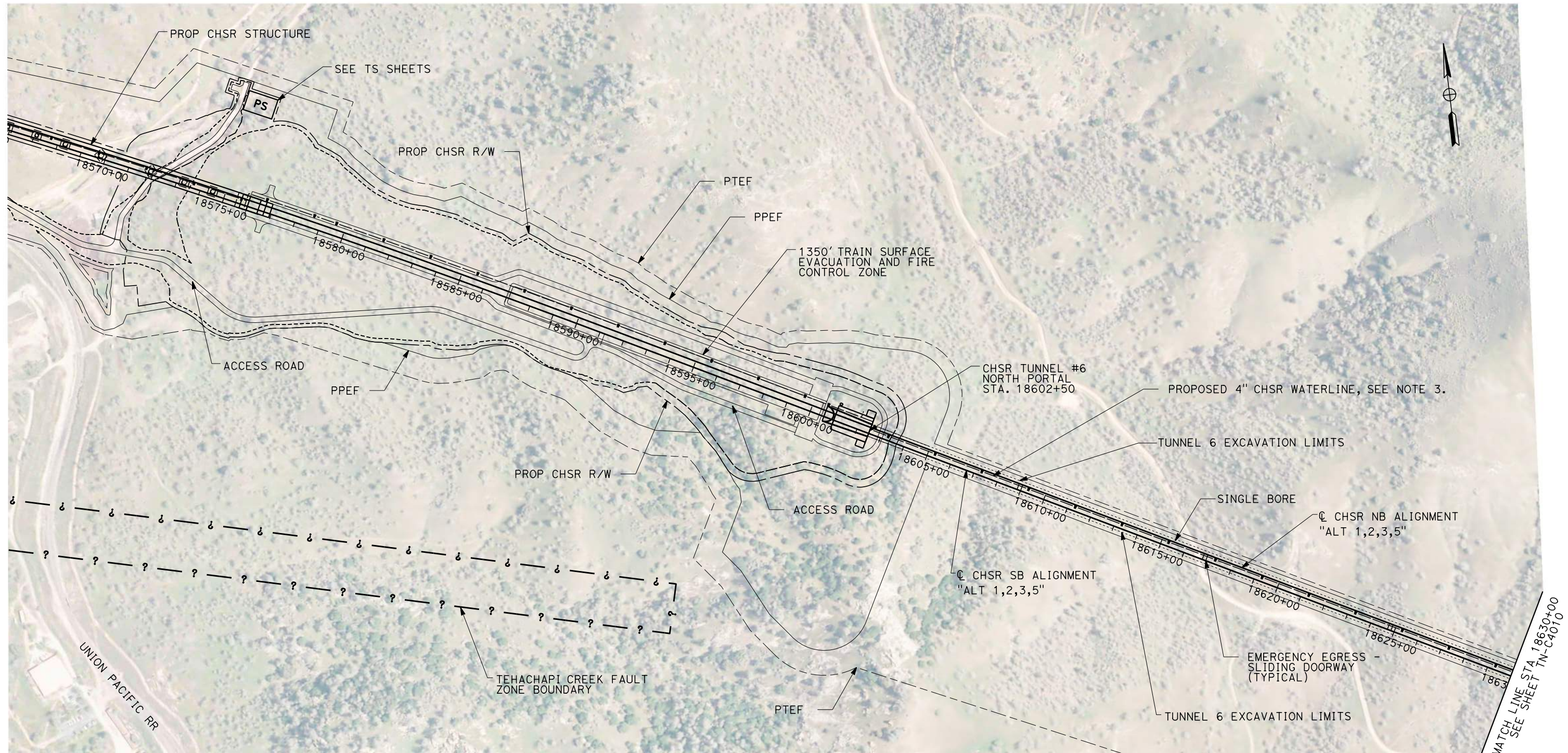
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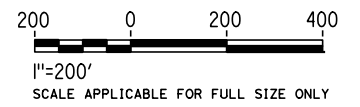
1/27/2021

jcs_user_17609



GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1004.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
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CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

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

ALIGNMENT ALT 1, 2, 3, 5
TUNNEL 6
STATION 18566+00 TO 18630+00

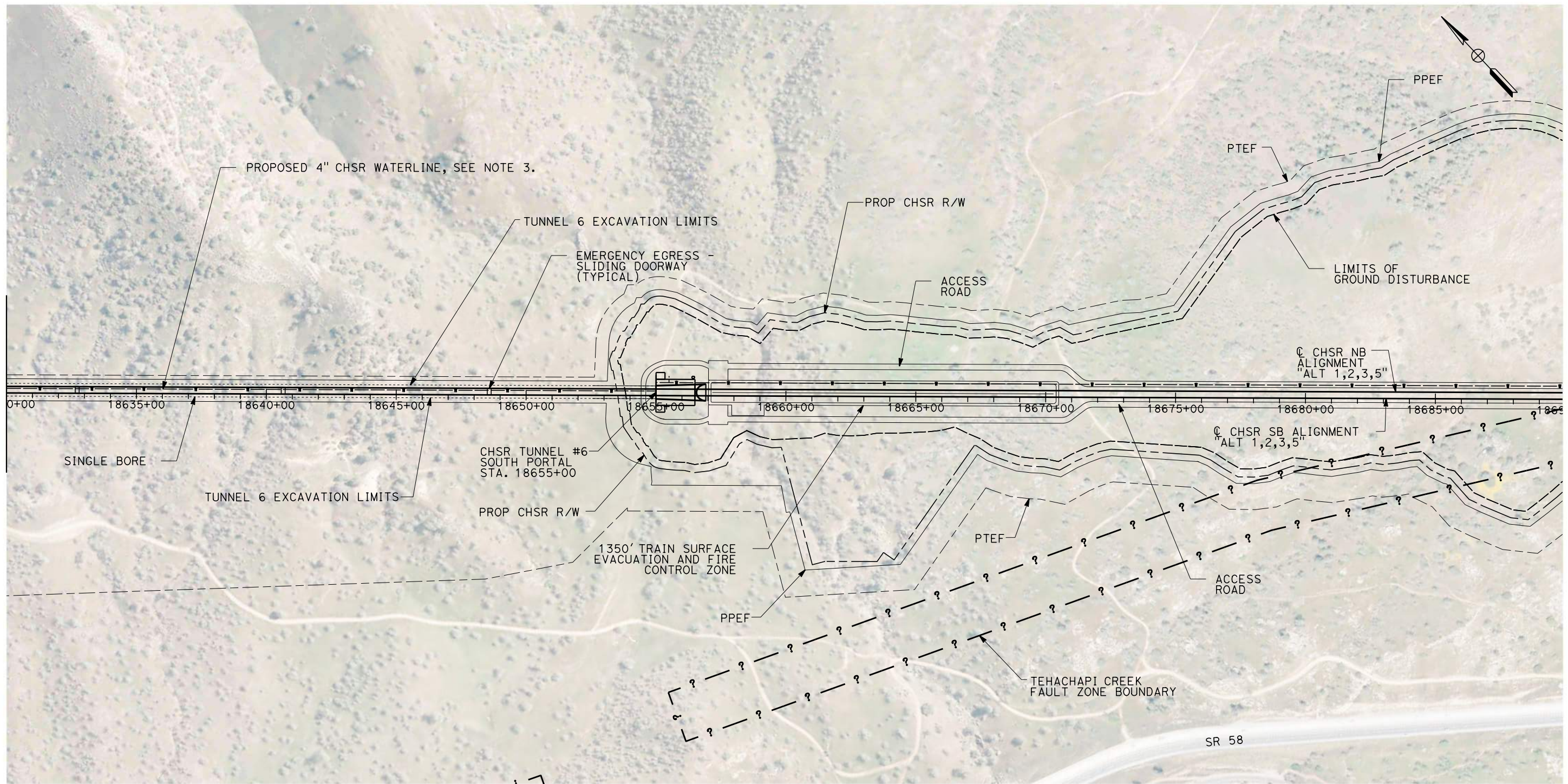
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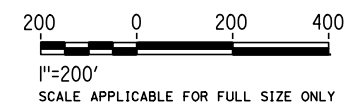
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GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1004.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
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DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
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**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALIGNMENT ALT 1, 2, 3, 5
TUNNEL 6
STATION 18630+00 TO 18690+00

CONTRACT NO.
HSR13-44

DRAWING NO.
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SCALE
AS SHOWN

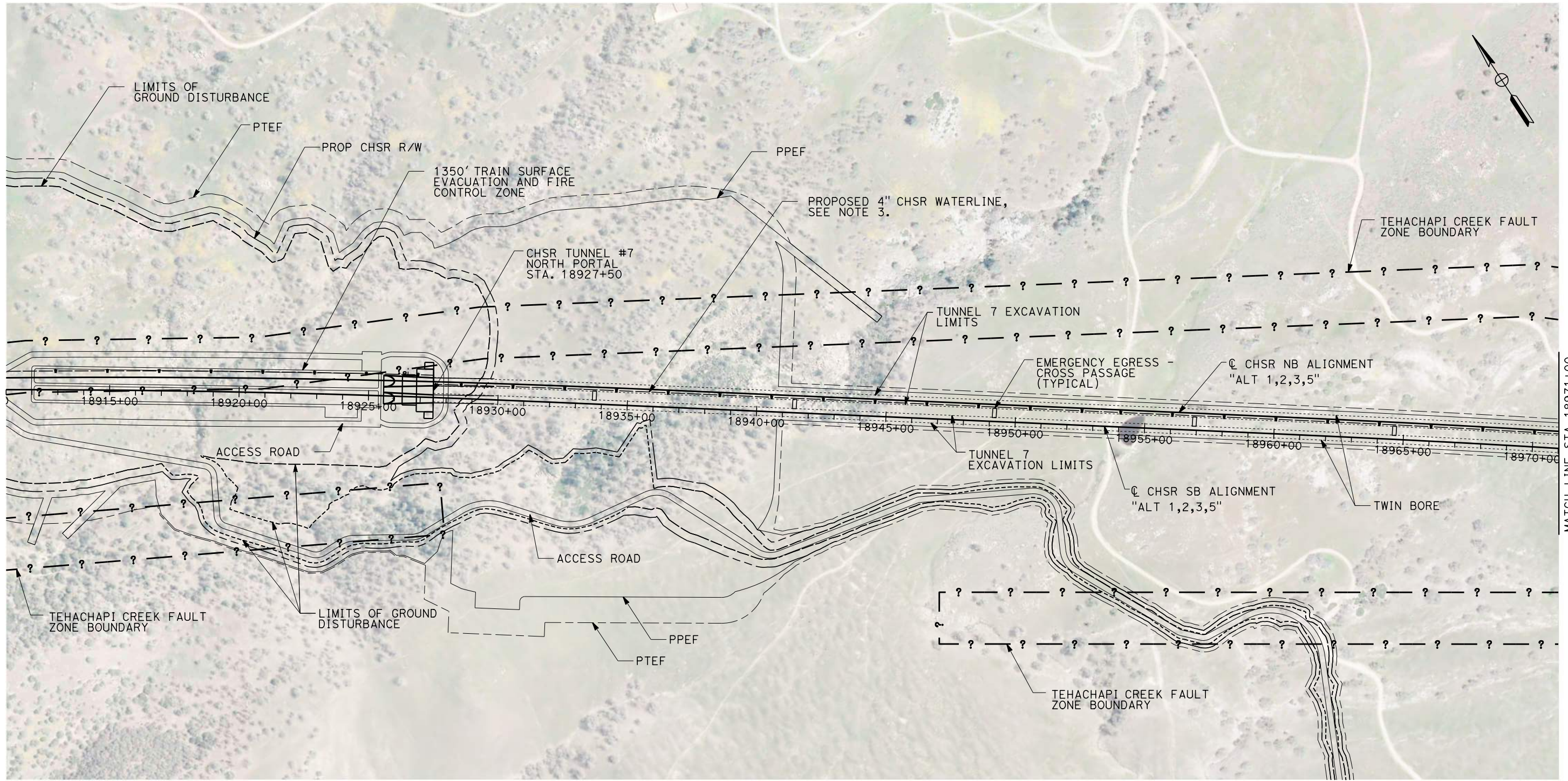
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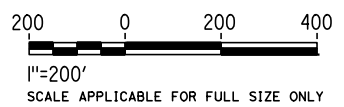


MATCH LINE STA 18971+00
SEE SHEET TN-C4012

GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1005.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

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

ALIGNMENT ALT 1, 2, 3, 5
TUNNEL 7
STATION 18911+00 TO 18971+00

CONTRACT NO.
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DRAWING NO.
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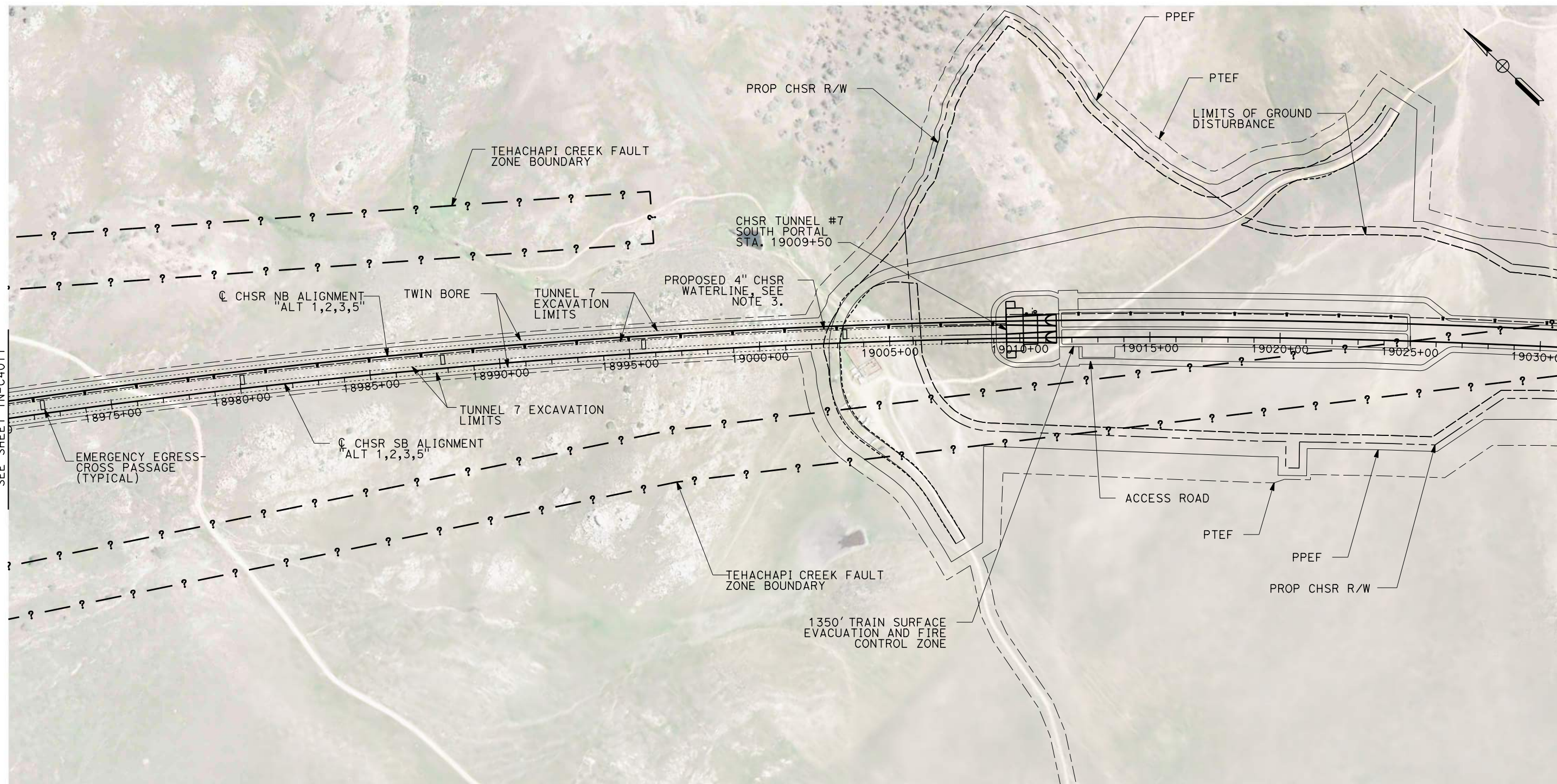
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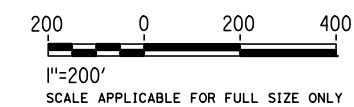
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GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1005.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
DRAWN BY K. BUNGER
CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

**RECORD SET
PEPD
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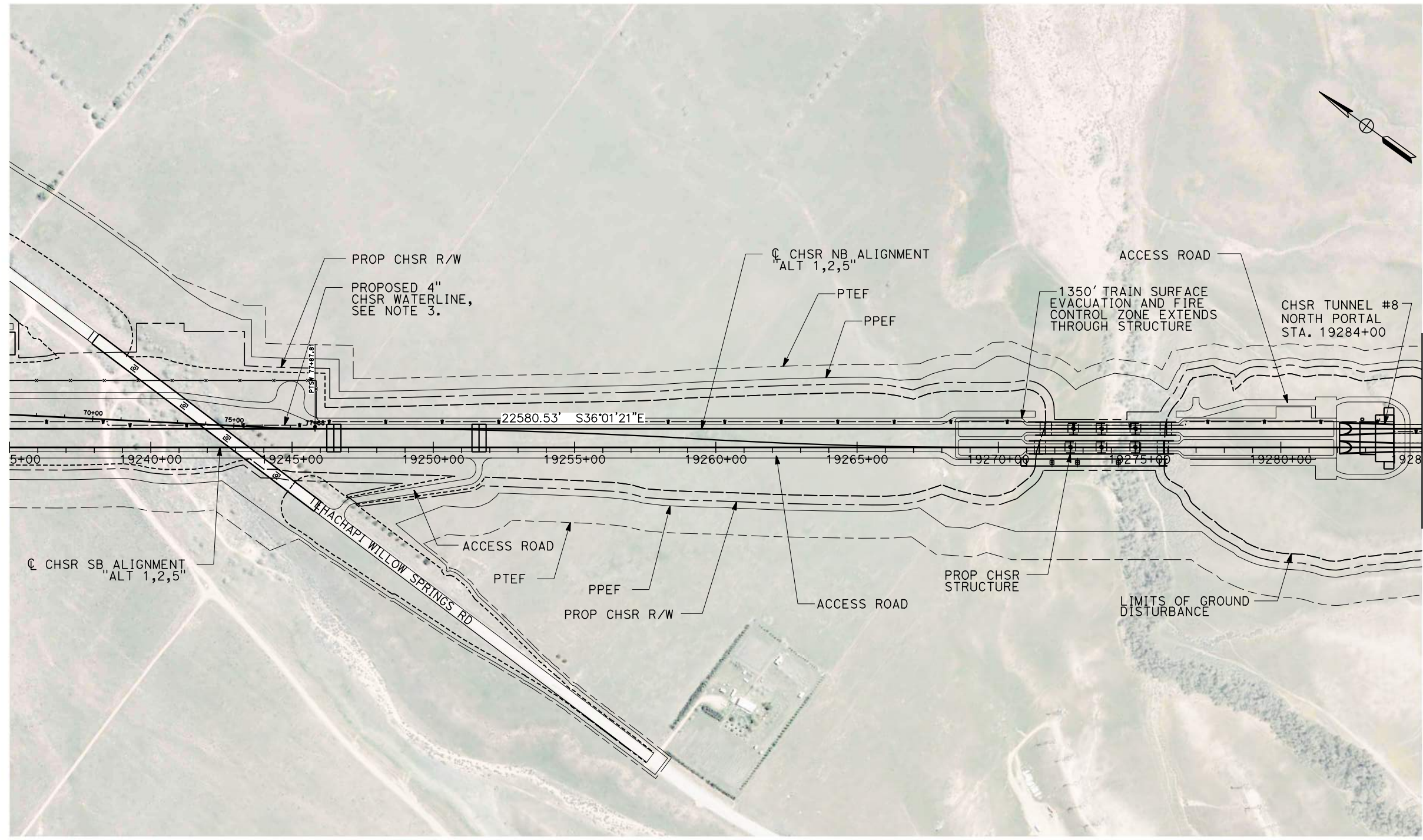
**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 1, 2, 3, 5
TUNNEL 7
STATION 18971+00 TO 19031+00

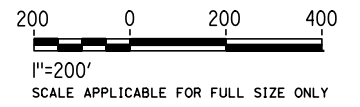
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MATCH LINE STA 19285+00
SEE SHEET TN-C4013

GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1005.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

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CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE

ALIGNMENT ALT 1, 2, 5
TUNNEL 8
STATION 19235+00 TO 19285+00

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-C4012A

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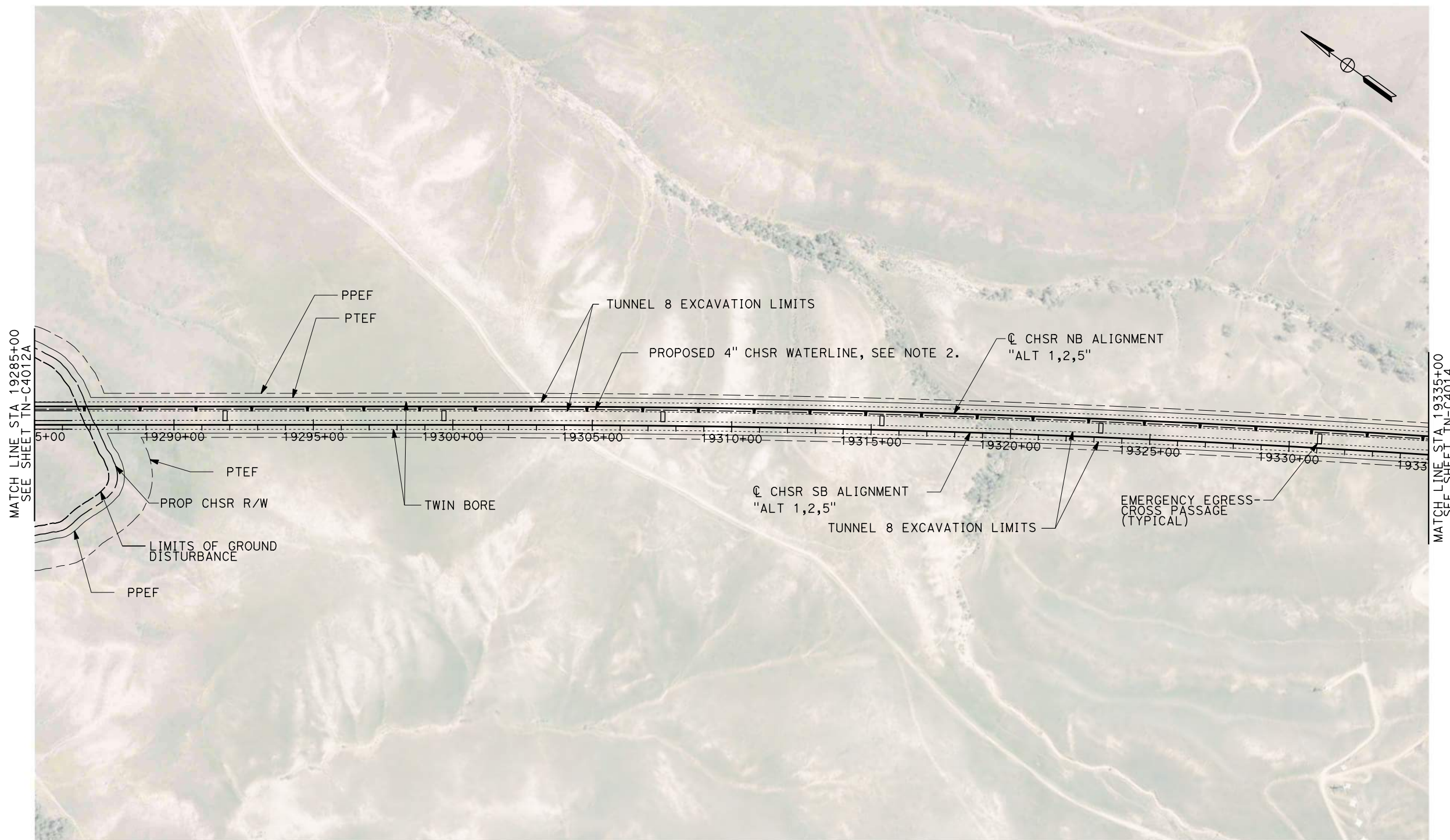
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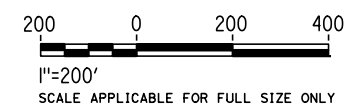
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jcs_user_17609



GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1006.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
DRAWN BY K. BUNGER
CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

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

ALIGNMENT ALT 1, 2, 5
TUNNEL 8
STATION 19285+00 TO 19335+00

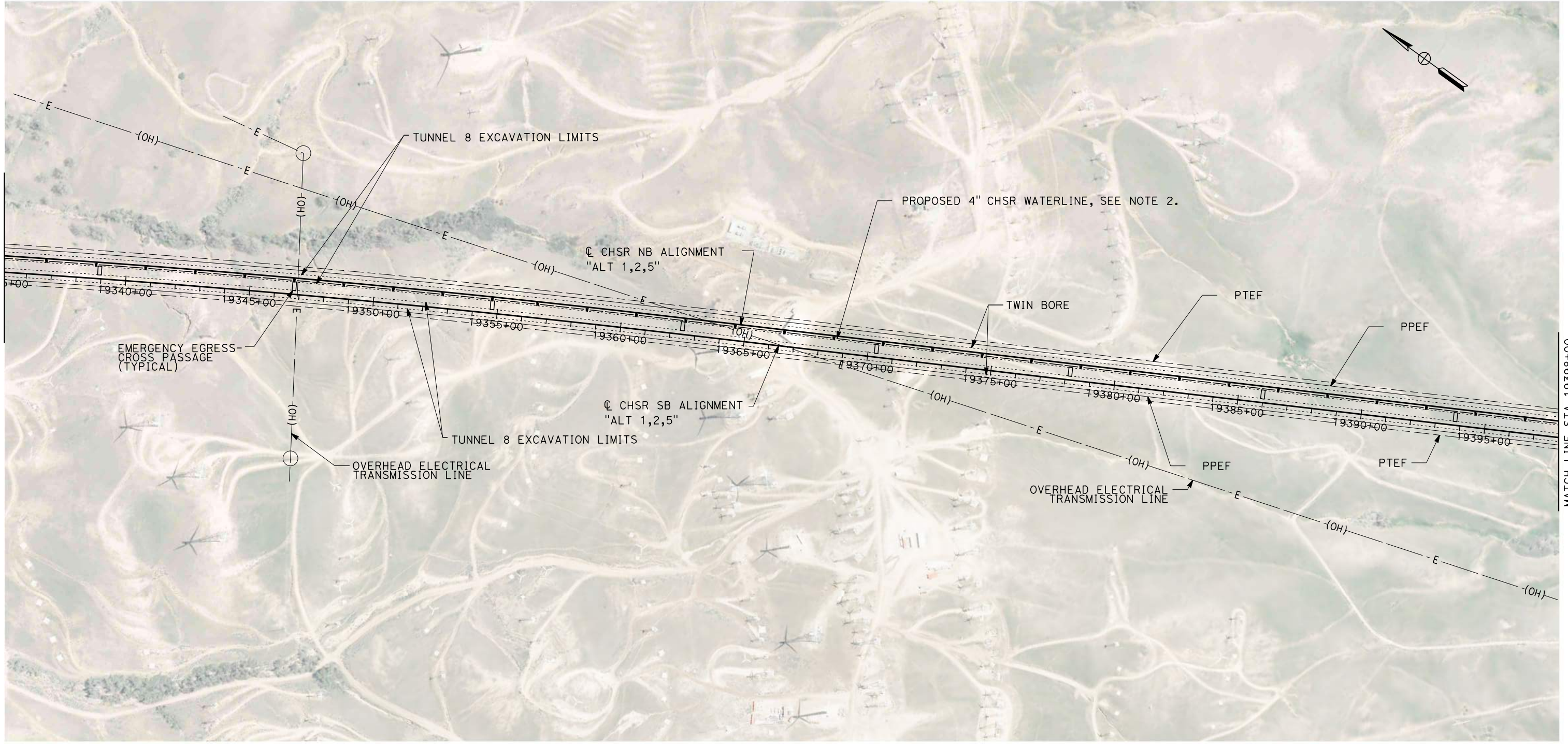
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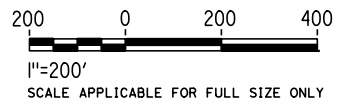
1/27/2021

ics_user_17609



GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEETS TN-Y1006 AND TN-Y1007.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

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CONSTRUCTION**



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

ALIGNMENT ALT 1, 2, 5
TUNNEL 8
STATION 19335+00 TO 19398+00

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-C4014

SCALE
AS SHOWN

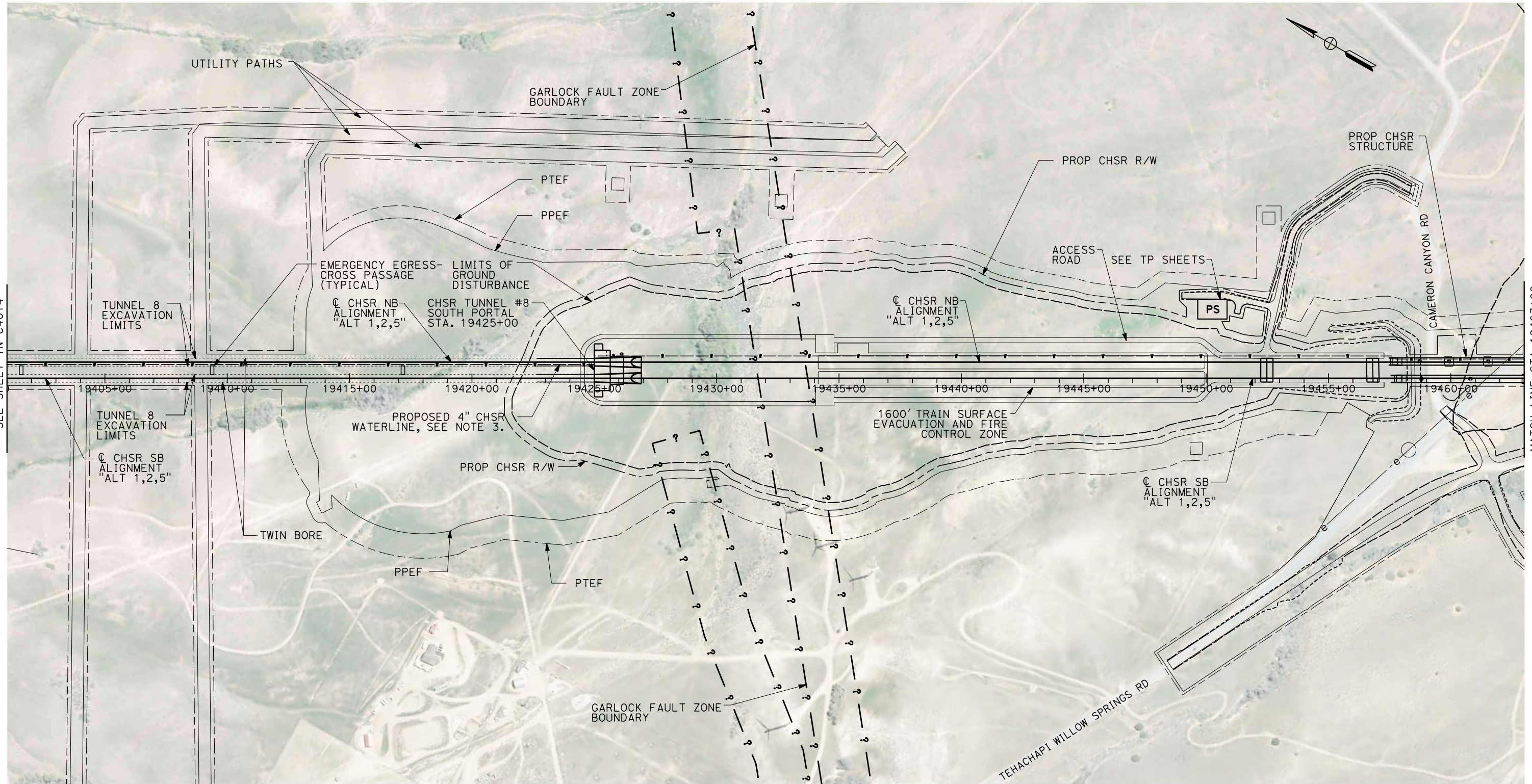
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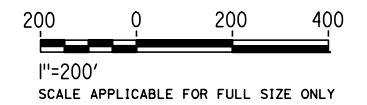
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GENERAL NOTES:

1. FAULT ZONE LOCATIONS ARE APPROXIMATE, TO BE CONFIRMED.
2. FOR PROFILE INFORMATION SEE SHEET TN-Y1007.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
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CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

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

ALIGNMENT ALT 1, 2, 5
TUNNEL 8
STATION 19398+00 TO 19463+00

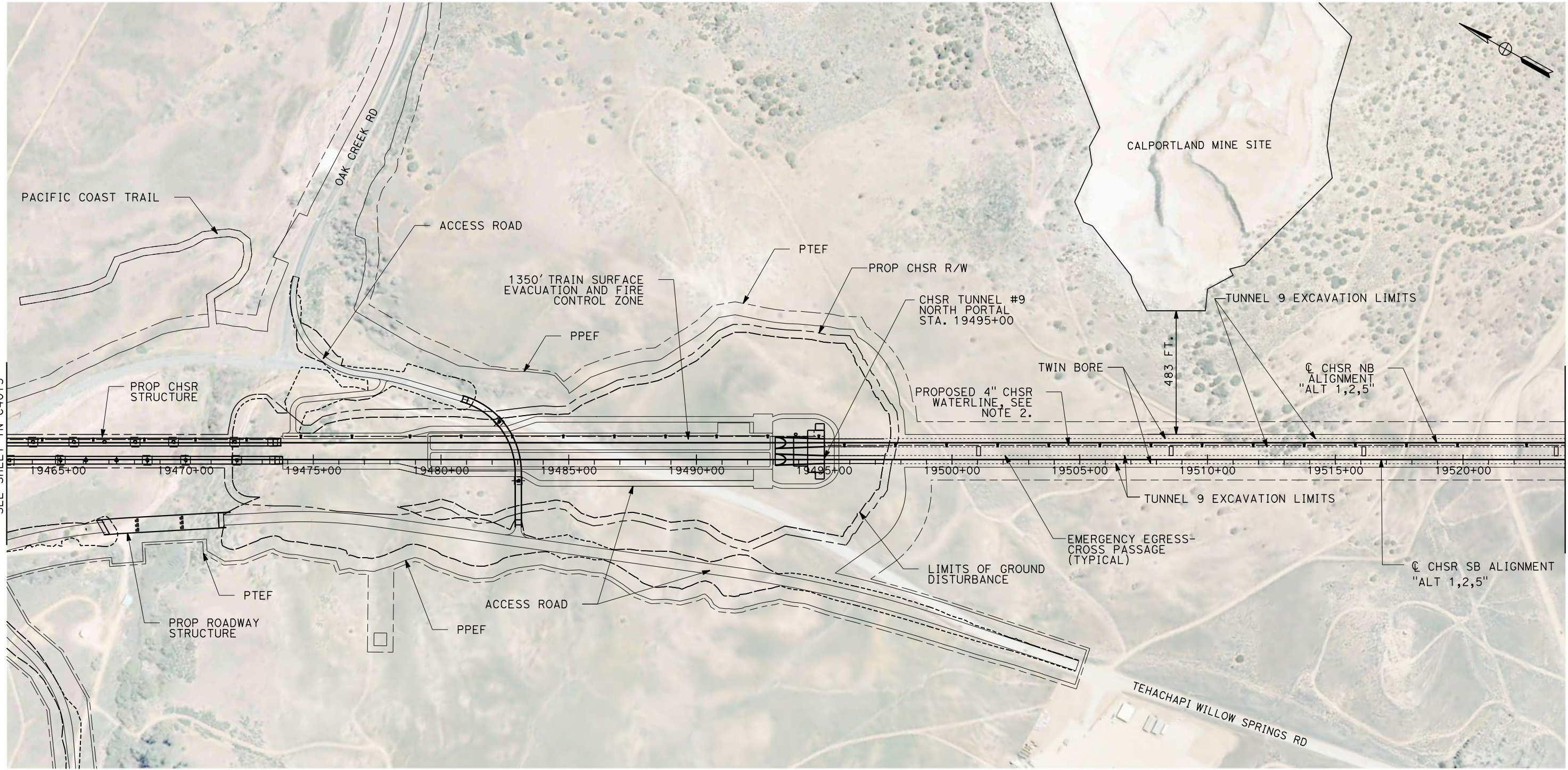
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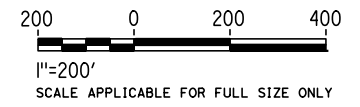
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GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEETS TN-Y1007 AND TN-Y1008.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
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CONSTRUCTION**



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

ALIGNMENT ALT 1, 2, 5
TUNNEL 9
STATION 19463+00 TO 19524+00

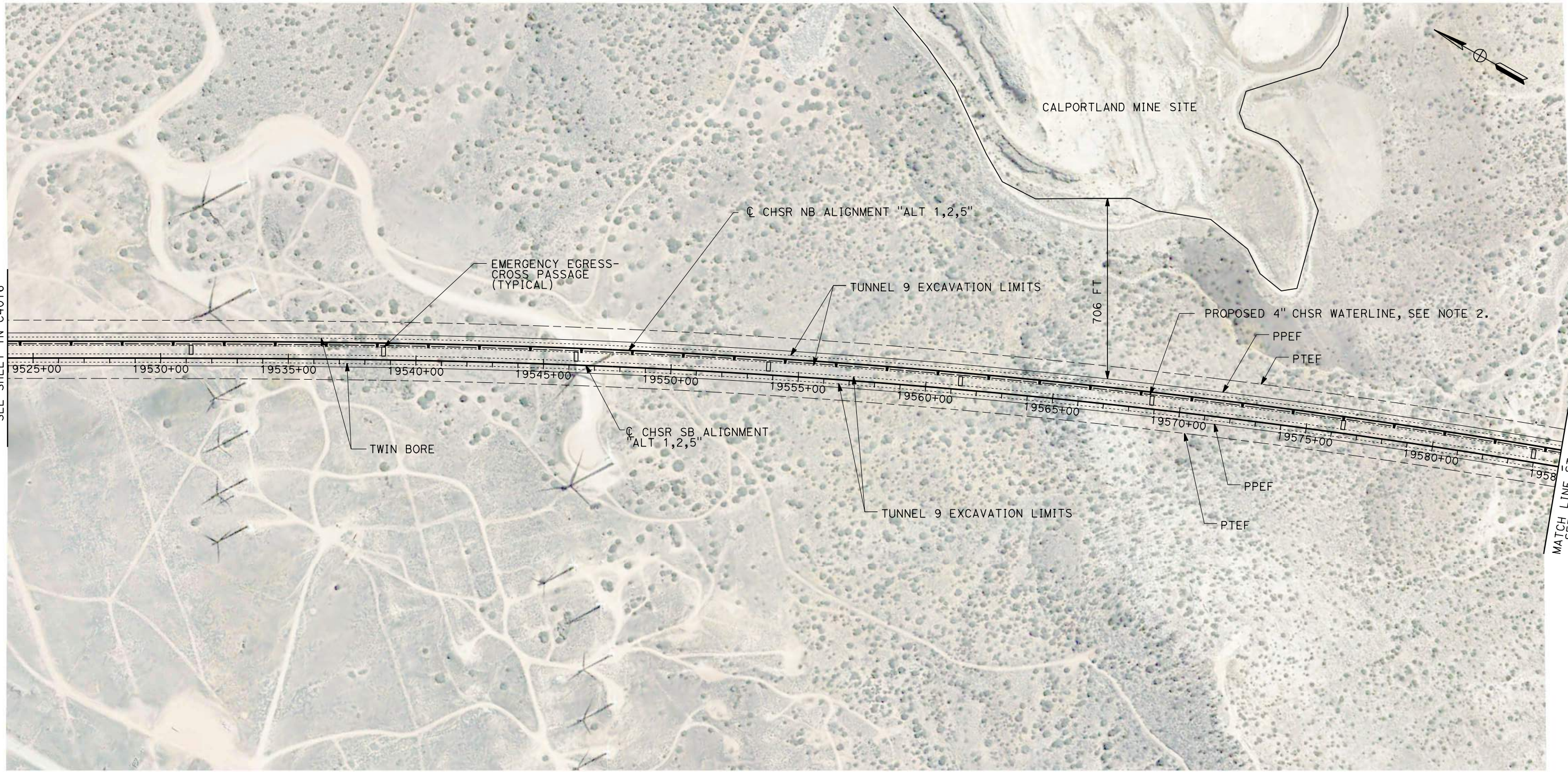
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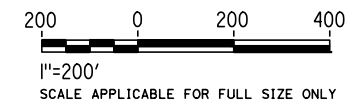
MATCH LINE STA 19524+00
SEE SHEET TN-C4016

MATCH LINE STA 19585+00
SEE SHEET TN-C4018

GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1008.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 1, 2, 5
TUNNEL 9
STATION 19524+00 TO 19585+00

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-C4017

SCALE
AS SHOWN

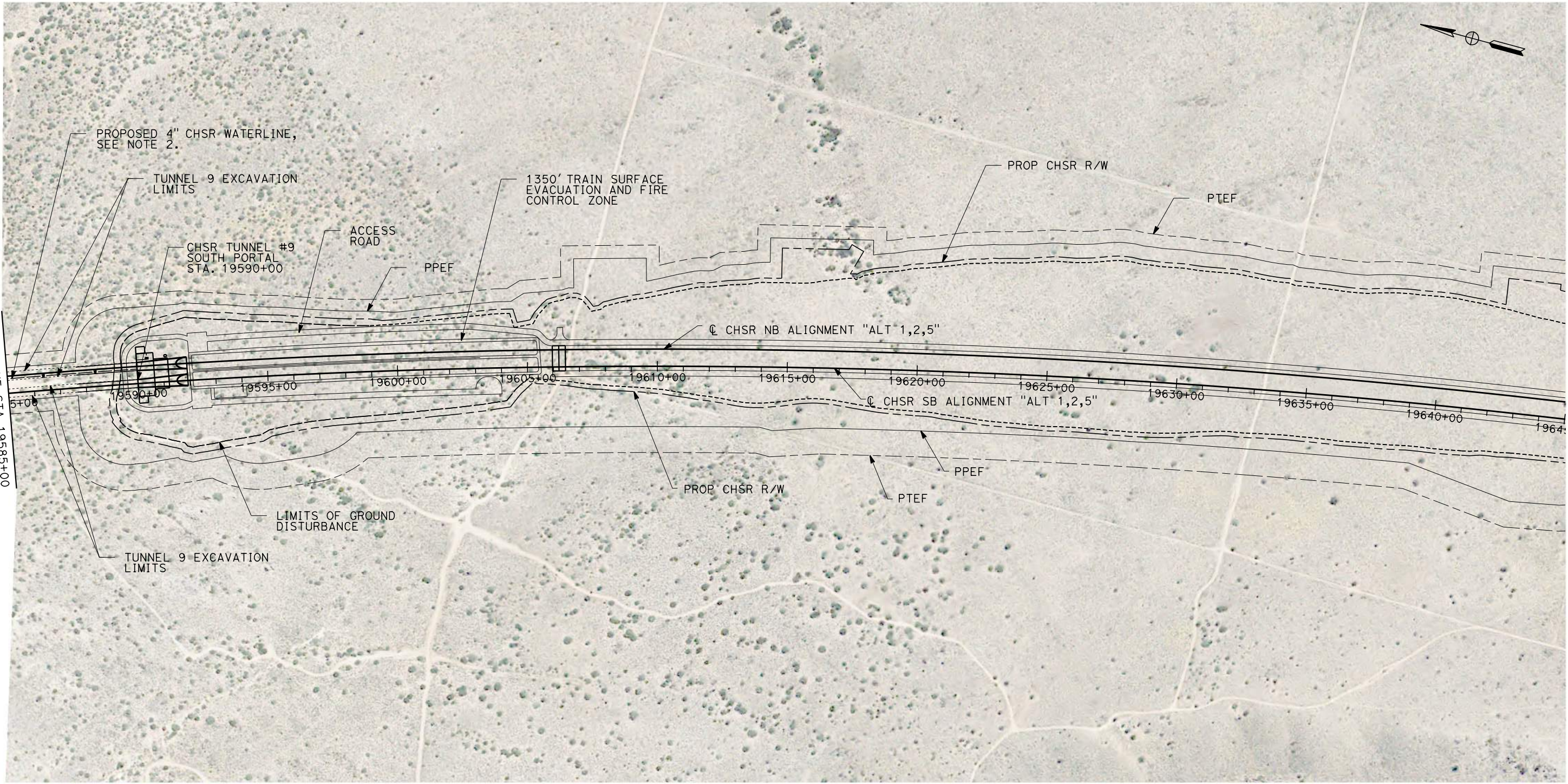
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1/27/2021

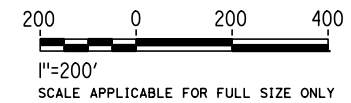
jcs_user_17609



GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1008.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 1, 2, 5
TUNNEL 9
STATION 19585+00 TO 19645+00

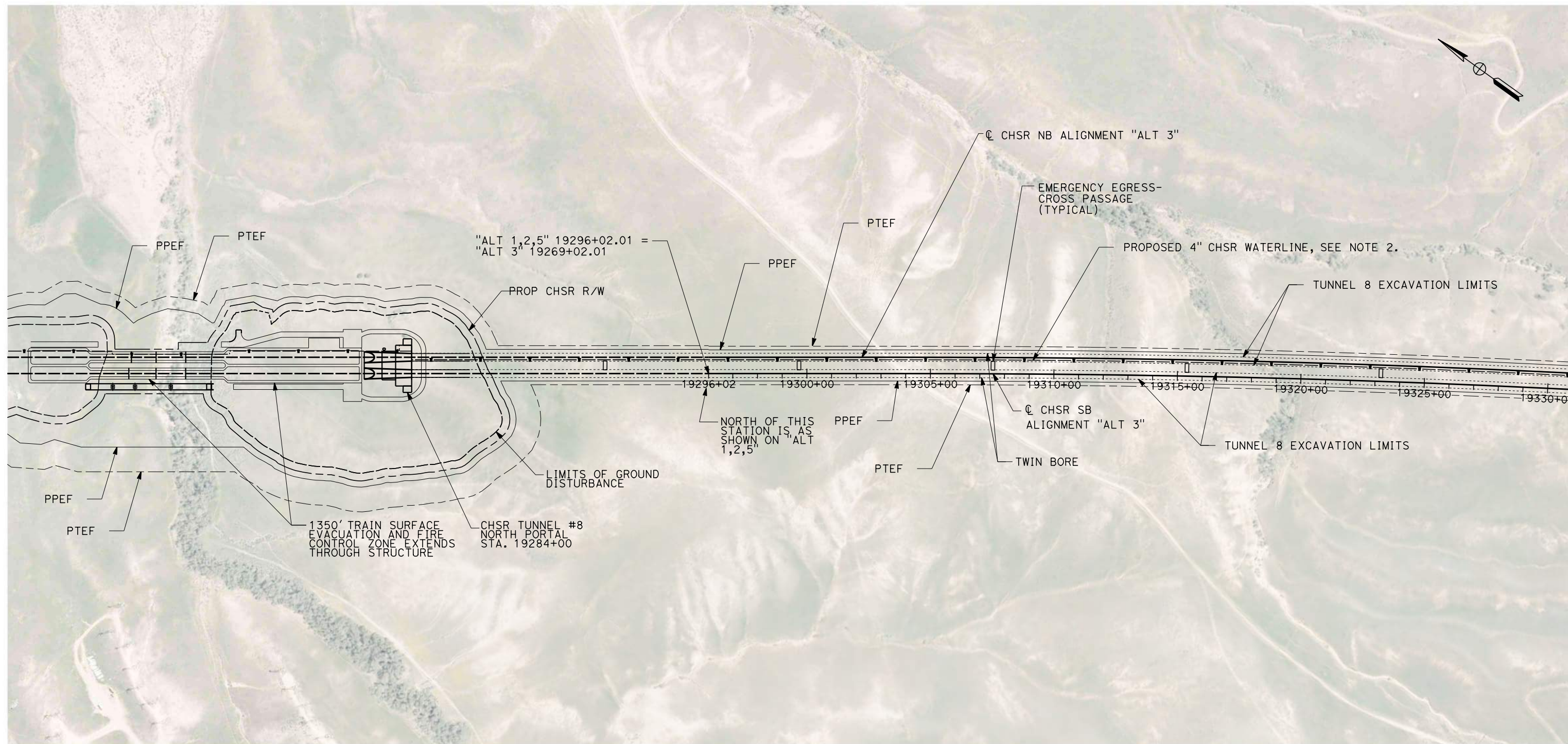
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DRAWING NO.
TN-C4018
SCALE
AS SHOWN
SHEET NO.
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1/27/2021

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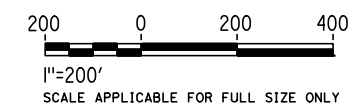


MATCH LINE STA. 19331+00
SEE SHEET TN-C4104

GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1101.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
DRAWN BY K. BUNGER
CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 3
TUNNEL 8
STATION 19268+00 TO 19331+00

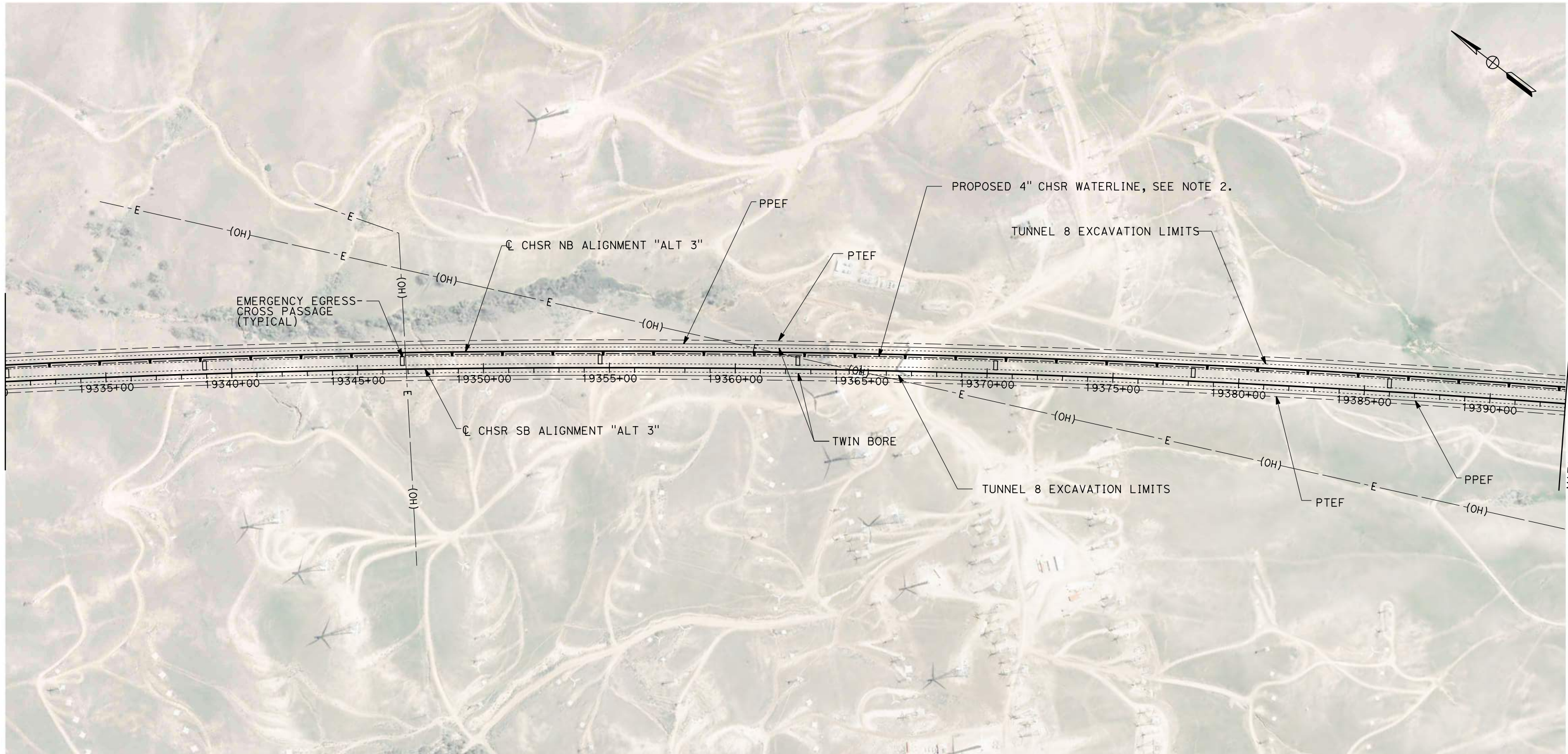
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SCALE AS SHOWN
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1/27/2021

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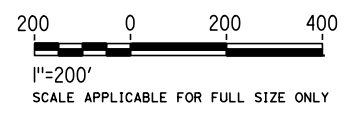
MATCH LINE STA 19331+00
SEE SHEET TN-C4103

MATCH LINE STA 19393+00
SEE SHEET TN-C4105

GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEETS TN-Y1101 AND TN-Y1102.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**

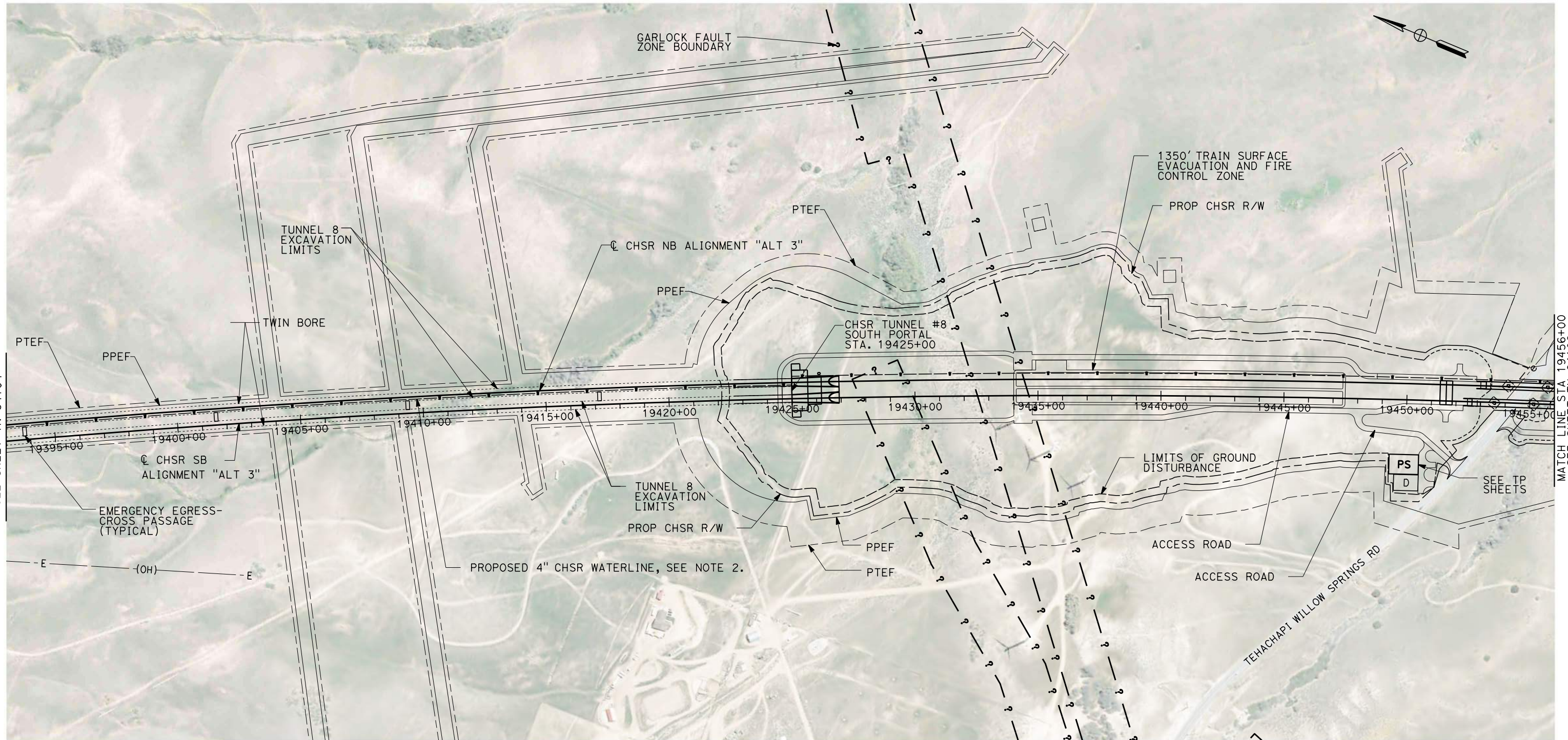


**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALIGNMENT ALT 3
TUNNEL 8
STATION 19331+00 TO 19393+00

CONTRACT NO.
HSR13-44
DRAWING NO.
TN-C4104
SCALE
AS SHOWN
SHEET NO.
27

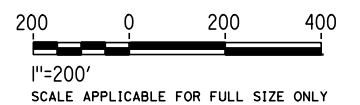
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 1/27/2021
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GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1102.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
DRAWN BY K. BUNGER
CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

**RECORD SET
 PEPD
 SUBMITTAL**

**NOT FOR
 CONSTRUCTION**

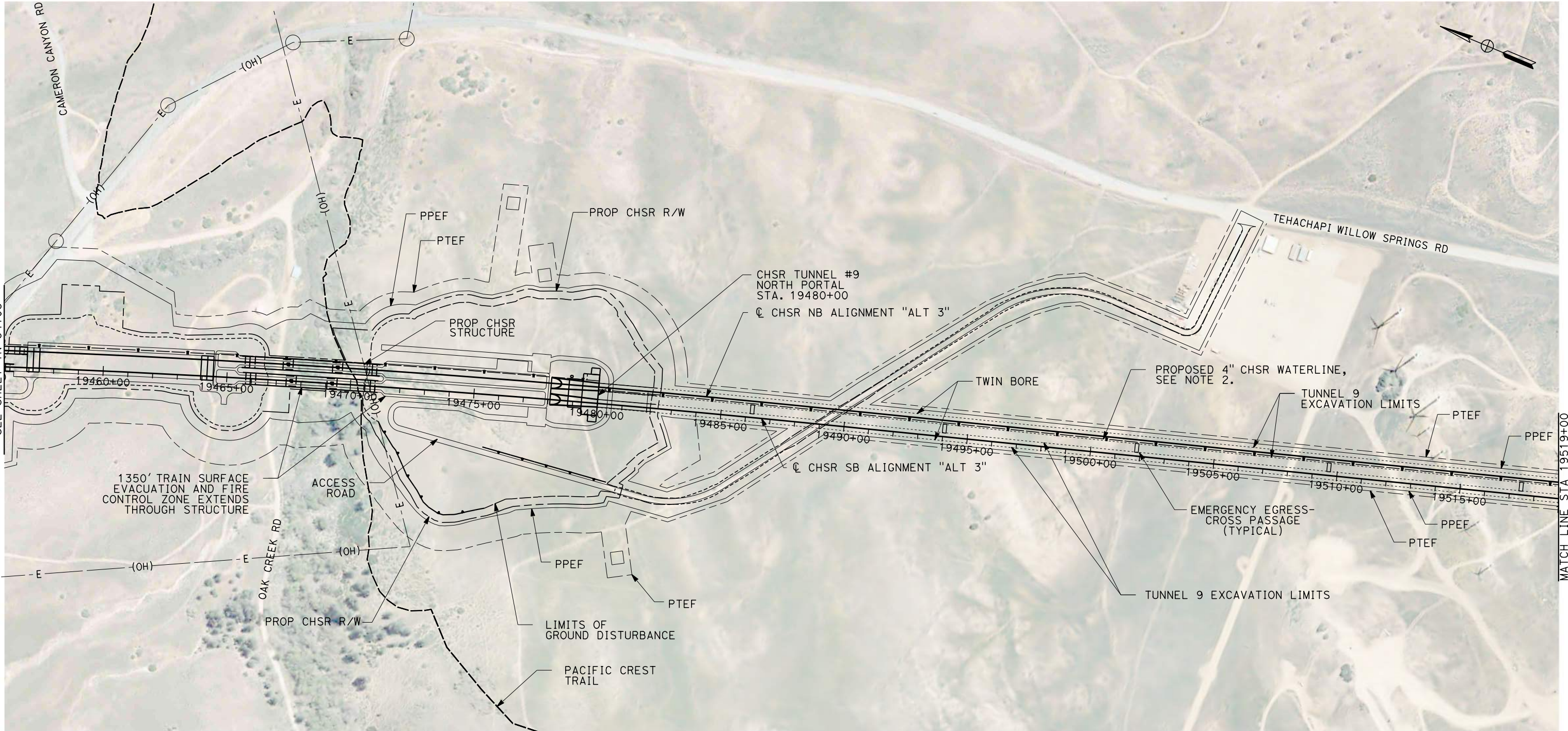


**CALIFORNIA HIGH-SPEED RAIL PROJECT
 BAKERSFIELD TO PALMDALE**

ALIGNMENT ALT 3
 TUNNEL 8
 STATION 19393+00 TO 19456+00

CONTRACT NO. HSR13-44
DRAWING NO. TN-C4105
SCALE AS SHOWN
SHEET NO. 28

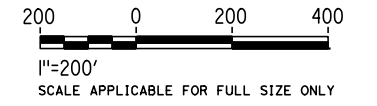
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GENERAL NOTES:

- FOR PROFILE INFORMATION SEE SHEET TN-Y1102.
- PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
- PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDU
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

NOT FOR
CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE

 ALIGNMENT ALT 3
 TUNNEL 9
 STATION 19456+00 TO 19519+00

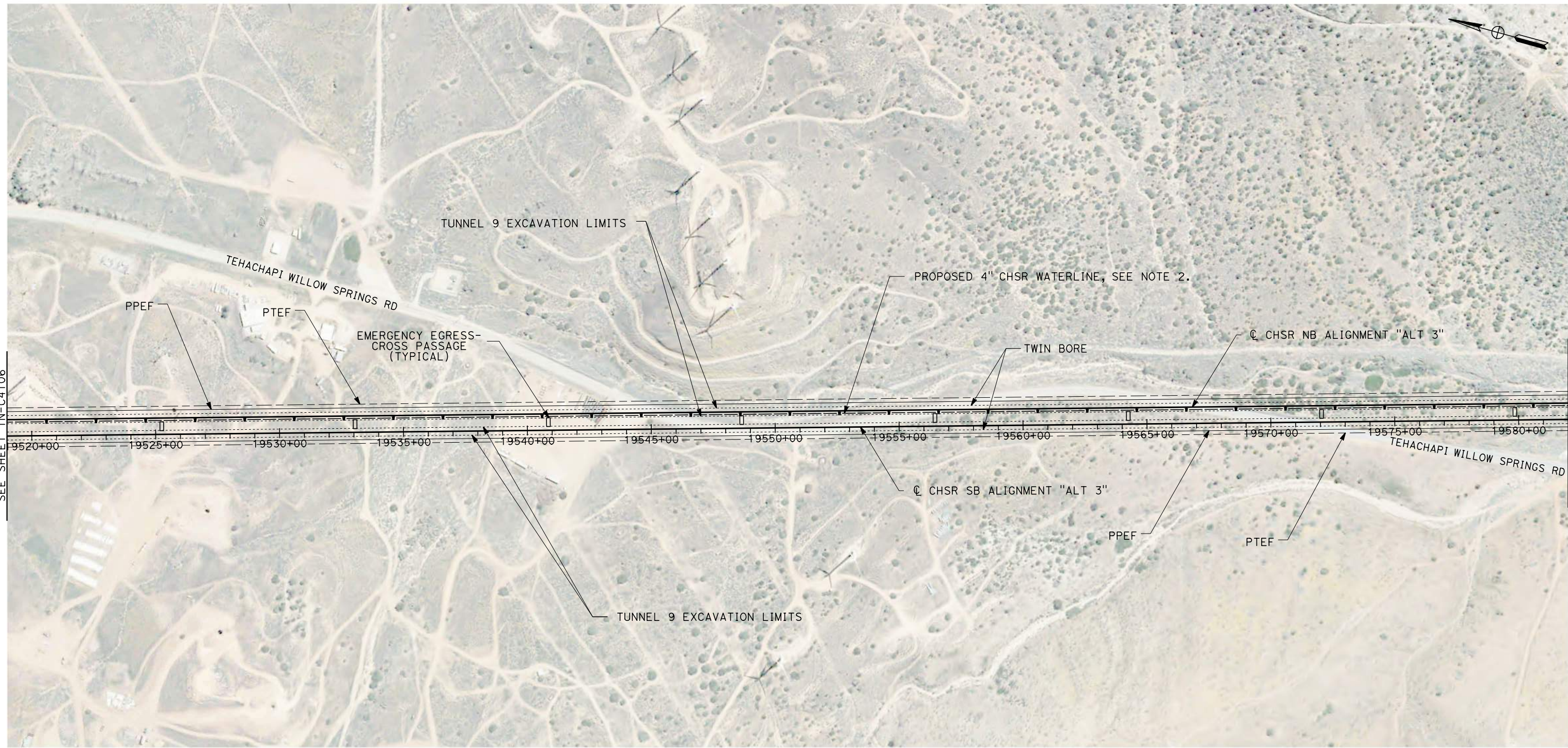
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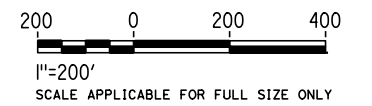
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GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1103.
2. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
3. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN

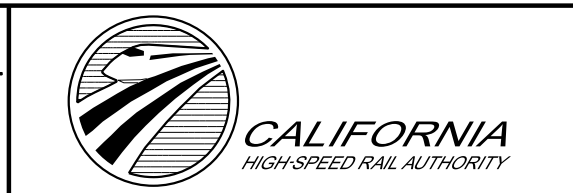


REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
DRAWN BY K. BUNGER
CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 3
TUNNEL 9
STATION 19519+00 TO 19582+00

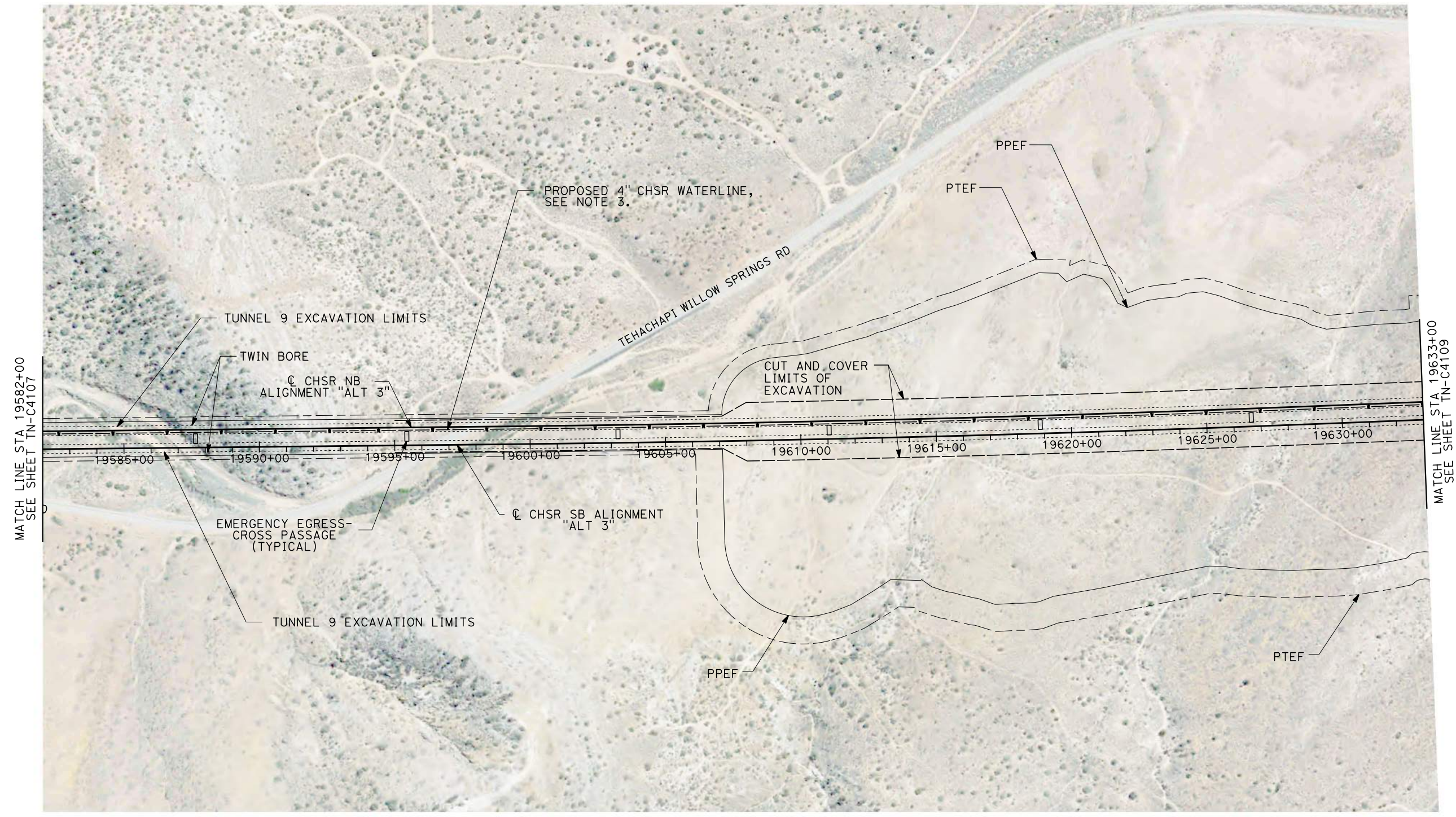
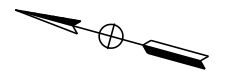
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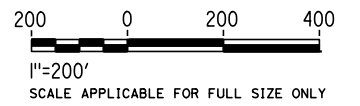
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GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1104.
2. THE TUNNEL WILL BE EXCAVATED BY CUT AND COVER METHODS BETWEEN STATION 19594+00 TO 19687+50.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

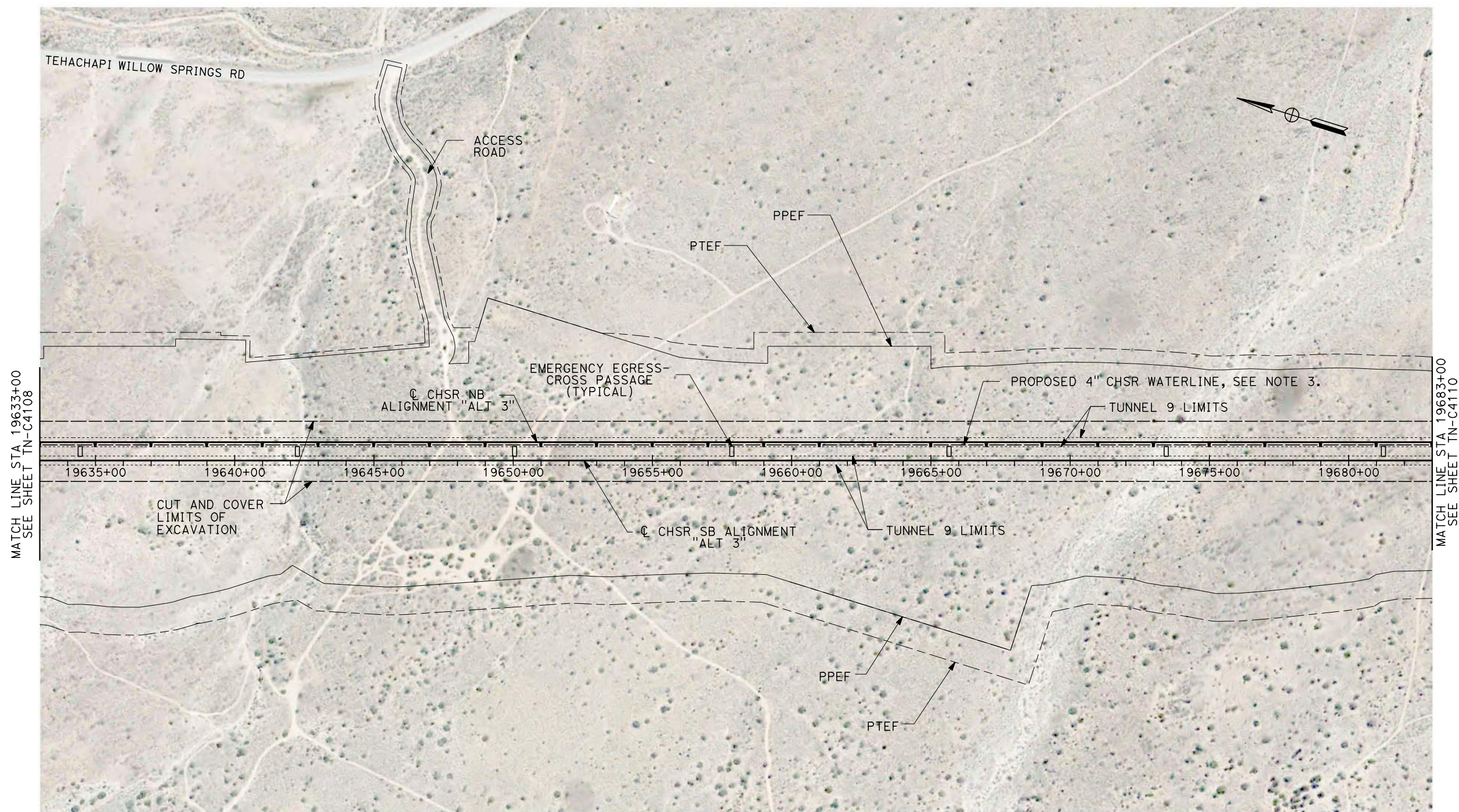
**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 3
TUNNEL 9
STATION 19582+00 TO 19633+00

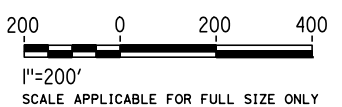
CONTRACT NO.
HSR13-44
DRAWING NO.
TN-C4108
SCALE
AS SHOWN
SHEET NO.
31



GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1103.
2. THE TUNNEL WILL BE EXCAVATED BY CUT AND COVER METHODS BETWEEN STATION 19594+00 TO 19687+50.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
DRAWN BY K. BUNGER
CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 3
TUNNEL 9
STATION 19633+00 TO 19683+00

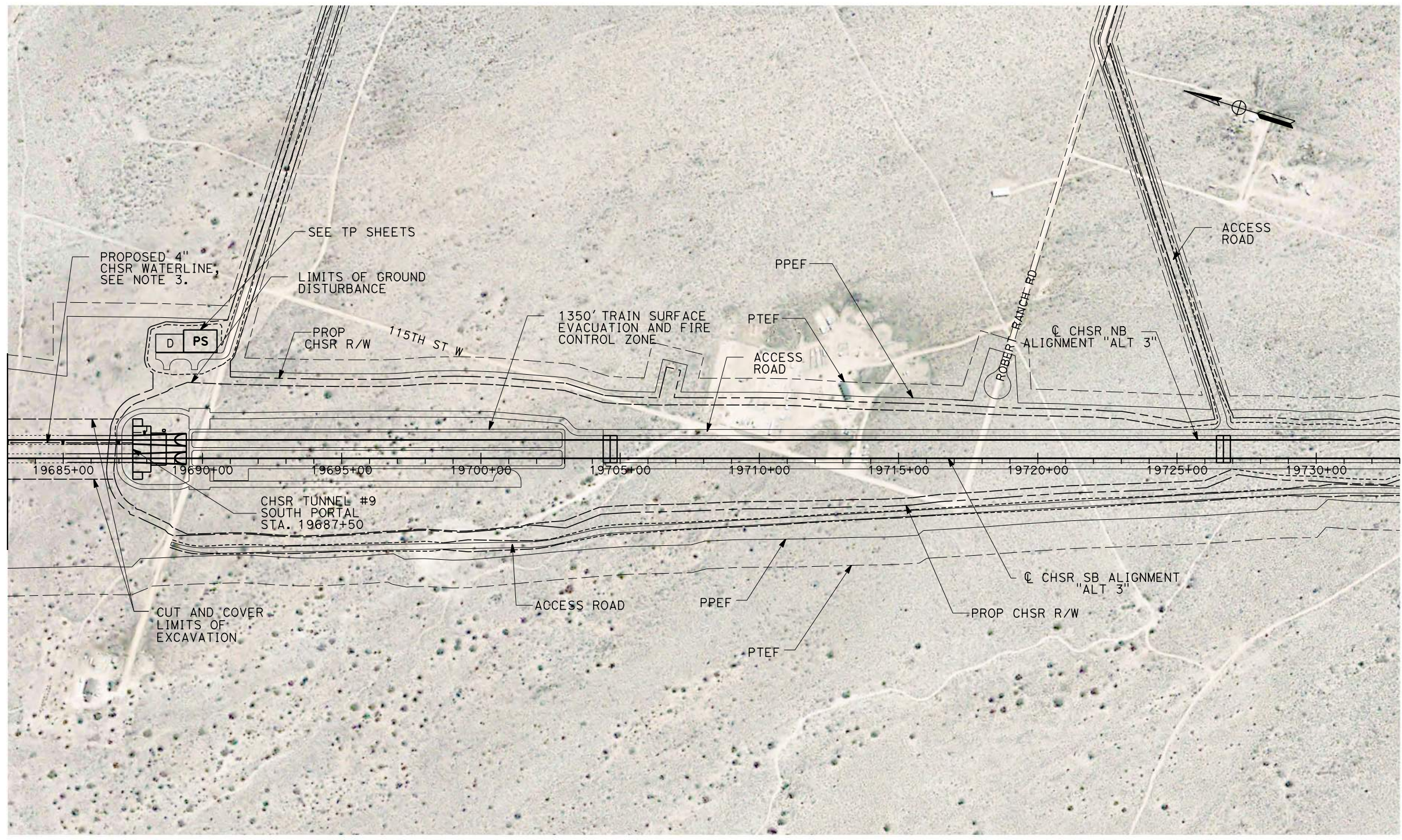
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SCALE AS SHOWN
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1/27/2021

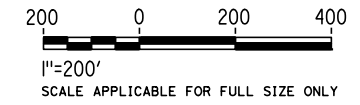
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GENERAL NOTES:

1. FOR PROFILE INFORMATION SEE SHEET TN-Y1104.
2. THE TUNNEL WILL BE EXCAVATED BY CUT AND COVER METHODS BETWEEN STATION 19594+00 TO 19687+50.
3. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
4. PROPOSED ELECTRICAL SERVICE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.

PLAN



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Z. SKOVAJSOVA
DRAWN BY K. BUNGER
CHECKED BY R. KUNDU
IN CHARGE J. MORRISON
DATE 01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

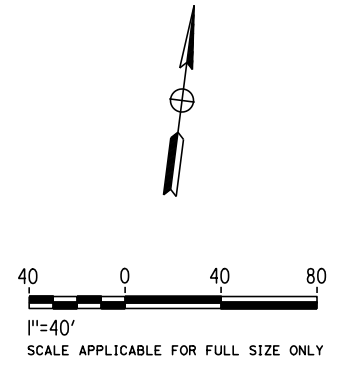
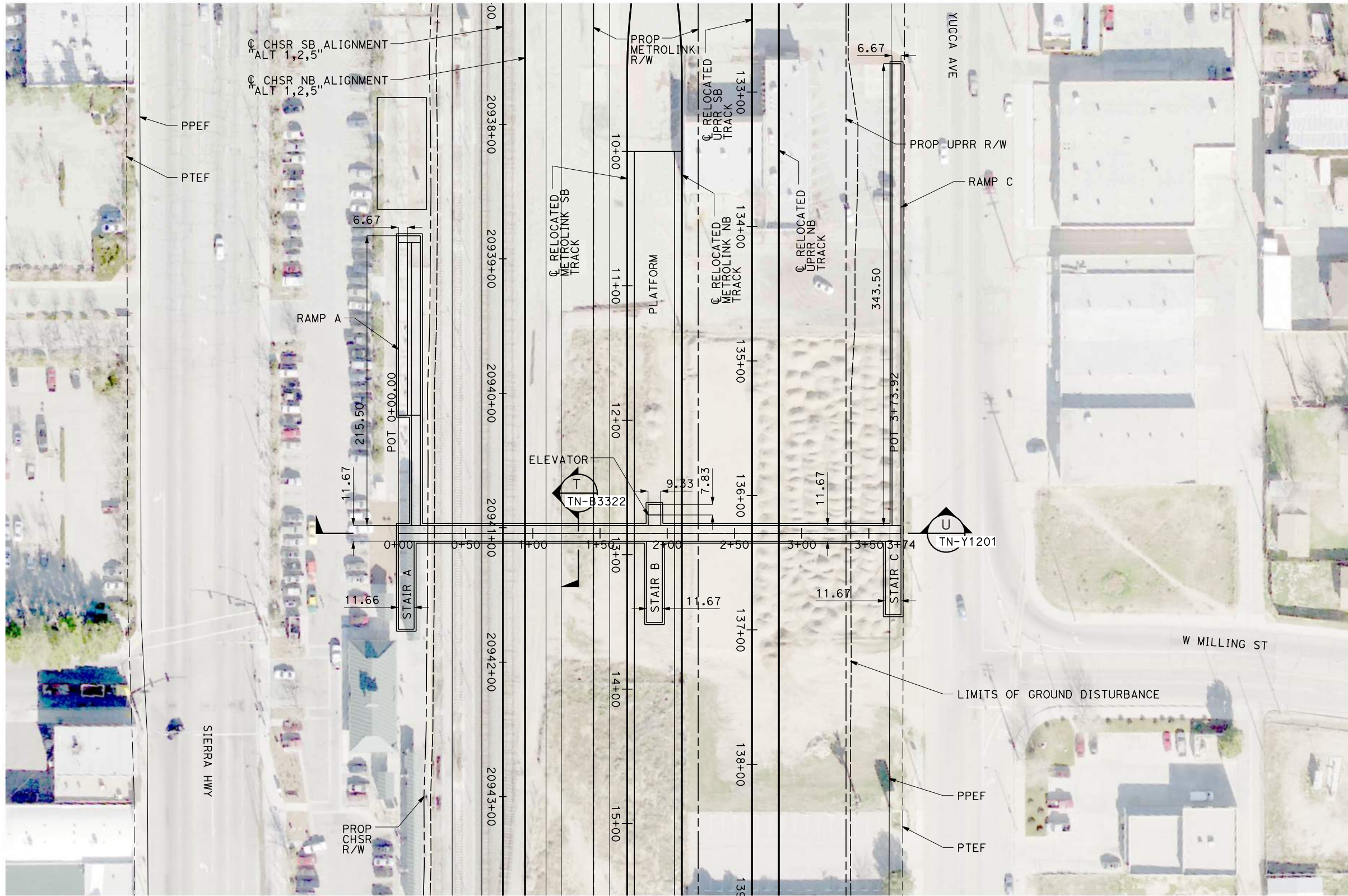
**NOT FOR
CONSTRUCTION**



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

ALIGNMENT ALT 3
TUNNEL 9
STATION 19683+00 TO 19733+00

CONTRACT NO. HSR13-44
DRAWING NO. TN-C4110
SCALE AS SHOWN
SHEET NO. 33



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

NOT FOR
CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE

ALTERNATIVE 1, 2, 3
TYPICAL UNDERPASS LAYOUT

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-C4201

SCALE
AS SHOWN

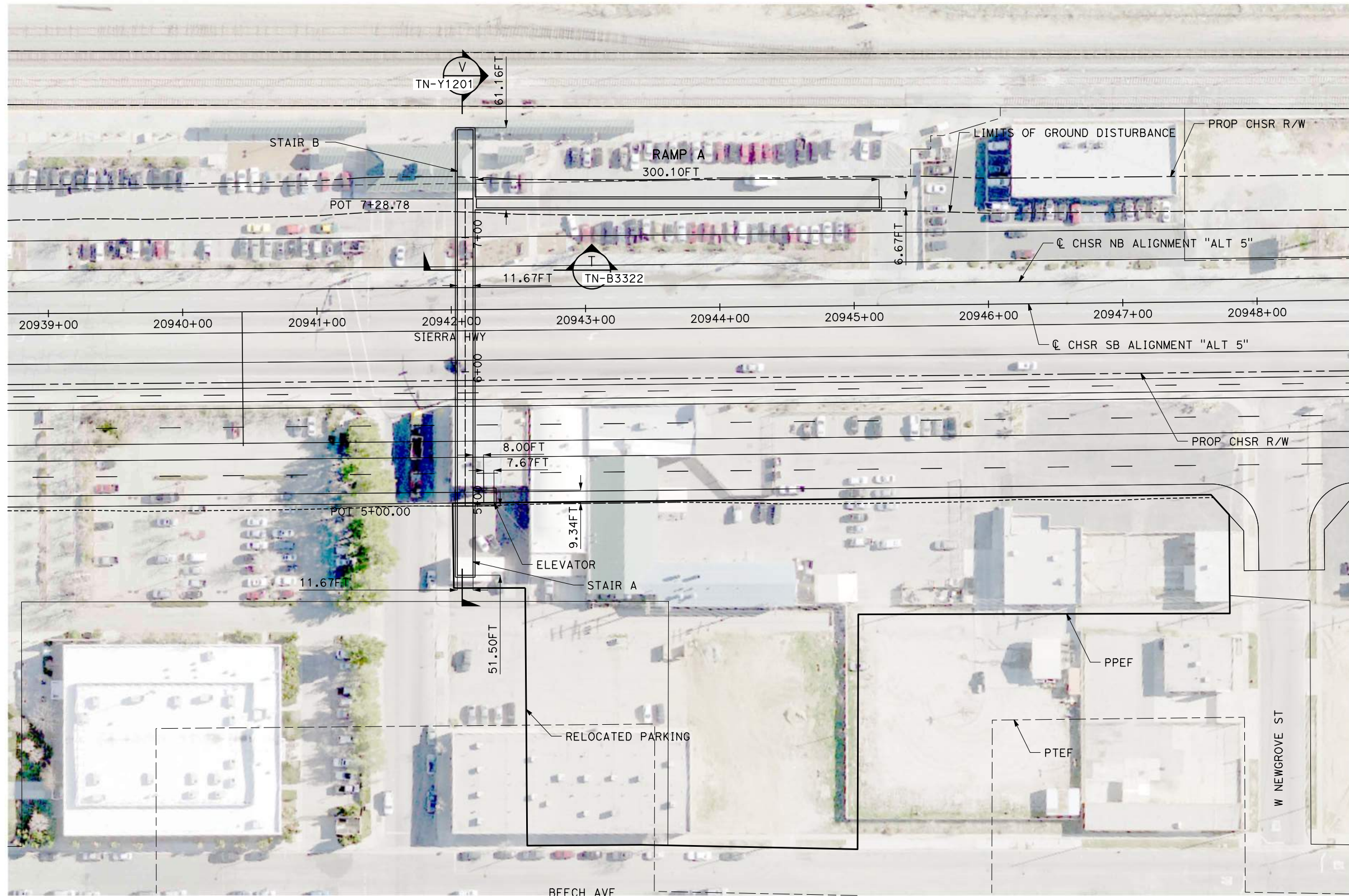
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1/27/2021

jcs_user_17609



PLAN

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

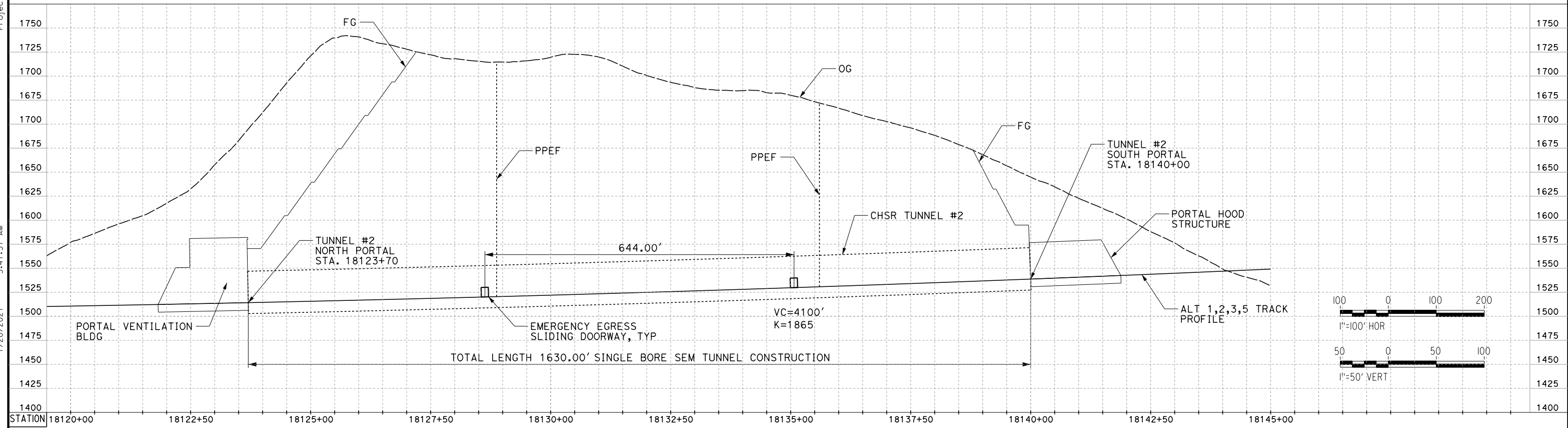
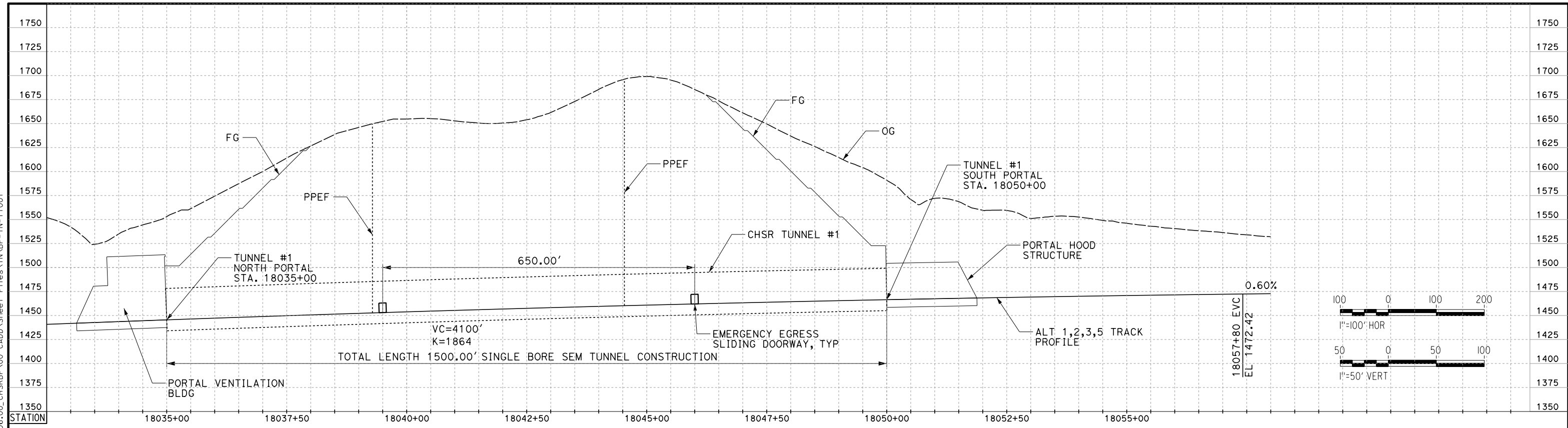
ALTERNATIVE 5
TYPICAL UNDERPASS LAYOUT

CONTRACT NO.
HSR13-44
DRAWING NO.
TN-C4202
SCALE
AS SHOWN
SHEET NO.
35

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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDUN
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

**RECORD SET
 PEPD
 SUBMITTAL**

**NOT FOR
 CONSTRUCTION**



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

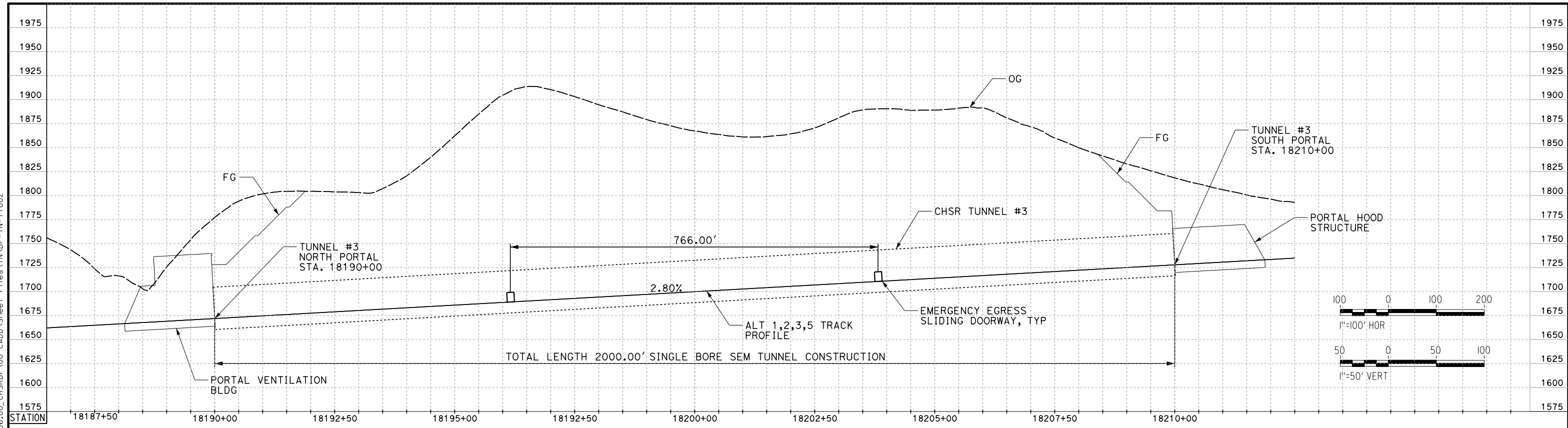
ALT 1,2,3,5
 TUNNEL PROFILES
 TUNNEL 1 AND TUNNEL 2

CONTRACT NO.
HSR13-44
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TN-Y1001
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AS SHOWN
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36

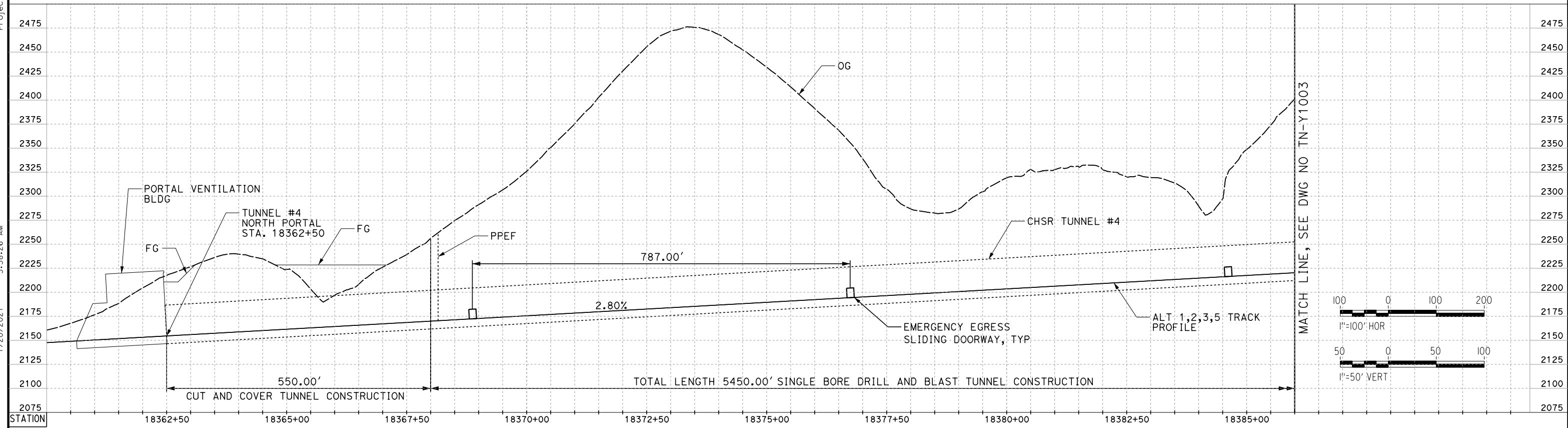
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1/20/2021 5:38:26 AM

jcs_user_17609



TUNNEL 3



TUNNEL 4

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KONDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 1,2,3,5
TUNNEL PROFILES
TUNNEL 3 AND TUNNEL 4

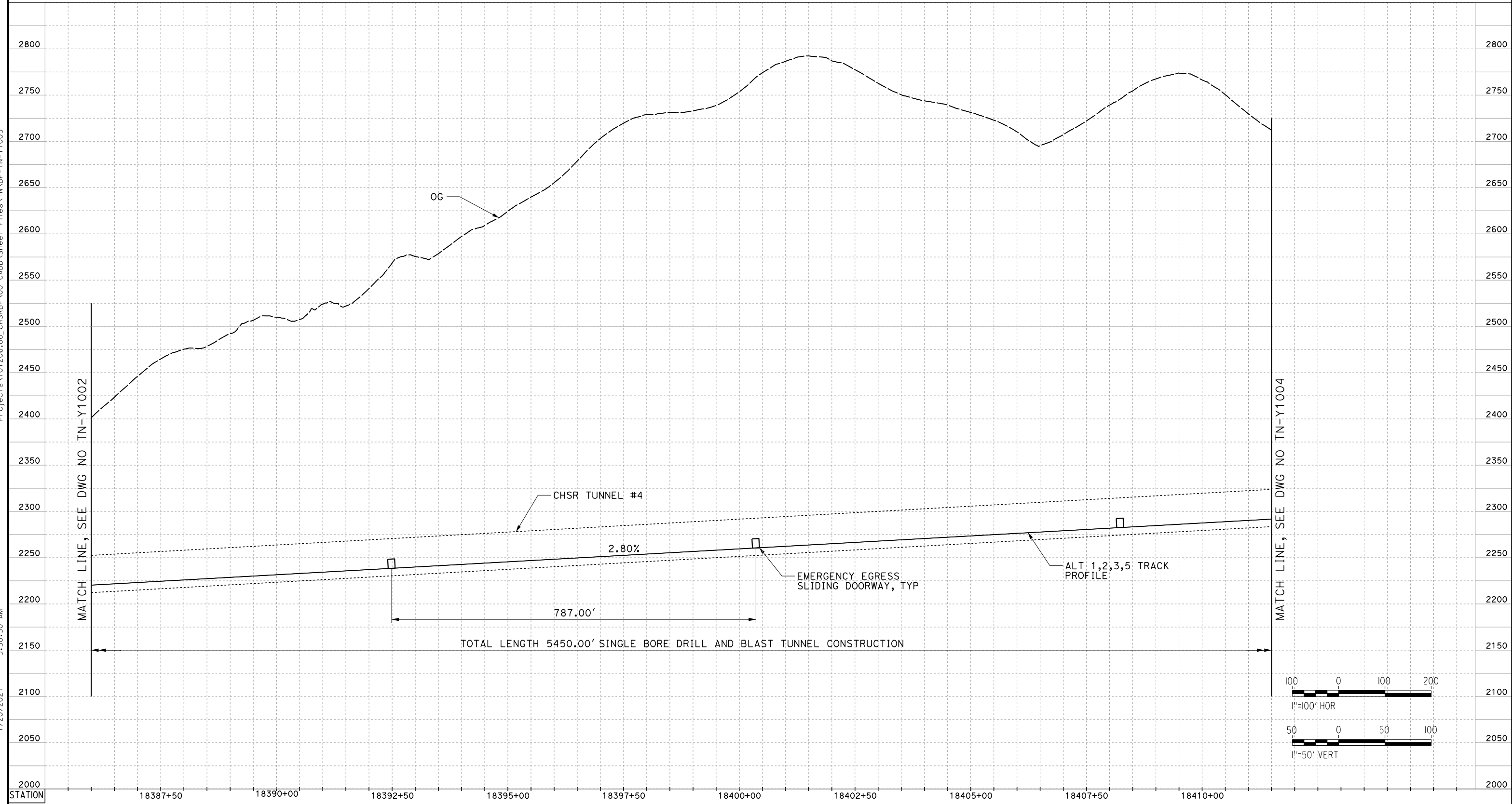
CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1002

SCALE
AS SHOWN

SHEET NO.
37

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TUNNEL 4

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 1,2,3,5
TUNNEL PROFILES
TUNNEL 4 - SHEET 1

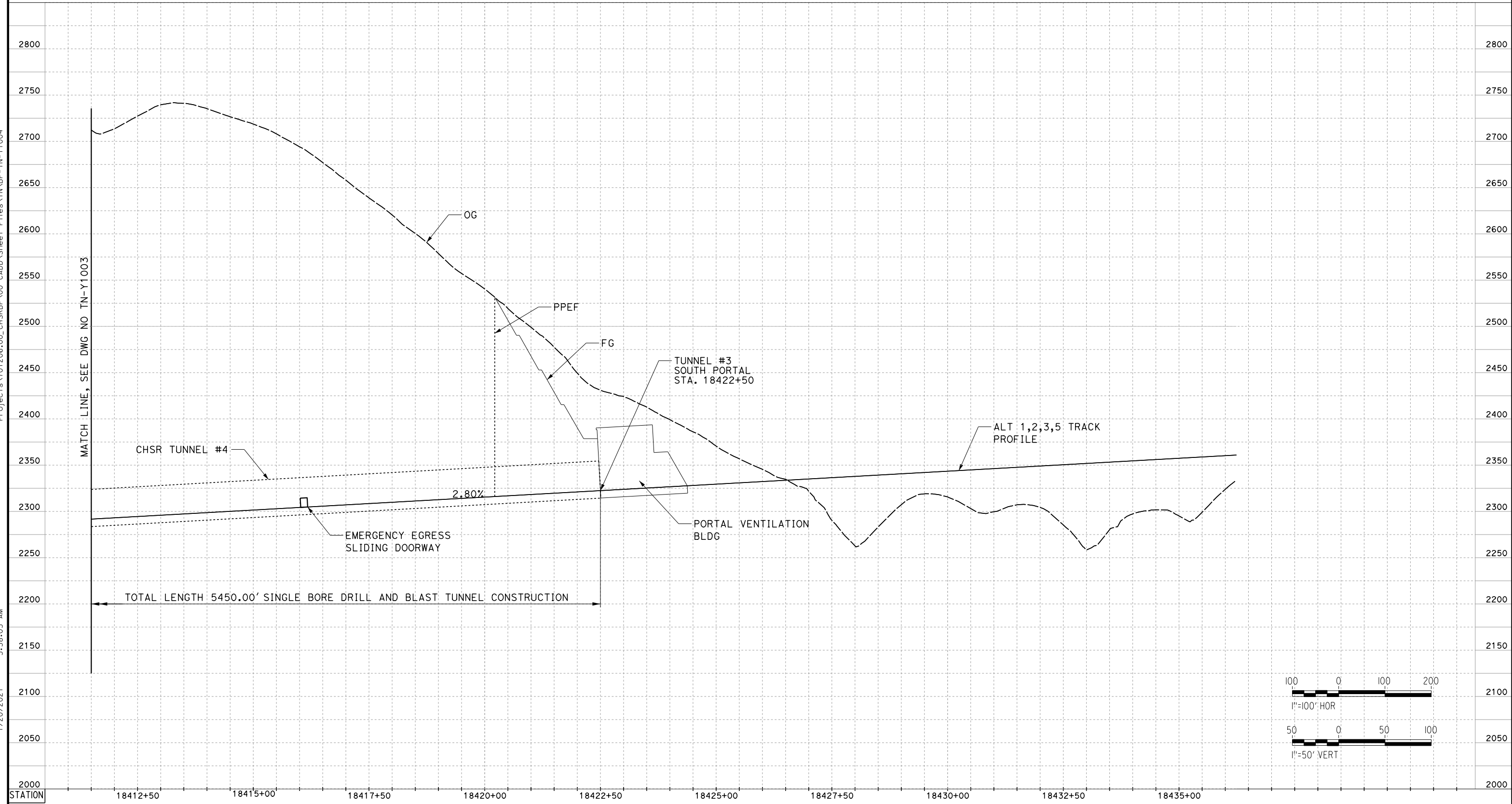
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DRAWING NO.
TN-Y1003

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AS SHOWN

SHEET NO.
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TUNNEL 4

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDUN
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

NOT FOR
CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE

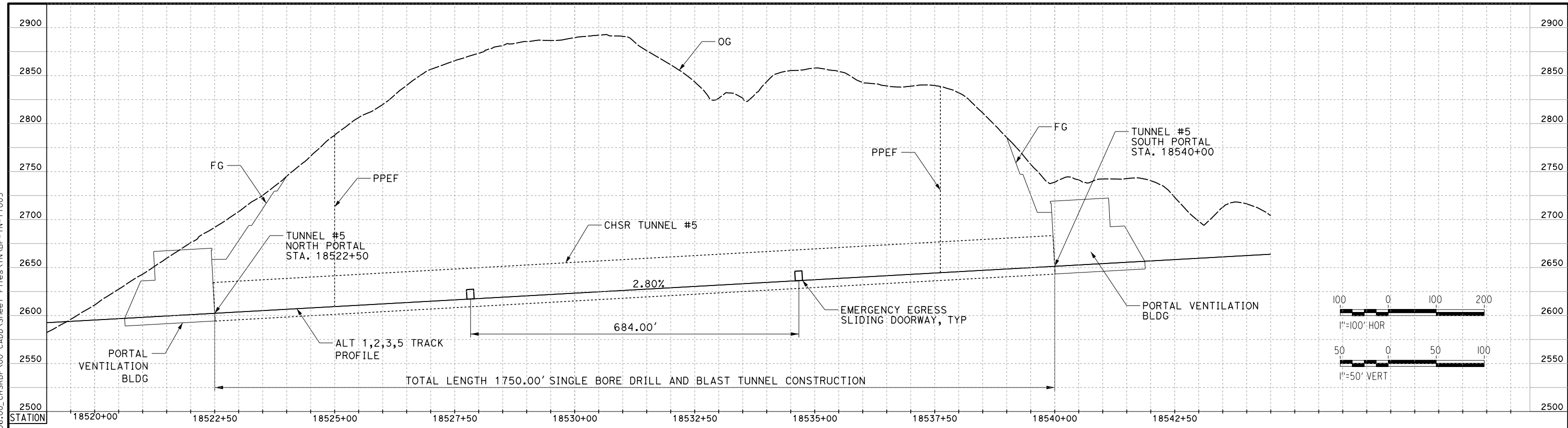
 ALT 1,2,3,5
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CONTRACT NO.
HSR13-44
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TN-Y1004
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AS SHOWN
 SHEET NO.
39

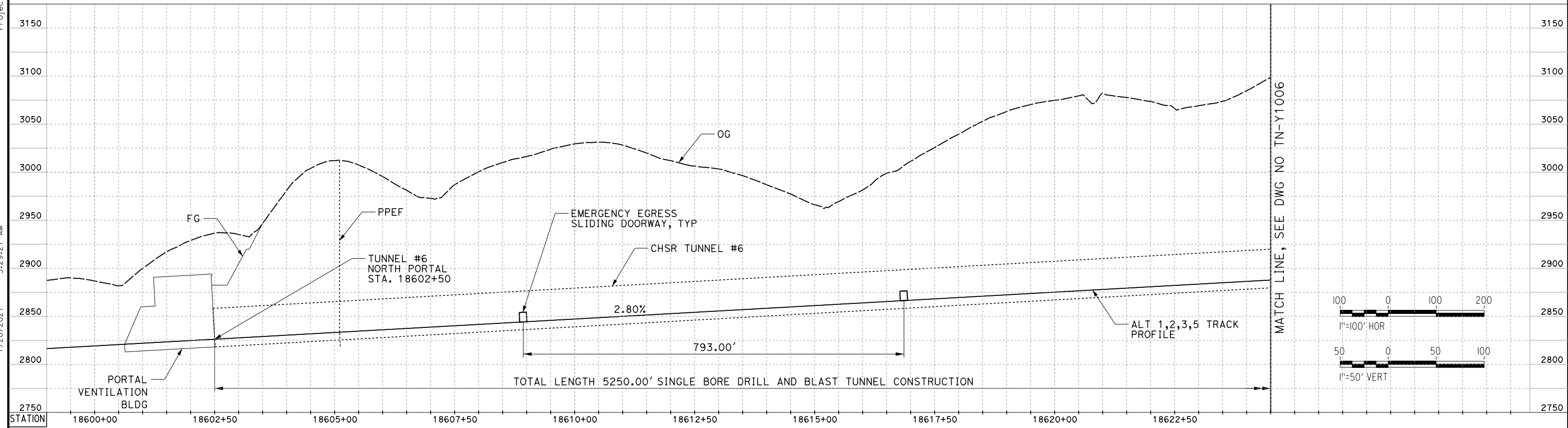
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_ics_user_17609



TUNNEL 5



TUNNEL 6

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

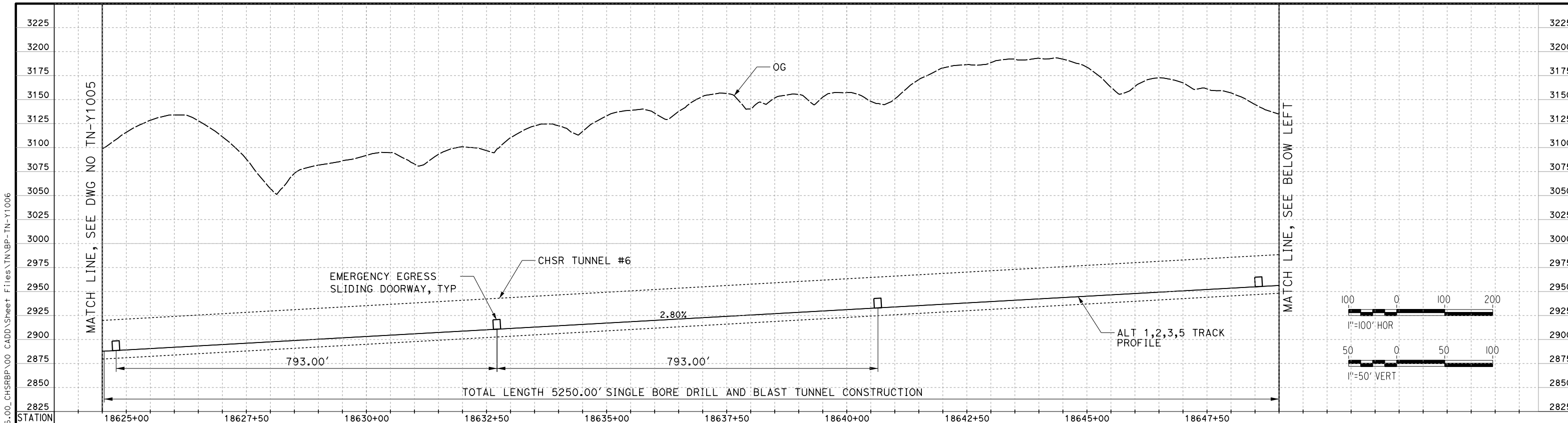
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TUNNEL 5 AND TUNNEL 6

CONTRACT NO.
HSR13-44

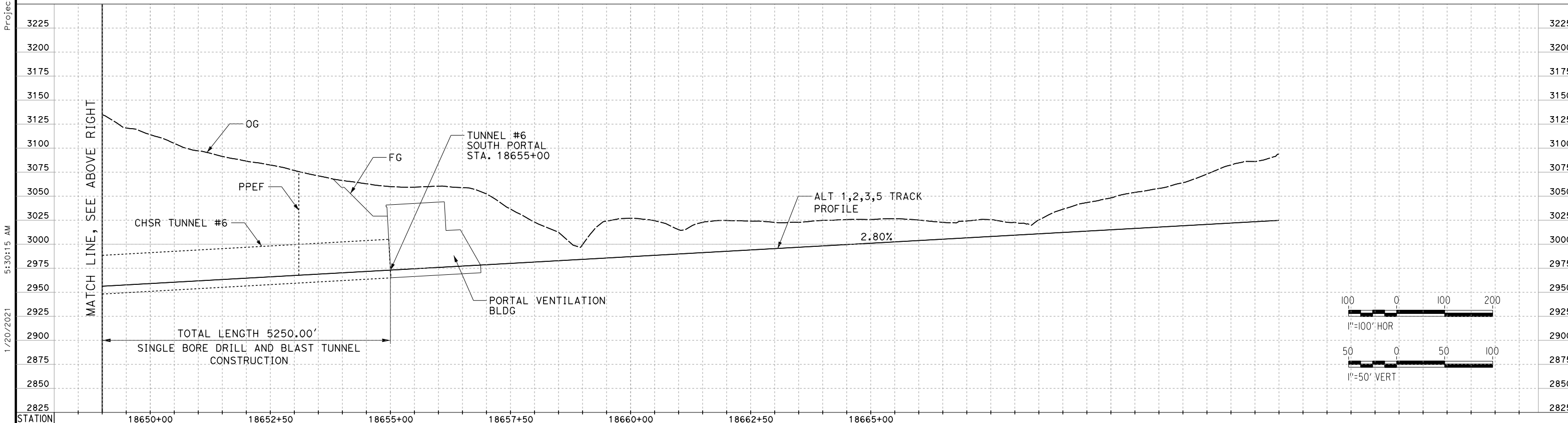
DRAWING NO.
TN-Y1005

SCALE
AS SHOWN

SHEET NO.
40



TUNNEL 6



TUNNEL 6

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 1, 2, 3, 5
TUNNEL PROFILES
TUNNEL 6

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1006

SCALE
AS SHOWN

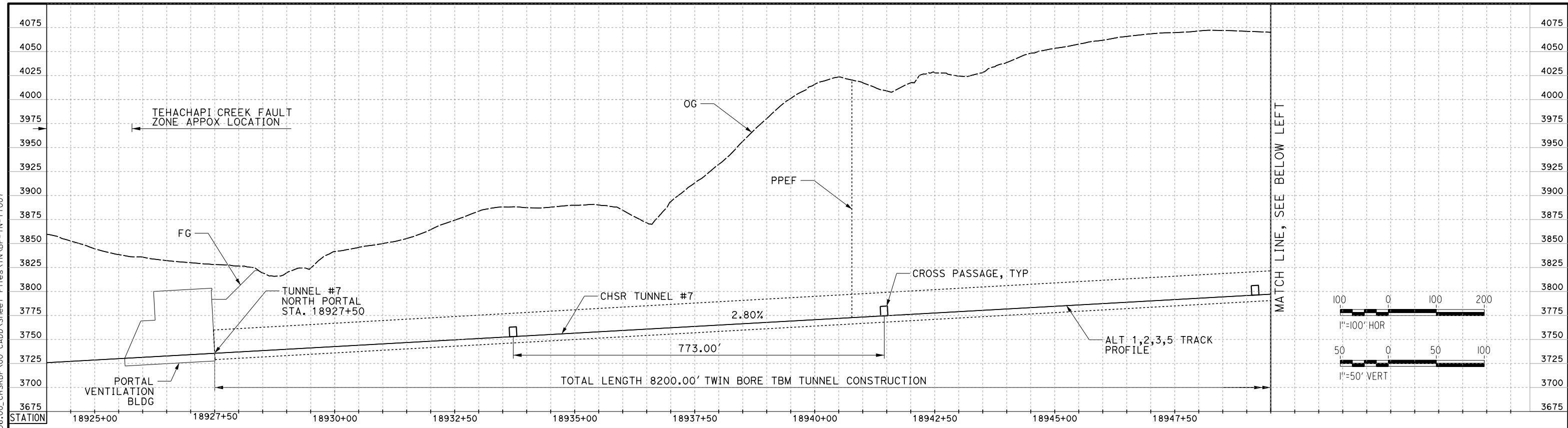
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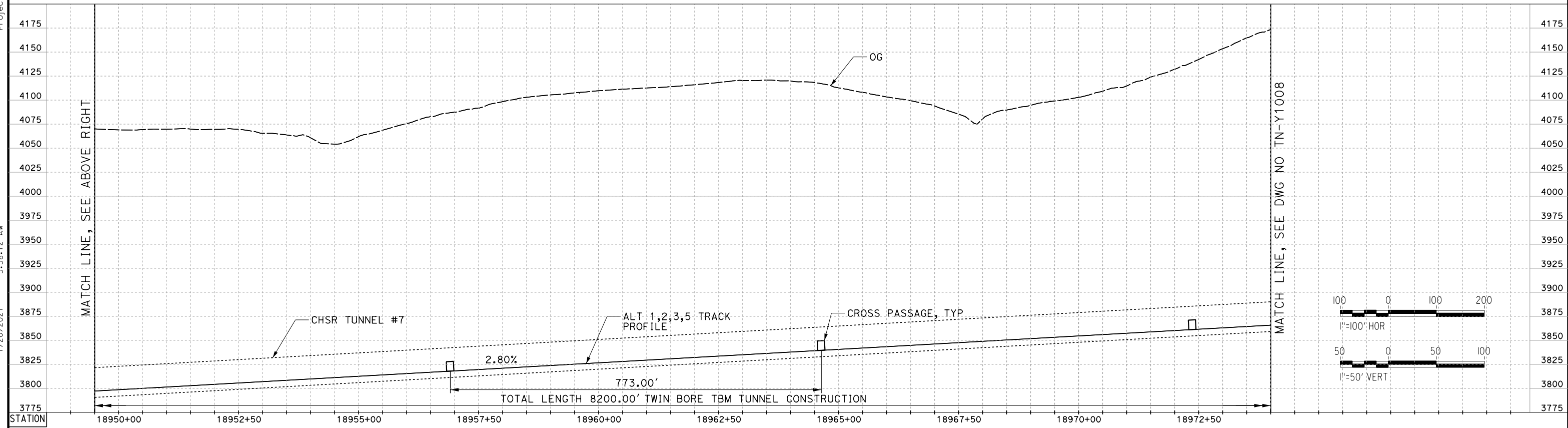
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ics_user_17609



TUNNEL 7



TUNNEL 7

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KONDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 1, 2, 5
TUNNEL PROFILES
TUNNEL 7 - SHEET 1

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1007

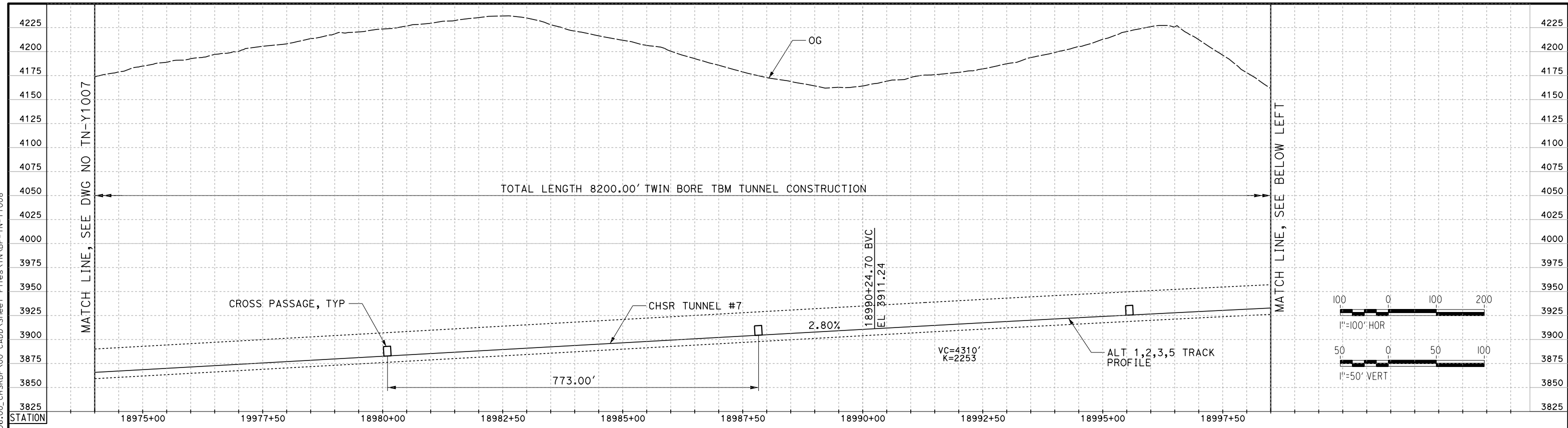
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SHEET NO.
42

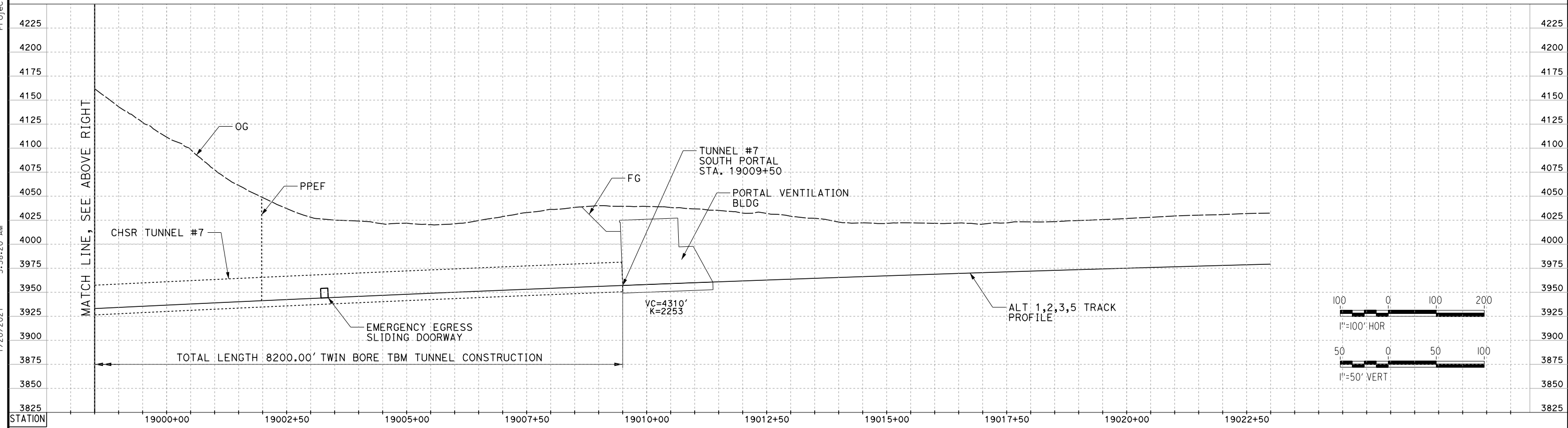
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jcs_user_17609



TUNNEL 7



TUNNEL 7

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDUN
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

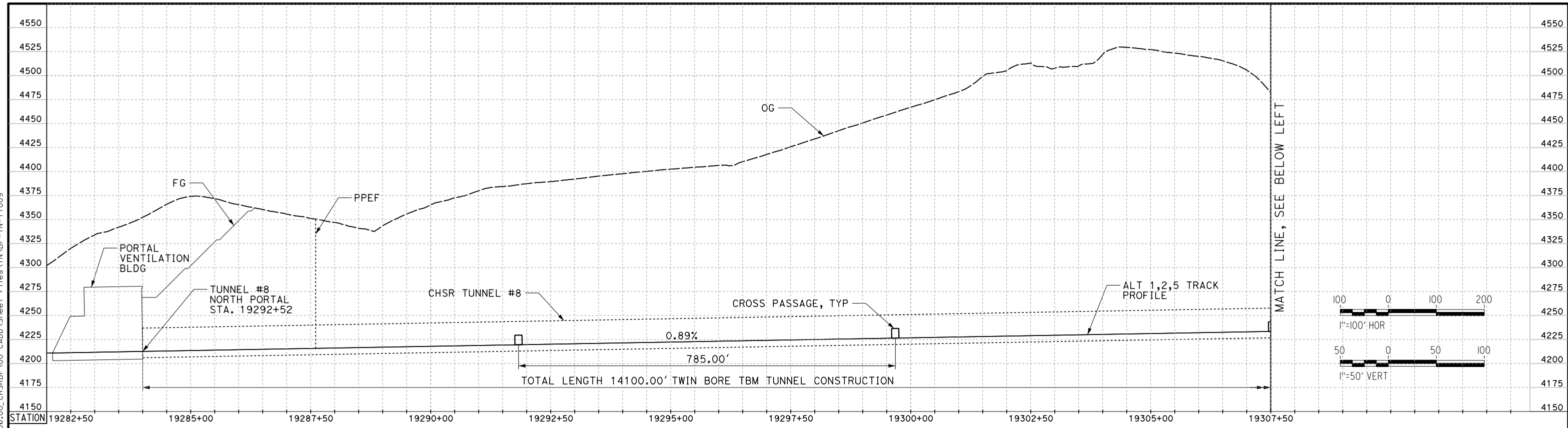
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TUNNEL PROFILES
TUNNEL 7 - SHEET 2

CONTRACT NO.
HSR13-44
DRAWING NO.
TN-Y1008
SCALE
AS SHOWN
SHEET NO.
43

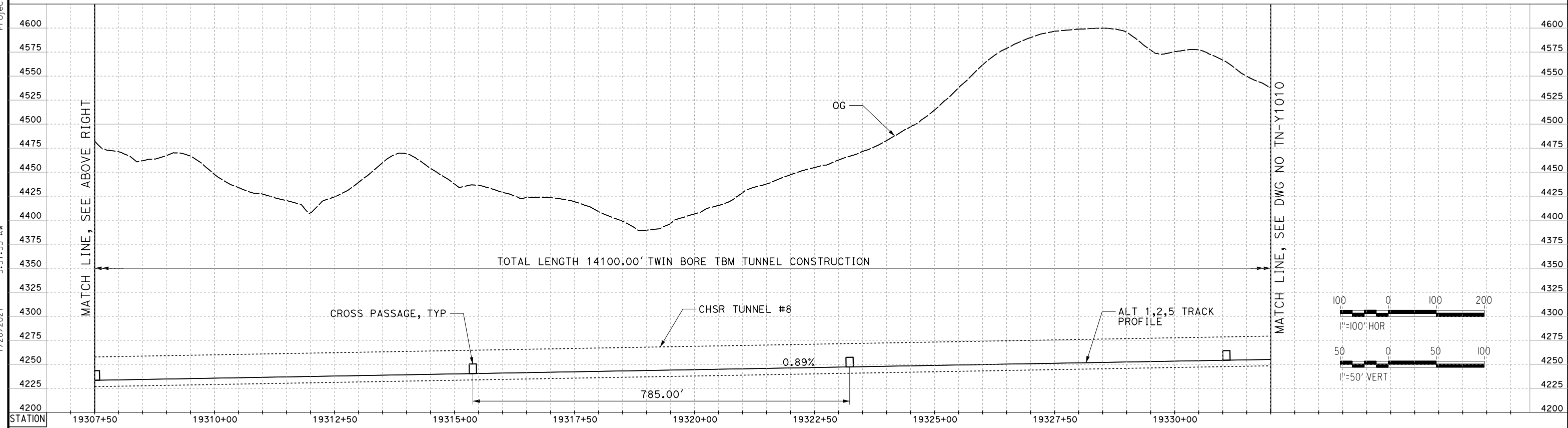
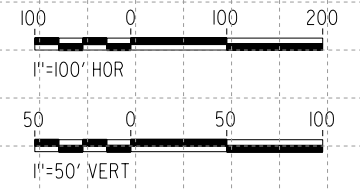
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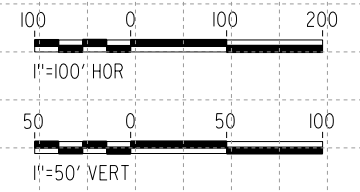
ics_user_17609



TUNNEL 8



TUNNEL 8



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KONDUN
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

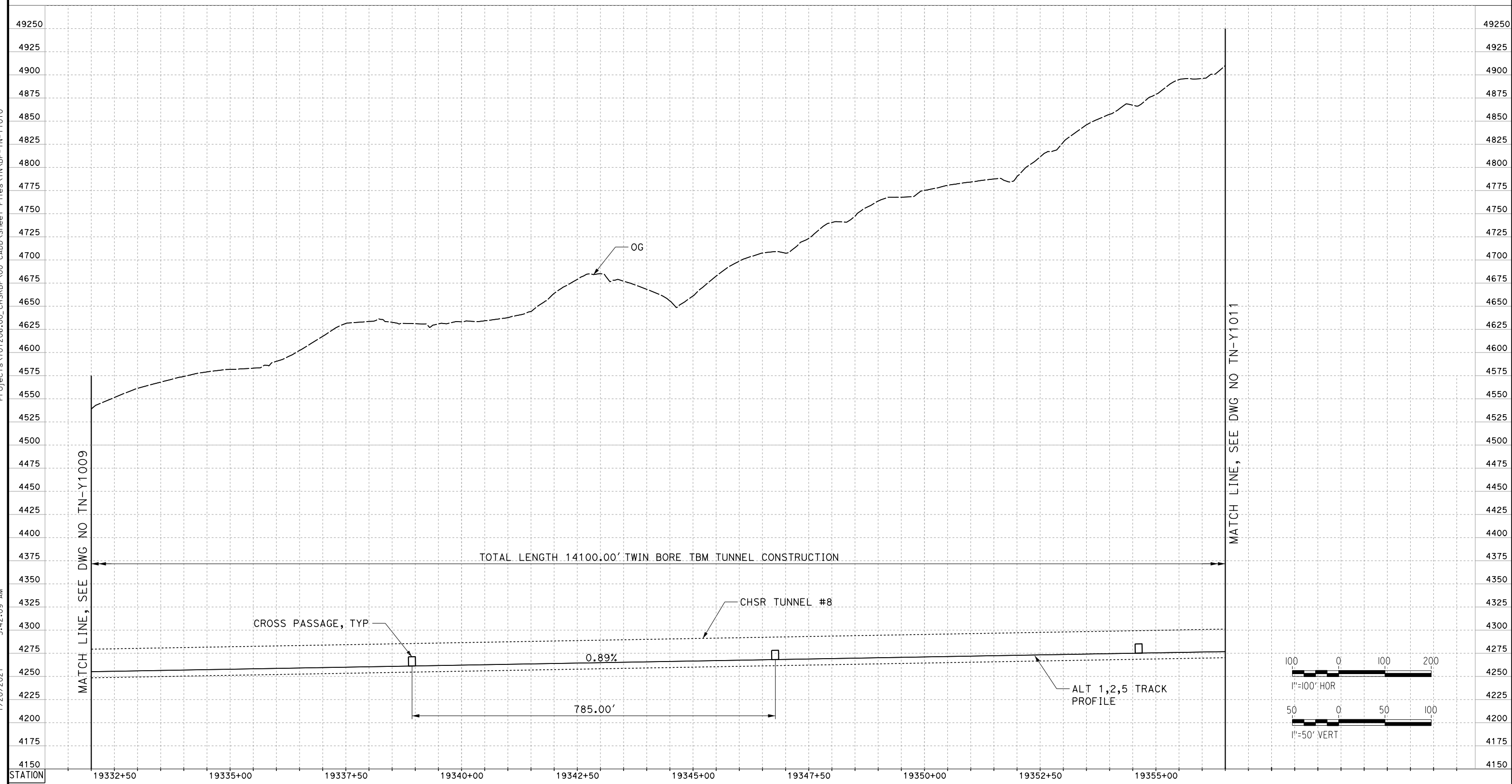
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CONTRACT NO.
HSR13-44
DRAWING NO.
TN-Y1009
SCALE
AS SHOWN
SHEET NO.
44

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jcs_user_17609



TUNNEL 8

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KONDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

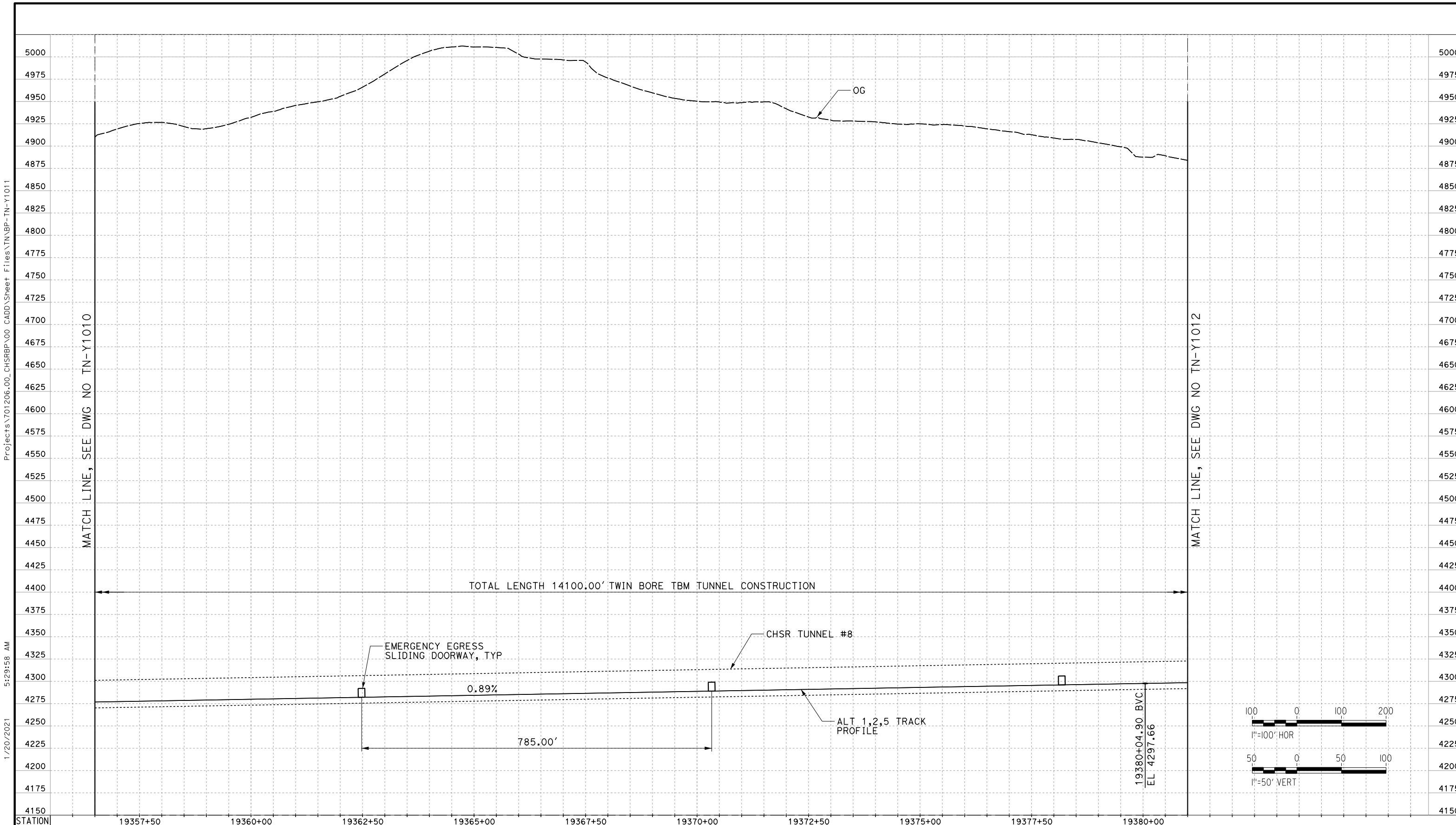
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TUNNEL PROFILES
TUNNEL 8 - SHEET 2

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1010

SCALE
AS SHOWN

SHEET NO.
45



TUNNEL 8

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KONDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 1, 2, 5
TUNNEL PROFILES
TUNNEL 8 - SHEET 3

CONTRACT NO.
HSR13-44

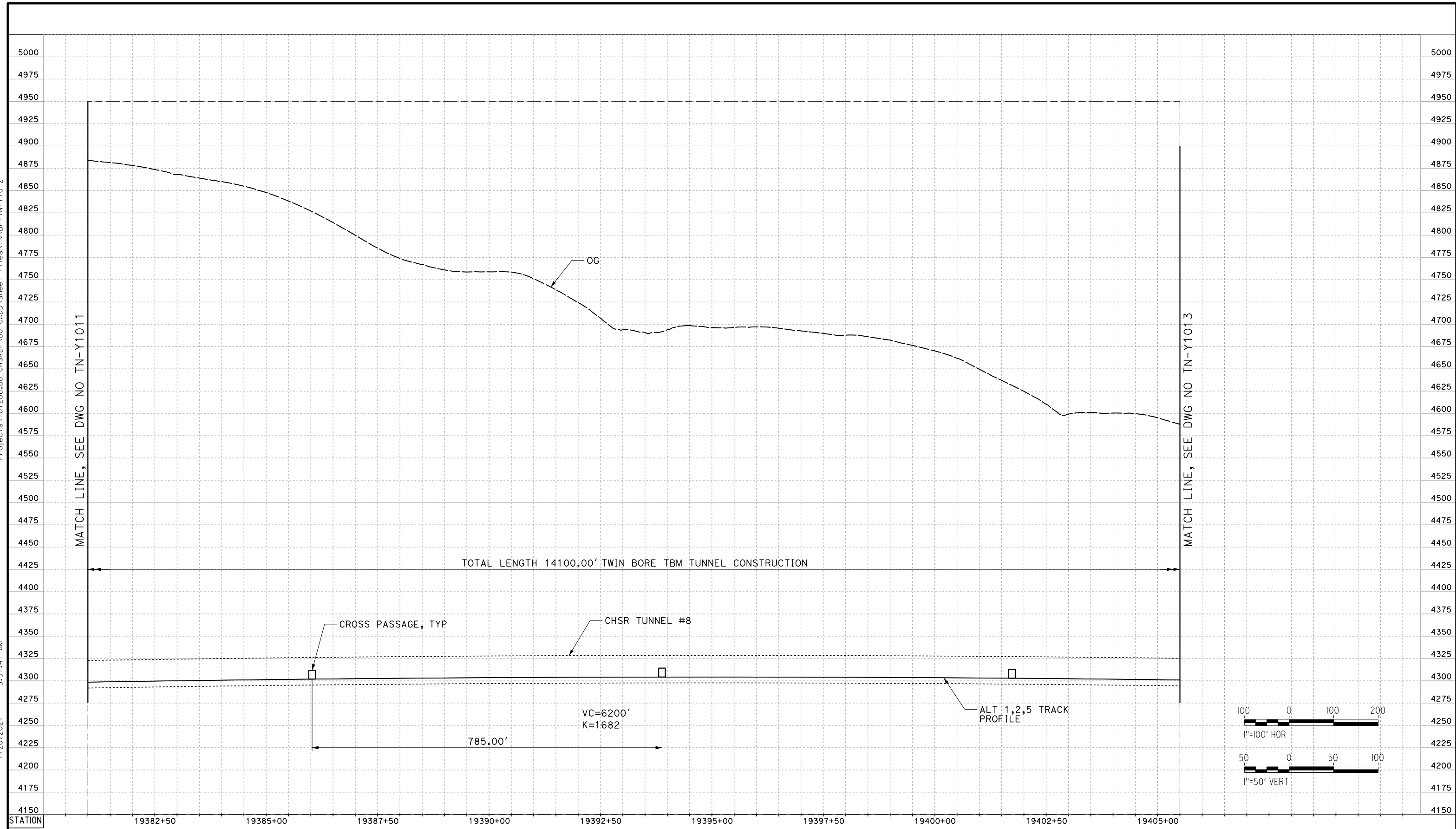
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TN-Y1011

SCALE
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SHEET NO.
46

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 jcs_user_17609



TOTAL LENGTH 14100.00' TWIN BORE TBM TUNNEL CONSTRUCTION

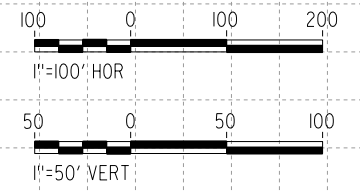
CROSS PASSAGE, TYP

CHSR TUNNEL #8

VC=6200'
K=1682

785.00'

ALT 1, 2, 5 TRACK PROFILE



TUNNEL 8

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KONDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 1, 2, 5
TUNNEL PROFILES
TUNNEL 8 - SHEET 4

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1012

SCALE
AS SHOWN

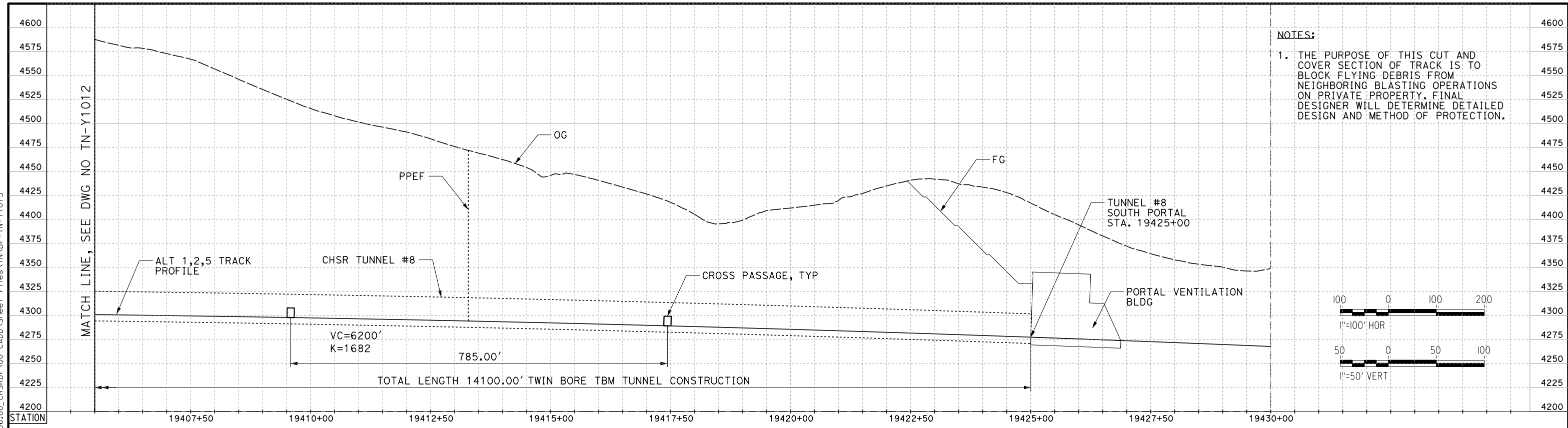
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47

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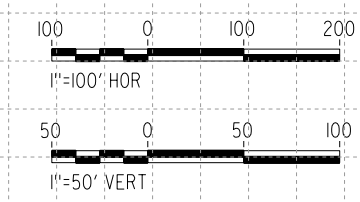
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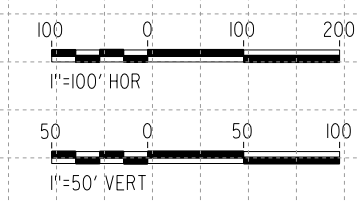
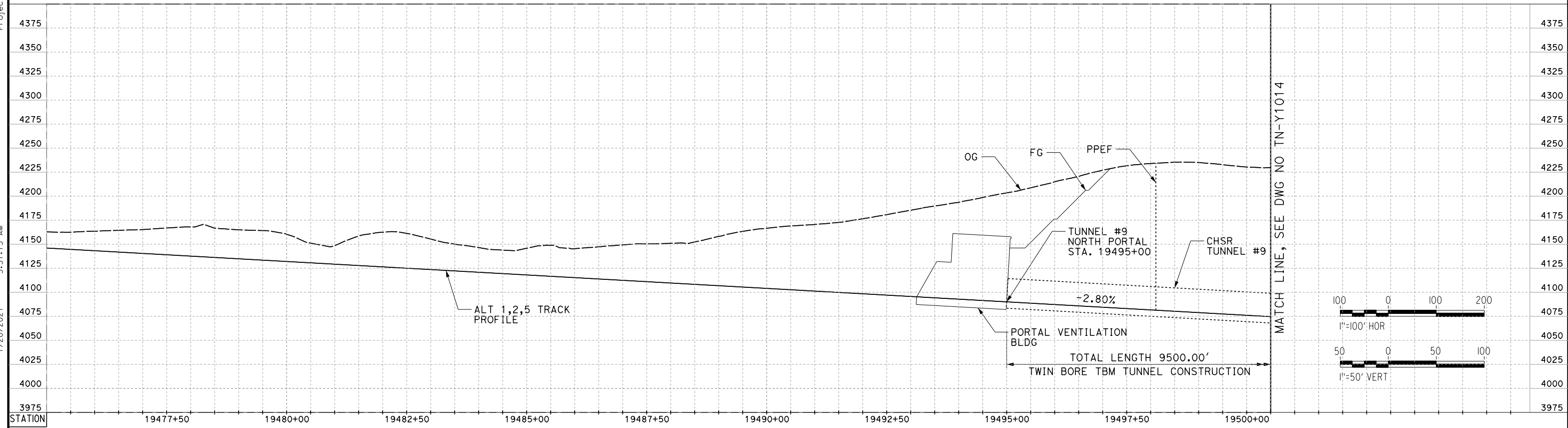
jcs_user_17609



NOTES:
 1. THE PURPOSE OF THIS CUT AND COVER SECTION OF TRACK IS TO BLOCK FLYING DEBRIS FROM NEIGHBORING BLASTING OPERATIONS ON PRIVATE PROPERTY. FINAL DESIGNER WILL DETERMINE DETAILED DESIGN AND METHOD OF PROTECTION.



TUNNEL 8



TUNNEL 9

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDUN
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

**RECORD SET
 PEPD
 SUBMITTAL**

**NOT FOR
 CONSTRUCTION**



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

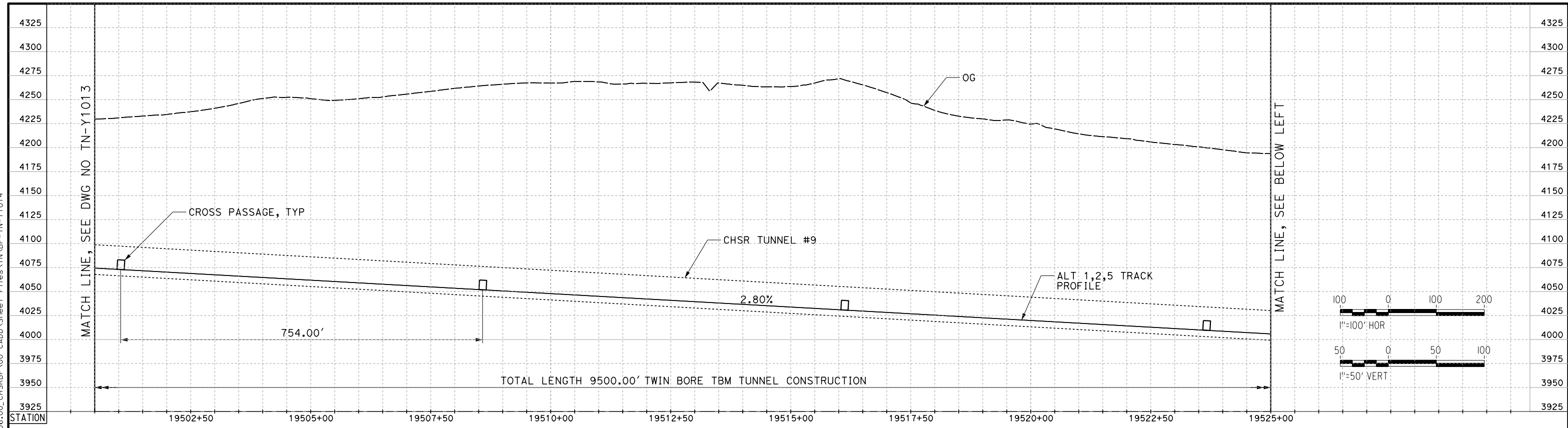
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 TUNNEL PROFILES
 TUNNEL 8 AND TUNNEL 9

CONTRACT NO.
HSR13-44
 DRAWING NO.
TN-Y1013
 SCALE
AS SHOWN
 SHEET NO.
48

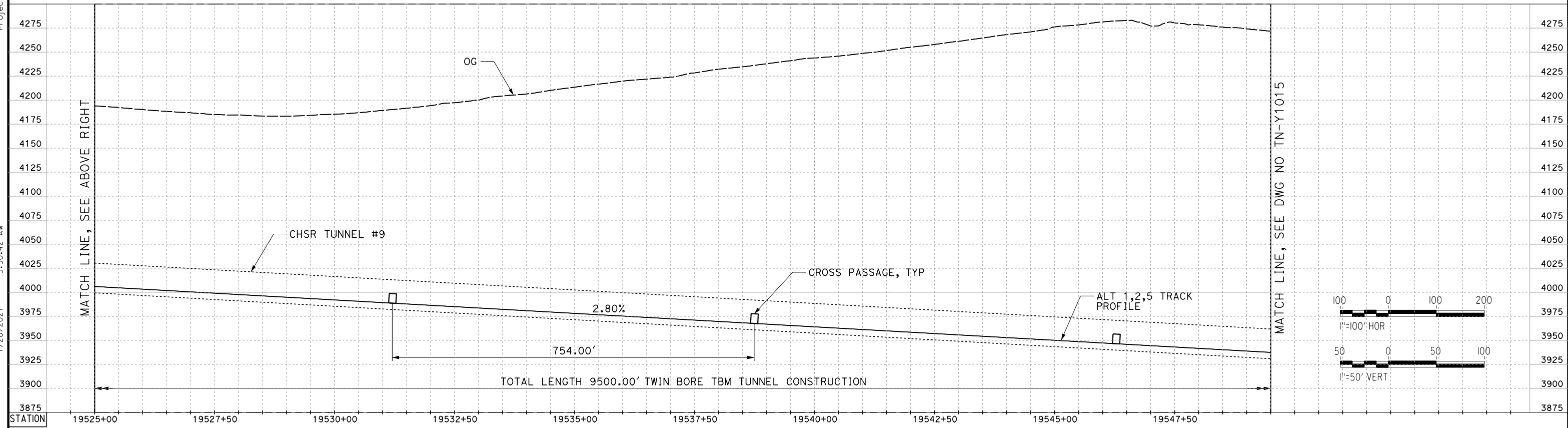
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jcs_user_17609



TUNNEL 9



TUNNEL 9

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

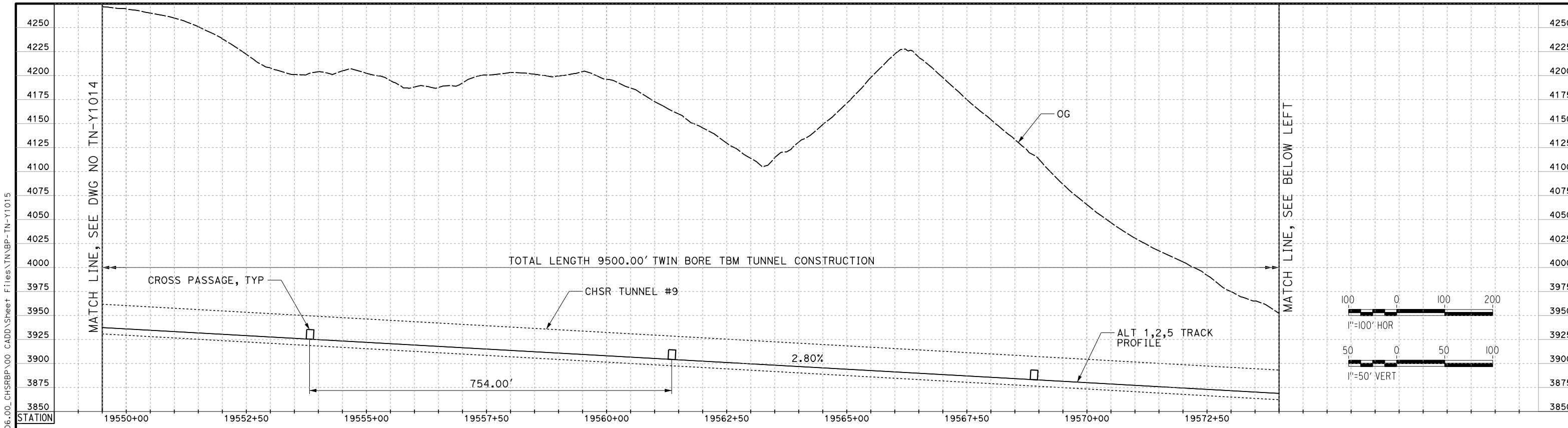
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TUNNEL PROFILES
TUNNEL 9 - SHEET 1

CONTRACT NO.
HSR13-44

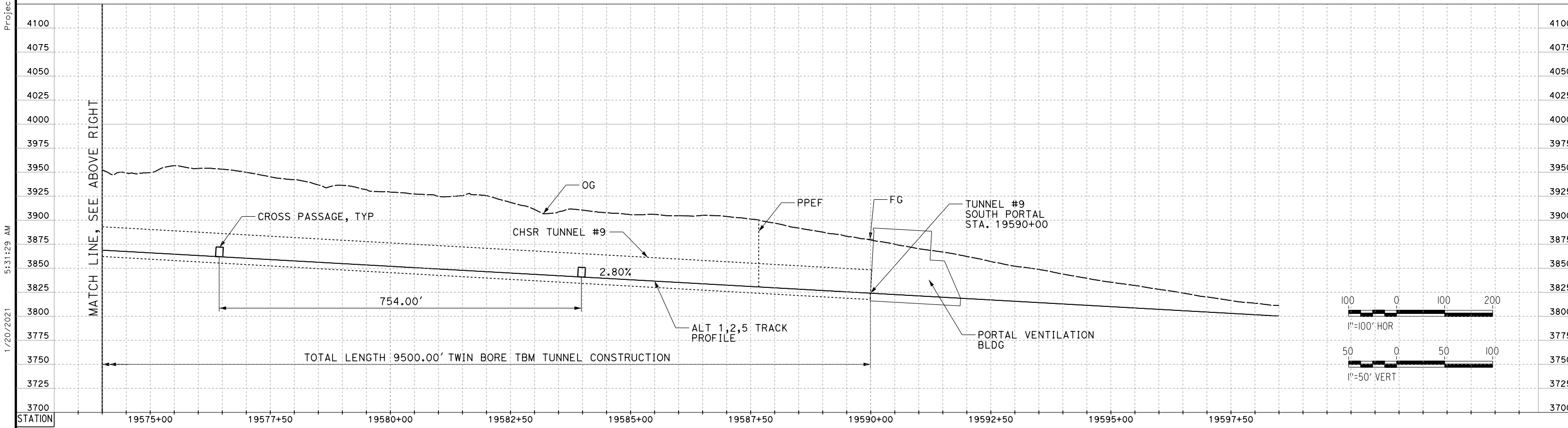
DRAWING NO.
TN-Y1014

SCALE
AS SHOWN

SHEET NO.
49



TUNNEL 9



TUNNEL 9

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 1, 2, 5
TUNNEL PROFILES
TUNNEL 9 - SHEET 2

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1015

SCALE
AS SHOWN

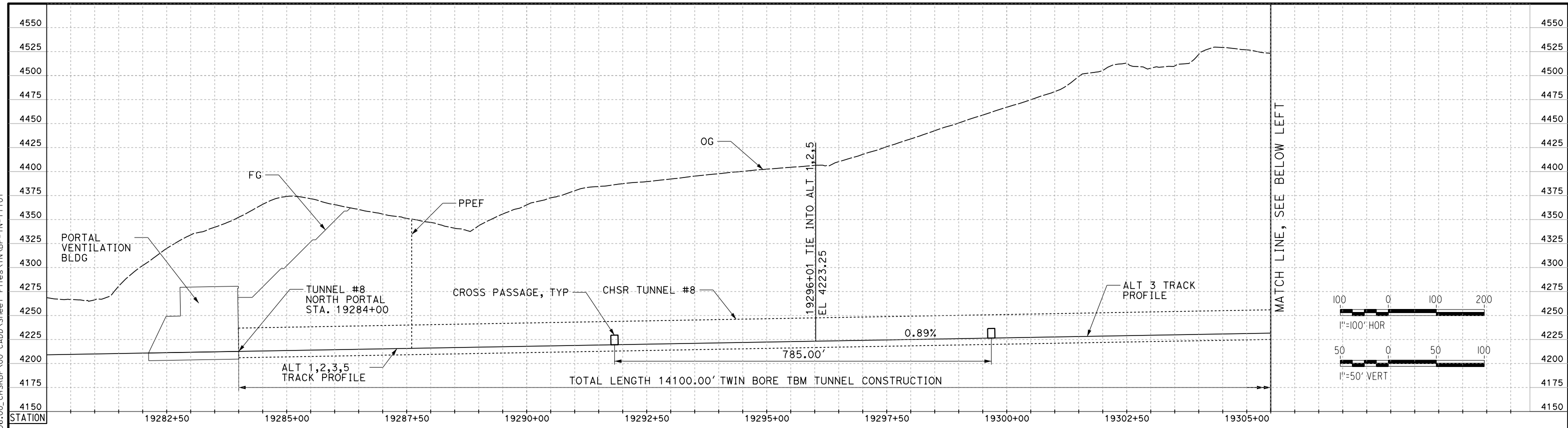
SHEET NO.
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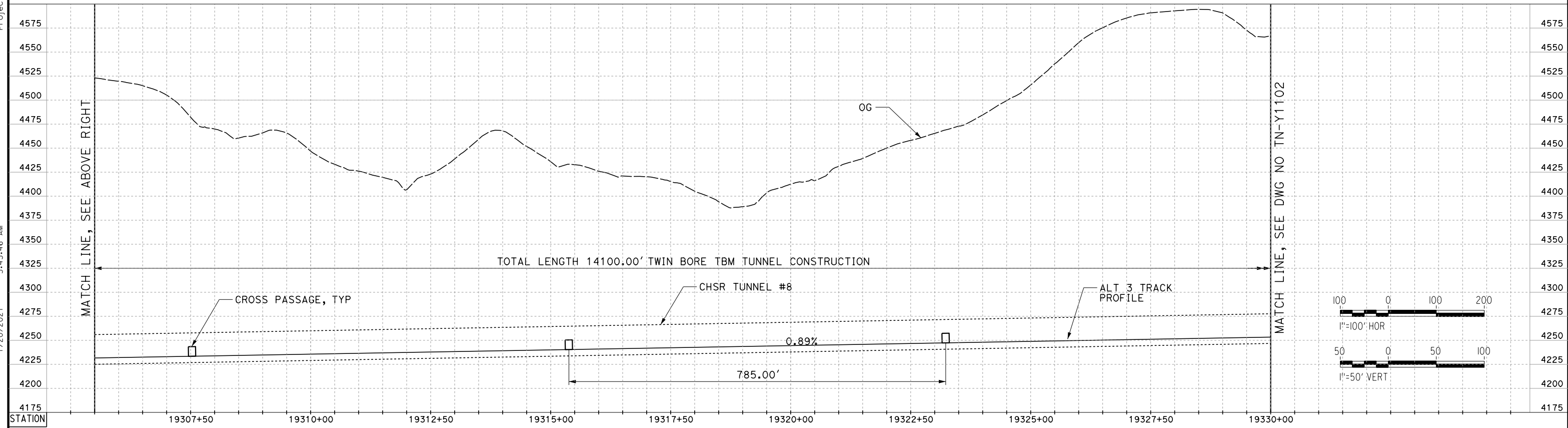
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ics_user_17609



TUNNEL 8



TUNNEL 8

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KONDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

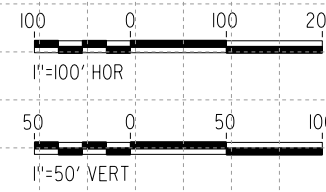
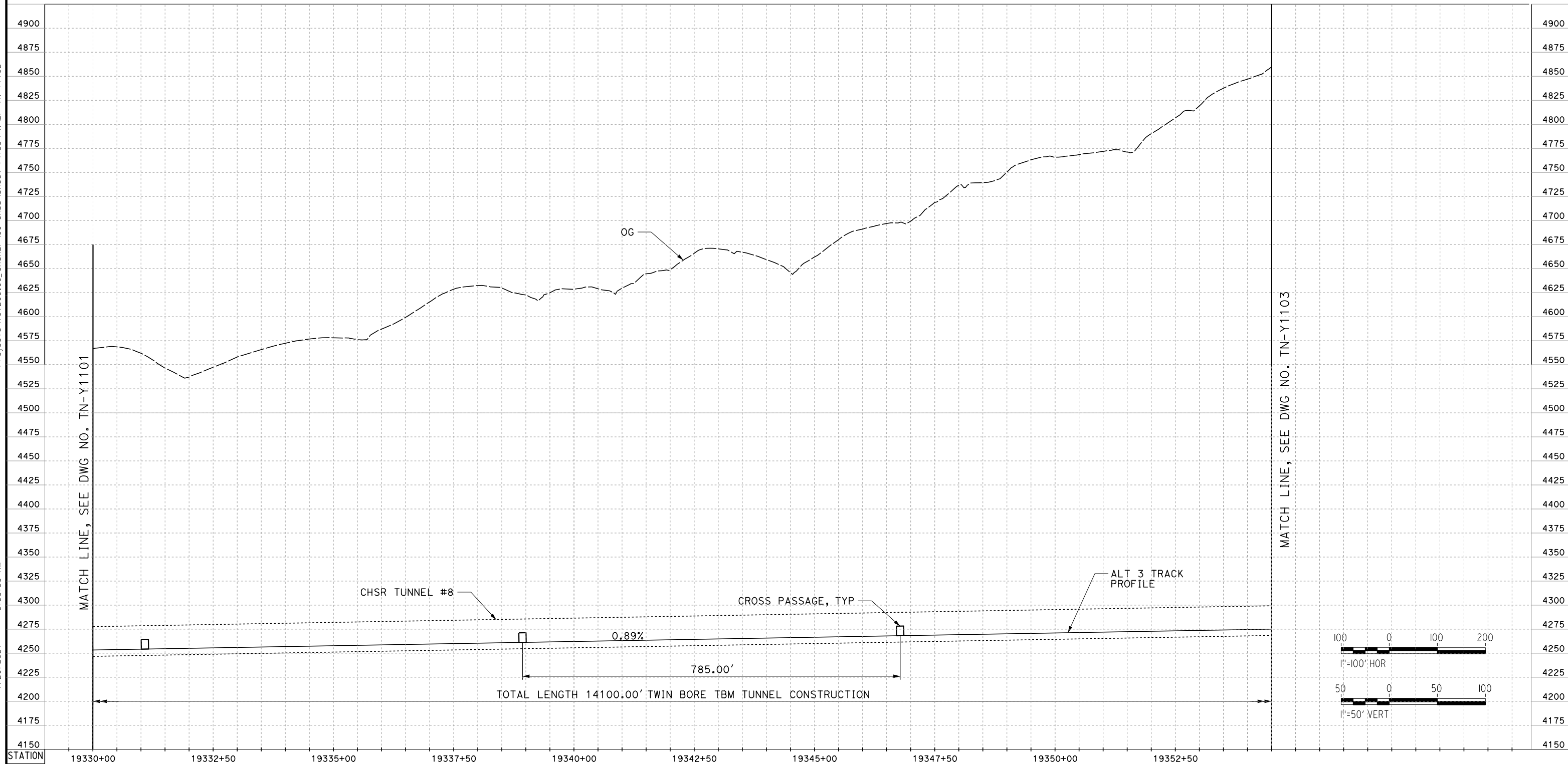
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TUNNEL PROFILES
TUNNEL 8 - SHEET 1

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1101

SCALE
AS SHOWN

SHEET NO.
51



TUNNEL 8

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

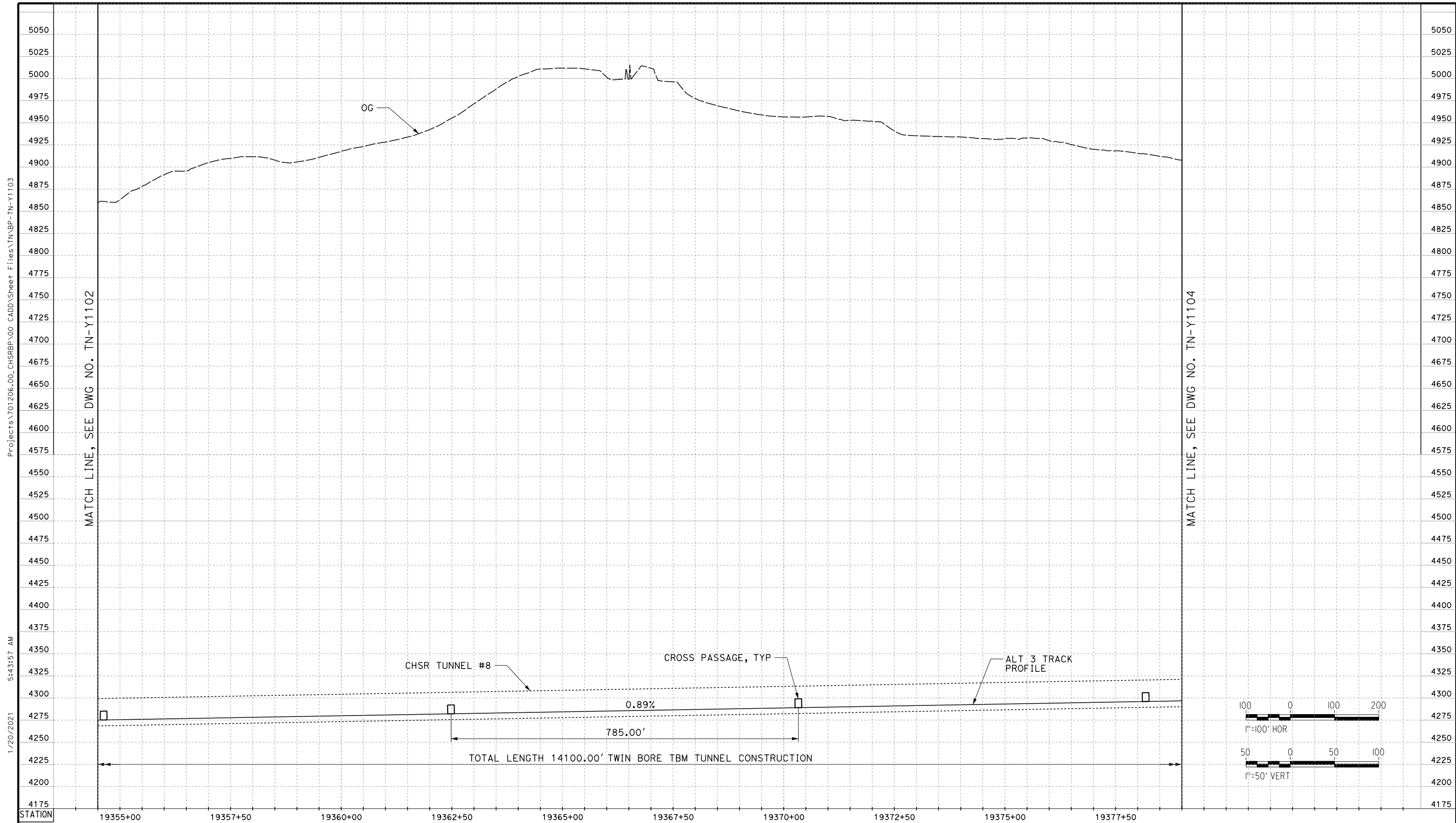
ALT 3
TUNNEL PROFILES
TUNNEL 8 - SHEET 2

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1102

SCALE
AS SHOWN

SHEET NO.
52



TUNNEL 8

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KONDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
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**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALT 3
TUNNEL PROFILE
TUNNEL 8 - SHEET 3

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1103

SCALE
AS SHOWN

SHEET NO.
53

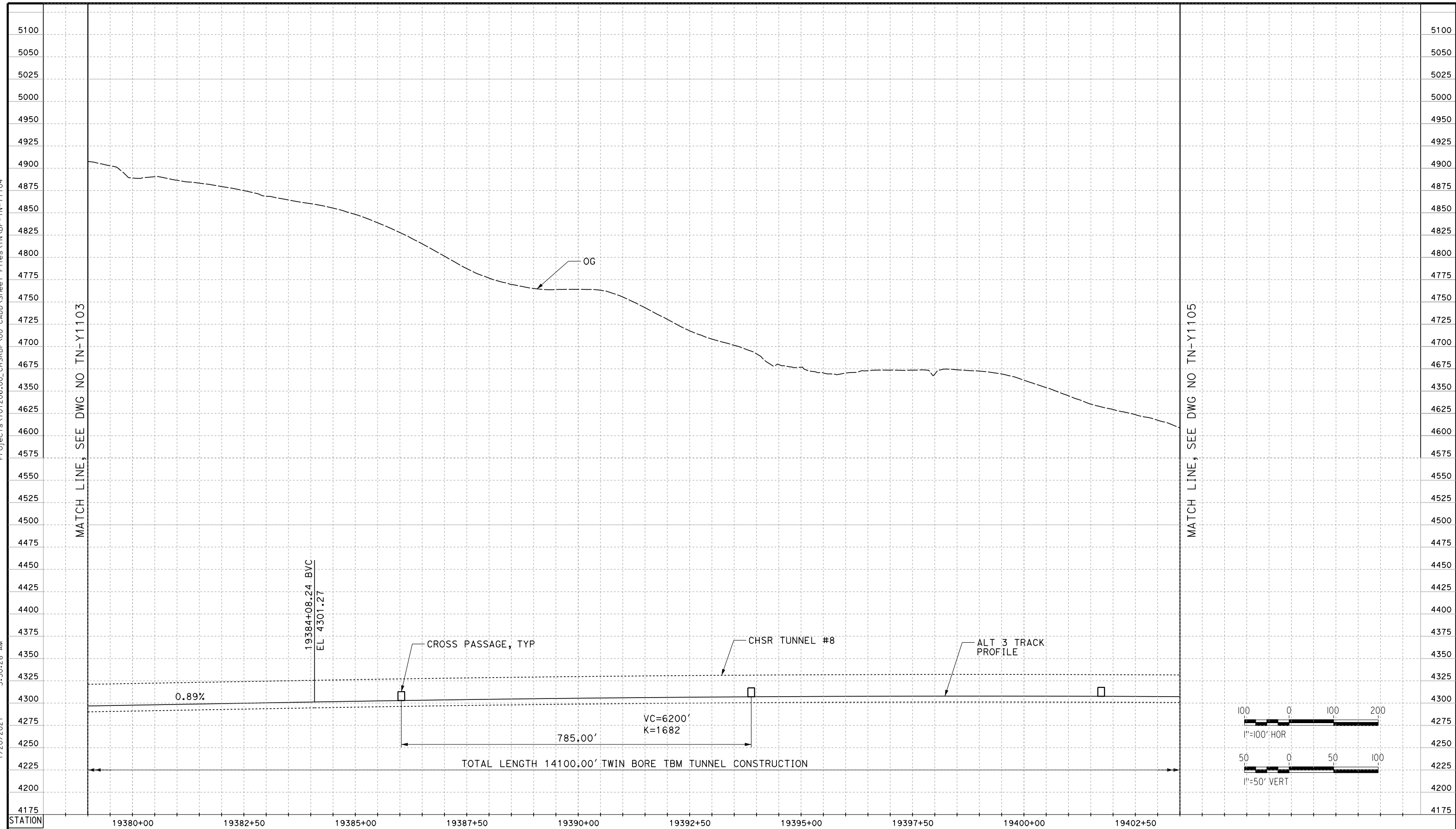
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1/20/2021

ics_user_17609



TUNNEL 8

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
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**NOT FOR
CONSTRUCTION**



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

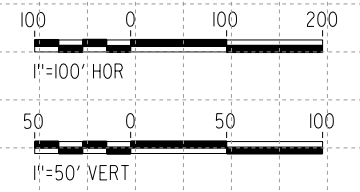
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CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1104

SCALE
AS SHOWN

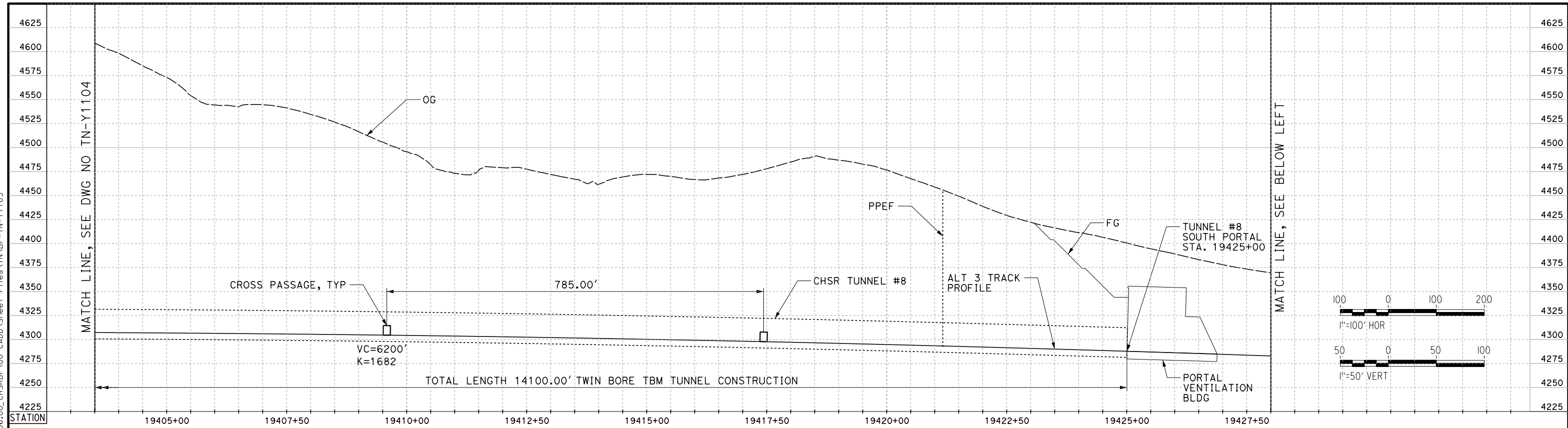
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54



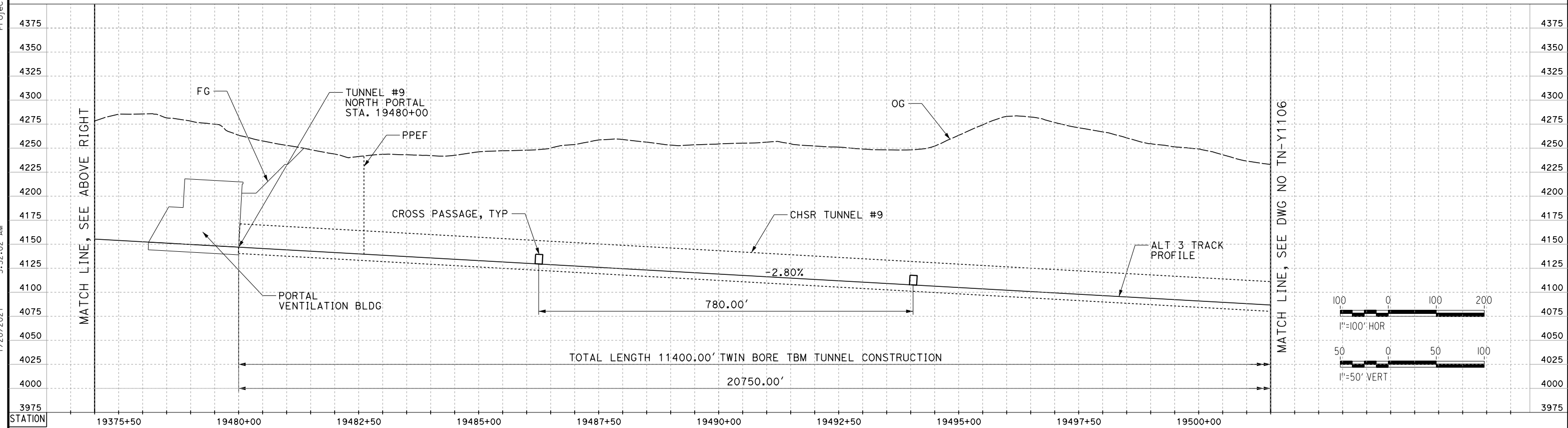
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1/20/2021 5:32:02 AM

ics_user_17609



TUNNEL 8



TUNNEL 9

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

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CONSTRUCTION**



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

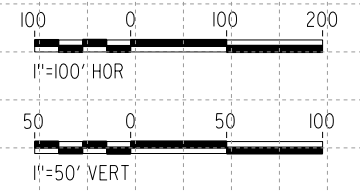
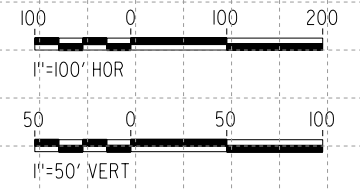
ALT 3
TUNNEL PROFILES
TUNNEL 8 AND TUNNEL 9

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-Y1105

SCALE
AS SHOWN

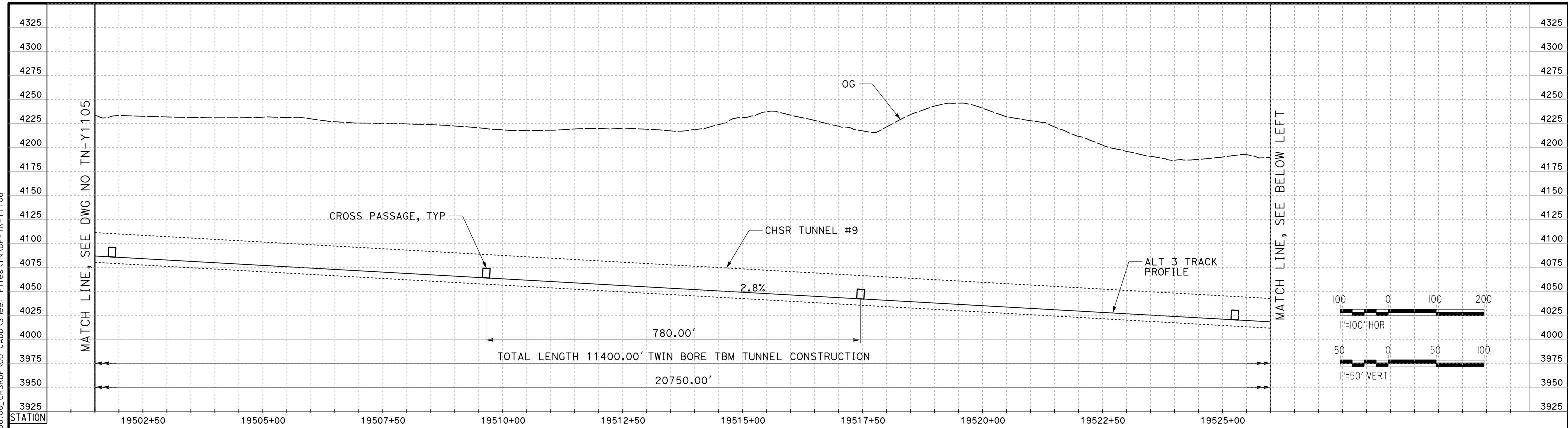
SHEET NO.
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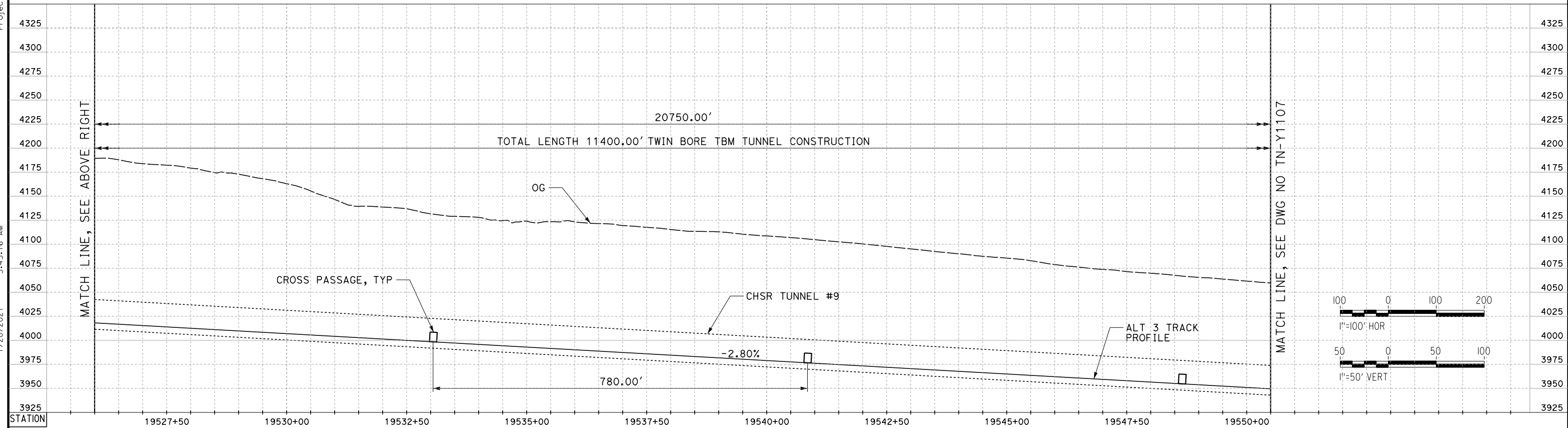
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1/20/2021 5:43:16 AM

jcs_user_17609



TUNNEL 9



TUNNEL 9

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDUN
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

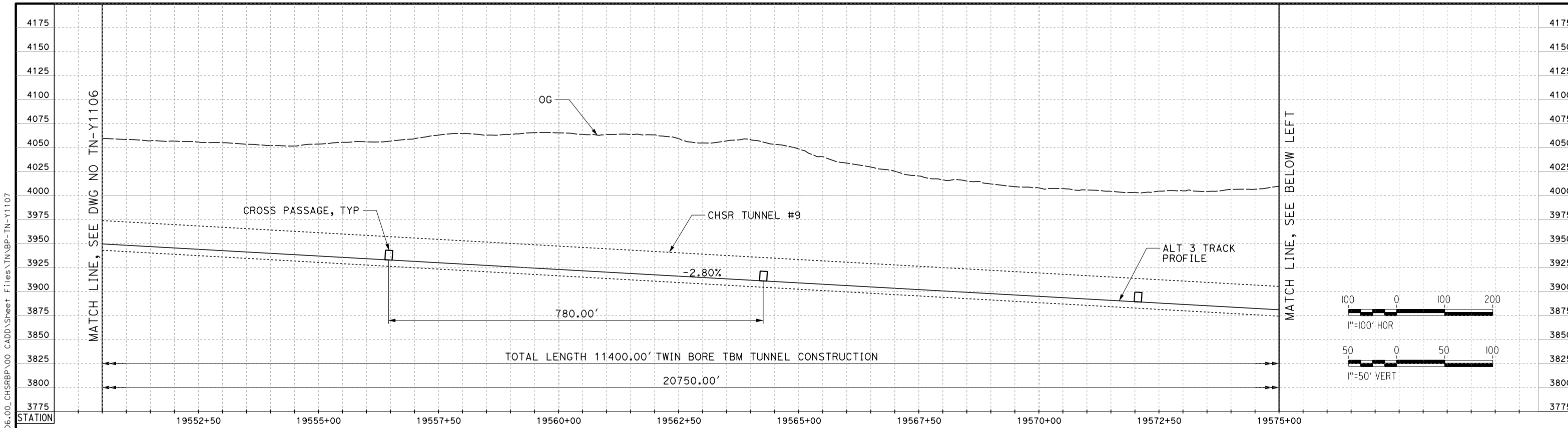
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CONSTRUCTION**



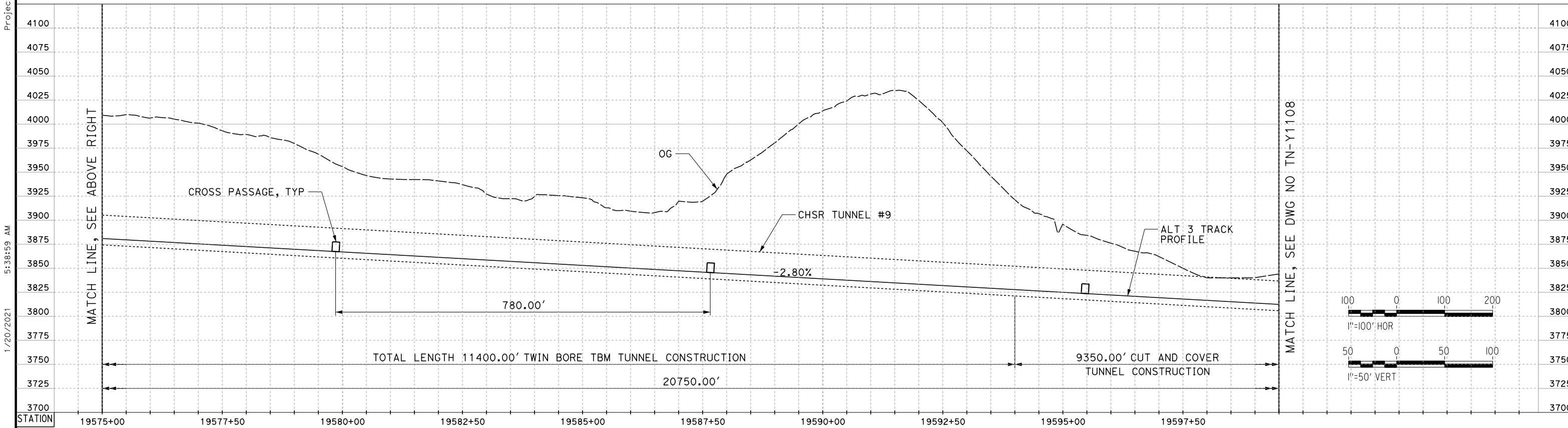
**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**

ALT 3
TUNNEL PROFILES
TUNNEL 9 - SHEET 1

CONTRACT NO.
HSR13-44
DRAWING NO.
TN-Y1106
SCALE
AS SHOWN
SHEET NO.
56



TUNNEL 9



TUNNEL 9

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 3
TUNNEL PROFILES
TUNNEL 9 - SHEET 2

CONTRACT NO.
HSR13-44

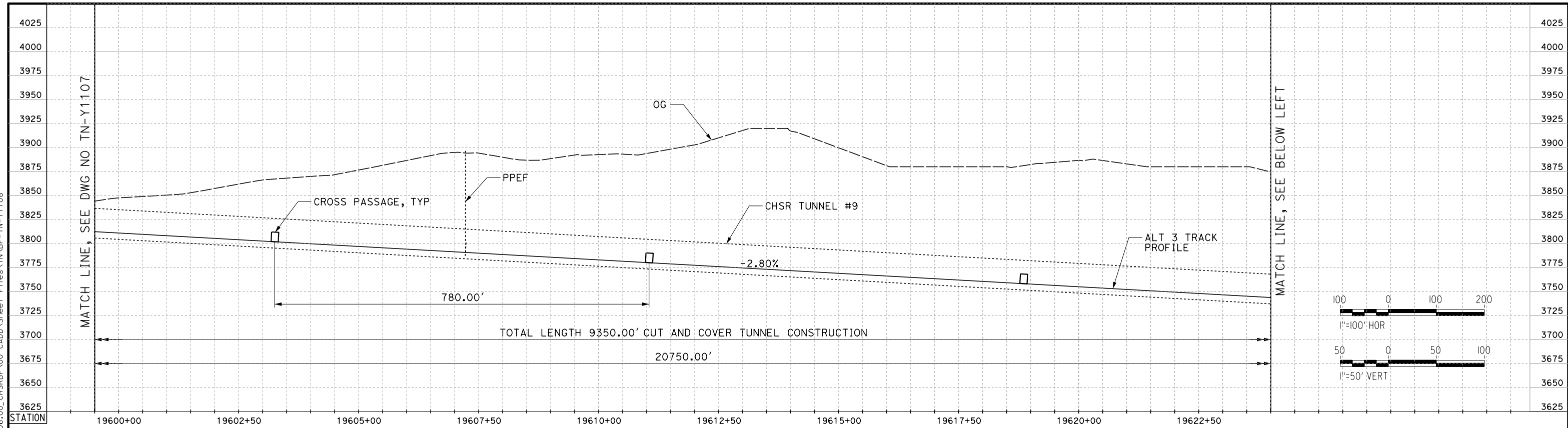
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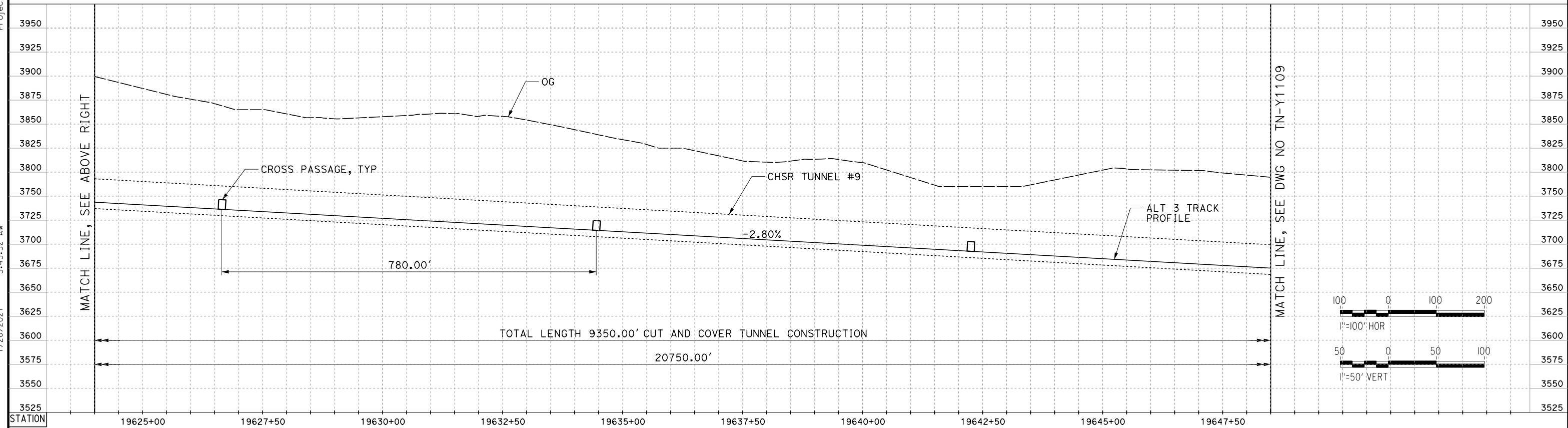
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TUNNEL 9



TUNNEL 9

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDUN
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

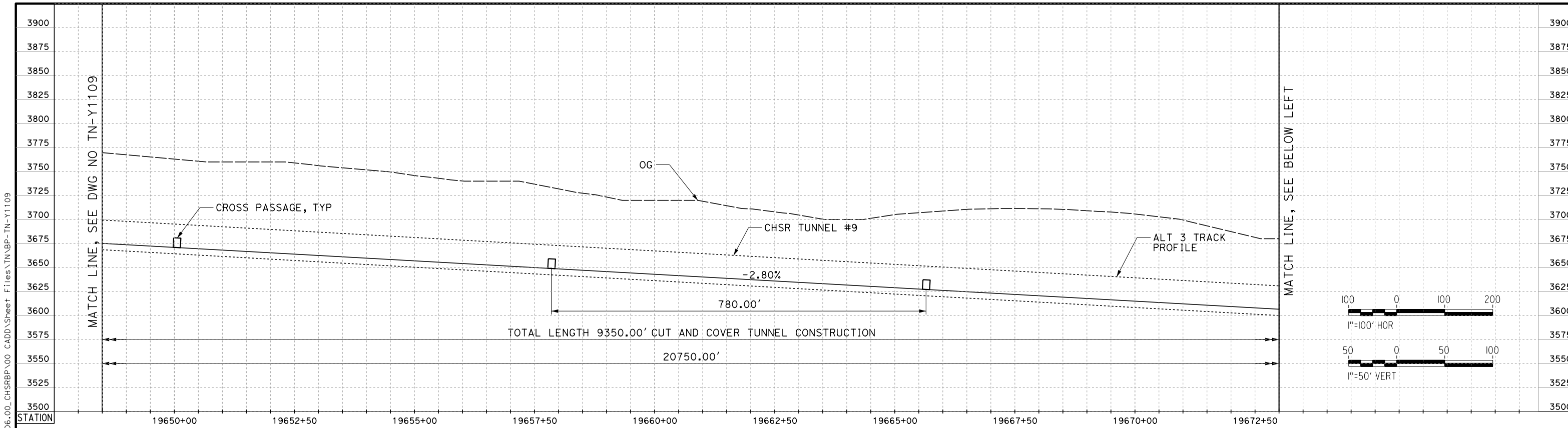
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CONSTRUCTION



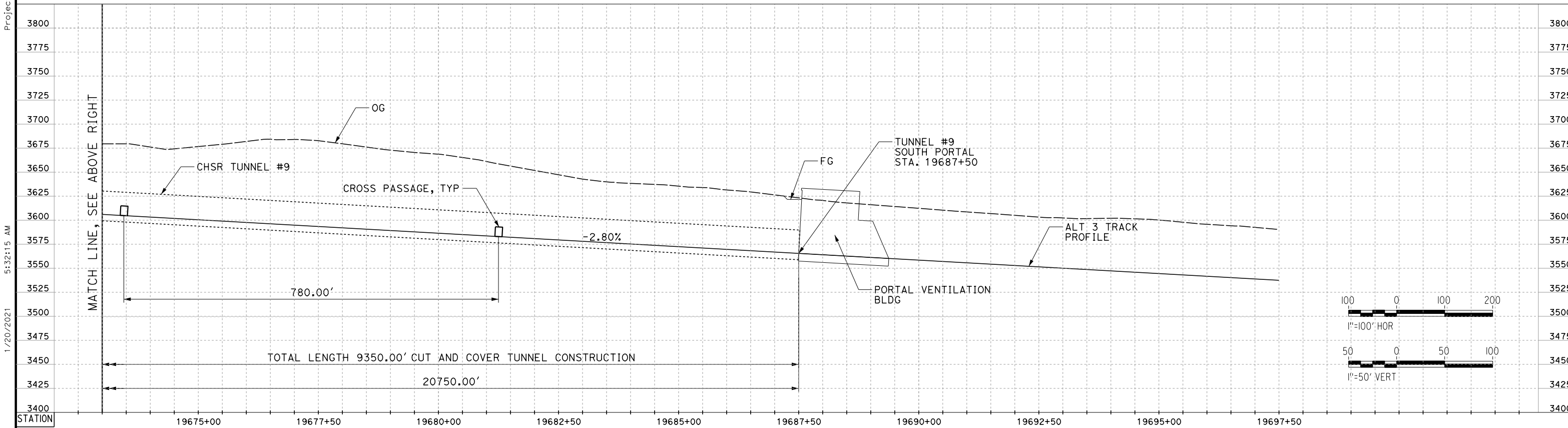
CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE

 ALT 3
 TUNNEL PROFILES
 TUNNEL 9 - SHEET 3

CONTRACT NO.
 HSR13-44
 DRAWING NO.
 TN-Y1108
 SCALE
 AS SHOWN
 SHEET NO.
 58



TUNNEL 9



TUNNEL 9

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDUN

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALT 3
TUNNEL PROFILES
TUNNEL 9 - SHEET 4

CONTRACT NO.
HSR13-44

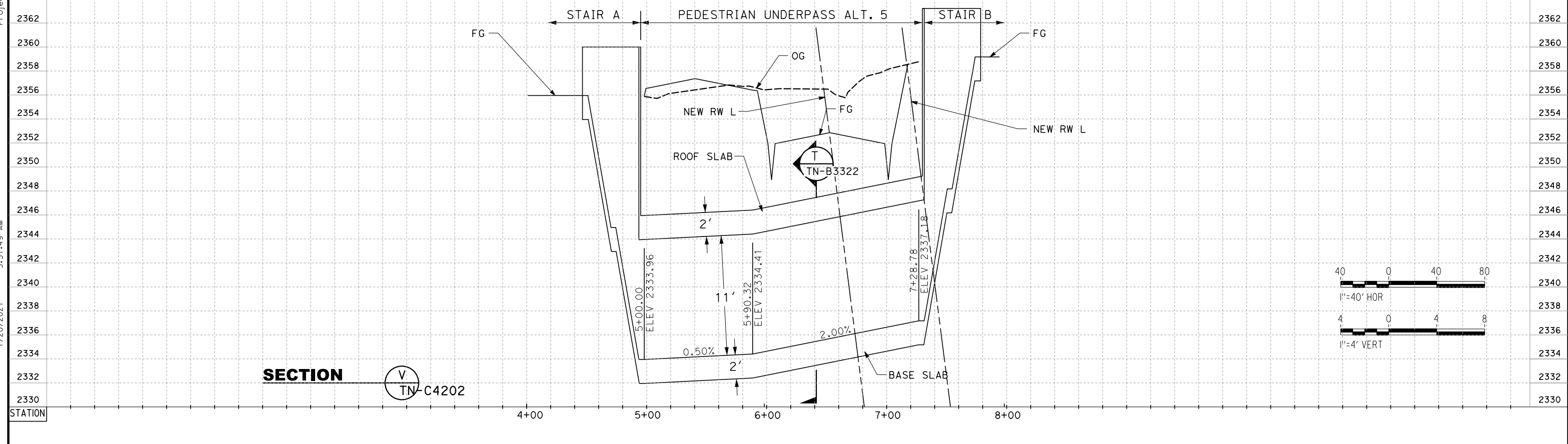
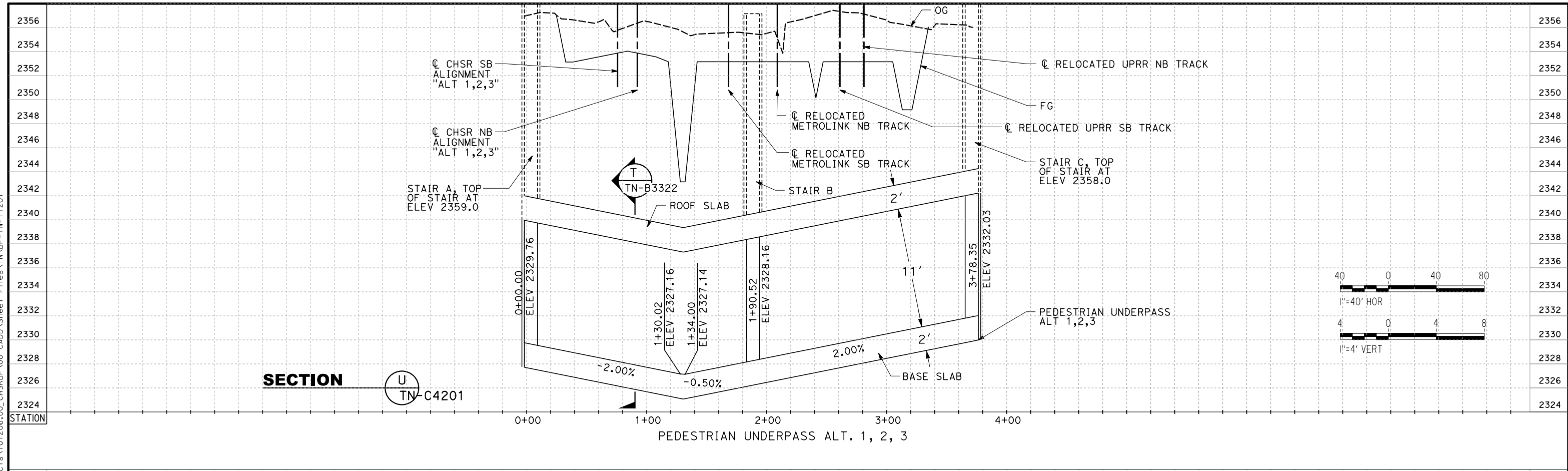
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TN-Y1109

SCALE
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SHEET NO.
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 jcs_user_17609



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

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CONSTRUCTION**



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

ALT 1, 2, 3, 5
 PROFILE VIEW
 TYPICAL UNDERPASS PROFILE

CONTRACT NO.
HSR13-44

DRAWING NO.
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SCALE
AS SHOWN

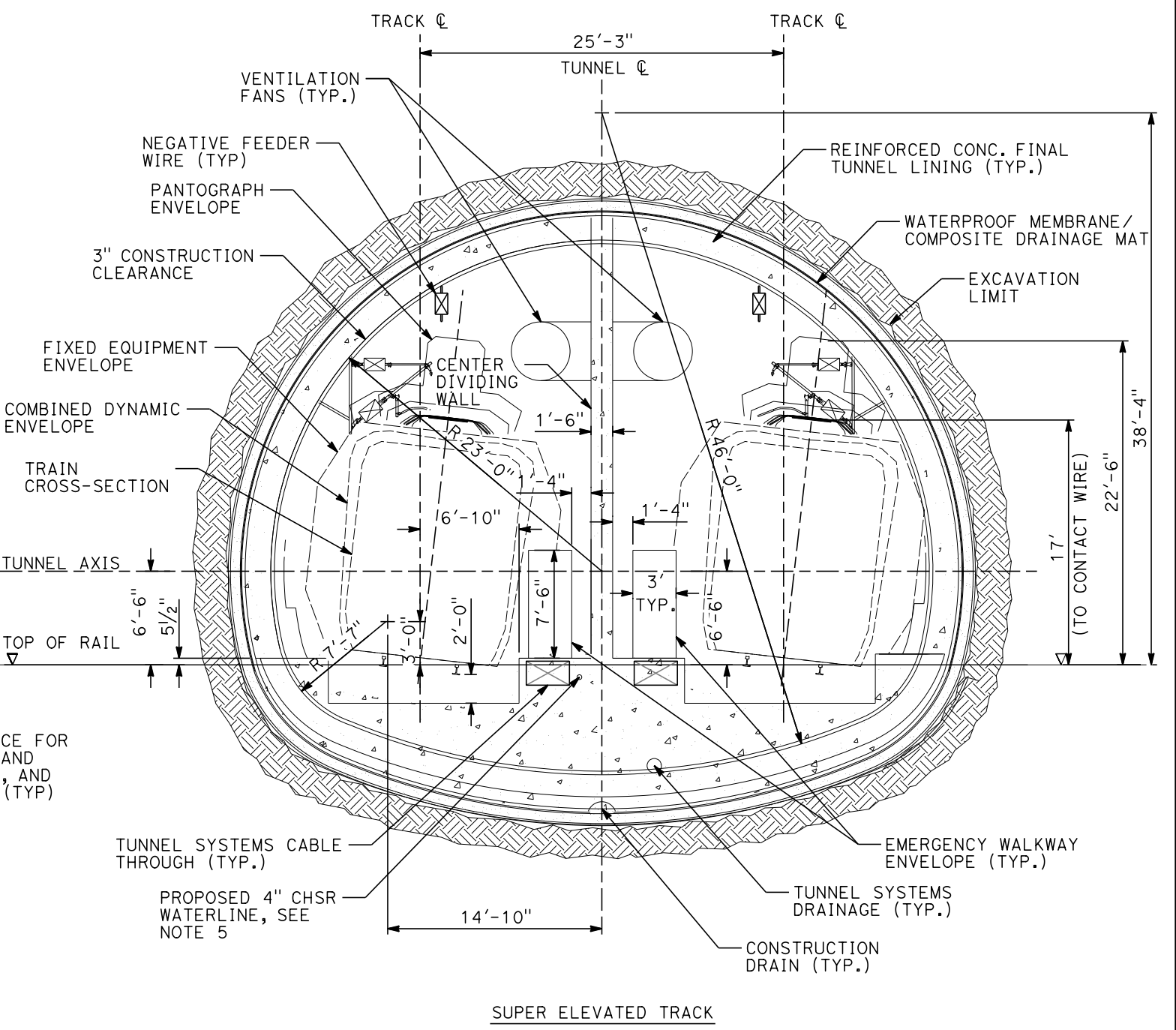
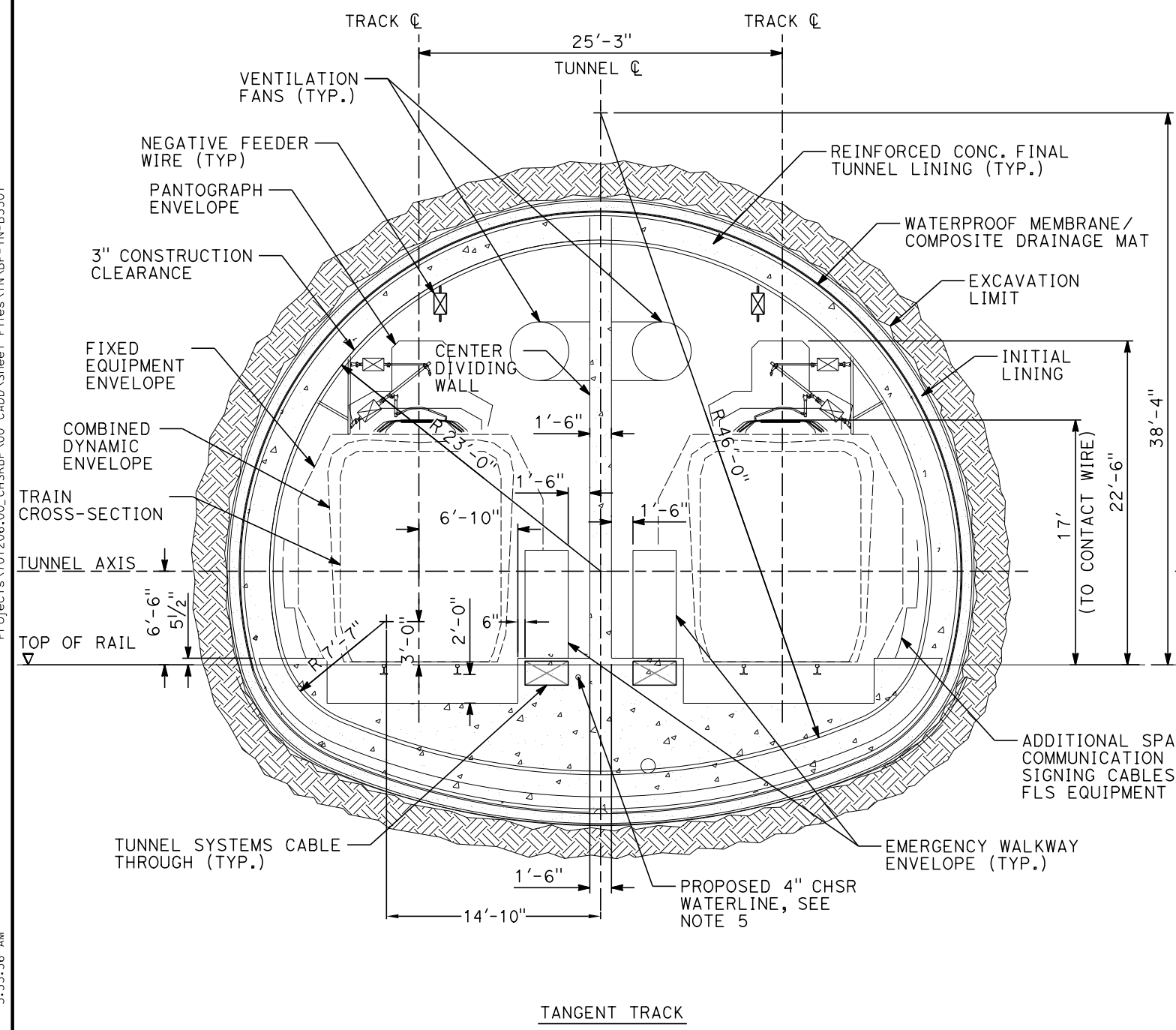
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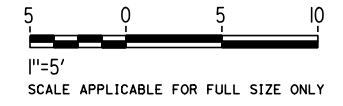
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GENERAL NOTES:

1. SEQUENTIAL EXCAVATION METHODS ARE ADOPTED FOR THE 15% IN-PROGRESS DESIGN OF DOUBLE-TRACK, TUNNEL 1, 2 & 3, SITED IN FANGLOMERATE.
2. EXCAVATION, GROUND SUPPORT, LINING THICKNESS, WATERTIGHTNESS AND GAS-TIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND TUNNEL-SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. CENTER DIVIDING WALL SHALL CONFORM TO NFPA 130 AND HAVE A 2 HOUR FIRE RATING.
5. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

NOT FOR
CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
ALTERNATIVE 1, 2, 3, 5
TUNNEL SEQUENTIAL EXCAVATION METHOD
SINGLE TUNNEL CLEARANCE DIAGRAM
TANGENT TRACK

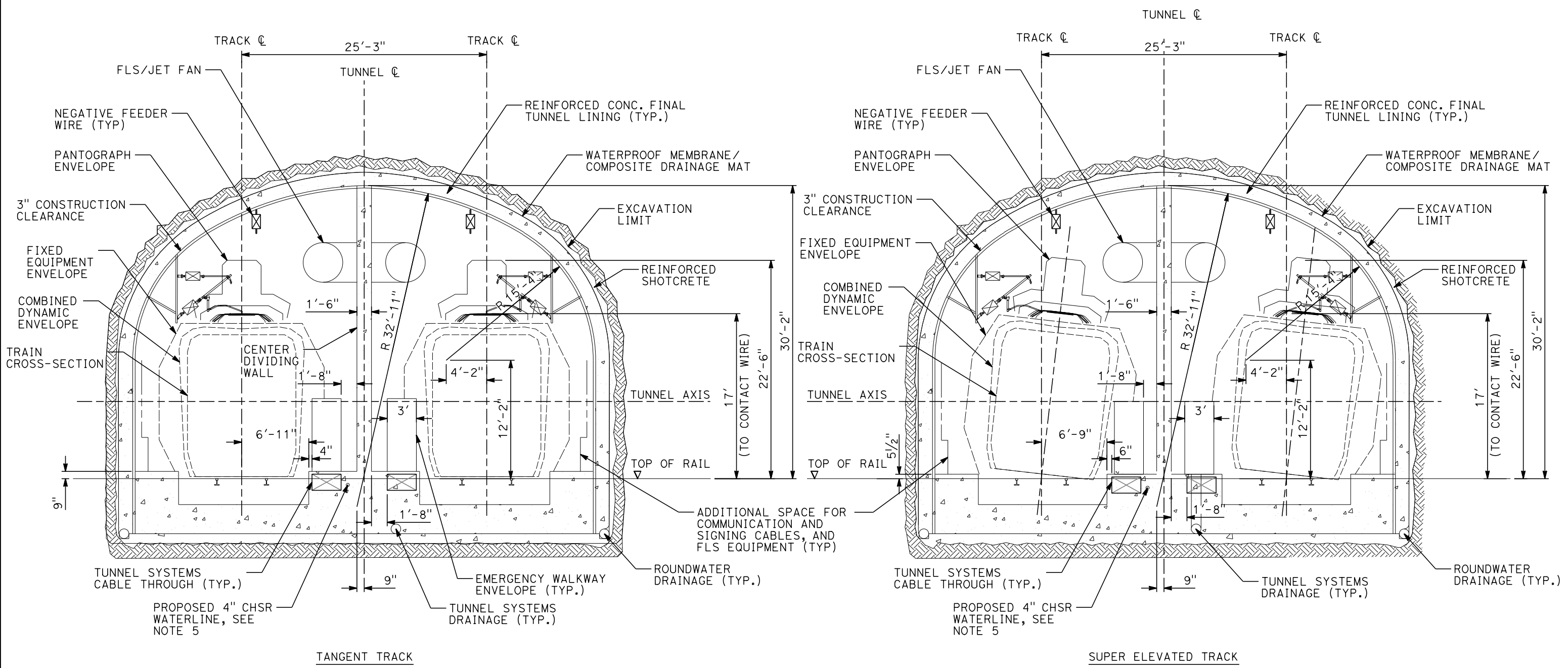
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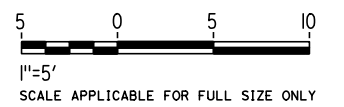
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GENERAL NOTES

1. DRILL AND BLAST METHOD IS IDENTIFIED FOR THE 15% IN-PROGRESS DESIGN OF DOUBLE TRACK TUNNEL FOR TUNNEL 4, 5 AND 6 IN HARD ROCK UNITS.
2. EXCAVATION, GROUND SUPPORT, LINING THICKNESS AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND TUNNEL-SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. CENTER DIVIDING WALL SHALL CONFORM TO NFPA 130 AND HAVE A 2 HOUR FIRE RATING.
5. THE COMPOSITE VEHICLE STATIC AND DYNAMIC ENVELOPES SHOWN FOLLOW TM1.1.10-A AND C.
6. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

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CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
ALTERNATIVE 1, 2, 3, 5
TUNNEL DRILL AND BLAST METHOD
SINGLE TUNNEL
CLEARANCE DIAGRAM

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3303

SCALE
AS SHOWN

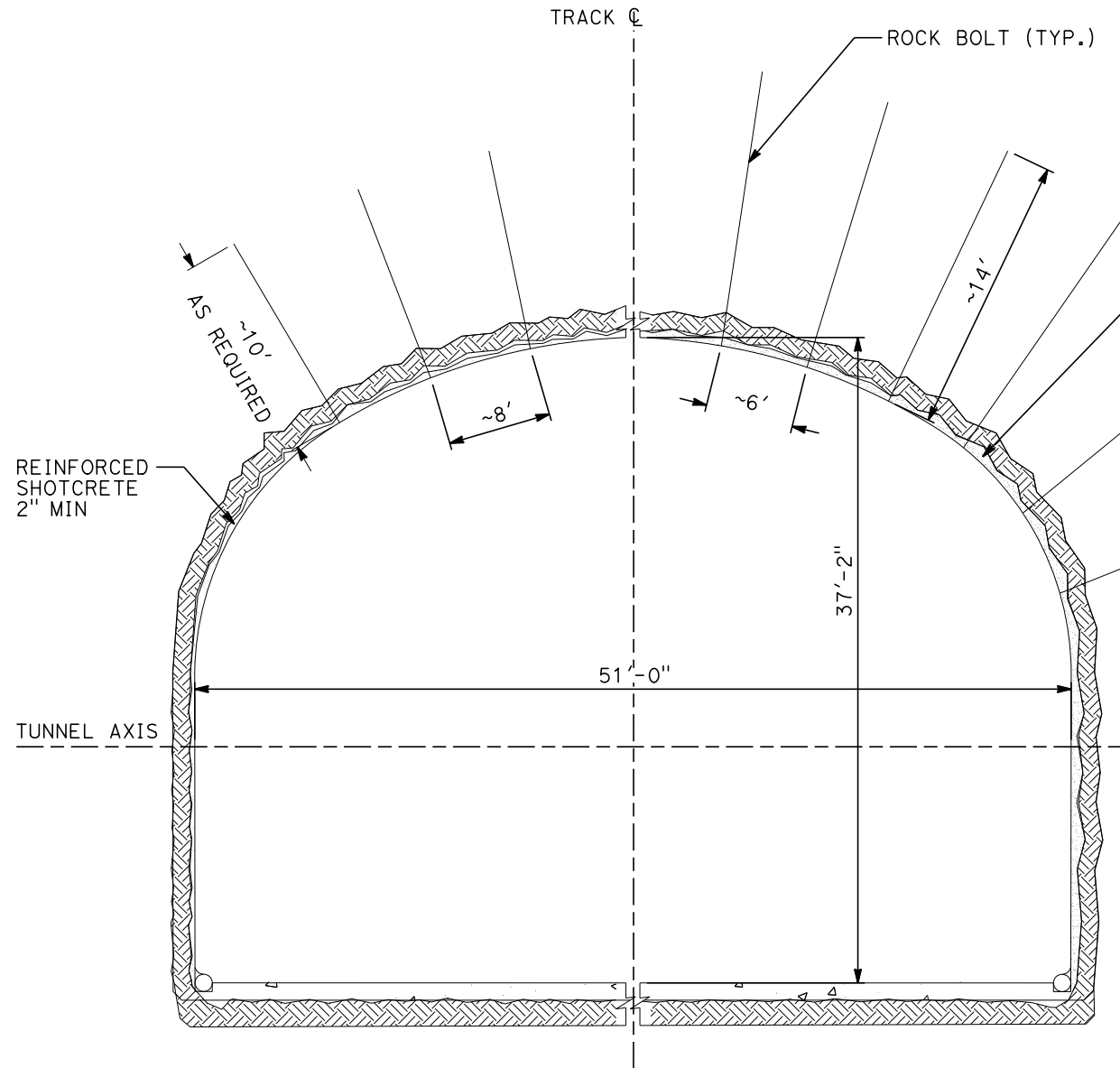
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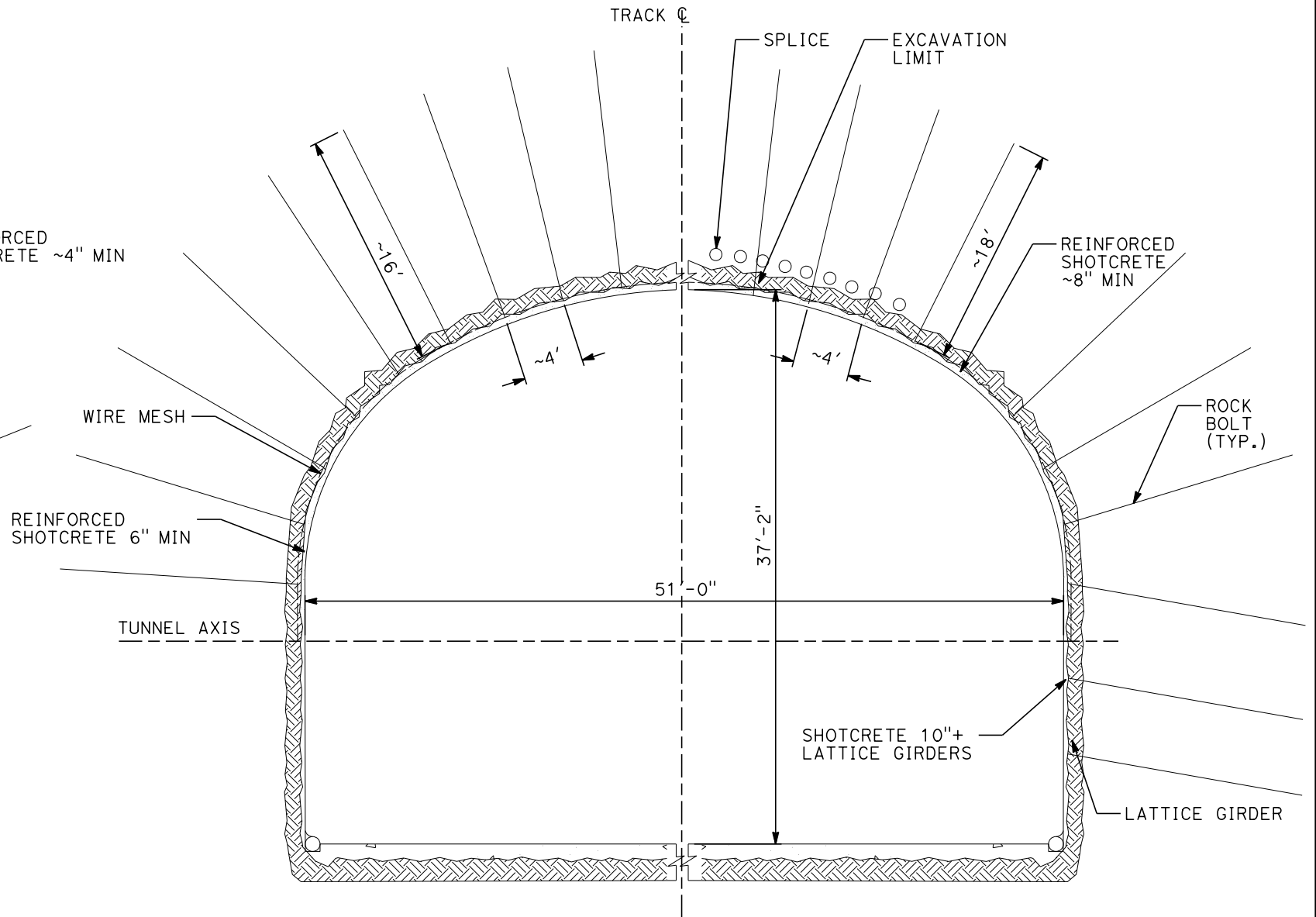
1/20/2021

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CLASS I
RMR >80

CLASS II
60 < RMR < 80

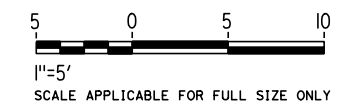


CLASS III
40 < RMR < 60

CLASS IV
20 < RMR < 40

GENERAL NOTES:

1. A DRILL AND BLAST OPTION IS IDENTIFIED FOR THE 15% IN-PROGRESS DESIGN OF TWIN, SINGLE TRACK TUNNELS FOR TUNNEL 4, 5 AND 6 IN HARD ROCK UNITS.
2. EXCAVATION, GROUND SUPPORT, LINING THICKNESS AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND TUNNEL-SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. CLASS I AND II MAY BE EXCAVATED FULL FACE. CLASS III MAY REQUIRE HEADING AND BENCH EXCAVATION WITH FACE SUPPORT AS REQUIRED. CLASS IV MAY REQUIRE TOP HEADING AND BENCH WITH SIDE SLASH, SPILES, AND FACE SUPPORT AS NEEDED. CLASS IV MAY REQUIRE A CHANGE IN EXCAVATION METHOD TO AN SEM CONSTRUCTION ALTERNATIVE.
5. THE COMPOSITE VEHICLE STATIC AND DYNAMIC ENVELOPES SHOWN FOLLOW TM1.1.10-A AND C



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**
ALTERNATIVE 1, 2, 3, 5
TUNNEL DRILL AND BLAST METHOD
SINGLE TUNNEL
INITIAL SUPPORT

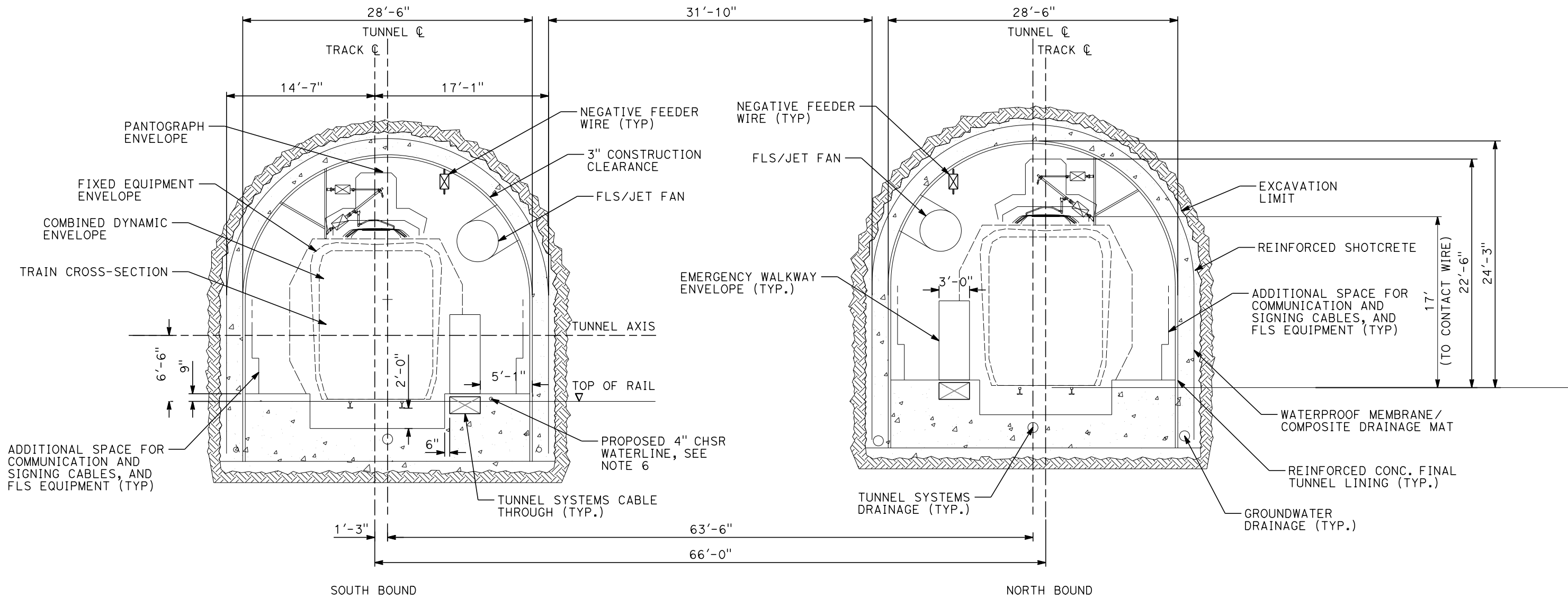
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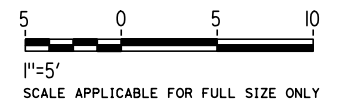
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jcs_user_17609



GENERAL NOTES:

1. A DRILL AND BLAST OPTION IS IDENTIFIED FOR THE 15% IN-PROGRESS DESIGN OF TWIN, SINGLE TRACK TUNNELS FOR TUNNEL 7 THROUGH THE TEHACHAPI FAULT ZONE.
2. EXCAVATION, GROUND SUPPORT, PILLAR WIDTH, LINING THICKNESS AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND TUNNEL-SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. PILLAR WIDTH BETWEEN TUNNELS TO BE ONE TUNNEL DIAMETER OR MORE BASED ON GUIDANCE IN TM 2.4.6
5. THE COMPOSITE VEHICLE STATIC AND DYNAMIC ENVELOPES SHOWN FOLLOW TM 1.1.10-A AND C.
6. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



REV	DATE	BY	CHK	APP	DESCRIPTION

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Z. SKOVAJSOVA
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K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

NOT FOR CONSTRUCTION



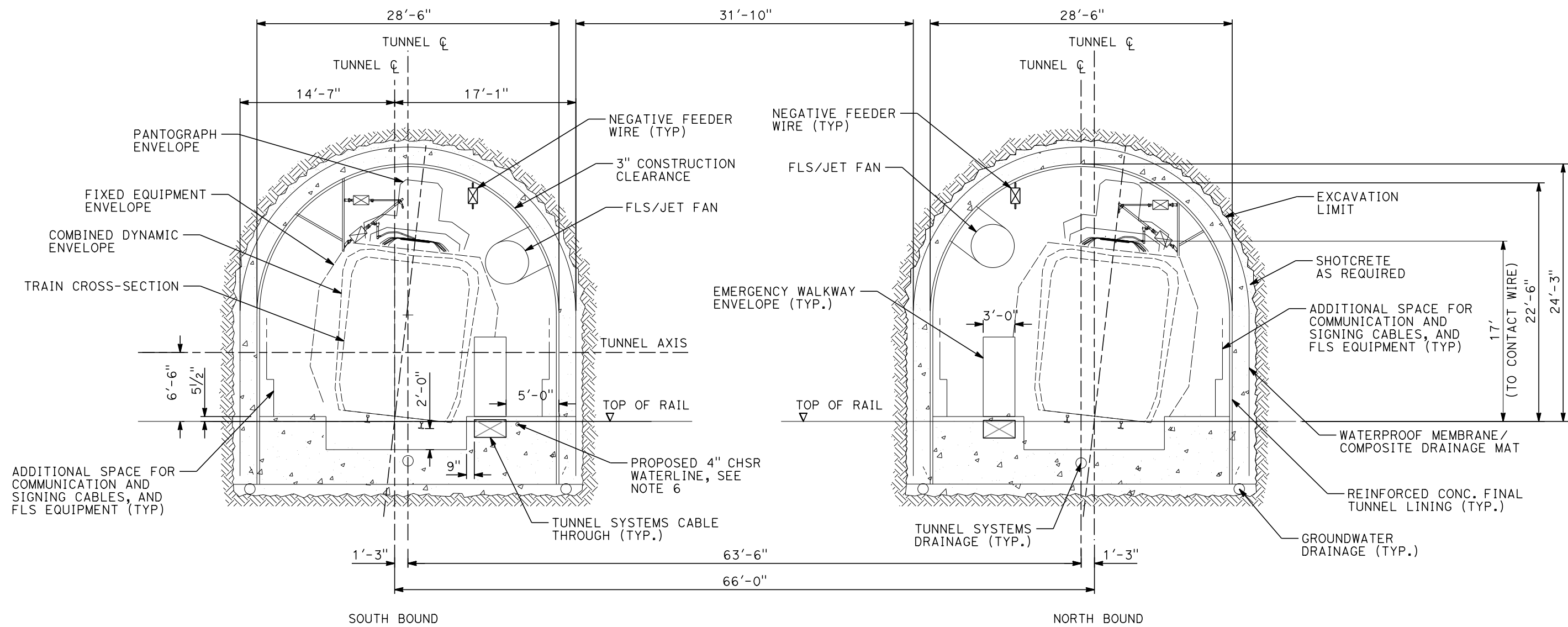
CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
ALTERNATIVE 1, 2, 3, 5
TUNNEL DRILL AND BLAST METHOD
TWIN TUNNELS - CLEARANCE DIAGRAM
TANGENT TRACK

CONTRACT NO.
HSR13-44
DRAWING NO.
TN-B3305
SCALE
AS SHOWN
SHEET NO.
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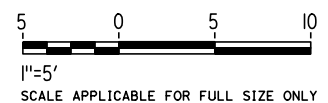
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ics_user_17609



GENERAL NOTES:

1. A DRILL AND BLAST OPTION IS IDENTIFIED FOR THE 15% IN-PROGRESS DESIGN OF TWIN, SINGLE TRACK TUNNELS FOR TUNNEL 7 THROUGH THE TEHACHAPI FAULT ZONE.
2. EXCAVATION, GROUND SUPPORT, PILLAR WIDTH, LINING THICKNESS AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND TUNNEL-SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. PILLAR WIDTH BETWEEN TUNNELS TO BE ONE TUNNEL DIAMETER OR MORE BASED ON GUIDANCE IN TM 2.4.6.
5. THE COMPOSITE VEHICLE STATIC AND DYNAMIC ENVELOPES SHOWN FOLLOW TM 1.1.10-A AND C.
6. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
TUNNEL DRILL AND BLAST METHOD
TWIN TUNNELS - CLEARANCE DIAGRAM
SUPER ELEVATED TRACK

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3306

SCALE
AS SHOWN

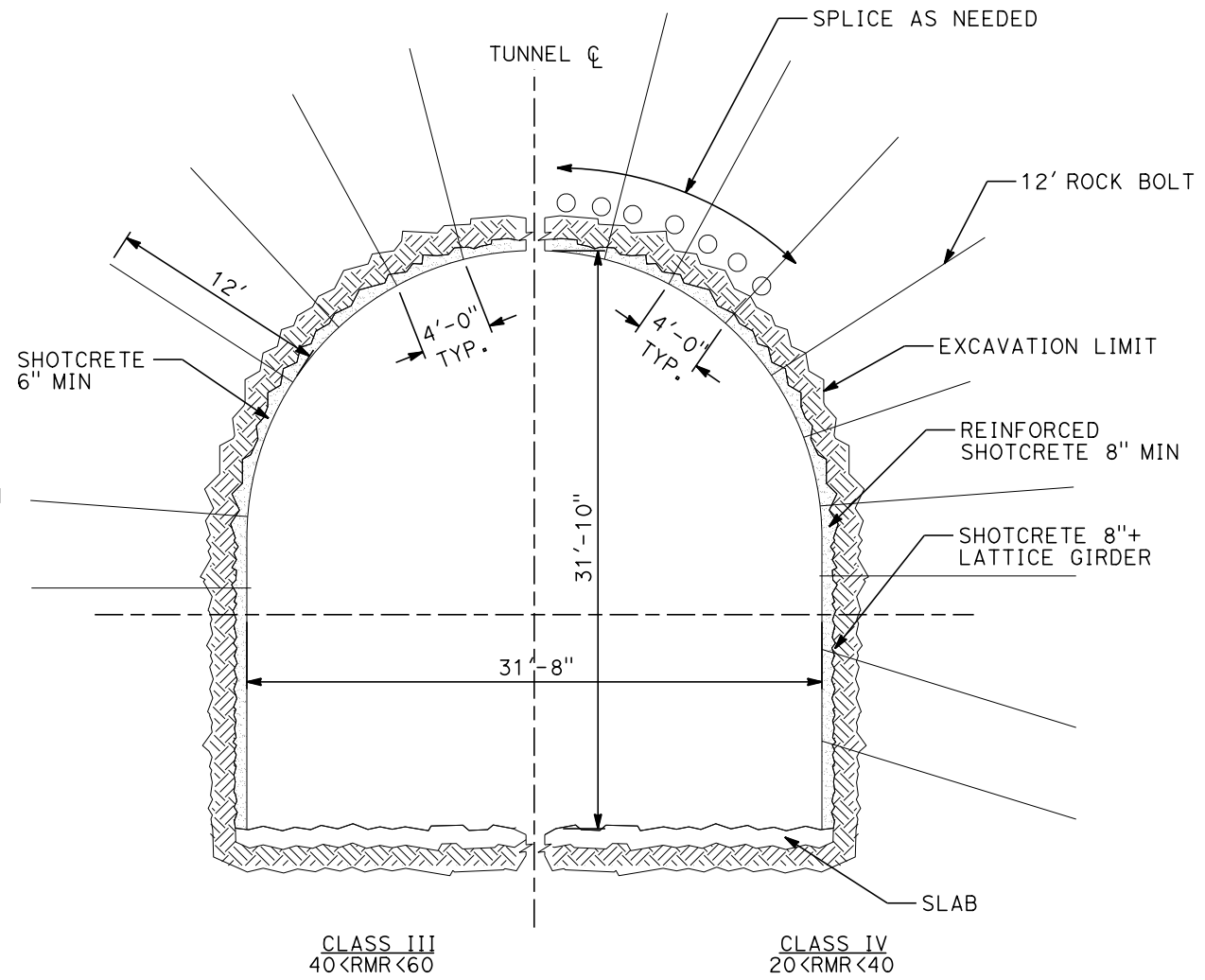
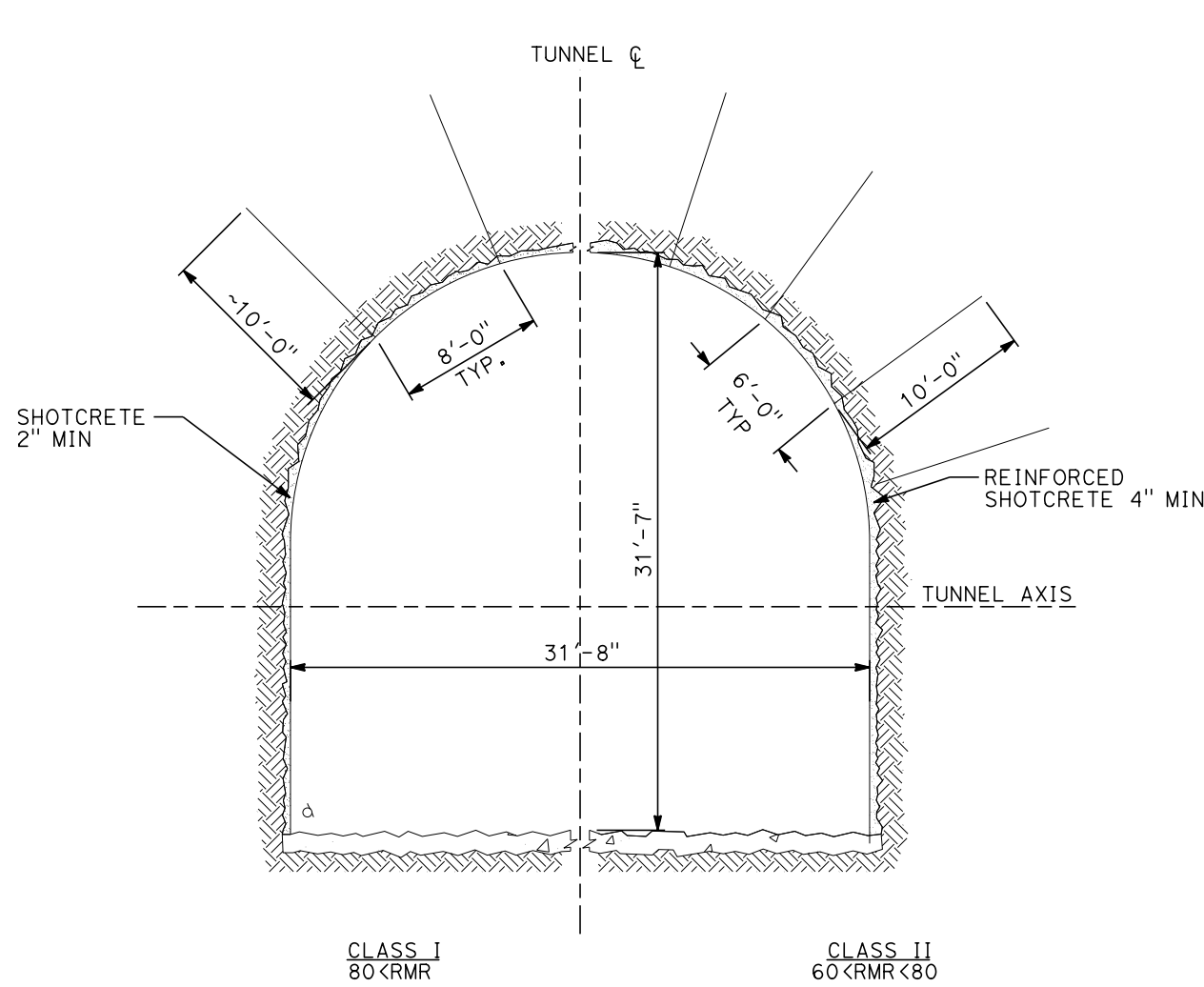
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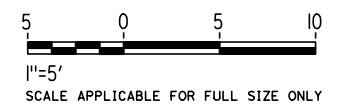
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GENERAL NOTES:

1. DRILL AND BLAST OPTION IS IDENTIFIED FOR THE 15% IN-PROGRESS DESIGN OF TWIN, SINGLE TRACK TUNNELS FOR TUNNEL 7 THROUGH THE TEHACHAPI FAULT ZONE.
2. EXCAVATION, GROUND SUPPORT, PILLAR WIDTH, LINING THICKNESS AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND TUNNEL-SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. PILLAR WIDTH BETWEEN TUNNELS TO BE ONE TUNNEL DIAMETER OR MORE BASED ON GUIDANCE IN TM 2.4.6.
5. CLASSES I AND II MAY BE EXCAVATED FULL FACE. CLASS III MAY REQUIRE HEADING AND BENCH EXCAVATION WITH FACE SUPPORT AS REQUIRED. CLASS IV MAY REQUIRE TOP HEADING AND BENCH WITH SIDE SLASH, SPILES, AND FACE SUPPORT AS NEEDED. CLASS IV MAY REQUIRE A CHANGE IN EXCAVATION METHOD TO AN SEM CONSTRUCTION ALTERNATIVE.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

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CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
TUNNEL DRILL AND BLAST METHOD
TWIN TUNNELS
INITIAL SUPPORT

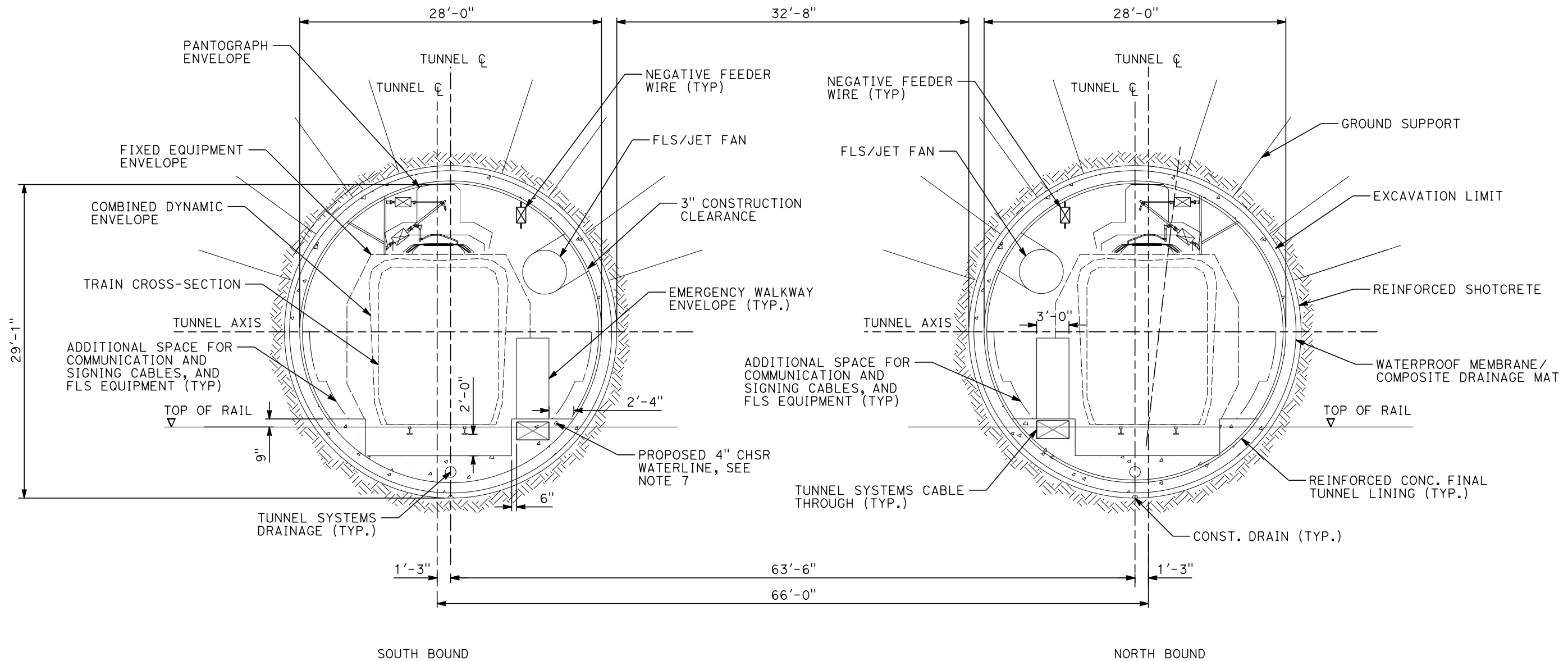
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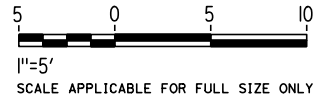
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jcs_user_17609



GENERAL NOTES:

1. OPEN TBM METHODS ARE ADOPTED FOR THE 15% IN-PROGRESS DESIGN OF THE LONGER (GREATER THAN 1 MILE) TWIN, SINGLE TRACK 7, 8 & 9, SITED IN HARD ROCK UNITS.
2. EXCAVATION, GROUND SUPPORT, PILLAR WIDTH, LINING THICKNESS AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULT AND TUNNEL SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. PILLAR WIDTH BETWEEN TUNNELS TO BE ONE TUNNEL DIAMETER OR MORE BASED ON GUIDANCE IN TM 2.4.6.
5. A DUAL DRAINAGE SYSTEM WILL BE USED IN TUNNEL 8 AT INVERT GRADIENTS OF LESS THAN 0.25% AND GREATER THAN -0.25%.
6. THE COMPOSITE VEHICLE STATIC AND DYNAMIC ENVELOPES SHOWN FOLLOW TM 1.1.10-A AND C.
7. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

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CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
TUNNEL TWIN TBM BORED TUNNELS
CLEARANCE DIAGRAM
TANGENT TRACK

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3308

SCALE
AS SHOWN

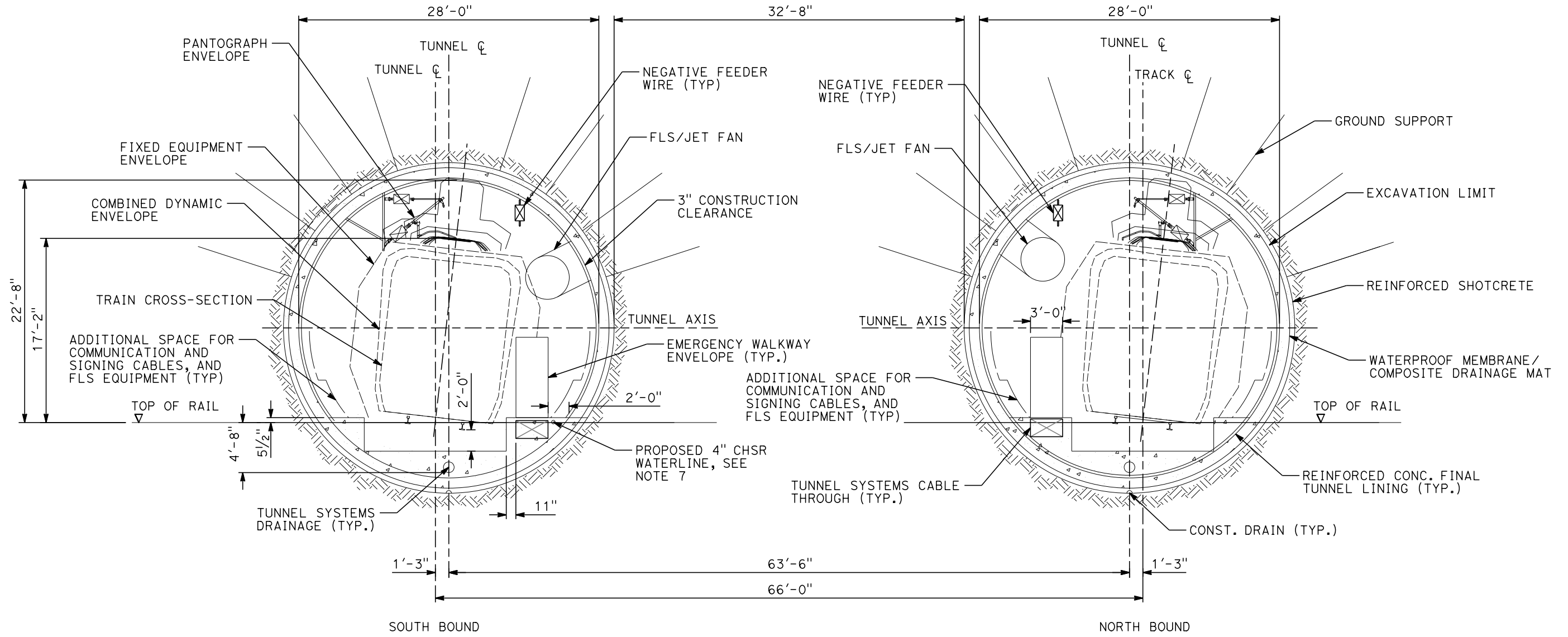
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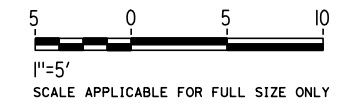
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GENERAL NOTES:

1. OPEN TBM METHODS ARE ADOPTED FOR THE 15% IN-PROGRESS DESIGN OF THE LONGER (GREATER THAN 1 MILE) TWIN, SINGLE TRACK 7, 8 & 9, SITED IN HARD ROCK UNITS.
2. EXCAVATION, GROUND SUPPORT, PILLAR WIDTH, LINING THICKNESS AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULT AND TUNNEL SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. PILLAR WIDTH BETWEEN TUNNELS TO BE ONE TUNNEL DIAMETER OR MORE BASED ON GUIDANCE IN TM 2.4.6.
5. A DUAL DRAINAGE SYSTEM WILL BE USED IN TUNNEL 8 AT INVERT GRADIENTS OF LESS THAN 0.25% AND GREATER THAN -0.25%.
6. THE COMPOSITE VEHICLE STATIC AND DYNAMIC ENVELOPES SHOWN FOLLOW TM 1.1.10-A AND C.
7. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
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K. BUNGER
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R. KUNDU
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J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

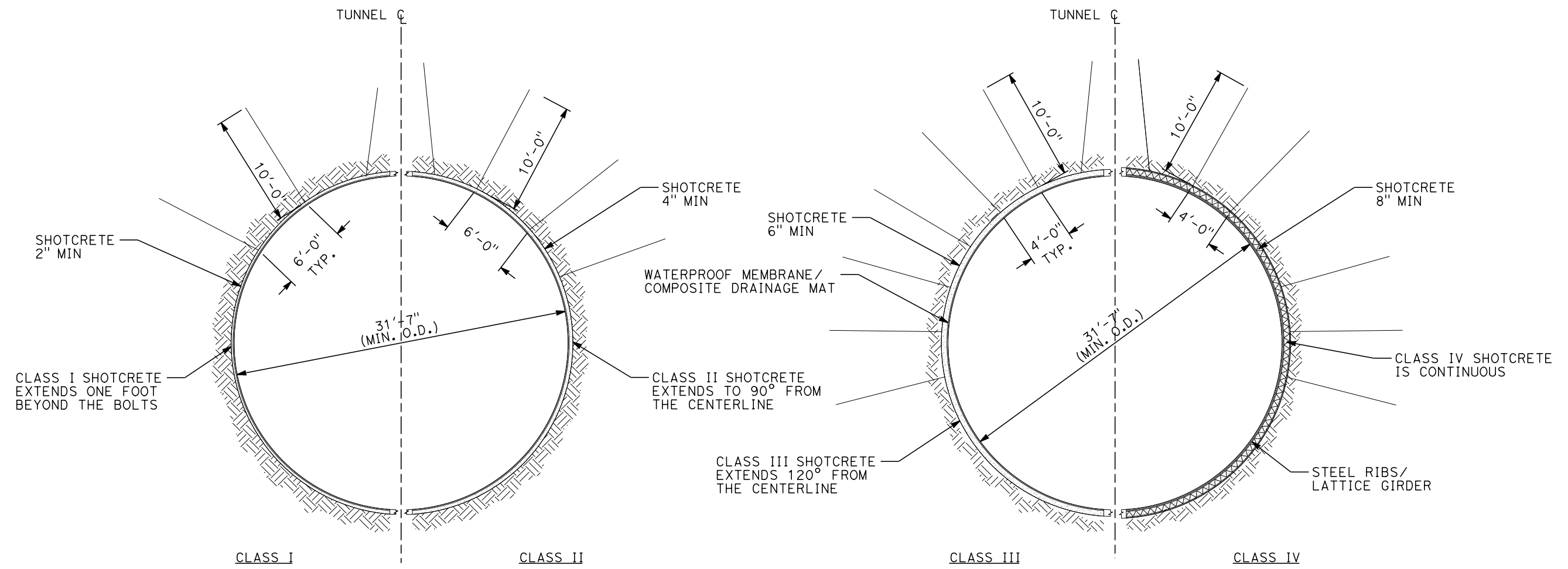
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CONSTRUCTION**



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

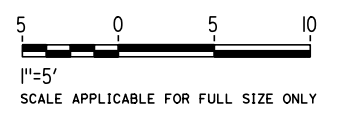
ALTERNATIVE 1, 2, 3, 5
TUNNEL TWIN TBM BORED TUNNELS
CLEARANCE DIAGRAM
SUPER ELEVATED TRACK

CONTRACT NO.
HSR13-44
DRAWING NO.
TN-B3309
SCALE
AS SHOWN
SHEET NO.
69



GENERAL NOTES:

1. OPEN TBM METHODS ARE ADOPTED FOR THE 15% IN-PROGRESS DESIGN OF THE LONGER (GREATER THAN 1 MILE) TWIN, SINGLE TRACK 7, 8 & 9, SITED IN HARD ROCK UNITS.
2. EXCAVATION, GROUND SUPPORT, PILLAR WIDTH, LINING THICKNESS AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULT AND TUNNEL SPECIFIC DESIGN WORK
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. PILLAR WIDTH BETWEEN TUNNELS TO BE ONE TUNNEL DIAMETER OR MORE BASED ON GUIDANCE IN TM 2.4.6
5. A DUAL DRAINAGE SYSTEM WILL BE USED IN TUNNEL 8 AT INVERT GRADIENTS OF LESS THAN 0.25% AND GREATER THAN -0.25%.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
TUNNEL TWIN TBM BORED TUNNELS
INITIAL SUPPORT

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3310

SCALE
AS SHOWN

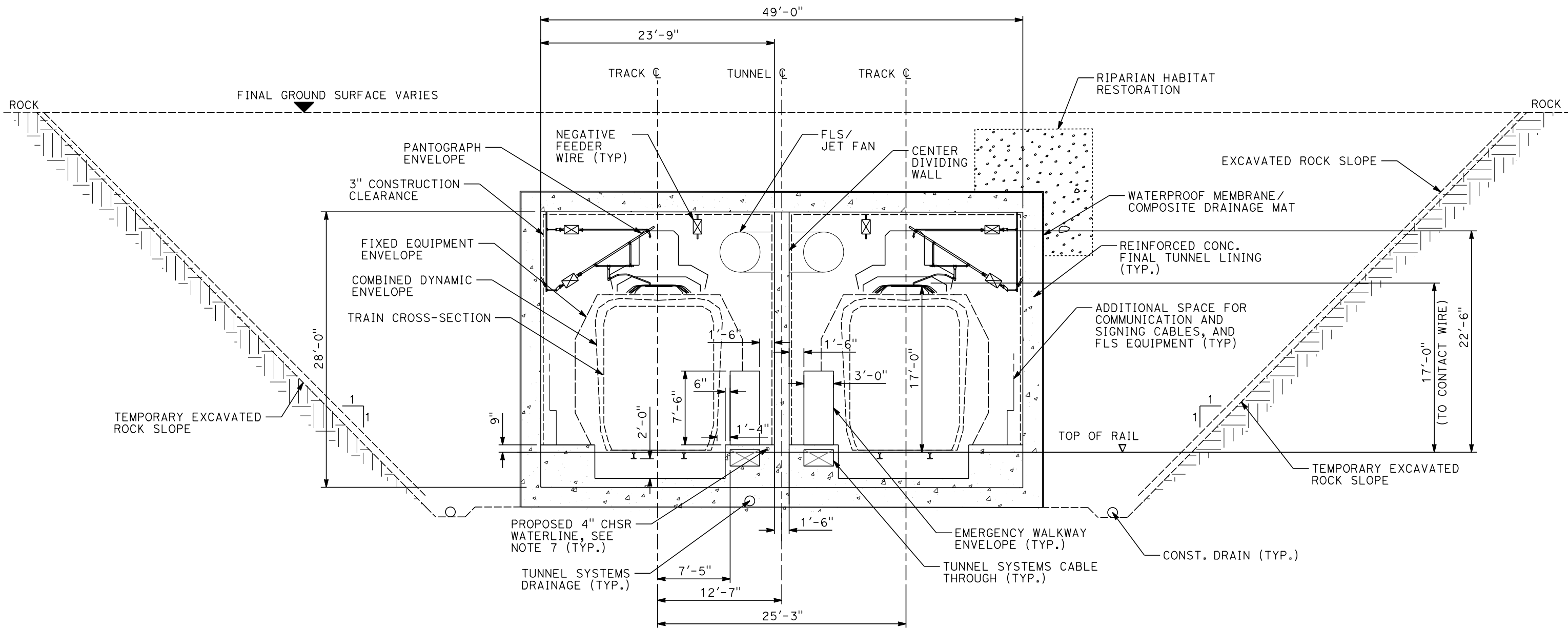
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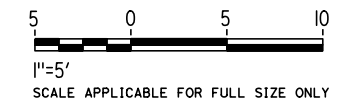
1/20/2021

jcs_user_17609



GENERAL NOTES:

1. TEMPORARY SLOPE AND BENCH GEOMETRIES SHOWN ARE BASED ON GUIDANCE PROVIDED IN TM 2.6.7.
2. SLOPE PROTECTION, DRAINAGE, STRUCTURAL DIMENSIONS, AND STABILIZATION PROVISIONS WILL BE DEVELOPED BASED ON SITE INVESTIGATION RESULTS AND SLOPE-SPECIFIC DESIGN WORK.
3. TYPICAL CROSS-SECTION REQUIRES FURTHER STUDY TO EVALUATE DYNAMIC AIRFLOW/PRESSURE LEVELS UNDER HIGH SPEED OPERATING CONDITIONS, AND TO FURTHER REFINE SPACE ALLOTTED FOR STRUCTURES, EQUIPMENT, AND EGRESS.
4. EXCAVATION, GROUND SUPPORT, LINING AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND CUT AND COVER-SPECIFIC DESIGN WORK.
5. CUT AND COVER BOX TYPICAL SECTION TO BE USED AT TUNNEL 4 AND 9, STATIONS 18362+50 TO 18368+00 AND 19594+00 TO 19687+50.
6. CENTER DIVIDING WALL SHALL CONFORM TO NFPA 130 AND HAVE A 2 HOUR FIRE RATING.
7. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19687+50. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
8. THERE ARE FIRE-RATED DOORS IN CENTER DIVIDING WALL.



REV	DATE	BY	CHK	APP	DESCRIPTION

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K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

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CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE

ALTERNATIVE 1, 2, 3, 5
TUNNEL CUT AND COVER BOX
(HABITAT RESTORATION)
CLEARANCE DIAGRAM - TANGENT TRACK

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3311

SCALE
AS SHOWN

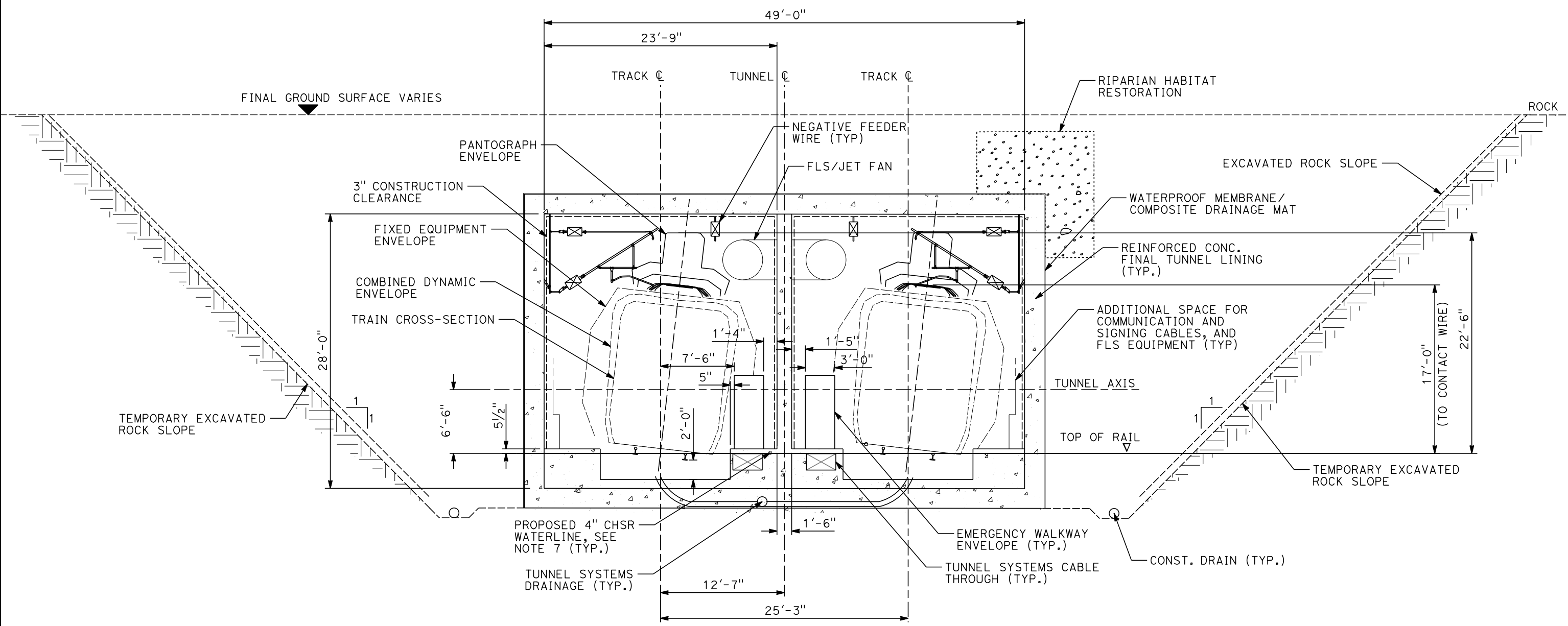
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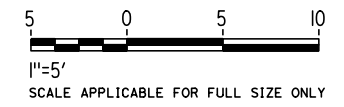
1/20/2021

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GENERAL NOTES:

1. TEMPORARY SLOPE AND BENCH GEOMETRIES SHOWN ARE BASED ON GUIDANCE PROVIDED IN TM 2.6.7.
2. SLOPE PROTECTION, DRAINAGE, STRUCTURAL DIMENSIONS, AND STABILIZATION PROVISIONS WILL BE DEVELOPED BASED ON SITE INVESTIGATION RESULTS AND SLOPE-SPECIFIC DESIGN WORK.
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4. EXCAVATION, GROUND SUPPORT, LINING AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND CUT AND COVER-SPECIFIC DESIGN WORK.
5. CUT AND COVER BOX TYPICAL SECTION TO BE USED AT TUNNEL 4 AND 9, STATIONS 18362+50 TO 18368+00 AND 19594+00 TO 19610+00.
6. CENTER DIVIDING WALL SHALL CONFORM TO NFPA 101 AND HAVE A 2 HOUR FIRE RATING.
7. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.
8. THERE ARE FIRE-RATED DOORS IN CENTER DIVIDING WALL.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
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DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
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J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
TUNNEL CUT AND COVER BOX
(HABITAT RESTORATION)
CLEARANCE DIAGRAM - SUPER ELEVATED TRACK

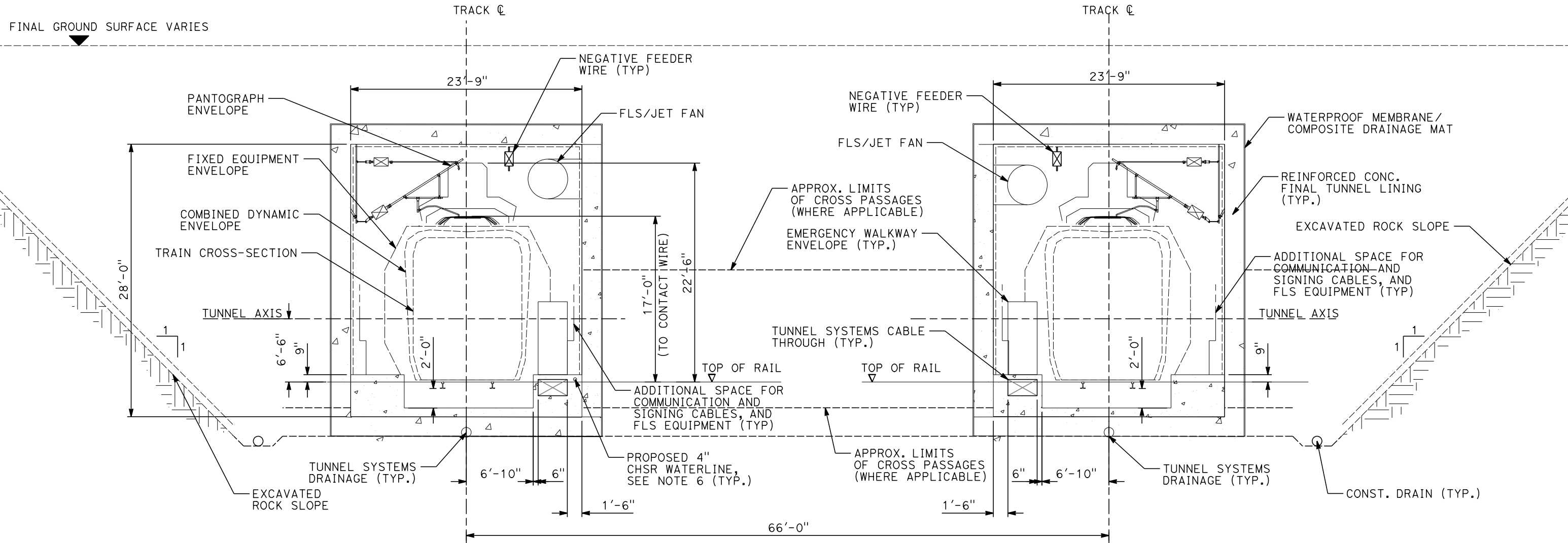
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DRAWING NO.
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AS SHOWN
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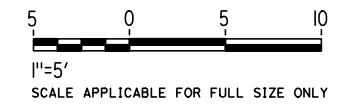
1/20/2021

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GENERAL NOTES:

1. TEMPORARY SLOPE AND BENCH GEOMETRIES SHOWN ARE BASED ON GUIDANCE PROVIDED IN TM 2.6.7.
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4. EXCAVATION, GROUND SUPPORT, LINING AND WATERTIGHTNESS PROVISIONS WILL BE OPTIMIZED BASED ON SITE INVESTIGATION RESULTS AND CUT AND COVER-SPECIFIC DESIGN WORK.
5. CUT AND COVER BOX TYPICAL SECTION TO BE USED AT TUNNEL 4 AND 9, STATIONS 18362+50 TO 18368+00 AND 19594+00 TO 19610+00.
6. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
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CHECKED BY
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IN CHARGE
J. MORRISON
DATE
01/29/2021

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CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
TUNNEL CUT AND COVER BOX
TWIN TUNNEL SINGLE TRACK
CLEARANCE DIAGRAM - TANGENT TRACK

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3313

SCALE
AS SHOWN

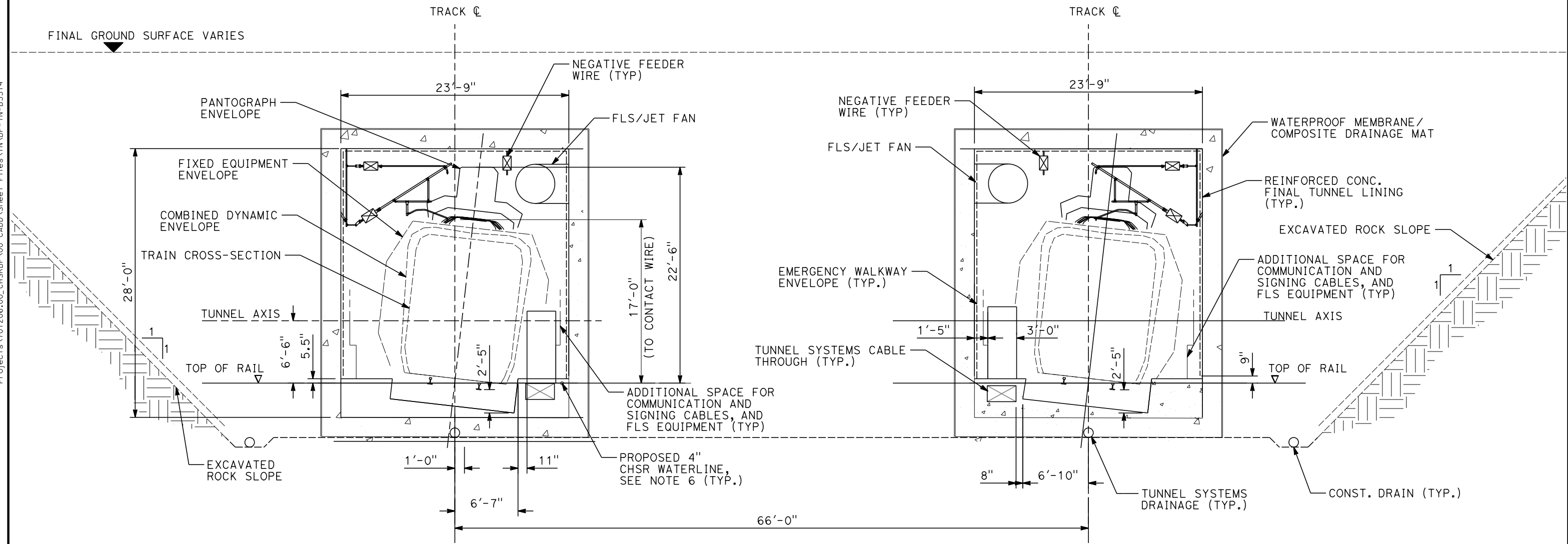
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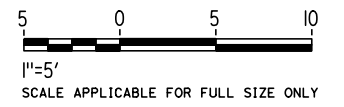
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GENERAL NOTES:

1. TEMPORARY SLOPE AND BENCH GEOMETRIES SHOWN ARE BASED ON GUIDANCE PROVIDED IN TM 2.6.7.
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5. CUT AND COVER BOX TYPICAL SECTION TO BE USED AT TUNNEL 4 AND 9, STATIONS 18362+50 TO 18368+00 AND 19594+00 TO 19610+00.
6. PROPOSED 4" WATER LINE PARALLELS ALIGNMENT FROM STATION 18034+00 TO 19591+00. IN THE TUNNELS IT IS INSTALLED BELOW THE EMERGENCY WALKWAY.



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CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
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SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
TUNNEL CUT AND COVER BOX
TWIN TUNNEL SINGLE TRACK
CLEARANCE DIAGRAM - SUPER ELEVATED TRACK

CONTRACT NO.
HSR13-44

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TN-B3314

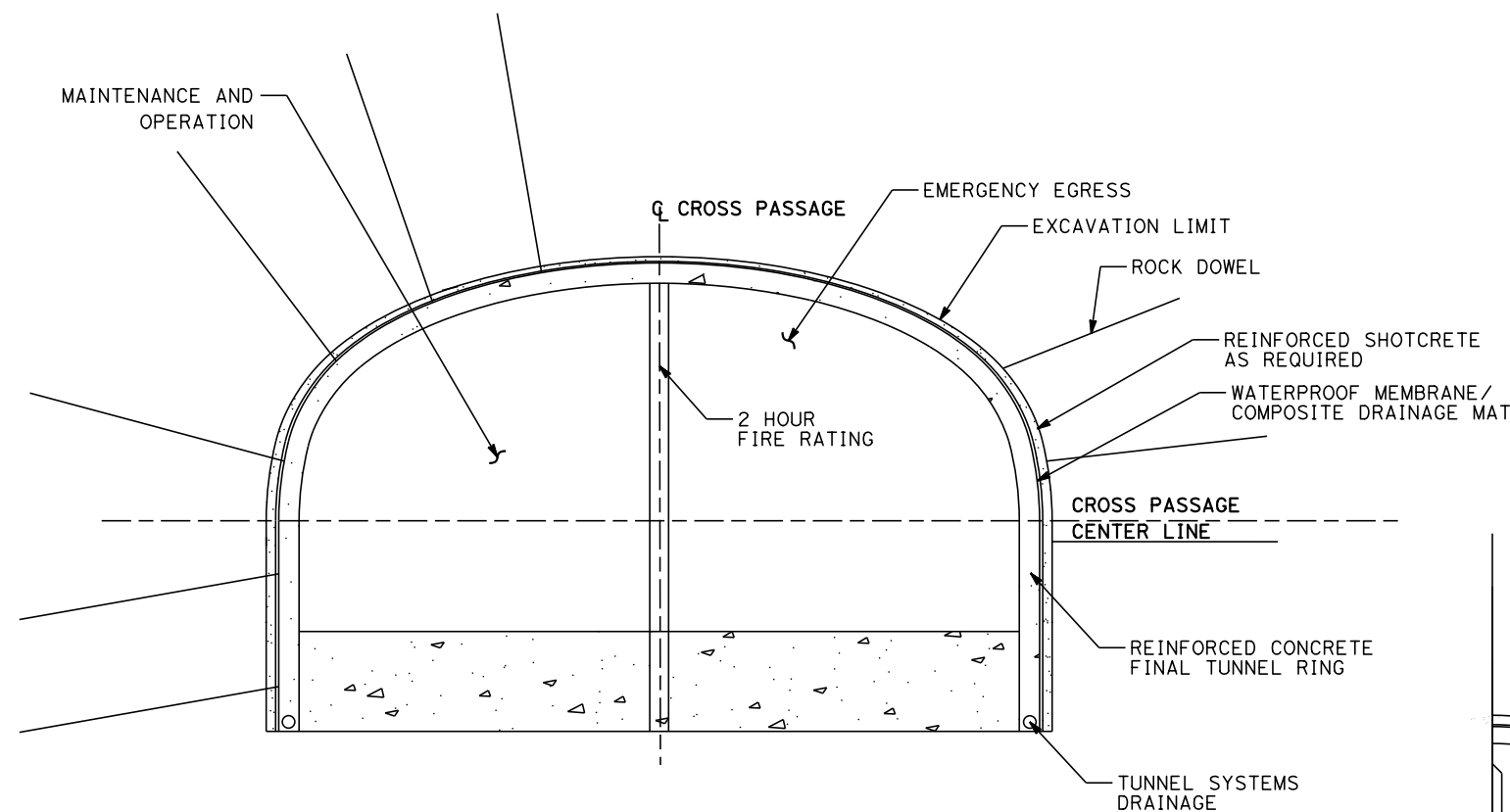
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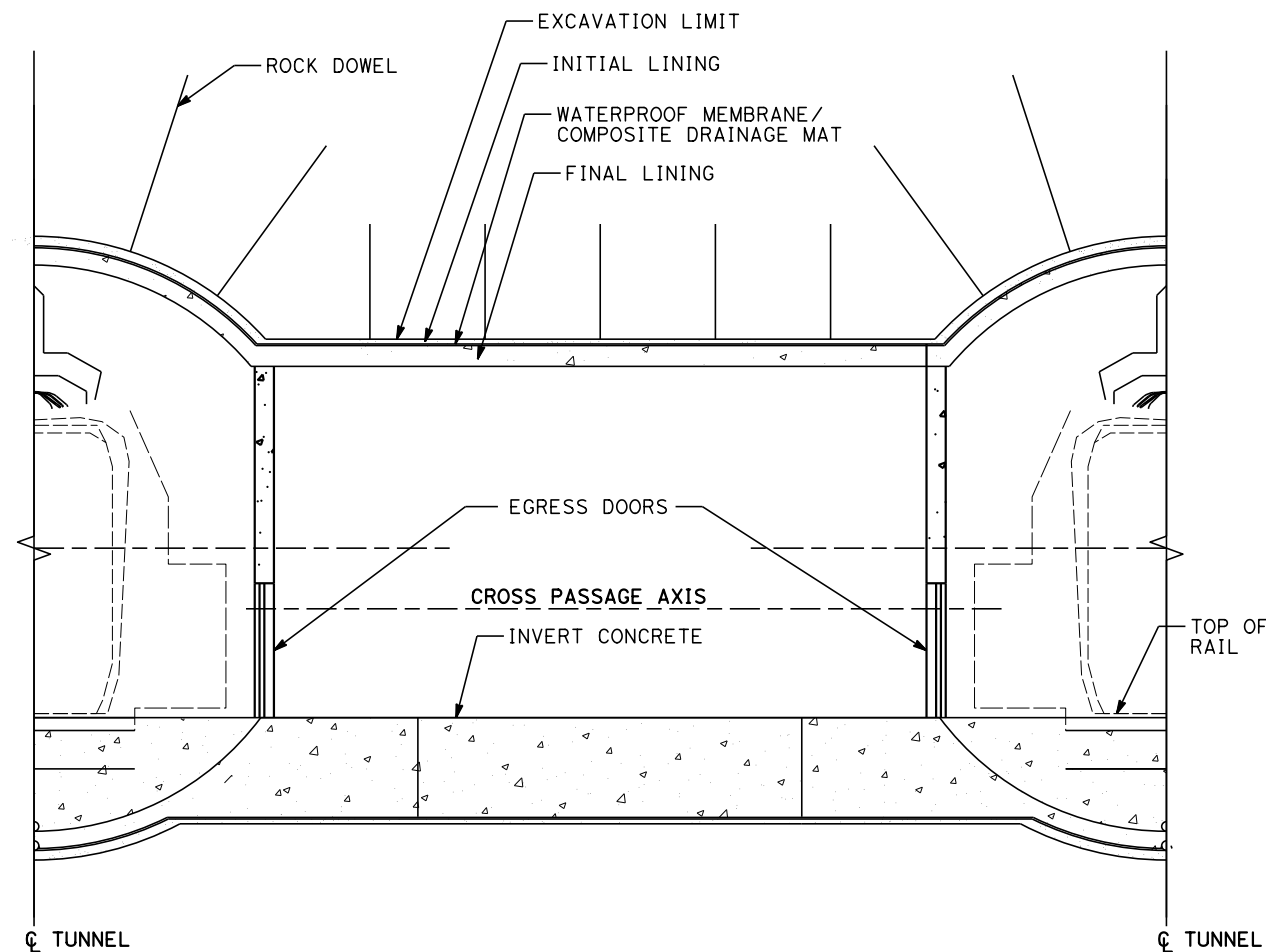
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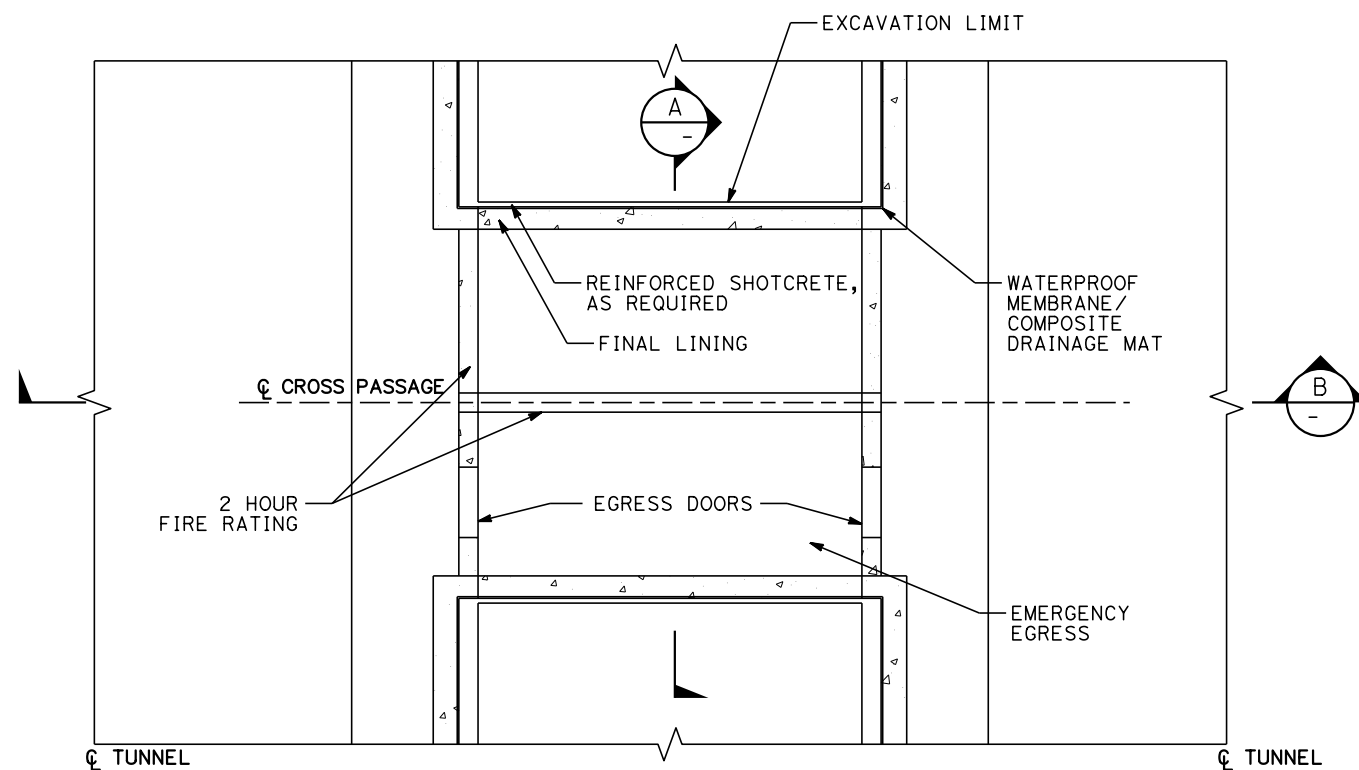
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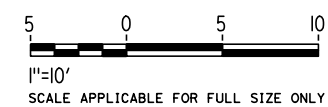
SECTION A
NOT TO SCALE



SECTION B
NOT TO SCALE



PLAN
NOT TO SCALE



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DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

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CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
ALTERNATIVE 1, 2, 3, 5
TUNNEL EMERGENCY CROSS PASSAGE

CONTRACT NO.
HSR13-44

DRAWING NO.
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SCALE
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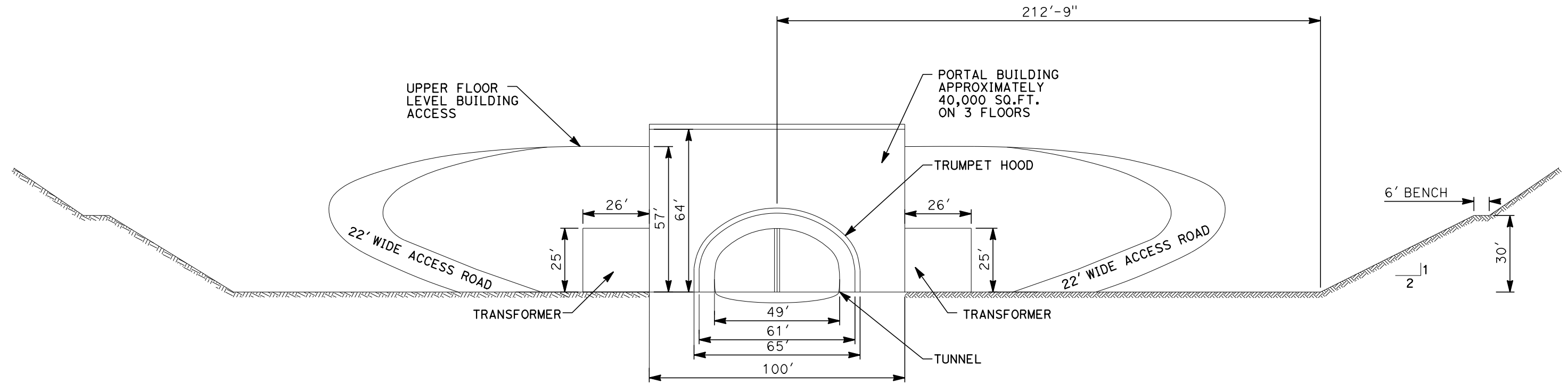
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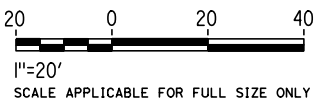
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SECTION X B
TN-B3318

GENERAL NOTES:

1. TRANSFORMERS, IF REQUIRED TO BE LOCATED OUTSIDE BUILDING, WITH NO STRUCTURES ABOVE TRANSFORMER. CLEAR SPACE INCLUDES ELECTRICAL CLEARANCE.
2. PERMANENT SLOPE PROTECTION, DRAINAGE AND STABILIZATION PROVISIONS WILL BE DEVELOPED BASED ON SITE INVESTIGATION RESULTS AND SLOPE-SPECIFIC DESIGN WORK.
3. LOW COVER TUNNELING OPTIONS TO BE EVALUATED AT EACH PORTAL.
4. PORTAL LAYOUTS WERE DEVELOPED FOLLOWING TM 2.4.6 HIGH SPEED TRAIN TUNNEL PORTAL FACILITIES



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

**RECORD SET
PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE**
ALTERNATIVE 1, 2, 3, 5
TYPICAL TRANSVERSE SECTION
PORTAL FACILITIES
FOR SINGLE TUNNEL CONFIGURATION

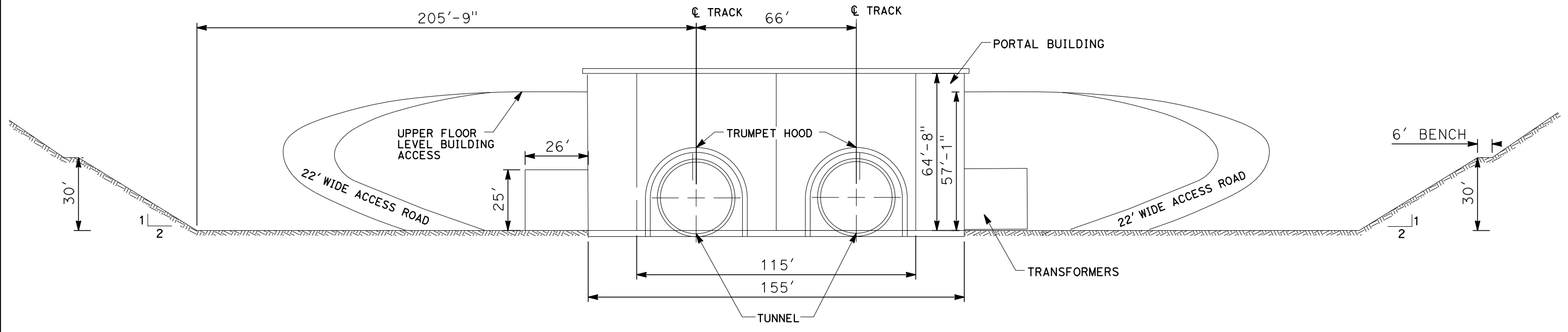
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DRAWING NO.
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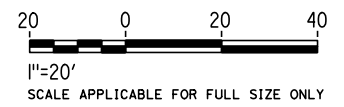
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SECTION X A
TN-B3319

GENERAL NOTES:

1. TRANSFORMERS, IF REQUIRED TO BE LOCATED OUTSIDE BUILDING, WITH NO STRUCTURES ABOVE TRANSFORMER. CLEAR SPACE INCLUDES ELECTRICAL CLEARANCE.
2. PERMANENT SLOPE PROTECTION, DRAINAGE AND STABILIZATION PROVISIONS WILL BE DEVELOPED BASED ON SITE INVESTIGATION RESULTS AND SLOPE-SPECIFIC DESIGN WORK.
3. LOW COVER TUNNELING OPTIONS TO BE EVALUATED AT EACH PORTAL.
4. PORTAL LAYOUTS WERE DEVELOPED FOLLOWING TM 2.4.6 HIGH SPEED TRAIN TUNNEL PORTAL FACILITIES



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
DRAWN BY
K. BUNGER
CHECKED BY
R. KUNDU
IN CHARGE
J. MORRISON
DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

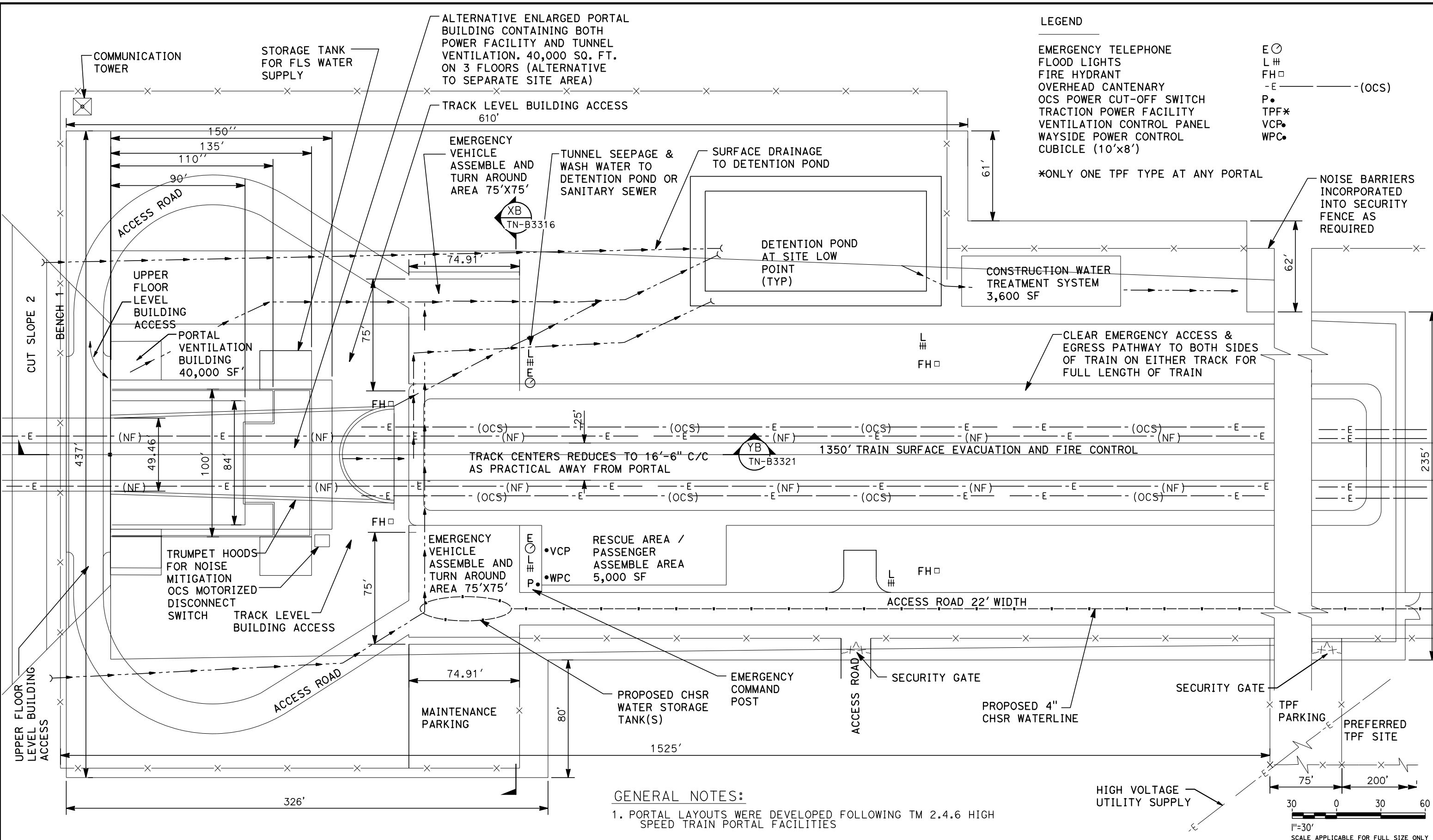
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CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
ALTERNATIVE 1, 2, 3, 5
TYPICAL TRANSVERSE SECTION
PORTAL FACILITIES
FOR TWIN TUNNEL CONFIGURATION

CONTRACT NO.
HSR13-44
DRAWING NO.
TN-B3317
SCALE
AS SHOWN
SHEET NO.
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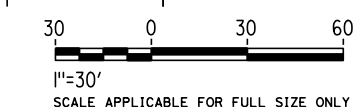


LEGEND

EMERGENCY TELEPHONE E ⊙
 FLOOD LIGHTS L #
 FIRE HYDRANT FH □
 OVERHEAD CANTENARY -E
 OCS POWER CUT-OFF SWITCH -E (OCS)
 TRACTION POWER FACILITY P
 VENTILATION CONTROL PANEL TPF*
 WAYSIDE POWER CONTROL VCP
 CUBICLE (10'x8') WPC

*ONLY ONE TPF TYPE AT ANY PORTAL

GENERAL NOTES:
 1. PORTAL LAYOUTS WERE DEVELOPED FOLLOWING TM 2.4.6 HIGH SPEED TRAIN PORTAL FACILITIES

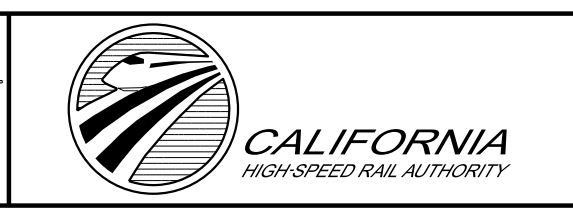


REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
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J. MORRISON
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RECORD SET
PEPD
SUBMITTAL

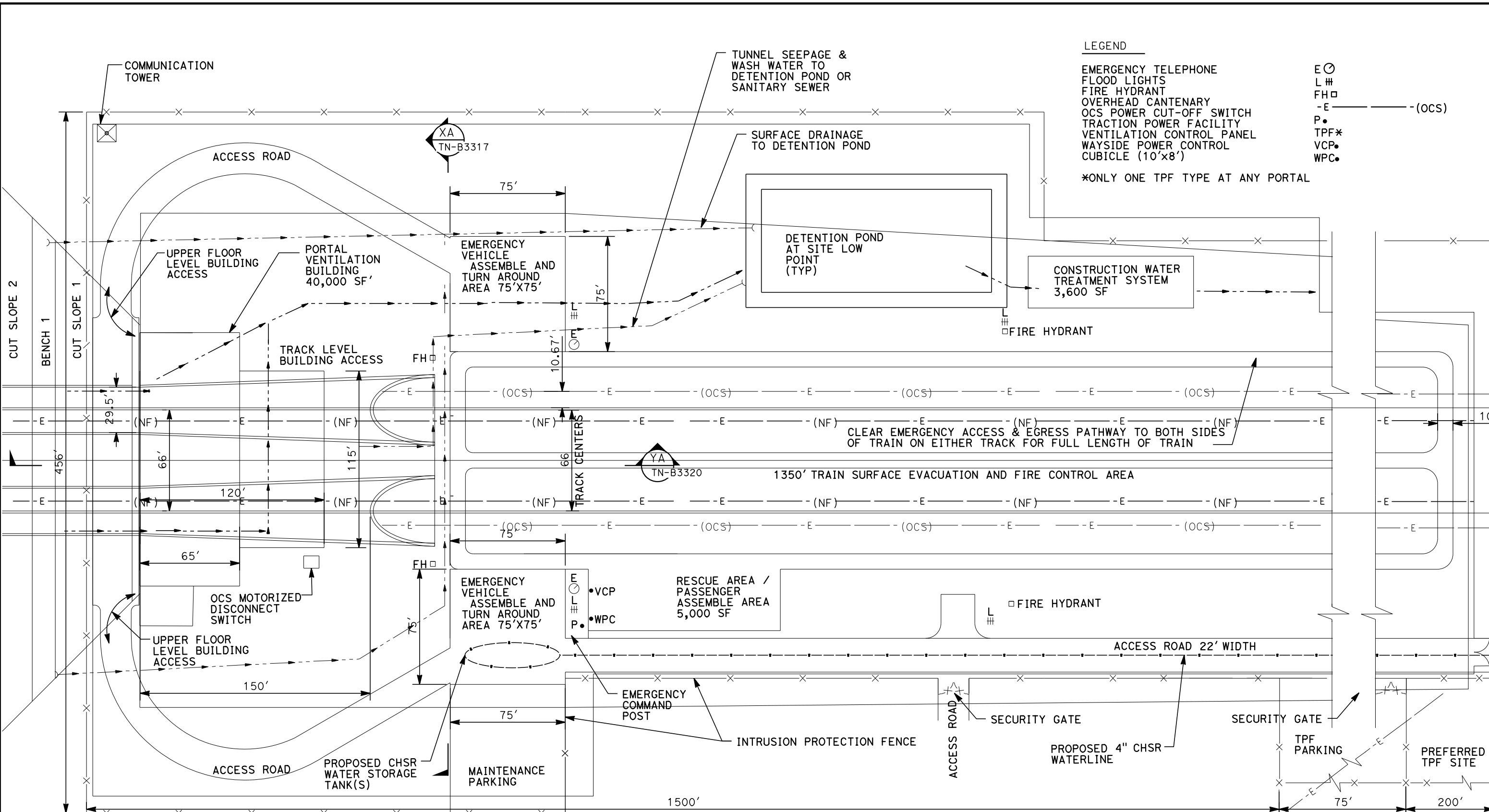
NOT FOR CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
 ALTERNATIVE 1, 2, 3, 5
 TYPICAL TUNNEL PORTAL FACILITIES PLAN
 SINGLE TUNNEL CONFIGURATION

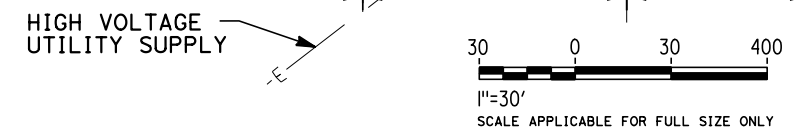
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- LEGEND**
- EMERGENCY TELEPHONE
 - FLOOD LIGHTS
 - FIRE HYDRANT
 - OVERHEAD CANTENARY
 - OCS POWER CUT-OFF SWITCH
 - TRACTION POWER FACILITY
 - VENTILATION CONTROL PANEL
 - WAYSIDE POWER CONTROL CUBICLE (10'x8')
 - *ONLY ONE TPF TYPE AT ANY PORTAL
- E ⊙
 - L #
 - FH □
 - E --- (OCS)
 - P •
 - TPF*
 - VCP •
 - WPC •

GENERAL NOTES:
 1. PORTAL LAYOUTS WERE DEVELOPED FOLLOWING TM 2.4.6
 HIGH-SPEED TRAIN PORTAL FACILITIES



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

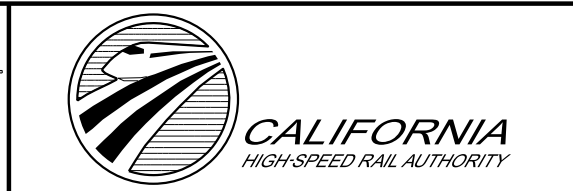
CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

NOT FOR
CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE
 ALTERNATIVE 1, 2, 3, 5
 TYPICAL TUNNEL PORTAL FACILITIES PLAN
 TWIN TUNNEL CONFIGURATION

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3319

SCALE
AS SHOWN

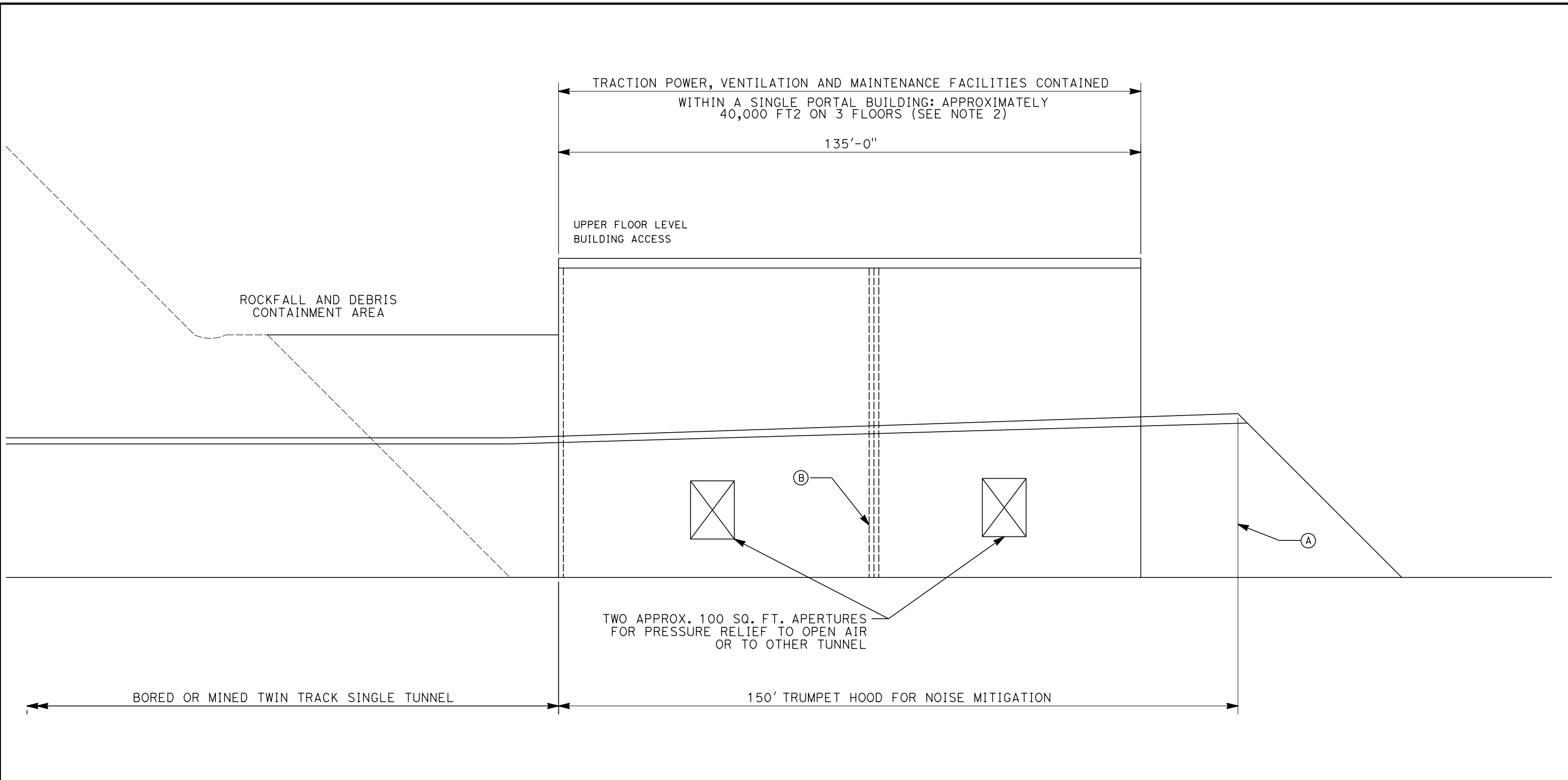
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TRACTION POWER, VENTILATION AND MAINTENANCE FACILITIES CONTAINED
WITHIN A SINGLE PORTAL BUILDING: APPROXIMATELY
40,000 FT2 ON 3 FLOORS (SEE NOTE 2)

135'-0"

UPPER FLOOR LEVEL
BUILDING ACCESS

ROCKFALL AND DEBRIS
CONTAINMENT AREA

TWO APPROX. 100 SQ. FT. APERTURES
FOR PRESSURE RELIEF TO OPEN AIR
OR TO OTHER TUNNEL

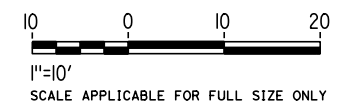
BORED OR MINED TWIN TRACK SINGLE TUNNEL

150' TRUMPET HOOD FOR NOISE MITIGATION

SECTION Y A
TN-B3319

GENERAL NOTES:

1. FREE AREA CSA (A) = 150% OF FREE AREA CSA (B)
2. FLOOR AREA EXCLUDES TRACTION POWER TRANSFORMERS WHICH ARE LOCATED OUTSIDE THE BUILDING.



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DATE
01/29/2021

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PEPD
SUBMITTAL**

**NOT FOR
CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
TYPICAL TUNNEL PORTAL FACILITIES PLAN
AT GRADE TWIN TUNNEL CONFIGURATION
LONG SECTION

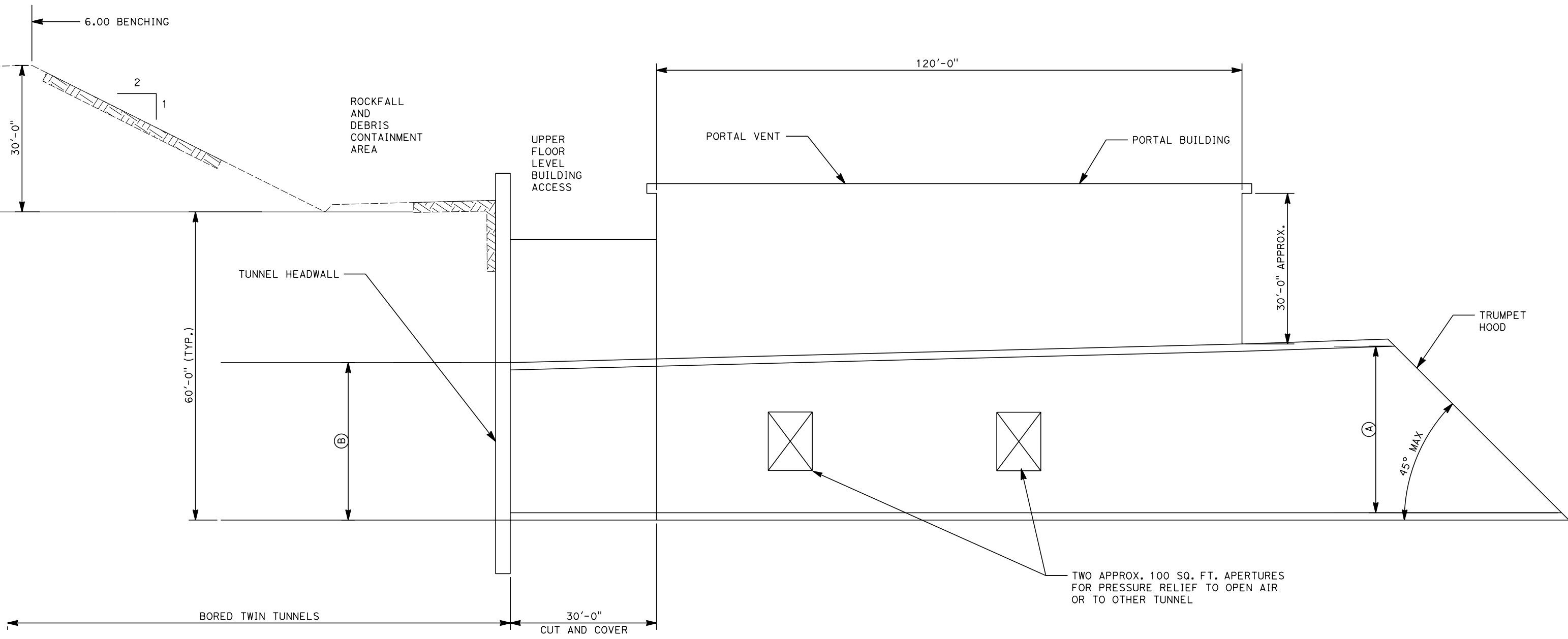
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DRAWING NO.
TN-B3320
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1/20/2021

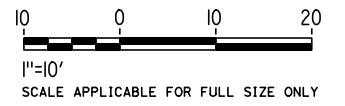
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SECTION Y B
TN-B3318

GENERAL NOTES:

- 1. FREE AREA CSA (A) = 150% OF FREE AREA CSA (B)
- 2. FLOOR AREA EXCLUDES TRACTION POWER TRANSFORMERS WHICH ARE LOCATED OUTSIDE THE BUILDING.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA

DRAWN BY
K. BUNGER

CHECKED BY
R. KUNDU

IN CHARGE
J. MORRISON

DATE
01/29/2021

RECORD SET
PEPD
SUBMITTAL

NOT FOR
CONSTRUCTION



CALIFORNIA HIGH-SPEED RAIL PROJECT
BAKERSFIELD TO PALMDALE

ALTERNATIVE 1, 2, 3, 5
TYPICAL TUNNEL PORTAL FACILITIES PLAN
AT GRADE SINGLE TUNNEL CONFIGURATION
LONG SECTION

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3321

SCALE
AS SHOWN

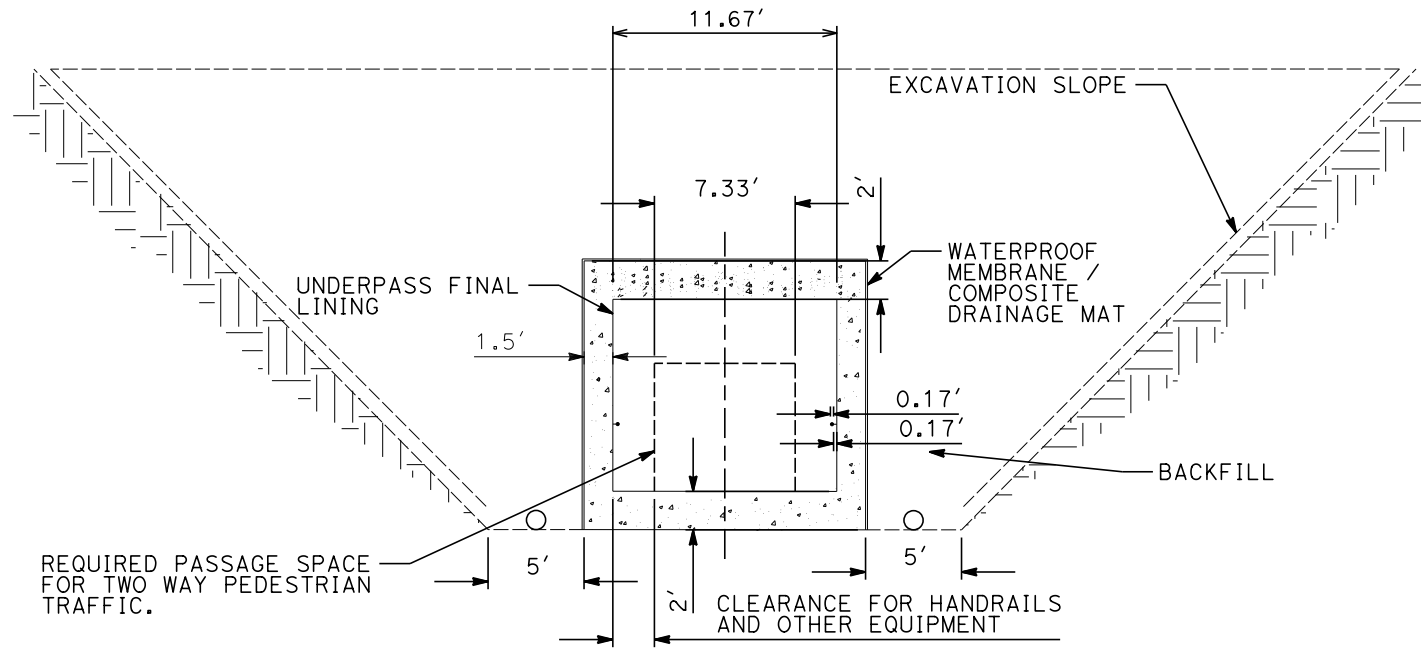
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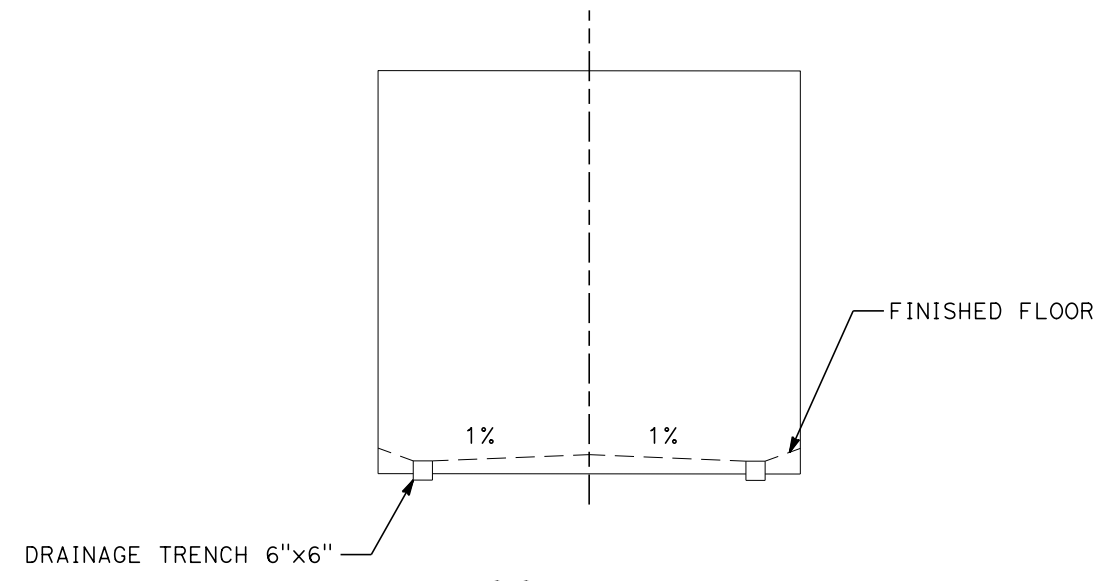
1/27/2021

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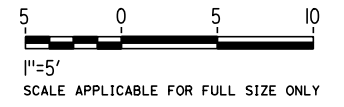


PEDESTRIAN UNDERPASS

SECTION T
 SCALE 1"=5'-0" TN-Y1201
 TN-C4201
 TN-C4202



FLOOR DETAIL
 NOT TO SCALE



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
Z. SKOVAJSOVA
 DRAWN BY
K. BUNGER
 CHECKED BY
R. KUNDU
 IN CHARGE
J. MORRISON
 DATE
01/29/2021

**RECORD SET
 PEPD
 SUBMITTAL**

**NOT FOR
 CONSTRUCTION**



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

ALTERNATIVE 1, 2, 3, 5
 TUNNEL CUT AND COVER BOX
 PEDESTRIAN UNDERPASS

CONTRACT NO.
HSR13-44

DRAWING NO.
TN-B3322

SCALE
AS SHOWN

SHEET NO.
82