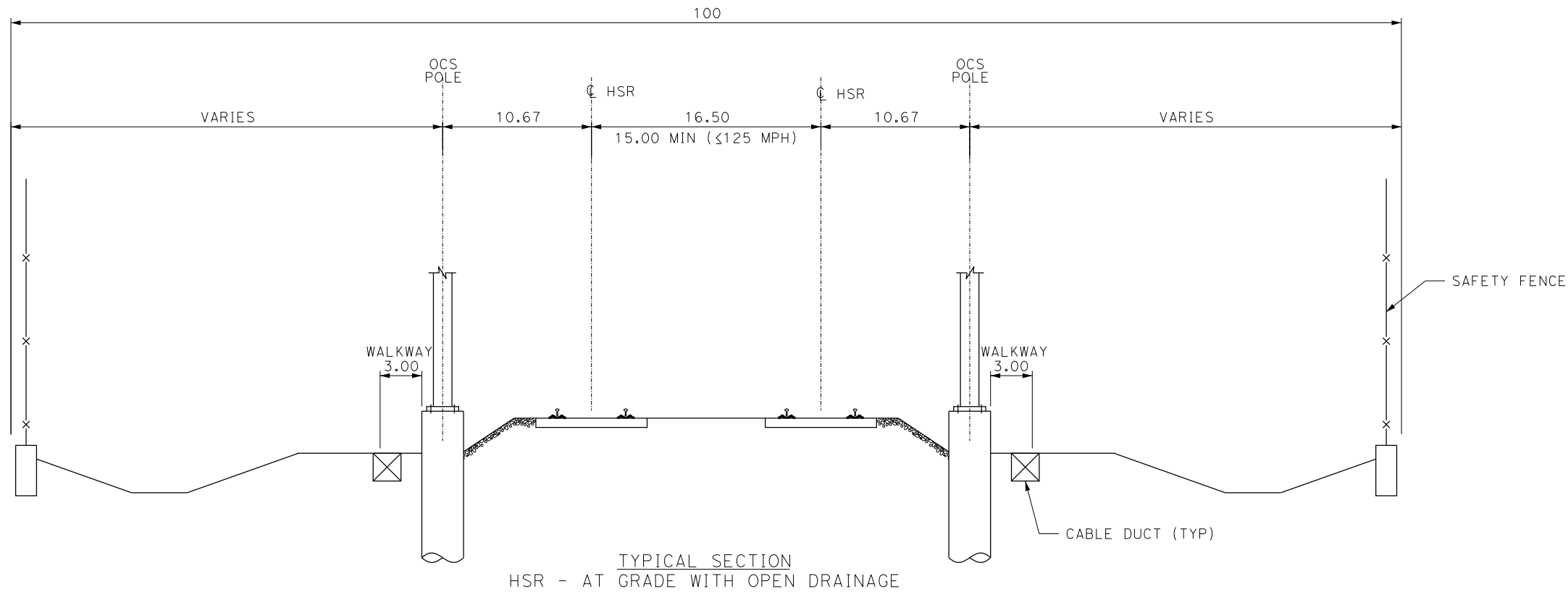
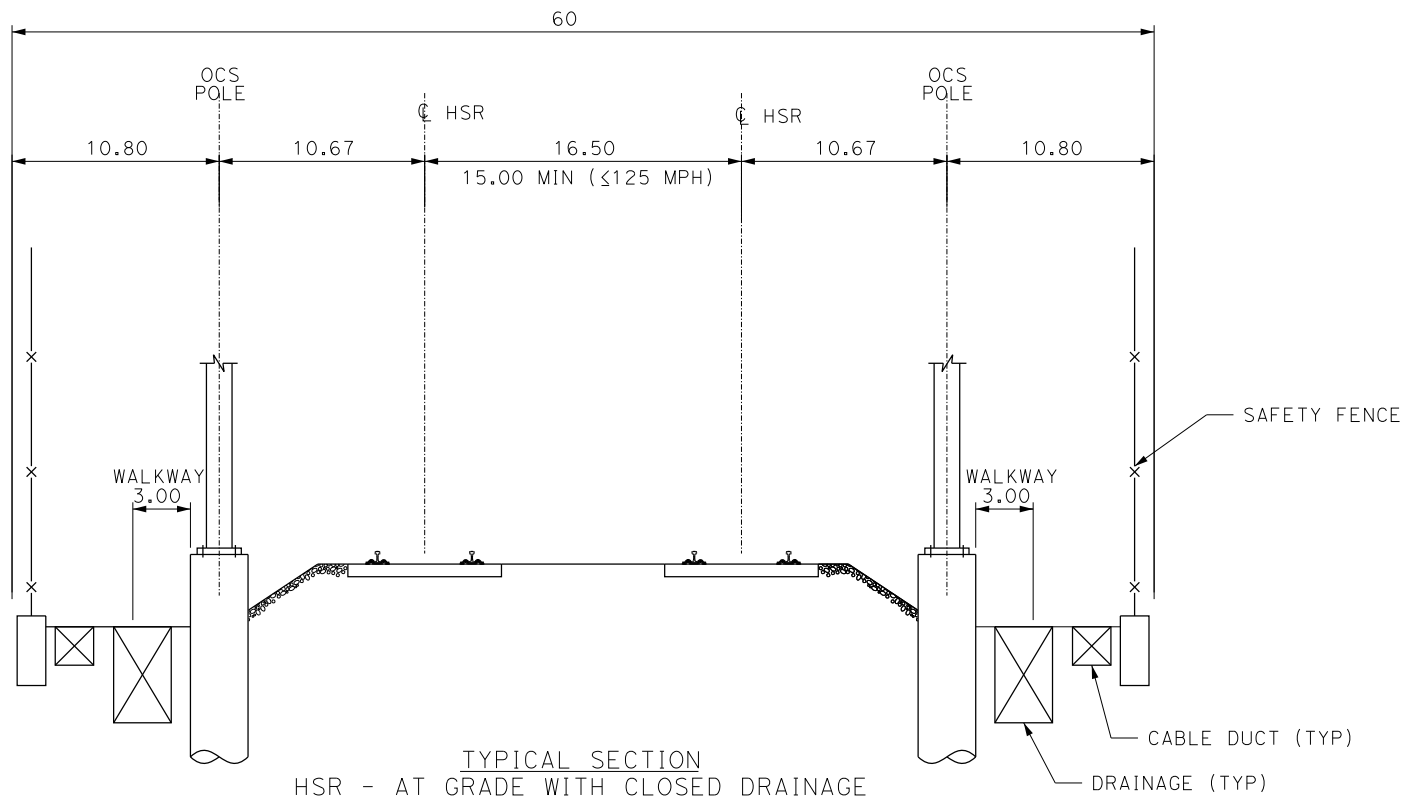


10/14/2009 10:19:40 AM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-A.dgn David



- NOTES:
1. TRACK, OCS POLES AND FOUNDATIONS, CABLE DUCTS AND DRAINAGE ARE SCHEMATIC AND DO NOT REPRESENT DESIGN.
 2. RIGHT-OF-WAY REQUIRED FOR THE HIGH-SPEED RAIL GUIDEWAY WILL DEPEND UPON CONDITIONS ALONG THE ALIGNMENT, INCLUDING TERRAIN, WHERE CUT/FILL SLOPES, RETAINING STRUCTURES, AND ACCESS ARE REQUIRED.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. RULENS
DRAWN BY P. DO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-06-09

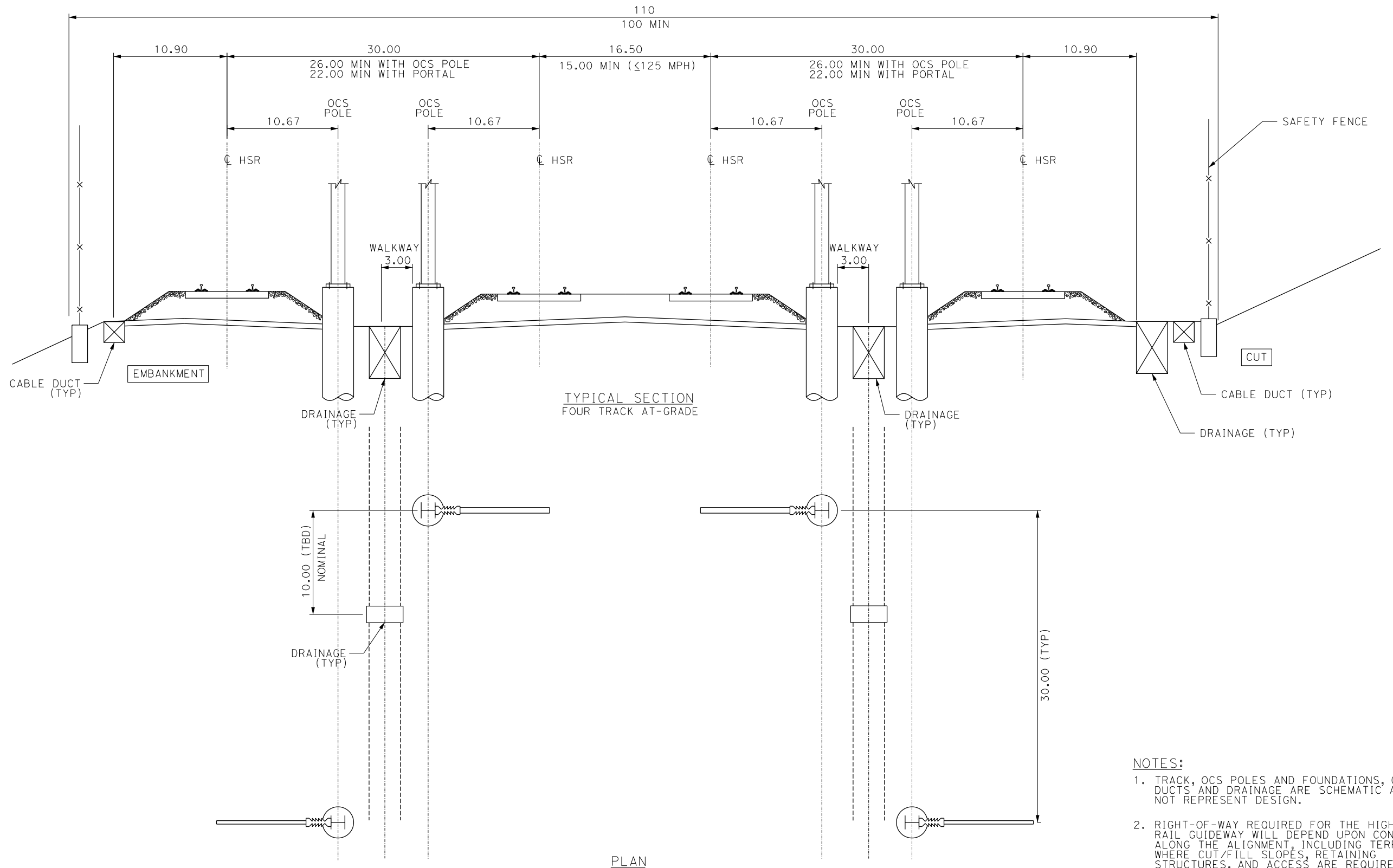


CALIFORNIA HIGH-SPEED TRAIN PROJECT

HSR TWO TRACK AT-GRADE

CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-A
SCALE 1"=5'-0"
SHEET NO.

10/14/2009 10:28:50 AM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-B.dgn



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. RULENS
DRAWN BY A. CHEUNG
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-06-09



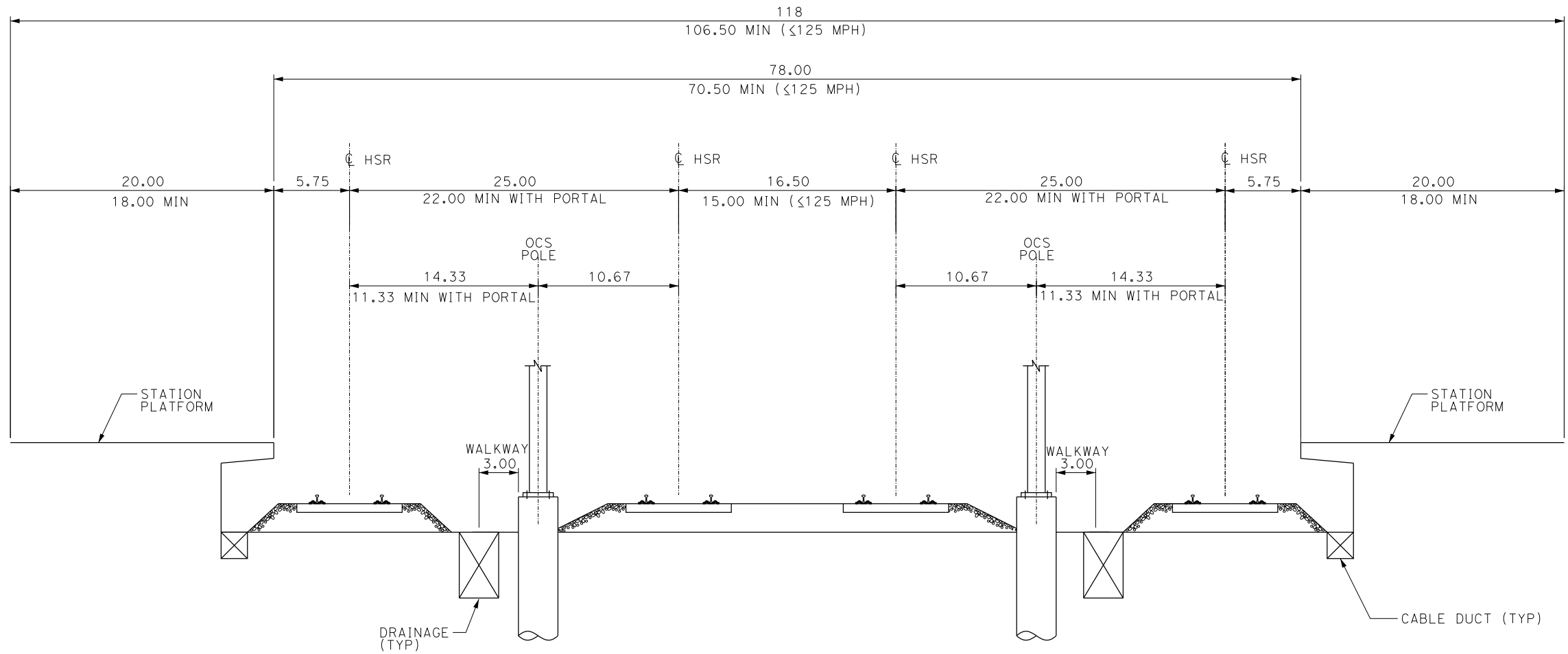
CALIFORNIA HIGH-SPEED RAIL AUTHORITY
FLY CALIFORNIA
Without ever leaving the ground.

CALIFORNIA HIGH-SPEED TRAIN PROJECT

HSR FOUR TRACK AT-GRADE

CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-B
SCALE 1"=5'-0"
SHEET NO.

10/14/2009 10:46:32 AM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-C.dgn David



TYPICAL SECTION
4-TRACK INTERMEDIATE STATION
OUTSIDE BOARDING PLATFORMS

- NOTES:
1. TRACK, OCS POLES AND FOUNDATIONS, CABLE DUCTS AND DRAINAGE ARE SCHEMATIC AND DO NOT REPRESENT DESIGN.
 2. BACK-TO-BACK CANTILEVERS ON A SINGLE POLE MAY BE PERMITTED AT PASSENGER STATIONS.
 3. RIGHT-OF-WAY REQUIRED FOR THE HIGH-SPEED RAIL GUIDEWAY WILL DEPEND UPON CONDITIONS ALONG THE ALIGNMENT, INCLUDING TERRAIN, WHERE CUT/FILL SLOPES, RETAINING STRUCTURES, AND ACCESS ARE REQUIRED.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. RULENS
DRAWN BY P. DO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-06-09

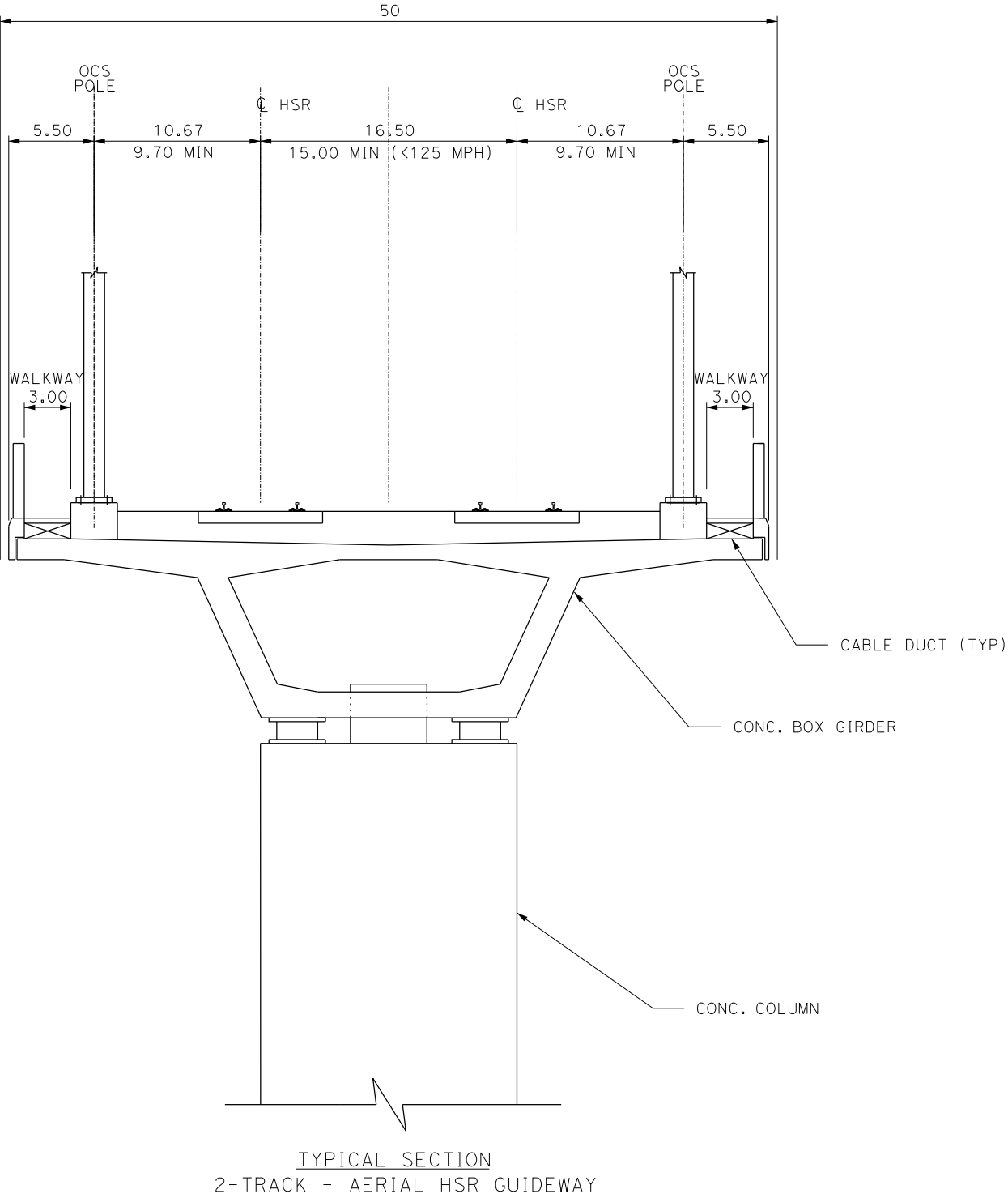


CALIFORNIA HIGH-SPEED TRAIN PROJECT

INTERMEDIATE HSR STATION

CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-C
SCALE 1"=5'-0"
SHEET NO.

10/14/2009 11:06:01 AM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-D.dgn David



- NOTES:
1. TRACK, OCS POLES AND FOUNDATIONS, CABLE DUCTS AND DRAINAGE ARE SCHEMATIC AND DO NOT REPRESENT DESIGN.
 2. RIGHT-OF-WAY REQUIRED FOR THE HIGH-SPEED RAIL GUIDEWAY WILL DEPEND UPON CONDITIONS ALONG THE ALIGNMENT, INCLUDING TERRAIN, WHERE CUT/FILL SLOPES, RETAINING STRUCTURES, AND ACCESS ARE REQUIRED.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. RULENS
DRAWN BY P. DO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-06-09

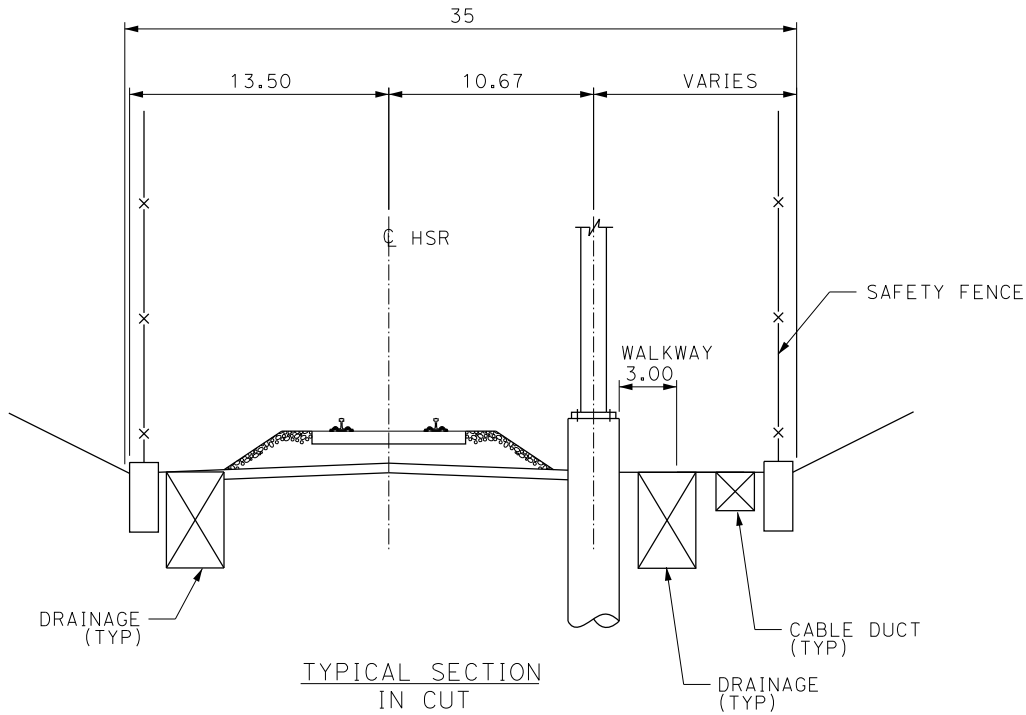
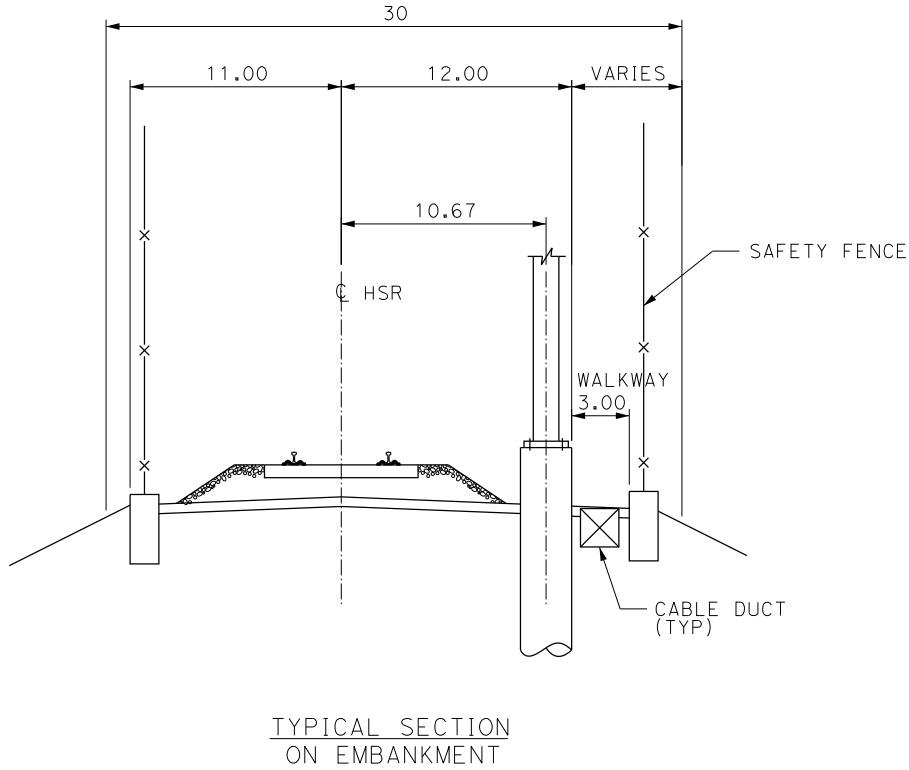
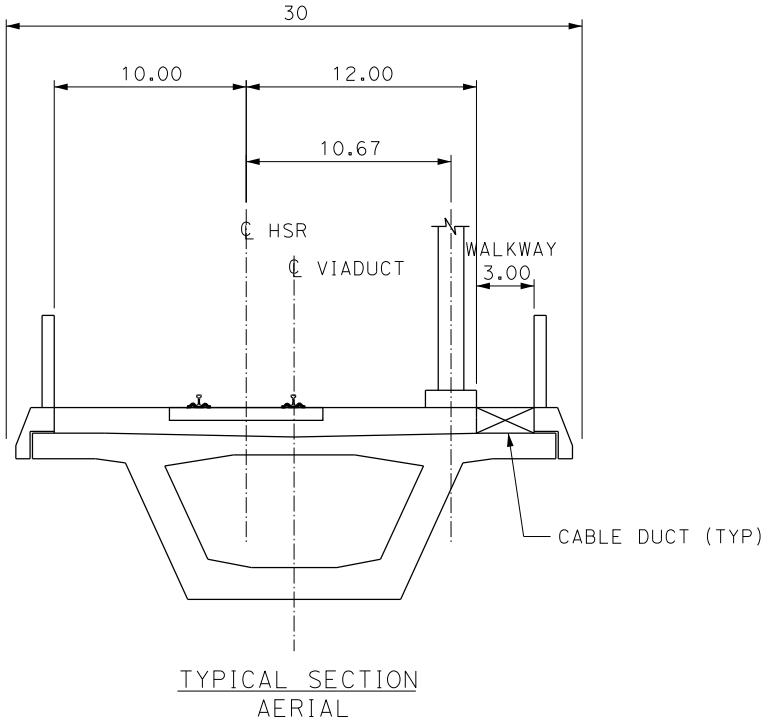


CALIFORNIA HIGH-SPEED TRAIN PROJECT

TWO TRACK - AERIAL HSR GUIDEWAY

CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-D
SCALE 1"=5'-0"
SHEET NO.

10/14/2009 11:16:09 AM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-E.dgn David



- NOTES:
1. TRACK, OCS POLES AND FOUNDATIONS, CABLE DUCTS AND DRAINAGE ARE SCHEMATIC AND DO NOT REPRESENT DESIGN.
 2. RIGHT-OF-WAY REQUIRED FOR THE HIGH-SPEED RAIL GUIDEWAY WILL DEPEND UPON CONDITIONS ALONG THE ALIGNMENT, INCLUDING TERRAIN, WHERE CUT/FILL SLOPES, RETAINING STRUCTURES, AND ACCESS ARE REQUIRED.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. RULENS
DRAWN BY A. CHEUNG
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-06-09



CALIFORNIA HIGH-SPEED TRAIN PROJECT

HSR - SINGLE TRACK FORMATION

CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-E
SCALE 1"=5'-0"
SHEET NO.

10/14/2009 11:32:57 AM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-F.dgn

David

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY J. THOMPSON
DRAWN BY P. DO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-06-09



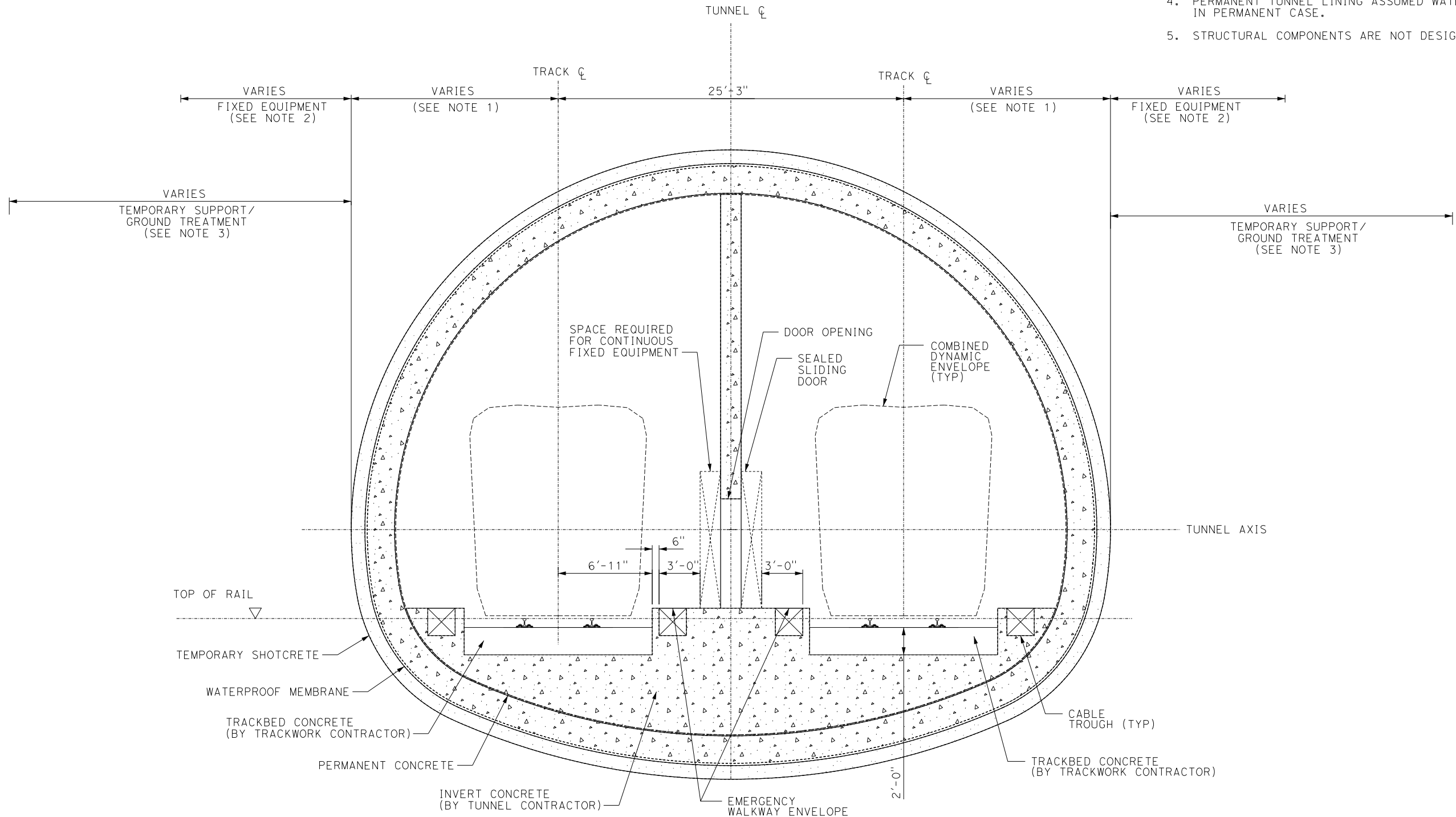
CALIFORNIA HIGH-SPEED RAIL AUTHORITY
FLY CALIFORNIA
Without ever leaving the ground.

CALIFORNIA HIGH-SPEED TRAIN PROJECT

TYPICAL CROSS SECTION
MINED SINGLE TUNNEL
DOUBLE TRACK

CONTRACT NO.
DRAWING NO. TM 1.1.21-F
SCALE 1/4"=1'-0"
SHEET NO.

- NOTES:
1. FREE TUNNEL CROSS-SECTIONAL AREAS COMPLY WITH TSI MEDICAL HEALTH CRITERIA, TO MINIMIZE AERODYNAMIC DRAG EFFECTS IN THE TUNNELS, AND TO PREVENT HEAT BUILD UP IN THE TUNNELS. SEE TM 2.4.2 BASIC TUNNEL CONFIGURATION DIRECTIVE DRAWINGS FOR REQUIRED FREE TUNNEL CROSS-SECTIONAL AREAS FOR DESIGN TRAIN SPEEDS AND TUNNEL LENGTH.
 2. TYPES, LOCATIONS AND DIMENSIONS OF NICHEs AND/OR ENLARGEMENTS FOR FIXED EQUIPMENT (EXAMPLE: EMERGENCY VENTILATION), IF REQUIRED, NOT DESIGNED.
 3. TYPES, LOCATIONS AND DIMENSIONS OF TEMPORARY SUPPORT AND/OR GROUND TREATMENT NOT DESIGNED.
 4. PERMANENT TUNNEL LINING ASSUMED WATERTIGHT/UNDRAINED IN PERMANENT CASE.
 5. STRUCTURAL COMPONENTS ARE NOT DESIGNED.



1. FREE TUNNEL CROSS-SECTIONAL AREAS COMPLY WITH TSI MEDICAL HEALTH CRITERIA, TO MINIMIZE AERODYNAMIC DRAG EFFECTS IN THE TUNNELS, AND TO PREVENT HEAT BUILD UP IN THE TUNNELS. SEE TM 2.4.2 BASIC TUNNEL CONFIGURATION DIRECTIVE DRAWINGS FOR REQUIRED FREE TUNNEL CROSS-SECTIONAL AREAS FOR DESIGN TRAIN SPEEDS AND TUNNEL LENGTH.
2. TYPES, LOCATIONS AND DIMENSIONS OF NICHES AND/OR ENLARGEMENTS FOR FIXED EQUIPMENT (EXAMPLE: EMERGENCY VENTILATION), IF REQUIRED, NOT DESIGNED.
3. TYPES, LOCATIONS AND DIMENSIONS OF TEMPORARY SUPPORT AND/OR GROUND TREATMENT NOT DESIGNED.
4. PERMANENT TUNNEL LINING ASSUMED WATERTIGHT/UNDRAINED IN PERMANENT CASE.
5. RUNNING TUNNELS ASSUMED TO BE DRIVEN BY TUNNEL BORING MACHINE.
6. ANNULUS GROUT REQUIRED ONLY IF CONCRETE LINING IS PRECAST.
7. STRUCTURAL COMPONENTS ARE NOT DESIGNED.



J. CHIRCO
DATE
07-06-09

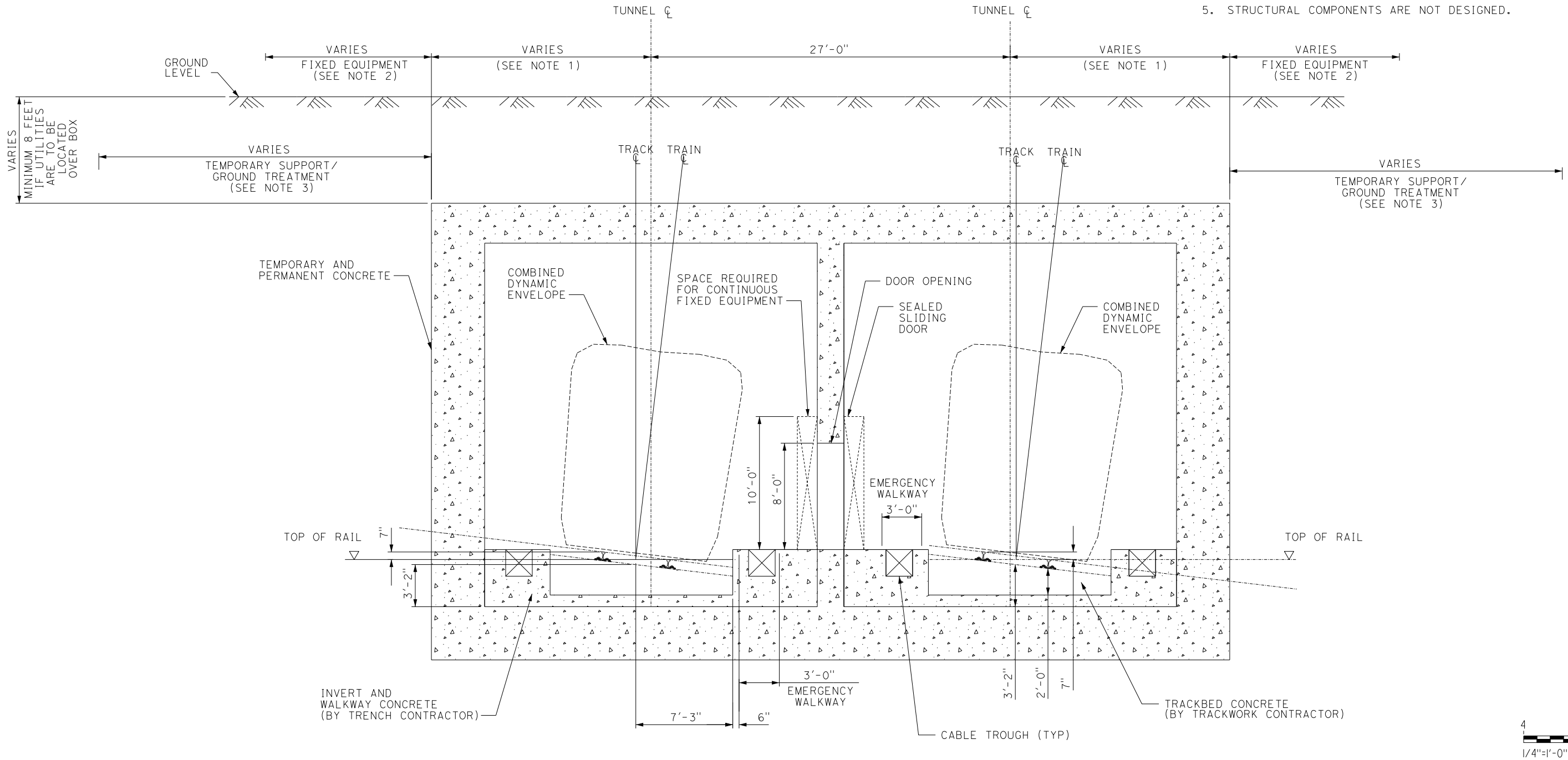


TYPICAL CROSS SECTION

PHYSICAL CROSS SECTION
BORED TUNNEL
SINGLE TRACK

SHEET NO.

10/14/2009 11:58:00 AM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-H.dgn David



- NOTES:
1. FREE TUNNEL CROSS-SECTIONAL AREAS COMPLY WITH TSI MEDICAL HEALTH CRITERIA, TO MINIMIZE AERODYNAMIC DRAG EFFECTS IN THE TUNNELS, AND TO PREVENT HEAT BUILD UP IN THE TUNNELS. SEE TM 2.4.2 BASIC TUNNEL CONFIGURATION DIRECTIVE DRAWINGS FOR REQUIRED FREE TUNNEL CROSS-SECTIONAL AREAS FOR DESIGN TRAIN SPEEDS AND TUNNEL LENGTH.
 2. TYPES, LOCATIONS AND DIMENSIONS OF NICHEs AND/OR ENLARGEMENTS FOR FIXED EQUIPMENT (EXAMPLE: EMERGENCY VENTILATION), IF REQUIRED, NOT DESIGNED.
 3. TYPES, LOCATIONS AND DIMENSIONS OF TEMPORARY SUPPORT AND/OR GROUND TREATMENT NOT DESIGNED.
 4. PERMANENT TUNNEL LINING ASSUMED WATERTIGHT/UNDRAINED IN PERMANENT CASE.
 5. STRUCTURAL COMPONENTS ARE NOT DESIGNED.

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY J. THOMPSON
DRAWN BY P. DO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-06-09



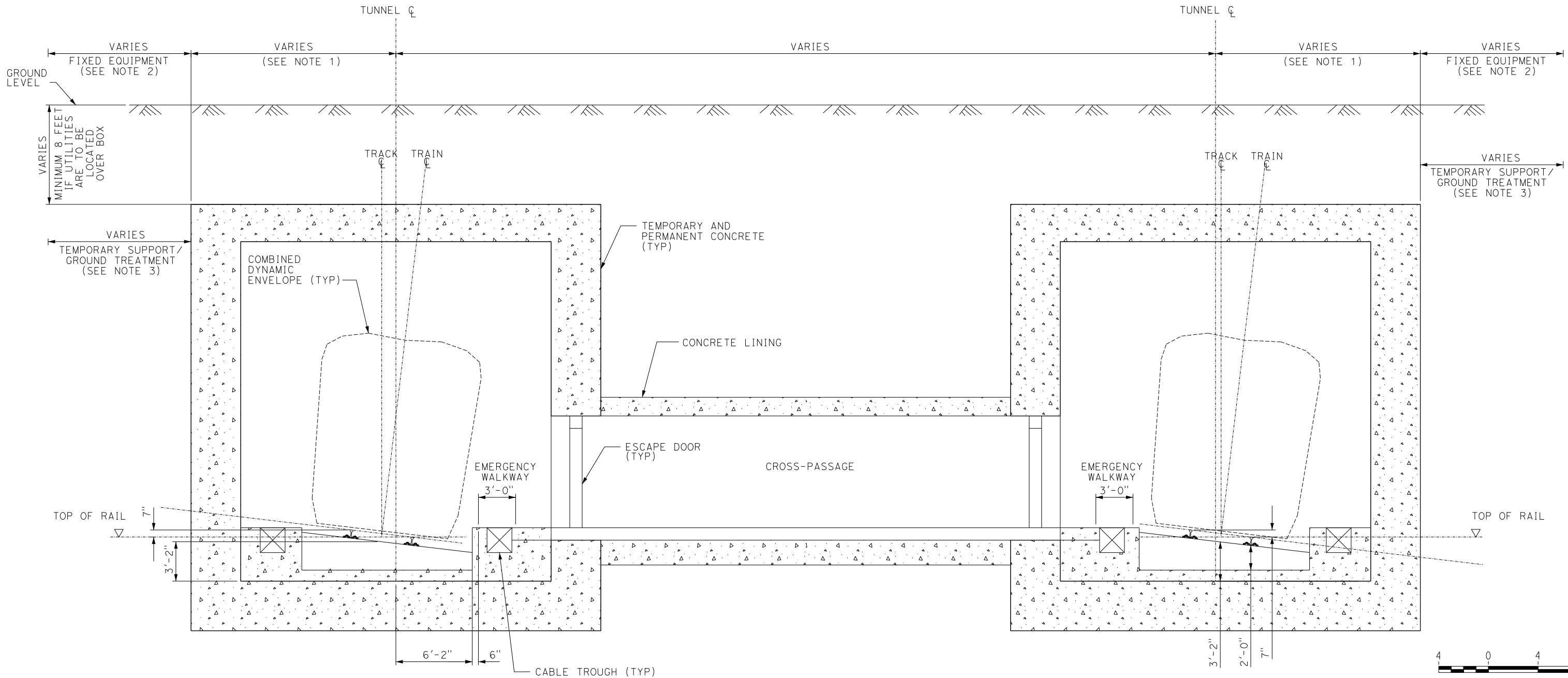
CALIFORNIA HIGH-SPEED TRAIN PROJECT

TYPICAL CROSS SECTION
CUT AND COVER TUNNEL
DOUBLE TRACK

CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-H
SCALE 1/4"=1'-0"
SHEET NO.

10/14/2009 1:40:09 PM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-1.dgn David

- NOTES:
1. FREE TUNNEL CROSS-SECTIONAL AREAS COMPLY WITH TSI MEDICAL HEALTH CRITERIA, TO MINIMIZE AERODYNAMIC DRAG EFFECTS IN THE TUNNELS, AND TO PREVENT HEAT BUILD UP IN THE TUNNELS. SEE TM 2.4.2 BASIC TUNNEL CONFIGURATION DIRECTIVE DRAWINGS FOR REQUIRED FREE TUNNEL CROSS-SECTIONAL AREAS FOR DESIGN TRAIN SPEEDS AND TUNNEL LENGTH.
 2. TYPES, LOCATIONS AND DIMENSIONS OF NICHEs AND/OR ENLARGEMENTS FOR FIXED EQUIPMENT (EXAMPLE: EMERGENCY VENTILATION), IF REQUIRED, NOT DESIGNED.
 3. TYPES, LOCATIONS AND DIMENSIONS OF TEMPORARY SUPPORT AND/OR GROUND TREATMENT NOT DESIGNED.
 4. PERMANENT TUNNEL LINING ASSUMED WATERTIGHT/UNDRAINED IN PERMANENT CASE.
 5. STRUCTURAL COMPONENTS ARE NOT DESIGNED.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY J. THOMPSON
DRAWN BY P. DO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-06-09



CALIFORNIA HIGH-SPEED TRAIN PROJECT

TYPICAL CROSS SECTION
CUT AND COVER TUNNEL
SINGLE TRACK

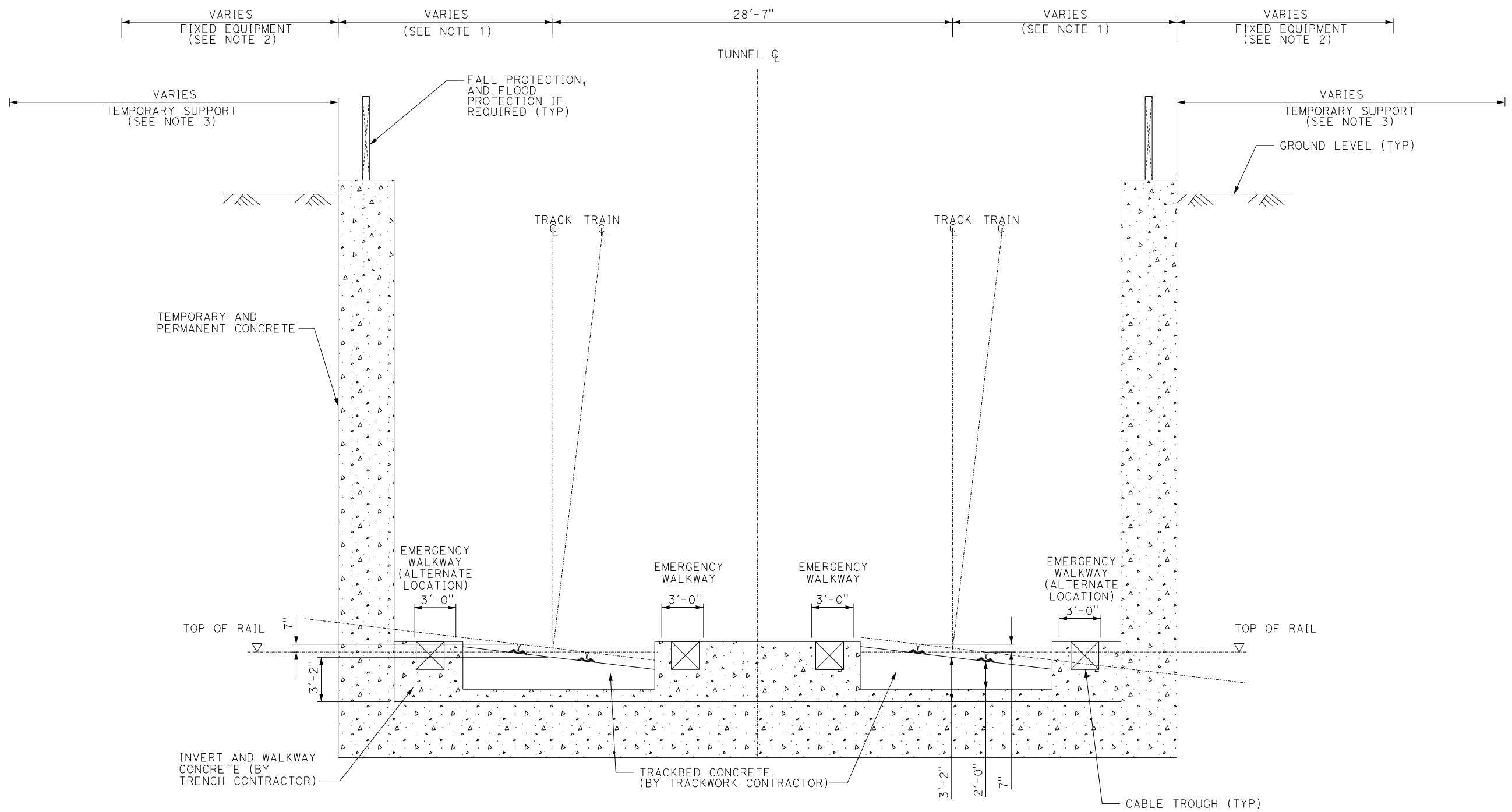
CONTRACT NO. 13259
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SCALE 1/4"=1'-0"
SHEET NO.

10/14/2009 1:45:43 PM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-J.dgn

David

NOTES:

1. SEE TM 2.4.2 BASIC TUNNEL CONFIGURATION DIRECTIVE DRAWINGS FOR MINIMUM CLEARANCE REQUIREMENTS.
2. TYPES, LOCATIONS AND DIMENSIONS OF NICHES AND/OR ENLARGEMENTS FOR FIXED EQUIPMENT (EXAMPLE: EMERGENCY VENTILATION), IF REQUIRED, NOT DESIGNED.
3. TYPES, LOCATIONS AND DIMENSIONS OF TEMPORARY SUPPORT AND/OR GROUND TREATMENT NOT DESIGNED.
4. PERMANENT TUNNEL LINING ASSUMED WATERTIGHT/UNDRAINED IN PERMANENT CASE.
5. STRUCTURAL COMPONENTS ARE NOT DESIGNED.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY J. THOMPSON
DRAWN BY P. DO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-07-09



CALIFORNIA HIGH-SPEED RAIL AUTHORITY
FLY CALIFORNIA
Without ever leaving the ground.

CALIFORNIA HIGH-SPEED TRAIN PROJECT

TYPICAL CROSS SECTION
TRENCH FOR DOUBLE TRACK

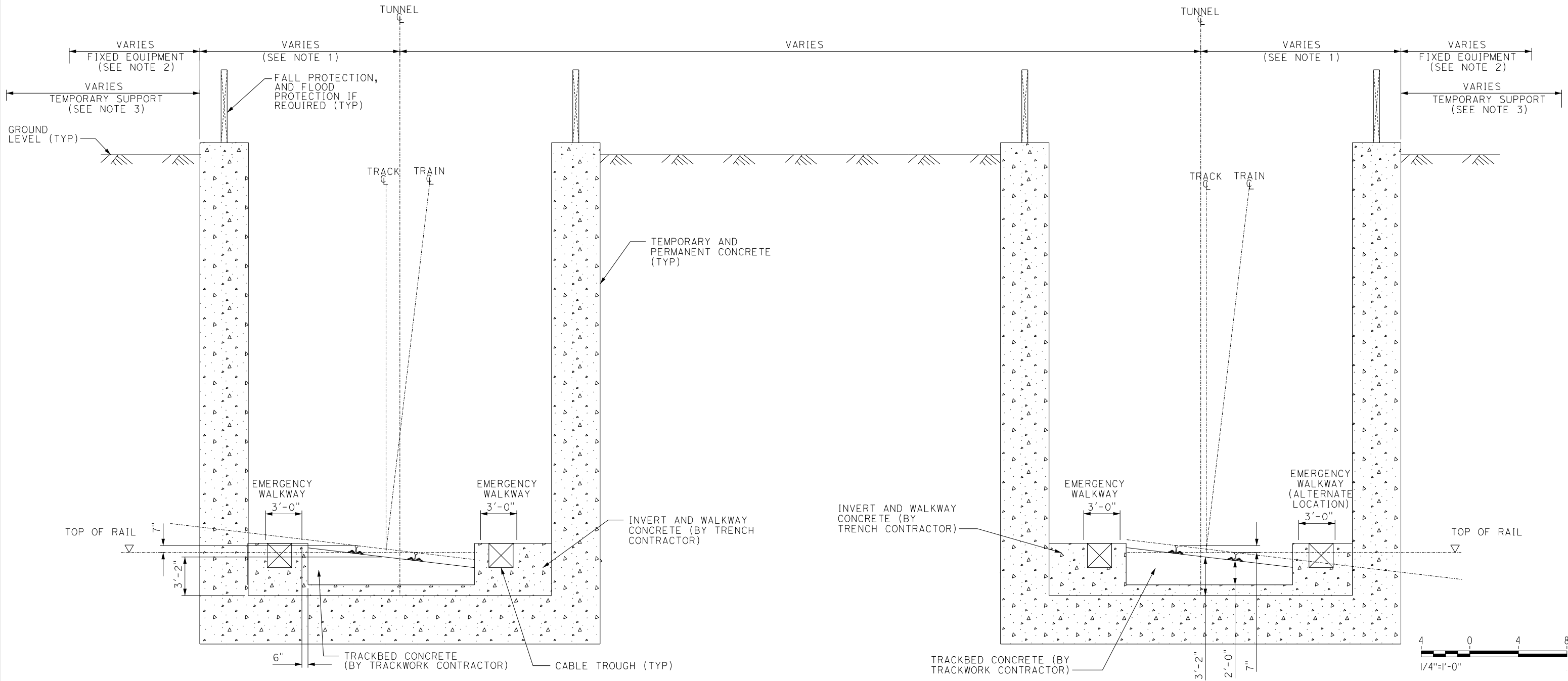
CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-J
SCALE 1/4"=1'-0"
SHEET NO.

10/14/2009 1:50:53 PM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-K.dgn

David

NOTES:

1. SEE TM 2.4.2 BASIC TUNNEL CONFIGURATION DIRECTIVE DRAWINGS FOR MINIMUM CLEARANCE REQUIREMENTS.
2. TYPES, LOCATIONS AND DIMENSIONS OF NICHEs AND/OR ENLARGEMENTS FOR FIXED EQUIPMENT (EXAMPLE: EMERGENCY VENTILATION), IF REQUIRED, NOT DESIGNED.
3. TYPES, LOCATIONS AND DIMENSIONS OF TEMPORARY SUPPORT AND/OR GROUND TREATMENT NOT DESIGNED.
4. PERMANENT TUNNEL LINING ASSUMED WATERTIGHT/UNDRAINED IN PERMANENT CASE.
5. STRUCTURAL COMPONENTS ARE NOT DESIGNED.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY J. THOMPSON
DRAWN BY P. DO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-07-09



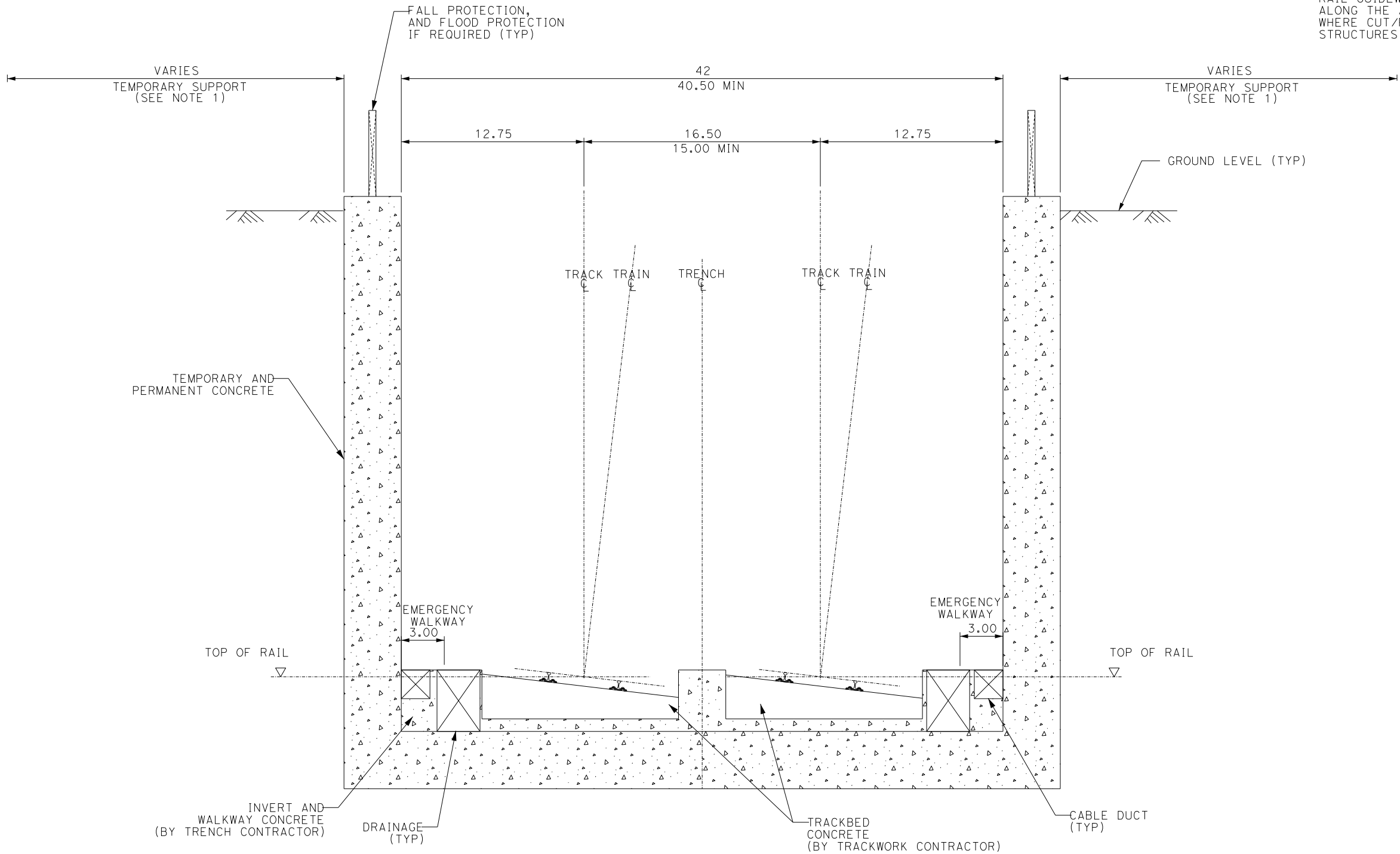
CALIFORNIA HIGH-SPEED TRAIN PROJECT

TYPICAL CROSS SECTION
TRENCH FOR SINGLE TRACK

CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-K
SCALE 1/4"=1'-0"
SHEET NO.

10/14/2009 1:57:07 PM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-L.dgn David

- NOTES:
1. TYPES, LOCATIONS AND DIMENSIONS OF TEMPORARY SUPPORT AND/OR GROUND TREATMENT NOT DESIGNED.
 2. PERMANENT LINING ASSUMED WATERTIGHT/UNDRAINED IN PERMANENT CASE.
 3. STRUCTURAL COMPONENTS ARE NOT DESIGNED.
 4. TRACK, OCS POLES AND FOUNDATIONS, CABLE DUCTS AND DRAINAGE ARE SCHEMATIC AND DO NOT REPRESENT DESIGN.
 5. RIGHT-OF-WAY REQUIRED FOR THE HIGH-SPEED RAIL GUIDEWAY WILL DEPEND UPON CONDITIONS ALONG THE ALIGNMENT, INCLUDING TERRAIN, WHERE CUT/FILL SLOPES, RETAINING STRUCTURES, AND ACCESS ARE REQUIRED.



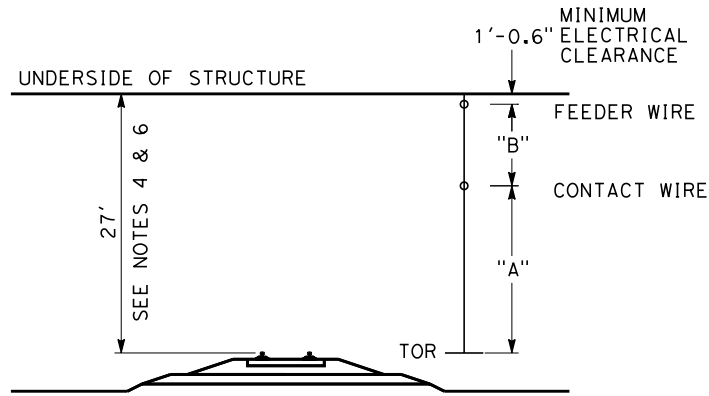
REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY J. THOMPSON
DRAWN BY A. ANTONIO
CHECKED BY J. CHIRCO
IN CHARGE J. CHIRCO
DATE 07-07-09



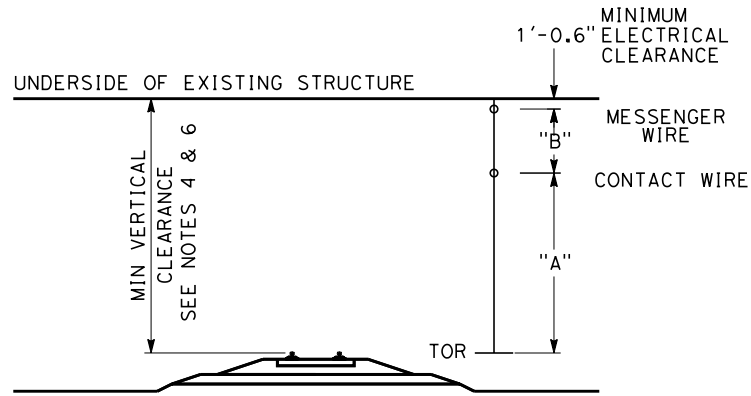
CALIFORNIA HIGH-SPEED TRAIN PROJECT	CONTRACT NO. 13259
TYPICAL CROSS SECTION DOUBLE TRACK TRENCH	DRAWING NO. TM 1.1.21-L
	SCALE 1/4"=1'-0"
	SHEET NO.

7/16/2010 11:07:44 AM T:\13259B Calif High Speed Rail\CADD\Directive Drawings\1.1.21 - Typical Cross Sections\1.1.21-M.dgn David



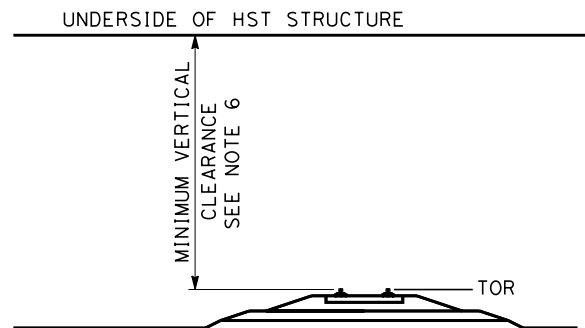
NEW STRUCTURE OVER TRACKS

	HEIGHT "A"	HEIGHT "B"	VERTICAL CLEARANCE
DEDICATED HST TRACK	17'-5"	8'-3.5"	27'
SHARED USE TRACK	18'-9"	7'-0.5"	27'



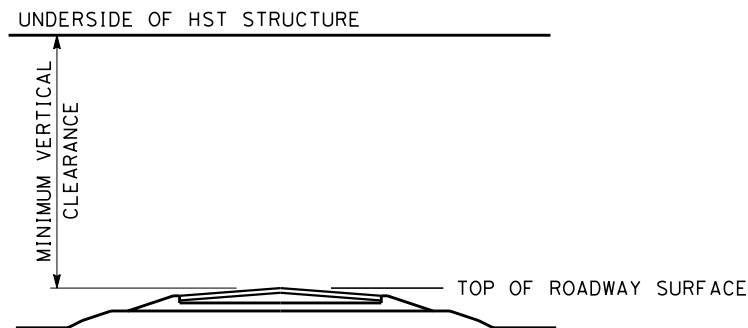
EXISTING STRUCTURE OVER TRACKS

	HEIGHT "A"	HEIGHT "B"	MIN VERTICAL CLEARANCE
DEDICATED HST TRACK	17'-5"	5'-3"	24'
SHARED USE TRACK	18'-9"	4'-0"	24'-6"



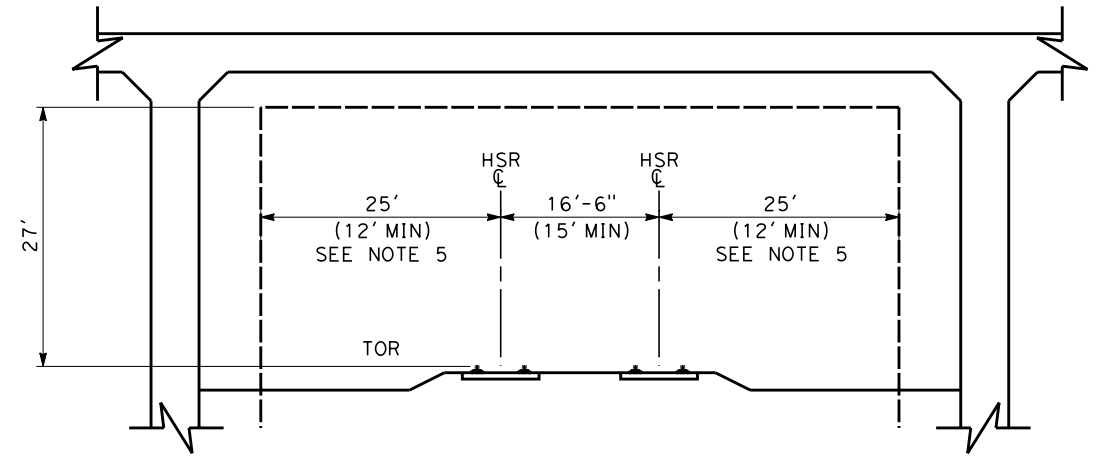
NEW HST STRUCTURE OVER TRACK

	MIN VERTICAL CLEARANCE
<u>FREIGHT TRACKS</u>	
BNSF	23'-4"
UPRR	23'
<u>NON-FREIGHT TRACKS</u>	
SCRRA	24'
CALTRAIN	24'-6"

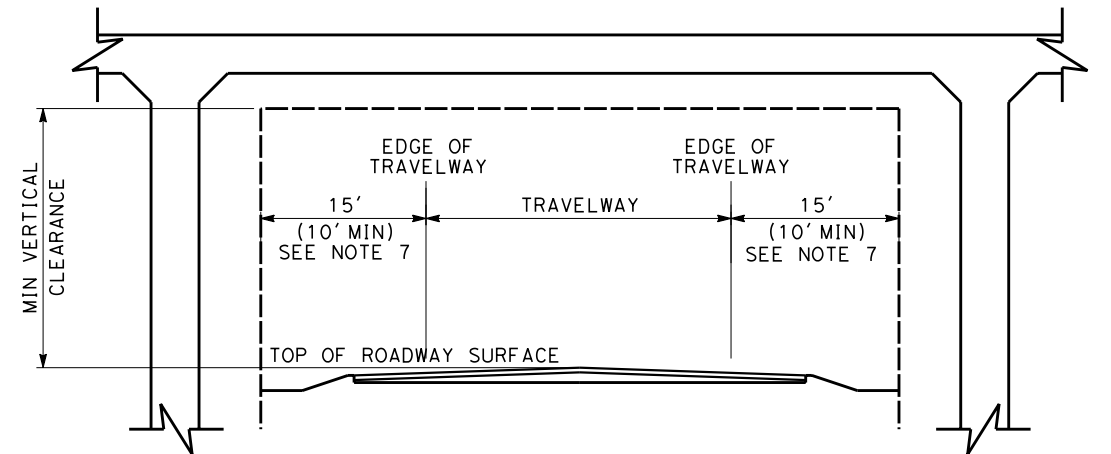


NEW HST STRUCTURE OVER ROADWAY

	MIN VERTICAL CLEARANCE
FREEWAY/EXPRESSWAY	16'-6"
OTHER	VARIES



CLEARANCE OUTLINE FOR NEW STRUCTURE OVER HST



CLEARANCE OUTLINE FOR NEW HST STRUCTURE OVER ROADWAY

	MIN SIDE CLEARANCE
FREEWAY/EXPRESSWAY	10'
OTHER	4'

NOTES:

1. ALL DIMENSIONS IN FEET UNLESS OTHERWISE STATED.
2. TOLERANCES ARE NOT ADDITIVE FOR INCREMENTAL DISTANCES.
3. STRUCTURE ANALYSIS REQUIRED WHERE MINIMUM VERTICAL CLEARANCES ARE NOT ACHIEVED.
4. DEFINED CLEARANCES ASSUMES OVERHEAD STRUCTURE LENGTH ALONG TRACK IS NO MORE THAN 160 FT.
5. PROTECTIVE STRUCTURE MAY BE REQUIRED IF SIDE CLEARANCE IS LESS THAN 25 FT.
6. AT LOCATIONS WHERE SUPERELEVATION IS PRESENT, VERTICAL CLEARANCES SHALL BE MEASURED FROM THE HIGH RAIL.
7. PROTECTIVE STRUCTURE MAY BE REQUIRED IF SIDE CLEARANCE IS 15 FT OR LESS.

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY S. MILITELLO
DRAWN BY D. SOLTERO
CHECKED BY M. ACOSTA
IN CHARGE J. CHIRCO
DATE 05/26/10

PARSONS BRINCKERHOFF



CALIFORNIA HIGH-SPEED RAIL AUTHORITY
FLY CALIFORNIA
Without ever leaving the ground.

CALIFORNIA HIGH-SPEED TRAIN PROJECT

MINIMUM CLEARANCE
FOR STRUCTURES OVER/UNDER
HIGH-SPEED TRAIN TRACKS

CONTRACT NO. 13259
DRAWING NO. TM 1.1.21-M
SCALE NTS
SHEET NO.