PORT OF TACOMA

TACOMA, WASHINGTON
BUBBLE 2 TRACK REPLACEMENT

PROJECT NO. 099585
CONTRACT NO. 070000

PORT COMMISSIONERS:

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DON MEYER
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Chief Facilities Development Officer

THAIS HOWARD, PE
Director of Engineering

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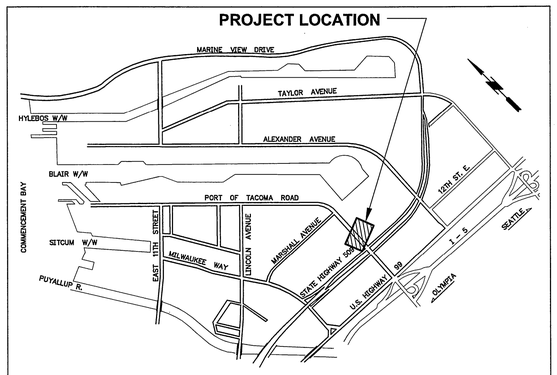
PROJECT LOCATION



VICINITY MAP NO SCALE PORT OF TACOMA

CONSULTANT:

Jacobs Engineering Group

SHEET NO.	DRAWING	DRAWING TITLE
1	C1	COVER SHEET
2	C2	LEGEND, SYMBOLS, AND ABBREVIATIONS
3	C3	EXISTING CONDITIONS AND SITE PREP
4	C4	RAIL SITE PLAN
5	C5	RAIL SECTIONS AND DETAILS
6	C6	TRACK PROFILE

BINDING EDGE

PORT OF TACOMA FILE: P:\W3X68600\700CADD\702CIVIL\099585_C1 cover sheet

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PORT OF TACOMA
BUBBLE 2 TRACK REPLACEMENT
COVER SHEET

CONT/CONS: 070000	TOWNSHIP:	RANGE:	SECTION:
M. ID: 099585	DAT-HRZ: WA83-SF	VERT: MLLW 19.39' @ Tide 22 1933	
PHASE: BID SET	PARCEL:	DRAWING SCALE: NONE	

6536
C1
1 OF 6

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ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
ABT	ABOUT
AC	ASPHALT CONCRETE, AIR COMPRESSOR
ACI	AMERICAN CONCRETE INSTITUTE
ACP	ASPHALT CONCRETE PAVEMENT
AD, ADDL	ADDITIONAL
AEI	AUTOMATIC EQUIPMENT IDENTIFICATION
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASPH	ASPHALT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BF	BLIND FLANGE
BLDG	BUILDING
BLK	BLOCK
BM	BENCH MARK, BEAM
BOC	BOTTOM OF CURB
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BP	BEGINNING POINT
BVCS	BEGIN VERTICAL CURVE STATION
BVCE	BEGIN VERTICAL CURVE ELEVATION
BRG	BEARING
C, CA	CHANNEL, CONDUIT COMPRESSOR AIR
CB	CATCH BASIN
CJ	CONSTRUCTION JOINT
CL	CENTER LINE, CLASS
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CO, C/O	CLEANOUT
COL	COLUMN
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDUIT
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTROL, CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
COR	CORNER
CP	CONCRETE PIPE
CPP	CORRUGATED POLYETHYLENE PIPE
CPPSSP	CORRUGATED POLYETHYLENE STORM SEWER PIPE
CRIT	CRITICAL
CY	CUBIC YARD
DBL	DOUBLE
DEMO	DEMOLITION
DIA	DIAMETER
DEG	DEGREE
DET	DETAIL
DI	DUCTILE IRON
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DN	DOWN
DW	DOMESTIC WATER
DWG	DRAWING
E	EASTING, EAST, ELECTRICAL
EA	EACH
EL, ELEV	ELEVATION
EMBED	EMBEDMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ESM	EASEMENT
EW	EACH WAY
EVCS	END VERTICAL CURVE STATION
EVCE	END VERTICAL CURVE ELEVATION
EXIST	EXISTING
EXJ	EXPANSION JOINT
EXP	EXPOSED
EXT	EXTERIOR, EXTENSION
FDC	FIRE DEPARTMENT CONNECTION
FDN	FOUNDATION
FH	FIRE HYDRANT
FG	FINISHED GRADE
FL	FLANGED
FM	FORCE MAIN
FT	FEET
FV	FIELD VERIFY
FW	FIRE WATER

ABBREVIATIONS (CONT'D)

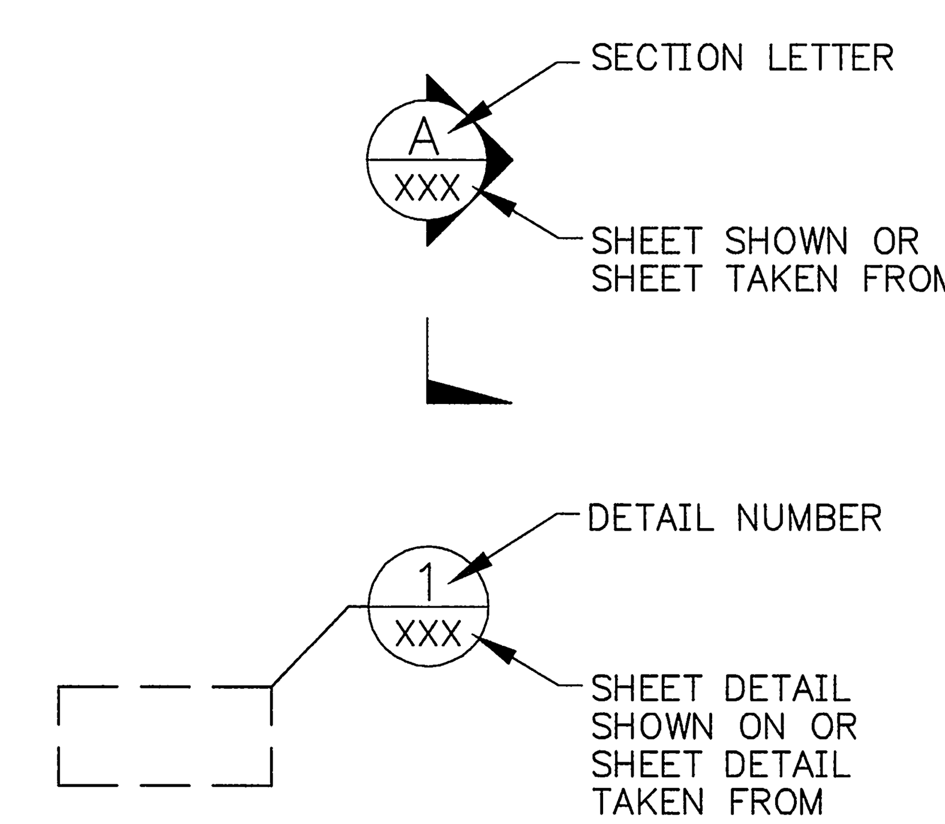
G	GAS
GA	GAUGE
GAL	GALVANIZED, GALLONS
GND	GROUND
GRT	GRATE ON CATCH BASIN
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HT	HEIGHT
HVAC	HEATING VENTILATION AIR CONDITIONING
I	INTERSTATE
ID	INSIDE DIAMETER
IN	INCH
INC	INCORPORATED
INCL	INCLUDING
IE	INVERT ELEVATION
JB	JUNCTION BOX
KW	KILOWATT
LB	POUND
LF	LINEAR FEET
LID	SOLID LID ON CATCH BASIN
LOC	LOCATION
LTG	LIGHTING
MAX	MAXIMUM
ME	MATCH EXISTING
MFR	MANUFACTURER
MH	MANHOLE
MHHW	MEAN HIGHER HIGH WATER
MIN	MINIMUM
MISC	MISCELLANEOUS
MLLW	MEAN LOWER LOW WATER
MW	MONITORING WELL
N	NORTHING, NORTH
NO.	NUMBER
NPP	NON PERFORATED PIPE
NRS	NON RISING STEM
NTS	NOT TO SCALE
OH	OVERHEAD
OHWL	ORDINARY HIGH WATER LINE
OP	OVERHEAD POWER
OPP	OPPOSITE
OSHA	OCCUPATION SAFETY AND HAZARD ADMINISTRATION
OWS	OIL, WATER SEPARATOR
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PERF	PERFORATED
PF	POINT OF FROG
PI	POINT OF INTERSECTION
PITO	POINT OF INTERSECTION ON TURNOUT
POT	POINT ON TANGENT
PP	PERFORATED PIPE
PROP	PROPOSED
PRV	PRESSURE REGULATING VALVE
PS	POINT OF SWITCH
PSF	POUNDS PER SQUARE FOOT
PSIG	POUNDS PER SQUARE INCH, GAGE
PT	POINT OF TANGENT
PVC	POLYVINYL CHLORIDE CONDUIT
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RE	RIM ELEVATION
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
S	SOUTH
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SPA	SPACES
SR	STATE ROUTE
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STD	STANDARD
SY	SQUARE YARD

ABBREVIATIONS (CONT'D)

T&B	TOP & BOTTOM
TESC	TEMPORARY EROSION & SEDIMENTATION CONTROL
TF	TRACK FEET
THRU	THROUGH
T.O.	TURNOUT
TOC	TOP OF CONCRETE, TOP OF CURB
TOP	TOP OF PAVEMENT
TP	TURNING POINT
TR	TACOMA RAIL
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
VC	VERTICAL CURVE
VERT	VERTICAL
VOL	VOLUME
W	WEST
W/	WITH
W/O	WITHOUT
WAC	WASHINGTON ADMINISTRATIVE CODE
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WT	WEIGHT
WWF	WELDED WIRE FABRIC
XING	CROSSING
XFMR	TRANSFORMER

SYMBOLS

× 21.28	TOP OF PAVEMENT ELEVATION
- - - - - - - - -	SAWCUT LINE
————	CENTERLINE PROPOSED RAIL
—— - - ——	PROJECT BOUNDARY
▶	FLOW DIRECTION (STORM DRAINAGE)
⋈	GATE VALVE
○	PC OR PT
(X)	CONSTRUCTION NOTE
◇X	DEMOLITION NOTE



HORIZONTAL DATUM

HORIZONTAL DATUM

NAD 83 (2007)

WASHINGTON STATE PLANE COORDINATE SYSTEM, SOUTH ZONE

PER 2007 PORT OF TACOMA "BLAIR–HYLEBOS PENINSULA SURVEY CONTROL MAP"

BASIS OF BEARING

INVERSE BEARING BETWEEN PORT OF TACOMA CONTROL POINTS #111 AND 114, BEING S42°19'53"E (NOT SHOWN)

VERTICAL DATUM

PORT OF TACOMA VERTICAL DATUM (MEAN LOWER LOW WATER)

BENCHMARK 111

PIERCE CO. MONUMENT IN CENTER LINE OF PORT OF TACOMA RD. AT INTERSECTION WITH MARSHALL AVE.

ELEVATION = 16.92

(PER 2007 PORT OF TACOMA "BLAIR–HYLEBOS PENINSULA SURVEY CONTROL MAP")

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PORT OF TACOMA
BUBBLE 2 TRACK REPLACEMENT
LEGEND, SYMBOLS, AND ABBREVIATIONS

TOWNSHIP: | RANGE: | SECTION:
DAT-HRZ: WA83-SF | VERT: MLLW 19.39' @ Tide 22 1933
PARCEL: | DRAWING SCALE: NONE

6536
C2
2 OF 6
CONT/CONS: 070000
M. ID: 099585
PHASE: BID SET

PORT OF TACOMA FILE: P:\W3X68600\700CADD\702CIVIL\099585_C2 abbreviations and notes

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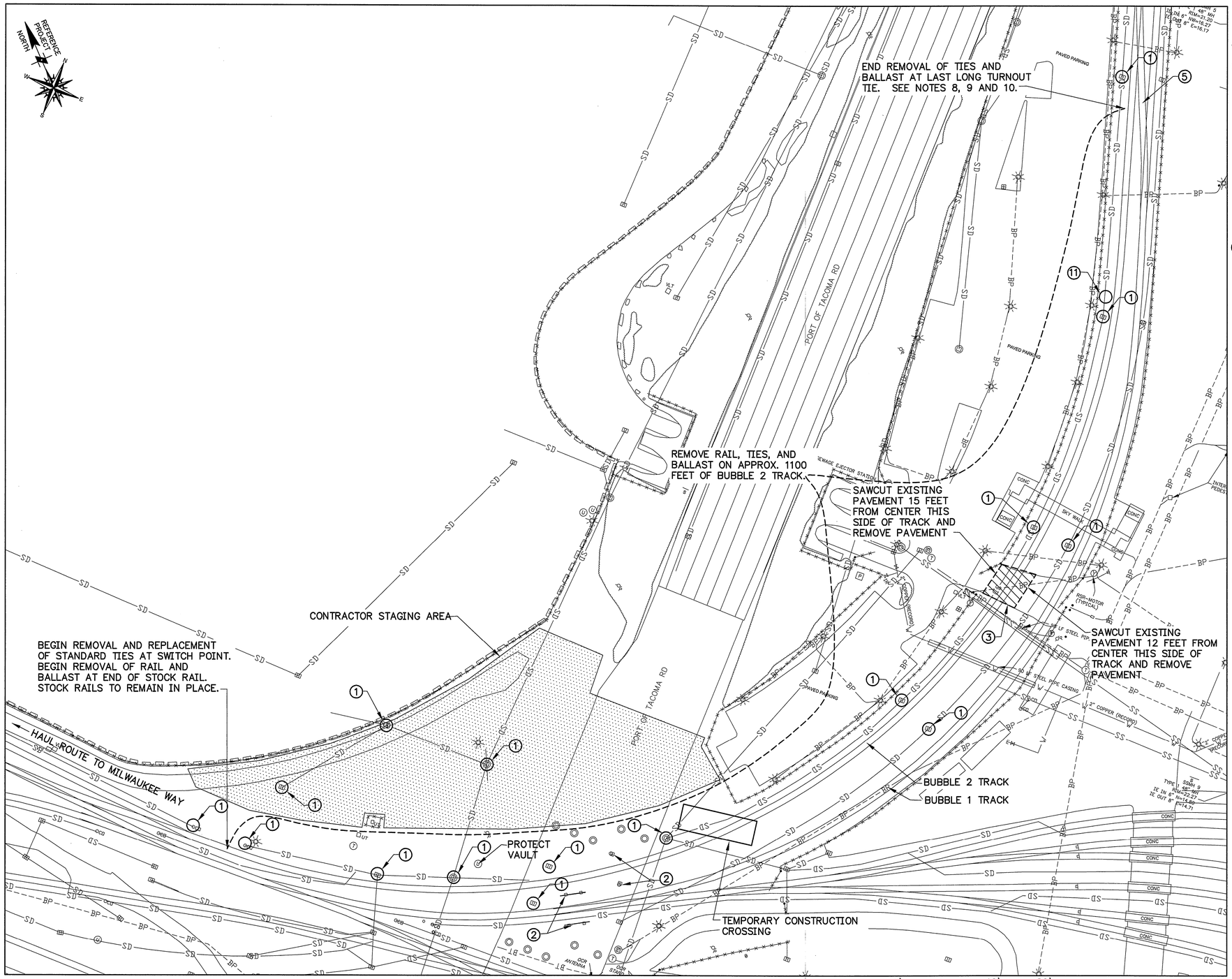

SITE PREP AND DEMOLITION NOTES:

1. PROTECT EXISTING STORM DRAIN STRUCTURES.
2. PROTECT EXISTING AEI READERS, CONDUITS, AND EQUIPMENT. EXTENT OF BALLAST REMOVAL BETWEEN READERS TO BE REDUCED TO AVOID IMPACTING READERS. COORDINATE WORK NEAR READERS WITH PORT. PORT WILL DISCONNECT AND RECONNECT AEI WHEEL SENSORS MOUNTED ON RAIL.
3. EXISTING 8" PAVING TO BE REMOVED. PCT ENTRANCE GATE IS AN ACTIVE GATE. COORDINATE WORK WINDOWS WITH THE PORT AND TACOMA RAIL PER THE SPECIFICATIONS.
4. TRACK EXCAVATION OF BALLAST AND NATIVE MATERIAL TO BE DISPOSED OF OFF SITE PER SPECIFICATIONS.
5. VEHICLES AND EQUIPMENT ON WHEELS SHALL NOT BE DRIVEN ON EXISTING CROSSOVER TIES OR TIES ON BUBBLE 1 TRACK.
6. CONTRACTOR STAGING AREA SHALL BE NO CLOSER THAN 30' TO CENTERLINE OF NEAREST TRACK. EQUIPMENT MAY NOT BE OPERATED WITHIN 25' OF CENTERLINE OF AN ACTIVE TRACK.
7. LOCATION OF EXISTING STORM DRAIN SYSTEM CATCH BASINS AND CLEANOUTS ARE APPROXIMATE. CONTRACTOR TO PROTECT, LOCATE AND FLAG STORM DRAIN CATCH BASINS AND CLEANOUTS.
8. UNCLIP AND TEMPORARILY REMOVE WEST 115# RAIL ON TURNOUT TIES TO PROVIDE CLEAR ACCESS FOR REMOVAL OF EXISTING TRACK TIES AND EXCAVATION OF BALLAST. REINSTALL WEST 115# RAIL ON TURNOUT TIES AND NEW TRACK TIES.
9. SAWCUT EAST RAIL NEAR THE LAST LONG TIE TO PROVIDE CLEAR ACCESS FOR REMOVAL OF EXISTING TIES AND EXCAVATION OF BALLAST. DRILL HOLES IN EAST RAIL FOR COMPROMISE JOINT.
10. DO NOT DISTURB LAST LONG TIE ON TURNOUT WITH EXCAVATION. FOUR CROSSOVER TIES 8'–0" TO BE INSTALLED AT END OF TURNOUT.
11. REMOVE RAIL LUBRICATOR AND GREASE RESERVOIR FROM EXISTING TRACK AND RE–INSTALL ON NEW TRACK.
12. TEMPORARY CONSTRUCTION CROSSING MAY BE CONSTRUCTED OF BALLAST OR TIMBER PLANKING. CROSSING TO BE REMOVED AT END OF CONSTRUCTION.

LEGEND

REMOVE EXISTING ASPHALT PAVING.

CONTRACTOR STAGING AREA

SITE PREP PLAN

40' 0 40' 80'
20' 60'
SCALE: 1"=40'

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PORT OF TACOMA
BUBBLE 2 TRACK REPLACEMENT
EXISTING CONDITIONS AND SITE PREP

CONT/CONS:	070000	TOWNSHIP:	RANGE:	SECTION:
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C3
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BINDING EDGE

TRACK GEOMETRY BUBBLE 2

NUMBER	DESC	STATION	NORTHING	EASTING	BEARING	DISTANCE	RADIUS	DEGREE OF CURVE	LENGTH	DELTA
T1	POT PC	99+27.72 100+10.00	703928.31 703928.25	1171800.22 1171882.50	S89° 57' 37"E	82.28				
C1	PC PCC	100+10.00 101+66.34	703928.25 703953.47	1171882.50 1172036.09			478.34	12°00'00"	156.34	18°43'35"
C2	PCC PCC	101+66.34 107+52.91	703953.47 704382.67	1172036.09 1172391.25			530.00	10°49'36"	586.57	63°24'40"
C3	PCC PT	107+52.91 109+78.10	704382.67 704605.61	1172391.25 1172375.05			535.00	10°43'31"	225.19	24°07'01"
T2	PT POT	109+78.10 111+50.00	704605.61 704770.67	1172375.05 1172327.04	N16° 12' 54"W	171.90				

REFERENCE PROJECT NORTH

END NEW TRACK NEAR LAST LONG TIE OF TURNOUT. STA 111+00±

POT: 111+50.00

PROVIDE 136# TO 115# COMPROMISE JOINTS

704605.61
1172375.05

PT: 109+78.10

PORT OF TACOMA ROAD

CONSTRUCT 1100 FEET OF BUBBLE 2 TRACK.

PCC: 107+52.91

PROVIDE 2' WIDTH ASPHALT TAPERED EDGE EACH SIDE OF CROSSING.

PROVIDE 7" DEPTH ASPHALT CROSSING FROM 27' TO 31' WIDTH

PS EXISTING SWITCH STA. 100+00
BEGIN NEW TIES STA. 100+01

POT: 99+27.72

PC: 100+10.00

PCC: 101+66.34

PROVIDE 136# TO 115# COMPROMISE JOINTS ON STOCK RAILS.

STA. 102+35. PROVIDE 12' WIDE TOP SURFACE BALLAST CROSSING LEVEL WITH TOP OF TIE EXTENDING 12' FROM CENTER LINE TRACK. MATCH AND EXTEND TO PAVED CROSSING ON SOUTH SIDE. PROVIDE 2' WIDTH TAPERED EDGE EACH SIDE OF CROSSING.

BUBBLE 2 TRACK

BUBBLE 1 TRACK

PIPE CASING

STEEL PIPE CASING

2" COPPER (RECORD)

PAVED PARKING

99+28 · 100+00 · 101+00 · 102+00 · 103+00 · 104+00 · 105+00 · 106+00 · 107+00 · 108+00 · 109+00 · 110+00 · 111+00 · 111+50

T1 · T2 · C1 · C2 · C3 · C4 · C5

12' · 12' · 27' · 31'

SITE PLAN

SCALE: 1"=40'

40' 0 40' 80'
20' 60'

CONSTRUCTION NOTES:

1. SEE SHEET C6 FOR TRACKWORK DETAILS.
2. PROVIDE GAGE RODS AT 13' SPACING WITHIN LIMITS OF CURVES AND AT STOCK RAILS OF SWITCH.
3. TURNOUTS ON EACH END OF TRACKWORK HAVE SIGNAL AND TRACK CIRCUIT. PROVIDE NEW TRACK WIRE CONNECTION TO RAIL FOR EACH CIRCUIT IN SAME LOCATION AS EXISTING. PROVIDE RAIL BONDING ACROSS RAIL JOINTS AS NEEDED. UP TO FOUR BONDS FOR EACH SIGNAL MAY BE NEEDED DEPENDENT ON JOINT LOCATIONS.
4. RAIL JOINTS SHALL NOT BE INSTALLED IN PAVEMENT. JOINTS TO BE LOCATED AT LEAST 15' FROM EDGE OF PAVING.

LEGEND

- T1 — TANGENT NUMBER ON TRACK
- C2 — CURVE NUMBER ON TRACK
- RAILROAD TRACKS EXISTING
- CENTERLINE NEW TRACK
- LOCATION OF PC, PCC, PT OR POT
- 7" ASPHALT PAVING

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PORT OF TACOMA
BUBBLE 2 TRACK REPLACEMENT
RAIL SITE PLAN

CONT/CONS:	070000	TOWNSHIP:	RANGE:
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PHASE: BID SET		PARCEL:	DRAWING SCALE: AS NOTED

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C4
4 OF 6

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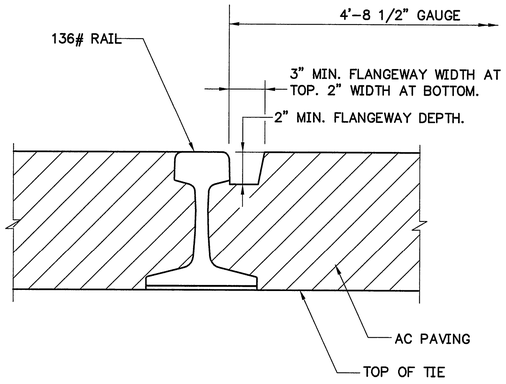
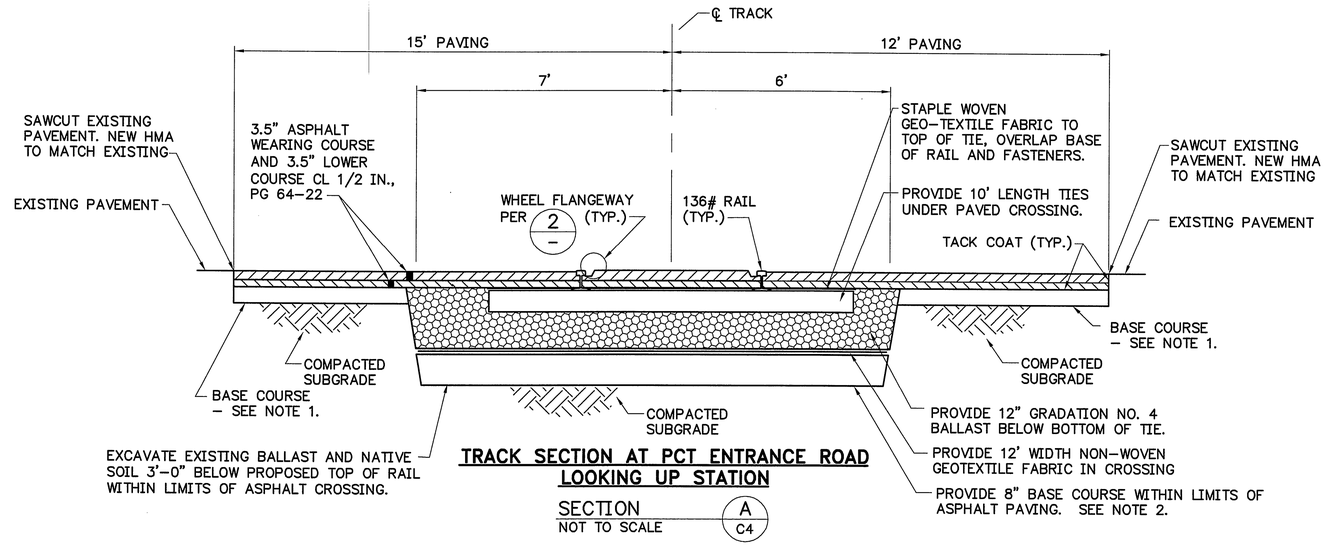
CONSTRUCTION NOTES:

1. REMOVE OR ADD BASE COURSE AS REQUIRED TO PROVIDE 7" DEPTH OF ASPHALT. EXISTING BASE COURSE REMOVED FROM OTHER LOCATIONS MAY BE USED FOR BASE COURSE. BASE COURSE TO BE COMPACTED AS NOTED BELOW BEFORE PLACEMENT OF ASPHALT.

2. PREPARE AND COMPACT SUBGRADE. OBTAIN APPROVAL OF THE PORT BEFORE PLACING BASE COURSE. EXISTING BASE COURSE OR EXISTING BALLAST MAY BE RE-USED FOR THIS BASE COURSE LAYER. COMPACT BASE COURSE TO 95% OF THE STANDARD DENSITY DETERMINED BY THE COMPACTION CONTROL DENSITY FOR GRANULAR MATERIALS (ASTM D-1557).

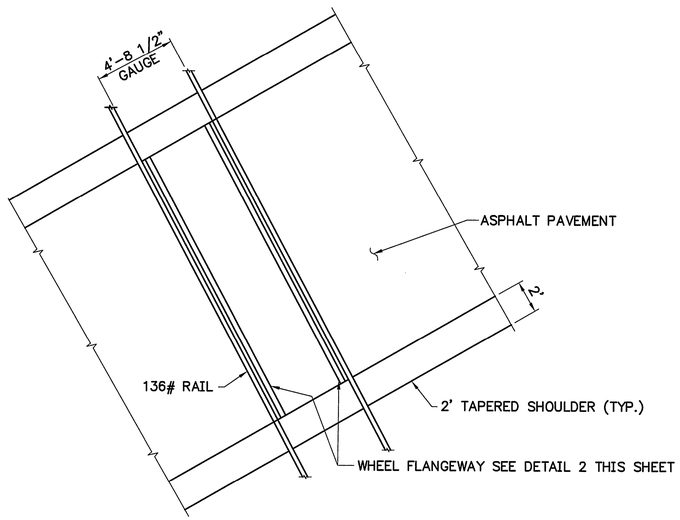


WHEEL FLANGEWAY

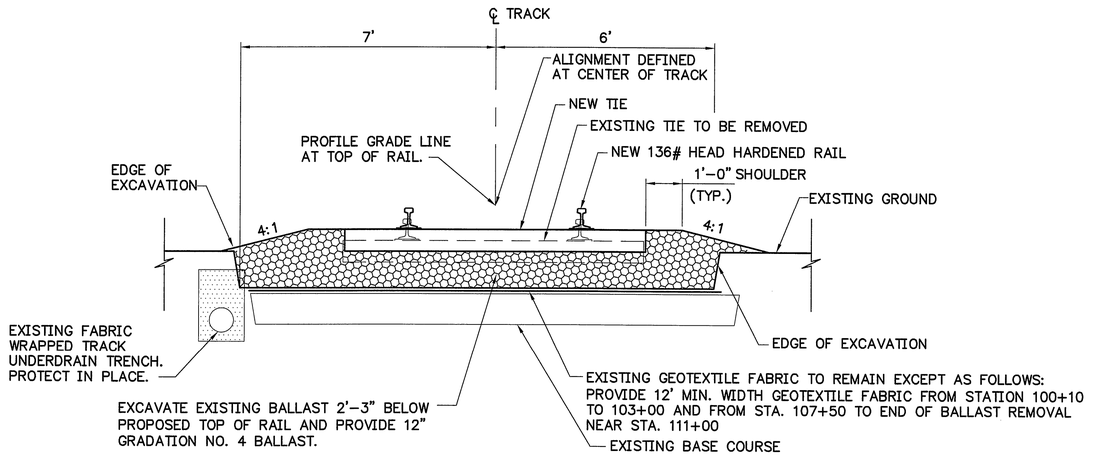


TRACK SECTION AT PCT ENTRANCE ROAD LOOKING UP STATION

SECTION A / C4
NOT TO SCALE



PLAN - ASPHALT PAVING AT PCT ENTRANCE ROAD



TYPICAL TRACK SECTION LOOKING UP STATION

SECTION B / C4
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PORT OF TACOMA
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RAIL SECTIONS AND DETAILS

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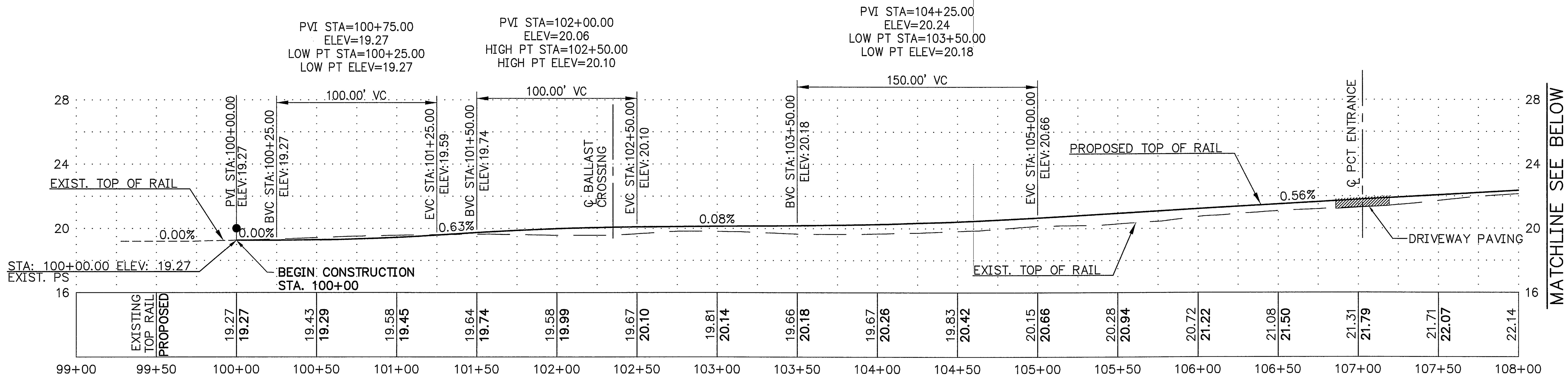
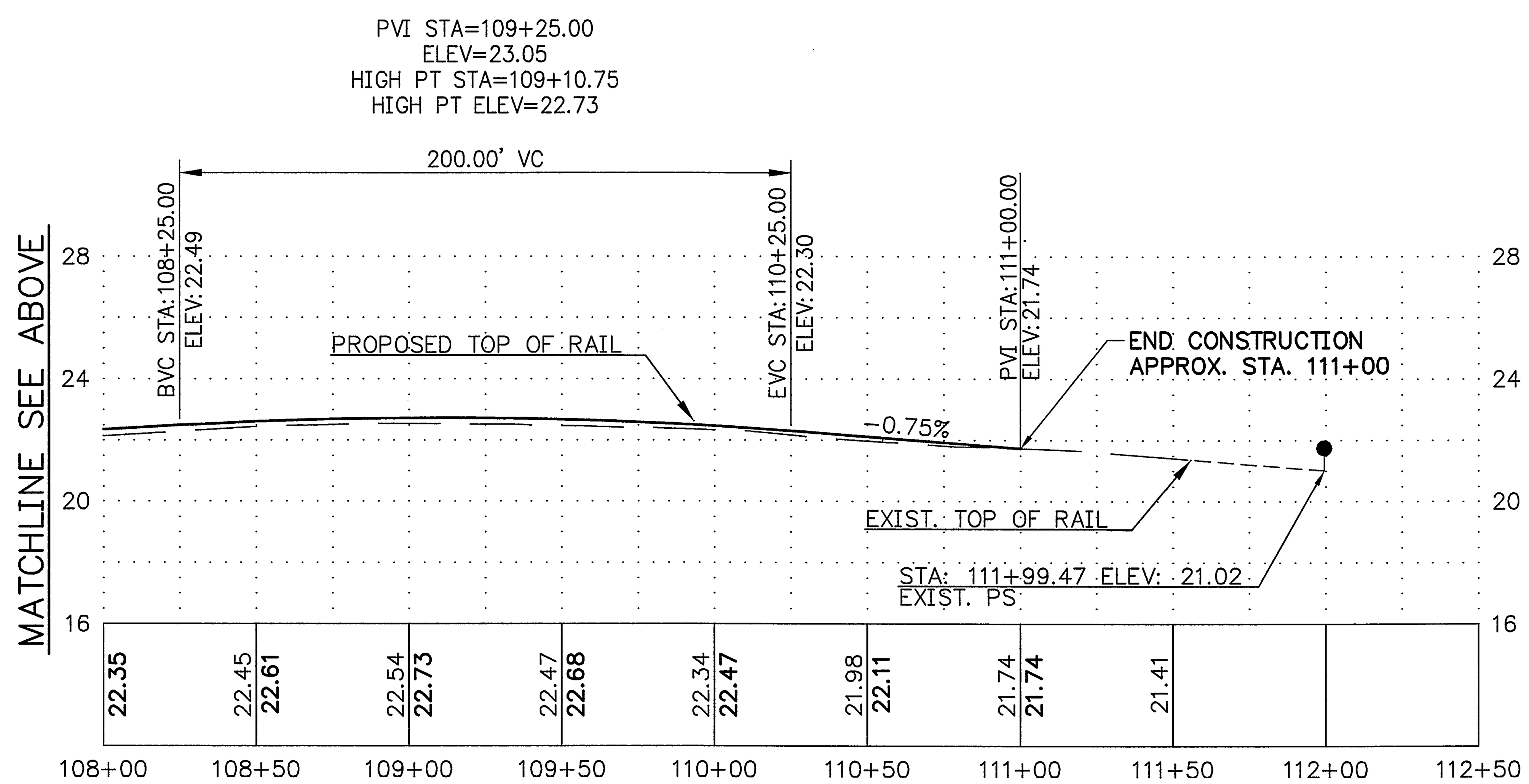


BUBBLE 2 TRACK PROFILE

CONSTRUCTION NOTES:

1. GEOTEXTILE FABRIC TO REMAIN EXCEPT AS FOLLOWS: PROVIDE 12' MIN. WIDTH NON-WOVEN GEOTEXTILE FABRIC FROM STATION 100+10 TO 103+00 AND FROM STA. 107+50 TO END OF BALLAST REMOVAL NEAR STA. 111+00



BUBBLE 2 TRACK PROFILE

40' 0 40' 80'
20' 20' 60'
SCALE HORIZONTAL: 1"=40'

4' 0 4' 8'
2' 2' 6'
VERTICAL: 1"=4'

PORT OF TACOMA
BUBBLE 2 TRACK REPLACEMENT
TRACK PROFILE

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