

# Notice of Exemption

# Appendix E

**To:** Office of Planning and Research  
P.O. Box 3044, Room 113  
Sacramento, CA 95812-3044

County Clerk  
County of: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**From:** (Public Agency): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
(Address)

Project Title: \_\_\_\_\_

Project Applicant: \_\_\_\_\_

Project Location - Specific:

Project Location - City: \_\_\_\_\_ Project Location - County: \_\_\_\_\_

Description of Nature, Purpose and Beneficiaries of Project:

Name of Public Agency Approving Project: \_\_\_\_\_

Name of Person or Agency Carrying Out Project: \_\_\_\_\_

**Exempt Status: (check one):**

- Ministerial (Sec. 21080(b)(1); 15268);
- Declared Emergency (Sec. 21080(b)(3); 15269(a));
- Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- Categorical Exemption. State type and section number: \_\_\_\_\_
- Statutory Exemptions. State code number: \_\_\_\_\_

Reasons why project is exempt:

Lead Agency  
Contact Person: \_\_\_\_\_ Area Code/Telephone/Extension: \_\_\_\_\_

**If filed by applicant:**

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project?    Yes    No

Signature: Stacy Montemurro Date: \_\_\_\_\_ Title: \_\_\_\_\_  
Signed by Lead Agency    Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.  
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: \_\_\_\_\_

**SUBJECT**

Union Pacific Railroad – South Stockton Yard Crossovers  
California Environmental Quality Act Statutory and  
Categorical Exemption

**TO**

San Joaquin Regional Rail Commission

**DATE**

December 28, 2023

**COPIES TO**

Bryan Pennino, Pennino Management Group

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This memorandum has been prepared to support the California Environmental Quality Act (CEQA) Statutory Exemption of the proposed Union Pacific Railroad (UPRR) South Stockton Yard Crossovers Project (Project).

## Project Description

The Project is located in the City of Stockton, within the southern portion of the Stockton Rail Yard. The Project encompasses the area north of the intersection of Industrial Drive and South McKinley Avenue, extending north approximately 3,000 feet (see attached Project Plans). Project activities will occur within UPRR's existing right-of-way between the following mileposts (MP) on the existing UPRR Oakland and Fresno Subdivisions:

- Oakland Subdivision MP 90.39 to MP 90.91
- Fresno Subdivision MP 86.88 to MP 87.55

The Project involves the construction of new track segments and the removal of other existing track segments to facilitate the more efficient movement and crossover of commuter and freight rail cars between the Oakland and Fresno track subdivisions.

All work will occur within the existing Stockton Rail Yard in areas previously disturbed by rail activities. None of the project activities are located within waterways or other sensitive areas. As a result, no biological, cultural, or aquatic resources (e.g., streams or wetlands) will be impacted by the Project. The Project will result in negligible or no expansion of use but will improve the efficiency of regional commuter and freight rail service.

The San Joaquin Regional Rail Commission (SJRRRC) is the Lead Agency for the Project.

## Justification for Statutory Exemption

Per the CEQA Statute, Section 21080(b)(10), CEQA does not apply to the following type of projects:

- “A project for the institution or increase of passenger or commuter services on rail or highway rights-of-way already in use, including modernization of existing stations and parking facilities.”

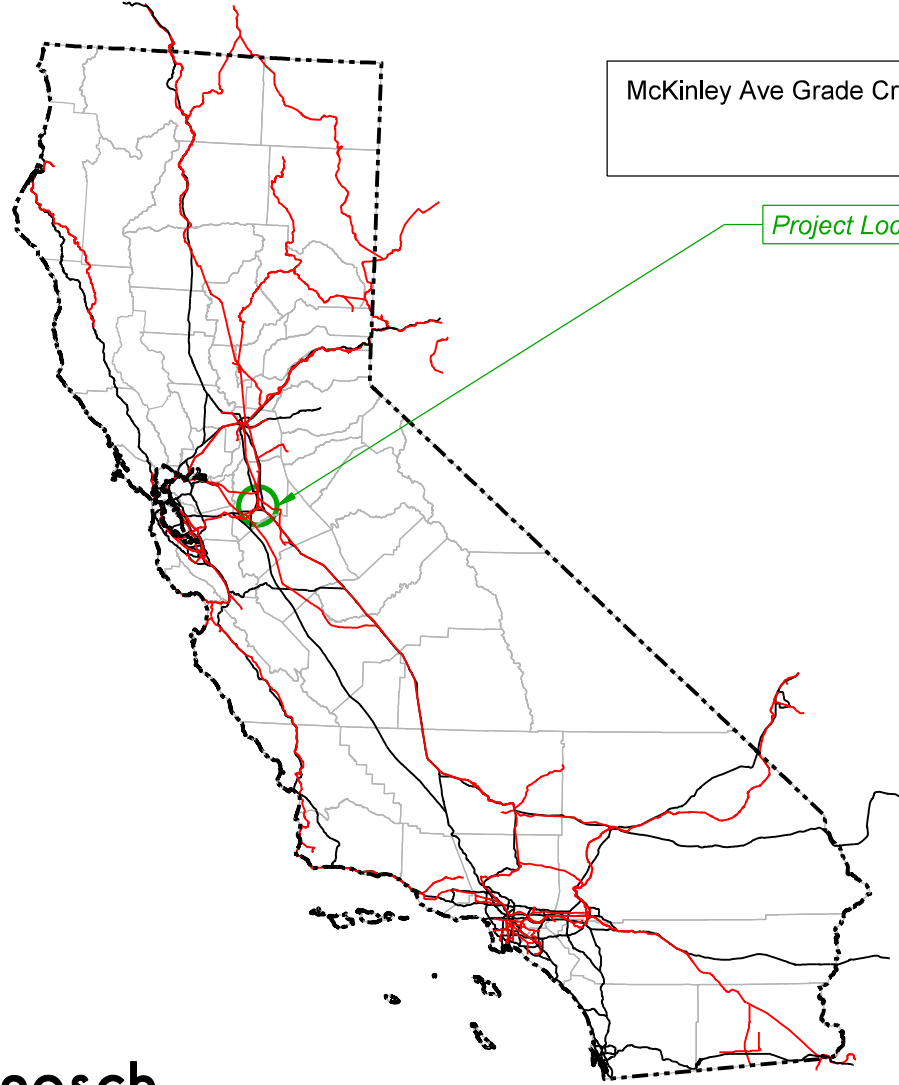
The proposed South Stockton Yard Crossovers would qualify for a statutory exemption under CEQA because the Project meets the following requirements:

- The purpose of the Project is to enhance existing passenger rail service on rail lines already in use.
- All proposed improvements are located within existing railroad right-of-way that is already in use.

Attachment: Project Plans

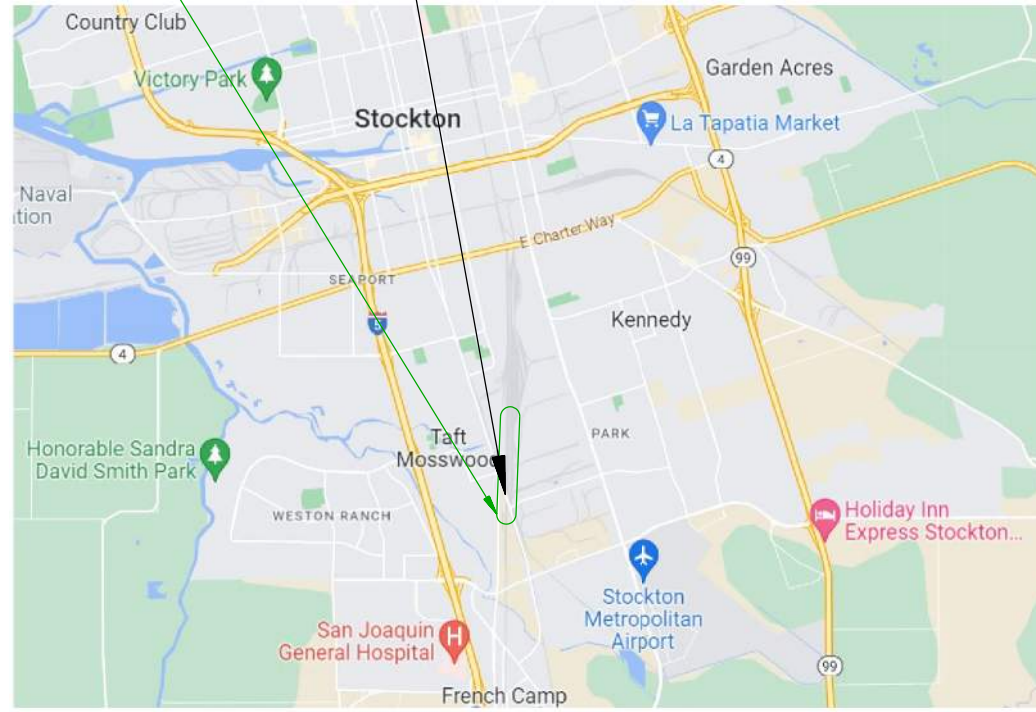


# ENGINEERING DESIGN



McKinley Ave Grade Crossing (Fresno MP 87.61)  
Lat - 37°54'28.96"N  
Long - 121°16'27.75"W

Project Location



Project Location Map



Alfred Benesch & Company  
5430 Maass Rd, Suite 240  
Bellevue, NE 68133  
402-333-5792

State of California

## STOCKTON, CALIFORNIA (SAN JOAQUIN COUNTY) OAKLAND & FRESNO SUBDIVISION MP 90.39 - 90.91 (OAKLAND), 86.88 - 87.55 (FRESNO) STOCKTON SOUTH END CROSSOVERS

**30% PLANS**  
**NOT FOR CONSTRUCTION**

LAST REVISED  
OCTOBER 4, 2023

WORK ORDER: 69777

PROJECT NUMBER:

BUDGET REFERENCE:

**PROJECT INDEX**

**PROJECT DESIGN**

**DESCRIPTION**

G001	COVER SHEET WITH VICINITY MAP
G002	PROJECT INDEX & REVISION SHEET
G003	GENERAL NOTES & PROJECT CONTACTS
G004	ABBREVIATIONS & LEGEND
G005	CONTROL POINTS AND GEOMETRY
G006	SCHEMATIC PLAN
G007	CURVE INFORMATION
P001 to 003	TRACK PLAN
TP001 to 009	TRACK PROFILES
T001 to 014	TYPICAL SECTIONS
X001 to 011	CROSS SECTIONS
C001 to 003	CULVERT DETAILS

**STANDARDS**

**DESCRIPTION**

**STRUCTURES DESIGN**

**DESCRIPTION**

**PROJECT INDEX (CONTINUED)**

**MECHANICAL DESIGN**

**DESCRIPTION**



**ELECTRICAL DESIGN**

**DESCRIPTION**

**PROJECT REVISIONS**

REV. #	BY	DATE:	SHEET:	DESCRIPTION

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 10/4/2023

 <p>Alfred Benesch &amp; Company 5430 Maass Rd, Suite 240 Bellevue, NE 68133 402-333-5792</p>		DRAWN BY: LJG	<b>UNION PACIFIC RAILROAD</b> LOCATION & DESCRIPTION: STOCKTON, CA (SAN JOAQUIN COUNTY) MP 90.39 - 90.91 (OAKLAND), MP 86.88 - 87.55 (FRESNO) STOCKTON SOUTH END CROSSOVERS	
		CHECKED BY: CLH		
		DATE: 10/04/2023	SHEET NUMBER: G002 of 007	SHEET TITLE: PROJECT INDEX & REVISIONS

**GENERAL NOTES**

- Contractors shall notify Service Alert, (800) 642-2444 and UPRR Fiber Optics Hotline (800) 336-9193, 48 hours prior to any excavation. The USA Authorization Numbers shall be kept at the job site.
- No work whatsoever shall be commenced without first notifying the UPRR Engineer.
- The Contractor shall comply with all Federal, State, County, and City Laws and Ordinances and Regulations of the Department of Industrial Relations, OSHA, NPDES and Industrial Accident Commission related to the safety and character of the work, equipment and labor personnel.
- Contractor shall be responsible for coordinating with all Utility agencies.
- Contractor shall protect in place (by any means necessary) all existing utilities to remain unless otherwise specified herein, contractor shall be responsible for the complete repair at his expense, for any damage to existing utilities, structures, or other site features, as a result of his work.
- Prior to placing curbs, pavements, base, subbase, track, etc., all underground utilities shall be installed, backfill completed, and the Engineer notified by each of the utility companies having facilities within the work area, that the utility installation has satisfactorily passed acceptance tests.
- All existing underground utilities, that are not to be re-used shall be abandoned in place. All existing pipelines to be abandoned in place shall be cement slurry filled and capped at least 3'-0" below top of proposed subgrade.
- Contractor shall verify locations and elevations of existing utilities whether known or unknown prior to beginning construction.
- Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, and pipelines not located prior to construction shall be brought to the attention of the engineer for determination of appropriate action such as removal or treatment in a manner judged suitable to the engineer.
- Contractor shall coordinate location of all proposed utilities with UPRR to assure accuracy of utility connections and compliance with local codes.
- Any existing conditions found to be a variance with these drawings must be immediately reported to the Engineer.
- Contractor shall maintain and clean to the satisfaction of the Engineer, all access and service roads used during construction.
- Contractor shall perform all construction in such a manner as to protect adjacent existing buildings, and other site elements which are to remain in service.
- Contractor shall provide As-built Drawings for all improvements.

- No field changes will be permitted without direct written authorization from the UPRR Engineer or his representative.
- Contractor shall coordinate work which affects adjacent property owners. Any questions or agreements between adjacent property owners and contractor shall be made in writing. A copy of such agreement shall be provided to the UPRR Engineer or his representative.
- The contractor is responsible for preparing a Stormwater Pollution Prevention Plan (SWPPP) to comply with State regulations. General specifications and typical erosion control details are included in the plan set.
- Right-of-way lines shown on the plans were taken from existing UPRR right-of-way map and are approximate.
- Match lines for sheets are based on the existing Main Line stationing unless otherwise specified.
- Track laying, ballasting, and installation of road crossing panels will be done by UPRR unless otherwise stated.
- Where existing culverts are to be extended, the contractor shall expose existing drainage structures and field verify size and type before ordering.
- The contractor is responsible for the removal of all pavement markings that will be in conflict with the proposed work.
- Contractor shall comply with all California and Stockton standard specifications for construction of public improvements requirements. Stockton standard specifications shall prevail.
- Contractor shall maintain at least one access to all affected business. If necessary, multiphase construction shall be utilized.

**CONTACT**

LEVI HAWKINS

**PHONE NUMBER**

(402) 544-3304

**UPRR**

- Construction Project Manager
- Construction Field Manager
- Project Design Manager
- Project Design Sr. Project Designer
- Structures Design Sr. Manager
- Structures Design Manager
- Information Technology - Fiber
- Real Estate - Utilities
- Real Estate - Acquisitions
- Soil Management Plan

**CONTACT**

**PHONE NUMBER**

**FIBER**

**CONTACT**

**PHONE NUMBER**

**UTILITIES**

**DESIGN CRITERIA**

- UPRR standard plans and trackworks
- Stockton Public Works Engineering Division
- California Department of Transportation Roadway Standards

**TRAFFIC NOTES**

- All barricades, warning signs, lights, devices, etc. for the guidance of vehicle traffic and pedestrians must conform to the installation shown in the Manual on Uniform Traffic Control Devices (MUTCD), current edition.
- Contractor shall make twice daily inspections of barricades and flashing lights to ensure proper placement and functioning of warning devices.
- Grade crossings closed to traffic during construction shall be barricaded in accordance with the MUTCD.
- At all grade crossings, all grade crossing warning signs (crossbuck) shall temporarily be relocated during construction and reset after the grade crossings construction is completed to a point adjacent to the roadway and 15 feet from the centerline of the near track as stated in the MUTCD except where automatic grade crossing warning signals/gates exist. All automatic warning devices are the responsibility of UPRR. At no time shall a crossing be left open without proper warning signs in place.
- Contractor shall submit traffic control plans to Stockton Traffic Department for approval at least 2 weeks prior to each road closure. Plans shall be 11" x 17" engineered drawings, sealed by a professional engineer from the California.
- The contractor is responsible for the prompt replacement and/or repair of all traffic control devices and appurtenances damaged or disturbed due to construction.

**PHONE NUMBER**

- (800) 336-9193
- (888) 258-0808
- (888) 877-7267

**GENERAL**

- UPRR CALL BEFORE YOU DIG
- CALL BEFORE YOU DIG (NATIONAL DIRECTORY)
- UPRR Response Management Communications Center (RMCC)

**CONTACT**

**PHONE NUMBER**



**FEDERAL AND LOCAL GOVERNMENT AGENCY**

**SURVEY NOTES**

- Railroad stationing for project profiles and alignments is based on stations established for chord definition spiraled curves at the centerline of the existing UPRR Main Line unless otherwise noted.
- The contractor is responsible for the preservation of all survey control monuments. In the event monuments are damaged or destroyed by the contractor, the Engineer will replace the monument solely at the contractor's expense.

	DATUM
HORIZONTAL	CA STATE PLANE ZONE III SCALE FACTOR = 1.000095013
VERTICAL	NAVD88

Survey completed on date 06/14/2023

 Alfred Benesch & Company 5430 Maass Rd, Suite 240 Bellevue, NE 68133 402-333-5792		DRAWN BY: LJG	<b>UNION PACIFIC RAILROAD</b> LOCATION & DESCRIPTION: STOCKTON, CA (SAN JOAQUIN COUNTY) MP 90.39 - 90.91 (OAKLAND), MP 86.88 - 87.55 (FRESNO) STOCKTON SOUTH END CROSSOVERS
		CHECKED BY: CLH	
		DATE: 10/04/2023	
		SHEET NUMBER G003 of 007	
SHEET TITLE: GENERAL NOTES AND PROJECT CONTACTS			

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**ABBREVIATIONS**

**MISCELLANEOUS**

Ac.	Acre
Ave.	Avenue
Bldg.	Building
BNSF	BNSF Railway
C.Y.	Cubic Yards
Conc.	Concrete
°	Degree
Dia.	Diameter
Dr.	Drive
Dwg.	Drawing
E	East
Elev.	Elevation
Exist.	Existing
'	Foot, Feet or Minute (s)
F.S.	Finished Surface
Horiz.	Horizontal
"	Inch, Inches or Second (s)
Inv.	Invert
Lt.	Left
L	Length
L.F.	Lineal Feet
Max.	Maximum
Min.	Minimum
N	North
NTS	Not to Scale
No.	Number
OH	Overhead
Prop.	Proposed
RR	Railroad
Rwy	Railway
R/W	Right of Way
Rt.	Right
S	South
S.F.	Square Feet
Sta.	Station
Std.	Standard
St.	Street
Twp.	Township
Typ.	Typical
UG	Underground
UPRR	Union Pacific Railroad
V	Velocity
Wt.	Weight
W	West
X-ing	Crossing

**SIGNAL**

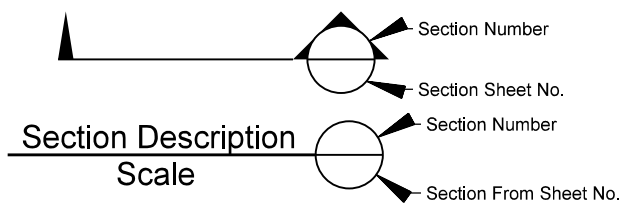
ABS	Automatic Block Signal
ATC	Automatic Train Control
CTC	Centralized Traffic Control
DED	Dragging Equipment Detector
DTC	Direct Traffic Control
ELTO	Electric Lock Turnout
HBD	Hot Box Detector
HTTO	Hand Throw Turnout
HWD	High Wide Detector
POTO	Power Operated Turnout
TWC	Track Warrant Control
WILD	Wheel Impact Load Detector

**STRUCTURES**

Bldg.	Building
Br.	Bridge
CB	Catch Basin
CPT	Concrete Pile Trestle - Ballast Deck
CIP	Cast Iron Pipe
CMP	Corrugated Metal Pipe
CMPA	Corrugated Metal Pipe Arch
CSP	Corrugated Steel Pipe
Culv.	Culvert
DI	Drop Inlet
DPGBD	Deck Plate Girder - Ballast Deck
DPGOD	Deck Plate Girder - Open Deck
EBW	East Backwall
F.L.	Flowline
F.F.	Finished Floor
GIP	Galvanized Iron Pipe
Hdw	Headwall
NBW	North Backwall
PCB	Prestressed Concrete Box
PSCT	Prestressed Concrete Trestle
RCA	Reinforced Concrete Arch
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
SBW	South Backwall
SSP	Smooth Steel Pipe
SPTBD	Steel Pile Trestle - Ballast Deck
SPTOD	Steel Pile Trestle - Open Deck
SPP	Structural Plate Pipe
TPGBD	Through Plate Girder - Ballast Deck
TPGOD	Through Plate Girder - Open Deck
TPTBD	Timber Pile Trestle - Ballast Deck
TPTOD	Timber Pile Trestle - Open Deck
TTBD	Through Truss - Ballast Deck
TTOD	Through Truss - Open Deck
TWB	Treated Wood Box
VCP	Vitrified Clay Pipe
Viad.	Viaduct
WBW	West Backwall
WIP	Wrought Iron Pipe

**TRACK**

ATR	Above Top of Rail
Align.	Alignment
BBR	Below Base of Rail
Cntrs.	Centers
CWR	Continuous Welded Rail
DSPD	Double Switch Point Derail
EOT	End of Track
HH	Head Hardened
Jtd.	Jointed Rail
LH	Left Hand
ML	Main Line
MM	Mile Marker
MP	Mile Post
NSC	Not Sufficient Clearance
OTM	Other Track Material
PCC	Point of Compound Curve
PC	Point of Curve
PCS	Point of Curve to Spiral
POC	Point on Curve
PF	1/2" Point of Frog
PI	Point of Intersection
PITO	Point of Intersection of Turnout
PS	Point of Spiral
PSC	Point of Spiral to Curve
POS	Point on Spiral
PT	Point of Tangent
POT	Point on Tangent
Pt. Sw.	Point of Switch
PVC	Point of Vertical Curve
PVI	Point of Vertical Intersection
PVT	Point of Vertical Tangent
RH	Right Hand
SH	Second Hand
SSPD	Single Switch Point Derail
TC	Track Centers
T.F.	Track Feet
Trk.	Track
UXO	Universal Cross-Over
X-Over	Cross-Over



**UTILITIES**

AIR	AIR	Compressed Air
F/O	F/O	Fiber Optic Cable
G	G	Gas Pipeline
OP	OP	Overhead Power Line
SS	SS	Sanitary Sewer
UGS	UGS	Underground Signal Line
Steam	Steam	Steam Line
S	S	Storm Sewer
T	T	Telephone
UGE	UGE	Underground Electric
W	W	Water Main
UD	UD	Under Drain
V.	V.	Valve
M.H.	M.H.	Manhole
C.B.	C.B.	Catch Basin
F.H.	F.H.	Fire Hydrant
J.B.	J.B.	Junction Box
E.M.	E.M.	Electric Meter
G.M.	G.M.	Gas Meter
W.M.	W.M.	Water Meter
M.W.	M.W.	Monitoring Well
PUMP	PUMP	Pump

**TRACK**

(Solid Red Line)	Existing Mainline
(Dashed Red Line)	Existing Siding or Spur
(Green Line)	Proposed
(Blue Dashed Line)	Remove
(Orange Dashed Line)	Shift
(Red/Green Dashed Line)	Relay
(Red/Orange Dashed Line)	Surface & Line
(Purple Line)	Future
(Pink Line)	Foreign Railroad or Industry
(Red Dotted Line)	In Buildings or Under Structures
(Red Line with Triangle)	Turnout
(Red Line with Arrow)	Power Turnout
(Red Line with Square)	Bumping Post
(Red Line with X)	Earthen Bumper
(Red Line with 56°)	Inert Retarder
(Red Line with 52°)	Dowty Retarder
(Red Line with Triangle)	Hayes Derail
(Red Line with Square)	Double Switch Point Derail

**PROPERTY**

(Solid Black Line)	Section Line
(Dashed Black Line)	Center Section Line
(Dotted Black Line)	Parcel or Easement Line
(Dash-dot Black Line)	Right of Way
(Long-dash Black Line)	Former Right of Way
(Red Dashed Line)	Right of Way to be Acquired
(Purple Dashed Line)	Foreign Right of Way

**ROAD CROSSING WARNING DEVICES**

(X Symbol)	Crossbuck Sign
(Flashing Light)	Flashing Light Warning Device
(Flashing Light with Gate)	Flashing Light Warning Device with Gate
(Cantilever Flashing Light)	Cantilever Flashing Light Warning Device
(Cantilever Flashing Light with Gate)	Cantilever Flashing Light Signal with Gate

**SIGNAL**

(Signal Bridge)	Signal Bridge
(Cantilever Signal)	Cantilever Signal
(ACS or CTC Signal)	ACS or CTC Signal
(Dwarf Signal)	Dwarf Signal
(Begin CTC)	Begin CTC
(Microwave Tower)	Microwave Tower
(AEI)	AEI
(Battery Box)	Battery Box
(Dragging Equipment Detector)	Dragging Equipment Detector
(Generator)	Generator
(Hot Box Detector)	Hot Box Detector

**STRUCTURES**

(Culvert)	Culvert
(Culvert with Headwalls)	Culvert with Headwalls
(Double Culvert)	Double Culvert
(Railroad Bridge)	Railroad Bridge
(Highway Overpass)	Highway Overpass
(Highway Underpass)	Highway Underpass
(Tunnel)	Tunnel
(Building)	Building
(Flag Pole)	Flag Pole

**OTHER**

(Embankment)	Embankment
(Flow Line)	Flow Line
(Milepost)	Milepost
(Milemarker)	Milemarker
(Control Point)	Control Point
(Revision Number)	Revision Number
(Revision Cloud)	Revision Cloud

**SIGNS**

(Stop Sign)	Stop
(Yield Sign)	Yard Limit
(1 Mile to Yard Limit Sign)	1 Mile to Yard Limit
(Whistle Post Sign)	Whistle Post
(Flanger Sign)	Flanger
(Station Sign)	Station
(Reduce Speed Sign)	Reduce Speed
(Resume Speed Sign)	Resume Speed
(General Purpose Sign)	General Purpose

**FENCES**

(Barbed Wire)	Barbed Wire
(Chain Link)	Chain Link
(Snow / Sand)	Snow / Sand
(Cattle Guard)	Cattle Guard

**ROADS**

(Paved Road)	Paved Road
(Unimproved Road)	Unimproved Road
(Interstate Highway)	Interstate Highway
(Federal Highway)	Federal Highway
(State Highway)	State Highway
(County Highway)	County Highway

**PERMITTING**

(Yellow Box)	Temporary Workspace - Permitted
(Blue Hatched Box)	Sensitive Resources - Impacted / Permitted
(Red Hatched Box)	Sensitive Resources - Do Not Impact

**CONSTRUCTION**

(Note)	Note (Work by Contractor)
(Note)	Note (Work by Others)
(Cut Lines)	Cut Lines
(Fill Lines)	Fill Lines
(Grading Limits)	Grading Limits

**LIGHTING**

(Light Pole)	Light Pole
(Light Tower)	Light Tower

Alfred Benesch & Company  
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CHECKED BY:	CLH
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SHEET NUMBER:	G004 of 007

<b>UNION PACIFIC RAILROAD</b>	
LOCATION & DESCRIPTION:	STOCKTON, CA (SAN JOAQUIN COUNTY) MP 90.39 - 90.91 (OAKLAND), MP 86.88 - 87.55 (FRESNO)
SHEET TITLE:	ABBREVIATIONS & LEGEND

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 10/4/2023

Control Points				
Point No.	Northing	Easting	Elevation	Description
1	2156652.1620	6339405.2740	16.22	5/8 RB
2	2157101.7560	6339099.5200	20.34	5/8 RB
3	2156303.5420	6339046.0030	20.72	5/8 RB
4	2155503.3540	6339039.9650	18.12	5/8 RB
5	2154703.5690	6339016.7460	19.05	5/8 RB
6	2153961.2260	6338982.6820	20.12	5/8 RB
7	2155469.4190	6338502.1710	18.53	PK NAIL
8	2154088.9790	6338385.9920	15.37	NGS Q1413 15.37
9	2156874.5520	6339300.4300	19.84	5/8 RB

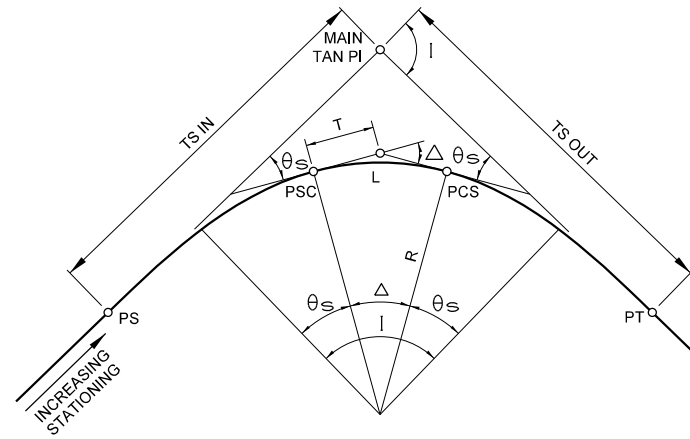


FIGURE A  
CIRCULAR CURVES  
WITH SPIRAL TRANSITION

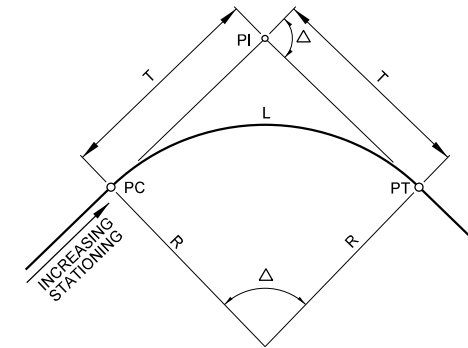


FIGURE B  
SIMPLE CIRCULAR CURVE

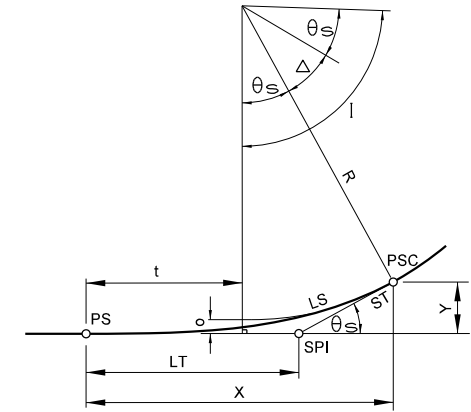


FIGURE C  
SPIRAL TRANSITION CURVE

SPIRAL TRANSITION CURVE DATA:  
THE SPIRAL USED IS DEFINED BY THE TALBOT SPIRAL.

I - TOTAL INTERSECTION ANGLE  
 $\theta_s$  - SPIRAL ANGLE =  $\frac{AL^2}{2}$   
 $\Delta$  - CENTRAL ANGLE OF CIRCULAR CURVE =  $I - 2\theta_s$   
Dc - DEGREE OF CURVE  
A - RATE OF CHANGE OF DEGREE OF CURVE PER 100-ft. OF LENGTH =  $\frac{Dc}{L}$   
R - RADIUS OF CIRCULAR CURVE  
T - TANGENT LENGTH OF CIRCULAR CURVE =  $R \tan \frac{\Delta}{2}$   
L - LENGTH OF CIRCULAR CURVE =  $\frac{\Delta}{Dc} \times 100$   
PS - TANGENT TO SPIRAL  
PSC - SPIRAL TO CURVE  
PCS - CURVE TO SPIRAL  
PT - SPIRAL TO TANGENT  
MAIN TAN PI - POINT OF INTERSECTION OF MAIN TANGENTS  
(TS IN) - TANGENT LENGTH OF COMPLETE CURVE =  $(R+o) \tan \frac{1}{2} I + t$   
(TS OUT)  
(WHEN SPIRALS OF EQUAL LENGTH ARE USED ON BOTH SIDES OF CIRCULAR CURVE, SEE FIGURE C. FOR o AND t).

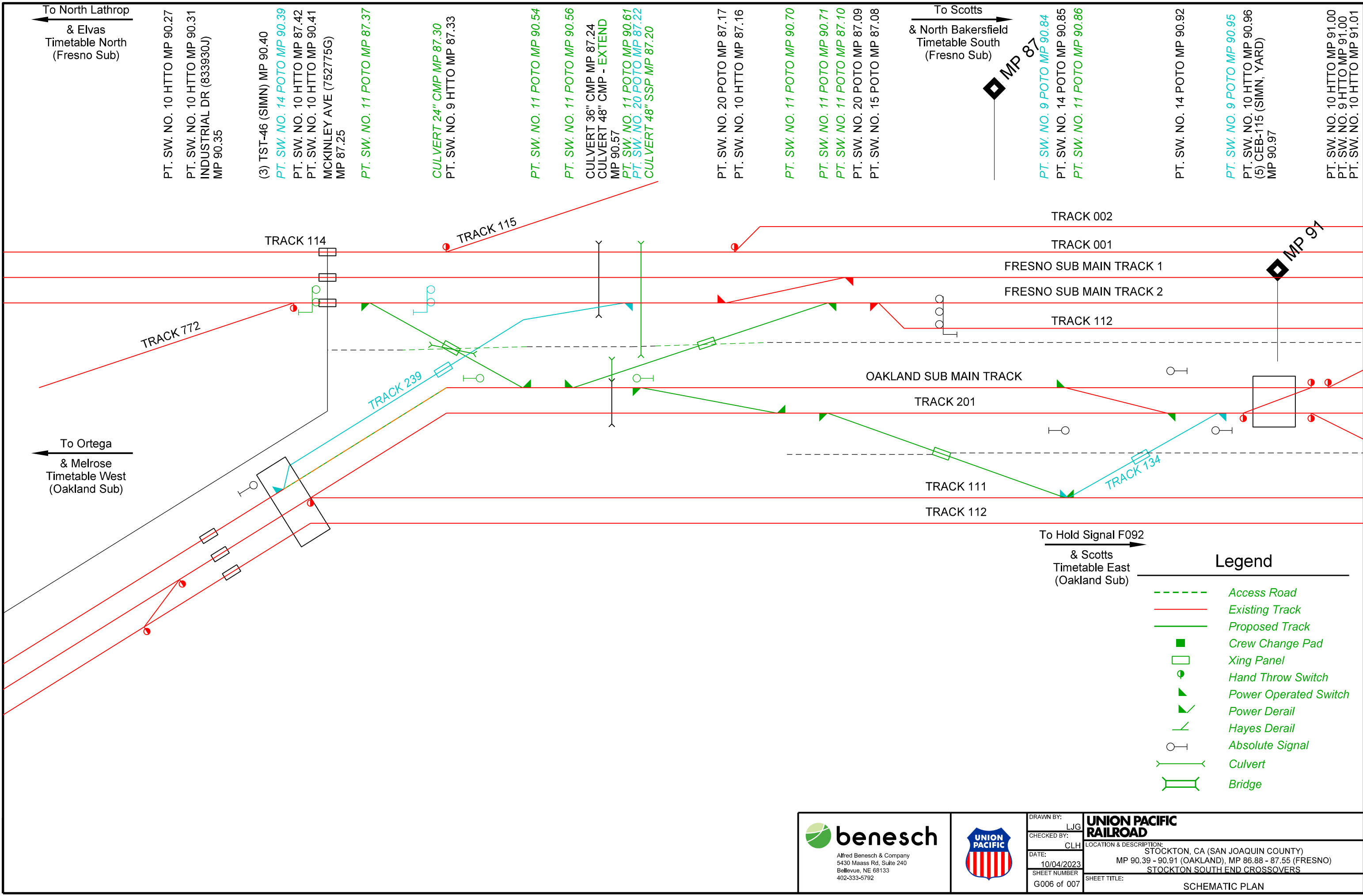
R = RADIUS OF CIRCULAR CURVE  
 $\Delta$  = CENTRAL ANGLE OF CIRCULAR CURVE  
 $T = R \tan \frac{\Delta}{2}$   
 $L = \frac{\Delta}{Dc} \times 100$   
 $Dc = 2 \sin^{-1} (50/R) = \text{DEGREE OF CURVE (CHORD DEFINITION)}$

LS = LENGTH OF SPIRAL (TS TO PSC)  
 $\theta_s = \frac{AL^2}{2}$   
 $X = 100 L_1 - 0.000762A^2 L_1^5$   
 $Y = 0.291AL_1^3 - 0.00000158A^3 L_1^7$   
 $o = 0.0727AL_1^3$   
 $t = 50L_1 - 0.000127A^2 L_1^5$   
 $ST = \frac{Y}{\sin \theta_s}$   
 $LT = X - \frac{Y}{\tan \theta_s}$   
 $Dc = 2 \sin^{-1} (50/R) = \text{DEGREE OF CURVE (CHORD DEFINITION)}$   
L<sub>1</sub> - TOTAL NO. OF STATIONS IN SPIRAL  
SPI - SPIRAL POINT OF INTERSECTION  
NOTE: Dc,  $\theta_s$ ,  $\Delta$ , AND I ARE IN DEGREES.  
ALL OTHERS DIMENSIONS ARE FEET.

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		CHECKED BY: CLH	
		DATE: 10/04/2023	
		SHEET NUMBER: G005 of 007	
		SHEET TITLE: CONTROL POINTS AND GEOMETRY	

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To North Lathrop  
& Elvas  
Timetable North  
(Fresno Sub)

To Ortega  
& Melrose  
Timetable West  
(Oakland Sub)

To Scotts  
& North Bakersfield  
Timetable South  
(Fresno Sub)

To Hold Signal F092  
& Scotts  
Timetable East  
(Oakland Sub)

PT. SW. NO. 10 HHTO MP 90.27  
 PT. SW. NO. 10 HHTO MP 90.31  
 INDUSTRIAL DR (833930J)  
 MP 90.35  
 (3) TST-46 (SIMN) MP 90.40  
 PT. SW. NO. 14 POTO MP 90.39  
 PT. SW. NO. 10 HHTO MP 87.42  
 PT. SW. NO. 10 HHTO MP 90.41  
 MCKINLEY AVE (752775G)  
 MP 87.25  
 PT. SW. NO. 11 POTO MP 87.37  
 CULVERT 24" CMP MP 87.30  
 PT. SW. NO. 9 HHTO MP 87.33  
 PT. SW. NO. 11 POTO MP 90.54  
 PT. SW. NO. 11 POTO MP 90.56  
 CULVERT 36" CMP MP 87.24  
 CULVERT 48" CMP - EXTEND  
 MP 90.57  
 PT. SW. NO. 11 POTO MP 90.61  
 PT. SW. NO. 20 POTO MP 87.22  
 CULVERT 48" SSP MP 87.20  
 PT. SW. NO. 20 POTO MP 87.17  
 PT. SW. NO. 10 HHTO MP 87.16  
 PT. SW. NO. 11 POTO MP 90.70  
 PT. SW. NO. 11 POTO MP 90.71  
 PT. SW. NO. 11 POTO MP 87.10  
 PT. SW. NO. 20 POTO MP 87.09  
 PT. SW. NO. 15 POTO MP 87.08  
 PT. SW. NO. 14 POTO MP 90.92  
 PT. SW. NO. 9 POTO MP 90.95  
 PT. SW. NO. 10 HHTO MP 90.96  
 (5) CEB-115 (SIMN, YARD)  
 MP 90.97  
 PT. SW. NO. 10 HHTO MP 91.00  
 PT. SW. NO. 9 HHTO MP 91.00  
 PT. SW. NO. 10 HHTO MP 91.01

Legend	
	Access Road
	Existing Track
	Proposed Track
	Crew Change Pad
	Xing Panel
	Hand Throw Switch
	Power Operated Switch
	Power Derail
	Hayes Derail
	Absolute Signal
	Culvert
	Bridge



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		CHECKED BY: CLH	
		DATE: 10/04/2023	
		SHEET NUMBER: G006 of 007	



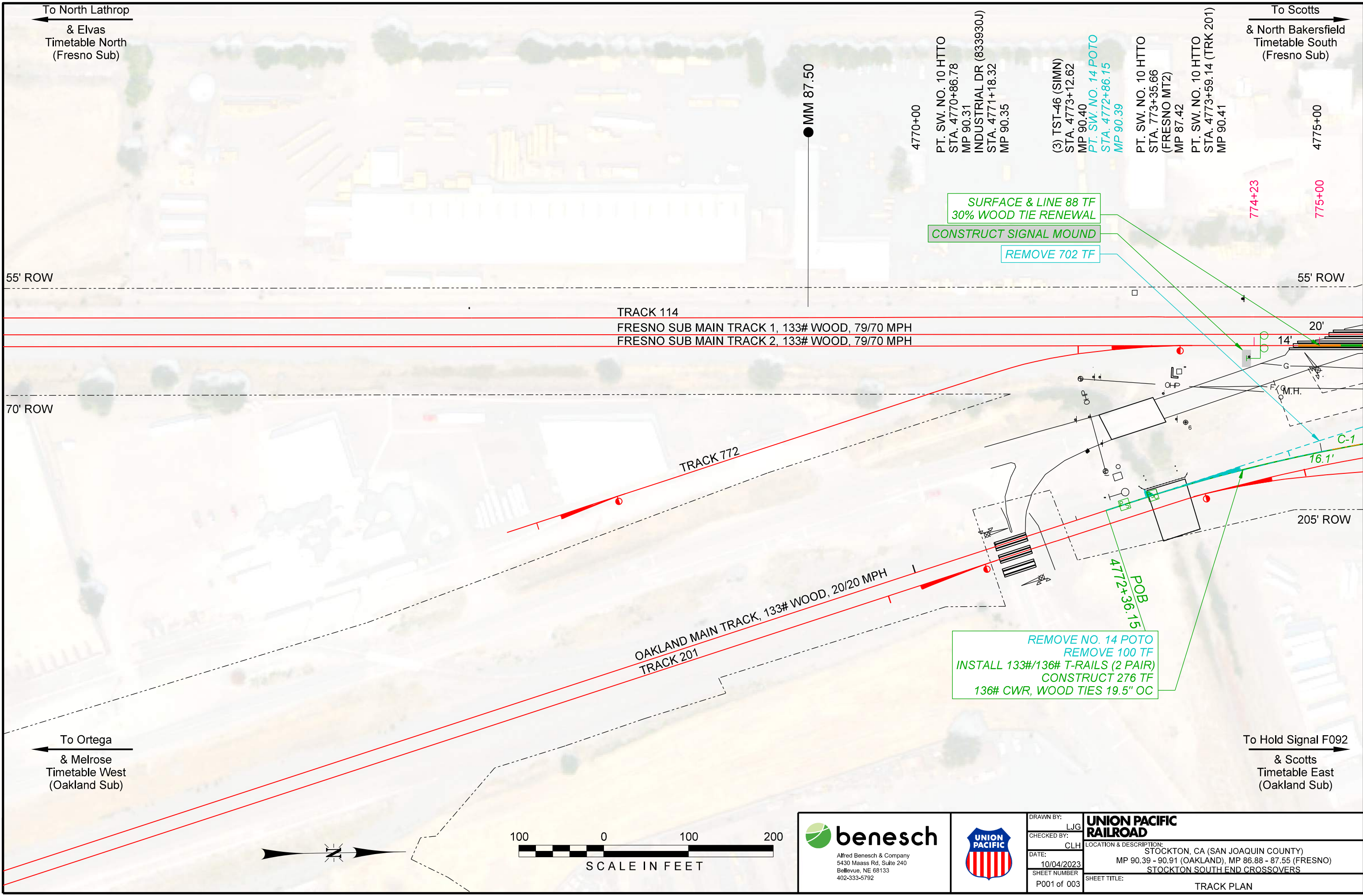
**Curve Information**

Curve Number	Track	PS	PSC	PCS	PT	Delta	Radius	Degree	S/L	Super Elevation	Design Speed
C-1	Oakland Main Tack	4772+59.16	4772+94.16	4778+42.28	4778+77.28	17° 29' 37"	1910.08'	3° 00' 00"	35'	0.75"	20
C-2	Fresno/Oakland South X-Over	777+64.83	778+08.83	778+51.39	778+95.39	6° 03' 25"	819.02'	7° 00' 00"	44'	1.00"	20
C-3	Fresno/Oakland South X-Over	780+46.33	780+90.33	781+32.84	781+76.84	6° 03' 13"	819.02'	7° 00' 00"	44'	1.00"	20
C-4	Fresno/Oakland North X-Over	4785+09.35	4785+53.35	4785+96.05	4786+40.05	6° 04' 02"	819.02'	7° 00' 00"	44'	1.00"	20
C-5	Fresno/Oakland North X-Over	4787+93.28	4788+37.28	4788+80.17	4789+24.17	6° 04' 48"	819.02'	7° 00' 00"	44'	1.00"	20
C-6	Track 201/111 X-Over	4790+96.60	4791+40.60	4791+93.66	4792+37.66	6° 47' 32"	819.02'	7° 00' 00"	44'	1.00"	20
C-7	Track 201/111 X-Over	4794+65.92	4795+09.92	4795+63.73	4796+07.73	6° 50' 42"	819.02'	7° 00' 00"	44'	1.00"	20

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		CHECKED BY: CLH	
		DATE: 10/04/2023	SHEET TITLE: CURVE INFORMATION
		SHEET NUMBER G007 of 007	

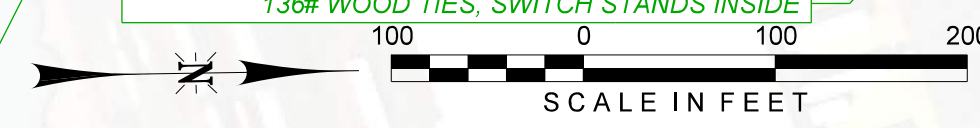
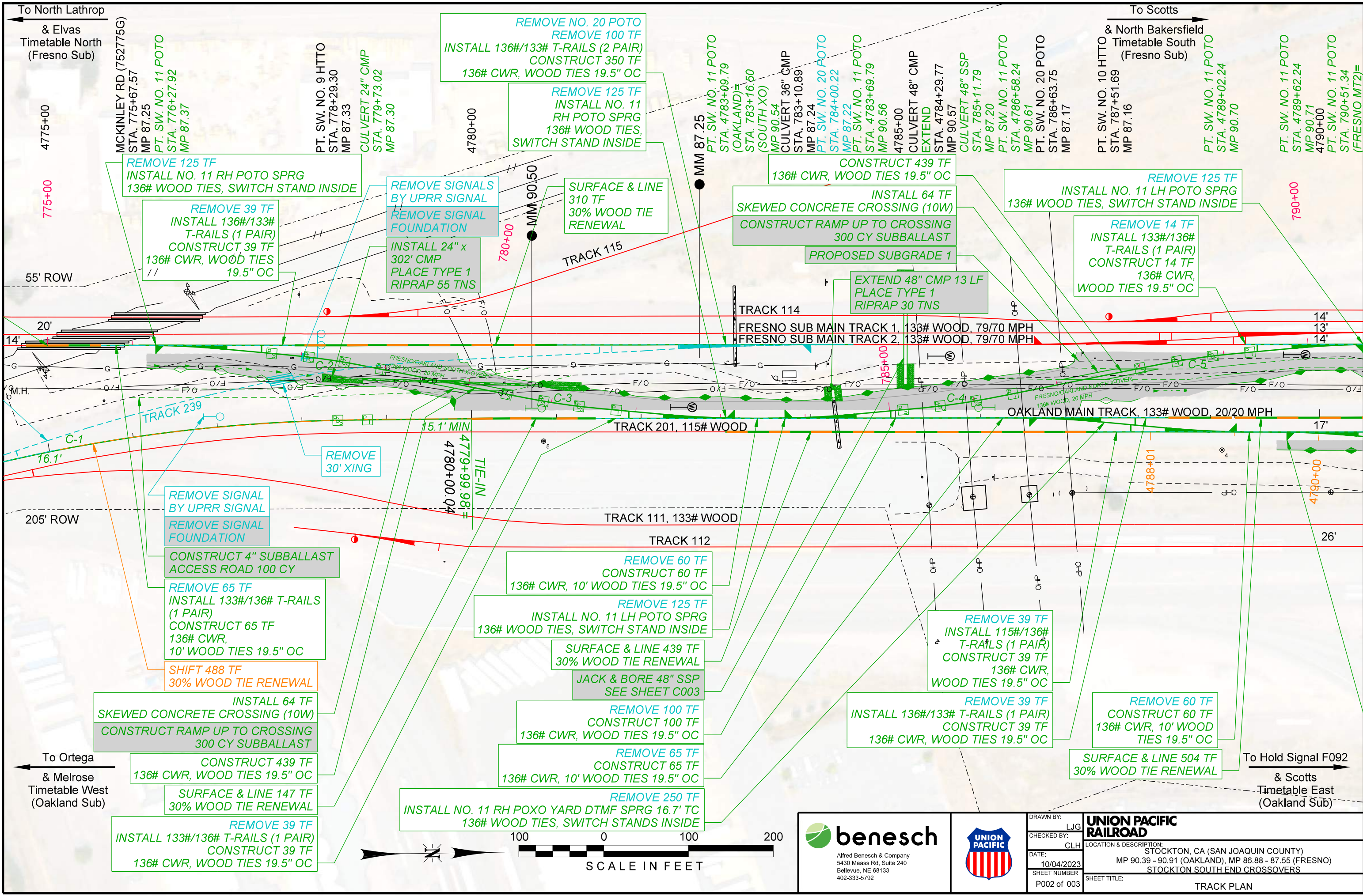
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		DATE: 10/04/2023 SHEET NUMBER: P001 of 003		SHEET TITLE: TRACK PLAN
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		SHEET TITLE: TRACK PLAN		



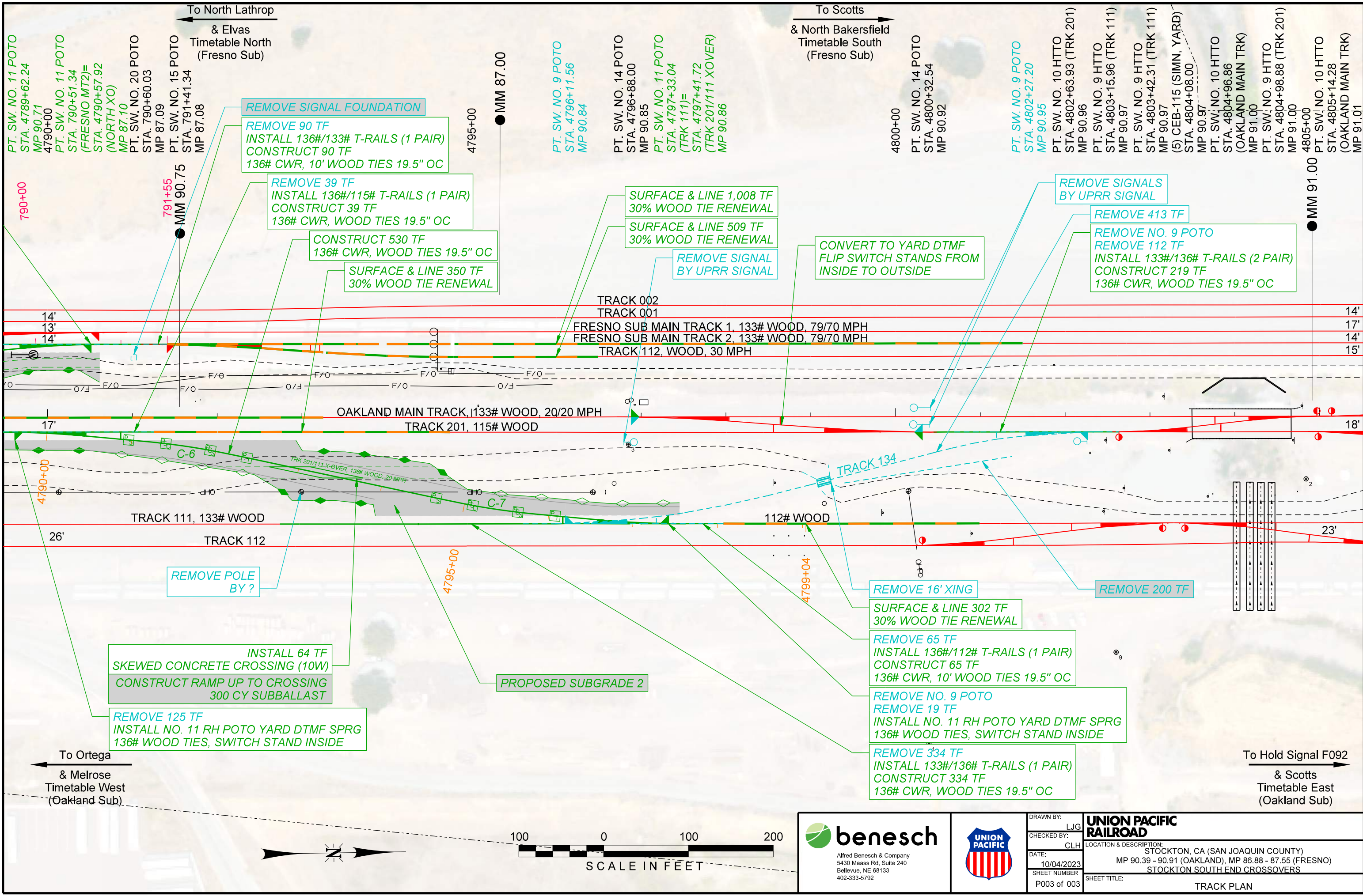
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		CHECKED BY: CLH	
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		SHEET NUMBER: P002 of 003	



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		DATE: 10/04/2023	
		SHEET NUMBER: P003 of 003	
SCALE IN FEET		SHEET TITLE: TRACK PLAN	