

PORT OF TACOMA

PARCEL 77 TRACKWORK INSTALLATION

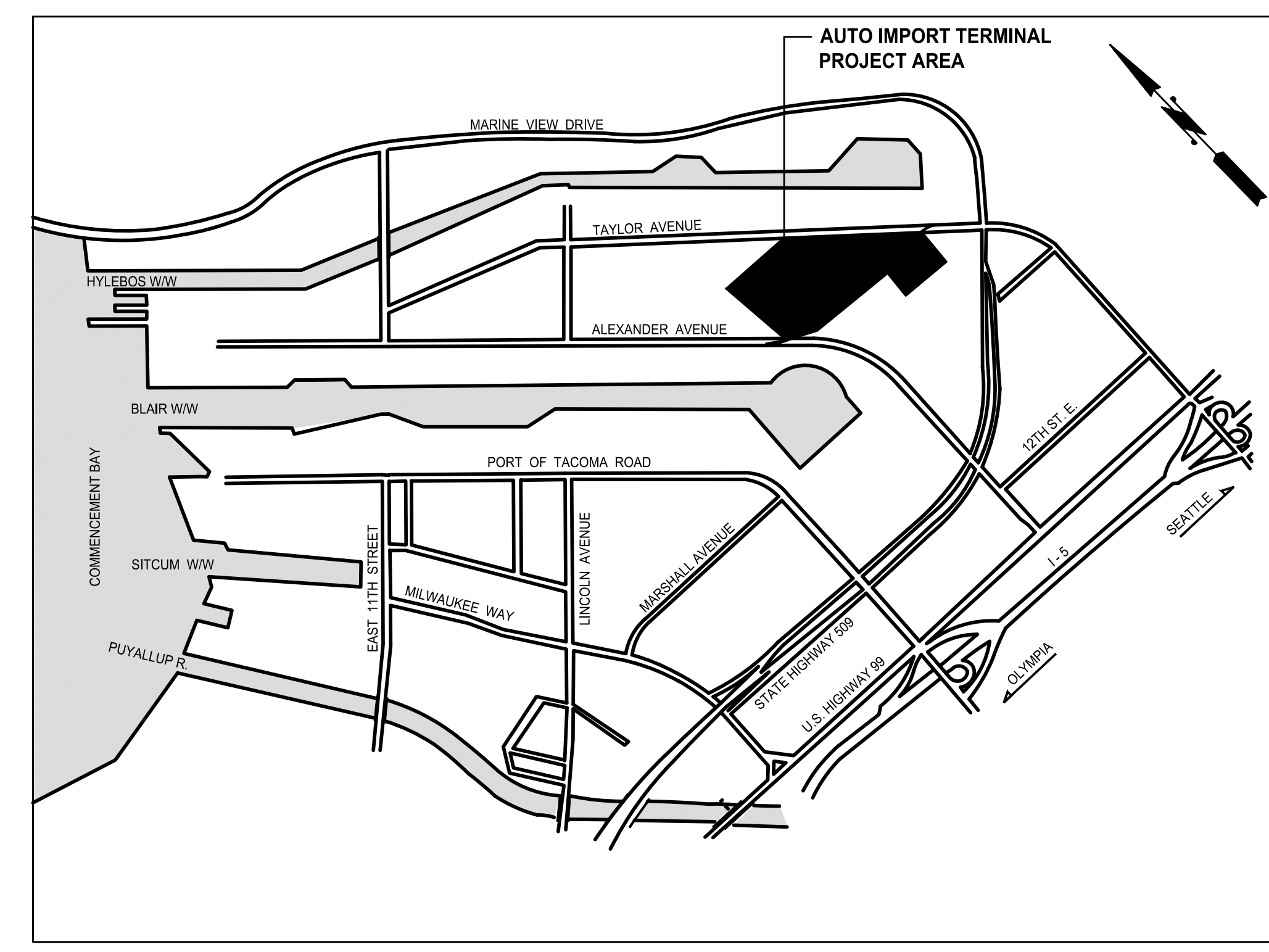
PROJECT NO. 201020.01 CONTRACT NO. 070771

PORT COMMISSIONERS:

- DON MEYER
- DONALD C. JOHNSON
- RICHARD P. MARZANO
- CLARE PETRICH
- JOHN McCARTHY

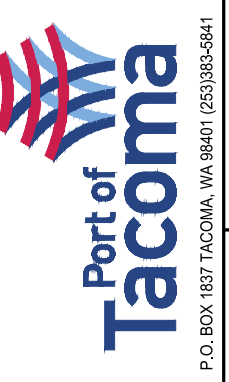
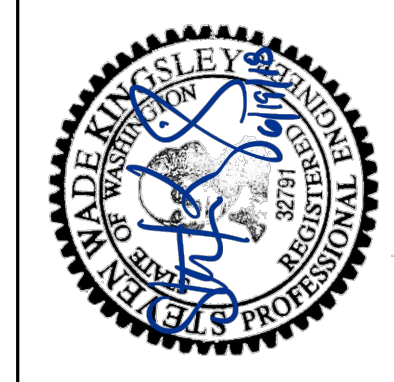
PORT STAFF:

- JOHN WOLFE
Chief Executive Officer
- DAKOTA CHAMBERLAIN, PE
Chief Facilities
Development Officer
- JANE VANDENBERG, PE
Director of Engineering
- CAROL RHODES, PE
Senior Project Manager



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G1.0	1 OF 14	PARCEL 77 TRACKWORK INSTALLATION	COVER	TJH	06/19/2018
CONT/CONS:	070771	TOWNSHIP:	21N	CHECKED BY:	DATE
M. ID:	201020.01	RANGE:	3E	SWK	06/19/2018
PHASE:	BID SET	DATE-HRZ:	W83-SF	PROJ. ENGR	DATE
		VERT:	PORT OF TACOMA BM#	bosterhaus	Jun 19, 2018
		PARCEL:	MULTIPLE	PRINTED BY:	PORT ADDRESS: ONE SITCUM PLAZA
		DRAWING SCALE:	AS SHOWN	TACOMA WA, 98401-1837	
				APPROVED:	
				DIRECTOR ENGR. DATE	
				DATE	
				REVISION:	
				BY:	
				APPR:	
				DATE:	



kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

GENERAL NOTES:

- 1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH PERMIT CONDITIONS, CITY OF TACOMA STANDARDS, AREMA, TACOMA RAIL, AND WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT) STANDARD SPECIFICATIONS 2017.
2. BEFORE ANY CONSTRUCTION MAY BEGIN, THE CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION MEETING WITH THE PORT AND CITY OF TACOMA PERMIT DEPARTMENT AND INSPECTION STAFF.
3. A COPY OF THESE APPROVED PLANS SHALL BE ON THE CONSTRUCTION SITE AT ALL TIMES.
4. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO OBTAIN ALL CONSTRUCTION EASEMENTS IF NECESSARY BEFORE INITIATING OFF-SITE WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, SPOTTERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND BY THE CONTRACTOR.
6. PRIOR TO THE START OF EXCAVATION, THE CONTRACTOR SHALL CALL 1-800-424-555 FOR UTILITY LOCATES AND COORDINATE UTILITY WORK WITH THE UTILITY SERVICE PROVIDER.
7. FEMA FLOODPLAIN LIMITS SHOWN ON PLANS ARE BASED ON CITY OF TACOMA GIS MAPPING OF FLOOD INSURANCE RATE MAPS EFFECTIVE MARCH 7, 2017.

HORIZONTAL DATUM:

- 1. THE HORIZONTAL DATUM IS WASHINGTON STATE PLANE COORDINATE SYSTEM SOUTH ZONE, NAD 83/07.
2. AS DERIVED FROM POSITIONING SYSTEM (GPS) TIES TO CONTORL POINTS 119, 178, AND GG AND THEIR COORDINATE VALUES SHOWN ON THE PORT'S MONUMENT NETWORK MAP DATED, DECEMBER 30, 2016.
3. ALL DISTANCES SHOWN ARE GROUND VALUES.

VERTICAL DATUM:

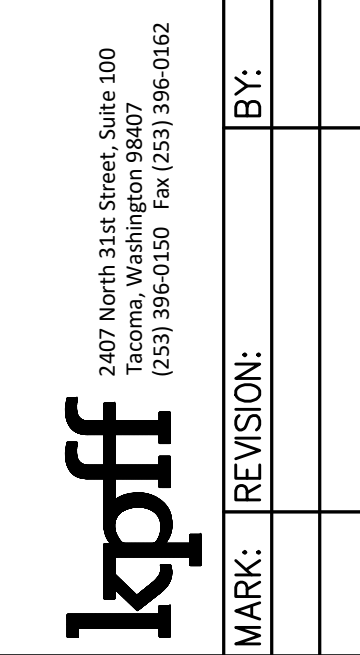
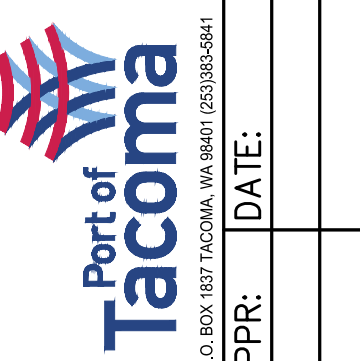
- 1. PORT OF TACOMA - MLLW 1983-2001 EPOCH

LOCAL MONUMENT AND ESTABLISHED TBM'S LIST:

Table with 4 columns: Point ID, Description, Northing (N), Easting (E), and Elevation (ELEV). Includes points like POINT 1 DEA CONTROL, POINT 2 DEA CONTROL, etc.

ABBREVIATIONS:

Large table mapping abbreviations to their full names. Columns include symbols like #, Ø, @, AB, AC, etc., and their corresponding full names such as DIAMETER, ASPHALT CONCRETE, AMERICAN CONCRETE INSTITUTE, etc.

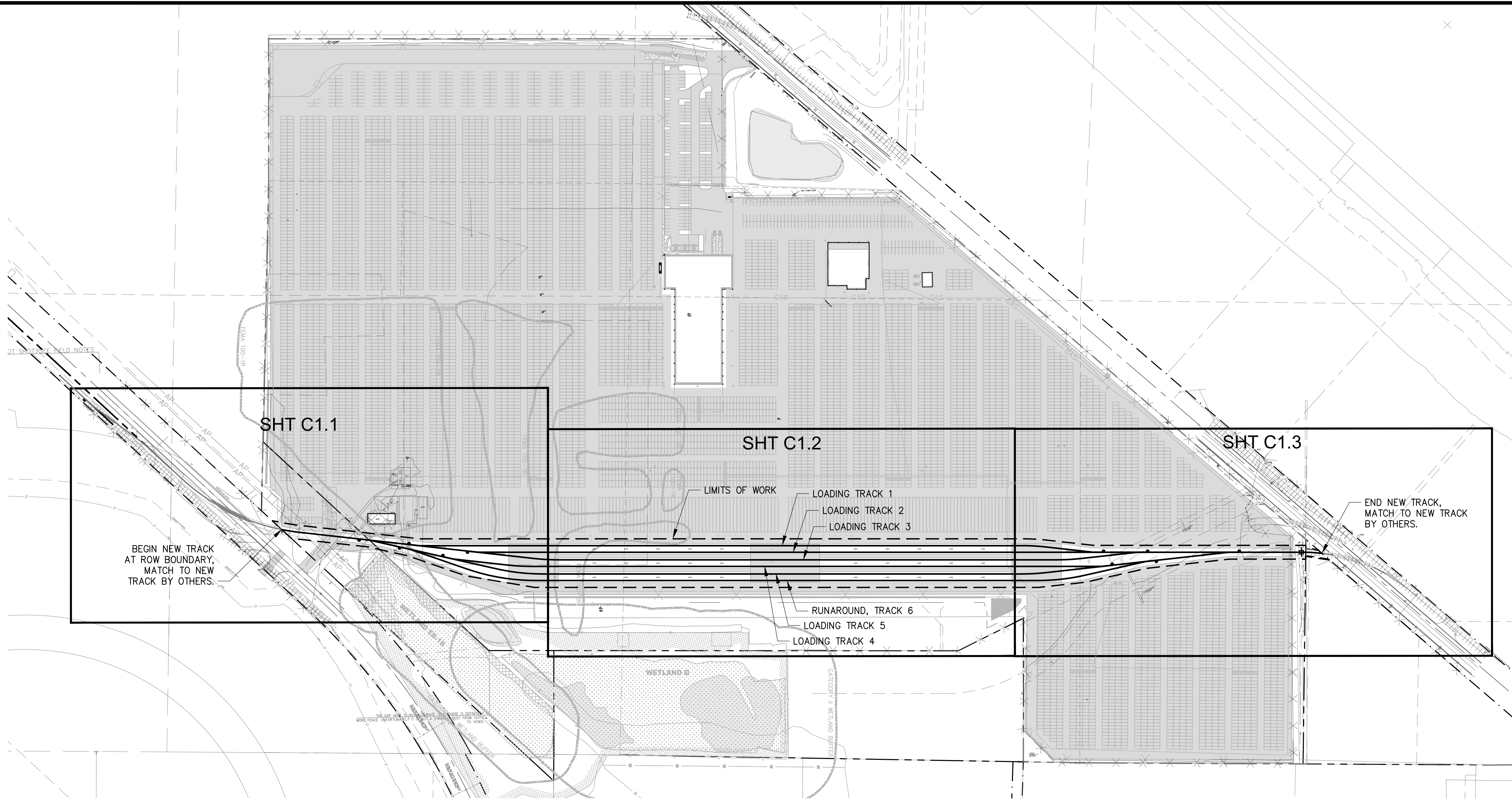


APPROVED: Table with columns for T/JH, CHECKED BY, DATE, SWK, PROJ. ENGR, DATE, DIRECTOR ENG. DATE, and PRINTED BY.

GENERAL NOTES Table with columns for TOWNSHIP, RANGE, SECTION, TACOMA BM#, DAT-HRZ, W83-SF, VER, PORT OF TACOMA, and DRAWING SCALE.

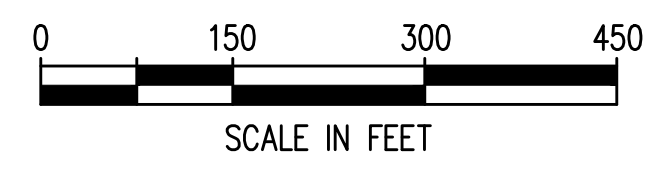
Table with columns for CONT/CONS, OF, TOWN, DAT-HRZ, W83-SF, VER, PORT OF TACOMA, and DRAWING SCALE.

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LEGEND

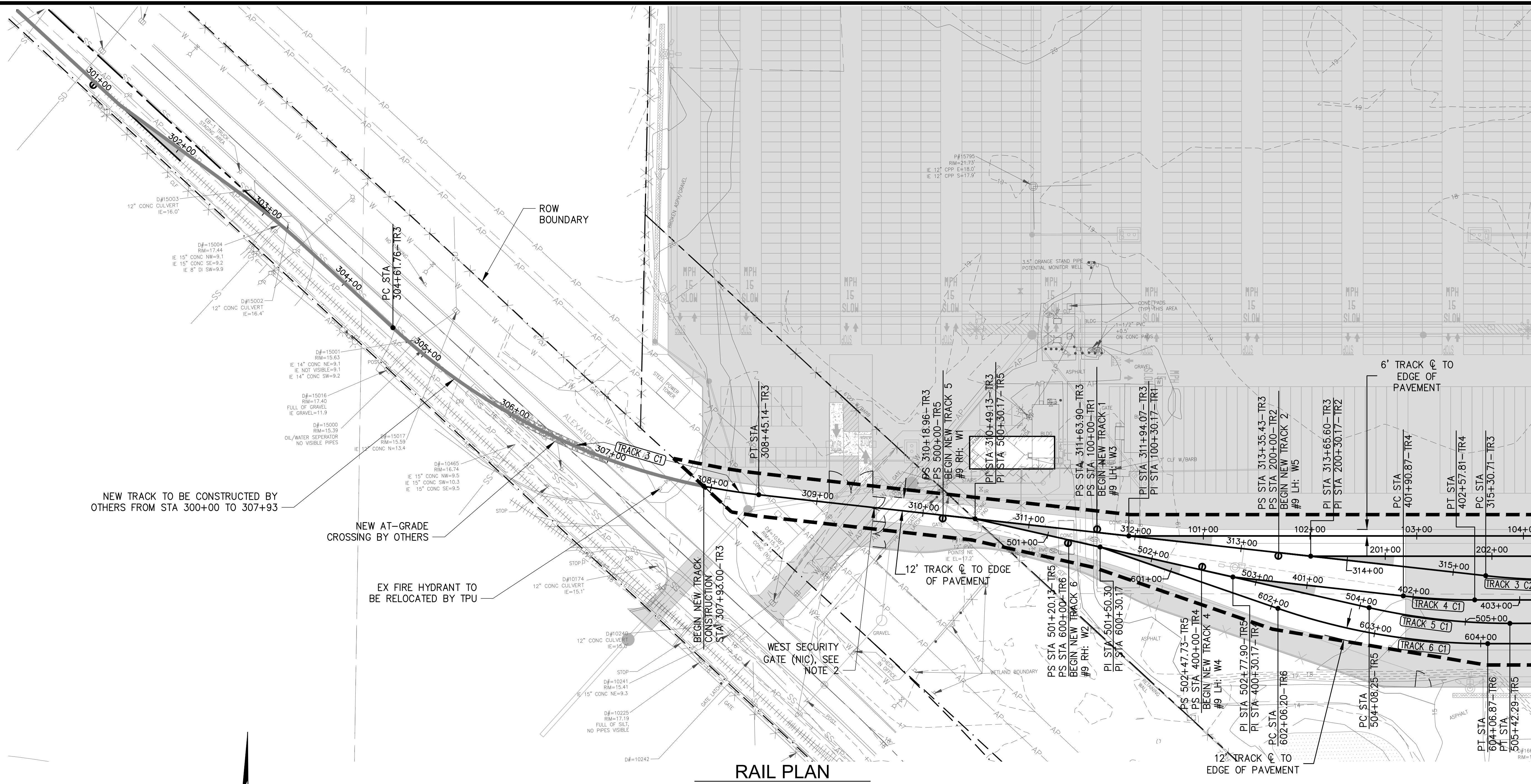
- LIMITS OF WORK
- +++++ EXISTING TRACK
- PROPOSED TRACK
- - - FUTURE STORAGE TRACK
- - - ROW BOUNDARY
- NO. 9 TURNOUT
- PAVEMENT (NIC)



OVERALL PLAN
SCALE: 1" = 150'

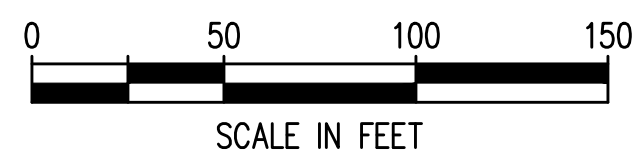
C1.0	PARCEL 77 TRACKWORK INSTALLATION		RAIL SITE PLAN	TJH 06/19/2018
	3 OF 14	070771	06/19/2018	06/19/2018
CONT/CONS:	201020.01	TOWNSHIP: 21N	RANGE: 3E	SECTION: 36
M. ID:	BID SET	DATE-HRZ: W83-SF	VERT: PORT OF TACOMA BM#	PRINTED BY: bosterhaus Jun 19, 2018
PHASE:		PARCEL: MULTIPLE	DRAWING SCALE: AS SHOWN	PORT ADDRESS: ONE SITCUM PLAZA TACOMA WA, 98401-1837
				2407 North 31st Street, Suite 100 Tacoma, Washington 98407 (253) 396-0150 Fax (253) 396-0162 P.O. BOX 1837 TACOMA, WA 98401 (253)396-0441
		MARK:	REVISION:	BY:
		APPR:	DATE:	

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RAIL PLAN

SCALE: 1" = 50'

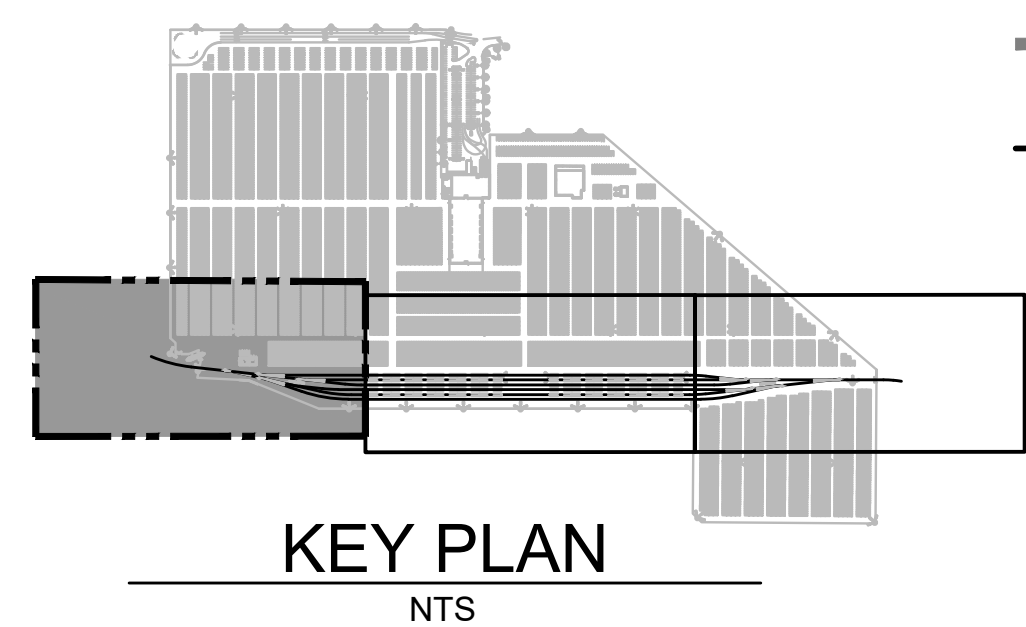


LEGEND

- | | | | |
|--|-----------------------------|--|---------------------------------|
| | LIMITS OF WORK | | ROW LINE |
| | EXISTING TRACK | | NO. 9 TURNOUT |
| | PROPOSED TRACK | | PAVEMENT (NIC) |
| | PROPOSED TRACK IN ROW (NIC) | | NEW AT GRADE CROSSING BY OTHERS |
| | FUTURE STORAGE TRACK | | BRIDGE PLATE RACK BY OTHERS |

NOTES

- WELD ALL RAIL JOINTS IN PAVEMENT AND WITHIN 12' OF PAVEMENT EDGE, SEE SHEETS C1.5 THRU C1.7 FOR PAVEMENT LIMITS, ALL OTHER RAIL JOINTS SHALL BE BOLTED. PAVEMENT BY OTHERS.
- ALL UNPAVED BALLAST AREAS BETWEEN WEST SECURITY GATE AND EAST SECURITY GATE SHALL BE SURFACED WITH WALKWAY ROCK, REFER TO AND .
- FOR TYPICAL TRACK SECTION, REFER TO .
- FOR TYPICAL #9 TURNOUT, REFER TO .

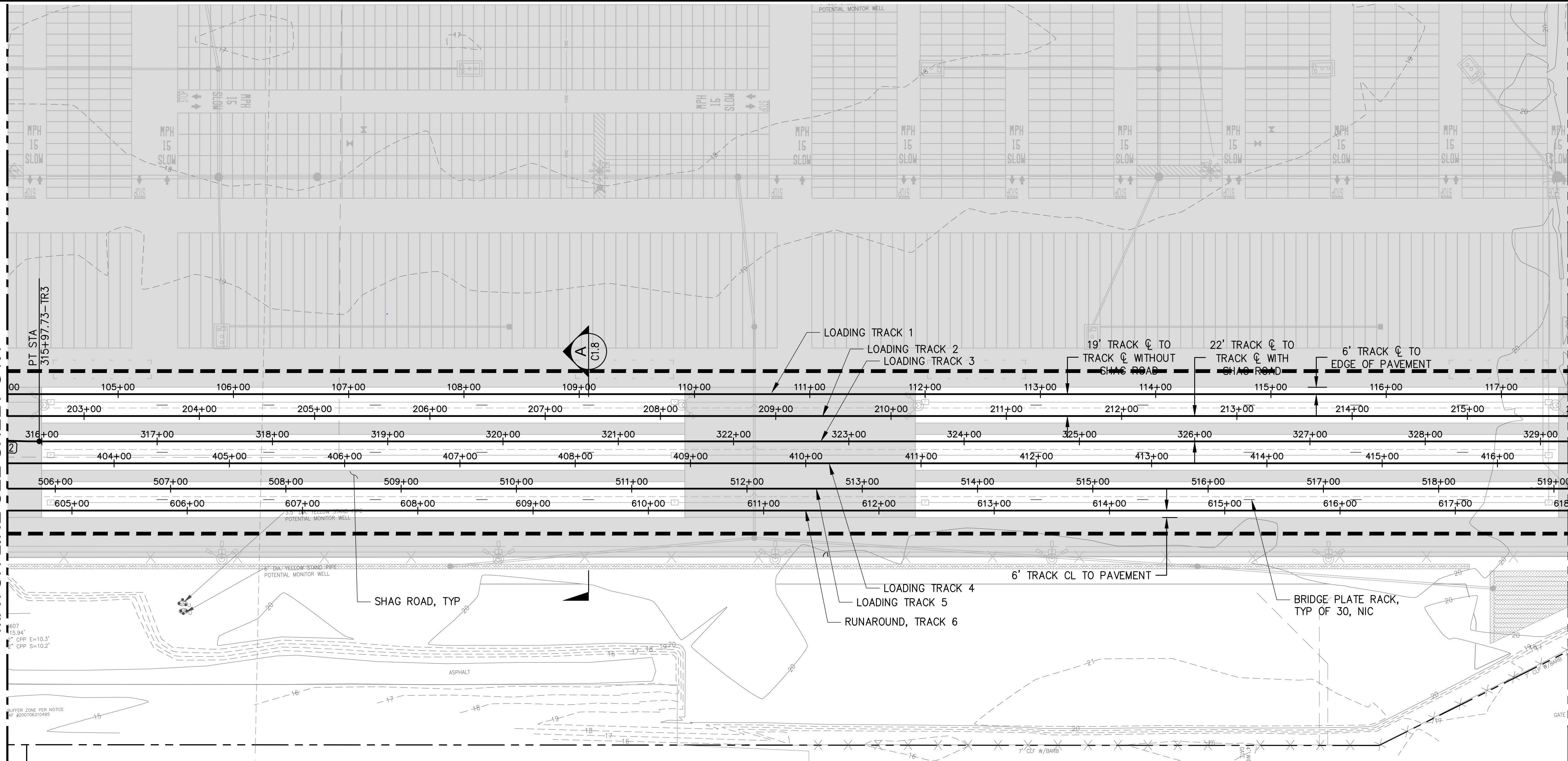


MATCH LINE SEE SHEET C1.2

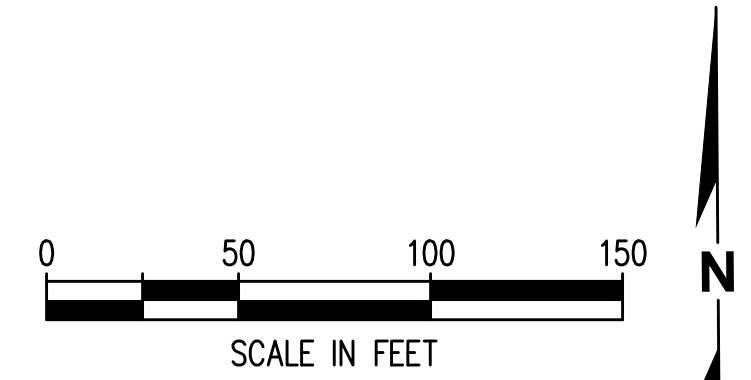
 2407 North 31st Street, Suite 100 Tacoma, Washington 98407 (253) 396-0150 Fax (253) 396-0162	MARK: _____ REVISION: _____ BY: _____ DATE: _____
APPROVED: TJH CHECKED BY: SWK DATE: 06/19/2018	PROJECT: bosterhaus Jun 19, 2018 DATE: 06/19/2018 PROJ. ENGR: bosterhaus Jun 19, 2018 DATE: 06/19/2018
PARCEL 77 TRACKWORK INSTALLATION RAIL PLAN AREA 1	DIRECTOR ENG. DATE: bosterhaus Jun 19, 2018 PRINTED BY: bosterhaus Jun 19, 2018 PORT ADDRESS: ONE SITCUM PLAZA TACOMA WA, 98401-1837
C1.1 4 OF 14	TOWNSHIP: 21N RANGE: 3E SECTION: 36 DAT-HRZ: W83-SF VERT: PORT OF TACOMA BM# PARCEL: MULTIPLE DRAWING SCALE: AS SHOWN
CONT/CONS: 070771 M. ID: 201020.01 PHASE: BID SET	THIS DRAWING IS THE PROPERTY OF THE PORT OF TACOMA AND SHALL NOT BE USED ON OTHER WORK, DISCLOSED, COPIED, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION

MATCH LINE SEE SHEET C1.1

MATCH LINE SEE SHEET C1.3



RAIL PLAN
SCALE: 1" = 50'

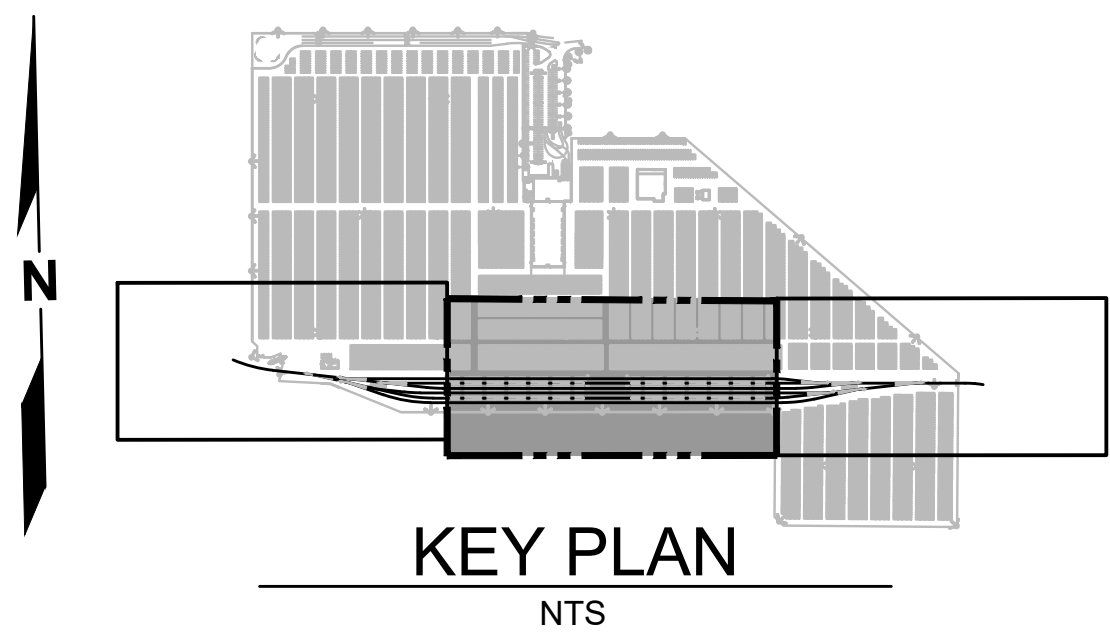


LEGEND

- LIMITS OF WORK
- +++++ EXISTING TRACK
- PROPOSED TRACK
- PROPOSED TRACK IN ROW (NIC)
- - - FUTURE STORAGE TRACK
- - - - - ROW LINE
- NO. 9 TURNOUT
- PAVEMENT (NIC)
- NEW AT GRADE CROSSING BY OTHERS
- BRIDGE PLATE RACK BY OTHERS

NOTES

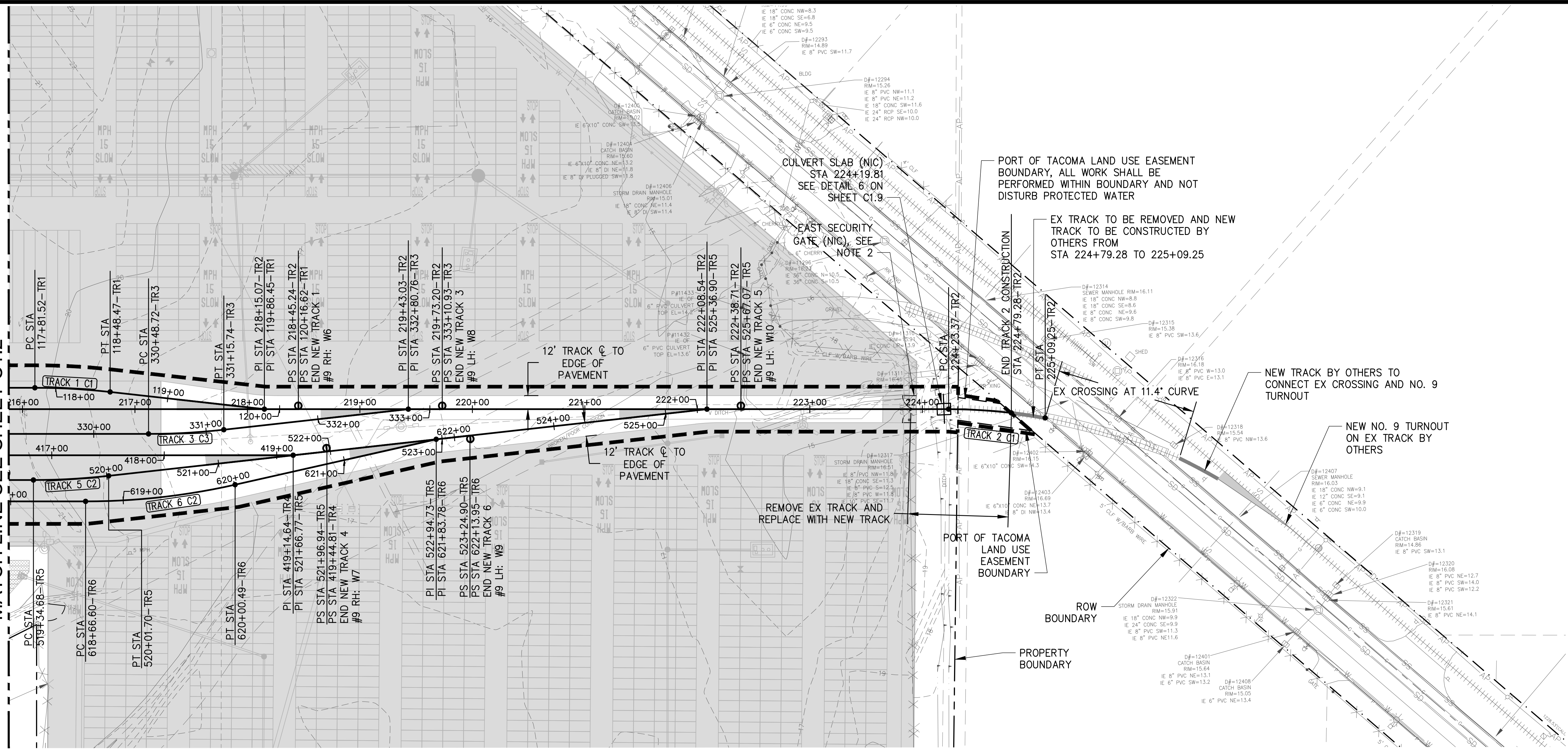
- WELD ALL RAIL JOINTS IN PAVEMENT AND WITHIN 12' OF PAVEMENT EDGE, SEE SHEETS C1.5 THRU C1.7 FOR PAVEMENT LIMITS, ALL OTHER RAIL JOINTS SHALL BE BOLTED. PAVEMENT BY OTHERS.
- ALL UNPAVED BALLAST AREAS BETWEEN WEST SECURITY GATE AND EAST SECURITY GATE SHALL BE SURFACED WITH WALKWAY ROCK, REFER TO **A** AND **1**
- FOR TYPICAL TRACK SECTION, REFER TO **1**
- FOR TYPICAL #9 TURNOUT, REFER TO **1**



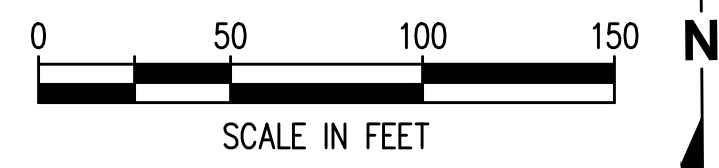
<p>Port of Tacoma 2407 North 31st Street, Suite 100 Tacoma, Washington 98407 (253) 396-0150 Fax (253) 396-0162</p>			<p>DATE: 06/19/2018</p> <p>CHECKED BY: TJH</p> <p>DATE: 06/19/2018</p> <p>SWK</p> <p>PROJ. ENGR: bosterhaus</p> <p>DATE: Jun 19, 2018</p> <p>PRINTED BY: bosterhaus</p> <p>PORT ADDRESS: ONE SITCUM PLAZA</p> <p>TACOMA WA, 98401-1837</p>
	<p>MARK: REVISION:</p> <p>BY:</p> <p>APPR:</p> <p>DATE:</p>	<p>APPROVED:</p>	<p>PARCEL 77 TRACKWORK INSTALLATION</p> <p>RAIL PLAN AREA 2</p> <p>RANGE: 3E</p> <p>SECTION: 36</p> <p>TOWNSHIP: 21N</p> <p>DATE-HRZ: W83-SF</p> <p>PORT OF TACOMA BM#</p> <p>VERT: MULTIPLE</p> <p>DRAWING SCALE: AS SHOWN</p>

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MATCH LINE SEE SHEET C1.2



RAIL PLAN
SCALE: 1" = 50'

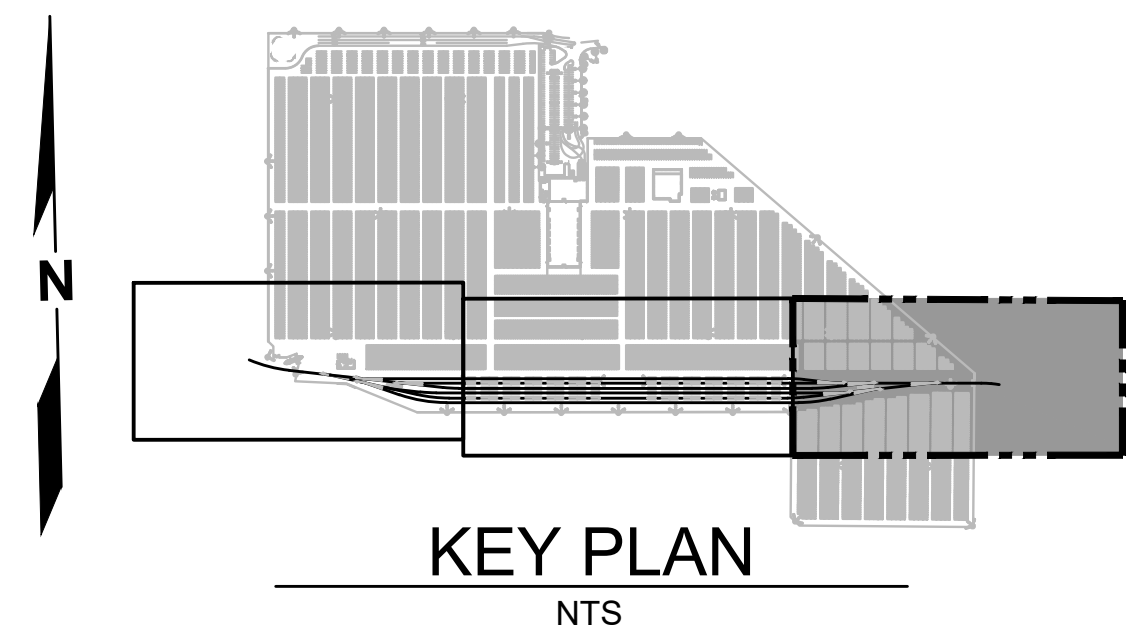


LEGEND

- LIMITS OF WORK
- ===== EXISTING TRACK
- PROPOSED TRACK
- PROPOSED TRACK IN ROW (NIC)
- FUTURE STORAGE TRACK
- ROW LINE
- NO. 9 TURNOUT
- PAVEMENT (NIC)
- NEW AT GRADE CROSSING BY OTHERS
- BRIDGE PLATE RACK BY OTHERS

NOTES

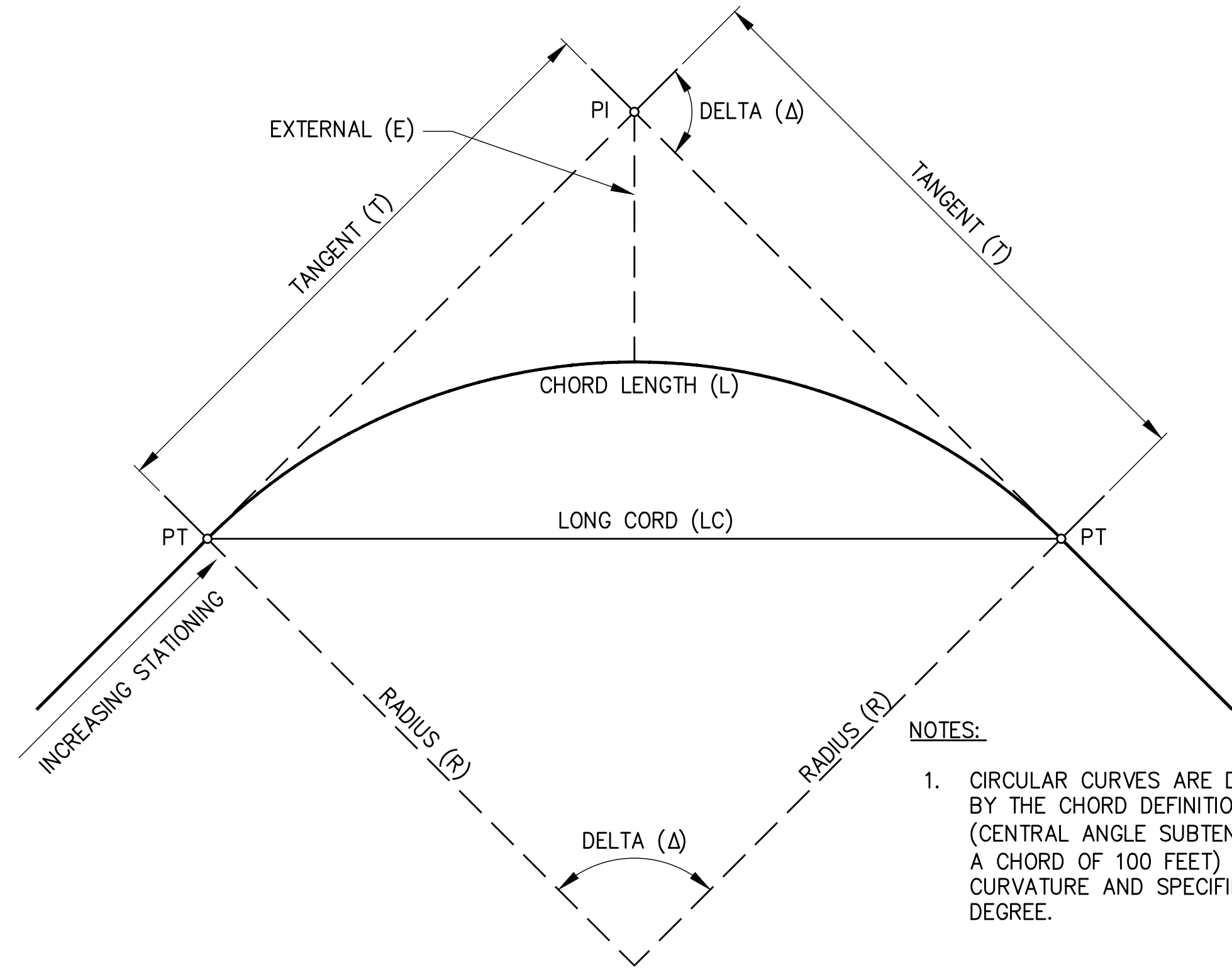
- WELD ALL RAIL JOINTS IN PAVEMENT AND WITHIN 12' OF PAVEMENT EDGE, SEE SHEETS C1.5 THRU C1.7 FOR PAVEMENT LIMITS, ALL OTHER RAIL JOINTS SHALL BE BOLTED. PAVEMENT BY OTHERS.
- ALL UNPAVED BALLAST AREAS BETWEEN WEST SECURITY GATE AND EAST SECURITY GATE SHALL BE SURFACED WITH WALKWAY ROCK, REFER TO **A** AND **1**
C1.8 C1.10
- FOR TYPICAL TRACK SECTION, REFER TO **1**
C1.10
- FOR TYPICAL #9 TURNOUT, REFER TO **1**
C1.11



<p>2407 North 31st Street, Suite 100 Tacoma, Washington 98407 (253) 396-0150 Fax (253) 396-0162</p>	DATE:
	APPR:
	BY:
	REVISION:
	MARK:
	DATE:
TJH	06/19/2018
CHECKED BY	DATE
SWK	06/19/2018
DIRECTOR ENG. DATE	PROJ. ENGR DATE
PRINTED BY: bosterhaus Jun 19, 2018	
PORT ADDRESS: ONE SITCUM PLAZA	TACOMA WA, 98401-1837
<p>PARCEL 77 TRACKWORK INSTALLATION</p>	
<p>C1.3 6 OF 14</p>	
CONT/CONS: 070771	TOWNSHIP: 21N
M. ID: 201020.01	RANGE: 3E
PHASE: BID SET	DATE-HRZ: W83-SF
	VERT: PORT OF TACOMA BM#
	PARCEL: MULTIPLE
	DRAWING SCALE: AS SHOWN

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HORIZONTAL CURVE DATA						
ID	POINT TYPE	STATION	NORTHING	EASTING	CURVE DATA	SHEET
TRACK 1 C1	PC	117+81.52	707813.152	1176805.019	LENGTH=66.94' RADIUS=603.80' TANGENT=33.54' DELTA=6°21'30" Dc=9°30'00" EXTERNAL=0.93'	C1.3
	PI	118+15.07	707812.348	1176838.554		
	PT	118+48.47	707807.835	1176871.794		
TRACK 2 C1	PC	224+23.37	707774.689	1177616.653	LENGTH=85.87' RADIUS=503.28' TANGENT=43.11' DELTA=9°47'30" Dc=11°24'10" EXTERNAL=1.84'	C1.3
	PI	224+66.49	707773.448	1177659.748		
	PT	225+09.25	707764.895	1177702.004		
TRACK 3 C1	PC	304+61.76	708066.880	1174369.325	LENGTH=383.38' RADIUS=603.80' TANGENT=198.40' DELTA=36°22'40" Dc=9°30'00" EXTERNAL=31.76'	C1.1
	PI	306+60.16	707928.782	1174511.771		
	PT	308+45.14	707902.086	1174708.365		
TRACK 3 C2	PC	315+30.71	707809.837	1175387.701	LENGTH=67.02' RADIUS=603.80' TANGENT=33.54' DELTA=6°21'30" Dc=9°30'00" EXTERNAL=0.93'	C1.1
	PI	315+64.25	707805.323	1175420.940		
	PT	315+97.73	707804.519	1175454.476		
TRACK 3 C3	PC	330+48.72	707769.742	1176905.049	LENGTH=67.02' RADIUS=603.81' TANGENT=33.54' DELTA=6°21'30" Dc=9°30'00" EXTERNAL=0.93'	C1.3
	PI	330+82.26	707768.938	1176938.584		
	PT	331+15.74	707771.854	1176972.002		
TRACK 4 C1	PC	401+90.87	707792.694	1175310.010	LENGTH=66.94' RADIUS=603.80' TANGENT=33.54' DELTA=6°21'30" Dc=9°30'00" EXTERNAL=0.93'	C1.1
	PI	402+24.41	707788.180	1175343.250		
	PT	402+57.81	707787.376	1175376.785		
TRACK 5 C1	PC	504+08.25	707782.579	1175277.195	LENGTH=134.04' RADIUS=603.80' TANGENT=67.30' DELTA=12°43'10" Dc=9°30'00" EXTERNAL=3.74'	C1.1
	PI	504+75.54	707766.192	1175342.468		
	PT	505+42.29	707764.579	1175409.746		
TRACK 5 C2	PC	519+34.68	707731.207	1176801.740	LENGTH=67.02' RADIUS=603.81' TANGENT=33.54' DELTA=6°21'30" Dc=9°30'00" EXTERNAL=0.93'	C1.3
	PI	519+68.23	707730.403	1176835.275		
	PT	520+01.70	707733.319	1176868.693		
TRACK 6 C1	PC	602+06.20	707783.920	1175191.965	LENGTH=200.67' RADIUS=603.80' TANGENT=101.39' DELTA=19°03'50" Dc=9°30'00" EXTERNAL=8.45'	C1.1
	PI	603+07.59	707748.517	1175286.971		
	PT	604+06.87	707746.087	1175388.330		
TRACK 6 C2	PC	618+66.60	707711.102	1176847.637	LENGTH=133.89' RADIUS=603.81' TANGENT=67.30' DELTA=12°43'10" Dc=9°30'00" EXTERNAL=3.74'	C1.3
	PI	619+33.90	707709.489	1176914.915		
	PT	620+00.49	707722.728	1176980.898		



- NOTES:
- CIRCULAR CURVES ARE DEFINED BY THE CHORD DEFINITION (CENTRAL ANGLE SUBTENDED BY A CHORD OF 100 FEET) OF CURVATURE AND SPECIFIED BY DEGREE.

CIRCULAR CURVE

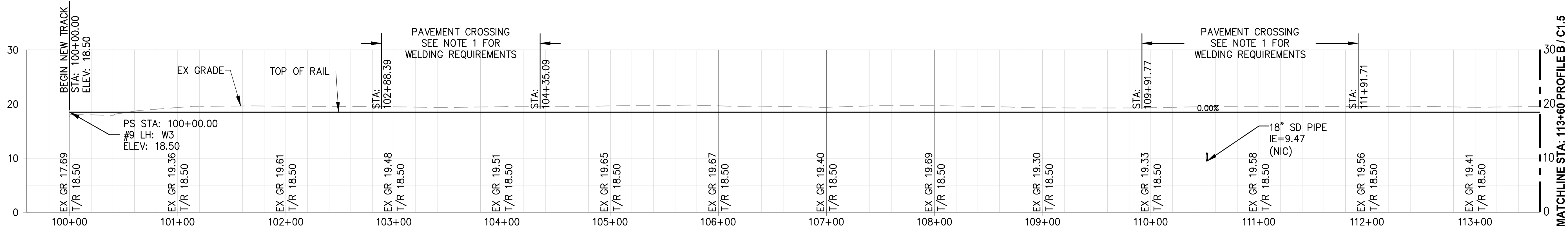
C1.4 7 OF 14	PARCEL 77 TRACKWORK INSTALLATION		TJH 06/19/2018
	CHECKED BY SWK	DATE 06/19/2018	DATE 06/19/2018
RAIL DATA AND NOTES		PROJ. ENGR bosterhaus Jun 19, 2018	
TOWNSHIP: 21N RANGE: 3E SECTION: 36		DIRECTOR ENG. DATE	
DATE-HRZ: W83-SF		PRINTED BY:	
PARCEL: MULTIPLE		PORT ADDRESS: ONE SITCUM PLAZA	
DRAWING SCALE: AS SHOWN		TACOMA WA, 98401-1837	
M. ID: 201020.01		APPROVED:	
PHASE: BID SET		DATE:	
BY:		APPR:	
REVISION:		DATE:	
MARK:		DATE:	

Port of Tacoma
2407 North 31st Street, Suite 100
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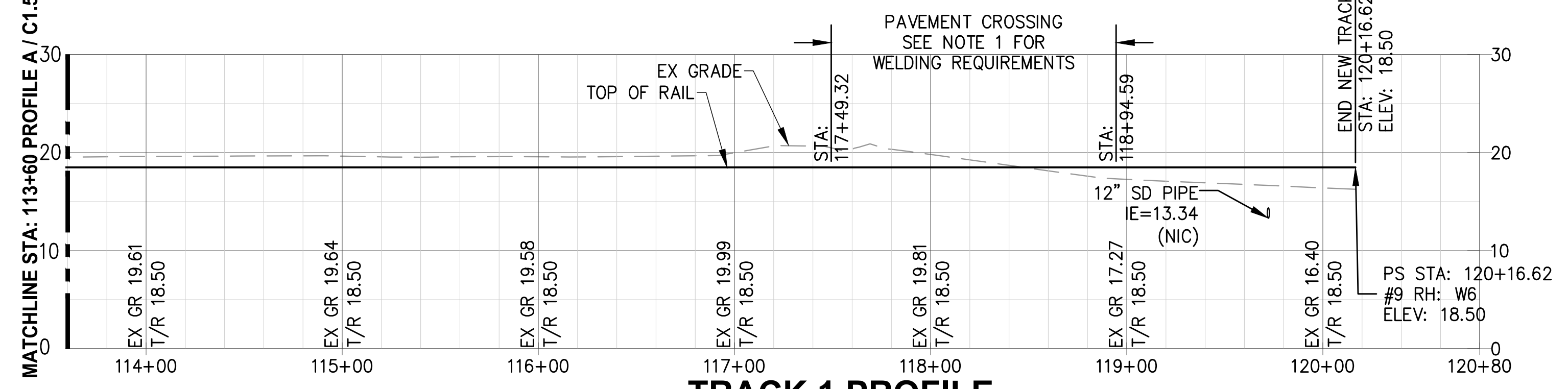
kpff
K. P. F. F. ENGINEERS
2407 North 31st Street, Suite 100
Tacoma, WA 98407
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WA 0000000000
KYLE S. BOSTERHAUS
REGISTERED PROFESSIONAL ENGINEER
NO. 1000000000

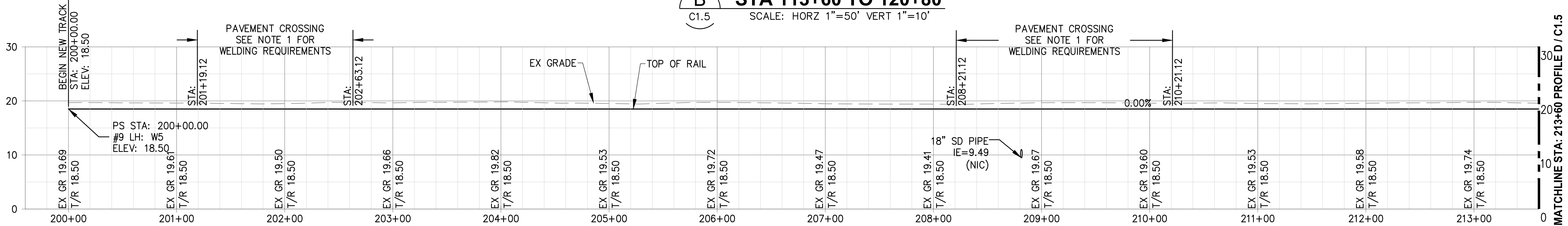
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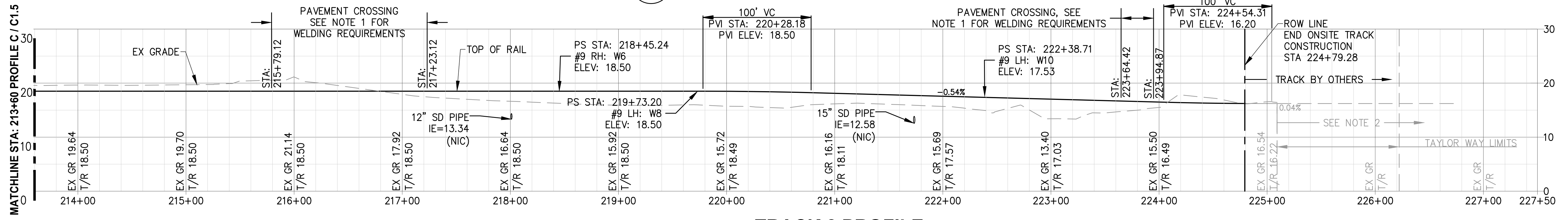
TRACK 1 PROFILE
STA 100+00 TO 113+60
 C1.5 SCALE: HORZ 1"=50' VERT 1"=10'



TRACK 1 PROFILE
STA 113+60 TO 120+80
 C1.5 SCALE: HORZ 1"=50' VERT 1"=10'

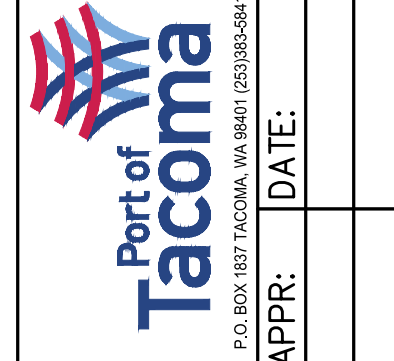
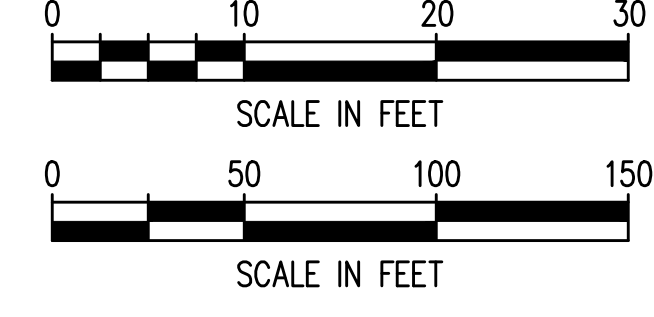


TRACK 2 PROFILE
STA 200+00 TO 213+60
 C1.5 SCALE: HORZ 1"=50' VERT 1"=10'



TRACK 2 PROFILE
STA 213+60 TO 227+50
 C1.5 SCALE: HORZ 1"=50' VERT 1"=10'

- NOTES:**
- WELD ALL RAIL JOINTS IN PAVEMENT AND WITHIN 12' OF PAVEMENT EDGE, ALL OTHER JOINTS SHALL BE BOLTED. PAVEMENT BY OTHERS.
 - TIE IN LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL LOCATE NEAREST JOINT IN THE FIELD AT OR BEYOND MATCH POINT INDICATED, VERIFY VERTICAL ALIGNMENT DATA, AND TIE INTO EXISTING RAIL AT EXISTING JOINT. CONTRACTOR SHALL NOT CUT EXISTING RAIL WITHOUT PRIOR APPROVAL FROM THE ENGINEER.



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 P.O. BOX 1837 TACOMA, WA 98401 (253)396-0441



APPROVED:

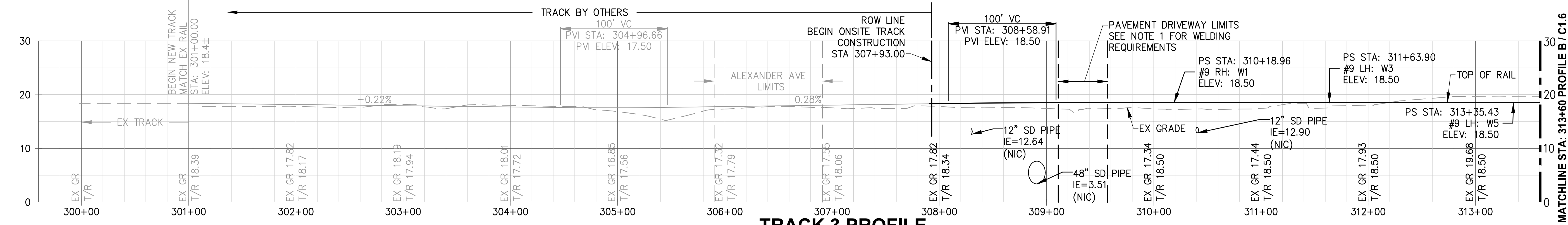
TJH	06/19/2018
CHECKED BY	SWK
PROJECT	PROJ. ENGR
DIRECTOR ENG. DATE	06/19/2018
PRINTED BY	bosterhaus Jun 19, 2018
PORT ADDRESS	ONE SITCUM PLAZA
TACOMA WA	98401-1837

PARCEL 77 TRACKWORK INSTALLATION

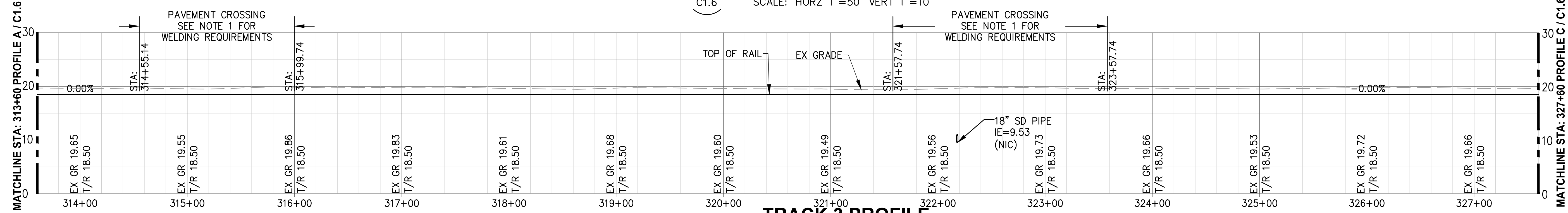
RAIL PROFILES	
TRACK 1 AND 2	
RANGE: 3E	SECTION: 36
TOWNSHIP: 21N	DATE: PORT OF TACOMA BM#
DATE: HRZ: W83-SF	PARCEL: MULTIPLE
PARCEL: MULTIPLE	DRAWING SCALE: AS SHOWN

C1.5

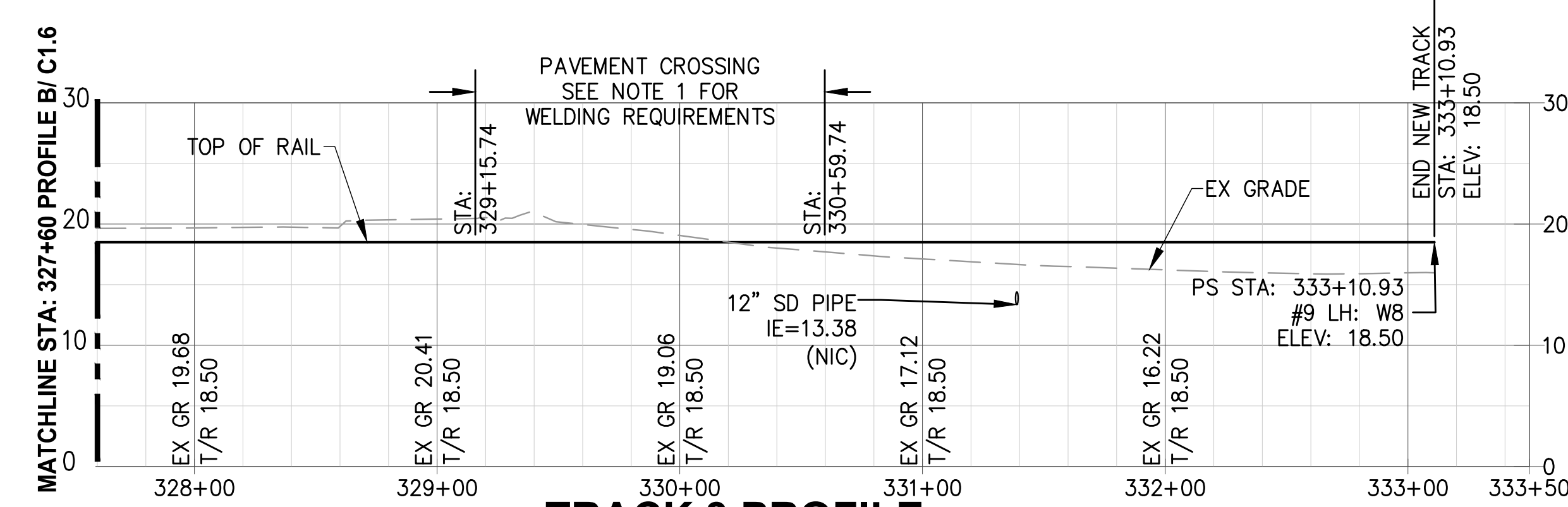
CONTR/CONS:	070771
OF	14
M. ID:	201020.01
PHASE:	BID SET



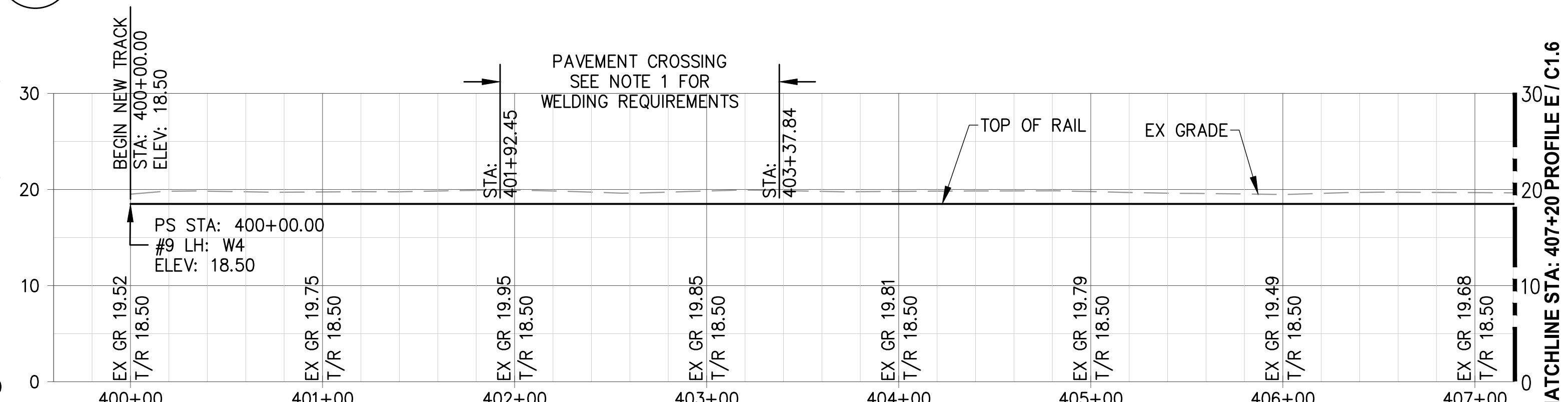
TRACK 3 PROFILE
STA 300+00 TO 313+60
 C1.6 SCALE: HORZ 1"=50' VERT 1"=10'



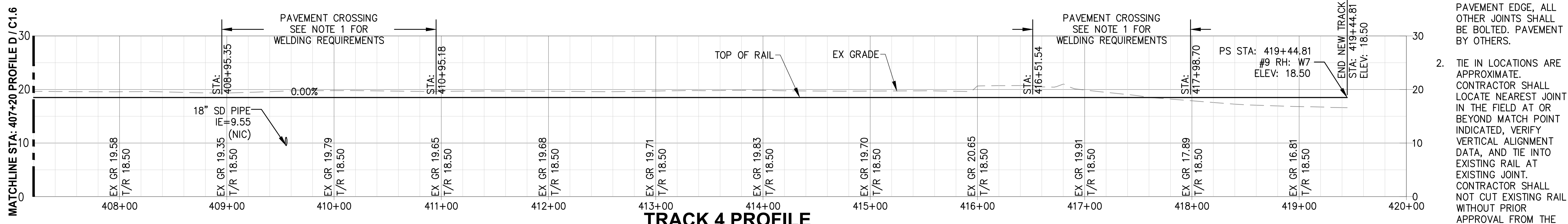
TRACK 3 PROFILE
STA 313+60 TO 327+60
 C1.6 SCALE: HORZ 1"=50' VERT 1"=10'



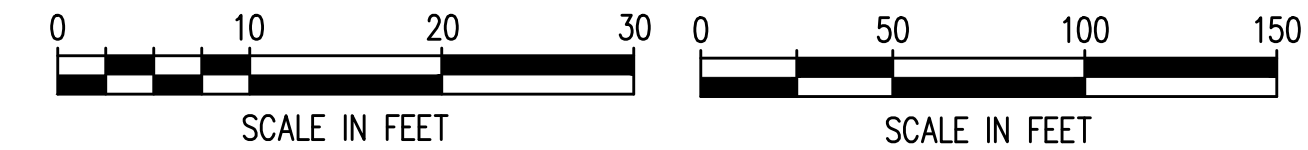
TRACK 3 PROFILE
STA 327+60 TO 333+50
 C1.6 SCALE: HORZ 1"=50' VERT 1"=10'



TRACK 4 PROFILE
STA 400+00 TO 407+20
 C1.6 SCALE: HORZ 1"=50' VERT 1"=10'

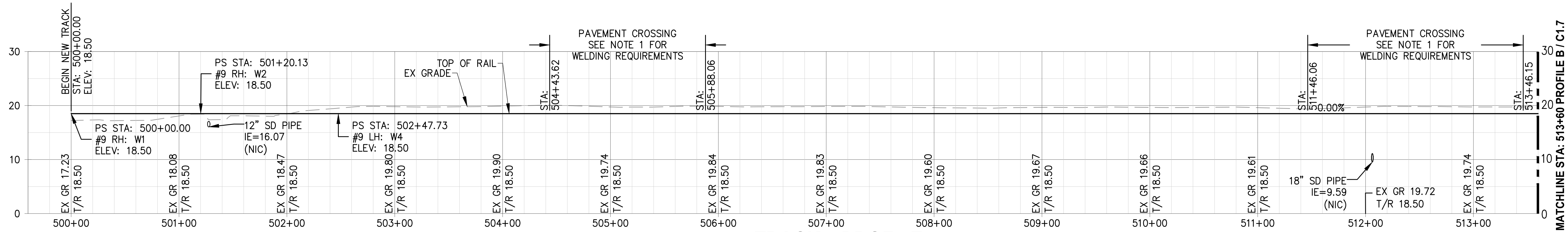


TRACK 4 PROFILE
STA 407+20 TO 420+00
 C1.6 SCALE: HORZ 1"=50' VERT 1"=10'

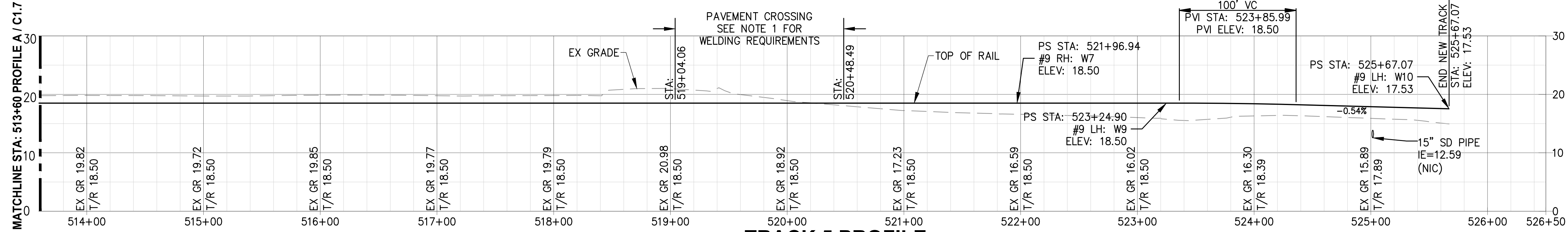


- NOTES:**
- WELD ALL RAIL JOINTS IN PAVEMENT AND WITHIN 12' OF PAVEMENT EDGE, ALL OTHER JOINTS SHALL BE BOLTED. PAVEMENT BY OTHERS.
 - TIE IN LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL LOCATE NEAREST JOINT IN THE FIELD AT OR BEYOND MATCH POINT INDICATED, VERIFY VERTICAL ALIGNMENT DATA, AND TIE INTO EXISTING RAIL AT EXISTING JOINT. CONTRACTOR SHALL NOT CUT EXISTING RAIL WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

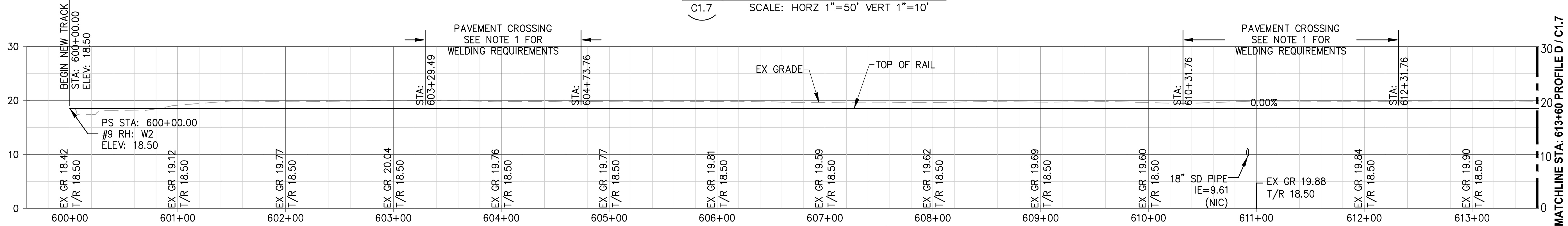
 2407 North 31st Street, Suite 100 Tacoma, Washington 98407 (253) 396-0150 Fax (253) 396-0162		 2407 North 31st Street, Suite 100 Tacoma, Washington 98407 (253) 396-0150 Fax (253) 396-0162	DATE: _____ APPR: _____ BY: _____ REVISION: _____
			APPROVED: T.J.H. 06/19/2018 CHECKED BY: SWK 06/19/2018 PROJECT ENG. DATE: 06/19/2018 DIRECTOR: bosterhaus Jun 19, 2018 PRINTED BY: ONE SITCUM PLAZA PORT ADDRESS: TACOMA WA, 98401-1837
C1.6 OF 14 9		PARCEL 77 TRACKWORK INSTALLATION RAIL PROFILES TRACK 3 AND 4 RANGE: 3E SECTION: 36 TOWNSHIP: 21N DAT-HRZ: W83-SF PORT OF TACOMA BM# DRAWING SCALE: AS SHOWN PARCEL: MULTIPLE	



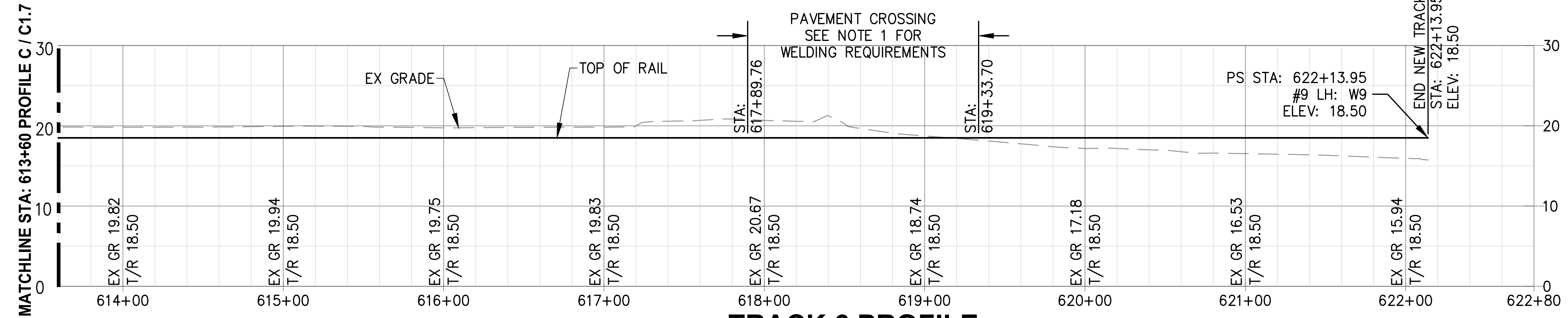
TRACK 5 PROFILE
STA 500+00 TO 513+60
 SCALE: HORZ 1"=50' VERT 1"=10'



TRACK 5 PROFILE
STA 513+60 TO 526+50
 SCALE: HORZ 1"=50' VERT 1"=10'

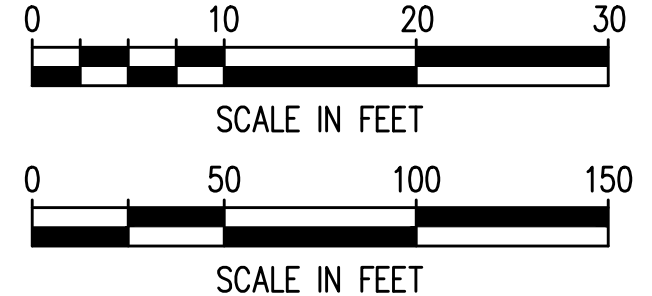


TRACK 6 PROFILE
STA 600+00 TO 613+60
 SCALE: HORZ 1"=50' VERT 1"=10'

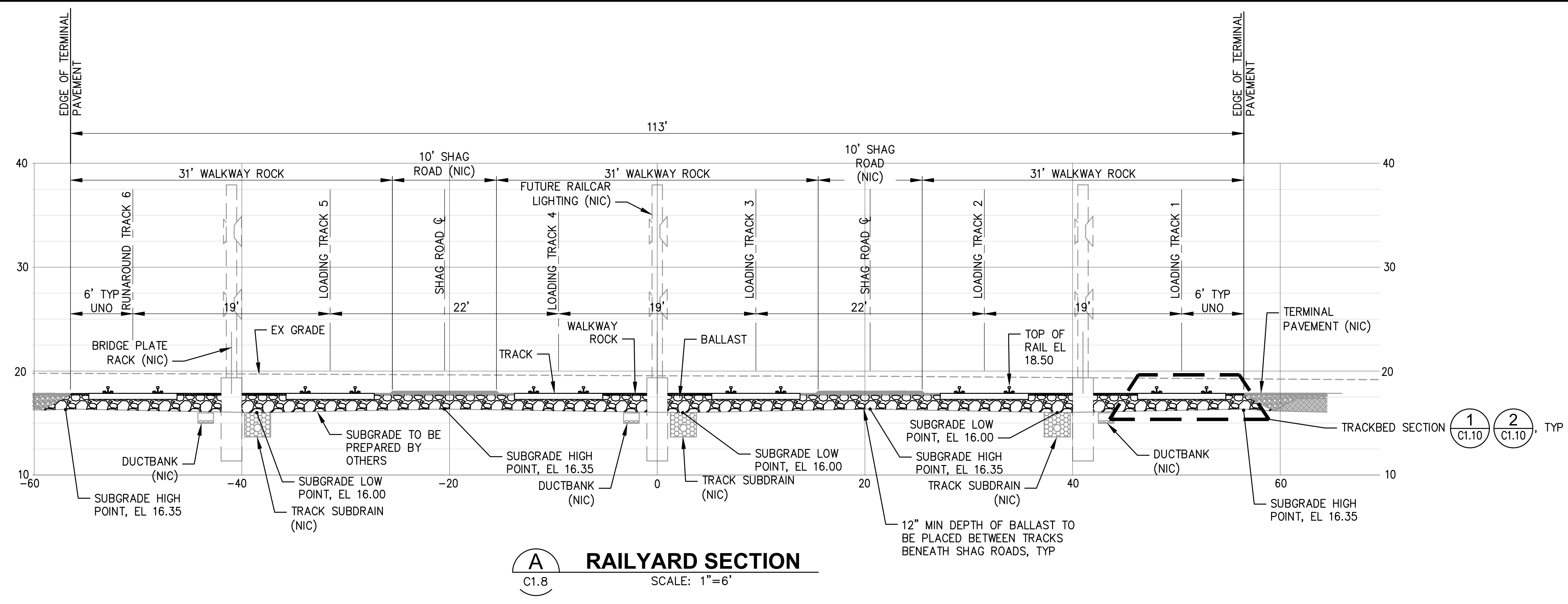


TRACK 6 PROFILE
STA 613+60 TO 622+80
 SCALE: HORZ 1"=50' VERT 1"=10'

- NOTES:**
- WELD ALL RAIL JOINTS IN PAVEMENT AND WITHIN 12' OF PAVEMENT EDGE, ALL OTHER JOINTS SHALL BE BOLTED. PAVEMENT BY OTHERS.
 - TIE IN LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL LOCATE NEAREST JOINT IN THE FIELD AT OR BEYOND MATCH POINT INDICATED, VERIFY VERTICAL ALIGNMENT DATA, AND TIE INTO EXISTING RAIL AT EXISTING JOINT. CONTRACTOR SHALL NOT CUT EXISTING RAIL WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

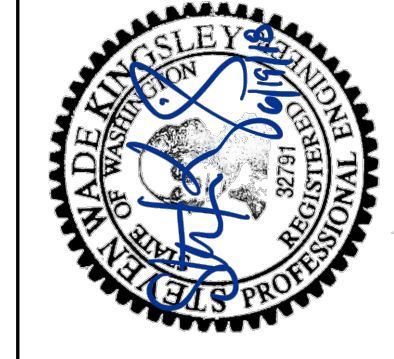


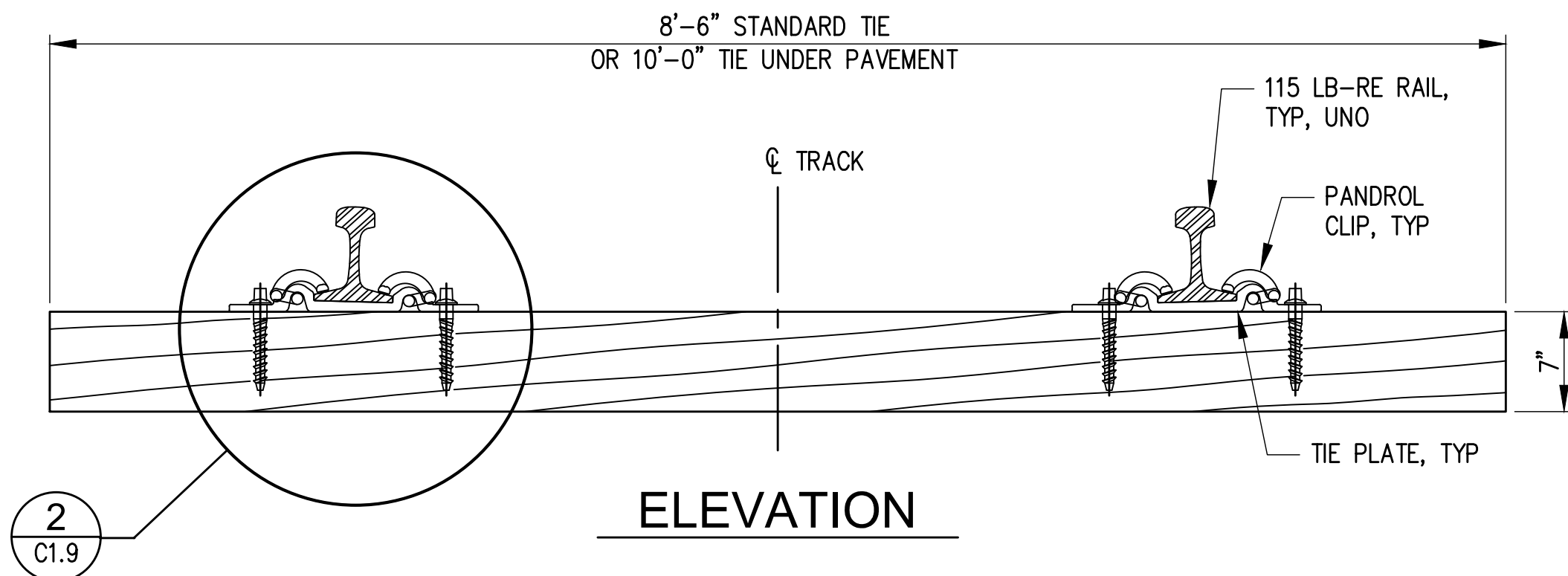
		2407 North 31st Street, Suite 100 Tacoma, Washington 98407 (253) 396-0150 Fax (253) 396-0162	
		P.O. BOX 1837 TACOMA, WA 98401 (203)384841	DATE:
	BY:		APPR:
	REVISION:		MARK:
PARCEL 77 TRACKWORK INSTALLATION		APPROVED:	
RAIL PROFILES TRACK 5 AND 6		T/JH CHECKED BY:	06/19/2018
TOWNSHIP: 21N RANGE: 3E SECTION: 36		DIRECTOR ENG. DATE:	SWK 06/19/2018
DAT-HRZ: W83-SF PARCEL: MULTIPLE		PRINTED BY:	PROJ. ENGR bosterhaus Jun 19, 2018
CON/CONS: 070771 M. ID: 201020.01 PHASE: BID SET		PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA, 98401-1837	DRAWING SCALE: AS SHOWN
C1.7 OF 14		THIS DRAWING IS THE PROPERTY OF THE PORT OF TACOMA AND SHALL NOT BE USED ON OTHER WORK, DISCLOSED, COPIED, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION	



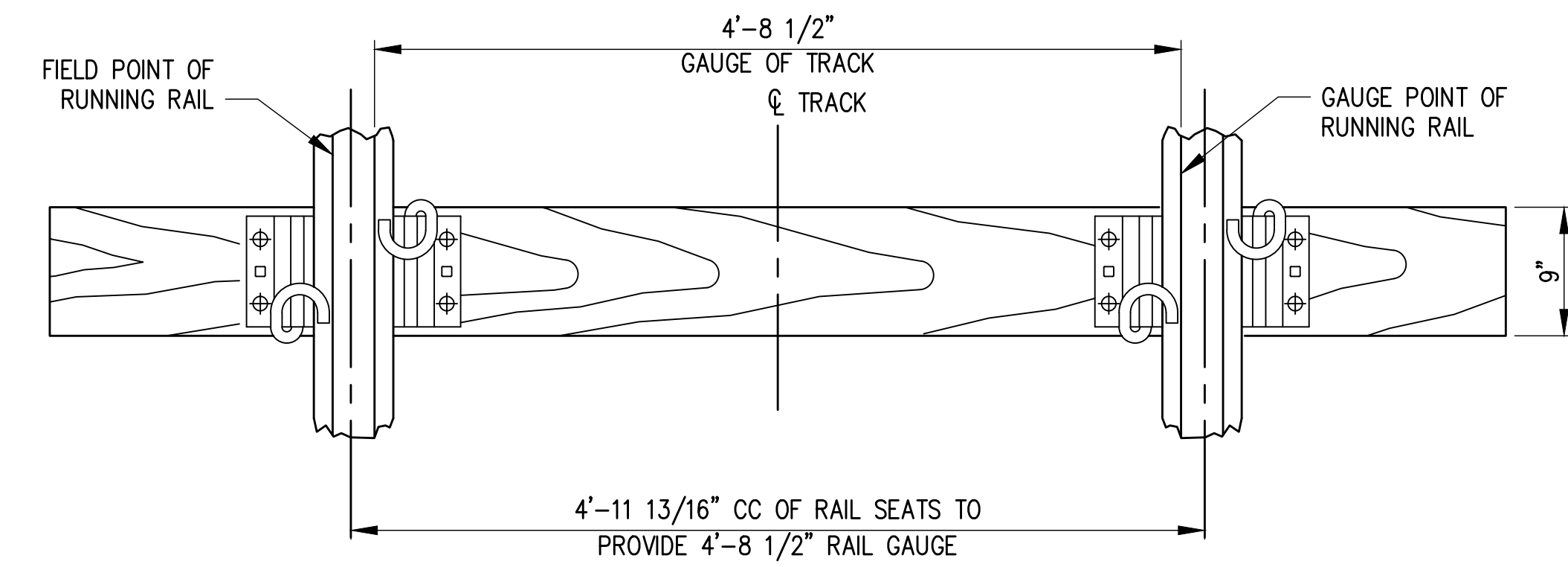
A
C1.8 **RAILYARD SECTION**
SCALE: 1"=6'

<p>C1.8 11 OF 14</p> <p>CONT/CONS: 070771 M. ID: 201020.01 PHASE: BID SET</p>	<p>PARCEL 77 TRACKWORK INSTALLATION</p>		<p>APPROVED: T/JH 06/19/2018</p>	<p>CHECKED BY: SWK 06/19/2018</p>
	<p>RAIL SECTIONS</p> <p>TOWNSHIP: 21N RANGE: 3E SECTION: 36 DAT-HRZ: W83-SF VERT: PORT OF TACOMA BM# PARCEL: MULTIPLE DRAWING SCALE: AS SHOWN</p>		<p>DIRECTOR ENG. DATE: PROJ. ENGR PRINTED BY: bosterhaus Jun 19, 2018 PORT ADDRESS: ONE SITCUM PLAZA TACOMA, WA, 98401-1837</p>	<p>DATE: _____</p> <p>APPR: _____</p> <p>BY: _____</p> <p>REVISION: _____</p> <p>MARK: _____</p>
<p>Port of Tacoma 2407 North 31st Street, Suite 100 Tacoma, Washington 98407 (253) 396-0150 Fax (253) 396-0162</p>		<p>kpff</p>		
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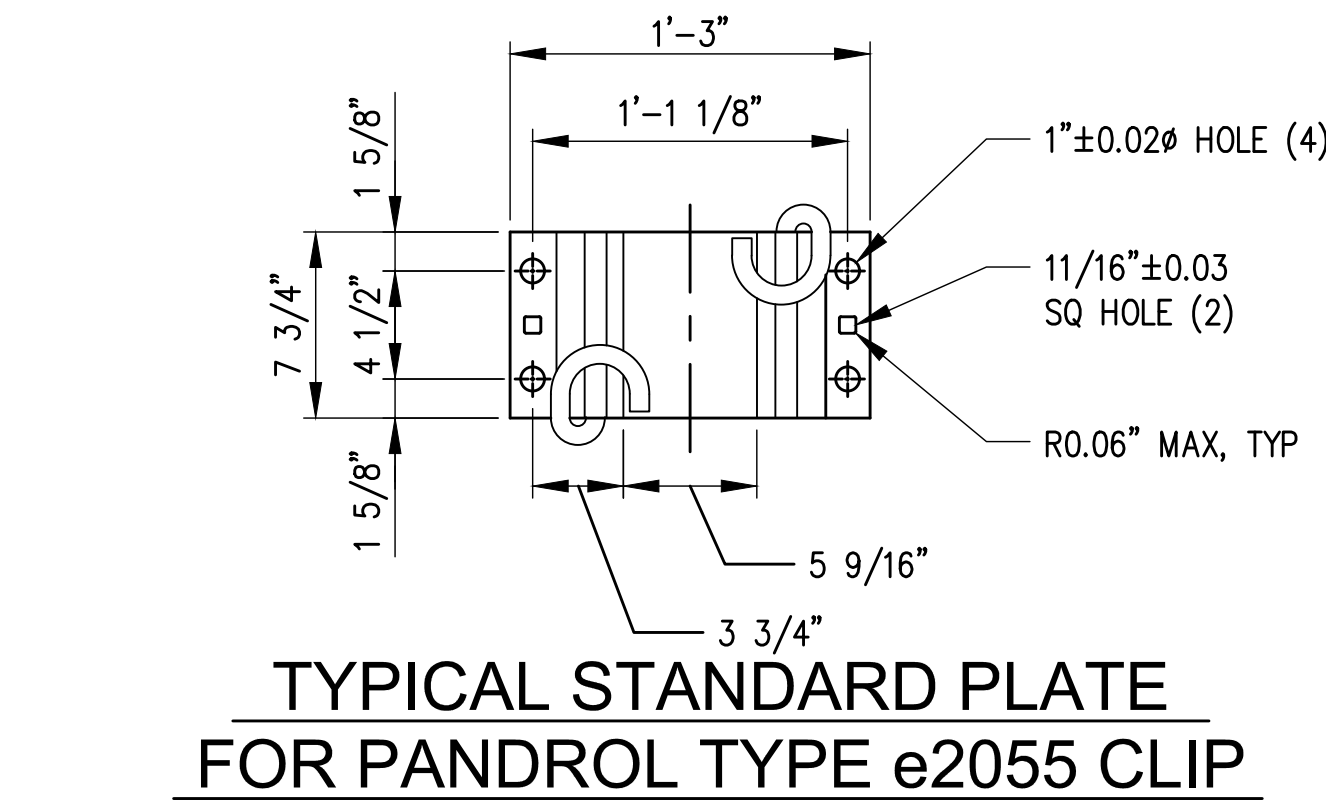




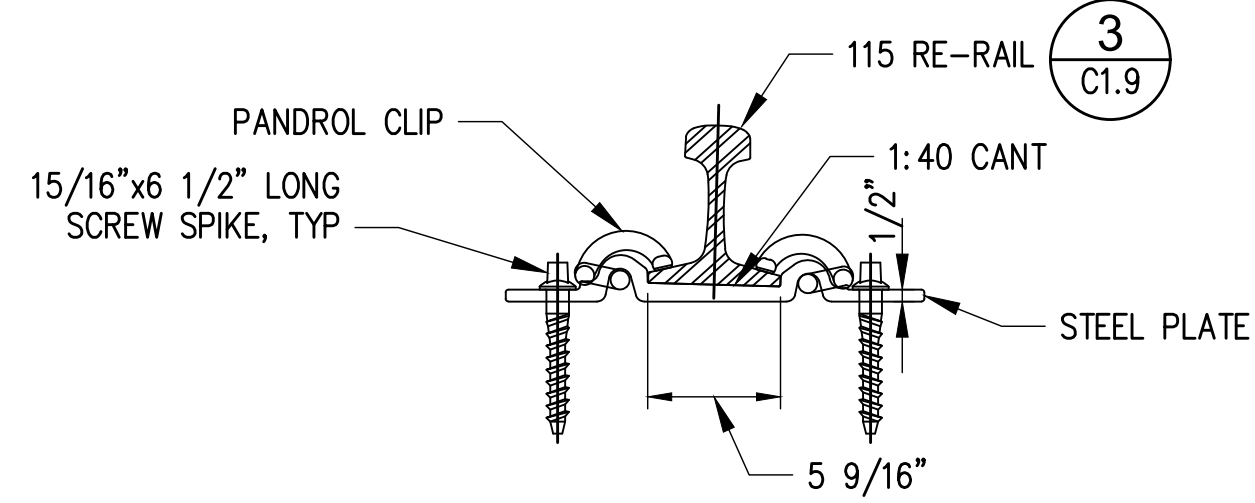
ELEVATION



PLAN
TIMBER TIE
SCALE: 1" = 1'

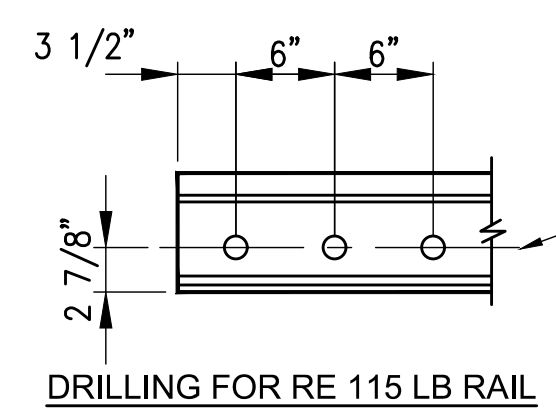
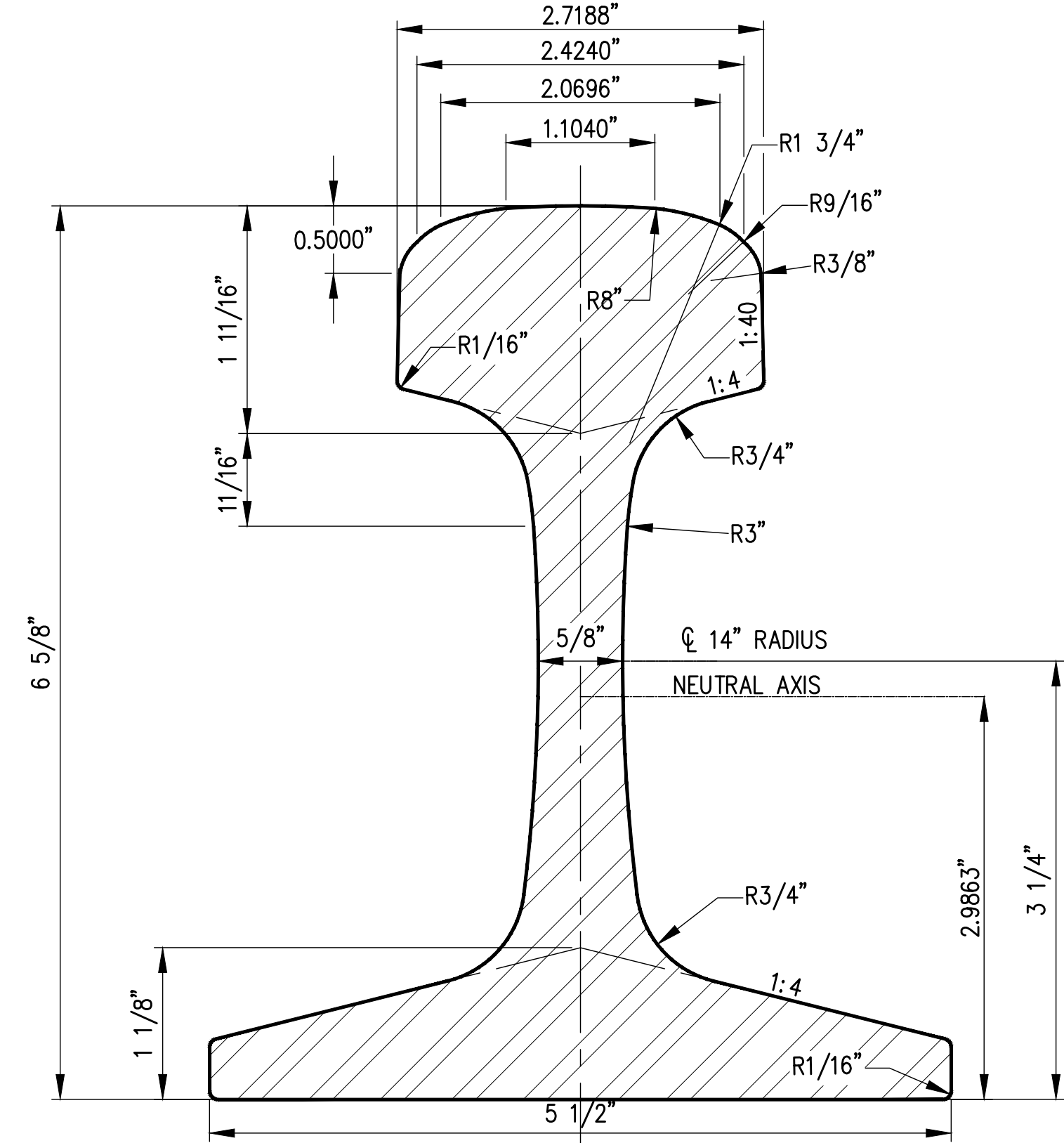


TYPICAL STANDARD PLATE FOR PANDROL TYPE e2055 CLIP



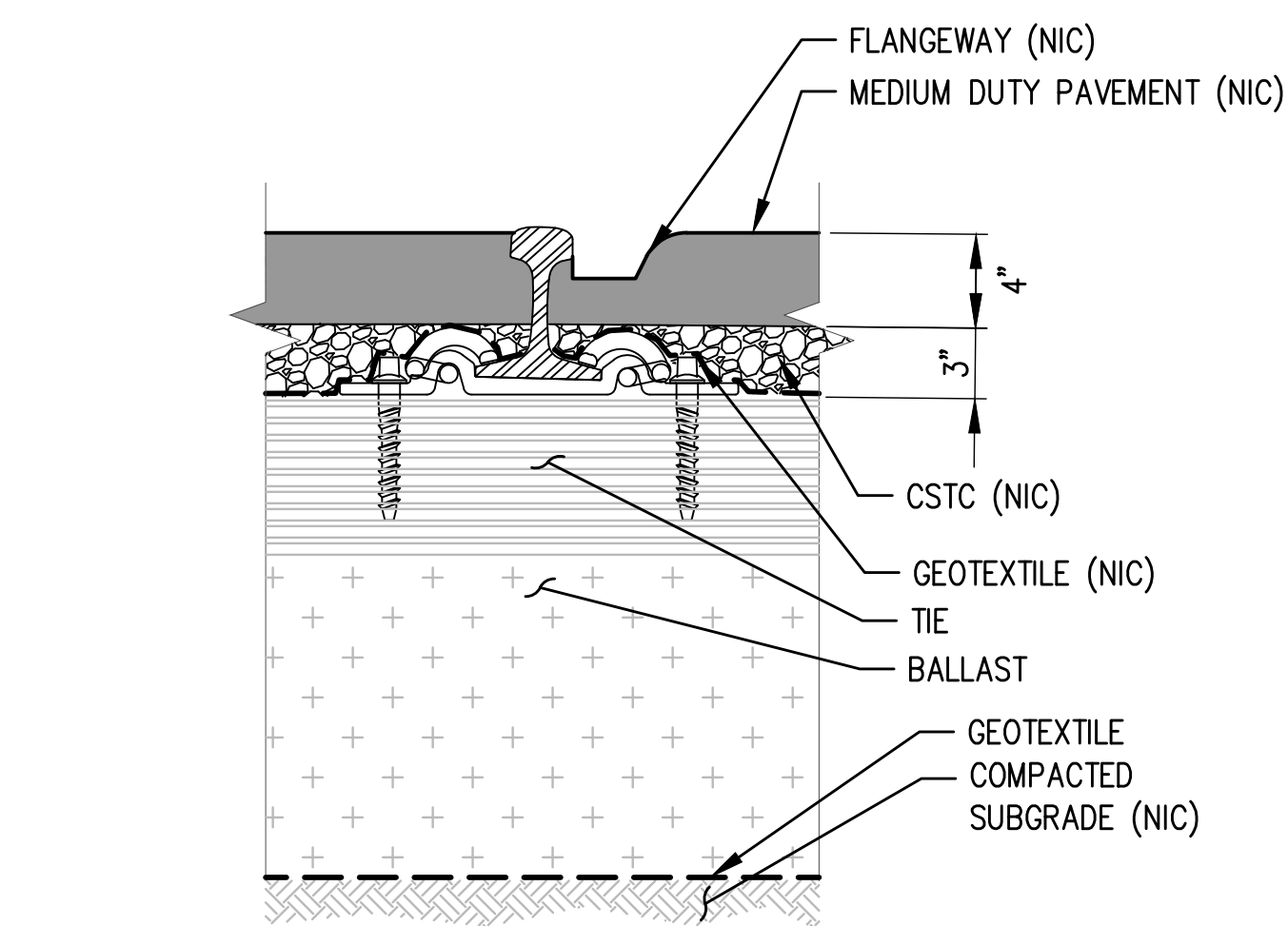
PANDROL TYPE e2055 CLIPS ON TIMBER TIES

2
C1.9
TIMBER TIE FASTENERS W/ 115# RAIL
SCALE: 1-1/2" = 1'

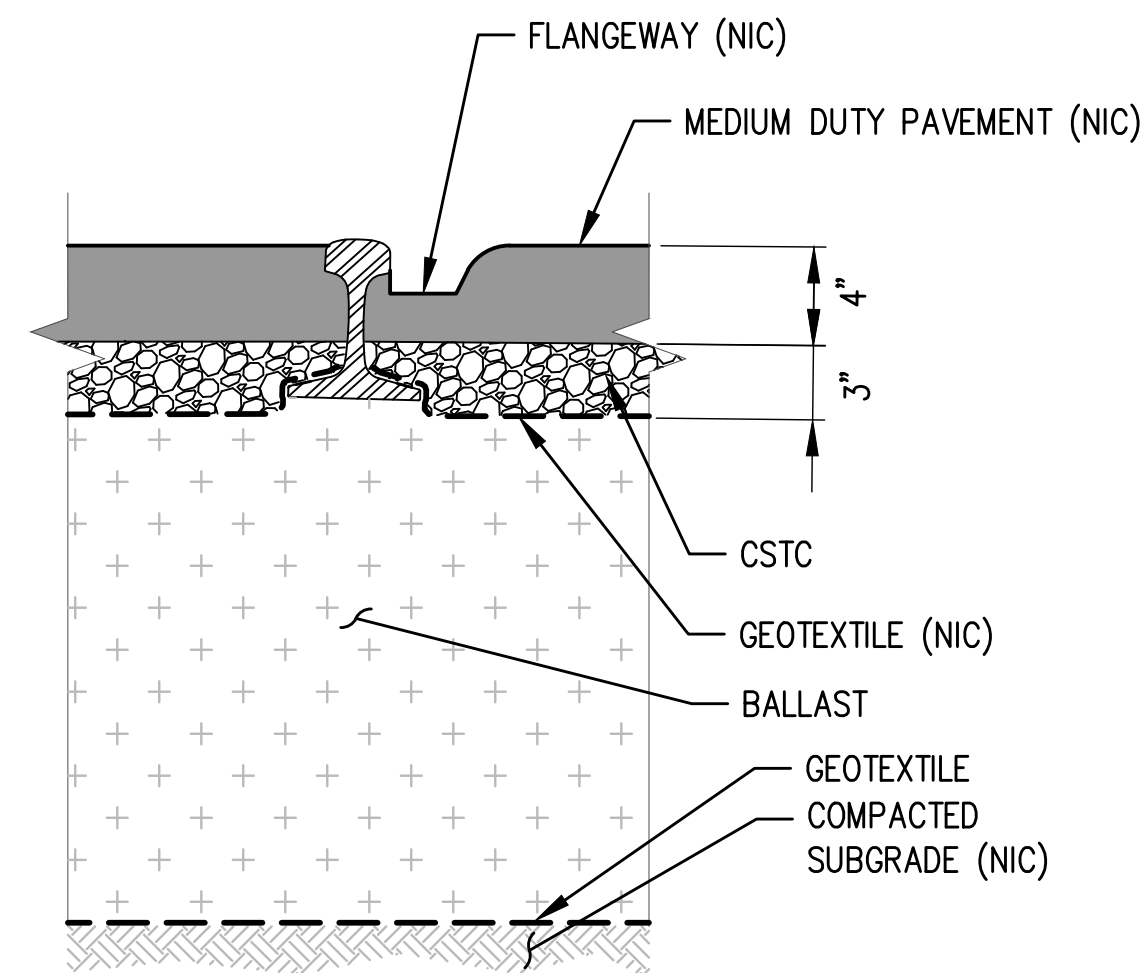


PROPERTIES		
AREA OF HEAD	3.91 SQ. IN.	34.8%
AREA OF WEB	3.05 SQ. IN.	27.1%
AREA OF BASE	4.29 SQ. IN.	38.1%
TOTAL AREA	11.25 SQ. IN.	100.0%
MOMENT OF INERTIA	65.60	
SECTION MODULUS, HEAD	18.00	
SECTION MODULUS, BASE	22.00	
WEIGHT	114.70 LBS PER YARD	

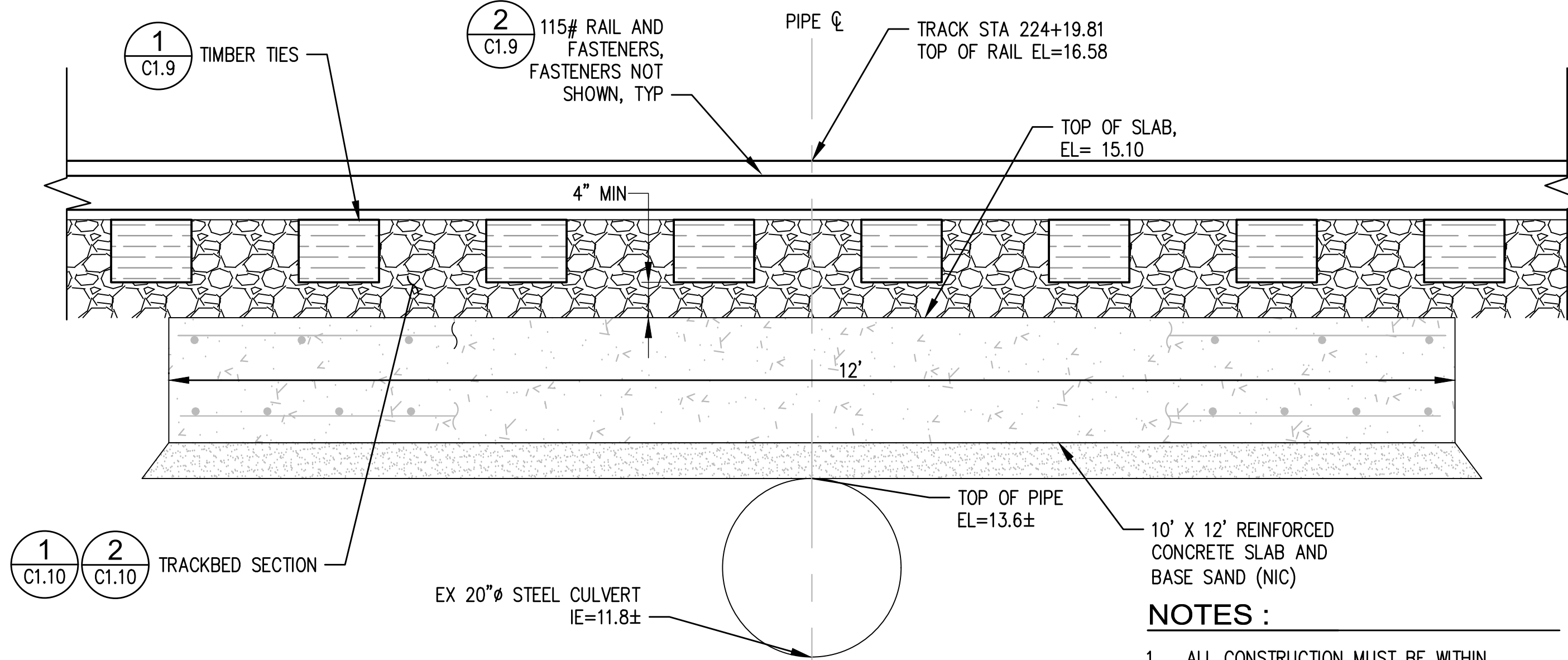
3
C1.9
RAIL SECTION - 115# RAIL
SCALE: 1" = 1'



4
C1.9
PAVEMENT CROSSING TIE AND ASPHALT FLANGEWAY
SCALE: NTS



5
C1.9
PAVEMENT CROSSING RAIL AND ASPHALT FLANGEWAY
SCALE: NTS



6
C1.3
RAIL AND CULVERT CROSSING CONCRETE SLAB DETAIL
SCALE: NTS

NOTES:
1. ALL CONSTRUCTION MUST BE WITHIN EASEMENT, AS SHOWN ON PLAN AND CANNOT DISTURB PROTECTED WATER.

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APPROVED: TJH 06/19/2018

CHECKED BY: SWK 06/19/2018

DATE: 06/19/2018

DATE: 06/19/2018

PROJECT: bosterhaus Jun 19, 2018

PROJ. ENGR: bosterhaus Jun 19, 2018

BY: bosterhaus Jun 19, 2018

DATE: 06/19/2018

REVISION: 1

MARK: 1

APPR: 1

DATE: 1

CONTRACT: 070771

TOWNSHIP: 21N

SECTION: 3E

RANGE: 3E

M. ID: 201020.01

DATE-HRZ: W83-SF

VERT: PORT OF TACOMA BM#

PARCEL: MULTIPLE

PHASE: BID SET

DRAWING SCALE: AS SHOWN

TACOMA WA, 98401-1837

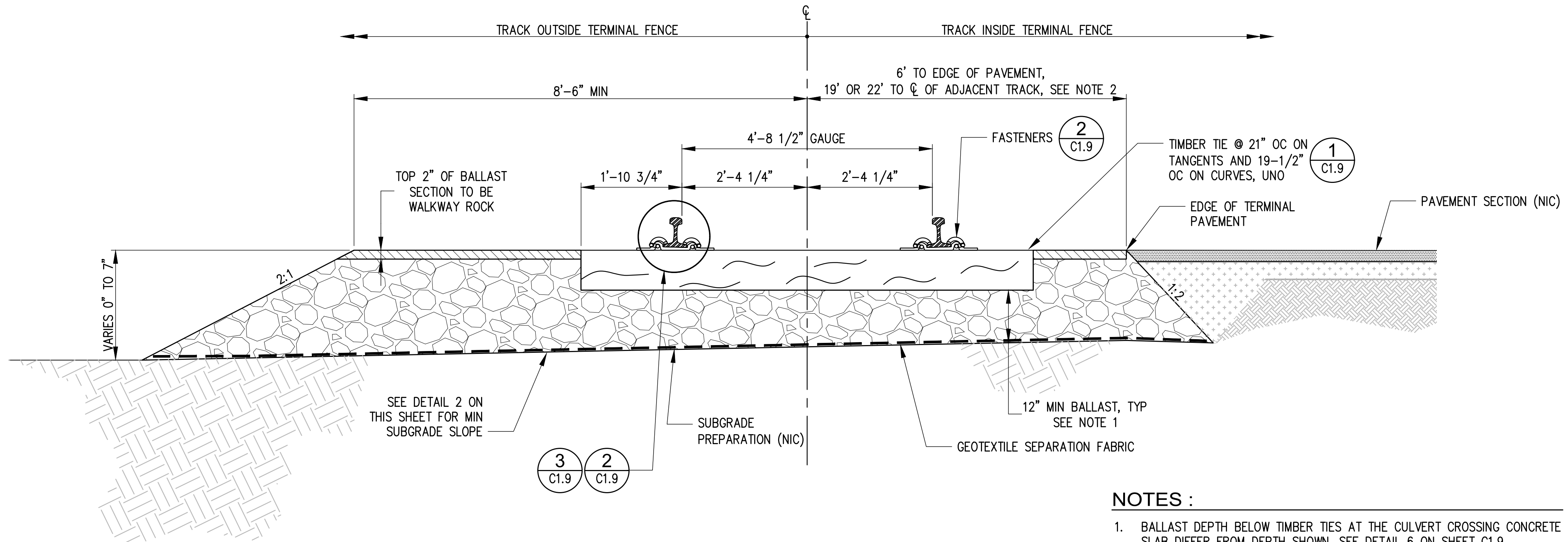
PARCEL ADDRESS: ONE SITCUM PLAZA

C1.9

12 OF 14

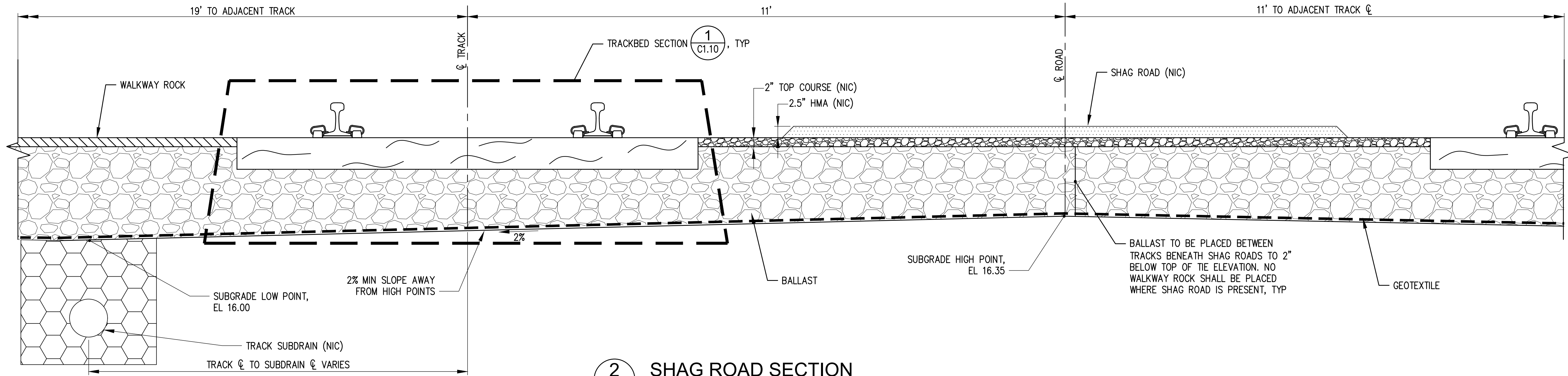
PARCEL 77 TRACKWORK INSTALLATION

RAIL DETAILS



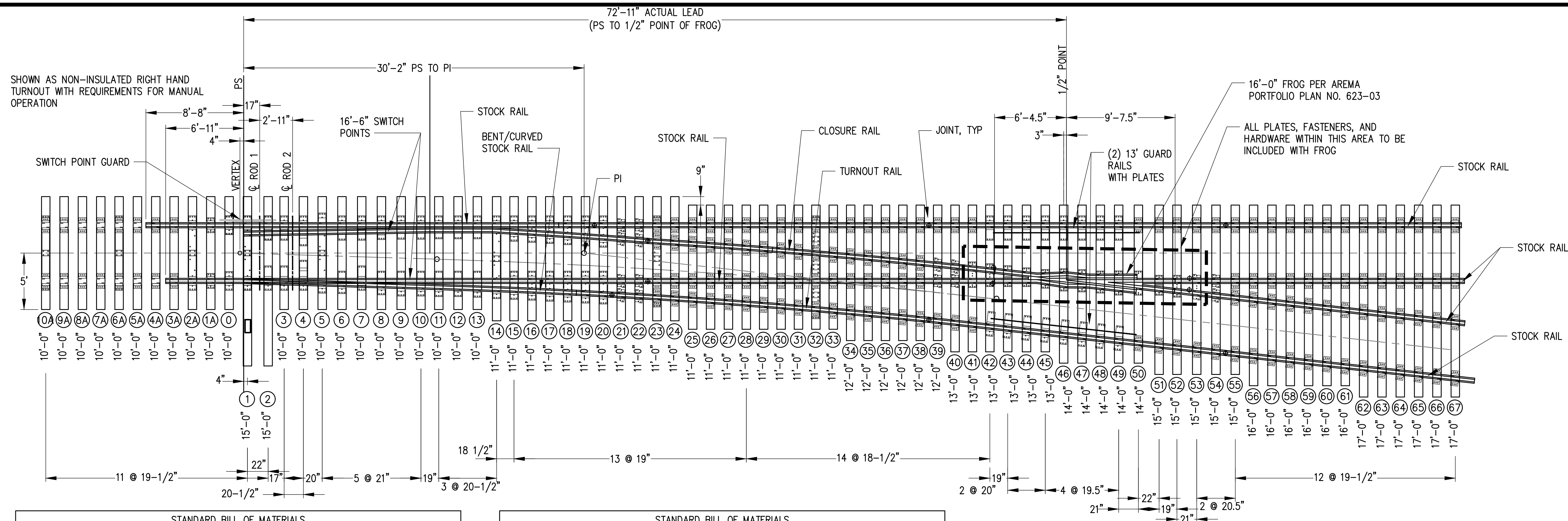
1 TRACKBED SECTION
C1.10 SCALE: 3/4" = 1'

- NOTES :**
1. BALLAST DEPTH BELOW TIMBER TIES AT THE CULVERT CROSSING CONCRETE SLAB DIFFER FROM DEPTH SHOWN. SEE DETAIL 6 ON SHEET C1.9.
 2. SEE DETAIL 2, THIS SHEET FOR ADJACENT TRACK CONDITION.
 3. SEE SECTION A ON SHEET C1.8 FOR SUBGRADE HIGH AND LOW POINTS.
 4. TOP OF BALLAST SHALL MATCH TOP OF TIMBER TIE THROUGHOUT RAIL YARD FROM EDGE OF TERMINAL PAVEMENT TO EDGE OF TERMINAL PAVEMENT, EXCEPT AS NOTED IN DETAIL 2 ON THIS SHEET.



2 SHAG ROAD SECTION
C1.10 SCALE: 1" = 1'

C1.10 13 OF 14	PARCEL 77 TRACKWORK INSTALLATION		RAIL DETAILS				
	CONT/CONS: 070771 M. ID: 201020.01 PHASE: BID SET	TOWNSHIP: 21N DAT-HRZ: W83-SF PARCEL: MULTIPLE	RANGE: 3E SECTION: 36 PORT OF TACOMA BM#	DIRECTOR ENG. DATE: bosterhaus Jun 19, 2018 PRINTED BY: bosterhaus Jun 19, 2018 PORT ADDRESS: ONE SITCUM PLAZA TACOMA WA, 98401-1837			



STANDARD BILL OF MATERIALS			
QTY	DESCRIPTION	LOCATION	BNSF/UP COMMON STANDARDS DWG NUMBER
2	16'-6" STRAIGHT SAMSON SWITCH POINTS		
1	36'-7" STRAIGHT SAMSON STOCK RAIL		
1	36'-5" BENT/CURVED SAMSON STOCK RAIL		
1	SWITCH ROD #1		
1	SWITCH ROD #2		
2	GAGE PLATE AHEAD OF POINT	TIES 6A & 10A	241304
1	ADJUSTABLE BRACE GAGE PLATE	TIE 2A	241301
2	TIE PLATE	TIE 1A	241307
1	ADJUSTABLE BRACE GAGE PLATE	TIE 1	241300
1	ADJUSTABLE BRACE GAGE PLATE	TIE 5	241305
2	PLATE	TIE 0	241306
6	ADJUSTABLE BRACE SLIDE PLATE	TIES 2, 3, & 7	241306
4	SLIDE PLATE	TIES 4 & 6	241306
6	RISER SLIDE PLATE	TIES 8, 9 & 10	241306
18	TURNOUT PLATE	TIES 11, 12, 13, 15, 16, 17, 18, 19, & 20	241307
1	GAGE PLATE	TIE 14	241311
1	GAGE PLATE	TIE 23	241312
1	GAGE PLATE	TIE 32	241313
1	CLOSURE RAIL		341001
1	TURNOUT RAIL		341001
A/R	115 RE RAIL		N/A
A/R	PANDROL TIE PLATES	SEE NOTE 2	

STANDARD BILL OF MATERIALS			
QTY	DESCRIPTION	LOCATION	BNSF/UP COMMON STANDARDS DWG NUMBER
14	MODIFIED PANDROL TIE PLATE	TIES 21, 22, 39, 40, & 54	263001
A/R	PANDROL ECLIP E-2055		
A/R	15/16" DIA. X 6 1/2" LG. SCREW SPIKES		130800
2	FIXED HEEL BLOCKS		
1	NO. 9 16'-0" AREMA RBM FROG PER AREMA PORTFOLIO PLAN NO. 623-03 WITH SCREW SPIKE PLATES AND ELASTIC FASTENERS		N/A
2	GUARD RAILS PER AREMA PORTFOLIO PLAN NO. 504-03 (13') WITH SCREW PLATES AND ELASTIC FASTENERS		N/A
1	SWITCH POINT GUARD. A&K RAILROAD MATERIALS MODEL U69, OR APPROVED EQUAL		N/A
1	SWITCH STAND, RACOR MODEL 22-E TRAILABLE		N/A
A/R	115RE 36" JOINT BARS		
22	7" X 9" X 10'-0" TIE	TIES 0-10A & 3-13	
20	7" X 9" X 11'-0" TIE	TIES 14-33	
6	7" X 9" X 12'-0" TIE	TIES 34-39	
6	7" X 9" X 13'-0" TIE	TIES 40-45	
5	7" X 9" X 14'-0" TIE	TIES 46-50	
7	7" X 9" X 15'-0" TIE	TIES 1-2 & 51-55	
6	7" X 9" X 16'-0" TIE	TIES 56-61	
6	7" X 9" X 17'-0" TIE	TIES 62-67	

A/R = AS REQUIRED


FROG DATA	
ANGLE	6'-21'-35"
TURNOUT DATA	
RADIUS OF CENTERLINE	614'
T =	24.59'
CENTRAL ANGLE - CLOSURE CURVE	4'-35'-13"
DEGREE OF CURVE	9'-20'-31"
DIMENSIONS ALONG TURNOUT	
VERTEX TO PC	17'-7 9/32"
PC TO PT	614'-0" @ RADI US
PT TO FROG POINT	6'-4 1/2"

SWITCH DATA		
SWITCH LENGTH	16'-6"	
HEEL SPREAD	6 1/4"	
HEEL ANGLE	1'-46'-22"	
SWITCH ANGLE	1'-46'-22"	
THROW AT ROD #1	4 3/4"	
TURNOUT POINT		
THICKNESS AT POINT	0"	
RADIUS (CLOSURE CURVE)	616.3542'	
VERTEX DISTANCE	4"	

NOTES :

- SEE PROJECT SPECIFICATIONS FOR SPECIAL TRACKWORK MATERIALS PROVIDED BY THE PORT. ALL ITEMS NOT LISTED IN SPECIFICATION SECTION 01 64 00 "OWNER FURNISHED PRODUCTS" SHALL BE PROVIDED BY THE CONTRACTOR.
- PANDROL TIE PLATES AND RESILIENT FASTENERS SHALL BE USED AT ALL LOCATIONS UNLESS OTHERWISE NOTED, SEE DETAIL 2 ON SHEET C1.9.
- SWITCH POINTS SHALL HAVE MANGANESE TIPS (AREA 220).
- SWITCH POINTS SHALL BE HEAD HARDENED AND DOUBLE REINFORCED PER AREMA PLAN NO. 221 DETAIL 5100 WITH TRANSIT STYLE CLIPS.
- TURNOUTS SHALL HAVE HORIZONTAL SWITCH RODS.
- FROG SHALL BE HIGH INTEGRITY, RAIL BOUND MANGANESE STEEL CASTING WITH MITERED HEEL AND EXTENDED HEEL AND WING RAILS.
- THE GUARD RAIL IS TO BE 54-5/8" FROM THE GAUGE SIDE OF THE FROG POINT TO THE STRAIGHT GUARDING FACE OF THE GUARD RAIL.
- NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAPS IN COMPUTING RAIL LENGTHS SHOWN.
- FRACTIONAL RAIL LENGTH CUTTINGS SHOWN ARE THEORETICAL AND ARE SUBJECT TO MINOR ADJUSTMENT TO MEET ACTUAL CLOSURE REQUIREMENTS IN THE FIELD.
- STOCK RAILS ARE TO BE BENT IN THE MILL OR IN THE SHOP.
- CHORD METHOD IS USED TO CALCULATE TURNOUT CURVE DATA AND OFFSETS.

1 NO. 9 TURNOUT
C1.11 SCALE: 1" = 5'



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Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162


DATE: _____

APPR: _____

BY: _____

REVISION: _____

MARK: _____



ANDREW K. SLESY
REGISTERED PROFESSIONAL ENGINEER
NO. 2274
EXPIRES 12/31/2024

TJH 06/19/2018

CHECKED BY DATE

SWK 06/19/2018

PROJ. ENGR DATE

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TACOMA WA, 98401-1837

APPROVED:

RAIL DETAILS

NO. 9 TURNOUT

RANGE: 3E SECTION: 36

TOWNSHIP: 21N DATE-HRZ: W83-SF

VERT: PORT OF TACOMA BM#

DRAWING SCALE: AS SHOWN

PARCEL: MULTIPLE

C1.11

14 OF 14

CONT/CONS: 070771

M. ID: 201020.01

PHASE: BID SET

PARCEL 77 TRACKWORK INSTALLATION

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