Project Study Report-Project Development Support (PSR-PDS)

To

Request Programming for Capital Support (Project Approval and Environmental Document Phase) in the 2022 STIP

On Route 12th Street

Between 1000 Feet South of 12th Street US 101 Overcrossing

And 1000 Feet North of 12th Street US 101 Overcrossing

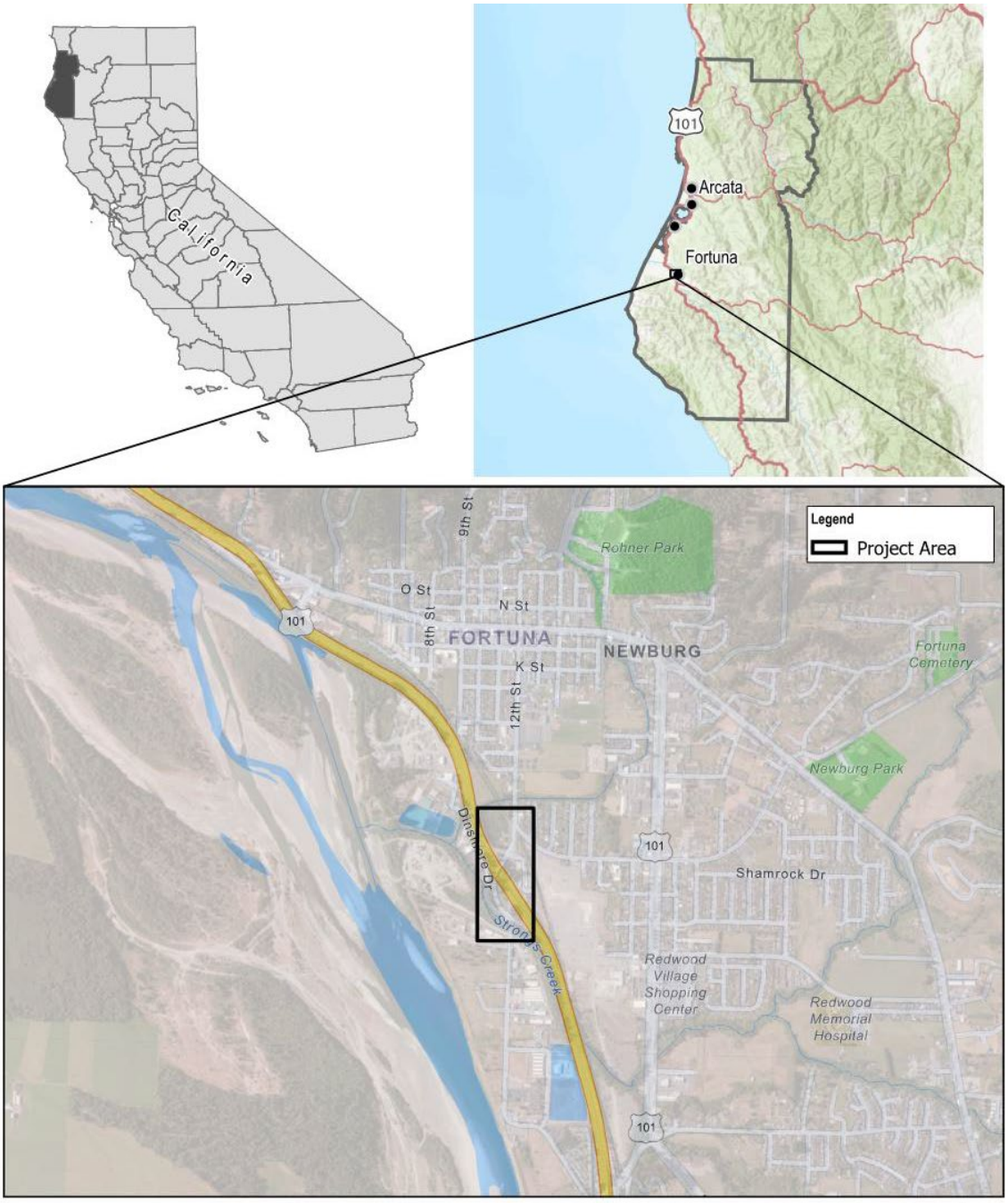
APPROVED:

9/15/21

Brendan E. Byrd
City Engineer
City of Fortuna

Date

Vicinity Map



Paper Size ANSI A

0 500 1,000 1,500 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

CITY OF FORTUNA
PREPARED PSR-PDS FOR 12TH STREET
AND HIGHWAY 101 INTERCHANGE

Vicinity Map

Project No. 12559859
Revision No. -
Date 8/31/2021

FIGURE 1

This project study report-project development support has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

9/15/21

REGISTERED CIVIL ENGINEER *DATE*

Table of Contents

Attachments

1. INTRODUCTION

Project Description:
The project proposes to improve traffic, pedestrian, and bicycle operations at the 12th Street interchange with US 101 in Fortuna in Humboldt County. The existing intersection controls, roadway geometry, and the high volumes of local and regional traffic on 12th Street result in poor traffic operation at and near the interchange. Proposed project components include roundabouts on 12th Street at the two intersections with the US 101 interchange, modifications to the US 101 on- and off-ramps, the realignment of Newburg Road, and widening the highway overcrossing bridge in order to accommodate non-motorized facilities.

This PSR-PDS was developed in conjunction with the Highway 101, Fortuna Downtown and Riverwalk Area Complete Streets and Connectivity Planning Study (GHD, 2016) which provides a detailed evaluation of interchange alternatives.

Table 1: Project Summary

Project Limits	On 12th Street between 1000 feet south of US 101 Overcrossing and 1000 feet north of US 101 Overcrossing (BR 04-0130, PM 60.49)
Number of Alternatives	5
Current Capital Outlay Support Estimate for PA&ED	North Roundabout: $1M South Roundabout: $850K
Current Capital Outlay Support Estimate for PS&E	North Roundabout: $1.3M South Roundabout: $1.1M
Current Capital Outlay Construction Cost	North Roundabout: $7.8M South Roundabout: $7.8M
Current Capital Outlay Right-of-Way Cost	North Roundabout: $1.1M South Roundabout: $100K
Funding Source	RTIP/STIP
Type of Facility	12th Street: Minor Arterial Newburg Road: Major Collector Riverwalk Drive: Major Collector Dinsmore Drive: Local Road
Number of Structures	1 (US 101 12th Street OC)
Anticipated Environmental Determination or Document	CEQA Mitigated Negative Declaration NEPA CE
Legal Description	On 12th Street in Humboldt County in Fortuna between 1000 feet south of US 101 Overcrossing and 1000 feet north of US 101 Overcrossing
Project Development Category	3

2. BACKGROUND

The project need originates from desires expressed in the City's 2010 General Plan, user-based experience and public request for improvements.

In 2016, a planning study was conducted to identify ways to improve access to the Riverwalk area and improve safety for all users (motorized & non-motorized), improve operations, apply Complete Streets concepts to create an entry statement/gateway, and ready the project for next steps in project development. The study was focused on US 101 interchanges at 12th Street and Kenmar Road and was funded by a 2015-2016 Sustainable Communities Planning Grant awarded to the Humboldt County Association of Governments (HCAOG) and the City of Fortuna as a sub-recipient.

The study process included researching and evaluating existing conditions, including right-of-way boundaries and ownership, maintenance responsibilities, identifying potentially sensitive environmental areas and potential permits, and obtaining traffic counts (motorized and non-motorized). Community

meetings and stakeholder outreach were used to understand concerns with the existing facilities, solicit ideas for improvements, and obtain comments on preliminary design concepts. A deficiency analysis was performed to identify existing facilities which do not conform to current design standards or City goals. Traffic modeling showed that many of the intersections were operating below a level of service (LOS) C (Fortuna's standard) for current conditions, with the LOS expected to significantly decline for full buildout over 20-years with no improvements to the intersections.

Improvements to the 12th Street Interchange was also identified as a priority in the City of Fortuna's draft Local Road Safety Plan (August 27, 2021).

Existing Conditions

The 12th Street Interchange study area includes 12th Street from north of Newburg Road to Riverwalk Drive south of the US 101 interchange. 12th Street crosses US 101 via a curving 32-foot wide over-crossing, with two 14-foot lanes and two two-foot wide raised concrete shoulders. The interchange at 12th Street has a significant distance between the southbound (SB) and northbound (NB) ramps intersections. However, the corridor on the north and south side of US 101 has several closely spaced intersections.

On the north side of US 101, there are a series of complex intersections on with 12th Street with an at-grade railroad crossing near Newburg Road. 12th Street branches off to intersect the US 101 NB off-ramp with Pond Street and intersects the US 101 NB on-ramp at a separate intersection approximately 100 feet to the west. There is a short length of Pond Street that connects these two intersections. Newburg Road intersects 12th Street approximately 500 feet to the north. There are no bike or pedestrian facilities in or around these intersections, with the exception of a sidewalk at the northeast corner of 12th Street and Newburg Road. Utility poles and vegetation sporadically reduce the usable area of the sidewalk to approximately three feet in width. From just north of Newburg Road to Main Street, 12th Street is an approximately 48-foot wide two-lane road with on-street parking and five-foot curb and sidewalks.

Riverwalk Drive is a north-south major collector with intersections at private driveways, Dinsmore Drive, and US 101 SB ramps. The close proximity of Dinsmore, 12th Street, the US 101 SB on-ramp, and Strongs Creek create wayfinding confusion. These intersections could be interpreted as one five-leg intersection. There are no bike or pedestrian facilities in or around the intersections along Riverwalk Drive, with the exception of a stretch of sidewalk on the east side south of Strongs Creek. Riverwalk Drive transitions into 12th Street and crosses over US 101. This overcrossing is approximately 28-feet wide with no shoulders or sidewalks.

Riverwalk Drive between the Kenmar and 12th Street interchange is approximately 36 feet wide, consisting of two lanes with 12-foot striped shoulders and parking on the east side, and a 14-foot lane with no striped shoulder on the west. There are intermittent segments of five-foot wide sidewalks. The existing NB off-ramp and on-ramp meet to form a large asphalt triangle with 12th Street. The SB on-ramp and off-ramp at 12th Street both lack directional clarity.

Caltrans's California Road System (CRS) maps show that 12th Street is classified as a minor arterial which connects to Riverwalk Drive, a major collector. 12th Street connects the Riverwalk Area to the City's south, and to downtown, including Main Street area and schools. The 12th Street arterial also connects Riverwalk Drive to residential areas to the north.

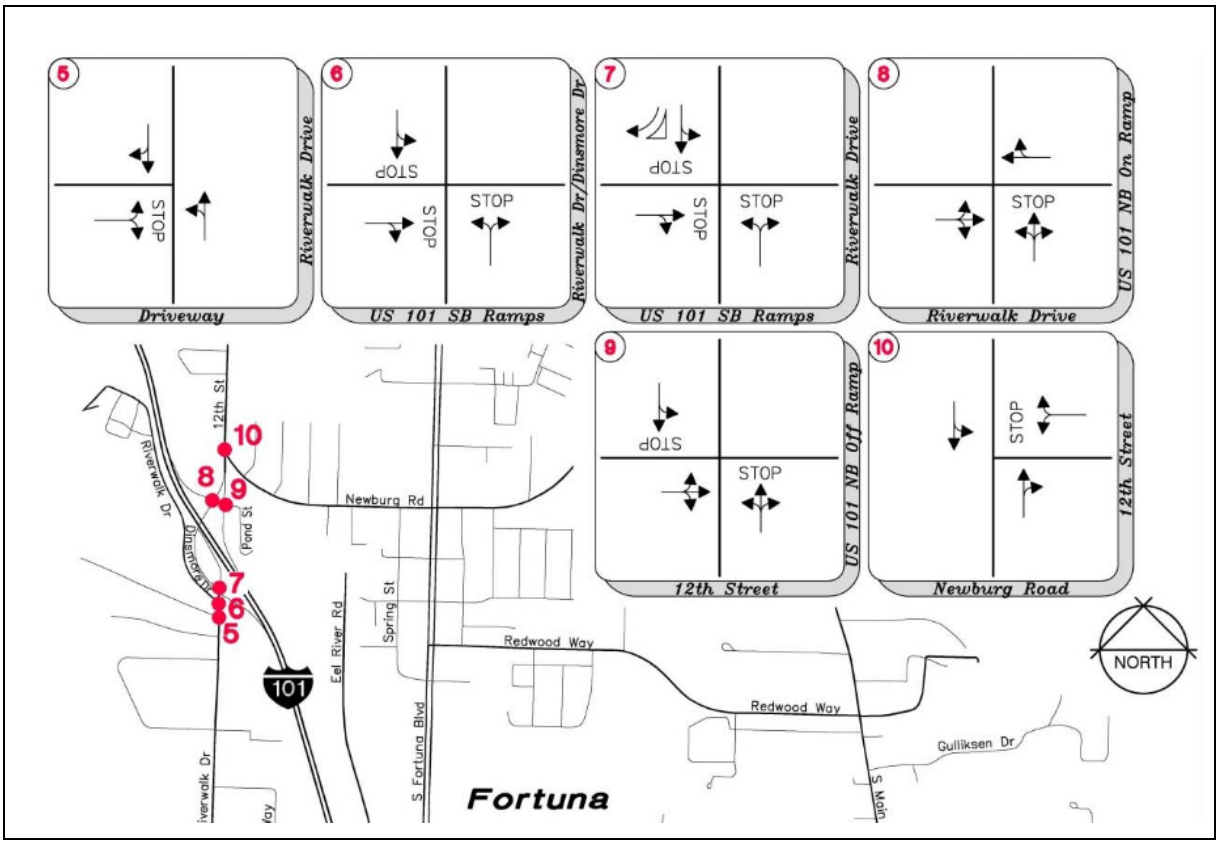


Figure 1: Existing Intersection Geometrics and Control

3. PURPOSE AND NEED

Purpose:

- Simplify and improve navigation and traffic operations on 12th Street between Newburg Road and Riverwalk Drive, including the 12th Street/US 101 interchange;
- Improve operations, reduce congestion, minimize conflicts, and improve safety at the 12th Street intersections;
- Improve the local and regional bicycle and pedestrian facilities through the 12th Street/US 101 interchange area; and
- Create a Gateway into central Fortuna that incorporates landscaping and wayfinding.

Need:

- Existing and future poor Level of Service (LOS) at the 12th Street intersections during peak hours as a result of closely spaced, stop-controlled intersections;
- No existing bicycle or pedestrian facilities resulting in a barrier to bicycle and pedestrian circulation and connectivity; and
- Intersections lack directional legibility, making it difficult for visitors to access the City's existing amenities.

Humboldt County's most significant regional thoroughfare for economic, tourist, recreational and commuting activity is US 101. The City of Fortuna is divided by US 101, which parallels the Eel River, and separates the Eel River and the Riverwalk Area from the majority of the City. Safer transportation alternatives, wayfinding signage, and improved traffic operations will support active living, provide better service to users, and support economic development and land use goals of the City.

4. TRAFFIC ENGINEERING PERFORMANCE ASSESSMENT

The information contained in this section is based on the findings from a preliminary traffic assessment conducted for the intersection at the 12th Street/US 101 interchange. The preliminary assessment include an Access Strategy and Configuration Assessment/Screening in accordance to the Intersection Control Evaluation (ICE) process outlined in Caltrans Traffic Operations Policy Directive 13-02. Refer to **Attachment B** for traffic counts and the LOS analysis. A formal Traffic Operations Analysis and ICE will be developed during the PA&ED phase to further define the scope of work, and more accurately analyze and identify the forecasted operational impacts of the proposed improvements.

Existing Conditions

Traffic Counts: The AM and PM peak hour intersection turn movement traffic counts were collected in March 2016. The AM peak hour is defined as one-hour of peak traffic flow counted between 7:00 am and 9:00 AM. The PM peak hour is defined as one-hour of peak traffic flow counted between 4:00 pm and 6:00 PM. The existing peak hour traffic volumes are presented in **Figure 2**.

Bicycle and Pedestrian Counts: HCAOG obtained bicycle and pedestrian counts for the project area in May 2016. The existing bicycle and pedestrian daily counts are presented in **Table 1**.

Table 1: Average Total Daily Bicycle and Pedestrian Counts

Intersection Name	Average Daily Bicycle Count	Average Daily Pedestrian Count
12th Street/US 101 NB On-Ramp	25	35
Newburg Road/12th Street	27	69

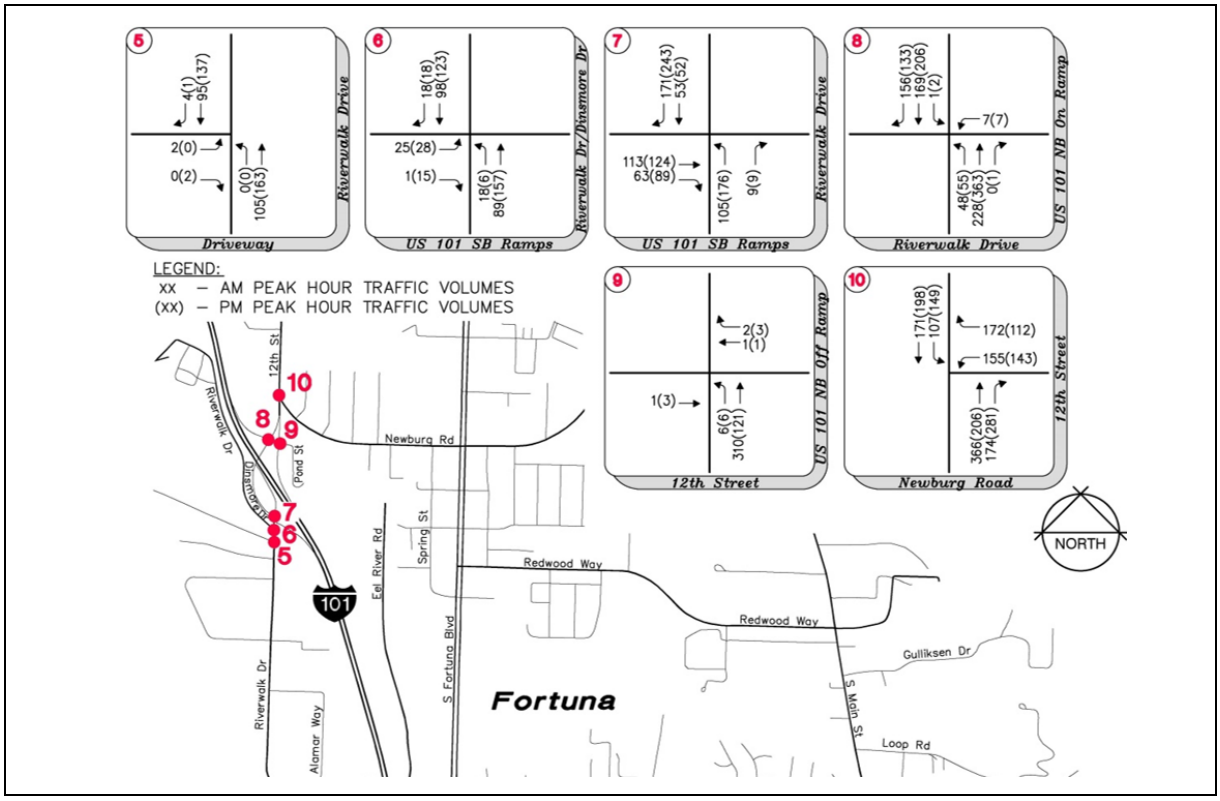


Figure 2: Existing Peak Hour Traffic Counts (2016)

Modeling Tools and Methodologies

Operational deficiencies were estimated using future traffic volumes estimated using the travel demand model (TRAFFIX) prepared for the City's General Plan update. The cumulative condition was established by adding additional trips to the traffic counts obtained in 2016, by assuming full buildout over 20 years in accordance with the City's General Plan (growth rate of 1.6% per year).

The existing, no build, and signal alternatives were analyzed using Synchro/SimTraffic traffic analysis software. Roundabout alternatives were analyzed using Signalized and Unsignalized Intersection Design and Research Aid (SIDRA) analysis software. The LOS for all intersection control types were calculated using the methods documented in the Transportation Research Board Publication Highway Capacity Manual, 2010.

Synchro/SimTraffic was used to provide the queuing analysis. SimTraffic data was seeded into the network for 15 simulated minutes, and then recorded five runs of 60 simulated minutes. The 95th-percentile queue lengths were determined for each lane group based on an average of the five recorded runs. The 95th-percentile queue was defined to be the queue length (in feet) that has a 5-percent probability of being exceeded during the analysis time period. The 95th-percentile queue was utilized to determine the appropriate length of turn pockets.

Summary of Existing Conditions Analysis and Findings

Existing weekday AM and PM peak hour intersection traffic operations were quantified utilizing the exiting traffic volumes and existing intersection lane geometrics and control. **Table 2** provides a summary of the existing vehicular AM and PM peak hour intersection delay and LOS. The 12th Street and Newburg Road intersections was found to currently operate below the LOS C target.

Table 2: Existing Levels of Service

Intersection	Control Type[1,2]	Target LOS	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
Riverwalk Drive and Private Driveway	TWSC	C	10.1	B	9.1	A
Riverwalk Drive and Dinsmore Drive	TWSC	C	10.4	B	10.3	B
Riverwalk Drive and US 101 SB Ramps	AWSC	C	9.3	A	10.2	B
Riverwalk Drive/12th Street and US 101 NB On-Ramp/Pond Street	TWSC	C	16.7	C	16.1	C
US 101 NB Off-Ramp/12th Street and Pond Street	TWSC	C	11.8	B	9.8	A
12th Street and Newburg Road	TWSC	C	106	F	26.6	D

Notes:
1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC and Signal

Summary of No Build Operation Analysis and Findings

Table 3 provides a summary of the No Build intersection LOS for cumulative conditions. The following intersections are expected to operate below LOS C for the No Build alternative for both AM and PM peak hour conditions:

- Riverwalk Drive and US 101 SB Ramps
- Riverwalk Drive/12th Street and US 101 NB On-Ramp/Pond Street
- 12th Street and Newburg Road

Table 3: No Build Levels of Service

Intersection	Control Type[1,2]	Target LOS	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
Riverwalk Drive and Private Driveway	TWSC	C	13.3	B	10.4	B
Riverwalk Drive and Dinsmore Drive	TWSC	C	14.2	B	18.5	C
Riverwalk Drive and US 101 SB Ramps	AWSC	C	19.0	C	65.1	F
Riverwalk Drive/12th Street and US 101 NB On-Ramp/Pond Street	TWSC	C	35.7	E	OVR	F
US 101 NB Off-Ramp/12th Street and Pond Street	TWSC	C	12.0	B	10.7	B
12th Street and Newburg Road	TWSC	C	OVR	F	95.3	F

Notes:
1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC and Signal

Summary of Traffic Signal Operation Analysis and Findings

Table 4 provides a summary of the intersection LOS for the signal intersections. All intersections are projected to operate at or above the threshold LOS for the signal alternative. **Figure 3** presents the cumulative peak hour volumes at the signalized intersections.

Table 4: Signalized Intersection Levels of Service

Intersection	Control Type[1]	Target LOS	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
Riverwalk Drive and Private Driveway	TWSC	C	15.5	C	14.9	B
Riverwalk Drive and Dinsmore Drive	Signal	C	NA	NA	NA	NA
Riverwalk Drive and US 101 SB Ramps	Signal	C	7.7	A	32.6	C
Riverwalk Drive/12th Street and US 101 NB On-Ramp/Pond Street	Signal	C	19.8	B	21.0	C
US 101 NB Off-Ramp/12th Street and Pond Street	Intersection Eliminated					
12th Street and Newburg Road	Signal	C	17.7	B	26.0	C

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC and Signal
3. NA=information not available

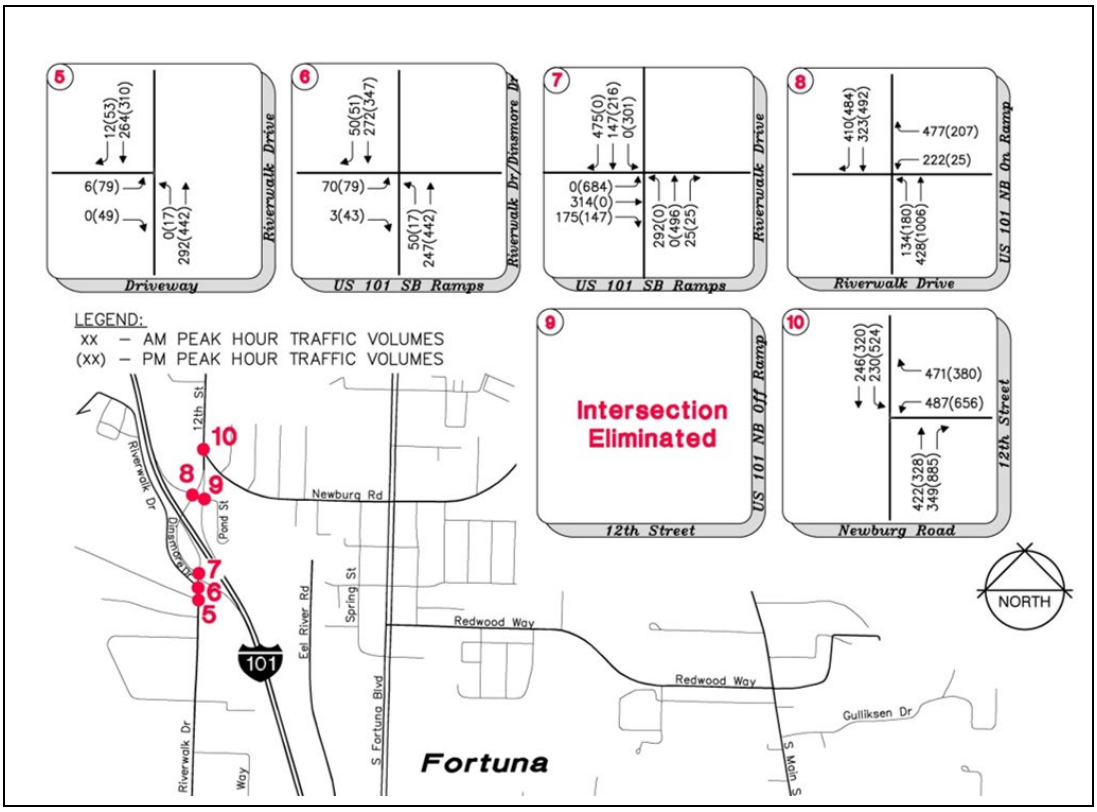


Figure 3: Cumulative Peak Volumes - Signalized Intersections

Summary of Roundabout Operation Analysis and Findings

Table 5 provides a summary of the intersection LOS for the roundabout intersections. All intersections are projected to operate at or above the threshold LOS for the roundabout alternatives. **Figure 4** presents the cumulative peak hour volumes at the roundabout intersections.

Table 5: Roundabout Intersections Levels of Service

Intersection	Control Type[1,2]	Target LOS	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
Riverwalk Drive and Private Driveway	RNDBT	C	4.3	A	4.3	A
Riverwalk Drive and US 101 SB Ramps	RNDBT	C	6.6	A	10.7	B
12th Street and US 101 NB Ramps/Newburg Road	RNDBT	C	8.7	A	19.9	B

Notes:
1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC and Signal

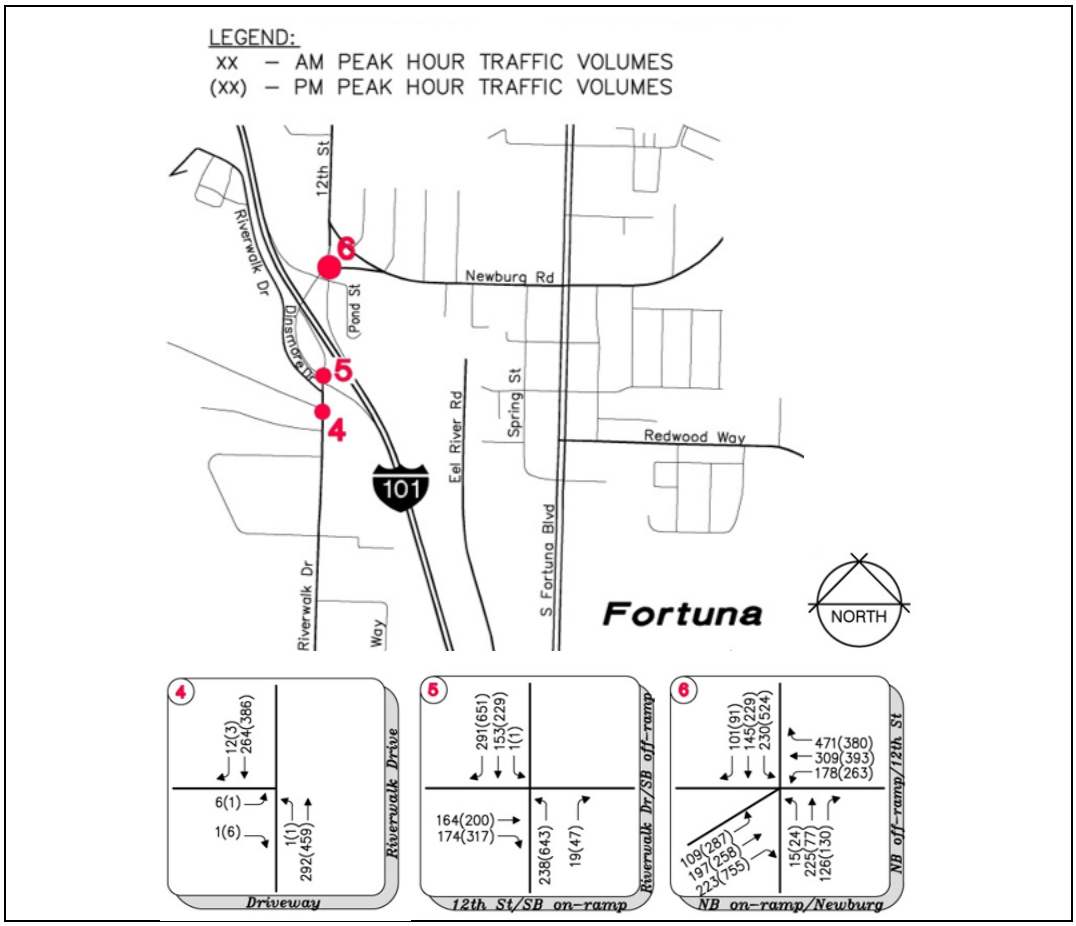


Figure 4: Cumulative Peak Volumes – Roundabout Intersections

Scope of Future Traffic Engineering Studies, Activities, & Tasks
The following discussion highlights the scope of traffic engineering studies, activities, and tasks to be completed during the PA&ED phase.

Project Study Limits: The existing interchange study area includes the following intersections:

- 12th Street Road and Newburg Road
- 12th Street and Pond Street
- 12th Street and US 101 Northbound Ramps
- Riverwalk Drive/12th Street and US 101 Southbound Ramps
- Riverwalk Drive/Dinsmore Drive

Traffic Data Collection: The preliminary traffic assessment was prepared using existing AM and PM peak hour intersection traffic counts collected in March 2016 and bicycle/pedestrian counts collected in May 2016 for a preliminary study. Future traffic engineering studies may obtain new vehicle, pedestrian and bicycle traffic counts or may rely on the data already collected. Future traffic data obtained may include origin-destination surveys to gauge the movements and to observe driver behavior upon entry to the intersection.

Traffic Forecasting: In the PA&ED phase, the Project Development Team (PDT) may update the future design year forecasting of traffic volumes and movements for the 12th Street intersections within the project area based on new data or assumptions, if available.

Traffic Operations Analysis Report (TOAR) and Intersection Control Evaluation (ICE): A TOAR and ICE Engineering Analysis (Step Two) will be prepared which may include intersection traffic control warrant studies, a capacity, operations and safety analysis, design performance checks, an economic analysis, and consultations with the District ICE Coordinator.

Traffic Management Plan: The traffic impacts during construction will be evaluated and mitigation strategy identified. The plan will include an analysis of the number of working days, staging, and detours.

Pedestrian and Bicycles Improvement Analysis: During the PA&ED phase, additional analysis will be prepared to ensure the inclusion of context sensitive bicycle and pedestrian improvements, such as dedicated bike lanes, shared-use paths and crosswalks, some of which are included in the conceptual layouts of the alternatives. Preliminary designs will be analyzed to ensure adequate facilities are included to support bicyclists and pedestrians.

Traffic Index for Pavement Design: The traffic index (TI) required for the pavement design for the new pavement at the roundabout alternatives will be completed during the PA&ED Phase.

5. DEFICIENCIES

US 101 bisects the community cutting off the Riverwalk area from other areas of the City. The existing 12th Street interchange creates a significant barrier to bicycle and pedestrian movement, does not conform to current design standards, and will not accommodate future projected traffic volumes or the anticipated needs of roadway users. The interchanges also lack directional legibility, making it difficult for visitors to access the City's existing amenities.

Existing and Forecasted (No Build) Operational Deficiencies

Traffic modeling conducted in 2016 showed that 1 of the 6 intersections analyzed are currently operating below a LOS C (Fortuna's standard). For full buildout over 20-years with no improvements to the intersections (No Build), 3 of the 6 intersections are expected to operate below a LOS C. Refer to **Table 6** for a summary of LOS for existing and no build future conditions.

Table 6: Existing Levels of Service

Intersection	Control Type[1,2]	Target LOS	Existing LOS		Future No Build LOS	
			AM Peak	PM Peak	AM Peak	PM Peak
Riverwalk Drive and Private Driveway	TWSC	C	B	A	B	B
Riverwalk Drive and Dinsmore Drive	TWSC	C	B	B	B	C
Riverwalk Drive and US 101 SB Ramps	AWSC	C	A	B	C	F
Riverwalk Drive/12th Street and US 101 NB On-Ramp/Pond Street	TWSC	C	C	C	E	F
US 101 NB Off-Ramp/12th Street and Pond Street	TWSC	C	B	A	B	B
12th Street and Newburg Road	TWSC	C	F	D	F	F

Notes:
1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC and Signal

Geometric Design Deficiencies

The following summarizes the non-standard features and geometric deficiencies identified for existing conditions in the project area:

<u>12th Street:</u>

- Overcrossing Width per HDM 308.1
- Right Shoulder Width per HDM 302.1 and 308.1
- Curve Radii per HDM Index 203.2
- Decision Sight Distance per HDM Index 201.7
- Intersection Spacing per HDM 504.3
- Vertical Clearance per HDM 309.2

<u>Newburg Road:</u>

- Angle of Intersection per HDM 403.3
- Horizontal Clearance per HDM 309.1

<u>US 101 NB On- and Off-Ramps:</u>

- Curve Radii per HDM Index 203.2
- Decision Sight Distance per HDM Index 201.7
- Intersection Spacing per HDM 504.3

<u>US 101 SB On- and Off-Ramps:</u>

- Intersection Spacing per HDM 504.3

Refer to **Attachment C** for a more comprehensive review of existing conditions and project design standards.

Pedestrian and Bicycle Deficiencies

The existing 12th Street interchange lacks bicycle and pedestrian infrastructure and there are no ADA-compliant pedestrian facilities.

6. CORRIDOR AND SYSTEM COORDINATION

The following discussion highlights the state, regional and local planning considerations for the proposed project improvements.

State Planning

Complete Streets

Caltrans Deputy Directive 64-Revision (DD-64R) provides for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities on the State Highway System. The Department views all transportation improvements (new and retrofit) as opportunities to improve safety, access, and mobility for all travelers and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.

Regional Planning

The 12th Street US101 Interchange Improvement Project was identified in HCAOG's 2017 Regional Transportation Plan (RTP) Update as a high-priority project.

Local Planning

General Plan

The City of Fortuna General Plan 2030 (General Plan) formalizes a long-term vision for the City's physical development. The 12th Street Interchange Improvement Project fulfils or meets many policies set forth in the General Plan, including specific direction to improve interchanges within the study area. These policies are detailed below.

Roadways and Highways

Policy TC-1.1 Reducing Mode Conflicts. The City shall seek to minimize conflicts between pedestrians, automobiles, and bicycles.

Policy TC-1.2 New Roadway Improvements. The City shall design and phase roadway improvements so that a level of service (LOS) C or better is maintained on all City streets, except that LOS D or better shall be maintained on Main Street.

Policy TC-1.3 Balanced Transportation System. The City shall strive to meet the level of service standard through a balanced transportation system that provides alternatives to the automobile and by promoting pedestrian, bicycle, and transit connections between employment areas and major residential and commercial areas.

Policy TC-1.4 Improved LOS. The City shall identify economic, design, and planning solutions to improve levels of service currently below LOS C. Where physical mitigation is infeasible, the City shall consider developing programs that enhance alternative access or otherwise reduce automobile travel demand.

Policy TC-1.15 Interchange Improvements. The City, through HCAOG in cooperation with Caltrans, shall allocate the costs for funding interchange improvements to areas of benefit and assign proportionate share costs to individual projects.

Bicycle and Trail Facilities

Policy TC-5.2 Bicycle System. The City shall develop and maintain a safe, convenient, and effective bicycle system that encourages increased bicycle use.

Policy TC-5.5 Rails-to-Trails. The City shall explore the concept of converting any abandoned railroad rights-of-way into multi-use bike and pedestrian paths for local and regional use per Sections 2540 through 2549 of the Streets and Highways Code.

The General Plan proposes a Class II bike lanes on 12th Street through the interchange, as well as Class II bike lanes on Newburg Road and Riverwalk Drive (refer to **Figure 5**).

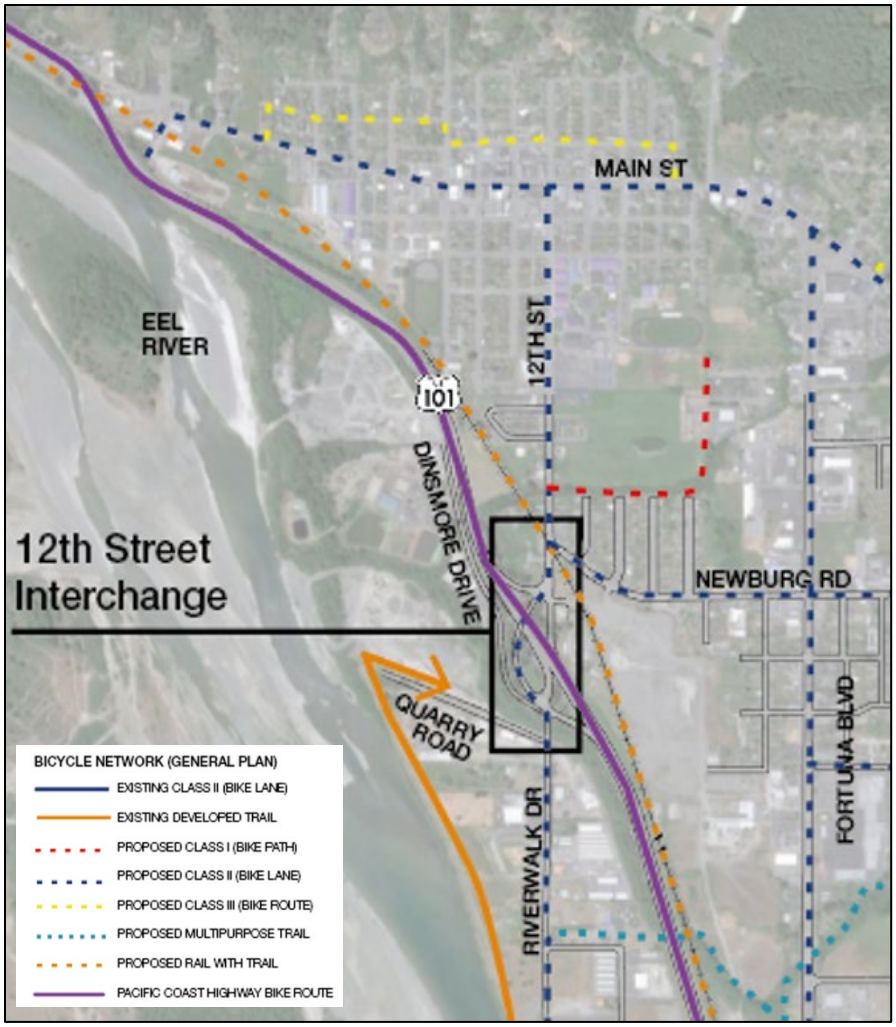


Figure 5: Bicycle Network in Fortuna General Plan

Pedestrian Facilities

Policy TC-4.2 New Developments. The City shall continue to require new development to finance and install sidewalks and pedestrian pathways connecting them to existing sidewalks or widening the right-of-way fronting the development to accommodate new sidewalks.

Policy TC-4.3 Specific Plans. The City shall encourage specific development plans to include design continuity of pedestrian access that enables residents to walk from their homes to places of work, recreation, and shopping.

Policy TC-4.7 Pedestrian Trails Interconnection. Where feasible, the City shall loop and interconnect pedestrian trails.

7. ALTERNATIVES

Intersection Alternatives

Unless noted otherwise, the alternatives identified below address the purpose and need of the project. Although the signal alternative does meet the projects' purpose and need, its high estimated cost makes it infeasible for the City to implement, and therefore it is rejected from further consideration during the PA&ED phase. Only the roundabout alternatives are recommended to be carried forward to the PA&ED Phase of the project.

Based on the preliminary conceptual layouts, none of the build alternatives are anticipated to contain non-standard geometries with respect to both Caltrans Design Standards and City of Fortuna Design Standards. Further refinements to the proposed alternatives will be conducted during the PA&ED phase of the project.

Refer to **Attachment D** for conceptual design drawings, **Attachment E** for truck turning analysis, and **Attachment F** for roundabout fast path exhibits.

<u>The "No Build" Alternative</u>

This is the "No Build" condition, where the study intersections would remain unaltered with respect to intersection geometrics and stop control. This alternative does not meet the purpose and need of the proposed project.

<u>Traffic Signal Alternative</u>

This signalized intersection concept corridor would require the removal of the existing structure over US 101, the construction of a new overcrossing, realignment of Dinsmore Drive with a new bridge over Strongs Creek, and widening from the intersection of Riverwalk Drive and US 101 SB Ramps to the intersection of 12th Street and Newburg Road. The current two-lane roadway would require expansion to four lanes throughout the corridor to accommodate the projected growth. The existing two-lane structure over Strongs Creek would need to be replaced. The freeway ramps to US 101 would need to be reconstructed and the existing Rohner Creek Bridge on US 101 widened.

After analyzing the forecasted traffic volumes with Synchro, the lane geometry was determined for each intersection as shown in the conceptual design. Left-turn and right-turn pocket lengths were based on the 95th percentile queue length.

The signal alternative accommodates pedestrians and bicycles with standard Class II bike lanes, sidewalks, and intersection crossings (crosswalks) along 12th Street, US 101 ramps, and Newburg Road. Each crossing is 10' wide and extends across the entire intersection length. Due to the number of lanes at each approach, long crosswalks will increase pedestrian crossing times and will affect the traffic signal timing to ensure that pedestrians can safely cross the roadway.

<u>North Roundabout Alternative</u>

A five-leg roundabout at the 12th Street/US 101 NB Ramps intersection that incorporates a realigned Newburg Road as the fifth leg. The existing Newburg Road connection to 12th Street would be closed by creating a cul-de-sac. The NB ramps would need to be reconstructed to current Caltrans standards. According to the City's General Plan, 12th Street and Newburg Road are to have Class II bike lanes, and there is a planned "rail with trail" along the existing railroad corridor.

After analyzing the forecasted traffic volumes with the Sidra software, it was determined that the five-way intersection would operate at an acceptable level of service as a multi-lane roundabout. Newburg Road was realigned beginning near the intersection with Sunnybrook Drive. The concept shows connections to the planned rail with trail and the bike lanes on 12th Street and Newburg Road. The Class I Bike Path will provide bike and pedestrian connectivity across US 101. Since the existing

overcrossing is not wide enough to accommodate a bike path, the bridge structure would require widening or a separate pedestrian bridge would be required.

South Roundabout Alternative 1

South Roundabout Alternative 1 uses the “dog bone” roundabout concept to route traffic through two closely spaced intersections. Southbound US 101 on- and off-ramps, NB Dinsmore Drive, and 12th Street will connect to the northern roundabout. 12th Street, Riverwalk Drive, and a private driveway would meet in the southern roundabout which would be located south of the Strong Creek bridge and require replacement of the bridge.

SB Dinsmore Drive would connect to Riverwalk Drive between the two roundabouts and be stop controlled. Left hand turns to and from Dinsmore Drive would be prohibited, so traffic would need to navigate both roundabouts for some movements (e.g. northbound Riverwalk Drive to Dinsmore Drive, or Dinsmore Drive to 12th Street).

The concept includes bike lanes and sidewalks on Riverwalk Drive south of the roundabout with connections to 10' wide shared use paths through the roundabouts, which would connect over the 12th Street/US 101 bridge.

After analyzing the forecasted traffic volumes with Sidra, it was determined that the roundabout south of Strongs Creek would operate at an acceptable level of service as a single lane roundabout. However, the SB off-ramp and Riverwalk Drive approaches to the northern intersection need dedicated right-turn lanes to operate at an acceptable levels of service.

Roundabout Alternative – 12th Street South Alternative 2 (a, b & c)

This alternative uses a single roundabout at the southbound ramp intersection and a realigned Dinsmore Drive. The roundabout is placed on the north side of Strongs Creek and directs traffic from 12th Street, Riverwalk Drive, and the southbound US 101 on and offramps.

Three different Dinsmore Drive realignments options were developed:

- **Alternative 2a** realigns Dinsmore Drive across Strongs Creek through private property, collects adjacent driveways, and intersects Riverwalk Drive to the south with a minor street stop controlled intersection. The private driveway south of Strongs Creek is also directed onto Dinsmore Drive.
- **Alternative 2b** avoids the new Strongs Creek crossing with a less significant realignment of Dinsmore Drive, bringing it into 12th Street north of the roundabout. This reduces impacts to Strongs Creek and private property.
- **Alternative 2c** proposes a similar roundabout solution as Alternative 2b, but realigns Dinsmore Drive to connect to 12th Street closer to the US 101 bridge.

All of the Alternative 2 concepts include bike lanes on Riverwalk Drive with connections to 10' wide shared use paths through the roundabouts, which would connect over the 12th Street/US 101 bridge.

Structure Alternatives

A preliminary structural analysis was prepared to determine preliminary scope, feasibility, rough cost range, and a list of potential project risks required for proposed structural improvements.

The 12th Street Overcrossing Bridge (Br. No. 04-0130) spans over Route US 101 at the interchange. The bridge is on curved alignment with supports skewed and parallel to US 101. The structure is a 34-foot-wide, 4-span, 197-foot-long, concrete tee-beam structure, with a span arrangement of 44, 65, 53, and 35 feet. The structure was constructed in 1962. End supports are short seat abutments on concrete pile foundations, and intermediate supports are 2-column bents on concrete pile foundations. US 101 currently passes under the spans 2 and 3 with a 15-foot 5-inch vertical clearance over northbound lanes and 15-foot 6-inch vertical clearance over southbound lanes. The 34-foot-width currently carries two 12-foot travel lanes, two 2-foot shoulders, and two 3-foot-wide Type 2 Barrier railings. The clear width between barrier railings is 28 feet.

The Overcrossing is State-owned, on the National Highway System, and rated adequate for permit loads. The structure is in good condition with a health index of 100, but the sufficiency rating (SR) is 80.1 because of the bridge's narrow width and ADT. When originally built, the ADT was much lower and the 28 feet width was adequate.

To accommodate the proposed lane configurations and bicycle and pedestrian connectivity on 12th Street at the US 101 interchange, the following structural alternatives were considered:

12th Street Overcrossing Bridge – Replace Structure

The signal alternative requires the replacement of the existing bridge structure over US 101. Based on the conditions at the site and the interchange geometrics, a new 12th Street Overcrossing will be approximately 200 feet in length. The most economical structure type will likely be a 4-span, precast, prestressed, concrete girder structure with a 4.3-foot structure depth. Approximate span configuration will be 58 feet, 82 feet, 82 feet, and 58 feet. End supports will be short-seat concrete abutments and interior supports will be 5-column bents. All supports will be pile supported. Clear roadway width will be 58 feet between 8-foot-wide Type 732SW barriers. Chain link railing will be mounted on the barrier walls above the interior spans and tubular handrailing will be mounted to the barrier wall above the end spans. Falsework is not necessary to erect this type of girder structure. Girders will be set in place from US 101 using traffic closures.

12th Street Overcrossing Bridge – Widen Structure or New Standalone Bicycle/Pedestrian Overcrossing

To provide bicycle and pedestrian connectivity for the 12th Street Roundabout Concepts, either the existing US 101 bridge structure would need to be widened, or a new standalone bicycle/pedestrian overcrossing will need to be provided. The estimated cost of both options are similar, therefore further analysis is needed as the project develops to determine which option would be most preferred.

Widen US 101 Overcrossing Structure

The proposed bridge widening would consist of constructing a 197-foot-long, 9.7-foot-wide, 4-span, precast, prestressed concrete girder addition along the north side of the existing Overcrossing. The widening would provide a clear width of 10'-0" between barriers and match the existing bridge structure depth, structure type, profile, and pile foundation supports. Both the east and west approaches to the bridge will be on widened fill embankment closely matching existing conditions. Vertical clearance from the soffit of the widened bridge to the surface of US 101 below would not be affected.

The existing barrier and deck slab along the north side of the overcrossing would need to be removed and replaced. Traffic control and temporary barriers along the 12th Street roadway would be required to construct the widening. Additionally, traffic control systems would be required on US 101 to construct pile foundations and widen the existing column bents. Falsework would not be necessary to erect this type of girder structure. Girders will be set in place from US 101 using traffic closures.

Overall width of the widened structure would be 43-feet 8-inches. Clear vehicular roadway width would be 28 feet between the existing Type 3 concrete barrier along the south edge of the existing bridge and a new Type ST-30 bridge rail located to separate the 10-foot-wide pedestrian/bicycle facility from the vehicular traffic. MASH bridge barrier with chain link railing mounted on the barrier wall would bound the pedestrian/bicycle facility along the north edge of the widened structure.

New Standalone Bicycle/Pedestrian US 101 Overcrossing

A new pedestrian/bicycle overcrossing would consist of constructing a 203-foot-long, 12-foot-wide, 4-span, precast, prestressed concrete girder structure along the north side and close to the existing overcrossing. The new structure would provide a clear width of 10'-0" between barriers and match the existing bridge structure depth, structure type, profile, and pile foundation supports. Both the east and west approaches to the bridge would be on widened fill embankment closely matching existing conditions. Vertical clearance from the soffit of the new bridge to the surface of US 101 below should maintain approximately 16 feet.

MASH bridge barriers with chain link railing mounted on the barrier wall would bound the pedestrian/bicycle facility along both edges of the new structure.

Strongs Creek Bridge on Riverwalk Drive – Replace Structure

The south roundabout alternatives would require the existing Strongs Creek bridge be replaced with a new structure. The existing Strongs Creek Bridge on Riverwalk Drive (Br. No. 04C-0085) is a County-owned, 99-foot-long, continuous 3-span, concrete flat slab structure constructed in 1962 with a clear roadway width of 28 feet. The roadway is classified as a major collector and current ADT is approximately 2300 vehicles per day. Two steel pipelines are carried on the bridge, one on each edge. The structure is in fair condition with a health index of 100, but the SR is 72.4 because of the bridge's narrow width and ADT. When originally built, the ADT was much lower and the 28 feet width was adequate.

Based on the conditions at the site and the proposed roadway geometrics, the bridge width required at Strongs Creek on Riverwalk Drive will need to vary from about 58 feet at the west abutment (west creek bank) to about 76 feet at the east abutment (east creek bank). The existing 99-foot-long bridge length is adequate. Because the proposed bridge width is more than twice the existing 28 feet, it would be most economical to replace the entire structure rather than to widen it.

The most economical replacement structure type would likely be a continuous 3-span, concrete flat slab structure with a 1.5 foot structure depth. Approximate span configuration would be 33.5 feet, 32 feet, and 33.5 feet. End supports will be concrete diaphragm abutments supported on concrete piles and interior supports would be concrete pile bents. Bridge width would varry (58 feet at the west abutment to 76 feet at the east abutment) and the bridge would include concrete barriers, a 10-foot-wide pedestrian/bicycle facility, and 12-foot eastbound and westbound travel lanes, shoulders, and edge and road medians of varying widths. Tubular hand railing would be mounted to the barrier walls. Falsework is necessary to erect this type of slab structure. The pipeline utilities would have to be relocated and supported on the new bridge or buried in the stream bottom.

Strongs Creek Bridge (New Bridge) on Dinsmore Drive

The Signal Alternative and the Roundabout Alternative 2a both require a new bridge over Strongs Creek to accommodate the realigned Dinsmore Drive. Based on the conditions at the site and the proposed roadway geometrics, the new Strongs Creek Bridge on Dinsmore Drive will be approximately 157 feet in length and 38-feet-wide. The most economical structure type will likely be a continuous 5-span, concrete flat slab structure with a 1.5 foot structure depth. Approximate span configuration will be 27.5 feet, 34 feet, 34 feet, 34 feet, and 27.5 feet. End supports will be concrete diaphragm abutments supported on concrete piles and interior supports will be concrete pile bents. Supports will be parallel to the channel and skewed approximately 60 degrees from normal to the roadway. Clear roadway width will be 24 feet between concrete barriers. Tubular handrailing will be mounted to the barrier walls. Falsework is necessary to erect this type of slab structure.

Rohner Creek Bridge on US 101

The Signal Alternative requires the existing Rohner Creek bridge on US101 be widened to accommodate the extended NB onramp. The existing Rohner Creek Bridge on U.S. 101 (Br. No. 04-0108) is a pile supported, 87-foot-long, 74-feet-wide, continuous 3-span, concrete flat slab structure constructed in 1962. The structure is in good condition with a SR of 95.9.

Based on the conditions at the site and the proposed roadway geometrics, the existing bridge would need to be widened on its east edge approximately 16 feet to accommodate the proposed 12th Street/U.S. 101 IC northbound on-ramp widening. The widening would match the existing bridge type and will be a continuous 3-span, concrete flat slab structure with a 1.33 foot structure depth. Approximate span configuration will be 29.5 feet, 28 feet, and 29.5 feet. End supports would be concrete diaphragm abutments supported on concrete piles and interior supports would be concrete pile bents. Supports would be parallel to the channel and skewed approximately 20 degrees from normal to the roadway. Concrete barrier would be mounted along the new right edge of deck. Falsework is necessary to erect this type of slab structure.

Pedestrian and Bike Facilities and Connectivity

Signal Alternative

The signal alternative accommodates pedestrians and bicycles with standard Class II bike lanes, sidewalks, and intersection crossings along 12th Street, US 101 ramps, and Newburg Road. Each crossing is 10' wide and extends across the entire intersection length. Due to the number of lanes at each approach, long crosswalks will increase pedestrian crossing times and will affect the traffic signal timing to ensure that pedestrians can safely cross the roadway.

Roundabout Alternatives

Pedestrian crossings are provided on all legs of all roundabout alternatives. Crossings are 10 feet in width and set back a minimum of 20 feet from the roundabout's circulating roadway. Where crosswalks intersect splitter islands or medians, a 6-foot long minimum paved pathway is provided between the travel lanes for safety and refuge when waiting to cross. Shared-use pathways, 10 feet in width and located outside of the roundabout, are setback a minimum of 5 feet from the circulatory road with a landscape strip to increase accessibility and discourage pedestrians from crossing into the central traveled way.

Bicycles are accommodated by navigating through the roundabouts in two ways. Cyclists may choose to take the travel lane and travel through the roundabout as a vehicle or may choose to take the separated bike ramp / shared use path and travel around the roundabout as a pedestrian.

Gateway and Landscaping

Wayfinding, gateway aesthetics and plantings can be featured in each alternative in undeveloped open space along or within each intersection. Roundabouts, with their central landscape areas, lend themselves to focal points with artistic gateway treatments. Refer to **Attachment H** for preliminary landscape and gateway concepts.

Cost Estimates

Capital, support, and total estimated costs for each alternative are summarized in **Table 7**. The total capital costs include traffic control, mobilization, right-of-way, utility relocation, and contingencies. The total support costs include costs for environmental clearance, plans, specifications, and estimates (PS&E), right-of-way engineering and acquisition, and construction support and management. Refer to **Attachment I** for detailed costs estimates for each alternative.

Table 7: Cost Estimate Summary

Alternative	Total Capital Cost	Total Support Cost	Total Estimated Cost (Rounded)
Signal	$31.1M	$12.0M	$43.1M
Roundabout North	$9.1M	$3.5M	$12.6M
Roundabout South 1	$8.1M	$3.3M	$11.4M
Roundabout South 2a	$10.7M	$4.3M	$15.0M
Roundabout South 2b	$8.4M	$3.4M	$11.8M
Roundabout South 2c	$7.7M	$3.0M	$10.7M

Alternatives Comparison

A preliminary alternatives analysis was conducted to identify a preferred alternative. The analysis considered the following: cost, truck accommodation, safety, local access, complete streets, environmental impacts, right-of-way impacts, public input, and the purpose and need.

As previously stated, the signal alternative does meet the projects purpose and need, however, its high estimated cost makes it infeasible for the City to implement, and therefore it is rejected from further consideration.

The roundabout alternatives were generally considered comparable in terms of meeting the performance criteria, however the roundabout North Alternative and South Alternative 2c were identified as the preferred alternative as they best met the performance criteria and was preferred by the public and stakeholders.

No design exceptions have been identified as at this point. However, as the project is further developed, the need for exceptions to design standards should be analyzed.

8. RIGHT-OF-WAY

Initial research was conducted to determine road widths, rights-of-way, adjacent parcel ownerships and maintenance responsibilities, as these factors can affect feasible design solutions or preferred alternatives. Refer to **Attachment J** for additional information on right-of-way and ownership. Right-of-way data sheets will be prepared during the PA&ED phase of the project.

Ownership

A railroad corridor owned by the North Coast Railroad Authority (NCRA) cuts through the project site. While Caltrans owns 12th Street from the interchange to just south of the railroad, Humboldt County has a pavement maintenance agreement from 50 feet south of the railroad to Dinsmore Drive. Dinsmore Drive at the north end of Riverwalk Drive is indicated as being in Humboldt County ownership. However, there is also documentation describing annexation of Strongs Creek Road (Dinsmore Drive) by the City. The ownership of Strongs Creek bridge and exact limits of this annexation will need to be determined in the future as the project develops.

The rights-of-way through the 12th Street interchange are largely publicly held by the City, County, or State. Dinsmore Drive provides access to the public Fortuna Dog Park and industrial land uses such as the Fortuna Wastewater Treatment Plant. The northeast quadrant of the interchange is designated for industrial land use and is owned and occupied by Sequoia Gas Company. Clendenen's Cider works, an agricultural land use, is located on the northwest quadrant.

Right-of-Way Widths

North of the railroad tracks, 12th Street right-of-way is 60 feet wide. South of the railroad tracks, the street is indicated to be 75 feet wide. Newburg Road varies in width from 40 to 50 feet.

Table 8 summarizes the approximate anticipated right-of-way impacts for each project alternative.

In addition to permanent acquisitions, temporary permissions/easements and/or encroachment permits will need to be obtained during the Right-of-Way phase of the project.

Table 8: Right-of-way Impacts

Alternative	APN #	Right-of-Way Acquisition	
		SQFT	Acre
Signal Concept		**215,894**	**4.96**
	200-353-035	26,670	0.61
	200-353-044	25,114	0.58
	200-353-005	2,786	0.06
	200-381-001	18,310	0.42
	200-381-002	2,165	0.05
	200-381-003	15,607	0.36
	200-381-004	31,722	0.73
	200-381-005	34,852	0.80
	200-381-006	28,621	0.66
	200-381-007	7,855	0.18
	200-381-009	22,943	0.53
Roundabout Concept - Option 1		**5,078**	**0.12**
	200-353-021	2,467	0.06
	200-353-035	2,610	0.06
Roundabout Concept – Option 2a		**51,030**	**1.17**
	200-353-035	25,916	0.59
	200-353-044	25,114	0.58
Roundabout Concept - Option 2b		**N/A**	**N/A**
		N/A	N/A
Roundabout Concept - Option 2c		**N/A**	**N/A**
		N/A	N/A
Roundabout Concept		**51,687**	**1.19**
	200-381-001	18,311	0.42
	200-381-002	11,852	0.27
	200-381-009	199	0.004
	201-331-005	21,325	0.49

Utilities

Existing underground and above ground utilities in the vicinity of the 12th Street interchange will need to be modified or relocated to accommodate the proposed improvements. Utility ownership is presented in **Table 9**.

Table 9: Utilities in Vicinity of 12th Street Interchange

Utility	Owner
Storm Drain	Caltrans/City of Fortuna
Cable Television	Suddenlink
Telephone	AT&T
Electrical	PG&E
Water	City of Fortuna
Railroad Signal	NCRA

Railroad
The railroad corridor roughly parallels the east side of US 101 and crosses through the project area at the intersection with Newburg Road. The NCRA is the public agency that owns right-of-way and the Northwestern Pacific Railroad (NWPRR) is the contract operator of the railroad. Together they have the responsibility for the safety, operation and maintenance of the railroad. Although there is currently no active rail service, any modifications to railroad crossings at roadway intersections require the approval of the California Public Utilities Commission (CPUC) under General Order 88-B.

California Senate Bill (SB) 1029 mandates that the NCRA property and right-of-way be railbanked in order to create the Great Redwood Trail. According to discussions with CPUC staff, if the rail corridor is railbanked and the rails and ties removed, then CPUC no longer have jurisdiction over the crossing.

As the project moves forward to project development, close coordination with the NCRA (or its successor agency) and the CPUC will be required to ensure the interchange improvements are consistent with rail corridor operations.

9. STAKEHOLDER INVOLVEMENT

The project concepts were developed and vetted through a public process that included regular meetings of a Technical Advisory Group (TAG), the general public, and specific project stakeholders. This section discusses the results of the public and stakeholder engagement during the design development process.

Technical Advisory Group (TAG)

A TAG was convened in January 2016 to support initial project planning and the development of project alternatives. The TAG met on five different occasions provide technical information relevant to the project, to coordinate with local agencies, and to act as the “eyes and ears” of the community to guide the project. Group members included representatives from HCAOG, the City of Fortuna, the Humboldt County Department Public Work, and Caltrans District 1.

Community Meetings

Two workshops were held in March and July of 2016 to obtain public input into the project assessment and design. Outreach for the project was conducted with flyers, emails, radio public service announcements on six or more stations, social media posts, and targeted in-person outreach to colleagues and residents. In order to encourage participation, each workshop offered food, a child-friendly space with activities, and Spanish-English interpretation. Both workshops resulted in specific and helpful feedback from stakeholders that was utilized during the development and evaluation of design alternatives.

First Community Meeting (March 2016)

The goals of this first workshop was to understand how residents and visitors currently navigate 12th Street interchange area, to identify specific concerns related to safety, operations, and connectivity, and to discuss potential design treatments that could be implements

The attendees identified many challenges for pedestrians and bicyclists, including narrow or virtually non-existent shoulders, and challenging road crossings. Meeting participants showed a preference for design alternatives involving roundabouts. Signalized intersection alternative comments were mostly mildly negative. Roundabout options with fewer roundabouts, and fewer bicycle/pedestrian crossings were preferred.

Second Community Meeting (July 2016)

The second workshop, conducted on July 20, 2016, was primarily focused on presenting design alternatives, answering questions and soliciting community feedback. There was a clear preference for the North Roundabout Alternative and South Roundabout Alternative 2 for Kenmar Road.

Public Presentations

The results of the 2016 Highway 101, Fortuna Downtown and Riverwalk Area Complete Streets and Connectivity Study was presented at the following public meetings:

- Fortuna City Council Meeting – November 8, 2016
- HCAOG Board Meeting – November 17, 2016
- HCAOG Technical Advisory Committee (TAC) Meeting – December 1, 2016

In addition, the results of the study were presented to the Caltrans District 1 Executive Committee on January 3, 2017.

10. ENVIRONMENTAL COMPLIANCE

Preliminary Environmental Analysis

In 2016, an initial environmental evaluation of the project and alternatives was conducted to help anticipate potential environmental constraints that may affect project design, alternatives, cost, schedule, and delivery. The evaluation included a reconnaissance-level site investigation of existing conditions in the project area to identify the presence or potential presence of biological resources listed under the Federal Endangered Species Act (ESA), the presence of wetlands and Waters of the US as regulated by the US Army Corps of Engineers (USACE), the presence or potential presence of species listed as endangered or threatened under the California Endangered Species Act (CESA) or considered a species of special concern (SSC) by the California Department of Fish and Wildlife (CDFW), or the potential for special-status plant species having a rare plant ranking as determined by the California Native Plant Society (CNPS) rare plant inventory, and to present the potential of sensitive habitats as listed by the CDFW. Refer to **Attachment K** for more information on the initial environmental evaluation that was prepared. During the PA&ED phase of the project, a formal Preliminary Environmental Analysis Report (PEAR) may be completed to satisfy Caltrans if required.

NEPA, CEQA and Permitting

During the PA&ED phase, the project will be evaluated for potential impacts on the environment in compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). Feasible opportunities to avoid or reduce impacts will be pursued and mitigation measures will be developed to reduce potentially significant impacts as appropriate. The draft CEQA document will be made available to the public for review and comment.

Based on the information currently available, the expected compliance pathways are a Mitigated Negative Declaration of environmental impact for CEQA and a Categorical Exclusion for NEPA in conformance with the Federal Highways Administration/Caltrans programmatic process.

The wetland and riparian habitats in the project area have a moderate to high likelihood of supporting listed reptile, frog and fish species including Western Pond Turtle *Emys (Actinymys) marmorata*, Northern Red-legged Frog Rana aurora, and Foothill Yellow-legged Frog *Rana boylii*. Several sensitive plant species also have a moderate likelihood of occurring in the study area.

Subsequent environmental investigations including a wetland delineation will be needed to address potential sensitive species identified and address any impacts to protected habitats. Additionally, a variety of permits and related environmental review will be necessary for project planning and design.

Anticipated Environmental Permitting and Compliance Requirements are presented in **Table 10**.

Table 10. Anticipated Environmental Permitting and Compliance Requirements

Law/Regulation	Permit/Approval	Authority
CEQA	Mitigated Negative Declaration	Lead Agency
NEPA	Categorical Exclusion	Caltrans on behalf of Federal Highways Administration
Clean Water Act Section 404	Nationwide Permit	US Army Corps of Engineers
Porter-Cologne/Clean Water Act Section 401	401 Certification and/or Waste Discharge Requirements (WDR)	North Coast Regional Water Quality Control Board
National Historic Preservation Act	Letter of Concurrence	State Historic Preservation Office & Tribal Historic Preservation Office

A Preliminary Environmental Study (PES) Form will be developed during the PA&ED phase of the project. The following technical studies and plans are anticipated to be required:

- Natural Environmental Study (NES) of Biological Resources
- Wetland Delineation and Rare Plant Survey
- Initial Site Assessment (ISA)
- Visual Impact Assessment (VIA), Minor VIA, or Visual Technical Memorandum
- Floodplain Evaluation & Location Hydraulic Study
- Geotechnical Investigation
- Historic Property Survey Report (HPSR) and Archaeological Survey Report (ARS)
- Preliminary Hydraulics/Hydrology Study
- Stormwater Data Report (SWDR)
- Water Quality Assessment Report
- Structures Advanced Planning Study and Preliminary Foundation Report

11. FUNDING

Funding to advance the project has not yet been programmed, however the City of Fortuna intends to request funding to advance the PA&ED phase of the project utilizing funds from the 2022 State Transportation Improvement Program (STIP).

Funding for PS&E, right-of-way and construction has not been programmed. Potential funding sources for PS&E, right-of-way and construction include: the state Active Transportation Program (ATP), the federal RAISE program, future STIP cycles, and local funds.

It has been determined that this project is eligible for Federal-aid funding.

Capital Outlay Project Estimate

Table 11 presents a summary of the capital outlay estimates for the proposed alternatives. Detailed estimates for the various alternatives are presented in **Attachment I**.

Table 11: Summary of Capital Outlay Estimate

Alternative	Estimated Capital Cost		
	Construction	Right-of-Way	Utilities
Signal	$26.6M	$4.3M	$200K
North Roundabout	$7.8M	$1.1M	$200K
South Roundabout 1	$7.8M	$100K	$200K
South Roundabout 2a	$10.5M	$0	$200K
South Roundabout 2b	$8.2M	$0	$200K
South Roundabout 2c	$7.5M	$0	$200K

The level of detail available to develop these capital outlay project estimates is useful for long-range planning purposes only. The capital outlay project estimates should not be used to program or commit State-programmed capital outlay funds.

Capital Outlay Support Estimate

Capital outlay support estimate for programming PA&ED in the 2022 STIP for this project by phase is as follows:

North Roundabout: $1,000,000

South Roundabout 2C: $850,000

12. DELIVERY SCHEDULE

The following section outlines the delivery schedule for the proposed alternative.

Table 10: Project Delivery Schedule

Project Milestones	Scheduled Delivery Date
Program Project	12/15/2021
Begin Environmental (PA&ED) Phase	08/01/2023
Circulate Draft Environmental Document	12/01/2024
Draft Project Report	12/01/2024
End Environmental Milestone	6/30/2025

The anticipated funding fiscal year for construction is 2029/30

13. RISKS

A risk register and risk analysis will be complete for the project during the PA&ED phase of the project.

14. EXTERNAL AGENCY COORDINATION

This project does not anticipate coordination with the Federal Highway Administration (FHWA).

Coordination between the City of Fortuna, County of Humboldt and Caltrans will be required throughout all phases of this project. In addition, the project will require the following coordination:

Caltrans
Encroachment Permit

US Army Corps of Engineers
Department of the Army Permit for:
Clean Water Act Section 404

California Department of Fish and Wildlife
California Fish and Game Code Section 1602
Lake or Streambed Alteration Agreement

Regional Water Quality Control Board
Clean Water Act Section 401
Water Quality Certification

Railroads
North Coast Railroad Authority

California Public Utilities Commission (unless rail corridor railbanked and rail and ties removed)
Modification to an Existing Rail Crossing, GO-88B

15. PROJECT REVIEWS

Caltrans District 1 has indicated that formal approval of this PSR is not required at this time. The City will engage Caltrans prior to proceeding with PA&ED at which time formal Caltrans reviews can occur, if requested.

16. PROJECT PERSONNEL

City of Fortuna
Merritt Perry, City Manager,707-725-1410
Brendan Byrd, City Engineer, 707-725-1469
Kevin Carter, Director of Public Works, 707-725-1472
Bob Natt, General Services Superintendent, 707-725-1466

Caltrans District 1
Brad Mettam, Deputy District Director, Planning and Local Assistance, 707-496-4794
Jesse Roberts, Transportation Planning, 707-441-4693

Humboldt County Association of Governments
Beth Burks, Director, 707-444-8208

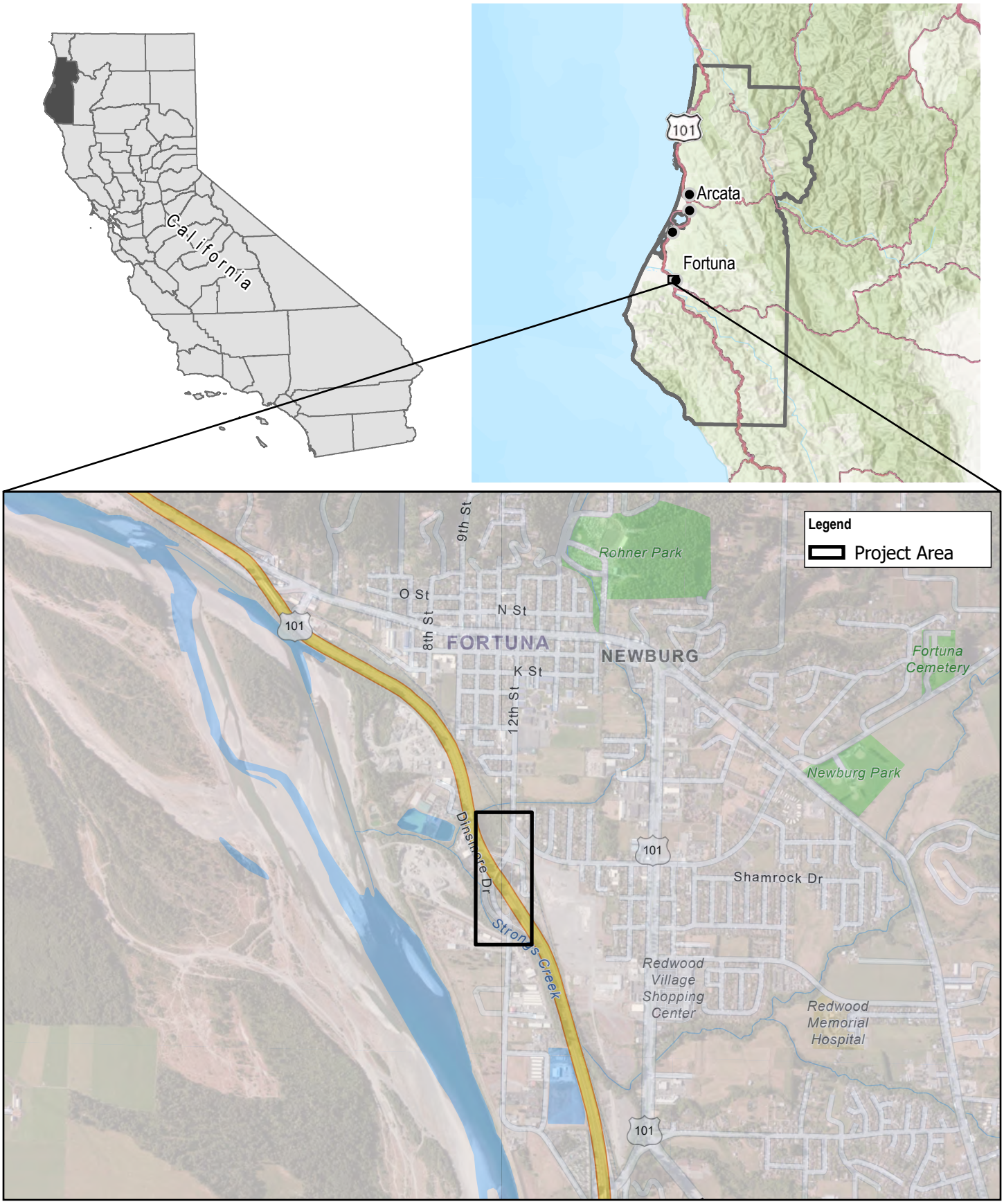
County of Humboldt
Tony Seghetti, Deputy Director Engineering, 707-445-7377
Tom Mattson, Director of Public Works, 707-445-7491

GHD (Consultant)
Josh Wolf, PE, Project Manager, 707-443-8326

17. ATTACHMENTS

A. Location map
B. Traffic Counts and LOS Analysis
C. Review of Geometric Design Standards
D. Conceptual Design Drawings
E. Truck Turning Analysis
F. Fast Path Exhibits
G. Preliminary Structures Analysis
H. Landscaping/Gateway Concepts
I. Cost Estimates
J. Right-of-Way and Property Ownership
K. Environmental Constraints Analysis

Attachment A - Location map



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Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

CITY OF FORTUNA
PREPARED PSR-PDS FOR 12TH STREET AND HIGHWAY 101 INTERCHANGE

Project No. **12559859**
Revision No. **-**
Date **8/31/2021**

Vicinity Map

FIGURE 1

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Data source: World Imagery (Clarity): This work is licensed under the Esri Master License Agreement.View Summary | View Terms of UseExport: This layer is not intended to be used to export tiles for offline. Data Collection and Editing: This layer may be used in various ArcGIS apps to support data collection and editing, with the results used internally or shared with others, as described for these use cases.; World Topographic Map - labelless: Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS; World Navigation Map: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA; transportation: USGS The National Map: National Transportation Dataset; U.S. Census Bureau – TIGER/Line; U.S. Forest Service. Data Refreshed July, 2021.; World Hillshade: Esri, USGS. Created by: kbarreroveliz

Attachment B - Traffic Counts and LOS Analysis

Existing Conditions

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	2	0	0	105	95	4
Future Vol, veh/h	2	0	0	105	95	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	3	0	0	140	127	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	269	129	132	0	-	0
Stage 1	129	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.19	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.281	-	-	-
Pot Cap-1 Maneuver	706	902	1411	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	870	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	706	902	1411	-	-	-
Mov Cap-2 Maneuver	706	-	-	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	870	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1411	-	706	-	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	0	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	25	1	18	89	98	18
Future Vol, veh/h	25	1	18	89	98	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	30	1	21	106	117	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	276	127	138	0	-	0
Stage 1	127	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	705	913	1421	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	869	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	694	913	1421	-	-	-
Mov Cap-2 Maneuver	694	-	-	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	855	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1421	-	700	-	-
HCM Lane V/C Ratio	0.015	-	0.044	-	-
HCM Control Delay (s)	7.6	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	113	63	0	0	0	0	0	105	0	9
Future Vol, veh/h	0	0	113	63	0	0	0	0	0	105	0	9
Peak Hour Factor	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84
Heavy Vehicles, %	2	6	6	6	2	6	6	6	2	6	6	6
Mvmt Flow	0	0	135	75	0	0	0	0	0	125	0	11
Number of Lanes	0	0	1	0	0	0	0	0	0	1	0	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	1
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	1	1
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	9.5	9.1
HCM LOS	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	92%	0%	0%
Vol Thru, %	0%	64%	24%
Vol Right, %	8%	36%	76%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	114	176	224
LT Vol	105	0	0
Through Vol	0	113	53
RT Vol	9	63	171
Lane Flow Rate	136	210	267
Geometry Grp	1	1	1
Degree of Util (X)	0.186	0.272	0.313
Departure Headway (Hd)	4.935	4.68	4.222
Convergence, Y/N	Yes	Yes	Yes
Cap	726	765	851
Service Time	2.974	2.721	2.254
HCM Lane V/C Ratio	0.187	0.275	0.314
HCM Control Delay	9.1	9.5	9.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	1.1	1.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	53	171
Future Vol, veh/h	0	0	53	171
Peak Hour Factor	0.92	0.84	0.84	0.84
Heavy Vehicles, %	2	6	6	6
Mvmt Flow	0	0	63	204
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	9.2
HCM LOS	A

Lane

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	7	0	0	48	228	0	1	169	156
Future Vol, veh/h	0	0	0	7	0	0	48	228	0	1	169	156
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	9	0	0	62	292	0	1	217	200

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	734	834	292	417	0	0	292	0	0
Stage 1	415	415	-	-	-	-	-	-	-
Stage 2	319	419	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	334	303	745	1137	-	-	1264	-	-
Stage 1	613	591	-	-	-	-	-	-	-
Stage 2	690	588	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	317	283	745	1137	-	-	1264	-	-
Mov Cap-2 Maneuver	317	283	-	-	-	-	-	-	-
Stage 1	573	553	-	-	-	-	-	-	-
Stage 2	689	587	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.7	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1137	-	-	317	1264	-	-
HCM Lane V/C Ratio	0.054	-	-	0.028	0.001	-	-
HCM Control Delay (s)	8.3	0	-	16.7	7.9	-	-
HCM Lane LOS	A	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	1	0	0	1	2	6	310	0	0	0	0
Future Vol, veh/h	0	1	0	0	1	2	6	310	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1	0	0	1	3	8	397	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	415	413	-	-	413	397	0	0	0
Stage 1	0	0	-	-	413	-	-	-	-
Stage 2	415	413	-	-	0	-	-	-	-
Critical Hdwy	7.13	6.53	-	-	6.53	6.23	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	5.53	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	-	-	4.027	3.327	2.227	-	-
Pot Cap-1 Maneuver	546	528	0	0	528	650	-	-	-
Stage 1	-	-	0	0	592	-	-	-	-
Stage 2	613	592	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	543	528	-	-	528	650	-	-	-
Mov Cap-2 Maneuver	543	528	-	-	528	-	-	-	-
Stage 1	-	-	-	-	592	-	-	-	-
Stage 2	609	592	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	11.8	11	
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	528	604
HCM Lane V/C Ratio	-	-	-	0.002	0.006
HCM Control Delay (s)	-	-	-	11.8	11
HCM Lane LOS	-	-	-	B	B
HCM 95th %tile Q(veh)	-	-	-	0	0

Intersection	
Int Delay, s/veh	31.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	155	172	366	174	107	171
Future Vol, veh/h	155	172	366	174	107	171
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	25	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	215	239	508	242	149	238

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1164	629	0	0	750	0
Stage 1	629	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	216	484	-	-	864	-
Stage 1	533	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 173	484	-	-	864	-
Mov Cap-2 Maneuver	~ 173	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	472	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	106	0	3.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	173	484	864	-
HCM Lane V/C Ratio	-	-	1.244	0.494	0.172	-
HCM Control Delay (s)	-	-	201.9	19.5	10	0
HCM Lane LOS	-	-	F	C	B	A
HCM 95th %tile Q(veh)	-	-	12	2.7	0.6	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	86.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	126	22	332	107	0	0	0	0	352	0	19
Future Vol, veh/h	0	126	22	332	107	0	0	0	0	352	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	134	23	353	114	0	0	0	0	374	0	20

Major/Minor	Major2			Minor2		
Conflicting Flow All	0	0	0	820	820	114
Stage 1	-	-	-	820	820	-
Stage 2	-	-	-	0	0	-
Critical Hdwy	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	-	-	0	~ 294	310	939
Stage 1	-	-	0	~ 369	389	-
Stage 2	-	-	0	-	-	-
Platoon blocked, %		-				
Mov Cap-1 Maneuver	-	-	-	~ 294	310	939
Mov Cap-2 Maneuver	-	-	-	~ 294	310	-
Stage 1	-	-	-	~ 369	389	-
Stage 2	-	-	-	-	-	-

Approach	WB	SB
HCM Control Delay, s		189
HCM LOS		F

Minor Lane/Major Mvmt	WBL	WBT	SBLn1
Capacity (veh/h)	-	-	305
HCM Lane V/C Ratio	-	-	1.294
HCM Control Delay (s)	-	-	189
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	19

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	13	465	0	0	413	228	26	0	220	0	0	0
Future Vol, veh/h	13	465	0	0	413	228	26	0	220	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	495	0	0	439	243	28	0	234	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	439	0	-	-	-	0	961	961	495
Stage 1	-	-	-	-	-	-	522	522	-
Stage 2	-	-	-	-	-	-	439	439	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1121	-	0	0	-	0	284	256	575
Stage 1	-	-	0	0	-	0	595	531	-
Stage 2	-	-	0	0	-	0	650	578	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1121	-	-	-	-	-	279	0	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	279	0	-
Stage 1	-	-	-	-	-	-	585	0	-
Stage 2	-	-	-	-	-	-	650	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT
Capacity (veh/h)	643	1121	-	-
HCM Lane V/C Ratio	0.407	0.012	-	-
HCM Control Delay (s)	14.4	8.3	0	-
HCM Lane LOS	B	A	A	-
HCM 95th %tile Q(veh)	2	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	642	43	9	611	0	30	0	13	0	0	0
Future Vol, veh/h	0	642	43	9	611	0	30	0	13	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	683	46	10	650	0	32	0	14	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	650	0	0	729	0	0	1375	1375	706	1382	1398	650
Stage 1	-	-	-	-	-	-	706	706	-	669	669	-
Stage 2	-	-	-	-	-	-	669	669	-	713	729	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309	3.509	4.009	3.309
Pot Cap-1 Maneuver	941	-	-	879	-	-	123	146	438	122	141	471
Stage 1	-	-	-	-	-	-	428	440	-	449	457	-
Stage 2	-	-	-	-	-	-	449	457	-	424	430	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	941	-	-	879	-	-	121	143	438	117	138	471
Mov Cap-2 Maneuver	-	-	-	-	-	-	121	143	-	117	138	-
Stage 1	-	-	-	-	-	-	428	440	-	449	449	-
Stage 2	-	-	-	-	-	-	441	449	-	411	430	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	37.7	0
HCM LOS			E	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	155	941	-	-	879	-	-	-
HCM Lane V/C Ratio	0.295	-	-	-	0.011	-	-	-
HCM Control Delay (s)	37.7	0	-	-	9.1	0	-	0
HCM Lane LOS	E	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	271	119	265	5	75	55	123	175	11	60	223	422
Future Volume (veh/h)	271	119	265	5	75	55	123	175	11	60	223	422
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1881	1881	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	274	120	268	5	76	56	124	177	11	61	225	0
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	359	157	454	10	157	143	165	612	38	105	520	0
Arrive On Green	0.28	0.28	0.28	0.09	0.09	0.09	0.09	0.18	0.18	0.06	0.15	0.00
Sat Flow, veh/h	1264	554	1599	116	1760	1599	1792	3420	211	1792	3668	0
Grp Volume(v), veh/h	394	0	268	81	0	56	124	92	96	61	225	0
Grp Sat Flow(s),veh/h/ln	1818	0	1599	1875	0	1599	1792	1787	1844	1792	1787	0
Q Serve(g_s), s	9.2	0.0	6.7	1.9	0.0	1.5	3.1	2.1	2.1	1.5	2.7	0.0
Cycle Q Clear(g_c), s	9.2	0.0	6.7	1.9	0.0	1.5	3.1	2.1	2.1	1.5	2.7	0.0
Prop In Lane	0.70		1.00	0.06		1.00	1.00		0.11	1.00		0.00
Lane Grp Cap(c), veh/h	517	0	454	168	0	143	165	320	330	105	520	0
V/C Ratio(X)	0.76	0.00	0.59	0.48	0.00	0.39	0.75	0.29	0.29	0.58	0.43	0.00
Avail Cap(c_a), veh/h	707	0	622	729	0	622	677	1181	1219	209	1428	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.1	0.0	14.2	20.1	0.0	19.9	20.5	16.5	16.5	21.2	18.0	0.0
Incr Delay (d2), s/veh	3.3	0.0	1.2	2.1	0.0	1.7	6.7	0.5	0.5	5.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	3.1	1.1	0.0	0.7	1.9	1.1	1.1	0.9	1.4	0.0
LnGrp Delay(d),s/veh	18.5	0.0	15.5	22.2	0.0	21.6	27.2	16.9	16.9	26.2	18.6	0.0
LnGrp LOS	B		B	C		C	C	B	B	C	B	
Approach Vol, veh/h		662			137			312			286	
Approach Delay, s/veh		17.3			22.0			21.0			20.2	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.2	12.8		17.7	8.8	11.2		8.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.4	30.6		18.0	17.5	18.5		18.0
Max Q Clear Time (g_c+I1), s	3.5	4.1		11.2	5.1	4.7		3.9
Green Ext Time (p_c), s	0.0	2.6		2.0	0.2	2.1		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.2
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	2	0	163	137	1
Future Vol, veh/h	0	2	0	163	137	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	201	169	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	371	170	170	0	-	0
Stage 1	170	-	-	-	-	-
Stage 2	201	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	630	874	1407	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	833	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	630	874	1407	-	-	-
Mov Cap-2 Maneuver	630	-	-	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	833	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1407	-	874	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	0	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	28	15	6	157	123	18
Future Vol, veh/h	28	15	6	157	123	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	32	17	7	178	140	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	342	150	160	0	-	0
Stage 1	150	-	-	-	-	-
Stage 2	192	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	656	899	1425	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	653	899	1425	-	-	-
Mov Cap-2 Maneuver	653	-	-	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1425	-	722	-	-
HCM Lane V/C Ratio	0.005	-	0.068	-	-
HCM Control Delay (s)	7.5	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	124	89	0	0	0	0	0	176	0	9
Future Vol, veh/h	0	0	124	89	0	0	0	0	0	176	0	9
Peak Hour Factor	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88
Heavy Vehicles, %	2	1	1	1	2	1	1	1	2	1	1	1
Mvmt Flow	0	0	141	101	0	0	0	0	0	200	0	10
Number of Lanes	0	0	1	0	0	0	0	0	0	1	0	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	1
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	1	1
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	10.3	10.2
HCM LOS	B	B

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	95%	0%	0%
Vol Thru, %	0%	58%	18%
Vol Right, %	5%	42%	82%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	185	213	295
LT Vol	176	0	0
Through Vol	0	124	52
RT Vol	9	89	243
Lane Flow Rate	210	242	335
Geometry Grp	1	1	1
Degree of Util (X)	0.295	0.327	0.4
Departure Headway (Hd)	5.048	4.868	4.295
Convergence, Y/N	Yes	Yes	Yes
Cap	706	733	831
Service Time	3.114	2.94	2.35
HCM Lane V/C Ratio	0.297	0.33	0.403
HCM Control Delay	10.2	10.3	10.2
HCM Lane LOS	B	B	B
HCM 95th-tile Q	1.2	1.4	1.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	52	243
Future Vol, veh/h	0	0	52	243
Peak Hour Factor	0.92	0.88	0.88	0.88
Heavy Vehicles, %	2	1	1	1
Mvmt Flow	0	0	59	276
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	10.2
HCM LOS	B

Lane

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	7	0	0	55	363	1	2	206	133
Future Vol, veh/h	0	0	0	7	0	0	55	363	1	2	206	133
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	0	0	59	386	1	2	219	141

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	798	869	387	361	0	0	387	0	0
Stage 1	504	504	-	-	-	-	-	-	-
Stage 2	294	365	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	355	290	661	1198	-	-	1171	-	-
Stage 1	607	541	-	-	-	-	-	-	-
Stage 2	756	623	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	332	0	661	1198	-	-	1171	-	-
Mov Cap-2 Maneuver	332	0	-	-	-	-	-	-	-
Stage 1	569	0	-	-	-	-	-	-	-
Stage 2	754	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.1	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1198	-	-	332	1171	-	-
HCM Lane V/C Ratio	0.049	-	-	0.022	0.002	-	-
HCM Control Delay (s)	8.2	0	-	16.1	8.1	-	-
HCM Lane LOS	A	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	3	0	0	1	3	6	121	0	0	0	0
Future Vol, veh/h	0	3	0	0	1	3	6	121	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	0	0	1	3	6	129	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	144	141	-	-	141	129	0	0	0
Stage 1	0	0	-	-	141	-	-	-	-
Stage 2	144	141	-	-	0	-	-	-	-
Critical Hdwy	7.12	6.52	-	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	825	750	0	0	750	921	-	-	-
Stage 1	-	-	0	0	780	-	-	-	-
Stage 2	859	780	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	821	750	-	-	750	921	-	-	-
Mov Cap-2 Maneuver	821	750	-	-	750	-	-	-	-
Stage 1	-	-	-	-	780	-	-	-	-
Stage 2	855	780	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	9.8	9.2	
HCM LOS	A	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	750	871
HCM Lane V/C Ratio	-	-	-	0.004	0.005
HCM Control Delay (s)	-	-	-	9.8	9.2
HCM Lane LOS	-	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	0

Intersection	
Int Delay, s/veh	7.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	143	112	206	281	149	198
Future Vol, veh/h	143	112	206	281	149	198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	25	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	154	120	222	302	160	213

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	906	373	0	0	524	0
Stage 1	373	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	308	675	-	-	1048	-
Stage 1	699	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	675	-	-	1048	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	488	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.6	0	3.9
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	255	675	1048	-
HCM Lane V/C Ratio	-	-	0.603	0.178	0.153	-
HCM Control Delay (s)	-	-	38.5	11.5	9.1	0
HCM Lane LOS	-	-	E	B	A	A
HCM 95th %tile Q(veh)	-	-	3.6	0.6	0.5	-

Cumulative No Build Alternative

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	0	0	245	295	8
Future Vol, veh/h	5	0	0	245	295	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	6	0	0	278	335	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	618	340	344	0	-	0
Stage 1	340	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.19	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.281	-	-	-
Pot Cap-1 Maneuver	442	687	1177	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	442	687	1177	-	-	-
Mov Cap-2 Maneuver	442	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1177	-	442	-	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	0	-	13.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	25	1	18	232	302	25
Future Vol, veh/h	25	1	18	232	302	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	28	1	20	264	343	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	662	357	372	0	-	0
Stage 1	357	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	421	678	1165	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	413	678	1165	-	-	-
Mov Cap-2 Maneuver	413	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	724	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1165	-	419	-	-
HCM Lane V/C Ratio	0.018	-	0.071	-	-
HCM Control Delay (s)	8.1	0	14.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	19
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	164	174	0	0	0	0	0	238	0	19
Future Vol, veh/h	0	0	164	174	0	0	0	0	0	238	0	19
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	6	6	6	2	6	6	6	2	6	6	6
Mvmt Flow	0	0	186	198	0	0	0	0	0	270	0	22
Number of Lanes	0	0	1	0	0	0	0	0	0	1	0	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	1
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	1	1
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	17.8	15.1
HCM LOS	C	C

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	93%	0%	0%
Vol Thru, %	0%	49%	34%
Vol Right, %	7%	51%	66%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	257	338	444
LT Vol	238	0	0
Through Vol	0	164	153
RT Vol	19	174	291
Lane Flow Rate	292	384	505
Geometry Grp	1	1	1
Degree of Util (X)	0.495	0.617	0.742
Departure Headway (Hd)	6.099	5.784	5.294
Convergence, Y/N	Yes	Yes	Yes
Cap	587	622	681
Service Time	4.178	3.854	3.363
HCM Lane V/C Ratio	0.497	0.617	0.742
HCM Control Delay	15.1	17.8	22.1
HCM Lane LOS	C	C	C
HCM 95th-tile Q	2.7	4.2	6.6

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	153	291
Future Vol, veh/h	0	0	153	291
Peak Hour Factor	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	6	6	6
Mvmt Flow	0	0	174	331
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	22.1
HCM LOS	C

Lane

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	15	0	0	109	420	0	1	323	410
Future Vol, veh/h	0	0	0	15	0	0	109	420	0	1	323	410
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	17	0	0	124	477	0	1	367	466

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1327	1560	477	833	0	0	477	0	0
Stage 1	725	725	-	-	-	-	-	-	-
Stage 2	602	835	-	-	-	-	-	-	-
Critical Hdwy	6.43	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	5.43	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	170	112	586	796	-	-	1080	-	-
Stage 1	478	428	-	-	-	-	-	-	-
Stage 2	545	381	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	134	0	586	796	-	-	1080	-	-
Mov Cap-2 Maneuver	134	0	-	-	-	-	-	-	-
Stage 1	377	0	-	-	-	-	-	-	-
Stage 2	544	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	35.7	2.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	796	-	-	134	1080	-	-
HCM Lane V/C Ratio	0.156	-	-	0.127	0.001	-	-
HCM Control Delay (s)	10.4	0	-	35.7	8.3	-	-
HCM Lane LOS	B	A	-	E	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	0.4	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	1	0	0	1	2	15	351	0	0	0	0
Future Vol, veh/h	0	1	0	0	1	2	15	351	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1	0	0	1	2	17	399	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	435	433	-	-	433	399	0	0	0
Stage 1	0	0	-	-	433	-	-	-	-
Stage 2	435	433	-	-	0	-	-	-	-
Critical Hdwy	7.13	6.53	-	-	6.53	6.23	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	5.53	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	-	-	4.027	3.327	2.227	-	-
Pot Cap-1 Maneuver	530	514	0	0	514	649	-	-	-
Stage 1	-	-	0	0	580	-	-	-	-
Stage 2	598	580	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	527	514	-	-	514	649	-	-	-
Mov Cap-2 Maneuver	527	514	-	-	514	-	-	-	-
Stage 1	-	-	-	-	580	-	-	-	-
Stage 2	595	580	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	12	11.1	
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	514	597
HCM Lane V/C Ratio	-	-	-	0.002	0.006
HCM Control Delay (s)	-	-	-	12	11.1
HCM Lane LOS	-	-	-	B	B
HCM 95th %tile Q(veh)	-	-	-	0	0

Intersection	
Int Delay, s/veh	605.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	487	471	422	349	230	246
Future Vol, veh/h	487	471	422	349	230	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	25	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	553	535	480	397	261	280

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1480	678	0	0	876	0
Stage 1	678	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	~ 139	~ 454	-	-	775	-
Stage 1	~ 506	-	-	-	-	-
Stage 2	~ 443	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 84	~ 454	-	-	775	-
Mov Cap-2 Maneuver	~ 84	-	-	-	-	-
Stage 1	~ 506	-	-	-	-	-
Stage 2	~ 266	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 1391.5	0	5.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	84	454	775	-
HCM Lane V/C Ratio	-	-	6.588	1.179	0.337	-
HCM Control Delay (s)	-	-	$ 2612.1	129.5	12	0
HCM Lane LOS	-	-	F	F	B	A
HCM 95th %tile Q(veh)	-	-	62	20.1	1.5	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection: 7: Riverwalk Drive & US 101 SB On & US 101 SB Off

Movement	EB	NB	SB
Directions Served	TR	LTR	LTR
Maximum Queue (ft)	101	72	209
Average Queue (ft)	40	44	71
95th Queue (ft)	75	62	146
Link Distance (ft)	343	40	310
Upstream Blk Time (%)		7	
Queuing Penalty (veh)		19	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Riverwalk Drive/12th Street & US 101 NB On

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	36	152	29
Average Queue (ft)	12	34	2
95th Queue (ft)	37	98	13
Link Distance (ft)	52	591	169
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: US 101 NB Off/12th Street & Pond Street

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	6	23	56
Average Queue (ft)	0	2	2
95th Queue (ft)	3	12	25
Link Distance (ft)	52	163	255
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: 12th Street & Newburg Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	875	12	151	578
Average Queue (ft)	857	1	36	519
95th Queue (ft)	870	11	101	657
Link Distance (ft)	855		182	529
Upstream Blk Time (%)	100		0	79
Queuing Penalty (veh)	0		1	0
Storage Bay Dist (ft)		25		
Storage Blk Time (%)	100	0		
Queuing Penalty (veh)	470	1		

Zone Summary

Zone wide Queuing Penalty: 590

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	6	0	459	353	6
Future Vol, veh/h	0	6	0	459	353	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	0	483	372	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	858	375	378	0	-	0
Stage 1	375	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	327	671	1180	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	327	671	1180	-	-	-
Mov Cap-2 Maneuver	327	-	-	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1180	-	671	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	0	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	79	43	17	442	316	47
Future Vol, veh/h	79	43	17	442	316	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	45	18	465	333	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	858	357	382	0	-	0
Stage 1	357	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	327	687	1176	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	320	687	1176	-	-	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	596	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.5	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1176	-	394	-	-
HCM Lane V/C Ratio	0.015	-	0.326	-	-
HCM Control Delay (s)	8.1	0	18.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	1.4	-	-

Intersection	
Intersection Delay, s/veh	65.1
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	301	216	0	0	0	0	0	496	0	25
Future Vol, veh/h	0	0	301	216	0	0	0	0	0	496	0	25
Peak Hour Factor	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	317	227	0	0	0	0	0	522	0	26
Number of Lanes	0	0	1	0	0	0	0	0	0	1	0	0

Approach	EB	NB
Opposing Approach		SB
Opposing Lanes	0	1
Conflicting Approach Left	SB	EB
Conflicting Lanes Left	1	1
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	65	67.1
HCM LOS	F	F

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	95%	0%	0%
Vol Thru, %	0%	58%	18%
Vol Right, %	5%	42%	82%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	521	517	831
LT Vol	496	0	0
Through Vol	0	301	147
RT Vol	25	216	684
Lane Flow Rate	548	544	875
Geometry Grp	1	1	1
Degree of Util (X)	1	1	1
Departure Headway (Hd)	7.193	6.781	6.537
Convergence, Y/N	Yes	Yes	Yes
Cap	510	539	560
Service Time	5.193	4.781	4.537
HCM Lane V/C Ratio	1.075	1.009	1.563
HCM Control Delay	67.1	65	63.8
HCM Lane LOS	F	F	F
HCM 95th-tile Q	13.7	14.1	14.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	147	684
Future Vol, veh/h	0	0	147	684
Peak Hour Factor	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	0	155	720
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	
Conflicting Lanes Left	0
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	63.8
HCM LOS	F

Lane

Intersection	
Int Delay, s/veh	11.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	25	0	0	180	1006	1	2	492	484
Future Vol, veh/h	0	0	0	25	0	0	180	1006	1	2	492	484
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	26	0	0	189	1059	1	2	518	509

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	2215	2470	1059	1027	0	0	1060	0	0
Stage 1	1438	1438	-	-	-	-	-	-	-
Stage 2	777	1032	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	48	30	273	676	-	-	657	-	-
Stage 1	219	198	-	-	-	-	-	-	-
Stage 2	453	310	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	~ 15	0	273	676	-	-	657	-	-
Mov Cap-2 Maneuver	~ 15	0	-	-	-	-	-	-	-
Stage 1	70	0	-	-	-	-	-	-	-
Stage 2	449	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 881.9	1.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	676	-	-	15	657	-	-
HCM Lane V/C Ratio	0.28	-	-	1.754	0.003	-	-
HCM Control Delay (s)	12.4	0	-	$ 881.9	10.5	-	-
HCM Lane LOS	B	A	-	F	B	-	-
HCM 95th %tile Q(veh)	1.1	-	-	3.9	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	3	0	0	1	3	25	207	0	0	0	0
Future Vol, veh/h	0	3	0	0	1	3	25	207	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	0	0	1	3	26	218	0	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	273	271	-	-	271	218	0	0	0
Stage 1	0	0	-	-	271	-	-	-	-
Stage 2	273	271	-	-	0	-	-	-	-
Critical Hdwy	7.12	6.52	-	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	679	636	0	0	636	822	-	-	-
Stage 1	-	-	0	0	685	-	-	-	-
Stage 2	733	685	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	676	636	-	-	636	822	-	-	-
Mov Cap-2 Maneuver	676	636	-	-	636	-	-	-	-
Stage 1	-	-	-	-	685	-	-	-	-
Stage 2	729	685	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	10.7	9.7	
HCM LOS	B	A	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	636	766
HCM Lane V/C Ratio	-	-	-	0.005	0.005
HCM Control Delay (s)	-	-	-	10.7	9.7
HCM Lane LOS	-	-	-	B	A
HCM 95th %tile Q(veh)	-	-	-	0	0

Intersection	
Int Delay, s/veh	11.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	656	380	328	885	524	320
Future Vol, veh/h	656	380	328	885	524	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	25	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	691	400	345	932	552	337

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2251	811	0	0	1277	0
Stage 1	811	-	-	-	-	-
Stage 2	1440	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 46	~ 379	-	-	~ 544	-
Stage 1	~ 437	-	-	-	-	-
Stage 2	~ 218	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	0	~ 379	-	-	~ 544	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	~ 437	-	-	-	-	-
Stage 2	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	43.3
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	379	~ 544	-
HCM Lane V/C Ratio	-	-	-	1.055	1.014	-
HCM Control Delay (s)	-	-	-	95.3	69.8	0
HCM Lane LOS	-	-	-	F	F	A
HCM 95th %tile Q(veh)	-	-	-	13.6	14.9	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection: 7: Riverwalk Drive & US 101 SB On & US 101 SB Off

Movement	EB	NB	SB
Directions Served	TR	LTR	LTR
Maximum Queue (ft)	57	114	364
Average Queue (ft)	16	64	331
95th Queue (ft)	39	96	350
Link Distance (ft)	343	40	310
Upstream Blk Time (%)		20	97
Queuing Penalty (veh)		105	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Riverwalk Drive/12th Street & US 101 NB On

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	46	92	9
Average Queue (ft)	17	10	0
95th Queue (ft)	46	51	4
Link Distance (ft)	51	591	169
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: US 101 NB Off/12th Street & Pond Street

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	15	31	174
Average Queue (ft)	1	4	21
95th Queue (ft)	7	20	110
Link Distance (ft)	51	95	255
Upstream Blk Time (%)			2
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: 12th Street & Newburg Road

Movement	WB	NB	SB
Directions Served	L	TR	LT
Maximum Queue (ft)	862	152	555
Average Queue (ft)	855	21	539
95th Queue (ft)	864	83	552
Link Distance (ft)	855	182	529
Upstream Blk Time (%)	100	0	100
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)	100		
Queuing Penalty (veh)	380		

Zone Summary

Zone wide Queuing Penalty: 1164

Cumulative Signal Alternative

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	5	18	227	453	27
Future Vol, veh/h	30	5	18	227	453	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	34	6	20	258	515	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	700	530	545	0	-	0
Stage 1	530	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.735	6.335	4.235	-	-	-
Critical Hdwy Stg 1	5.535	-	-	-	-	-
Critical Hdwy Stg 2	5.935	-	-	-	-	-
Follow-up Hdwy	3.5855	3.3855	2.2855	-	-	-
Pot Cap-1 Maneuver	376	531	981	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	367	531	981	-	-	-
Mov Cap-2 Maneuver	367	-	-	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	981	-	384	-	-
HCM Lane V/C Ratio	0.021	-	0.104	-	-
HCM Control Delay (s)	8.7	0.1	15.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	291	0	153	0	0	0	0	238	19	11	327	0
Future Volume (veh/h)	291	0	153	0	0	0	0	238	19	11	327	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1900				0	1792	1900	1792	1792	0
Adj Flow Rate, veh/h	252	110	174				0	270	22	12	372	0
Adj No. of Lanes	1	1	0				0	2	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88				0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	6	6	6				0	6	6	6	6	0
Cap, veh/h	508	187	295				0	1154	93	587	648	0
Arrive On Green	0.30	0.30	0.30				0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1707	627	991				0	3281	258	1042	1792	0
Grp Volume(v), veh/h	252	0	284				0	143	149	12	372	0
Grp Sat Flow(s),veh/h/ln	1707	0	1618				0	1703	1747	1042	1792	0
Q Serve(g_s), s	3.2	0.0	4.0				0.0	1.5	1.6	0.2	4.4	0.0
Cycle Q Clear(g_c), s	3.2	0.0	4.0				0.0	1.5	1.6	1.8	4.4	0.0
Prop In Lane	1.00		0.61				0.00		0.15	1.00		0.00
Lane Grp Cap(c), veh/h	508	0	482				0	616	632	587	648	0
V/C Ratio(X)	0.50	0.00	0.59				0.00	0.23	0.24	0.02	0.57	0.00
Avail Cap(c_a), veh/h	1162	0	1102				0	1160	1190	920	1221	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.6	0.0	7.9				0.0	5.9	5.9	6.5	6.8	0.0
Incr Delay (d2), s/veh	0.7	0.0	1.2				0.0	0.2	0.2	0.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.9				0.0	0.7	0.8	0.1	2.3	0.0
LnGrp Delay(d),s/veh	8.4	0.0	9.1				0.0	6.1	6.1	6.5	7.6	0.0
LnGrp LOS	A		A					A	A	A	A	
Approach Vol, veh/h		536						292			384	
Approach Delay, s/veh		8.7						6.1			7.6	
Approach LOS		A						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		14.1		12.4		14.1		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		18.0		18.0		18.0		
Max Q Clear Time (g_c+I1), s		3.6		6.0		6.4		
Green Ext Time (p_c), s		3.5		2.1		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	15	0	351	109	420	0	0	323	410
Future Volume (veh/h)	0	0	0	15	0	351	109	420	0	0	323	410
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1845	1845	1845	1845	0	0	1845	1845
Adj Flow Rate, veh/h				17	0	399	124	477	0	0	367	466
Adj No. of Lanes				0	1	1	1	2	0	0	1	1
Peak Hour Factor				0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %				3	3	3	3	3	0	0	3	3
Cap, veh/h				503	0	449	198	2001	0	0	714	607
Arrive On Green				0.29	0.00	0.29	0.11	0.57	0.00	0.00	0.39	0.39
Sat Flow, veh/h				1757	0	1568	1757	3597	0	0	1845	1568
Grp Volume(v), veh/h				17	0	399	124	477	0	0	367	466
Grp Sat Flow(s),veh/h/ln				1757	0	1568	1757	1752	0	0	1845	1568
Q Serve(g_s), s				0.4	0.0	15.4	4.2	4.3	0.0	0.0	9.6	16.3
Cycle Q Clear(g_c), s				0.4	0.0	15.4	4.2	4.3	0.0	0.0	9.6	16.3
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				503	0	449	198	2001	0	0	714	607
V/C Ratio(X)				0.03	0.00	0.89	0.63	0.24	0.00	0.00	0.51	0.77
Avail Cap(c_a), veh/h				613	0	547	376	2752	0	0	922	784
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.2	0.0	21.5	26.7	6.7	0.0	0.0	14.8	16.8
Incr Delay (d2), s/veh				0.0	0.0	14.4	3.3	0.1	0.0	0.0	0.6	3.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.2	0.0	8.4	2.2	2.1	0.0	0.0	5.0	7.6
LnGrp Delay(d),s/veh				16.2	0.0	35.9	30.0	6.8	0.0	0.0	15.4	20.3
LnGrp LOS				B		D	C	A			B	C
Approach Vol, veh/h					416			601			833	
Approach Delay, s/veh					35.1			11.6			18.1	
Approach LOS					D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		40.5			11.6	28.9		22.5
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		49.5			13.5	31.5		22.0
Max Q Clear Time (g_c+I1), s		6.3			6.2	18.3		17.4
Green Ext Time (p_c), s		9.2			0.2	6.1		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	19.8
HCM 2010 LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	487	471	422	349	230	246
Future Volume (veh/h)	487	471	422	349	230	246
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	553	535	480	397	261	280
Adj No. of Lanes	2	1	1	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	1221	762	560	1038	435	932
Arrive On Green	0.35	0.35	0.30	0.30	0.13	0.50
Sat Flow, veh/h	3476	1599	1881	1599	3476	1881
Grp Volume(v), veh/h	553	535	480	397	261	280
Grp Sat Flow(s),veh/h/ln	1738	1599	1881	1599	1738	1881
Q Serve(g_s), s	7.8	16.7	15.2	7.3	4.5	5.6
Cycle Q Clear(g_c), s	7.8	16.7	15.2	7.3	4.5	5.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	1221	762	560	1038	435	932
V/C Ratio(X)	0.45	0.70	0.86	0.38	0.60	0.30
Avail Cap(c_a), veh/h	1670	968	592	1065	1121	1335
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.8	13.0	21.0	5.2	26.2	9.5
Incr Delay (d2), s/veh	0.3	1.6	11.6	0.2	1.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	7.6	9.7	6.5	2.2	2.9
LnGrp Delay(d),s/veh	16.1	14.7	32.5	5.4	27.5	9.6
LnGrp LOS	B	B	C	A	C	A
Approach Vol, veh/h	1088		877			541
Approach Delay, s/veh	15.4		20.3			18.3
Approach LOS	B		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.5	23.9				36.4		26.8
Change Period (Y+Rc), s	4.6	5.1				5.1		4.6
Max Green Setting (Gmax), s	20.4	19.9				44.9		30.4
Max Q Clear Time (g_c+I1), s	6.5	17.2				7.6		18.7
Green Ext Time (p_c), s	0.7	1.6				7.5		3.6

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Intersection: 7: Riverwalk Drive & US 101 SB On & US 101 SB Off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	LTR	T	TR	L	T
Maximum Queue (ft)	121	104	90	77	28	202
Average Queue (ft)	53	35	34	27	3	90
95th Queue (ft)	99	84	71	62	16	172
Link Distance (ft)	351	351	189	189		854
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					200	
Storage Blk Time (%)						0
Queuing Penalty (veh)						0

Intersection: 8: Riverwalk Drive/12th Street & US 101 NB On

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	R
Maximum Queue (ft)	124	209	140	161	151	237	195
Average Queue (ft)	19	87	52	56	49	109	87
95th Queue (ft)	121	185	105	134	115	204	160
Link Distance (ft)	408			854	854	251	251
Upstream Blk Time (%)	0					0	
Queuing Penalty (veh)	0					0	
Storage Bay Dist (ft)		250	150				
Storage Blk Time (%)	0	1		2			
Queuing Penalty (veh)	0	0		2			

Intersection: 10: 12th Street & Newburg Road

Movement	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	R	L	L	T
Maximum Queue (ft)	174	187	229	273	255	143	175	149
Average Queue (ft)	78	86	75	203	81	17	95	64
95th Queue (ft)	147	162	159	287	187	73	152	116
Link Distance (ft)		821		251	251			530
Upstream Blk Time (%)				6	1			
Queuing Penalty (veh)				21	3			
Storage Bay Dist (ft)	225		225			200	200	
Storage Blk Time (%)	0		0				0	0
Queuing Penalty (veh)	0		1				0	0

Zone Summary

Zone wide Queuing Penalty: 48

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	79	49	17	442	310	53
Future Vol, veh/h	79	49	17	442	310	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	83	52	18	465	326	56

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	622	354	382	0	-	0
Stage 1	354	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.645	6.245	4.145	-	-	-
Critical Hdwy Stg 1	5.445	-	-	-	-	-
Critical Hdwy Stg 2	5.845	-	-	-	-	-
Follow-up Hdwy	3.5285	3.3285	2.2285	-	-	-
Pot Cap-1 Maneuver	432	686	1168	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	423	686	1168	-	-	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	735	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1168	-	496	-	-
HCM Lane V/C Ratio	0.015	-	0.272	-	-
HCM Control Delay (s)	8.1	0.1	14.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	684	0	147	0	0	0	0	496	25	301	216	0
Future Volume (veh/h)	684	0	147	0	0	0	0	496	25	301	216	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	865	0	0				0	522	26	317	227	0
Adj No. of Lanes	2	1	0				0	2	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	1450	761	0				0	753	37	354	874	0
Arrive On Green	0.41	0.00	0.00				0.00	0.22	0.22	0.07	0.16	0.00
Sat Flow, veh/h	3514	1845	0				0	3491	169	1757	1845	0
Grp Volume(v), veh/h	865	0	0				0	269	279	317	227	0
Grp Sat Flow(s),veh/h/ln	1757	1845	0				0	1752	1815	1757	1845	0
Q Serve(g_s), s	17.3	0.0	0.0				0.0	12.7	12.7	16.1	9.7	0.0
Cycle Q Clear(g_c), s	17.3	0.0	0.0				0.0	12.7	12.7	16.1	9.7	0.0
Prop In Lane	1.00		0.00				0.00		0.09	1.00		0.00
Lane Grp Cap(c), veh/h	1450	761	0				0	388	402	354	874	0
V/C Ratio(X)	0.60	0.00	0.00				0.00	0.69	0.69	0.90	0.26	0.00
Avail Cap(c_a), veh/h	1450	761	0				0	543	563	359	1043	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	0.87	0.87	0.00
Uniform Delay (d), s/veh	20.6	0.0	0.0				0.0	32.2	32.2	41.1	24.1	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0				0.0	3.1	3.1	20.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0				0.0	6.5	6.7	9.9	5.0	0.0
LnGrp Delay(d),s/veh	22.4	0.0	0.0				0.0	35.4	35.3	61.7	24.3	0.0
LnGrp LOS	C							D	D	E	C	
Approach Vol, veh/h		865						548			544	
Approach Delay, s/veh		22.4						35.3			46.1	
Approach LOS		C						D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	22.7	25.0		42.2		47.8		
Change Period (Y+Rc), s	4.6	5.1		5.1		5.1		
Max Green Setting (Gmax), s	18.4	27.9		28.9		50.9		
Max Q Clear Time (g_c+I1), s	18.1	14.7		19.3		11.7		
Green Ext Time (p_c), s	0.0	5.2		3.7		8.0		

Intersection Summary	
HCM 2010 Ctrl Delay	32.6
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	25	0	207	180	1006	0	0	492	484
Future Volume (veh/h)	0	0	0	25	0	207	180	1006	0	0	492	484
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1845	1845	1845	1845	0	0	1845	1845
Adj Flow Rate, veh/h				0	0	246	189	1059	0	0	518	509
Adj No. of Lanes				0	1	2	1	2	0	0	1	1
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				3	3	3	3	3	0	0	3	3
Cap, veh/h				0	205	348	688	2766	0	0	641	544
Arrive On Green				0.00	0.00	0.11	0.26	0.53	0.00	0.00	0.69	0.69
Sat Flow, veh/h				0	1845	3136	1757	3597	0	0	1845	1568
Grp Volume(v), veh/h				0	0	246	189	1059	0	0	518	509
Grp Sat Flow(s),veh/h/ln				0	1845	1568	1757	1752	0	0	1845	1568
Q Serve(g_s), s				0.0	0.0	6.8	7.7	16.1	0.0	0.0	17.6	25.5
Cycle Q Clear(g_c), s				0.0	0.0	6.8	7.7	16.1	0.0	0.0	17.6	25.5
Prop In Lane				0.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	205	348	688	2766	0	0	641	544
V/C Ratio(X)				0.00	0.00	0.71	0.27	0.38	0.00	0.00	0.81	0.93
Avail Cap(c_a), veh/h				0	451	767	688	2766	0	0	758	645
HCM Platoon Ratio				1.00	1.00	1.00	0.67	0.67	1.00	1.00	2.00	2.00
Upstream Filter(I)				0.00	0.00	1.00	0.69	0.69	0.00	0.00	0.88	0.88
Uniform Delay (d), s/veh				0.0	0.0	38.6	23.0	8.3	0.0	0.0	11.7	12.9
Incr Delay (d2), s/veh				0.0	0.0	2.7	0.1	0.3	0.0	0.0	9.4	23.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	3.1	3.8	7.8	0.0	0.0	10.3	14.0
LnGrp Delay(d),s/veh				0.0	0.0	41.3	23.2	8.5	0.0	0.0	21.0	36.1
LnGrp LOS						D	C	A			C	D
Approach Vol, veh/h					246			1248			1027	
Approach Delay, s/veh					41.3			10.8			28.5	
Approach LOS					D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		75.5			39.8	35.8		14.5
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		59.0			17.5	37.0		22.0
Max Q Clear Time (g_c+I1), s		18.1			9.7	27.5		8.8
Green Ext Time (p_c), s		10.8			4.6	3.8		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	21.0
HCM 2010 LOS	C

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	656	380	328	885	524	320
Future Volume (veh/h)	656	380	328	885	524	320
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	691	400	345	932	552	337
Adj No. of Lanes	2	1	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	858	691	739	1022	644	1182
Arrive On Green	0.25	0.25	0.53	0.53	0.19	0.64
Sat Flow, veh/h	3408	1568	1845	1568	3408	1845
Grp Volume(v), veh/h	691	400	345	932	552	337
Grp Sat Flow(s),veh/h/ln	1704	1568	1845	1568	1704	1845
Q Serve(g_s), s	17.1	17.2	10.5	36.0	14.1	7.2
Cycle Q Clear(g_c), s	17.1	17.2	10.5	36.0	14.1	7.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	858	691	739	1022	644	1182
V/C Ratio(X)	0.81	0.58	0.47	0.91	0.86	0.29
Avail Cap(c_a), veh/h	1151	826	739	1022	773	1182
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.93	0.93	1.00	1.00
Uniform Delay (d), s/veh	31.6	18.9	15.1	9.1	35.3	7.1
Incr Delay (d2), s/veh	3.1	0.8	2.0	12.8	8.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	7.5	5.7	26.6	7.3	3.8
LnGrp Delay(d),s/veh	34.7	19.7	17.0	21.9	43.5	7.7
LnGrp LOS	C	B	B	C	D	A
Approach Vol, veh/h	1091		1277			889
Approach Delay, s/veh	29.2		20.6			29.9
Approach LOS	C		C			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	21.6	41.1				62.8		27.2
Change Period (Y+Rc), s	4.6	5.1				5.1		4.6
Max Green Setting (Gmax), s	20.4	24.9				44.9		30.4
Max Q Clear Time (g_c+I1), s	16.1	38.0				9.2		19.2
Green Ext Time (p_c), s	0.9	0.0				11.3		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	26.0
HCM 2010 LOS	C

Intersection: 7: Riverwalk Drive/US 101 SB Off & US 101 SB Ramp

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	LTR	T	TR	L	T
Maximum Queue (ft)	346	396	231	240	293	233
Average Queue (ft)	179	223	131	142	172	110
95th Queue (ft)	292	335	203	215	272	198
Link Distance (ft)	390	390	199	199		892
Upstream Blk Time (%)	0	1	1	1		
Queuing Penalty (veh)	0	0	2	3		
Storage Bay Dist (ft)					300	
Storage Blk Time (%)					1	
Queuing Penalty (veh)					2	

Intersection: 8: Riverwalk Drive/12th Street & US 101 NB Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	R	L	T	T	T	R
Maximum Queue (ft)	135	172	235	551	550	345	189
Average Queue (ft)	50	78	94	131	203	181	101
95th Queue (ft)	106	147	182	418	478	336	184
Link Distance (ft)	163	163		892	892	349	349
Upstream Blk Time (%)	1	1				0	
Queuing Penalty (veh)	0	0				2	
Storage Bay Dist (ft)			150				
Storage Blk Time (%)			1	1			
Queuing Penalty (veh)			6	2			

Intersection: 10: 12th Street & Newburg Road

Movement	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	R	L	L	T
Maximum Queue (ft)	268	275	205	364	403	283	330	355
Average Queue (ft)	126	125	54	191	320	188	240	127
95th Queue (ft)	216	212	139	314	429	291	338	296
Link Distance (ft)		820		349	349			530
Upstream Blk Time (%)				0	8			0
Queuing Penalty (veh)				2	49			0
Storage Bay Dist (ft)	225		225			250	250	
Storage Blk Time (%)	1	0	0			0	9	
Queuing Penalty (veh)	4	2	0			1	28	

Zone Summary

Zone wide Queuing Penalty: 180

Cumulative Roundabout Alternative

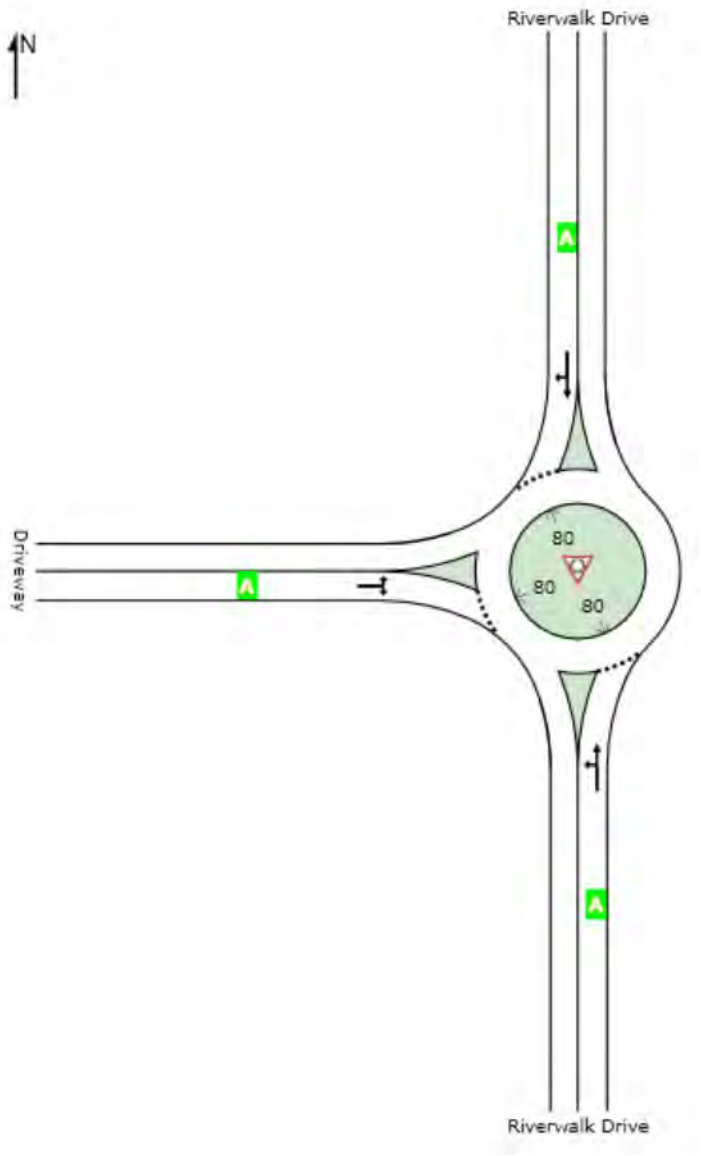
LEVEL OF SERVICE

Site: Riverwalk Drive/Driveway AM

12th Street Interchange Roundabout Concept - Option 1
Cumulative AM
Roundabout

All Movement Classes

	South	North	West	Intersection
LOS	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

LANE SUMMARY

Site: Riverwalk Drive/Driveway AM

12th Street Interchange Roundabout Concept - Option 1
Cumulative AM
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Riverwalk Drive													
Lane 1[d]	333	3.0	1368	0.243	100	4.3	LOS A	1.5	37.3	Full	1600	0.0	0.0
Approach	333	3.0		0.243		4.3	LOS A	1.5	37.3				
North: Riverwalk Drive													
Lane 1[d]	314	3.0	1376	0.228	100	4.2	LOS A	1.2	30.7	Full	1600	0.0	0.0
Approach	314	3.0		0.228		4.2	LOS A	1.2	30.7				
West: Driveway													
Lane 1[d]	8	4.7	1074	0.007	100	10.0	LOS A	0.0	0.8	Full	1600	0.0	0.0
Approach	8	4.7		0.007		10.0	LOS A	0.0	0.8				
Intersection	655	3.0		0.243		4.3	LOS A	1.5	37.3				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

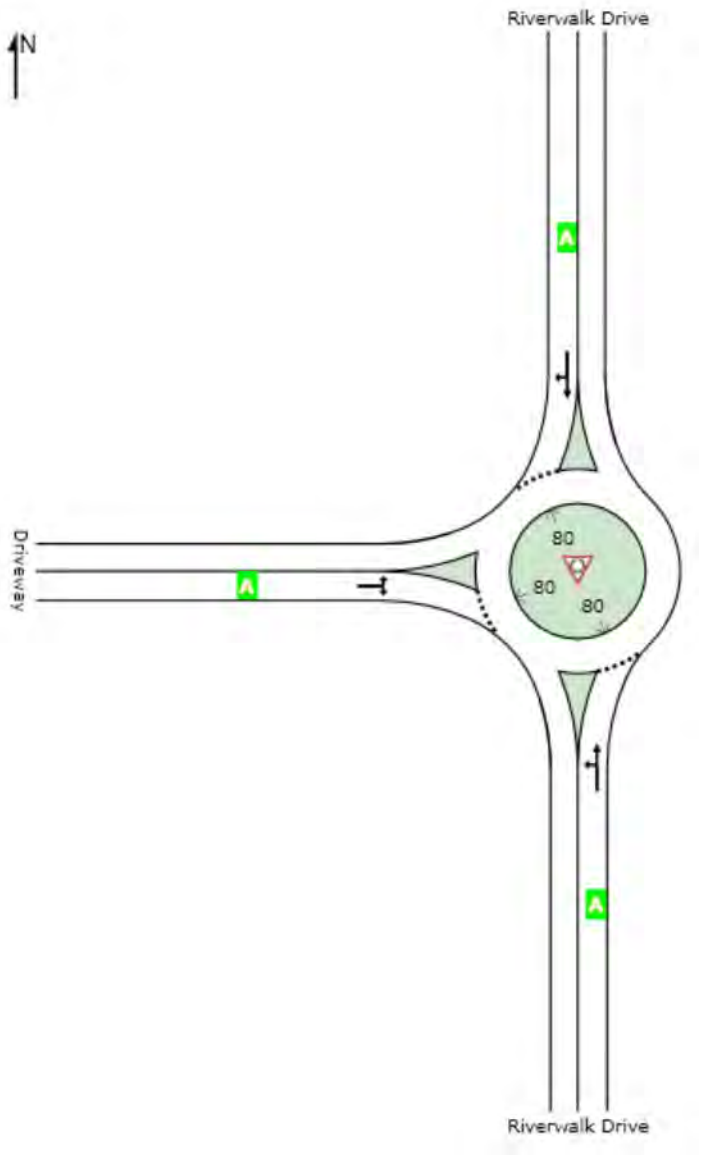
LEVEL OF SERVICE

Site: Riverwalk Drive/Driveway PM

12th Street Interchange Roundabout Concept - Option 1
Cumulative PM
Roundabout

All Movement Classes

	South	North	West	Intersection
LOS	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
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Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

LANE SUMMARY

Site: Riverwalk Drive/Driveway PM

12th Street Interchange Roundabout Concept - Option 1
Cumulative PM
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Riverwalk Drive													
Lane 1[d]	484	3.0	1376	0.352	100	4.2	LOS A	2.5	63.4	Full	1600	0.0	0.0
Approach	484	3.0		0.352		4.2	LOS A	2.5	63.4				
North: Riverwalk Drive													
Lane 1[d]	409	3.0	1376	0.298	100	4.2	LOS A	1.7	42.9	Full	1600	0.0	0.0
Approach	409	3.0		0.298		4.2	LOS A	1.7	42.9				
West: Driveway													
Lane 1[d]	7	3.3	1016	0.007	100	6.6	LOS A	0.0	0.8	Full	1600	0.0	0.0
Approach	7	3.3		0.007		6.6	LOS A	0.0	0.8				
Intersection	901	3.0		0.352		4.3	LOS A	2.5	63.4				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	25	0	237	302	25
Future Vol, veh/h	0	25	0	237	302	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	28	0	269	343	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	357	372	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	4.16	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	0	678	1165	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	678	1165	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1165	-	678	-	-
HCM Lane V/C Ratio	-	-	0.042	-	-
HCM Control Delay (s)	0	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	122	0	521	316	47
Future Vol, veh/h	0	122	0	521	316	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	128	0	548	333	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	357	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	687	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	687	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	687	-	-
HCM Lane V/C Ratio	-	0.187	-	-
HCM Control Delay (s)	-	11.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.7	-	-

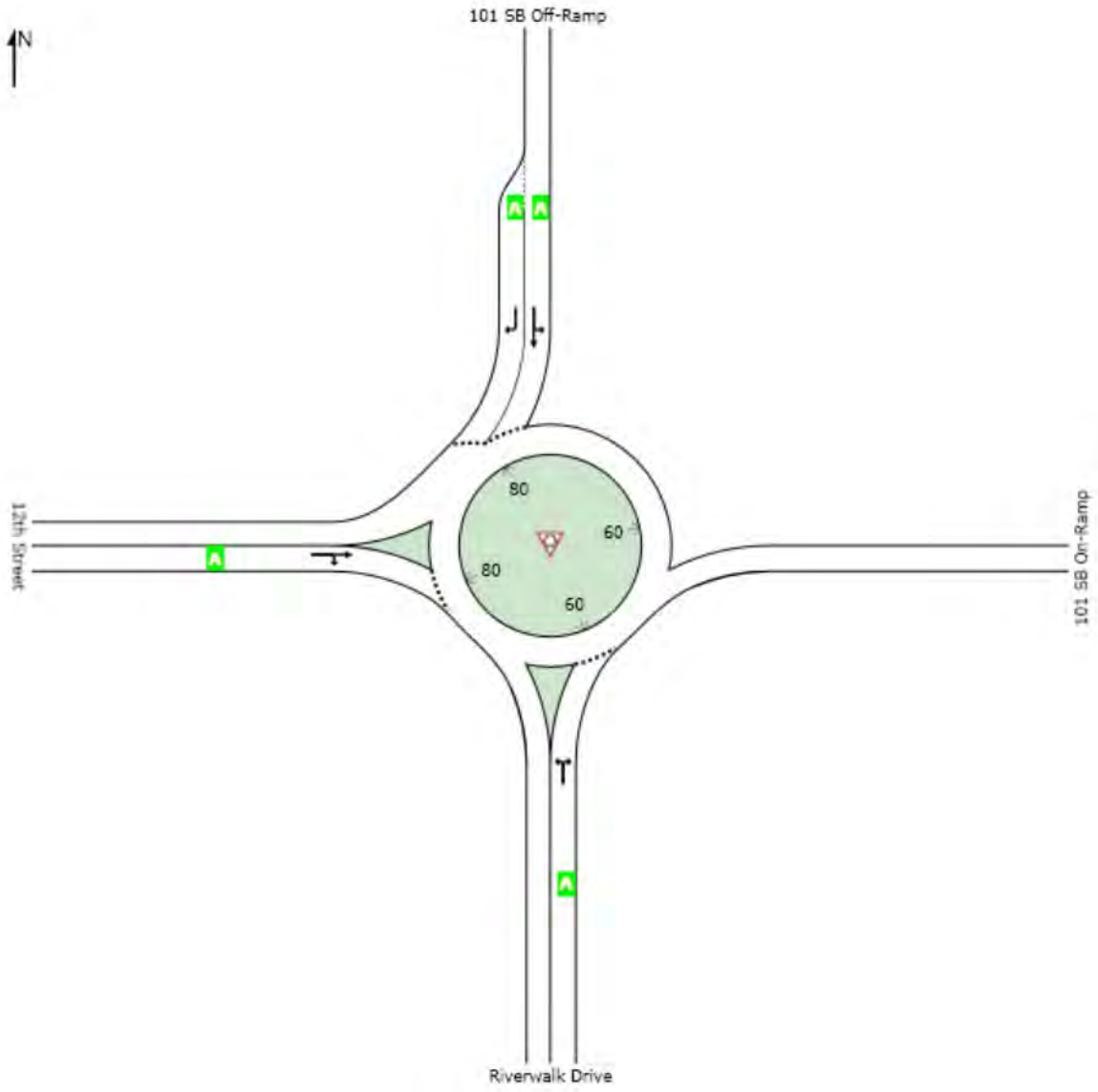
LEVEL OF SERVICE

Site: Riverwalk Drive/SB Ramps AM

12th Street Interchange Roundabout Concept - Option 1 & 2
Cumulative AM
Roundabout

All Movement Classes

	South	North	West	Intersection
LOS	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

LANE SUMMARY

Site: Riverwalk Drive/SB Ramps AM

12th Street Interchange Roundabout Concept - Option 1 & 2
Cumulative AM
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Riverwalk Drive													
Lane 1[d]	292	3.0	1120	0.261	100	10.0	LOS A	1.5	38.7	Full	1600	0.0	0.0
Approach	292	3.0		0.261		10.0	LOS A	1.5	38.7				
North: 101 SB Off-Ramp													
Lane 1	175	3.0	1051	0.167	100	5.7	LOS A	0.9	22.8	Full	1600	0.0	0.0
Lane 2[d]	331	3.0	1323	0.250	100	5.5	LOS A	1.5	38.6	Short	200	0.0	NA
Approach	506	3.0		0.250		5.5	LOS A	1.5	38.6				
West: 12th Street													
Lane 1[d]	384	3.0	1172	0.328	100	5.3	LOS A	2.1	52.7	Full	1600	0.0	0.0
Approach	384	3.0		0.328		5.3	LOS A	2.1	52.7				
Intersection	1182	3.0		0.328		6.6	LOS A	2.1	52.7				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

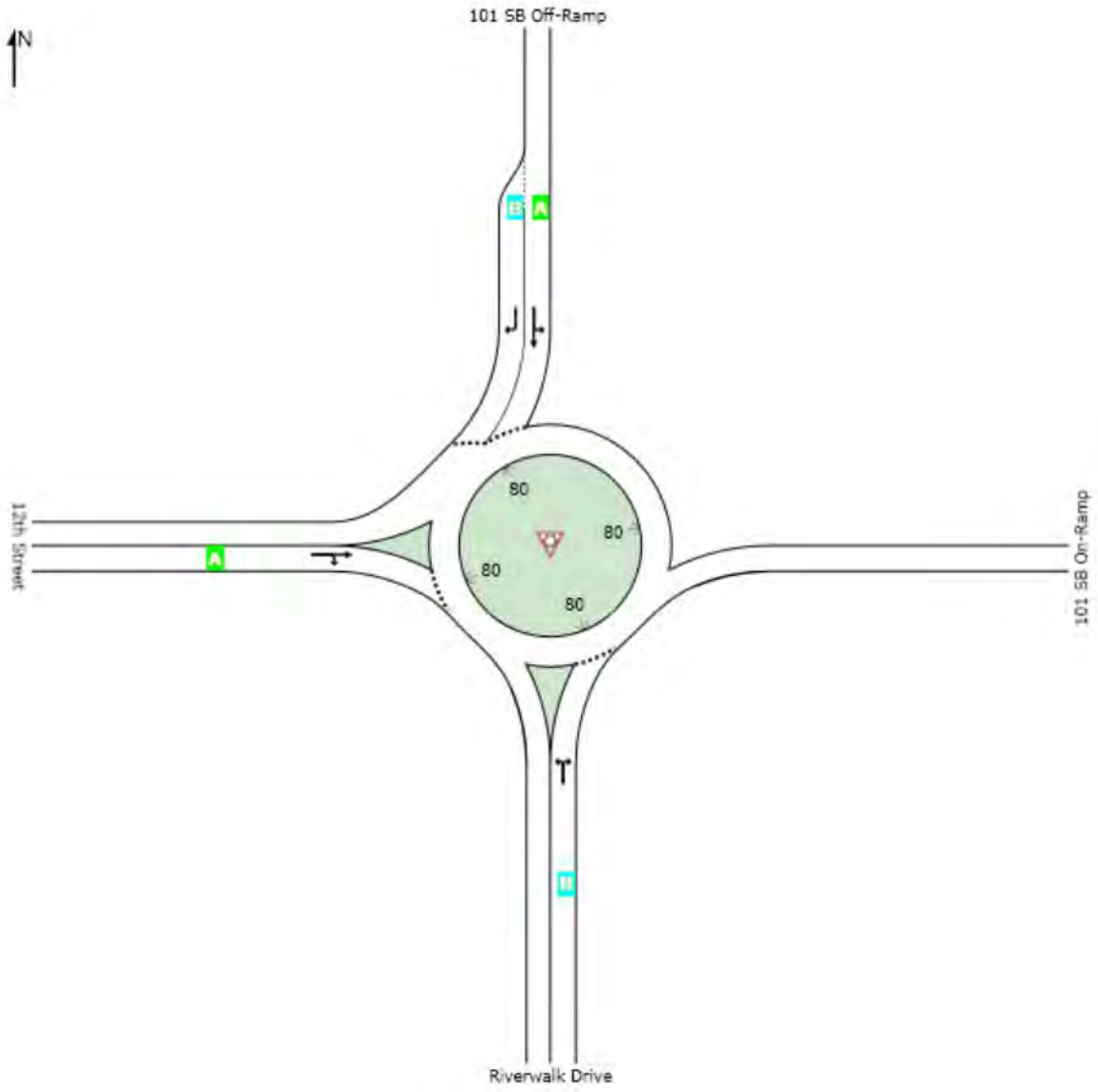
LEVEL OF SERVICE

Site: Riverwalk Drive/SB Ramps PM

12th Street Interchange Roundabout Concept - Option 1 & 2
Cumulative PM
Roundabout

All Movement Classes

	South	North	West	Intersection
LOS	B	B	A	B



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

LANE SUMMARY

Site: Riverwalk Drive/SB Ramps PM

12th Street Interchange Roundabout Concept - Option 1 & 2
Cumulative PM
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Riverwalk Drive													
Lane 1[d]	726	3.0	1126	0.645	100	11.2	LOS B	6.1	157.4	Full	1600	0.0	0.0
Approach	726	3.0		0.645		11.2	LOS B	6.1	157.4				
North: 101 SB Off-Ramp													
Lane 1	242	3.0	647	0.374	100	9.2	LOS A	2.5	64.3	Full	1600	0.0	0.0
Lane 2[d]	685	3.0	909	0.754	100	14.7	LOS B	10.9	278.0	Short	200	0.0	NA
Approach	927	3.0		0.754		13.2	LOS B	10.9	278.0				
West: 12th Street													
Lane 1[d]	544	3.0	1083	0.503	100	5.9	LOS A	4.0	102.0	Full	1600	0.0	0.0
Approach	544	3.0		0.503		5.9	LOS A	4.0	102.0				
Intersection	2198	3.0		0.754		10.7	LOS B	10.9	278.0				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

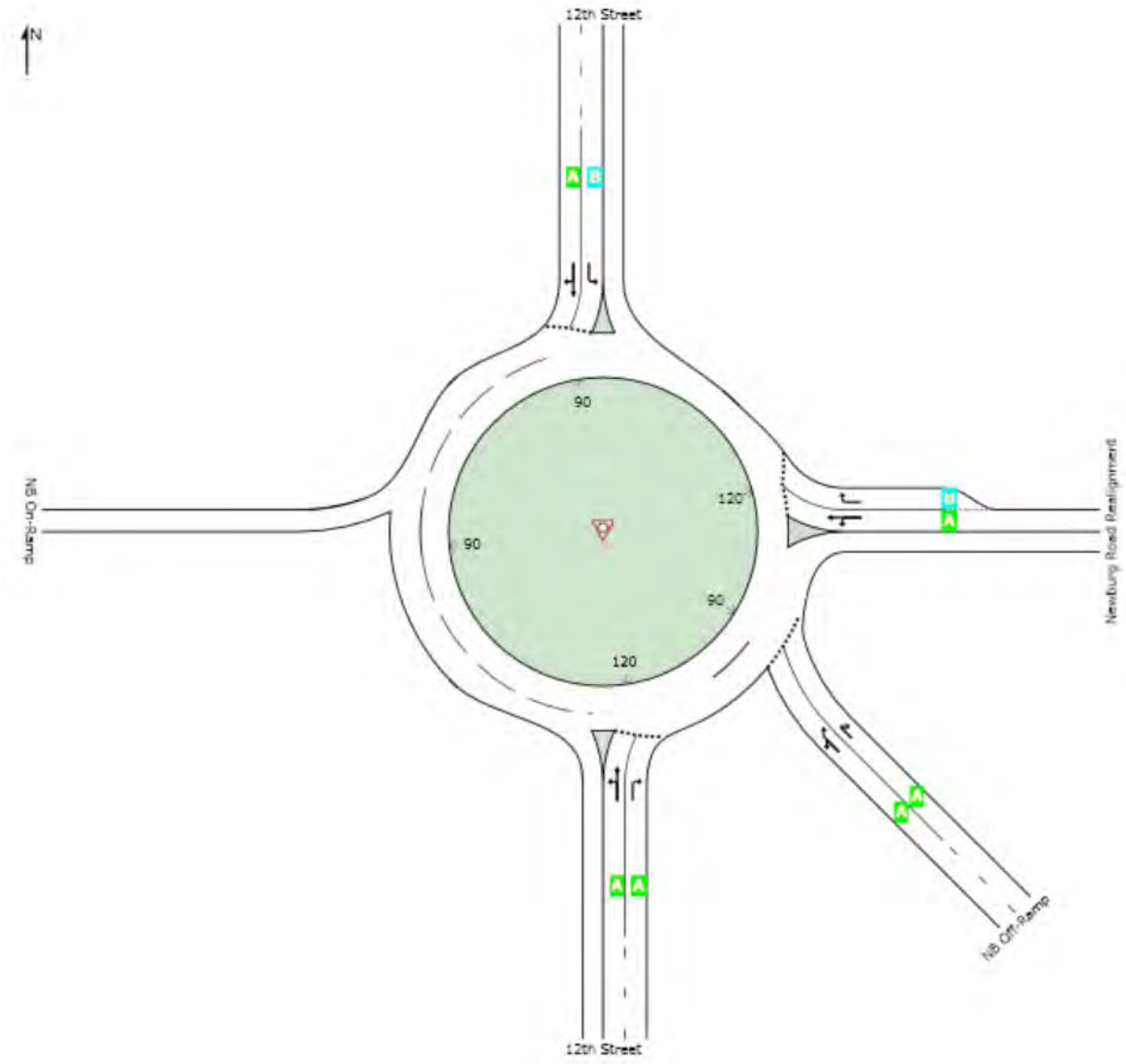
LEVEL OF SERVICE

Site: 12th Street/NB Ramps/Newburg Road AM

12th Street Interchange Roundabout Concept
Cumulative AM
Roundabout

All Movement Classes

	South	Southeast	East	North	Intersection
LOS	A	A	A	B	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

LANE SUMMARY

Site: 12th Street/NB Ramps/Newburg Road AM

12th Street Interchange Roundabout Concept
Cumulative AM
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 12th Street													
Lane 1[d]	348	3.0	1416	0.246	100	6.8	LOS A	1.7	42.6	Full	1600	0.0	0.0
Lane 2	253	3.0	1141	0.222	100	5.3	LOS A	1.4	35.4	Full	1600	0.0	0.0
Approach	601	3.0		0.246		6.2	LOS A	1.7	42.6				
SouthEast: NB Off-Ramp													
Lane 1[d]	273	3.0	971	0.281	100	6.1	LOS A	1.3	32.4	Full	1600	0.0	0.0
Lane 2	143	3.0	742	0.193	100	7.1	LOS A	0.8	19.8	Full	1600	0.0	0.0
Approach	416	3.0		0.281		6.5	LOS A	1.3	32.4				
East: Newburg Road Realignment													
Lane 1[d]	553	3.0	1174	0.472	100	9.2	LOS A	3.7	93.9	Full	1600	0.0	0.0
Lane 2	535	3.0	893	0.599	100	10.5	LOS B	5.7	147.0	Short	200	0.0	NA
Approach	1089	3.0		0.599		9.9	LOS A	5.7	147.0				
North: 12th Street													
Lane 1	261	3.0	732	0.357	100	14.3	LOS B	2.5	63.4	Full	1600	0.0	0.0
Lane 2[d]	280	3.0	936	0.299	100	7.7	LOS A	2.2	57.3	Full	1600	0.0	0.0
Approach	541	3.0		0.357		10.9	LOS B	2.5	63.4				
Intersection	2647	3.0		0.599		8.7	LOS A	5.7	147.0				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

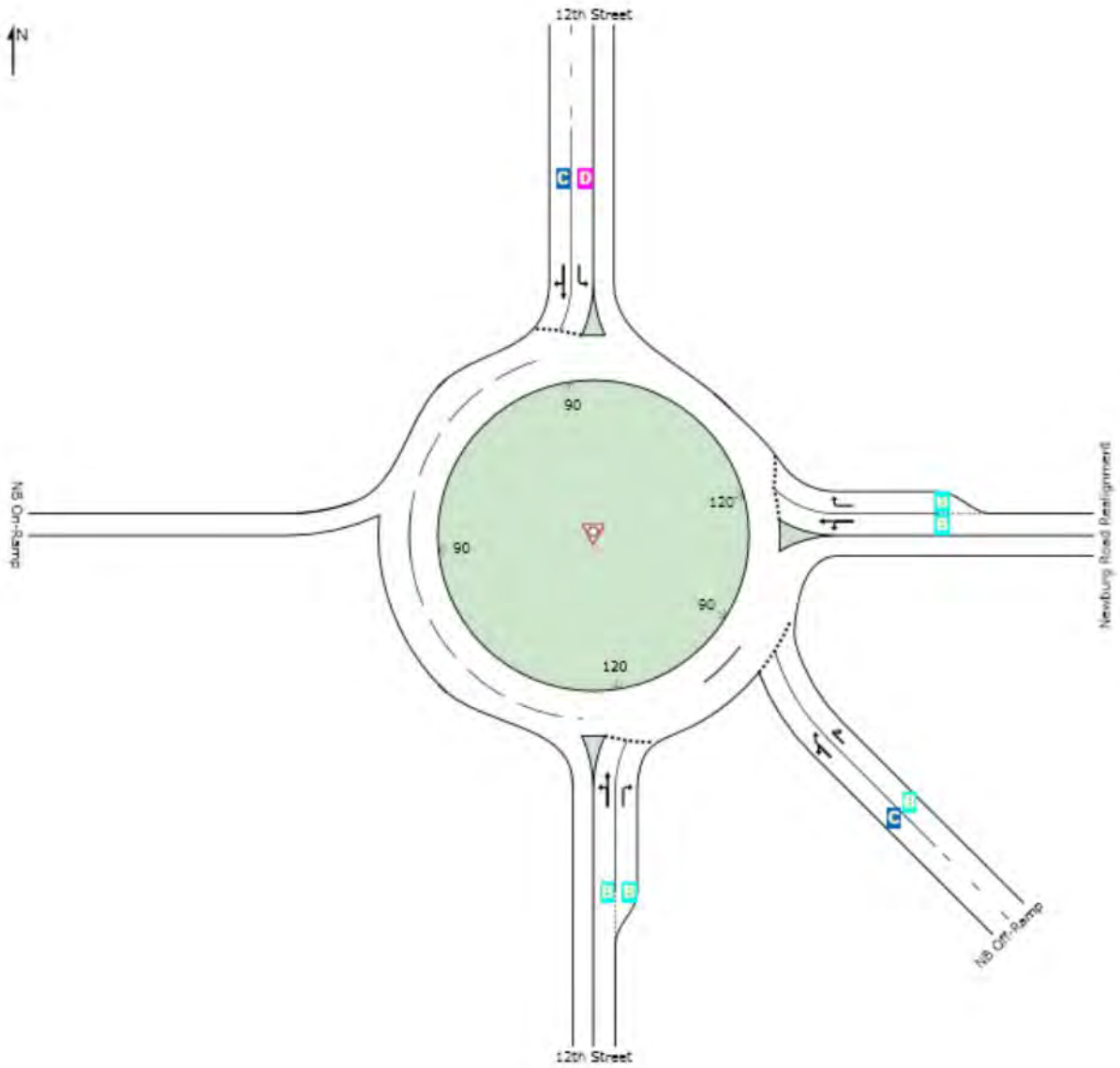
LEVEL OF SERVICE

Site: 12th Street/NB Ramps/Newburg Road PM

12th Street Interchange Roundabout Concept
Cumulative PM
Roundabout

All Movement Classes

	South	Southeast	East	North	Intersection
LOS	B	B	B	D	B



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

LANE SUMMARY

Site: 12th Street/NB Ramps/Newburg Road PM

12th Street Interchange Roundabout Concept
Cumulative PM
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: 12th Street													
Lane 1	566	3.0	823	0.688	100	14.3	LOS B	8.1	206.2	Full	1600	0.0	0.0
Lane 2[d]	795	3.0	1078	0.737	100	10.6	LOS B	10.5	269.9	Short	200	0.0	NA
Approach	1361	3.0		0.737		12.1	LOS B	10.5	269.9				
SouthEast: NB Off-Ramp													
Lane 1	106	3.0	270	0.394	100	20.4	LOS C	2.3	57.7	Full	1600	0.0	0.0
Lane 2[d]	137	3.0	388	0.353	100	14.8	LOS B	2.3	59.0	Full	1600	0.0	0.0
Approach	243	3.0		0.394		17.3	LOS B	2.3	59.0				
East: Newburg Road Realignment													
Lane 1[d]	691	3.0	984	0.702	100	13.9	LOS B	9.5	242.5	Full	1600	0.0	0.0
Lane 2	400	3.0	731	0.547	100	10.3	LOS B	5.0	128.6	Short	200	0.0	NA
Approach	1091	3.0		0.702		12.6	LOS B	9.5	242.5				
North: 12th Street													
Lane 1[d]	552	3.0	611	0.902	100	48.5	LOS D	19.8	507.6	Full	1600	0.0	0.0
Lane 2	337	3.0	445	0.756	100	30.2	LOS C	9.4	240.1	Full	1600	0.0	0.0
Approach	888	3.0		0.902		41.6	LOS D	19.8	507.6				
Intersection	3583	3.0		0.902		19.9	LOS B	19.8	507.6				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Attachment C - Review of Geometric Design Standards

Memorandum

June 22, 2016

Project:	Fortuna Highway 101/Riverwalk Connectivity Study		
Subject:	***Review of Safety and Design Standards***		
Client:	Humboldt County Association of Governments	Job no.:	11109149
Prepared by:	David Caisse, P.E and Josh Wolf, P.E.	Tel:	(707) 443-8326

Introduction / Objective

This memo is intended to provide a brief summary of the existing conditions and identify potential non-standard features for the Highway 101 interchanges at 12th Street and Kenmar Road. Existing facilities were compared against the applicable standards and guidelines for the roadway being analyzed. For example, standards for the Highway 101 on and off ramps and other State owned facilities are based on the Caltrans Highway Design Manual. Local facilities are based on the local agency or Federal guidance or standards (generally whichever are more stringent). Local facilities located within the State right-of-way crossing over or under a freeway or expressway and connecting to the state facility are based on the State's design standards. Below is a list of public standards which are commonly used.

Common Public Design Standards and Guidelines

State of California

Caltrans Highway Design Manual – This manual was developed by the California Department of Transportation (Caltrans) to establish uniform policies and procedures to carry out the State highway design functions of the department. Design standards include items such as roadway geometry, pavement engineering, drainage, bicycle transportation and other miscellaneous design standards.

California Manual on Uniform Traffic Control Devices (CA MUTCD) – This manual provides uniform standards and specifications for all official traffic control devices in California. Design standards include items such as signs, markings, signal and temporary traffic control for vehicular, rail and bicycle facilities. The CA MUTCD is based on Federal Highway Administrations (FHWA) *2009 National Manual on Uniform Traffic Control Devices* with California revisions and amendments.

Federal

AASHTO Geometric Design of Highways and Streets – Similar to the Highway Design Manual, these guidelines are intended to provide roadway design standards with operational efficiency, comfort, safety and convenience of the motorist in mind. Design standards include items such as highway function, design controls and elements of design for various functional classifications of roadways (freeways, arterials, collectors, local roads, etc.).

US Department of Justice's ADA Standards for Accessible Design – These standards are based on the Americans with Disabilities Act of 1990 (ADA) and provide standards to prohibit discrimination and ensure equal opportunity for persons with disabilities. Design elements include standards for accessible routes, general site and building elements (residential and commercial) and recreational facilities.

AASHTO Guide for the Development of Bicycle Facilities – This manual was developed to provide an overview of planning and design considerations, as well as recommendations for operation and maintenance of various types of bicycle facilities.

NACTO Urban Bikeway Design Guide – Similar to the AASHTO Guide for the Development of Bicycle Facilities, this manual was developed to provide guidance for the planning and design of bicycle facilities. This manual however, was developed by cities for cities based on the experience of the best cycling cities in the world.

As discussed later in this memo, there are currently no pedestrian or bicycle facilities in the immediate vicinity of the interchanges, therefore the later three of the manuals identified above were not used when evaluating the existing conditions.

Condition Assessment

A reconnaissance level condition assessment was performed and used to identify fundamental deficiencies as compared to the current design standards. The results presented below are based on a preliminary level characterization to provide background information and guidance for evaluating the existing conditions. For example, the characterization is based on notable qualitative characteristics visually observed and/or measured during a site walk, rather than a detailed investigation or survey of the existing conditions.

The characteristics noted are based on observable features that are relevant to the evaluation of the current layout. The characterization is intended to serve as a planning tool to provide additional information to be considered when recommending improvement alternatives. The primary factors being investigated are items such as horizontal alignment, geometric cross section, design vehicles, clearances, and sight distance.

Results

The results of the condition assessment for each segment of roadway can be found on the following pages.

12th Street and US Highway 101 Interchange

12th Street/Riverwalk Drive

Roadway Segment: **Riverwalk Dr/12th St**

	Existing Roadway Characteristics	Design Standards	Meets Standards (√ = yes)	Reference to Standard
Facility Type	Local Facility			
Functional Classification	Minor Arterial / Major Collector			
No. of Lanes	2			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	N			
Posted Speed/Design Speed (mph)	30/35	45 [1]		HDM Index 101.1
Lane Width (ft)	12	12	√	HDM Index 301.1 / AASHTO
Overcrossing Width (ft)	28	32		HDM Index 308.1
Right Shoulder Width (ft)	Var. 2' - 8' (between NB and SB ramps)	4		HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	300+/-	425		HDM Index 203.2
Decision Sight Distance (ft)	400 [2]	525		HDM Index 201.7
Intersection Spacing (ft)	0' (Between SB ramps and Dinsmore Dr) & 300' (between NB ramps and Newburg Rd)	500		HDM Index 504.3
Horizontal Clearance (ft)	4'+ (w/out curb) & 1.5'+ (w/ curb)	4' (w/out curb) & 1.5' (w/ curb)	√	HDM Index 309.1
Vertical Clearance (ft - in)	15' - 5" [3]	16' - 6"		HDM Index 309.2
Stopping Sight Distance (ft)	250+	250	√	HDM Index 201.1
Design Vehicle	Cal Legal - 50 [4]	Cal Legal - 50		HDM Index 404.4

1 Design Standard applies to connections to freeways or expressways

[2] The roadway geometry could probably accommodate the minimum Decision Sight Distance, but some trees might need trimming or be removed.

[3] This location is an overcrossing so the vertical clearance shown here is for US Hwy 101.

[4] A Cal Legal - 50 Truck could probably navigate the turns, but may be required to travel outside the lane slightly and use the gore area or adjacent shoulder.

- Posted Speed/Design Speed – When feasible, the design speed of local facilities connecting to a freeway or expressway should be 45 mph, but shall be a minimum of 35 mph.
- Overcrossing Width – The adjacent sections of roadway approaching the overcrossing are urban in nature and contain 12’ travel lanes with 8’ shoulders. At the overcrossing, the section narrows to 12’ travel lanes, 2’ paved shoulders and a concrete curb/vehicular railing which begins at the edge of the shoulder.

- Right Shoulder Width – The shoulder width decreases to only 2' within the overcrossing area and again on the Strongs Creek Bridge (which is located at the southern extents of this segment). All other portions of this segment have shoulders which meet the minimum design standard of 4' wide. The widths vary, but are generally around 8' in width.

- Intersection Spacing –

    - At the southern extent of this segment, Dinsmore Road intersects Riverwalk Drive immediately adjacent to the SB ramps. Due to its proximity and configuration, Dinsmore Road appears more like a 5th leg of the Riverwalk Drive and SB ramp intersection rather than its own. Drivers appear to be confused and have been observed traveling directly from Dinsmore Drive to the SB ramp or northward towards the downtown area.

    - At the northern extent of the segment, the NB on and off ramps are located approximately 300' south of the Newburg Road and 12th Street intersection. The preferred distance between intersections (from curb return to curb return) is 500', but shall be a minimum of 400'.

- Curve Radii - 12th Street is a relatively straight section of road, but contains a few curves near the interchange. The first curve heading south towards Highway 101 is slightly smaller than recommended based on the speed of the roadway through that section.

- Decision Sight Distance - Near the overcrossing, there are a number of large conifers that restrict visibility. The sight distance could be improved and would likely meet the standards if the trees were trimmed or removed.

- Vertical Clearance – Since this is an overcrossing, the vertical clearance described here is for the vehicles on Highway 101.

- Design Vehicle – In all cases, it appears as though a Cal Legal-50 truck could navigate the turns and stay within the paved roadway area; however, due to the tight radii entering and exiting the ramps and turning on and off the side streets (Dinsmore Drive and Newburg Road), large trucks would need to encroach slightly into the oncoming travel lane and or gore area.

Newburg Road

Roadway Segment: Newburg Rd

	Existing Roadway Characteristics	Design Standards	Meets Standards (√ = yes)	Reference to Standard
Facility Type	Local Facility			
Functional Classification	Major Collector			
No. of Lanes	2			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	Y (north side only)			
Posted Speed/Design Speed (mph)	25/30	25	√	AASHTO
Lane Width (ft)	12	12	√	HDM Index 301.1 / AASHTO
Right Shoulder Width (ft)	8 / 4	2	√	HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	300+	300	√	HDM Index 203.2
Decision Sight Distance (ft)	450+	450	√	HDM Index 201.7
Angle of Intersection (Degree)	45	75		HDM Index 403.3
Horizontal Clearance (ft)	3'+/- (in areas w/out curb)	4' (w/out curb) & 1.5' (w/ curb)		HDM Index 309.1
Stopping Sight Distance (ft)	200+	200	√	HDM Index 201.1
Design Vehicle	Cal Legal - 50 [1]	Cal Legal - 50		HDM Index 404.4

[1] A Cal Legal - 50 Truck could probably navigate the turns, but would be required travel outside its lane.

- Angle of Intersection – Newberg Intersects 12th Street at a 45 degree angle. Provided there are no physical constraints, the interior angle should be 90 degrees or as close to 90 degrees as practical, but should not be less than 75 degrees.
- Horizontal Clearance – The southern half of the roadway contains a number of utility poles that are very close to the edge of the travel lane.
- Design Vehicle – Newberg Road intersects 12th Street at an acute angle. Due to the angle and tight radii, large trucks need to encroach into oncoming travel lane to navigate the turns and stay within the existing pavement.

Dinsmore Drive

Roadway Segment: Dinsmore Dr

	Existing Roadway Characteristics	Design Standards	Meets Standards (√ = yes)	Reference to Standard
Facility Type	Local Facility			
Functional Classification	Local Road			
No. of Lanes	2			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	N			
Posted Speed/Design Speed (mph)	25/30	25	√	AASHTO
Lane Width (ft)	12	12	√	HDM Index 301.1 / AASHTO
Right Shoulder Width (ft)	2	2	√	HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	300+	300	√	HDM Index 203.2
Decision Sight Distance (ft)	450+	450	√	HDM Index 201.7
Horizontal Clearance (ft)	4'+/- [1]	4'	√	HDM Index 309.1
Stopping Sight Distance (ft)	200+	200	√	HDM Index 201.1
Design Vehicle	Cal Legal - 50 [2]	Cal Legal - 50		HDM Index 404.4

[1] Power poles are very close to the edge of the pavement.

[2] A Cal Legal - 50 Truck could probably navigate the turns, but would be required travel outside its lane.

- Design Vehicle – Dinsmore Drive intersects 12th Street as one of the five legs of this intersection. As a result, the intersection is tight and confusing. Due to the tight radius and close proximity of the bridge to the intersection, large trucks heading or coming from the south leg of the intersection are required to swing wide and encroach into oncoming travel lanes.

US Highway 101 Northbound Ramp

Roadway Segment: **US Hwy 101 Northbound (On and off ramps)**

	Existing Roadway Characteristics	Design Standards	Meets Standards (√ = yes)	Reference to Standard
Facility Type	Freeway / Expressway			
Functional Classification	Freeway / Expressway			
No. of Lanes	1			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	N			
Posted Speed/Design Speed (mph)	35/40	25/50 [1]		HDM Index 504.3
Lane Width (ft)	12	12	√	HDM Index 301.1
Right Shoulder Width (ft)	8	8	√	HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	400 / 600	550		HDM Index 203.2
Decision Sight Distance (ft)	425+/-	600		HDM Index 201.7
Horizontal Clearance (ft)	4'+ (w/out curb) & 1.5'+ (w/ curb)	4' (w/out curb) & 1.5' (w/ curb)	√	HDM Index 309.1
Stopping Sight Distance (ft)	300+	300	√	HDM Index 201.1
Design Vehicle	STAA [2]	STAA		HDM Index 404.4

[1] Design speed should be 25 mph when traffic is expected to make a turning movement at the terminus and 50 mph when entering, exiting a ramp or when a "through" movement is provided at the terminus.

[2] An STAA truck could probably navigate the turns, but would be required travel outside its lane.

- Posted Speed/Design Speed – The design speed of ramp can vary depending on the alignment and controls at each end. An acceptable approach is to set 25 mph and 50 mph design speeds for the ramp terminus and exit nose, respectively. The NB off ramp terminates at an intersection where traffic is expected to make a turning movement; therefore, the design speed should be 25 mph nearing this portion of the ramp.

- Curve Radii – The design standard for the minimum curve radius of the northbound on and off ramps are based on the posted speed limit entering the on ramp from Highway 101. The curve radius identified below as not meeting the standard are is located on the northbound on ramp just before entering Highway 101. This particular section of road has no posted speed limit, but traffic entering Highway 101 at this location is accelerating and approaching speeds in excess of 40 mph. If considerations are made for improvements to this interchange, this radius should be increased to meet the current design standards.

- Decision Sight Distance – Similar to the 12th Street overcrossing, there are a number of large

conifers (Redwoods) along the right side of the off ramp that restrict visibility. The sight distance could be improved and would likely meet the standards if the trees were trimmed or removed.

- Design Vehicle – In all cases, it appears as though an STAA truck could navigate the turns and stay within the pavement; however, due to the tight radii entering and exiting the ramps and turning on and off 12th Street, large trucks would need to encroach slightly into the oncoming travel lane or gore area.

US Highway 101 Southbound Ramp

Roadway Segment: **US Hwy 101 Southbound (On and off ramps)**

	Existing Roadway Characteristics	Design Standards	Meets Standards (√ = yes)	Reference to Standard
Facility Type	Freeway / Expressway			
Functional Classification	Freeway / Expressway			
No. of Lanes	1			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	N			
Posted Speed/Design Speed (mph)	25/30	25/50 [1]		HDM Index 504.3
Lane Width (ft)	12	12	√	HDM Index 301.1
Right Shoulder Width (ft)	8	8	√	HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	300 / 650	300	√	HDM Index 203.2
Decision Sight Distance (ft)	450+	450	√	HDM Index 201.7
Horizontal Clearance (ft)	4'+ (w/out curb) & 1.5'+ (w/ curb)	4' (w/out curb) & 1.5' (w/ curb)	√	HDM Index 309.1
Stopping Sight Distance (ft)	200+	200	√	HDM Index 201.1
Design Vehicle	STAA [2]	STAA		HDM Index 404.4

[1] Design speed should be 25 mph when traffic is expected to make a turning movement at the terminus and 50 mph when entering, exiting a ramp or when a "through" movement is provided at the terminus.

[2] An STAA truck could probably navigate the turns, but would be required travel outside its lane.

- Posted Speed/Design Speed - The design speed of ramp can vary depending on the alignment and controls at each end. An acceptable approach is to set 25 mph and 50 mph design speeds for the ramp terminus and exit nose, respectively. The SB off ramp terminates at an intersection where traffic is expected to make a turning movement; therefore, the design speed should be 25 mph nearing this portion of the ramp.

- Design Vehicle – In all cases, it appears as though an STAA truck could navigate the turns and stay within the pavement; however, due to the tight radii entering and exiting the ramps and turning on and off 12th Street or Dinsmore Drive, large trucks would need to encroach slightly into the oncoming travel lanes or gore area.

~~**Kenmar Road and US Highway 101 Interchange**~~

~~Kenmar Road~~

Roadway Segment: ~~Kenmar Rd~~

	Existing Roadway Characteristics	**Design Standards**	**Meets Standards** (√ = yes)	**Reference to Standard**
Facility Type	Local Facility			
Functional Classification	Other Principal Arterial / Major Collector			
No. of Lanes	2			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	N			
Posted Speed/Design Speed (mph)	35/40	45 [1]		HDM Index 101.1
Lane Width (ft)	12	12	√	HDM Index 301.1 / AASHTO
Right Shoulder Width (ft)	8	4	√	HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	600 / 75	550		HDM Index 203.2
Decision Sight Distance (ft)	230+/-	600		HDM Index 201.7
Horizontal Clearance (ft)	4'+ (w/out curb) & 1.5'+ (w/ curb) or shielded	4' (w/out curb) & 1.5' (w/ curb)	√	HDM Index 309.1
Vertical Clearance (ft - in)	14' - 10" [2]	15		HDM Index 309.2
Stopping Sight Distance (ft)	125+/-	300		HDM Index 201.1
Design Vehicle	Cal Legal - 50 [3]	Cal Legal - 50		HDM Index 404.4

[1] Design Standard applies to connections to freeways or expressways

[2] This location is an undercrossing so the vertical clearance shown here is for Kenmar Rd.

[3] A Cal Legal - 50 Truck could probably navigate the turns, but would be required travel outside its lane.

- ~~Posted Speed/Design Speed - When feasible, the design speed of local facilities connecting to a freeway or expressway should be 45 mph, but shall be a minimum of 35 mph.~~
- ~~Curve Radii – Most of Kenmar is relatively straight, but near the southern portion of the interchange there is a tight radius. The curve radius here is significantly smaller than recommended based on the speed of the roadway through that section.~~
- ~~Decision Sight Distance – As a result of the tight radius identified above and dense vegetation growing outside of the right of way, visibility is obstructed.~~
- ~~Vertical Clearance – Kenmar Road is an undercrossing at this location so the vertical clearance described here is for the vehicles on Kenmar Road.~~
- ~~Stopping Sight Distance – Similar to Decision Sight Distance, the tight radius and dense vegetation obstructs visibility reducing the available stopping sight distance.~~

- ~~Design Vehicle – In all cases, it appears as though a Cal Legal-50 truck could navigate the turns and stay within the paved roadway area; however, due to the tight radii entering and exiting the ramps and small curve radius identified above, large trucks would need to make wide turns and encroach slightly into the oncoming travel lane or gore area.~~

~~Eel River Drive~~

Roadway Segment: Eel River Dr

	Existing Roadway Characteristics	Design Standards	Meets Standards (√ = yes)	Reference to Standard
Facility Type	Local Facility			
Functional Classification	Major Collector			
No. of Lanes	2			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	N			
Posted Speed/Design Speed (mph)	30/35	30	√	AASHTO
Lane Width (ft)	11	9	√	HDM Index 301.1 / AASHTO
Right Shoulder Width (ft)	2+	2	√	HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	85	425		HDM Index 203.2
Decision Sight Distance (ft)	525+	525	√	HDM Index 201.7
Intersection Spacing (ft)	150' (Between NB ramps and Eel River Dr)	500'		HDM Index 504.3
Horizontal Clearance (ft)	4'+/-	4' (w/out curb) & 1.5' (w/ curb)	√	HDM Index 309.1
Stopping Sight Distance (ft)	250+	250	√	HDM Index 201.1
Design Vehicle	Cal Legal - 50 [1]	Cal Legal - 50		HDM Index 404.4

- ~~Curve Radii – Most of Eel River Drive is relatively straight, but near its intersection with Kenmar Road there is a tight radius. The curve radius here is significantly smaller than recommended based on the speed of the roadway through that section; however, at this point the road is approaching the STOP sign so speeds would be lower. If considerations are made for improvements to this interchange, the curve radius or approach angle should be evaluated.~~

- ~~Intersection Spacing – The SB on and off ramps are located approximately 150' south of the Eel River Drive and Kenmar Road intersection. The preferred distance between intersections (from curb return to curb return) is 500', but shall be a minimum of 400'.~~

- ~~Design Vehicle – Eel River Drive intersects Kenmar Road at an acute angle. Due to the angle and tight radii, large trucks need to encroach into the oncoming travel lane to navigate the turns and stay within the existing paved roadway.~~

~~US Highway 101 Northbound Ramp~~

Roadway Segment: US Hwy 101 Northbound (On and off ramps)

	Existing Roadway Characteristics	Design Standards	Meets Standards (√ = yes)	Reference to Standard
Facility Type	Freeway / Expressway			
Functional Classification	Freeway / Expressway			
No. of Lanes	1			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	N			
Posted Speed/Design Speed (mph)	35/40	25/50 [1]		HDM Index 504.3
Lane Width (ft)	12	12	√	HDM Index 301.1
Right Shoulder Width (ft)	8	8	√	HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	N/A	550	√	HDM Index 203.2
Decision Sight Distance (ft)	600+	600	√	HDM Index 201.7
Horizontal Clearance (ft)	4'+ (w/out curb) & 1.5'+ (w/ curb)	4' (w/out curb) & 1.5' (w/ curb)	√	HDM Index 309.1
Stopping Sight Distance (ft)	300+	300	√	HDM Index 201.1
Design Vehicle	STAA [2]	STAA		HDM Index 404.4

[1] Design speed should be 25 mph when traffic is expected to make a turning movement at the terminus and 50 mph when entering, exiting a ramp or when a "through" movement is provided at the terminus.

[2] An STAA truck could probably navigate the turns, but would be required travel outside its lane.

- ~~Posted Speed/Design Speed – The design speed of ramp can vary depending on the alignment and controls at each end. An acceptable approach is to set 25 mph and 50 mph design speeds for the ramp terminus and exit nose, respectively. The NB off ramp terminates at an intersection where traffic is expected to make a turning movement; therefore, the design speed should be 25 mph nearing this portion of the ramp.~~

- ~~Design Vehicle – In all cases, it appears as though an STAA truck could navigate the turns and stay within the pavement; however, due to the tight radii entering and exiting the ramps and turning on and off Kenmar Road, large trucks would need to encroach slightly into the oncoming travel lane or gore area.~~

~~US Highway 101 Southbound Ramp~~

Roadway Segment: **US Hwy 101 Southbound (On and off ramps)**

	Existing Roadway Characteristics	Design Standards	Meets Standards (√ = yes)	Reference to Standard
Facility Type	Freeway / Expressway			
Functional Classification	Freeway / Expressway			
No. of Lanes	1			
Rural/Urban	Rural			
Bike Facilities (Y/N)	N			
Pedestrian Facilities (Y/N)	N			
Posted Speed/Design Speed (mph)	35/40 [1]	25/50 [2]		HDM Index 504.3
Lane Width (ft)	12	12	√	HDM Index 301.1
Right Shoulder Width (ft)	8	8	√	HDM Index 302.1 & 308.1 / AASHTO
Curve Radii (ft)	N/A	550	√	HDM Index 203.2
Decision Sight Distance (ft)	600+	600	√	HDM Index 201.7
Horizontal Clearance (ft)	4'+ (w/out curb) & 1.5'+ (w/ curb)	4' (w/out curb) & 1.5' (w/ curb)	√	HDM Index 309.1
Stopping Sight Distance (ft)	300+	300	√	HDM Index 201.1
Design Vehicle	STAA [3]	STAA		HDM Index 404.4

[1] The southbound on ramp didn't have a speed limit sign, but was assumed to be 35 mph based on the northbound on ramp and ramp geometry.

[2] Design speed should be 25 mph when traffic is expected to make a turning movement at the terminus and 50 mph when entering, exiting a ramp or when a "through" movement is provided at the terminus.

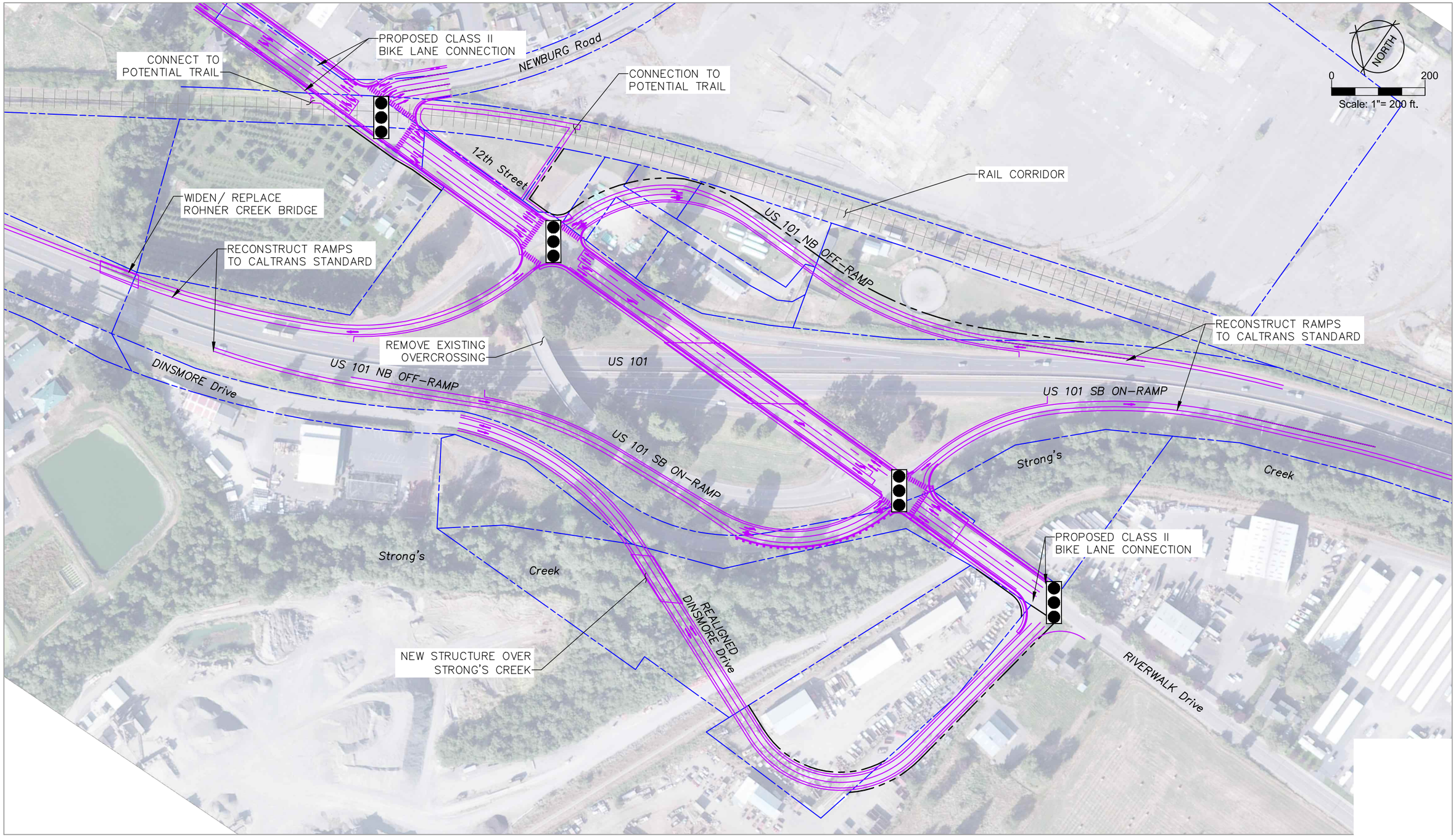
[3] An STAA truck could probably navigate the turns, but would be required travel outside its lane.

- ~~Posted Speed/Design Speed – The design speed of ramp can vary depending on the alignment and controls at each end. An acceptable approach is to set 25 mph and 50 mph design speeds for the ramp terminus and exit nose, respectively. The SB off ramp terminates at an intersection where traffic is expected to make a turning movement; therefore, the design speed should be 25 mph nearing this portion of the ramp.~~

- ~~Design Vehicle – In all cases, it appears as though an STAA truck could navigate the turns and stay within the pavement; however, due to the tight radii entering and exiting the ramps and turning on and off Kenmar Road, large trucks would need to encroach into the oncoming travel lane or gore area.~~

Attachment D - Conceptual Design Drawings

12th Street INTERCHANGE TRAFFIC SIGNAL CONCEPT



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure 7.2

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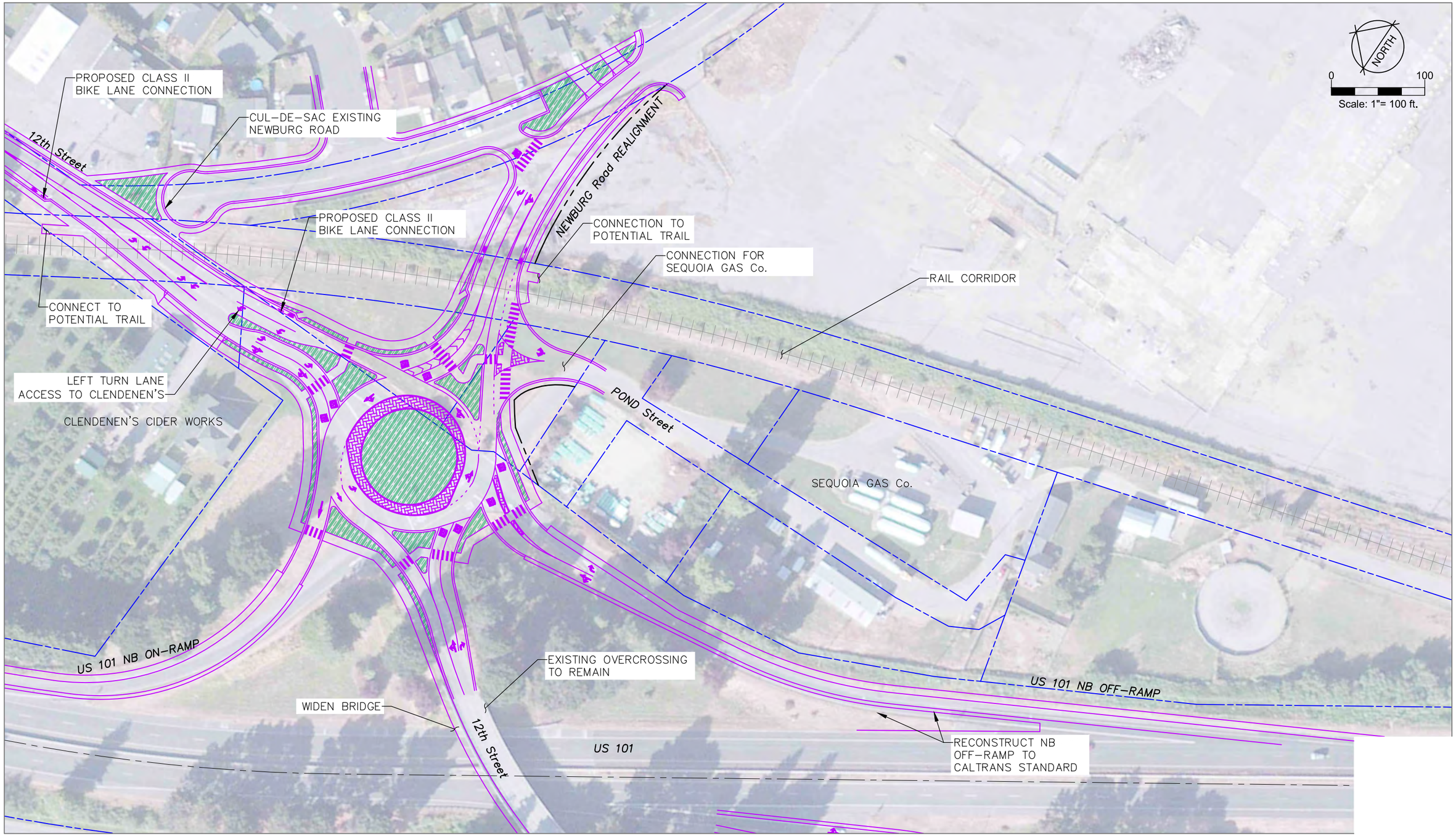
12th St. NORTH INTERCHANGE ROUNDABOUT CONCEPT



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure 7.11

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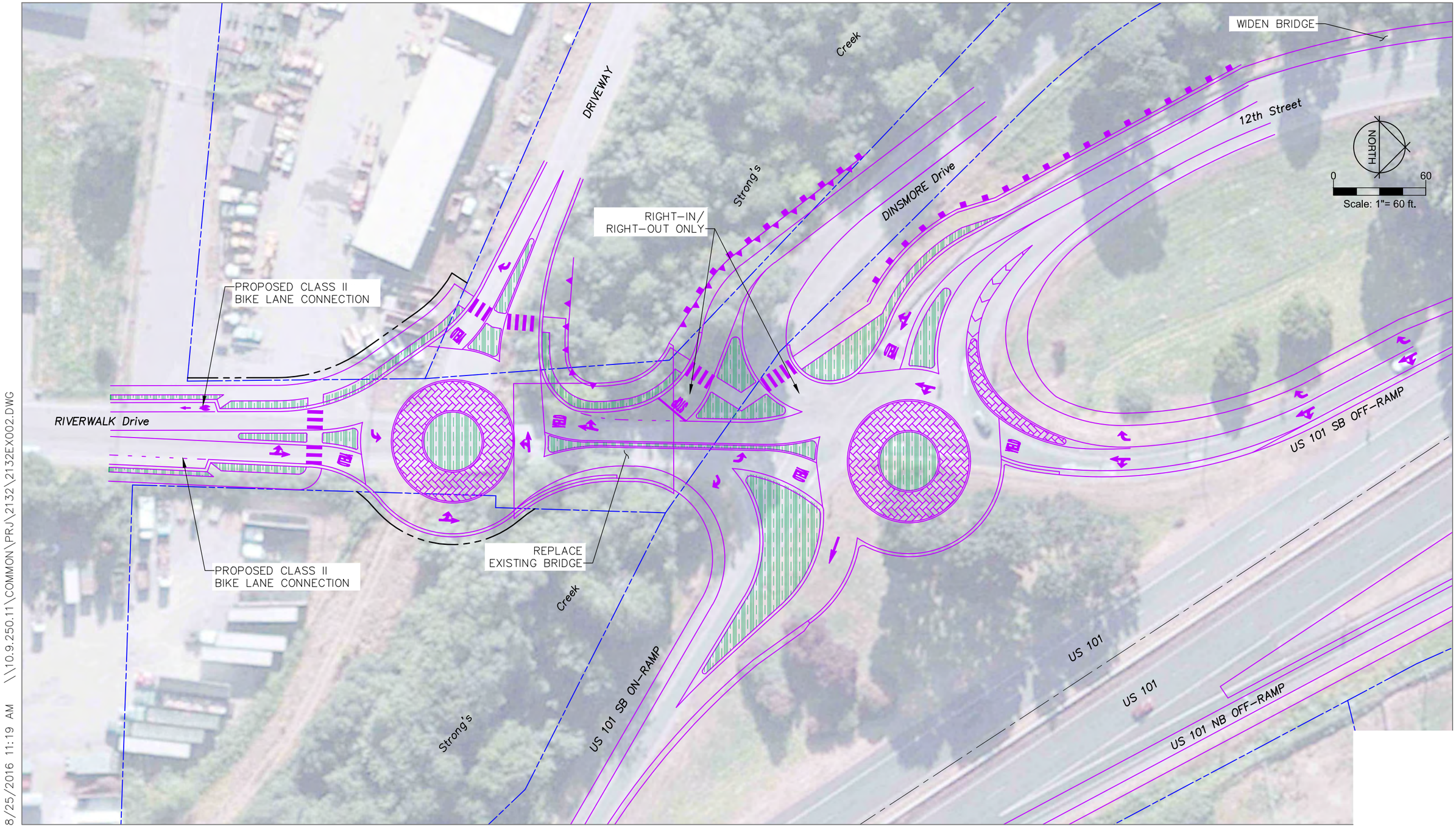
2132EX002.dwg

12th St. SOUTH INTERCHANGE ROUNDABOUT CONCEPT-Option 1



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure 7.7

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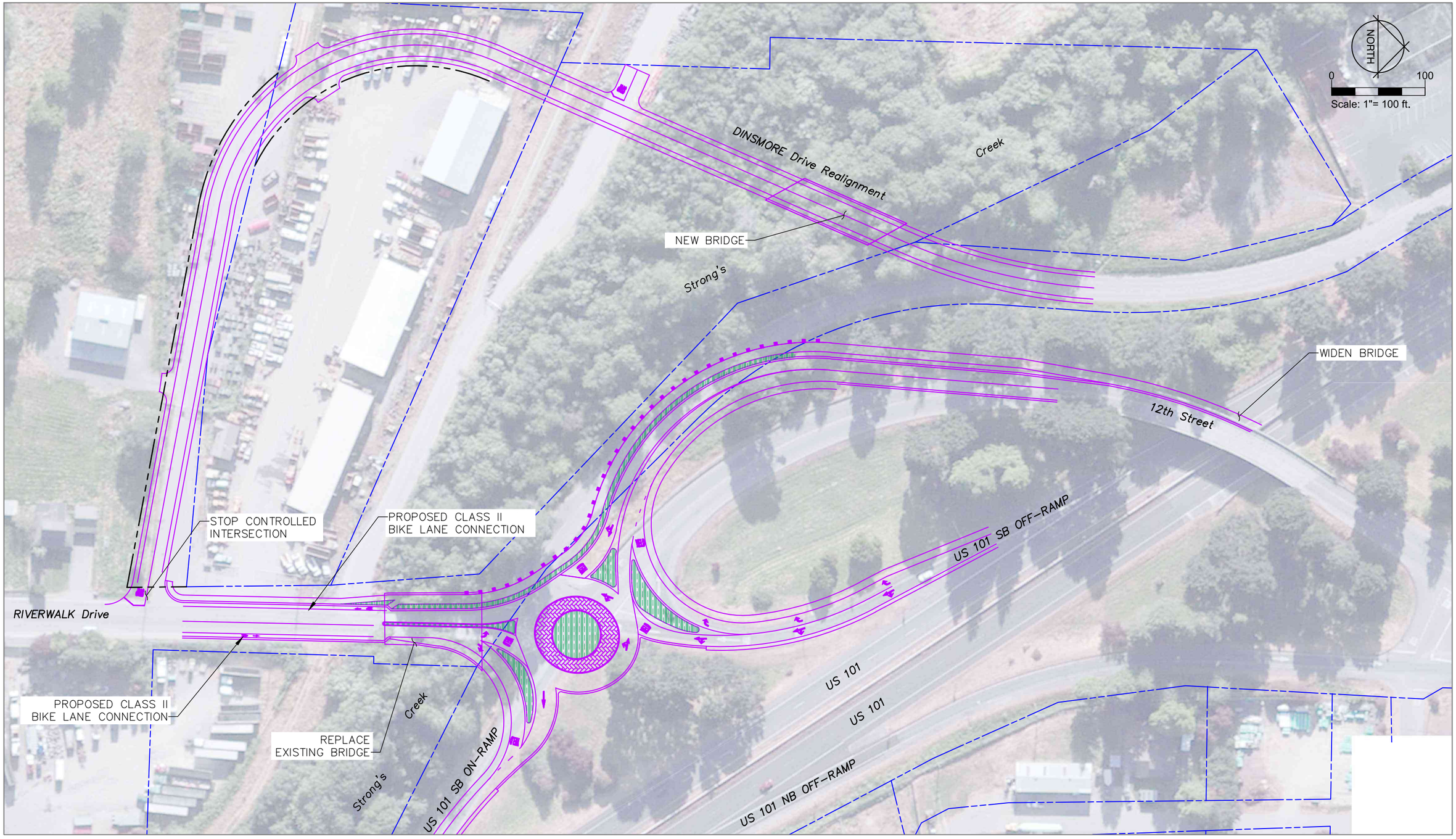
12th St. SOUTH INTERCHANGE ROUNDABOUT CONCEPT - Option 2a



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure 7.8

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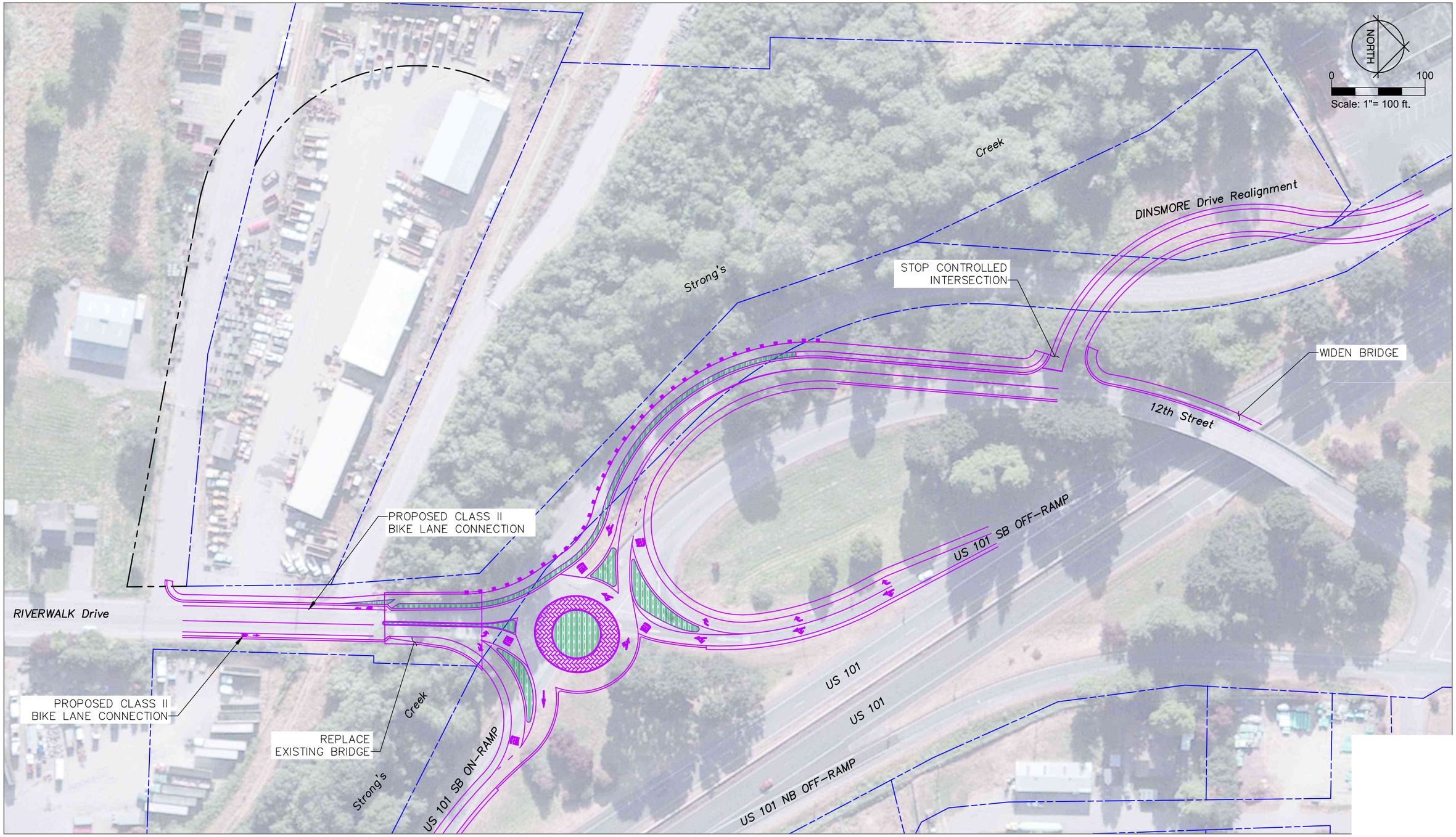
12th St. SOUTH INTERCHANGE ROUNDABOUT CONCEPT - Option 2b



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure 7.9

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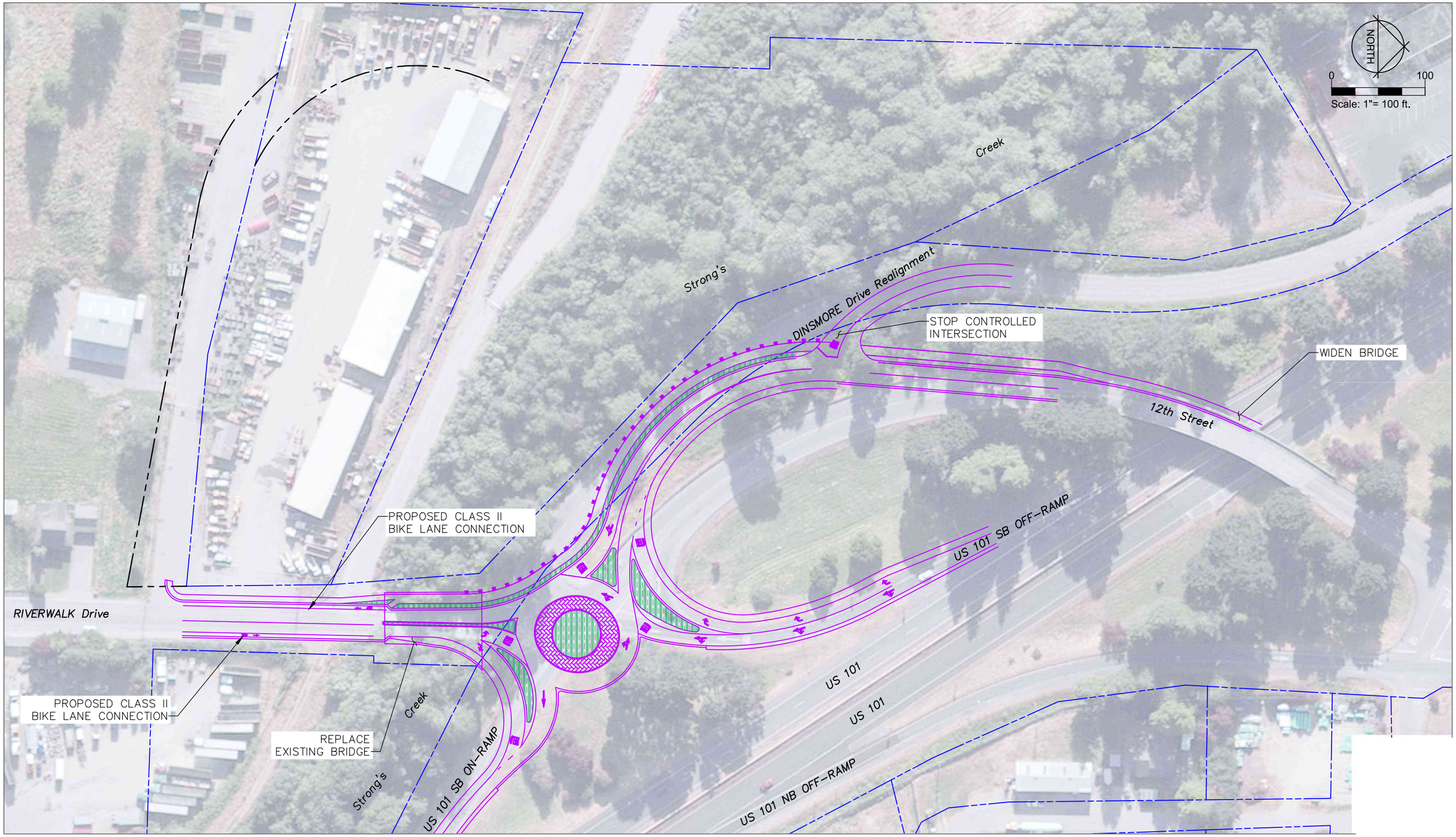
12th St. SOUTH INTERCHANGE ROUNDABOUT CONCEPT - Option 2c



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure 7.10**

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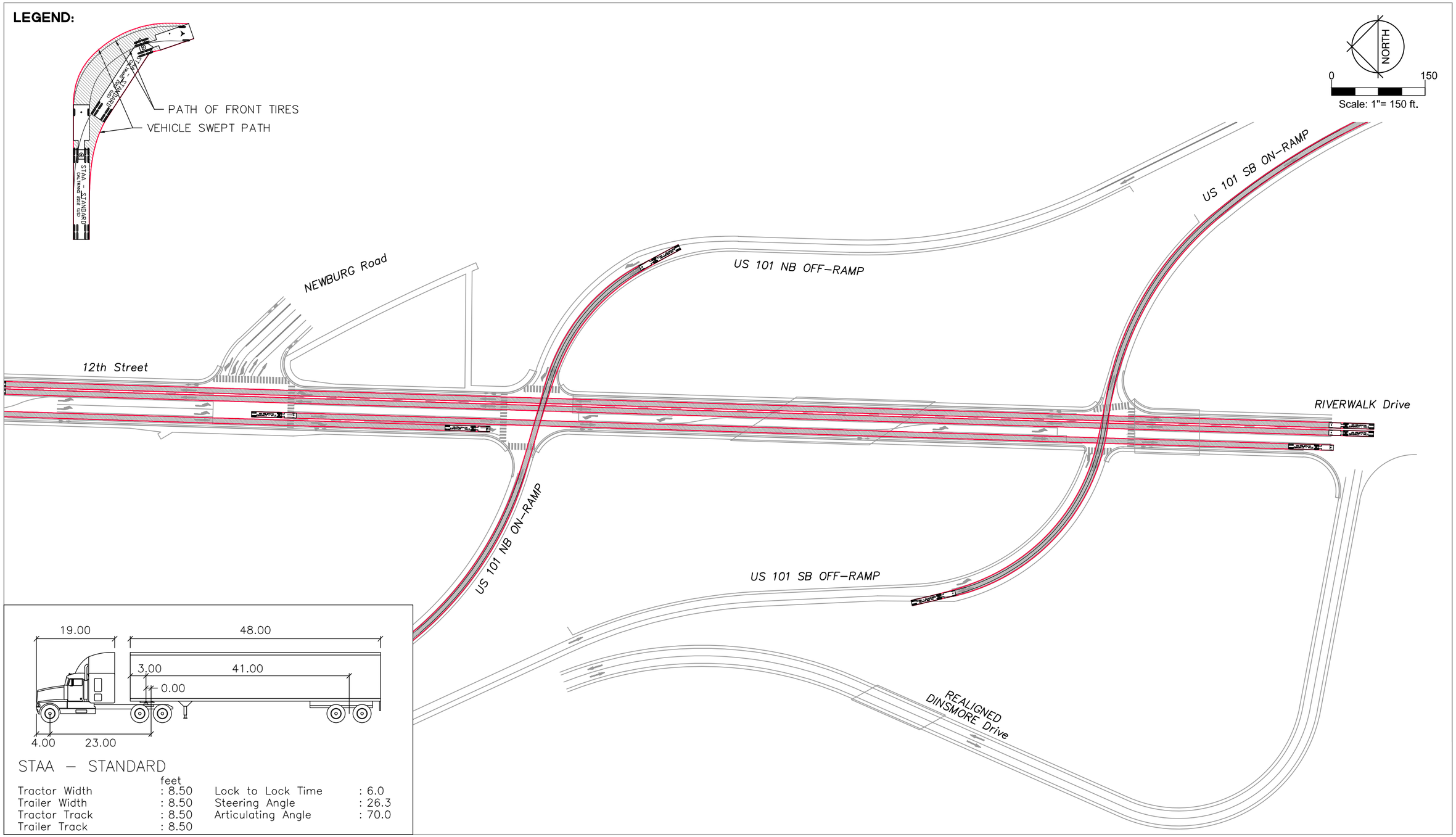
2132EX003.dwg

Attachment E - Truck Turning Analysis

12th Street STAA (THROUGH MOVEMENT ONLY)



US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B22**

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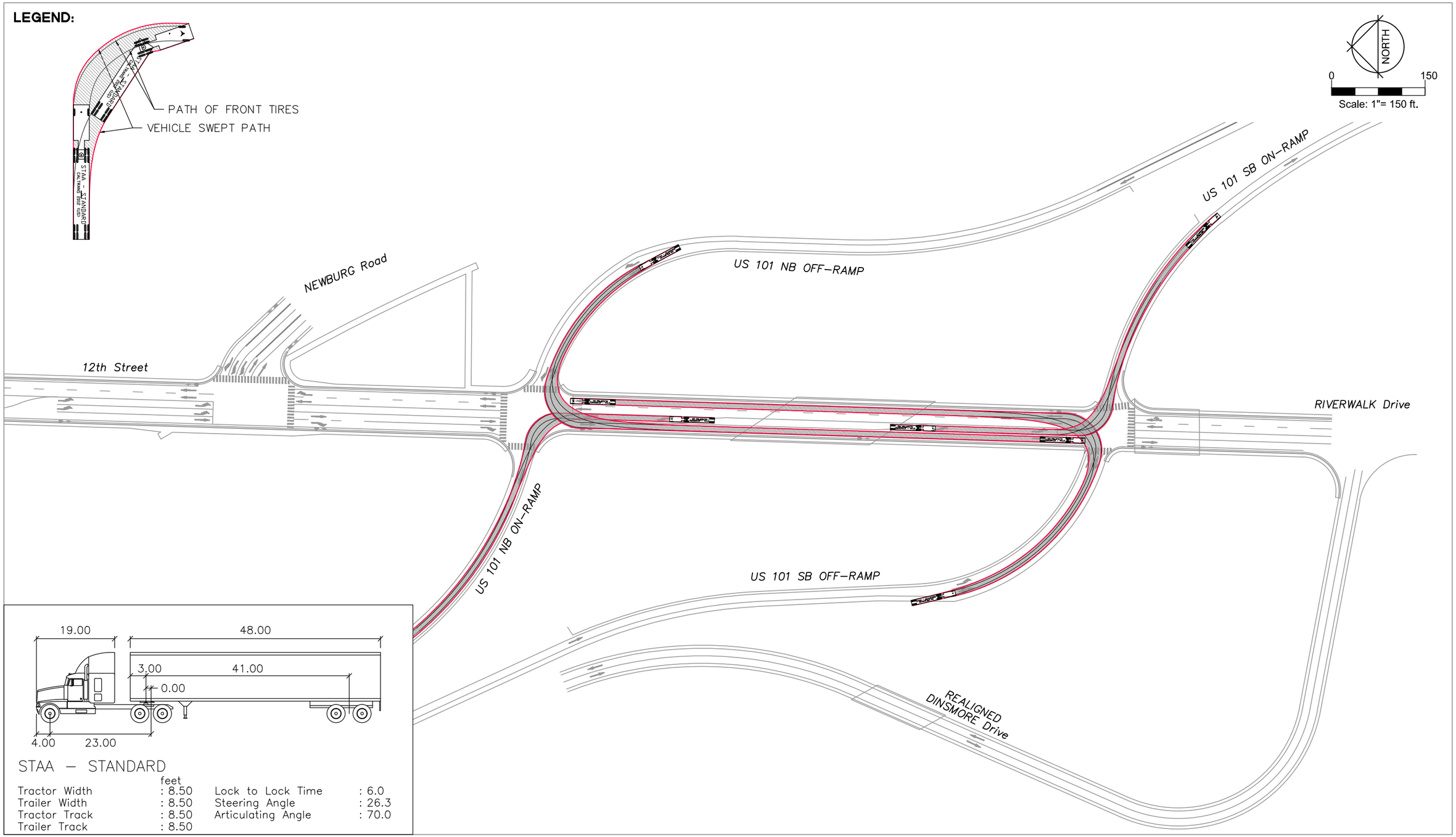
2132EX004.dwg

12th Street STAA (LEFT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B23**

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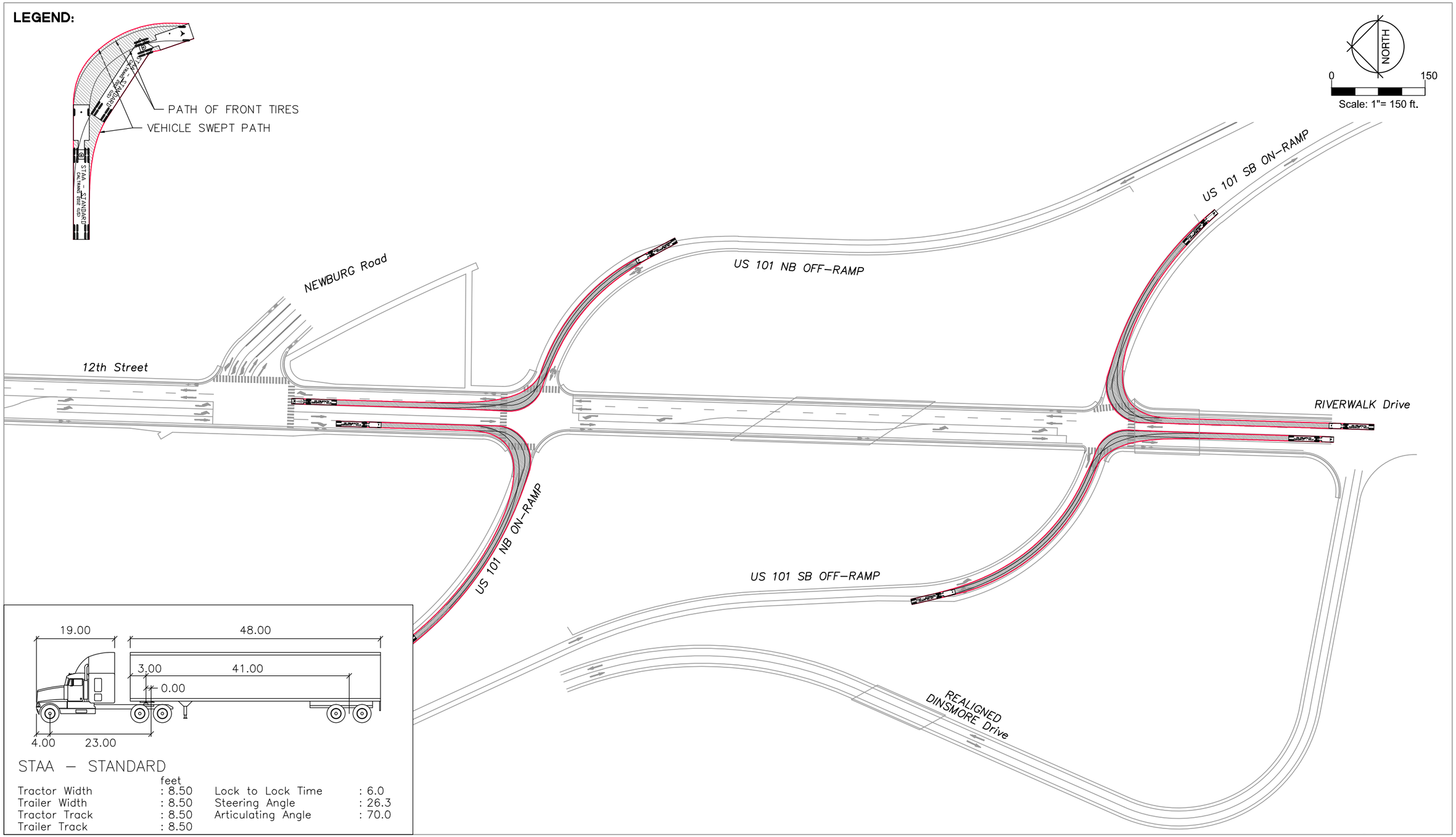
2132EX004.dwg

12th Street STAA (RIGHT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B24**

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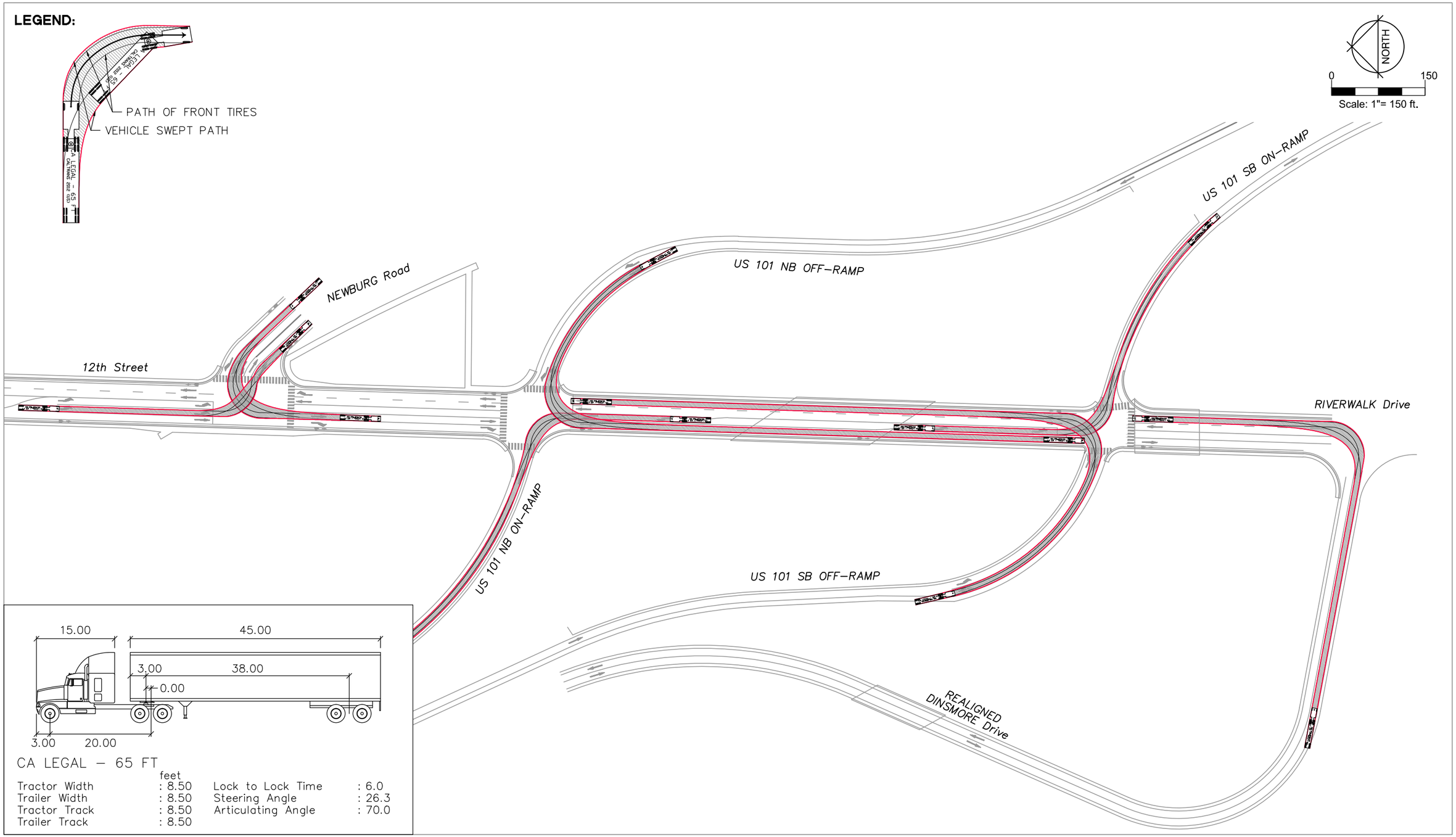
2132EX004.dwg

12th Street CA LEGAL (LEFT-TURN MOVEMENT ONLY)



US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B25**

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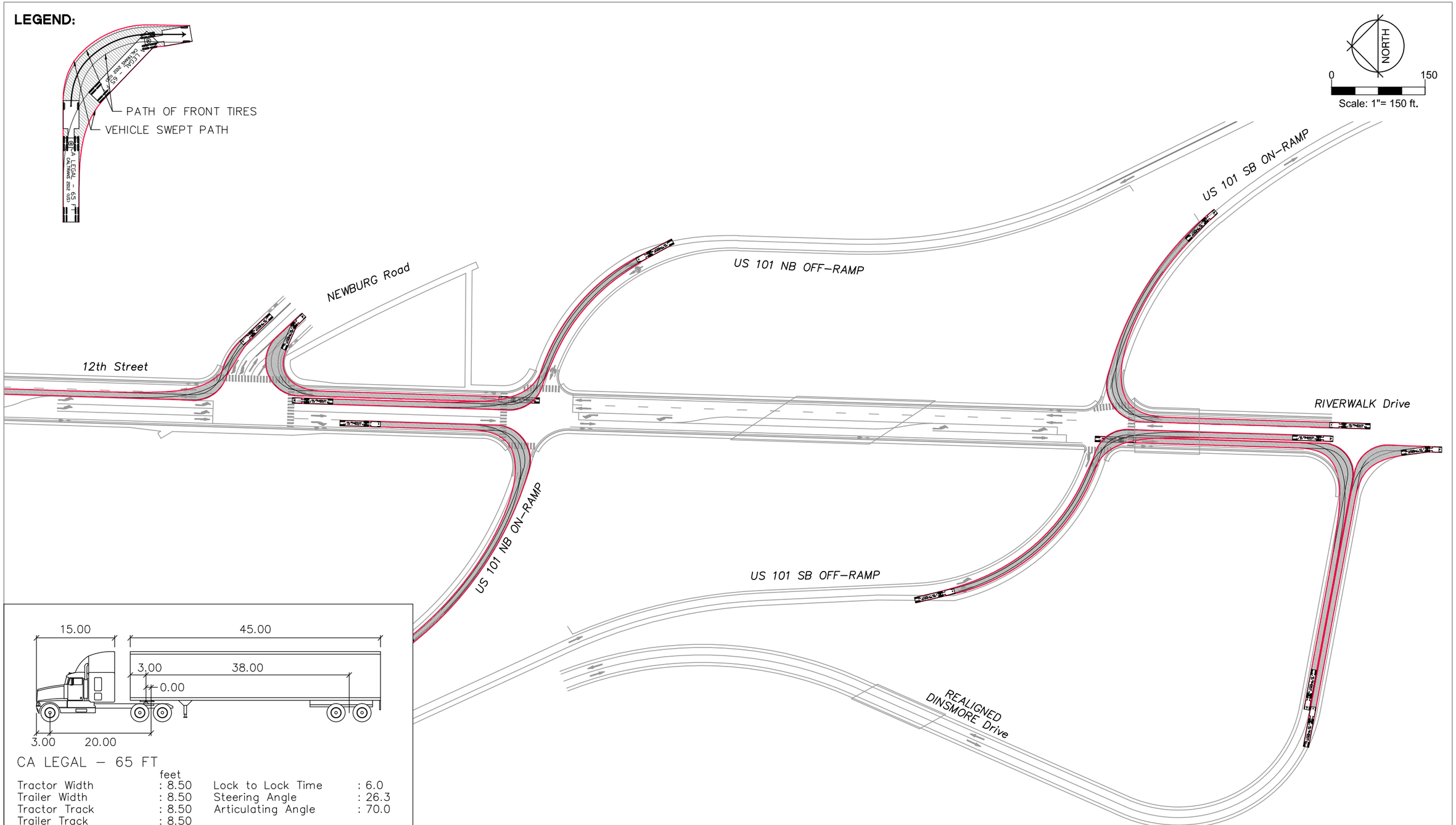
12th Street CA LEGAL (RIGHT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure B26

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August 26, 2016
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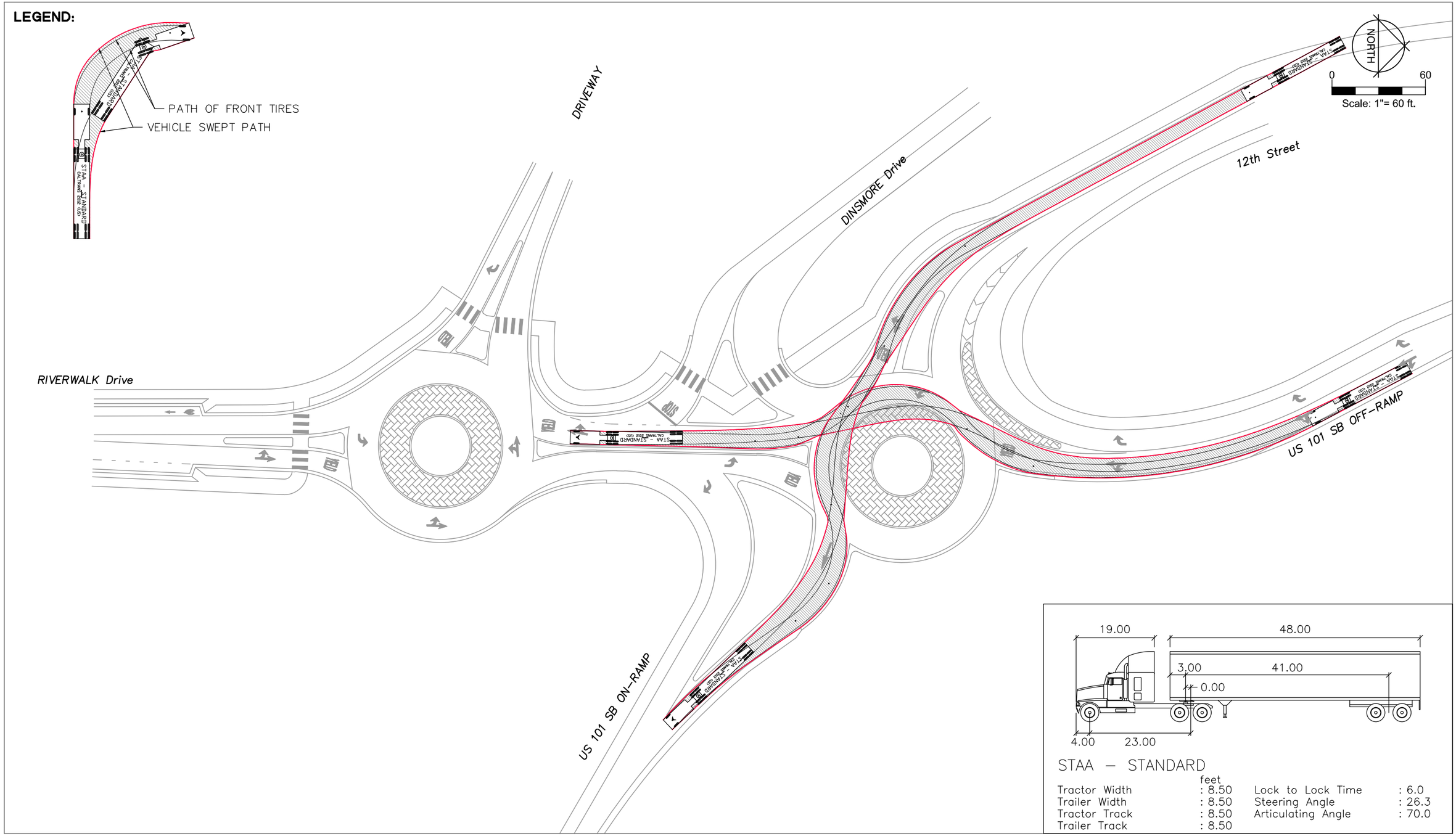
12th St. SOUTH Opt. 1 STAA (THROUGH MOVEMENT ONLY)



8/25/2016 3:00 PM \\10.9.250.11\COMMON\PRJ\2132\2132EX002.DWG

US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B27**

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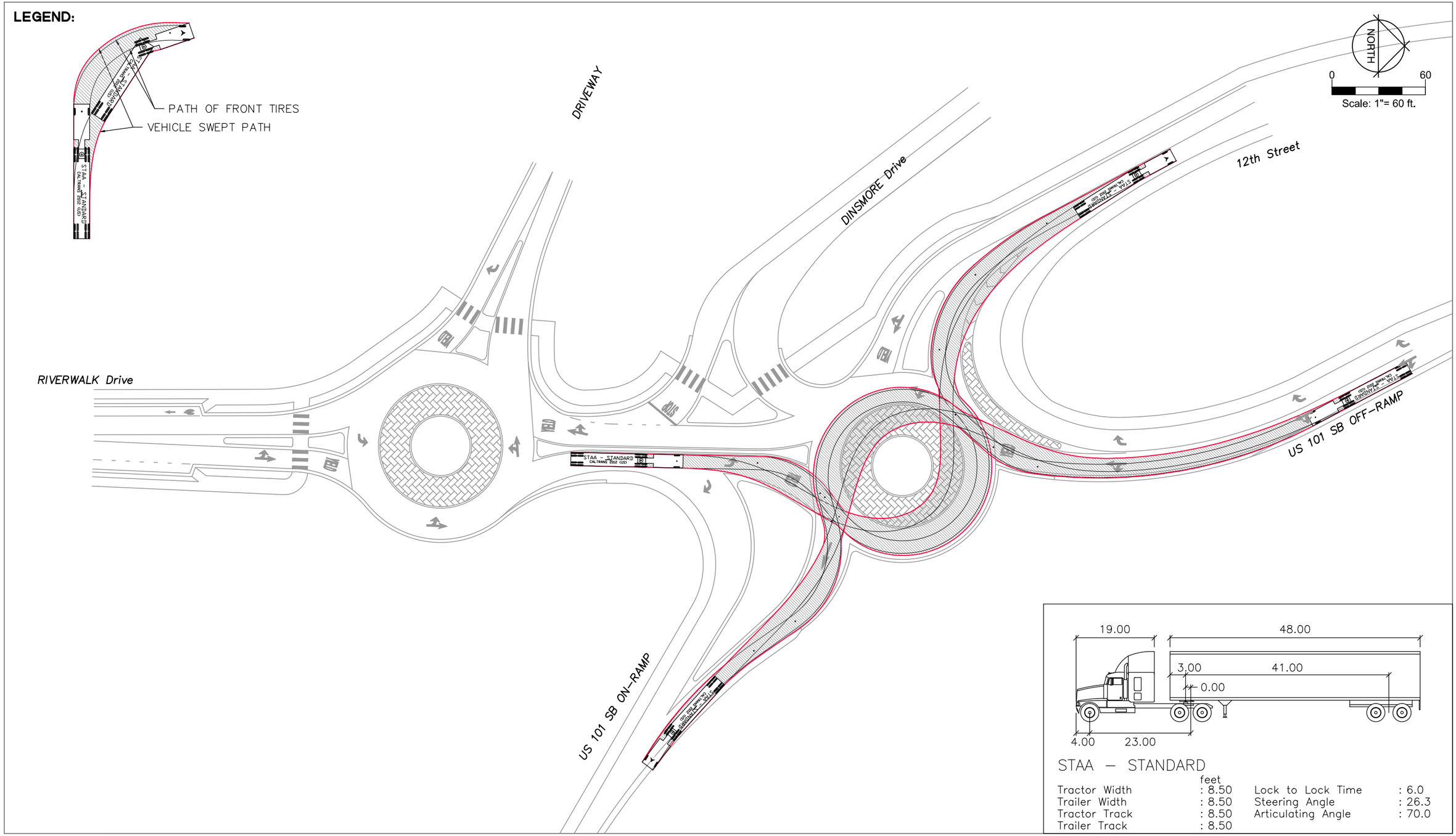
2132EX002.dwg

12th St. SOUTH Opt. 1 STAA (LEFT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B28**

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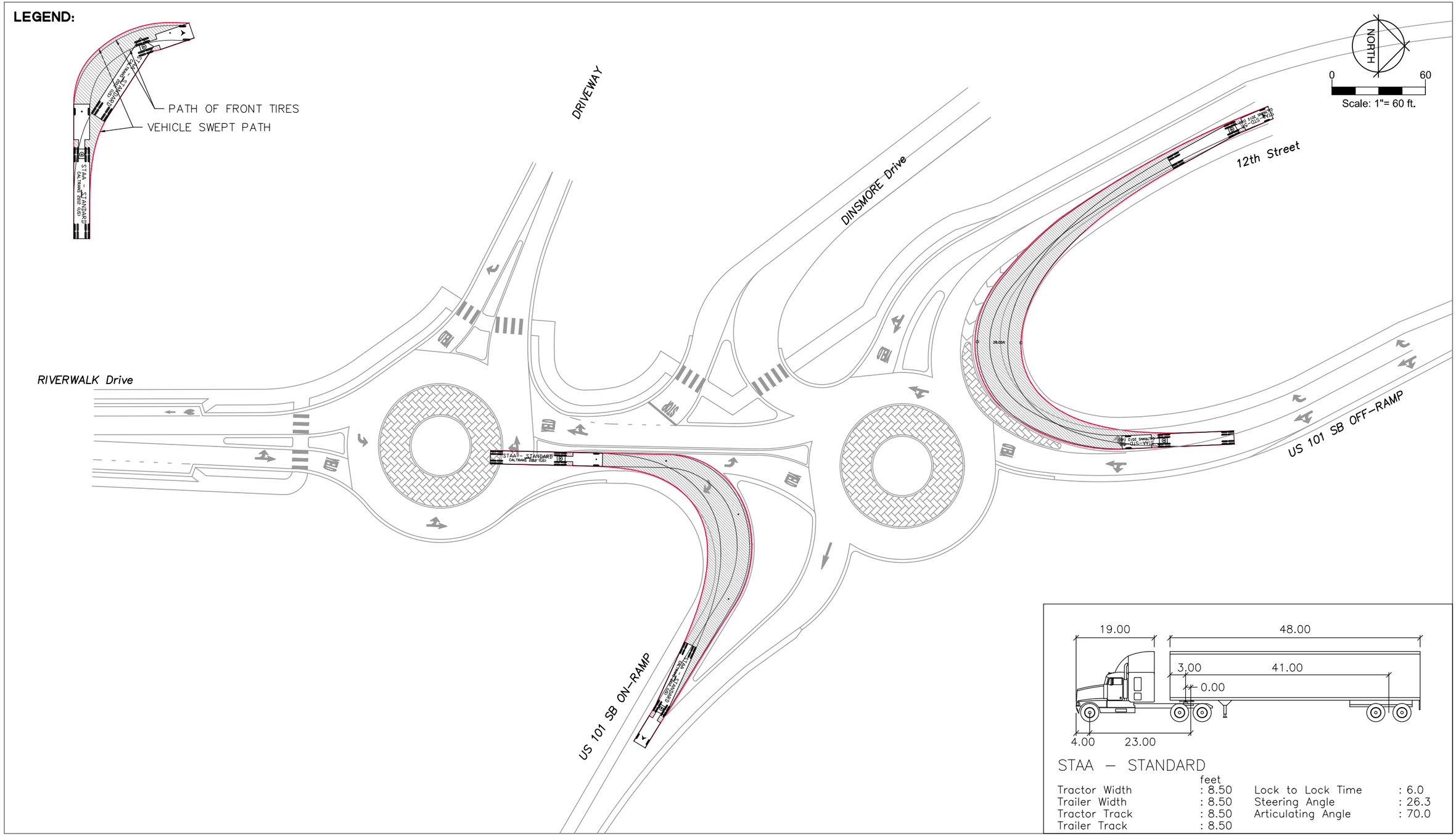
12th St. SOUTH Opt. 1 STAA (RIGHT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B29**

Fortuna, California

August 26, 2016
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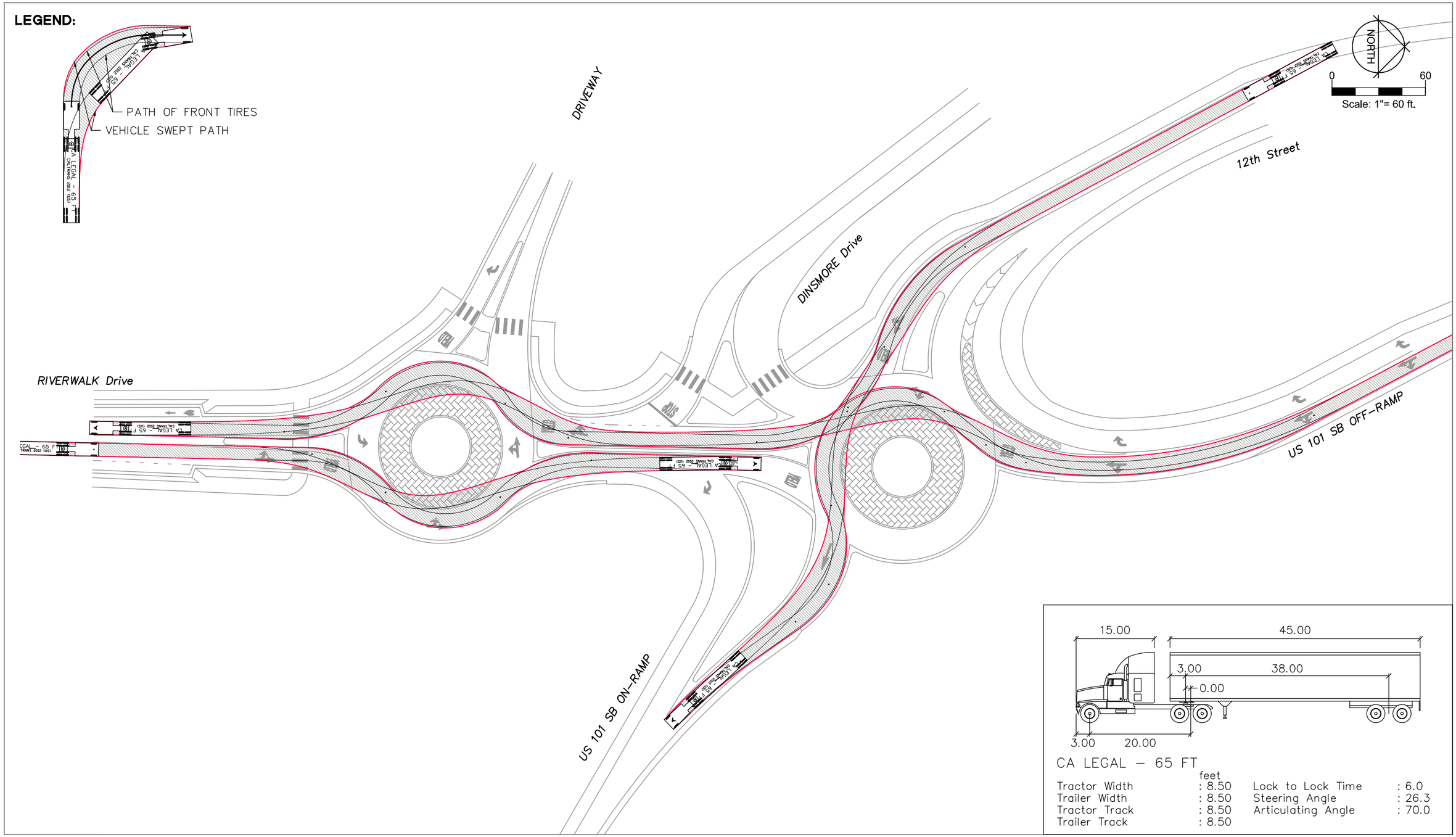
12th St. SOUTH Opt. 1 CA LEGAL (THROUGH MOVEMENT ONLY)



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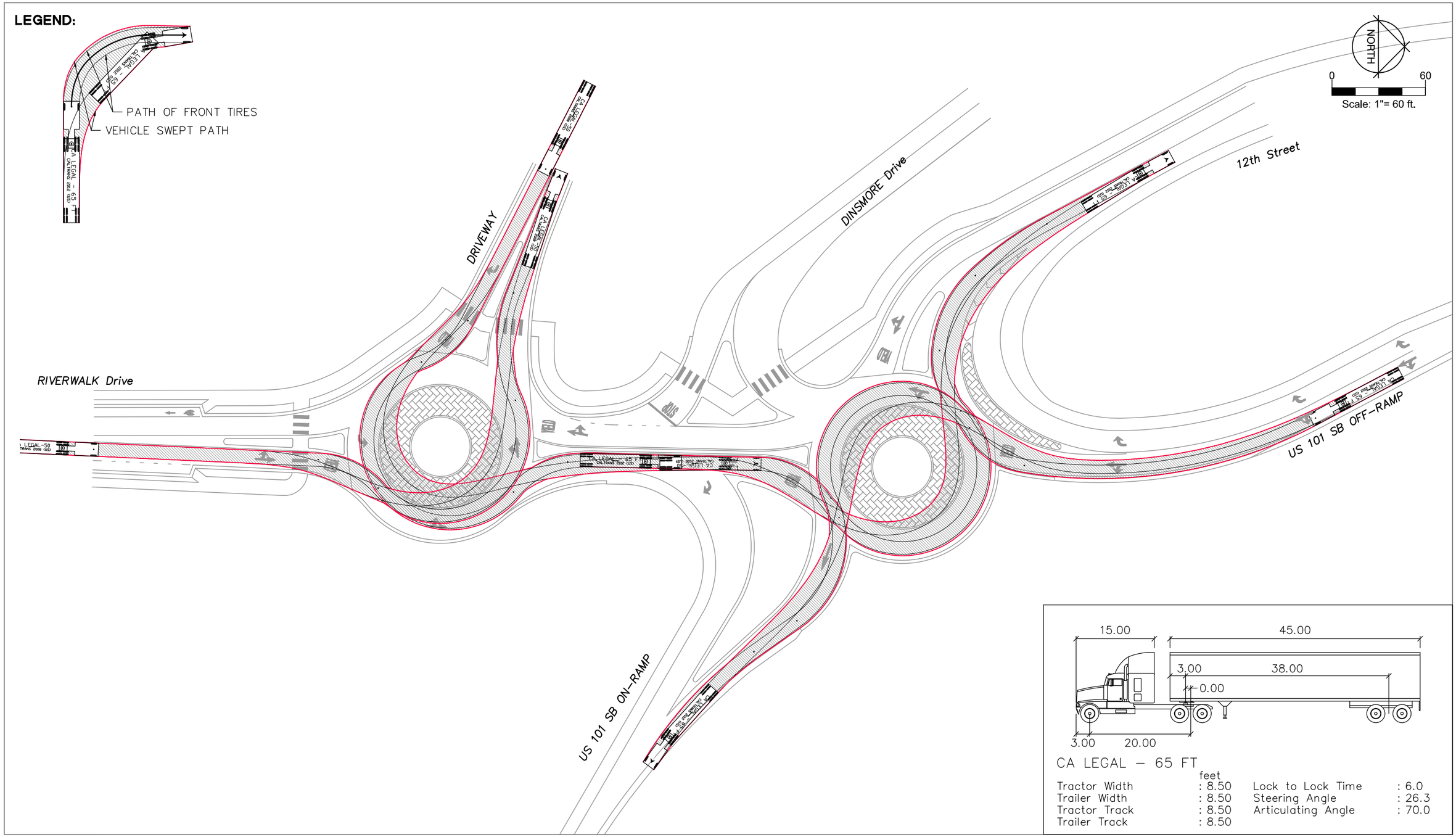
US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B30**

Fortuna, California

August 26, 2016
2132EX002.dwg

12th St. SOUTH Opt. 1 CA LEGAL (LEFT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure B31

Fortuna, California

August 26, 2016
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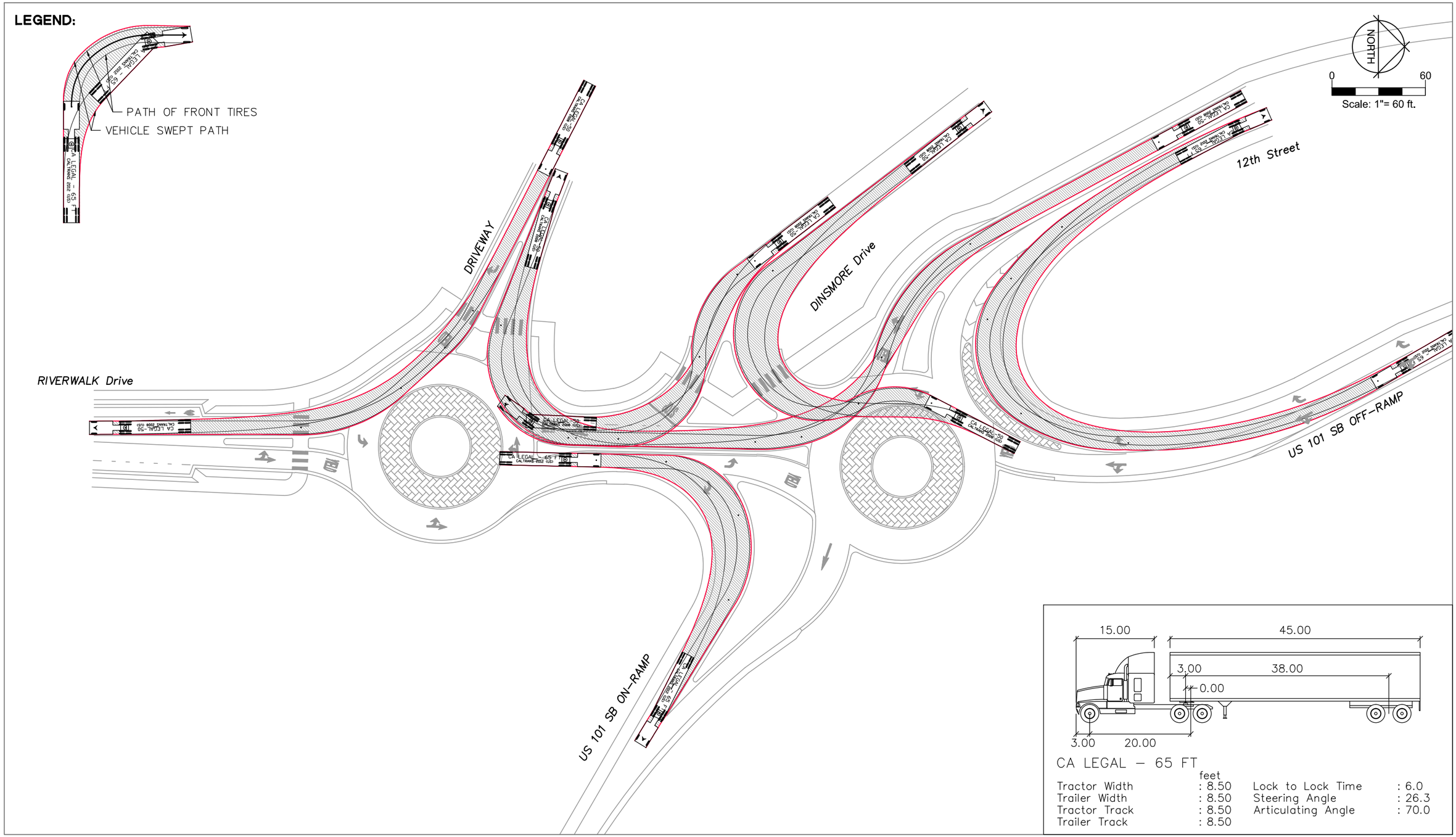
12th St. SOUTH Opt. 1 CA LEGAL (RIGHT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B32**

Fortuna, California

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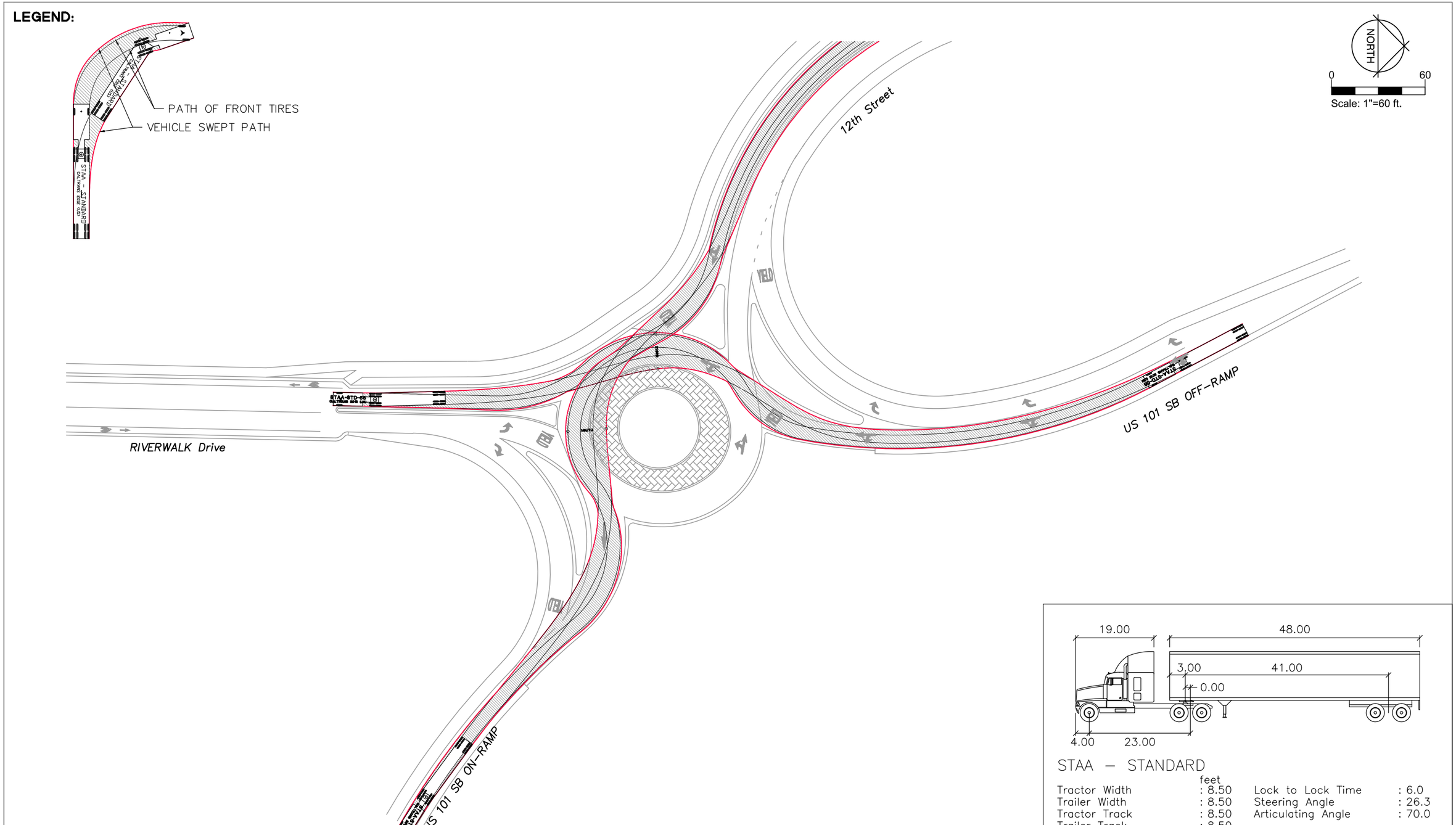
12th St. SOUTH Opt. 2 STAA (THROUGH MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B33**

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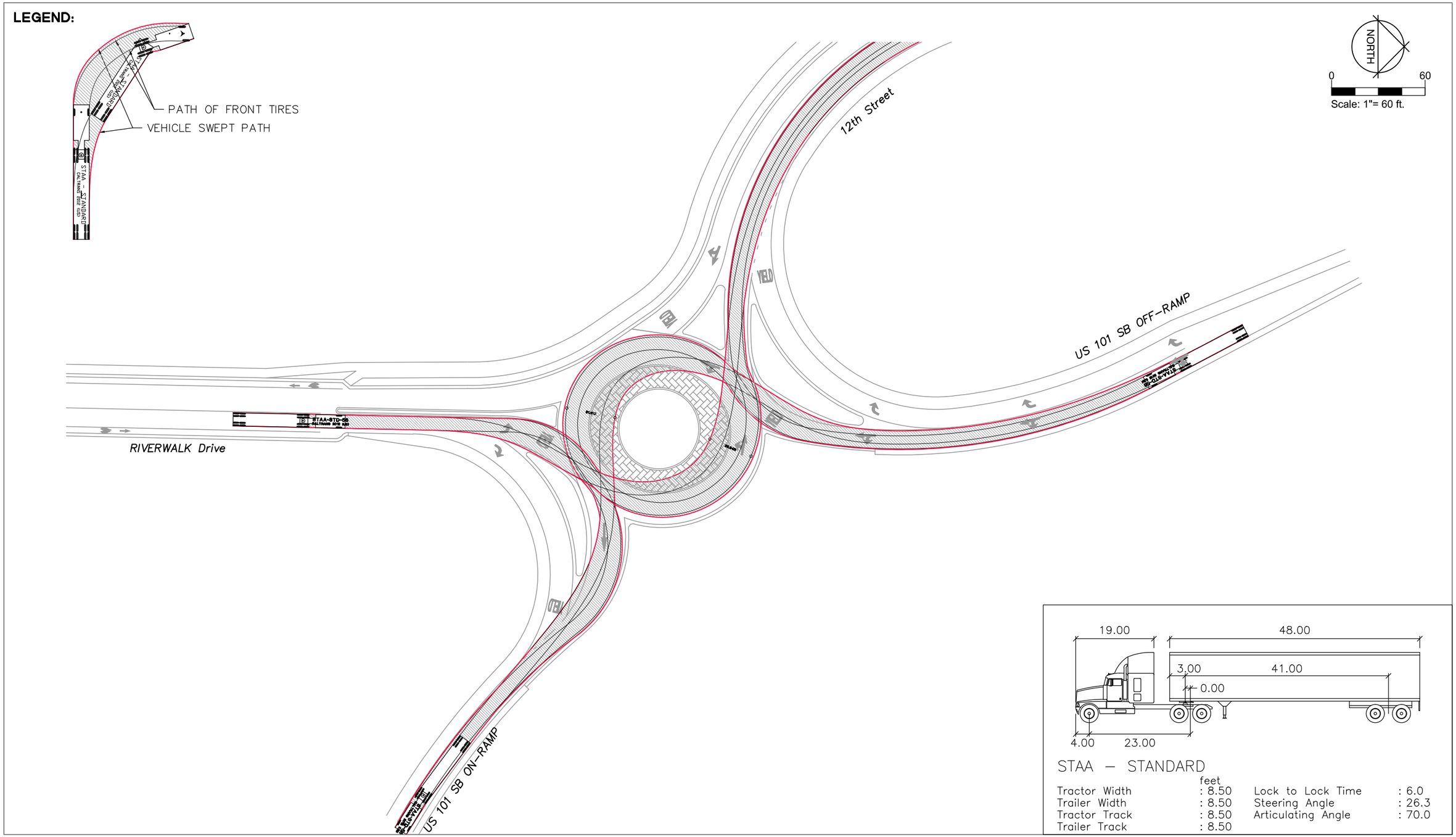
2132EX003.dwg

12th St. SOUTH Opt. 2 STAA (LEFT-TURN MOVEMENT ONLY)



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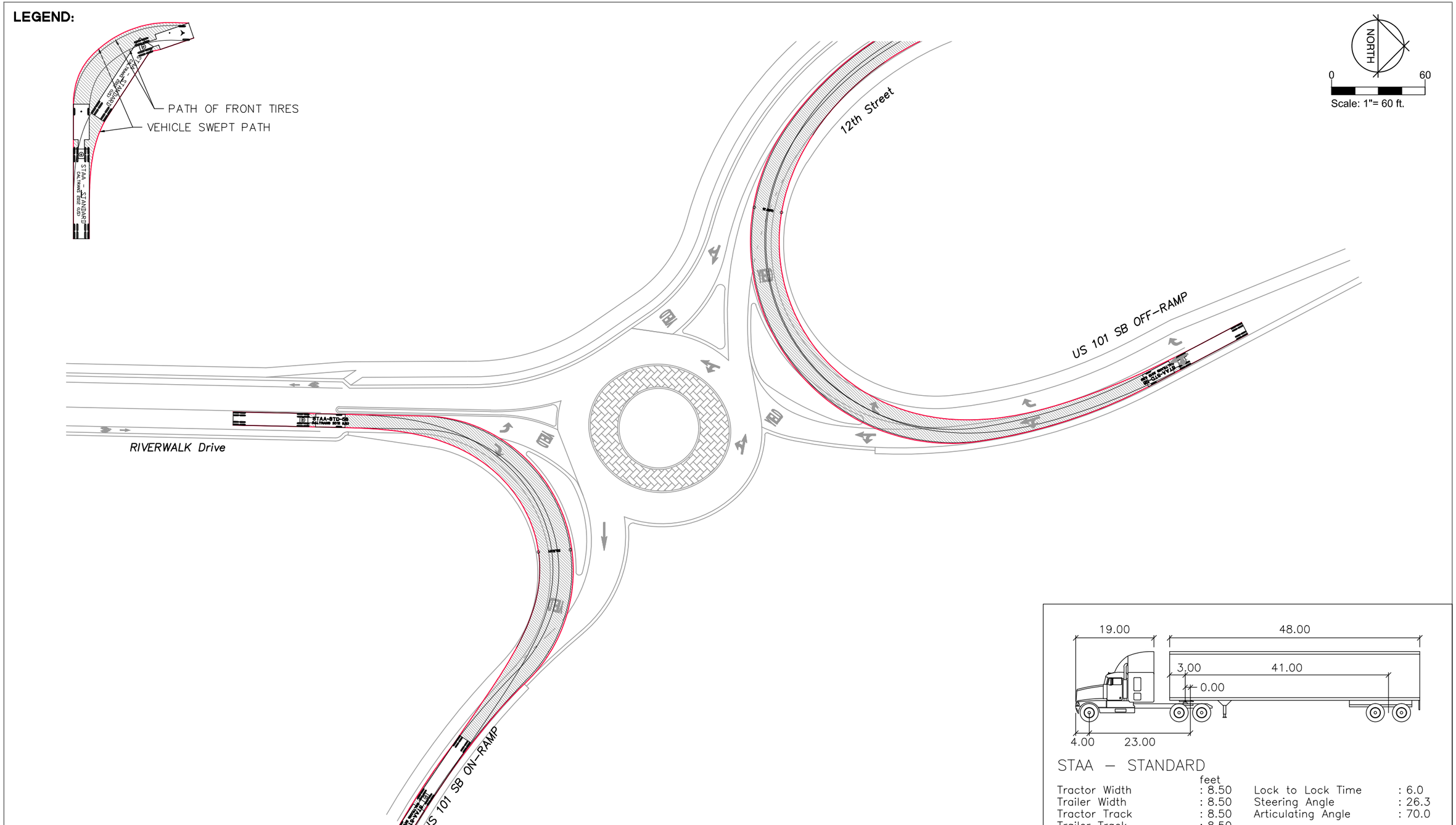
US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B34**

Fortuna, California

August 26, 2016
2132EX003.dwg

12th St. SOUTH Opt. 2 STAA (RIGHT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B35**

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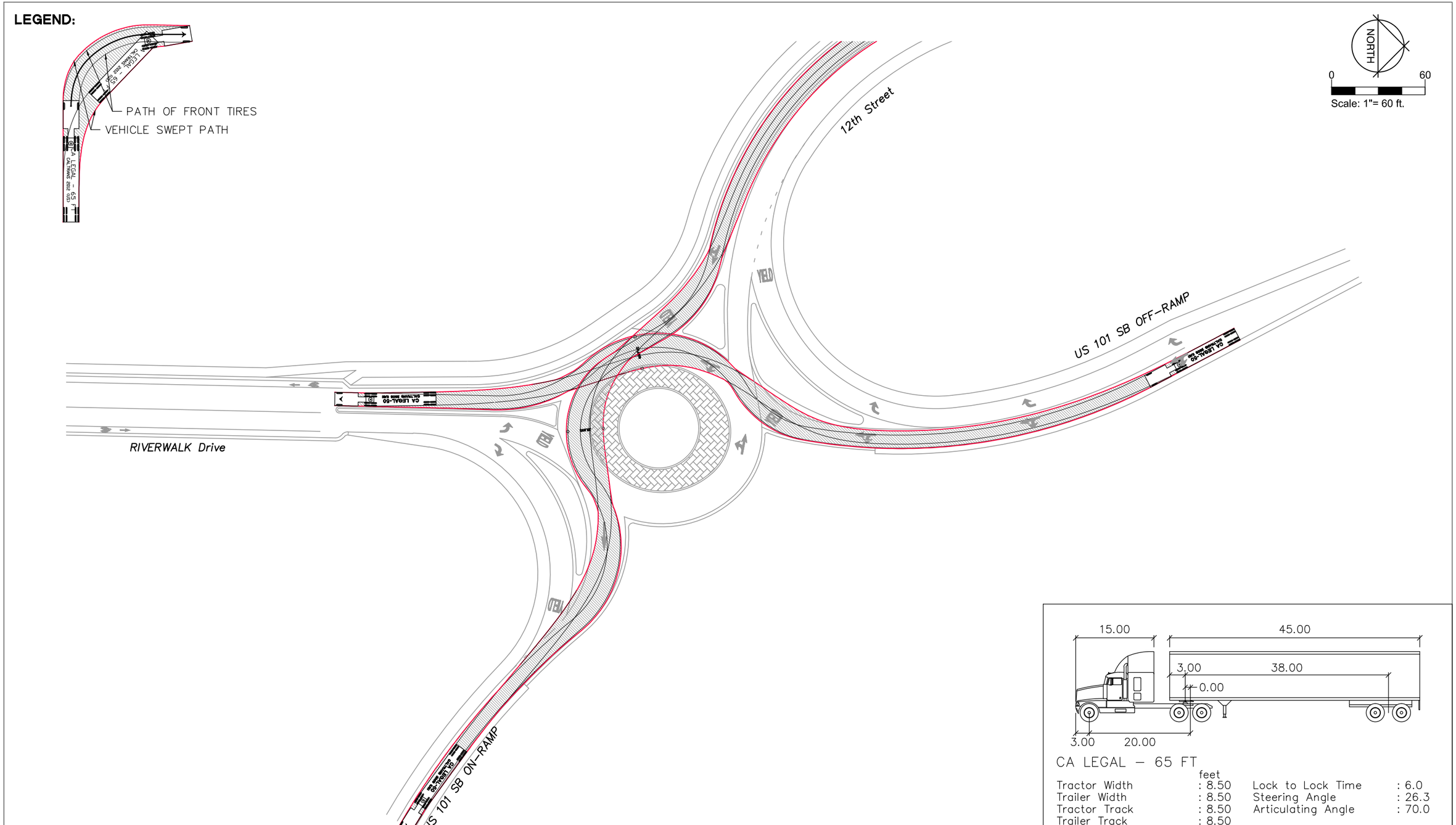
12th St. SOUTH Opt. 2 CA LEGAL (THROUGH MOVEMENT ONLY)



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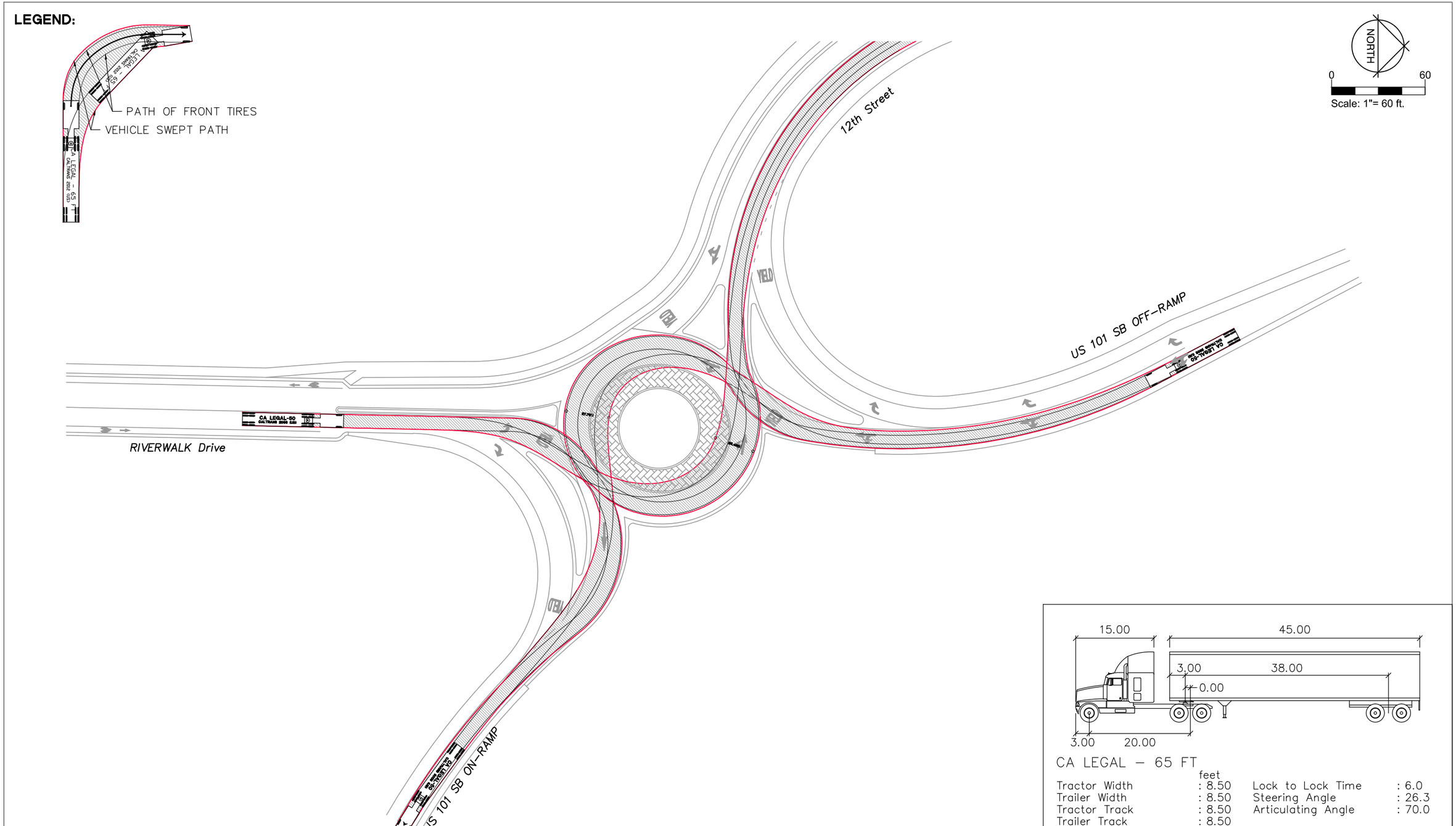
US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B36**

Fortuna, California

August 26, 2016
2132EX003.dwg

12th St. SOUTH Opt. 2 CA LEGAL (LEFT-TURN MOVEMENT ONLY)



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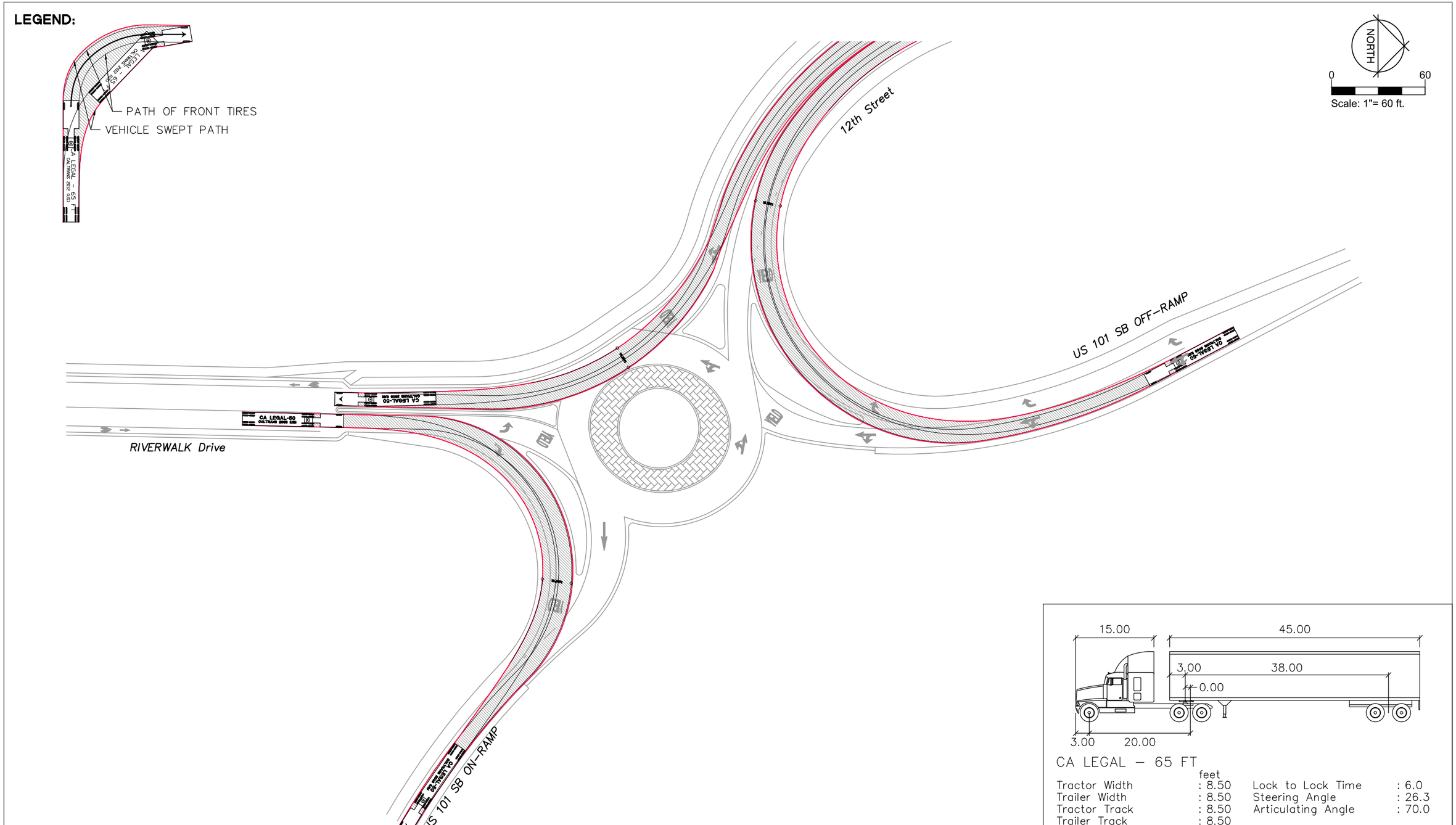
US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure B37

Fortuna, California

August 26, 2016
2132EX003.dwg

12th St. SOUTH Opt. 2 CA LEGAL (RIGHT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B38**

Fortuna, California

August 26, 2016
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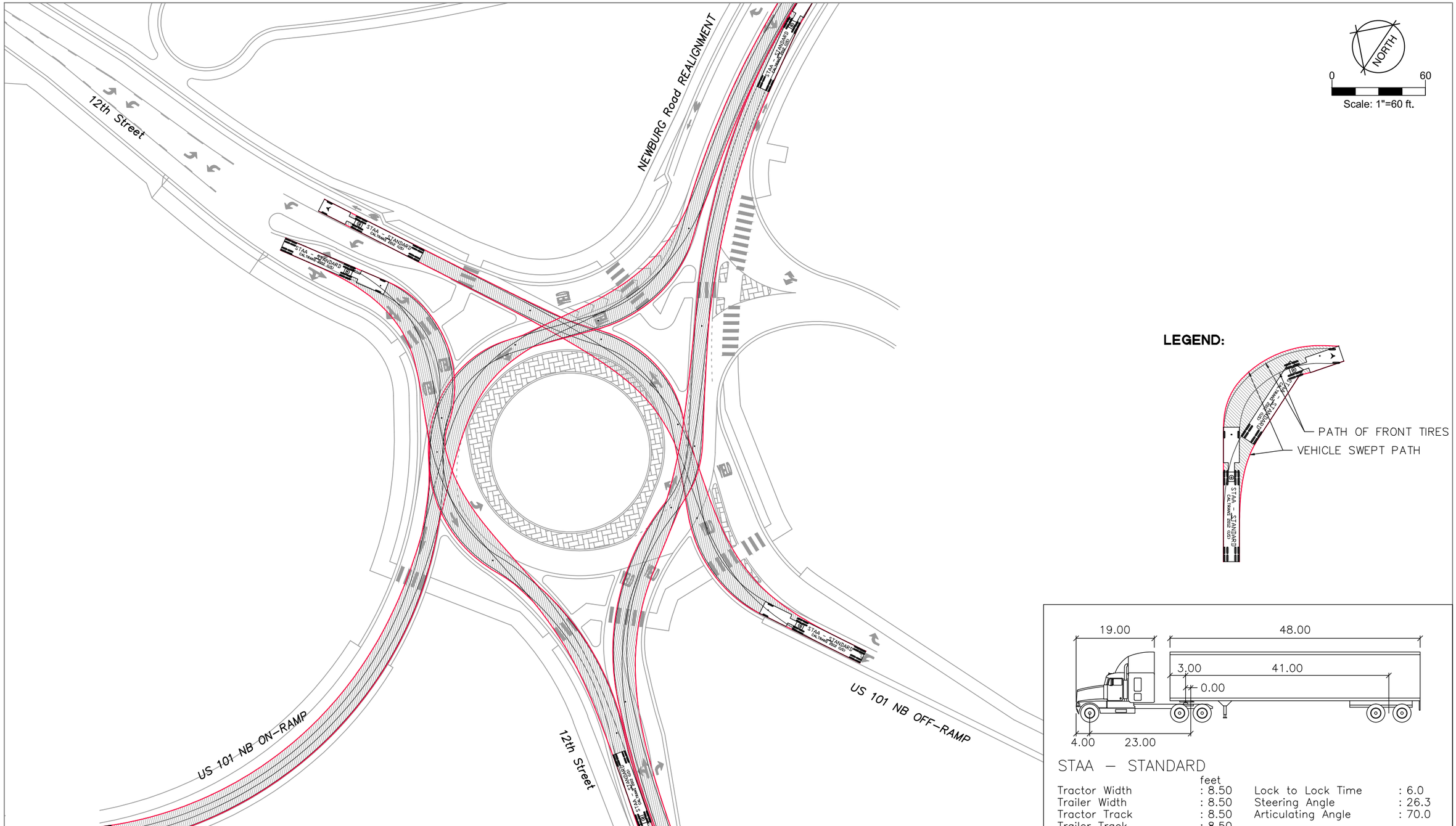
12th St. NORTH STAA (THROUGH MOVEMENT ONLY)



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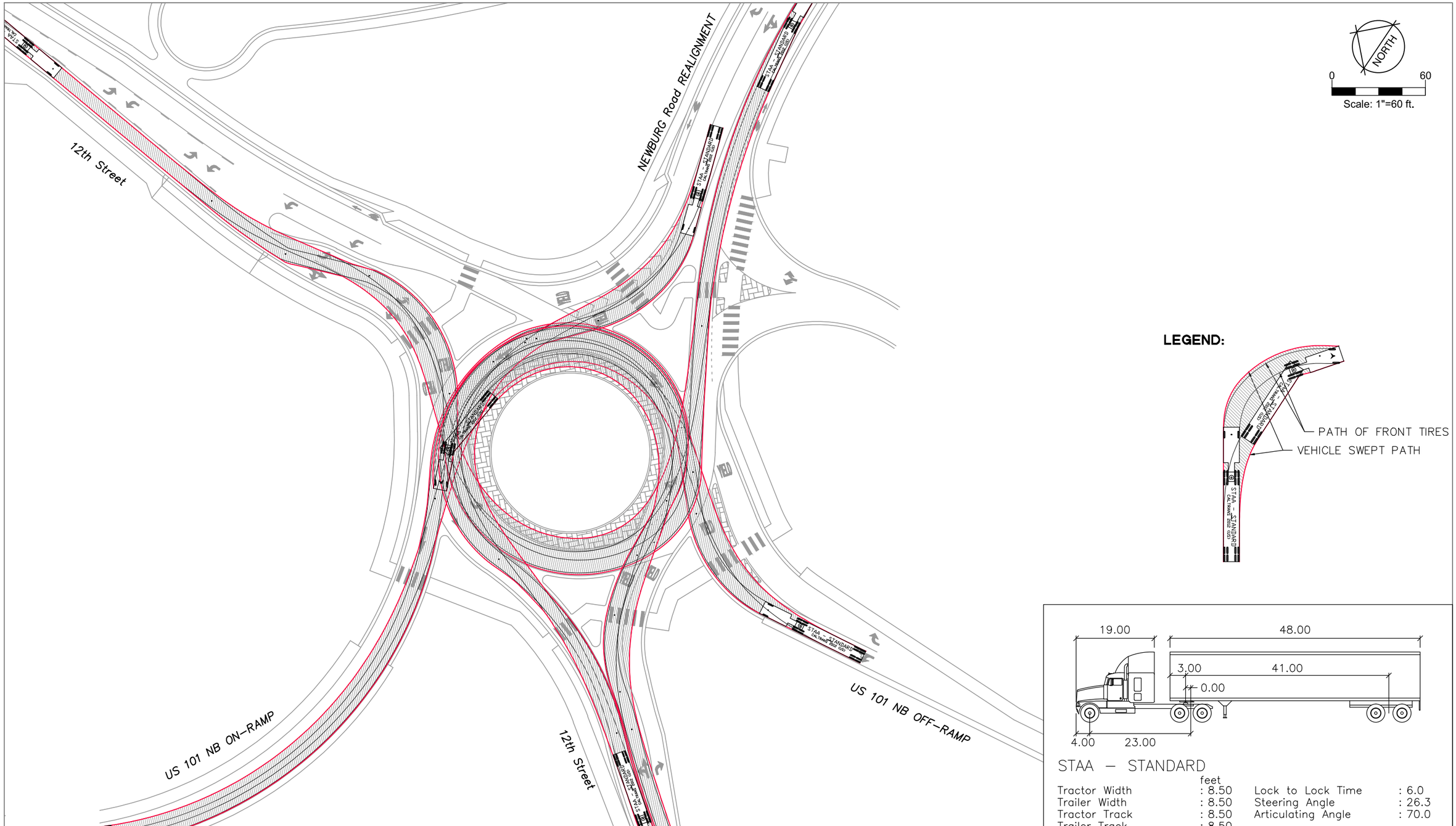
US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B39**

Fortuna, California

August 26, 2016
2132EX002.dwg

12th St. NORTH STAA (LEFT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B40**

Fortuna, California

August 26, 2016
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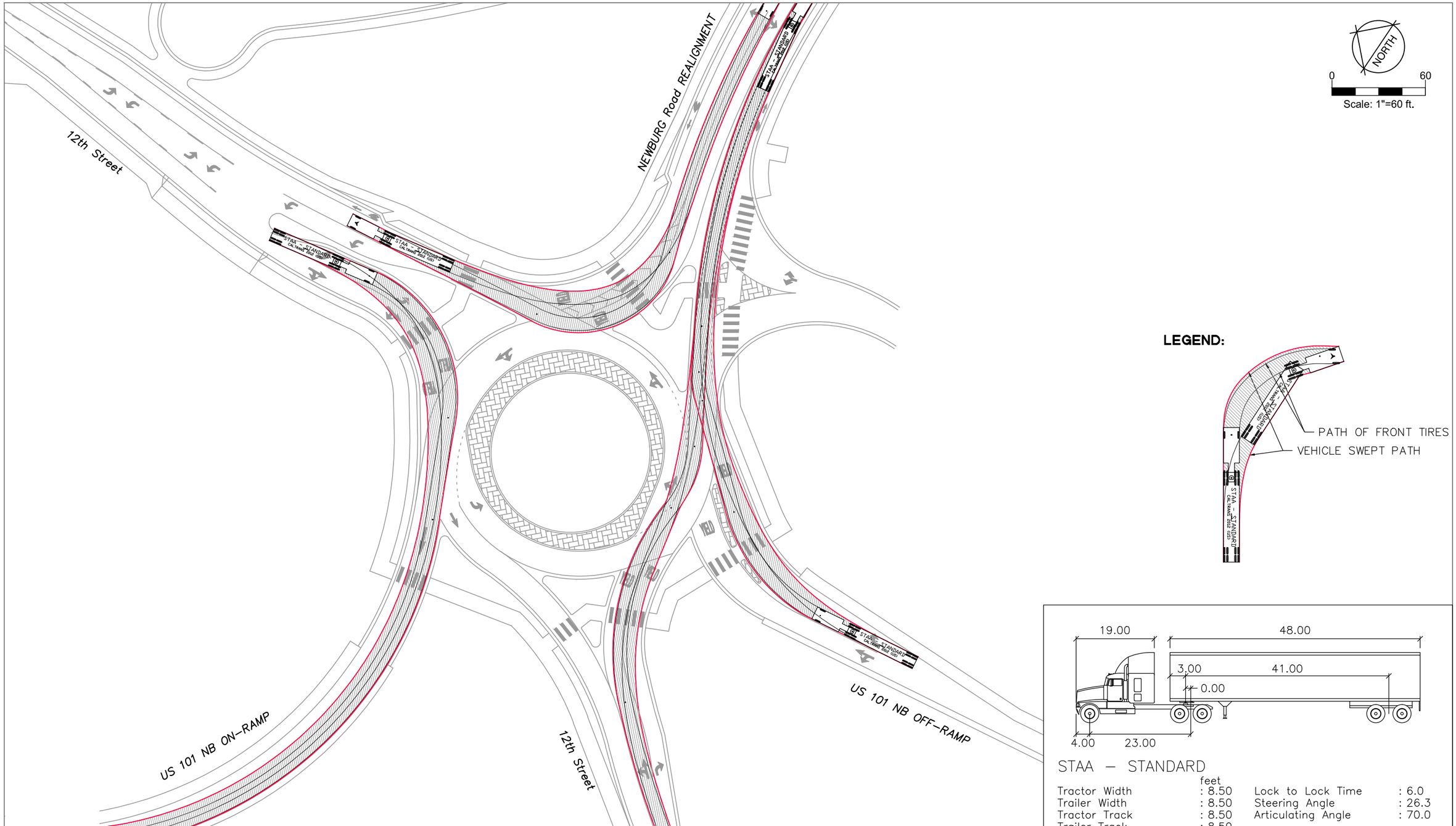
12th St. NORTH STAA (RIGHT-TURN MOVEMENT ONLY)



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US 101/RIVERWALK AREA CONNECTIVITY PROJECT **Figure B41**

Fortuna, California

August 26, 2016
2132EX002.dwg

Attachment F - Fast Path Exhibits

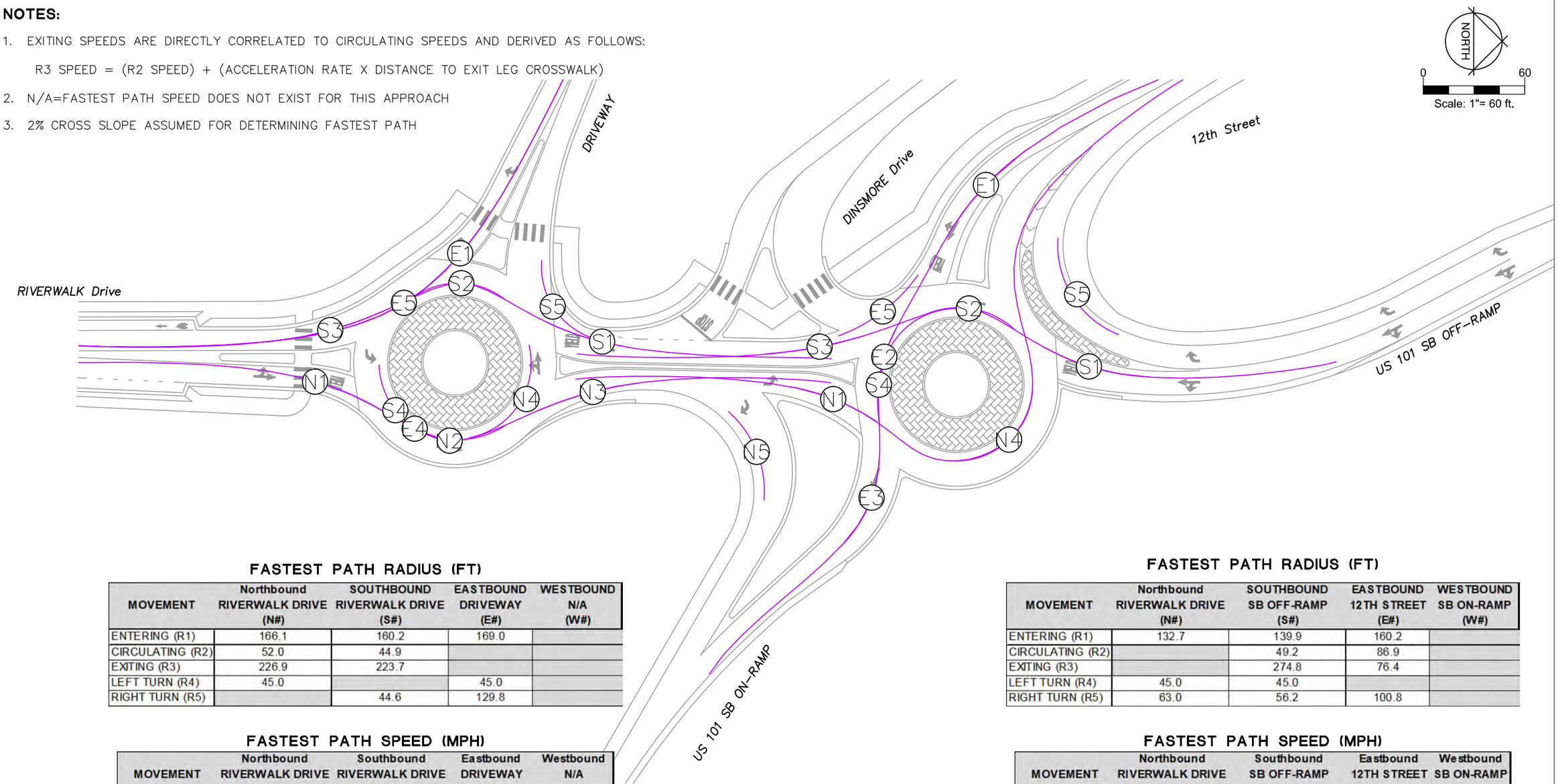
12th Street SOUTH Opt. 1 FASTEST PATH

NOTES:

1. EXITING SPEEDS ARE DIRECTLY CORRELATED TO CIRCULATING SPEEDS AND DERIVED AS FOLLOWS:

   R3 SPEED = (R2 SPEED) + (ACCELERATION RATE X DISTANCE TO EXIT LEG CROSSWALK)

2. N/A=FASTEST PATH SPEED DOES NOT EXIST FOR THIS APPROACH
3. 2% CROSS SLOPE ASSUMED FOR DETERMINING FASTEST PATH



FASTEST PATH RADIUS (FT)

MOVEMENT	Northbound RIVERWALK DRIVE (N#)	SOUTHBOUND RIVERWALK DRIVE (S#)	EASTBOUND DRIVEWAY (E#)	WESTBOUND N/A (W#)
ENTERING (R1)	166.1	160.2	169.0	
CIRCULATING (R2)	52.0	44.9		
EXITING (R3)	226.9	223.7		
LEFT TURN (R4)	45.0		45.0	
RIGHT TURN (R5)		44.6	129.8	

FASTEST PATH SPEED (MPH)

MOVEMENT	Northbound RIVERWALK DRIVE (N#)	Southbound RIVERWALK DRIVE (S#)	Eastbound DRIVEWAY (E#)	Westbound N/A (W#)
ENTERING (V1)	24.8	24.4	24.9	
CIRCULATING (V2	14.8	14.0		
EXITING (V3)	27.9	27.8		
LEFT TURN (V4)	14.0		14.0	
RIGHT TURN (V5)		14.9	22.5	

FASTEST PATH RADIUS (FT)

MOVEMENT	Northbound RIVERWALK DRIVE (N#)	SOUTHBOUND SB OFF-RAMP (S#)	EASTBOUND 12TH STREET (E#)	WESTBOUND SB ON-RAMP (W#)
ENTERING (R1)	132.7	139.9	160.2	
CIRCULATING (R2)		49.2	86.9	
EXITING (R3)		274.8	76.4	
LEFT TURN (R4)	45.0	45.0		
RIGHT TURN (R5)	63.0	56.2	100.8	

FASTEST PATH SPEED (MPH)

MOVEMENT	Northbound RIVERWALK DRIVE (N#)	Southbound SB OFF-RAMP (S#)	Eastbound 12TH STREET (E#)	Westbound SB ON-RAMP (W#)
ENTERING (V1)	22.7	23.2	24.4	
CIRCULATING (V2)		14.5	17.8	
EXITING (V3)		29.1	18.4	
LEFT TURN (V4)	14.0	14.0		
RIGHT TURN (V5)	17.0	16.3	20.4	

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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure C4

Fortuna, California

August 26, 2016
2132EX002.dwg

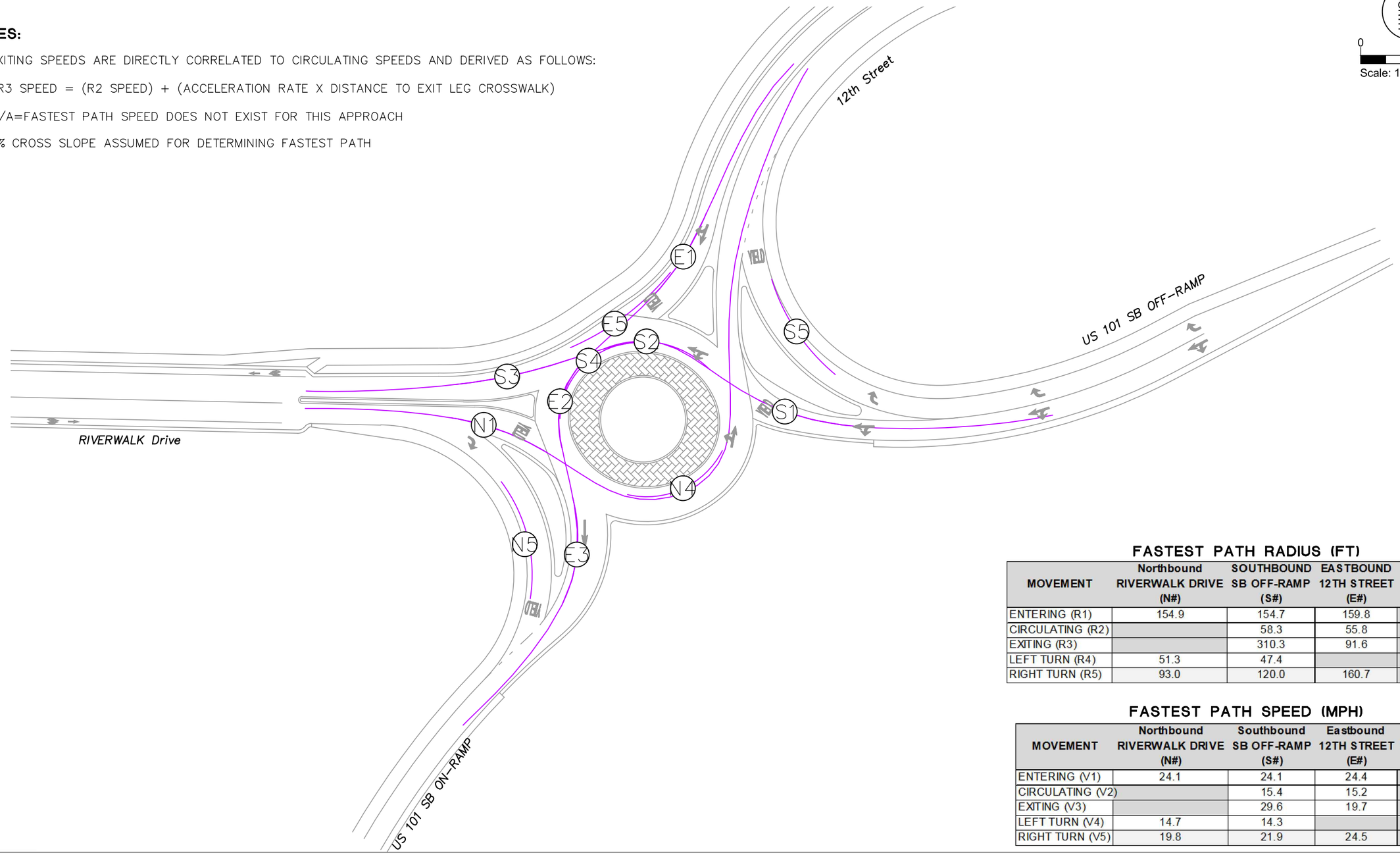
12th Street SOUTH Opt. 2 FASTEST PATH

NOTES:

1. EXITING SPEEDS ARE DIRECTLY CORRELATED TO CIRCULATING SPEEDS AND DERIVED AS FOLLOWS:

   R3 SPEED = (R2 SPEED) + (ACCELERATION RATE X DISTANCE TO EXIT LEG CROSSWALK)

2. N/A=FASTEST PATH SPEED DOES NOT EXIST FOR THIS APPROACH
3. 2% CROSS SLOPE ASSUMED FOR DETERMINING FASTEST PATH



FASTEST PATH RADIUS (FT)

MOVEMENT	Northbound RIVERWALK DRIVE (N#)	SOUTHBOUND SB OFF-RAMP (S#)	EASTBOUND 12TH STREET (E#)	WESTBOUND SB ON-RAMP (W#)
ENTERING (R1)	154.9	154.7	159.8	
CIRCULATING (R2)		58.3	55.8	
EXITING (R3)		310.3	91.6	
LEFT TURN (R4)	51.3	47.4		
RIGHT TURN (R5)	93.0	120.0	160.7	

FASTEST PATH SPEED (MPH)

MOVEMENT	Northbound RIVERWALK DRIVE (N#)	Southbound SB OFF-RAMP (S#)	Eastbound 12TH STREET (E#)	Westbound SB ON-RAMP (W#)
ENTERING (V1)	24.1	24.1	24.4	
CIRCULATING (V2)		15.4	15.2	
EXITING (V3)		29.6	19.7	
LEFT TURN (V4)	14.7	14.3		
RIGHT TURN (V5)	19.8	21.9	24.5	

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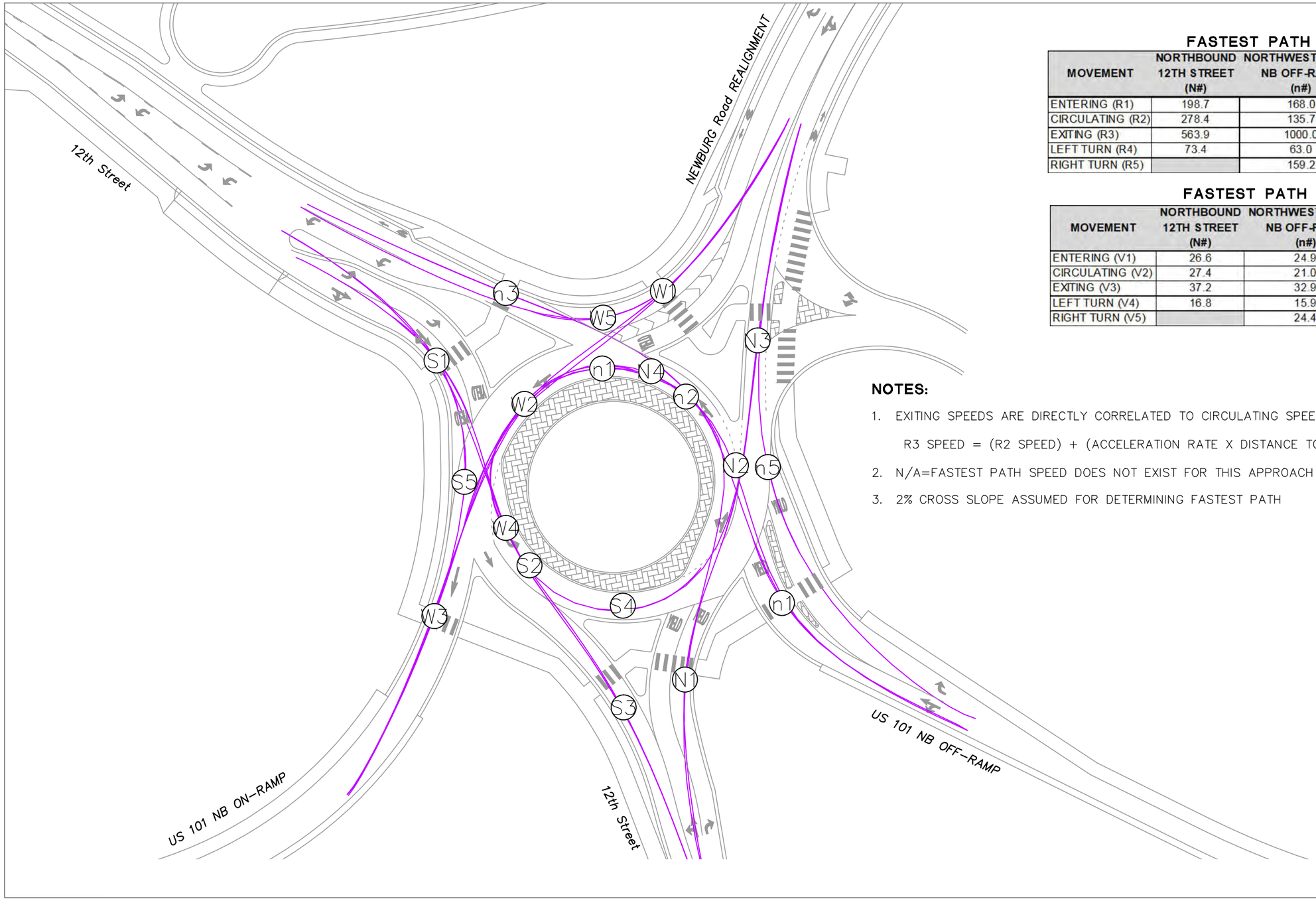
US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure C5

Fortuna, California

August 26, 2016
2132EX003.dwg

12th Street NORTH FASTEST PATH



FASTEST PATH RADIUS (FT)

MOVEMENT	NORTHBOUND 12TH STREET (N#)	NORTHWESTBOUND NB OFF-RAMP (n#)	SOUTHBOUND 12TH STREET (S#)	WESTBOUND NEWBURG ROAD (W#)
ENTERING (R1)	198.7	168.0	155.5	258.0
CIRCULATING (R2)	278.4	135.7	208.7	179.8
EXITING (R3)	563.9	1000.0	390.3	750.0
LEFT TURN (R4)	73.4	63.0	63.4	54.9
RIGHT TURN (R5)		159.2	122.9	81.1

FASTEST PATH SPEED (MPH)

MOVEMENT	NORTHBOUND 12TH STREET (N#)	NORTHWESTBOUND NB OFF-RAMP (n#)	Southbound 12TH STREET (S#)	Westbound NEWBURG ROAD (W#)
ENTERING (V1)	26.6	24.9	24.2	29.4
CIRCULATING (V2)	27.4	21.0	24.6	23.3
EXITING (V3)	37.2	32.9	34.5	34.4
LEFT TURN (V4)	16.8	15.9	15.9	15.1
RIGHT TURN (V5)		24.4	22.1	18.8

NOTES:

1. EXITING SPEEDS ARE DIRECTLY CORRELATED TO CIRCULATING SPEEDS AND DERIVED AS FOLLOWS:

   R3 SPEED = (R2 SPEED) + (ACCELERATION RATE X DISTANCE TO EXIT LEG CROSSWALK)

2. N/A=FASTEST PATH SPEED DOES NOT EXIST FOR THIS APPROACH
3. 2% CROSS SLOPE ASSUMED FOR DETERMINING FASTEST PATH

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US 101/RIVERWALK AREA CONNECTIVITY PROJECT Figure C6

Fortuna, California

August 26, 2016
2132EX002.dwg

Attachment G - Preliminary Structures Analysis

Morrison Structures
1890 Park Marina Drive, Ste 104
Redding, CA 96001

Structure Memorandum

From: Bob Morrison, Jr., S.E., Morrison Structures, Redding, California

To: Josh Wolf, P.E, GHD, Eureka, California

Date: September 15, 2016

Re: Highway 101 Fortuna Downtown and Riverwalk Area Complete Streets and Connectivity Planning Study
U.S. 101/12th Street Interchange – Signal Concept
HUM-101-60.49

General

The purpose of this memorandum is to provide structure information for the proposed alternatives for the Signal Concept for Fortuna-12th Street Overcrossing Interchange Improvements. The level of study we have conducted is a Project Study Report-Project Development Support (PSR-PDS) Cost Estimate. The purpose of our study was to determine preliminary scope, feasibility, rough cost range, and a list of potential project risks for the proposed structures work.

The proposed Signal Concept improvement intends to add traffic signals and improve 12th Street in the City of Fortuna by re-aligning and widening 12th Street, removing the existing and constructing a new 12th Street Overcrossing (Br. No. 04-0130) and widening or replacing Strongs Creek Bridge (Br. No. 04C-0085) on Riverwalk Drive west of the interchange. Also necessary would be realignment of Dinsmore Drive northwest of the interchange; construction of a new Strongs Creek Bridge on the realignment of Dinsmore Drive; widening of the northbound U.S. 101 on-ramp and widening the Rohner Creek Bridge (Br. No. 04-0108) on U.S. 101 to accommodate the northbound on-ramp widening.

The new 12th Street roadway alignment and 12th Street Overcrossing will be located south of the existing Overcrossing and will be on tangent alignment connecting to Riverwalk Drive west of Strongs Creek. Traffic signals will be located at a new interchange intersection east of Strongs Creek, and at a new intersection of Dinsmore Drive with Riverwalk Drive west of Strongs Creek. The new Overcrossing on 12th Street will accommodate four 12-foot traffic-lanes, with 5-foot shoulders and 8-foot sidewalk barriers on each side for an overall width of approximately 74 feet including the sidewalk barriers. The proposed alignment is skewed approximately 35 degrees to Highway 101.

New 12th Street Overcrossing Br. No. 04-0130 at US 101/12th Street OC Interchange

Based on the conditions at the site and the interchange geometrics, the new 12th Street Overcrossing will be approximately 200 feet in length. The most economical structure type will likely be a 4-span, precast, prestressed, concrete girder structure with a 4.3 foot structure depth. Approximate span configuration will be 58 feet, 82 feet, 82 feet, and 58 feet. End supports will be short-seat concrete abutments and interior supports will be 5-column bents. All supports will be pile supported. Clear roadway width will be 58 feet between 8-foot-wide Type 732SW barriers. Chain link railing will be mounted on the barrier walls above the interior spans and tubular handrailing will be mounted to the barrier wall above the end spans. Falsework is not necessary to erect this type of girder structure. Girders would be set in place from U.S. 101 using traffic closures.

The anticipated structure cost is $4,500,000, not including costs for mobilization or contingencies. Bridge removal costs to remove the existing 12th Street Overcrossing represent $170,000 of this figure.

Strongs Creek Bridge (Br. No. 04C-0085) on Riverwalk Drive

The existing Strongs Creek Bridge on Riverwalk Drive (Br. No. 04C-0085) is a County-owned, 99-foot-long, continuous 3-span, concrete flat slab structure constructed in 1962 with a clear roadway width of 28 feet. The roadway is classified as an urban collector and current average daily traffic (ADT) is approximately 2300 vehicles per day. The structure is in fair condition with a health index of 100, but the sufficiency rating (SR) is 72.4 because of the bridge's narrow width and ADT. When originally built, the ADT was much lower and the 28 feet width was adequate.

The Highway Bridge Program funding from Federal Highways may be available to assist in the costs of widening or replacing the bridge. Structures with sufficiency ratings below 80 are eligible for rehabilitation and widening. However, the necessary bridge width is 74 feet to accommodate the improvements, which is 46 feet wider than the existing structure. Because the necessary bridge widening is 46 feet and amounts to 62% of the required overall proposed bridge width (74 feet), it will be most economical to replace the entire structure rather than to widen it.

Based on the conditions at the site and the proposed roadway geometrics, the new bridge will be approximately 99 feet in length. The most economical structure type will likely be a continuous 3-span, concrete flat slab structure with a 1.5 foot structure depth. Approximate span configuration will be 33.5 feet, 32 feet, and 33.5 feet. End supports will be concrete diaphragm abutments supported on concrete piles and interior supports will be concrete pile bents. Clear roadway width will be 58 feet between 8-foot-wide Type 732SW barriers. Tubular handrailing will be mounted to the barrier walls. Falsework is necessary to erect this type of slab structure.

The anticipated structure cost is $1,500,000 not including costs for mobilization or contingencies. Bridge removal costs to remove the existing Strongs Creek Bridge represent $50,000 of this figure.

The estimate assumes that Riverwalk Drive can be closed to traffic during construction.

Strongs Creek Bridge (New Bridge) on Dinsmore Drive

Based on the conditions at the site and the proposed roadway geometrics, the new Strongs Creek Bridge on Dinsmore Drive will be approximately 157 feet in length and 38-feet-wide. The most economical structure type will likely be a continuous 5-span, concrete flat slab structure with a 1.5 foot structure depth. Approximate span configuration will be 27.5 feet, 34 feet, 34 feet, 34 feet, and 27.5 feet. End supports will be concrete diaphragm abutments supported on concrete piles and interior supports will be concrete pile bents. Supports will be parallel to the channel and skewed approximately 60 degrees from normal to the roadway. Clear roadway width will be 24 feet between 7-foot-wide Type 732SW barriers. Tubular handrailing will be mounted to the barrier walls. Falsework is necessary to erect this type of slab structure.

The anticipated structure cost is $1,200,000 not including costs for mobilization or contingencies.

Rohner Creek Bridge (Br. No. 04-0108) on U.S. Highway 101

The existing Rohner Creek Bridge on U.S. 101 (Br. No. 04-0108) is a pile supported, 87-foot-long, 74-feet-wide, continuous 3-span, concrete flat slab structure constructed in 1962. The structure is in good condition with a sufficiency rating (SR) of 95.9.

Based on the conditions at the site and the proposed roadway geometrics, the existing bridge will need to be widened on its right edge (east edge) approximately 16 feet to accommodate the proposed 12th

Street/U.S. 101 IC northbound on-ramp widening. The widening will match the existing bridge type and will be a continuous 3-span, concrete flat slab structure with a 1.33 foot structure depth. Approximate span configuration will be 29.5 feet, 28 feet, and 29.5 feet. End supports will be concrete diaphragm abutments supported on concrete piles and interior supports will be concrete pile bents. Supports will be parallel to the channel and skewed approximately 20 degrees from normal to the roadway. A Type 742 concrete barrier will be mounted along the new right edge of deck. Falsework is necessary to erect this type of slab structure.

The anticipated structure cost is $550,000 not including costs for mobilization or contingencies.

MORRISON STRUCTURES, INC.

1890 Park Marina Drive, Suite 104
Redding, CA 96001

BRIDGE GENERAL PLAN ESTIMATE ☐ OR PLANNING ESTIMATE ☒

STRUCTURE	12th St OC/US 101 IC NEW ALIGN		04-0130	COUNTY	HUM	RCVD. BY	
TYPE	PC PS I-GIRDER	DIST.	1	ROUTE	101	P.M.	
LENGTH	280 X WIDTH	74	=	20720 SF		EST. NO.	1
PROJECT INCLUDES	1	STRUCTURES		QUANTITIES BY	RLM	DATE	9/2/2016
AND $		ROADWORK		CHECKED BY		DATE	

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	TRAFFIC CONTROL SYSTEM	LS	0	$ 72,000.00	$ -
2	TEMPORARY RAILING (TYPE K)	LF	2000	$ 40.50	$ 81,000.00
3	BRIDGE REMOVAL (PORTION)	LS	0	$ -	$ -
4	STRUCTURE EXCAVATION (BRIDGE)	CY	939	$ 157.50	$ 147,892.50
5	STRUCTURE BACKFILL (BRIDGE)	CY	622	$ 112.50	$ 69,975.00
6	FURNISH PILING (CLASS 90) (ALT "V")	LF	3810	$ 40.50	$ 154,305.00
7	DRIVE PILING (CLASS 90) (ALT "V")	EA	127	$ 1,620.00	$ 205,740.00
8	STRUCTURAL CONCRETE, BRIDGE FOOTING	CY	213	$ 540.00	$ 115,020.00
9	STRUCTURAL CONCRETE, BRIDGE	CY	1228	$ 1,400.00	$ 1,719,200.00
10	FRACTURE RIB TEXTURE	SF	7500	$ 13.50	$ 101,250.00
11	DRILL & BOND DOWEL	LF	0	$ 36.90	$ -
12	FURNISH PC PS CONC GIRDER (50-60')	EA	26	$ 16,200.00	$ 421,200.00
13	FURNISH PC PS CONC GIRDER (80-90')	EA	13	$ 20,700.00	$ 269,100.00
14	FURNISH PC PS CONC GIRDER (80-90')	EA	13	$ 20,700.00	$ 269,100.00
15	ERECT PC PS CONC GIRDER	EA	52	$ 4,500.00	$ 234,000.00
16	JOINT SEAL	LF	260	$ 108.00	$ 28,080.00
17	BAR REINFORCING STEEL (BRIDGE)	LB	260000	$ 1.31	$ 340,600.00
18	TYPE 732 CONC BARRIER (MOD)	LF	620	$ 202.50	$ 125,550.00
19	CHAIN LINK RAILING (TYPE 7)	LF	280	$ 81.00	$ 22,680.00
20	TUBULAR HAND RAIILING	LF	340	$ 76.50	$ 26,010.00
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COMMENTS:

COSTS ESTIM FOR 2016 CONSTRUCTION

SUBTOTAL	$ 4,330,702.50
MOBILIZATION ((10 %)	$ 481,189.17
SUBTOTAL STRUCTURE ITEMS	$ 4,811,891.67
CONTINGENCIES (25 %)	$ 1,202,972.92
BRIDGE TOTAL ($ 290 / SF	$ 6,014,864.58
BRIDGE REMOVAL (CONTINGENCIES INCL)	$ 170,000.00
WORK BY RAILROAD OR UTILITY FORCES	$ -
GRAND TOTAL	$ 6,184,864.58
FOR BUDGET PURPOSES - USE	$ 6,185,000.00

COMMENTS:

MORRISON STRUCTURES, INC.

1890 Park Marina Drive, Suite 104
Redding, CA 96001

BRIDGE GENERAL PLAN ESTIMATE ☐				**OR PLANNING ESTIMATE** ☒			
STRUCTURE	Strongs Cr Br on Riverwalk Replace		4C-085	COUNTY	HUM	RCVD. BY	
TYPE	Signal Concept - CIP SLAB	DIST.	1	ROUTE	DINSMORE DR	P.M.	
LENGTH	99 X WIDTH 74	=	7326 SF			EST. NO.	1
PROJECT INCLUDES	1	STRUCTURES		QUANTITIES BY	RLM	DATE	8/29/2016
AND $		ROADWORK		CHECKED BY		DATE	

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)	CY	430	$ 157.50	$ 67,725.00
2	STRUCTURE BACKFILL (BRIDGE)	CY	320	$ 112.50	$ 36,000.00
3	FURNISH CLASS 90 PILING ALT "V"	LF	3832	$ 46.00	$ 176,272.00
4	DRIVE CLASS 90 PILING ALT "V"	EA	32	$ 1,625.00	$ 52,000.00
5	STRUCTURAL CONCRETE, BRIDGE	CY	800	$ 1,050.00	$ 840,000.00
6	JOINT SEAL (MR=1 ")	LF	148	$ 70.00	$ 10,360.00
7	BAR REINFORCING STEEL (BRIDGE)	LB	123000	$ 1.40	$ 172,200.00
8	CONCRETE BARRIER (TYPE 732 SW)	LF	280	$ 280.00	$ 78,400.00
9	TUBULAR HANDRAILING	LF	280	$ 70.00	$ 19,600.00
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SUBTOTAL		$ 1,452,557.00
MOBILIZATION	(10 %)	$ 161,395.22
SUBTOTAL STRUCTURE ITEMS		$ 1,613,952.22
CONTINGENCIES	(25 %)	$ 403,488.06
BRIDGE TOTAL	($ 275 / SF	$ 2,017,440.28
BRIDGE REMOVAL (CONTINGENCIES INCL)		$ 50,000.00
WORK BY RAILROAD OR UTILITY FORCES		$ -
GRAND TOTAL		$ 2,067,440.28
FOR BUDGET PURPOSES - USE		$ 2,068,000.00

COMMENTS:

COSTS ESTIM FOR 2016 CONSTRUCTION

COMMENTS:

MORRISON STRUCTURES, INC.

1890 Park Marina Drive, Suite 104
Redding, CA 96001

BRIDGE GENERAL PLAN ESTIMATE ☐			**OR PLANNING ESTIMATE** ☒		
STRUCTURE	Dinsmore Dr. Strongs Cr Traffic Signal	New	COUNTY	HUM	RCVD. BY
TYPE	CIP SLAB	DIST. 1	ROUTE	DINSMORE DR	P.M.
LENGTH	157 X WIDTH 38	= 5966 SF			EST. NO. 1
PROJECT INCLUDES	1 STRUCTURES		QUANTITIES BY	RLM	DATE 8/29/2016
AND $	ROADWORK		CHECKED BY		DATE

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)	CY	210	$ 157.50	$ 33,075.00
2	STRUCTURE BACKFILL (BRIDGE)	CY	158	$ 112.50	$ 17,775.00
3	FURNISH CLASS 90 PILING ALT "V"	LF	3120	$ 49.50	$ 154,440.00
4	DRIVE CLASS 90 PILING ALT "V"	EA	26	$ 1,800.00	$ 46,800.00
5	STRUCTURAL CONCRETE, BRIDGE	CY	650	$ 1,050.00	$ 682,500.00
6	JOINT SEAL (MR=1 ")	LF	152	$ 63.00	$ 9,576.00
7	BAR REINFORCING STEEL (BRIDGE)	LB	100000	$ 1.33	$ 133,000.00
8	CONCRETE BARRIER (TYPE 732 SW)	LF	394	$ 248.00	$ 97,712.00
9	TUBULAR HANDRAILING	LF	394	$ 63.00	$ 24,822.00
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SUBTOTAL	$ 1,199,700.00
MOBILIZATION (10 %)	$ 133,300.00
SUBTOTAL STRUCTURE ITEMS	$ 1,333,000.00
CONTINGENCIES (25 %)	$ 333,250.00
BRIDGE TOTAL ($ 279 / SF	$ 1,666,250.00
BRIDGE REMOVAL (CONTINGENCIES INCL)	$ -
WORK BY RAILROAD OR UTILITY FORCES	$ -
GRAND TOTAL	$ 1,666,250.00
FOR BUDGET PURPOSES - USE	$ 1,667,000.00

COMMENTS:

COSTS ESTIM FOR 2016 CONSTRUCTION

COMMENTS:

MORRISON STRUCTURES, INC.

1890 Park Marina Drive, Suite 104
Redding, CA 96001

BRIDGE GENERAL PLAN ESTIMATE ☐			**OR PLANNING ESTIMATE** ☒		
STRUCTURE	Rohner Cr US101 Br Widen (04-0108)		COUNTY	HUM	RCVD. BY
TYPE	CIP SLAB	DIST. 1	ROUTE	DINSMORE DR	P.M.
LENGTH	87 X WIDTH 16	= 1392 SF			EST. NO. 1
PROJECT INCLUDES	1	STRUCTURES	QUANTITIES BY	RLM	DATE 8/29/2016
AND $		ROADWORK	CHECKED BY		DATE

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)	CY	49	$ 305.00	$ 14,945.00
2	STRUCTURE BACKFILL (BRIDGE)	CY	37	$ 218.00	$ 8,066.00
3	FURNISH CLASS 90 PILING ALT "V"	LF	560	$ 96.00	$ 53,760.00
4	DRIVE CLASS 90 PILING ALT "V"	EA	8	$ 3,400.00	$ 27,200.00
5	STRUCTURAL CONCRETE, BRIDGE	CY	150	$ 2,030.00	$ 304,500.00
6	JOINT SEAL (MR=1 ")	LF	32	$ 122.00	$ 3,904.00
7	BAR REINFORCING STEEL (BRIDGE)	LB	23400	$ 2.60	$ 60,840.00
8	CONCRETE BARRIER (TYPE 742)	LF	125	$ 475.00	$ 59,375.00
9	TEMPORARY RAILING (TYPE K)	LF	400	$ 42.00	$ 16,800.00
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SUBTOTAL		$ 549,390.00
MOBILIZATION	(10 %)	$ 61,043.33
SUBTOTAL STRUCTURE ITEMS		$ 610,433.33
CONTINGENCIES	(25 %)	$ 152,608.33
BRIDGE TOTAL	($ 548 / SF	$ 763,041.67
BRIDGE REMOVAL (CONTINGENCIES INCL)		$ -
WORK BY RAILROAD OR UTILITY FORCES		$ -
GRAND TOTAL		$ 763,041.67
FOR BUDGET PURPOSES - USE		$ 764,000.00

COMMENTS: ____________________

COSTS ESTIM FOR 2016 CONSTRUCTION

COMMENTS: ____________________

Morrison Structures
1890 Park Marina Drive, Ste 104
Redding, CA 96001

Structure Memorandum

From: Bob Morrison, Jr., S.E., Morrison Structures, Redding, California

To: Josh Wolf, P.E, GHD, Eureka, California

Date: September 15, 2016

Re: Highway 101 Fortuna Downtown and Riverwalk Area Complete Streets and Connectivity Planning Study
U.S. 101/12th Street Interchange – Roundabout Concept 2c
HUM-101-60.49

General

The purpose of this memorandum is to provide structure information for the proposed alternatives for the Roundabout Concept 2c for Fortuna-12th Street Overcrossing Interchange Improvements. The level of study we have conducted is a Project Study Report-Project Development Support (PSR-PDS) Cost Estimate. The purpose of our study was to determine preliminary scope, feasibility, rough cost range, and a list of potential project risks for the proposed structures work.

The proposed Roundabout Concept 2c improvement intends to improve 12th Street and the 12th Street/U.S. 101 interchange in the City of Fortuna by widening 12th Street, widening or replacing the existing 12th Street Overcrossing (Br. No. 04-0130), adding a roundabout at the south interchange and widening or replacing Strongs Creek Bridge (Br. No. 04C-0085) on Riverwalk Drive west of the interchange. Also necessary would be realignment of Dinsmore Drive northwest of the interchange and the construction of a new Strongs Creek Bridge on the realignment of Dinsmore Drive.

The existing 12th Street roadway alignment east of U.S. 101 and 12th Street Overcrossing will be widened to accommodate a new 10-foot-wide pedestrian/bicycle trail along the north side of the roadway. The existing 12th Street Overcrossing bridge will be widened to accommodate the new 10-foot-wide pedestrian/bicycle facility, separated from the two-way vehicle traffic. West of the overcrossing a roundabout will be constructed at the intersection of Riverwalk Drive, 12th Street, and U.S. 101 southbound on and off ramps. The realignment of Dinsmore Drive will cross Strongs Creek northwest from the interchange and intersect with Riverwalk Drive further west from Strongs Creek.

12th Street Overcrossing Br. No. 04-0130 at US 101/12th Street OC Interchange

The 12th Street Overcrossing Bridge (Br. No. 04-0130) spans over Route U.S. 101 at the interchange. The bridge is on curved alignment with supports skewed and parallel to Highway 101. The structure is a 34-foot-wide, 4-span, 197-foot-long, concrete tee-beam structure, with a span arrangement of 44, 65, 53, and 35 feet. The structure was constructed in 1962. End supports are short seat abutments on concrete pile foundations, and intermediate supports are 2-column bents on concrete pile foundations. Highway 101 currently passes under the spans 2 and 3 with a 15-foot 5-inch vertical clearance over northbound lanes and 15-foot 6-inch vertical clearance over southbound lanes. The 34-foot-width currently carries two 12-foot travel lanes, two 2-foot shoulders, and two 3-foot-wide Type 2 Barrier railings. The clear width between barrier railings is 28 feet.

12th Street Overcrossing - Looking East

The Overcrossing is State-owned, on the National Highway System, and rated adequate for permit loads. The structure is in good condition with a health index of 100, but the sufficiency rating (SR) is 80.1 because of the bridge's narrow width and ADT. When originally built, the ADT was much lower and the 28 feet width was adequate. Based on our discussions with Caltrans, this structure is not eligible for funding under the Federal Highways Bridge Program. Structures with sufficiency ratings below 80 are eligible for rehabilitation and must have a structurally deficient status. This structure does not have any structural deficient status and the sufficiency rating is above 80. However, funds from the U.S. Department of Transportation surface transportation funding programs may be available to assist with costs of widening depending on program and eligibility requirements. Two alternatives to provide for the pedestrian/bicycle facility at 12 Street Overcrossing are to widen the existing bridge or to construct a new independent pedestrian/bicycle overcrossing close to the existing bridge along the north side.

Bridge Widening Alternative

The proposed bridge widening consists of constructing a 197-foot-long, 9.7-foot-wide, 4-span, precast, prestressed concrete girder addition along the north side of the existing Overcrossing. The widening will provide a clear width of 10'-0" between barriers and match the existing bridge structure depth, structure type, profile, and pile foundation supports. Both the east and west approaches to the bridge would be on widened fill embankment closely matching existing conditions. Vertical clearance from the soffit of the widened bridge to the surface of U.S. 101 below will not be affected.

The existing barrier and deck slab along the north side of the Overcrossing will need to be removed and replaced. Traffic control and temporary barriers along the 12th Street roadway will be required to construct the widening. Additionally, traffic control systems will be required on U.S. 101 to construct pile foundations and widen the existing column bents. Falsework is not necessary to erect this type of girder structure. Girders would be set in place from U.S. 101 using traffic closures.

Overall width of the widened structure will be 43-feet 8-inches. Clear vehicular roadway width will be 28 feet between the existing Type 3 concrete barrier along the south edge of the existing bridge and a new Type ST-30 bridge rail located to separate the 10-foot-wide pedestrian/bicycle facility from the vehicular traffic. A Type 732SW (modified) barrier with chain link railing mounted on the barrier wall will bound the pedestrian/bicycle facility along the north edge of the widened structure.

The anticipated structure cost is $950,000. This cost does not include mobilization or any contingencies.

Construct New Pedestrian/Bicycle Overcrossing

The proposed new pedestrian/bicycle overcrossing consists of constructing a 203-foot-long, 12-foot-wide, 4-span, precast, prestressed concrete girder structure along the north side and close to the existing

Overcrossing. The new structure will provide a clear width of 10'-0" between barriers and match the existing bridge structure depth, structure type, profile, and pile foundation supports. Both the east and west approaches to the bridge would be on widened fill embankment closely matching existing conditions. Vertical clearance from the soffit of the new bridge to the surface of U.S. 101 below should maintain approximately 16 feet.

The existing barrier and deck slab along the north side of the Overcrossing will need to be removed and replaced. Traffic control and temporary barriers along the 12th Street roadway will be required to construct the new structure. Additionally, traffic control systems will be required on U.S. 101 to construct pile foundations and column bents. Falsework is not necessary to erect this type of girder structure. Girders would be set in place from U.S. 101 using traffic closures.

Type 732SW (modified) barriers with chain link railing mounted on the barrier wall will bound the pedestrian/bicycle facility along both edges of the new structure.

The anticipated structure cost is also $950,000. This cost does not include mobilization or any contingencies.

Strongs Creek Bridge (Br. No. 04C-0085) on Riverwalk Drive

The existing Strongs Creek Bridge on Riverwalk Drive (Br. No. 04C-0085) is a County-owned, 99-foot-long, continuous 3-span, concrete flat slab structure constructed in 1962 with a clear roadway width of 28 feet. The roadway is classified as an urban collector and current average daily traffic (ADT) is approximately 2300 vehicles per day. Two steel pipelines are carried on the bridge, one on each edge. The structure is in fair condition with a health index of 100, but the sufficiency rating (SR) is 72.4 because of the bridge's narrow width and ADT. When originally built, the ADT was much lower and the 28 feet width was adequate.

Strongs Creek Bridge on Riverwalk Drive – Looking East

Based on our discussions with Caltrans, the Highway Bridge Program funding from Federal Highways may be available to assist in the costs of widening or replacing the bridge. Structures with sufficiency ratings below 80 are eligible for rehabilitation and widening. Additionally, the U.S. Department of Transportaion has programs that can assist with costs of widening as discussed above. If cost of total bridge replacement is expected to be less than 50 percent of cost associated with widening, then total replacement of the bridge is usually the preferred option.

Based on the conditions at the site and the proposed roadway geometrics, the bridge width required at Strongs Creek on Riverwalk Drive will need to vary from about 58 feet at the west abutment (west creek bank) to about 76 feet at the east abutment (east creek bank). The existing 99-foot-long bridge length is adequate. Because proposed bridge width is more than twice the existing 28 feet, it will be most economical to replace the entire structure rather than to widen it.

The most economical replacement structure type will likely be a continuous 3-span, concrete flat slab structure with a 1.5 foot structure depth. Approximate span configuration will be 33.5 feet, 32 feet, and 33.5 feet. End supports will be concrete diaphragm abutments supported on concrete piles and interior supports will be concrete pile bents. Bridge width varies, (58 feet at the west abutment to 76 feet at the east abutment) and the bridge carries Type 732SW (modified) barriers, a 10-foot-wide pedestrian/bicycle facility, and 12-foot eastbound and westbound travel lanes, shoulders, and edge and road medians of varying widths. Tubular handrailing will be mounted to the barrier walls. Falsework is necessary to erect this type of slab structure. The pipeline utilities will be have to be relocated and supported on the new bridge or buried in the stream bottom.

The anticipated structure cost is $1,375,000 excluding costs for mobilization and contingencies. Bridge removal costs to remove the existing Strongs Creek Bridge represent $50,000 of this figure.

The estimate assumes that Riverwalk Drive can be closed to traffic during construction.

Strongs Creek Bridge (New Bridge) on Dinsmore Drive

Based on the conditions at the site and the proposed roadway geometrics, the new Strongs Creek Bridge on Dinsmore Drive will be approximately 157 feet in length and 38-feet-wide. The most economical structure type will likely be a continuous 5-span, concrete flat slab structure with a 1.5 foot structure depth. Approximate span configuration will be 27.5 feet, 34 feet, 34 feet, 34 feet, and 27.5 feet. End supports will be concrete diaphragm abutments supported on concrete piles and interior supports will be concrete pile bents. Supports will be parallel to the channel and skewed approximately 60 degrees from normal to the roadway. Clear roadway width will be 24 feet between 7-foot-wide Type 732SW barriers. Tubular handrailing will be mounted to the barrier walls. Falsework is necessary to erect this type of slab structure.

The anticipated structure cost, excluding mobilization and contingencies, is $1,200,000.

MORRISON STRUCTURES, INC.

1890 Park Marina Drive, Suite 104
Redding, CA 96001

BRIDGE GENERAL PLAN ESTIMATE ☐		**OR PLANNING ESTIMATE** ☒	
STRUCTURE	12th St OC/US 101 IC Widen(04-0130)	COUNTY HUM	RCVD. BY
TYPE	PC PS I-GIRDER DIST. 1	ROUTE 101	P.M.
LENGTH	197 X WIDTH 9.7 = 1911 SF		EST. NO. 1
PROJECT INCLUDES	1 STRUCTURES	QUANTITIES BY RLM	DATE 9/2/2016
AND $	ROADWORK	CHECKED BY	DATE

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	TRAFFIC CONTROL SYSTEM	LS	1	$ 72,000.00	$ 72,000.00
2	TEMPORARY RAILING (TYPE K)	LF	2000	$ 40.50	$ 81,000.00
3	BRIDGE REMOVAL (PORTION)	LS	1	$ 27,000.00	$ 27,000.00
4	STRUCTURE EXCAVATION (BRIDGE)	CY	155	$ 157.50	$ 24,412.50
5	STRUCTURE BACKFILL (BRIDGE)	CY	114	$ 112.50	$ 12,825.00
6	FURNISH PILING (CLASS 90) (ALT "V")	LF	650	$ 45.00	$ 29,250.00
7	DRIVE PILING (CLASS 90) (ALT "V")	EA	21	$ 3,150.00	$ 66,150.00
8	STRUCTURAL CONCRETE, BRIDGE FOOTING	CY	28	$ 675.00	$ 18,900.00
9	STRUCTURAL CONCRETE, BRIDGE	CY	145	$ 1,575.00	$ 228,375.00
10	FRACTURE RIB TEXTURE	SF	576	$ 13.50	$ 7,776.00
11	DRILL & BOND DOWEL	LF	324	$ 36.90	$ 11,955.60
12	FURNISH PC PS CONC GIRDER (30-40')	EA	4	$ 12,510.00	$ 50,040.00
13	FURNISH PC PS CONC GIRDER (50-60')	EA	2	$ 17,550.00	$ 35,100.00
14	FURNISH PC PS CONC GIRDER (60-70')	EA	2	$ 20,700.00	$ 41,400.00
15	ERECT PC PS CONC GIRDER	EA	8	$ 4,500.00	$ 36,000.00
16	JOINT SEAL	LF	24	$ 36.00	$ 864.00
17	BAR REINFORCING STEEL (BRIDGE)	LB	34620	$ 1.71	$ 59,200.20
18	TYPE 732 CONC BARRIER (MOD)	LF	227	$ 202.50	$ 45,967.50
19	CHAIN LINK RAILING (TYPE 7)	LF	200	$ 81.00	$ 16,200.00
20	CALIFORNIA ST-10 BRIDGE RAIL	LF	318	$ 247.50	$ 78,705.00
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COMMENTS:

COSTS ESTIM FOR 2016 CONSTRUCTION

SUBTOTAL	$ 943,120.80
MOBILIZATION (10 %)	$ 104,791.20
SUBTOTAL STRUCTURE ITEMS	$ 1,047,912.00
CONTINGENCIES (25 %)	$ 261,978.00
BRIDGE TOTAL ($ 685 / SF	$ 1,309,890.00
BRIDGE REMOVAL (CONTINGENCIES INCL)	$ -
WORK BY RAILROAD OR UTILITY FORCES	$ -
GRAND TOTAL	$ 1,309,890.00
FOR BUDGET PURPOSES - USE	$ 1,310,000.00

COMMENTS:

MORRISON STRUCTURES, INC.

1890 Park Marina Drive, Suite 104
Redding, CA 96001

BRIDGE GENERAL PLAN ESTIMATE ☐		OR PLANNING ESTIMATE ☒	
STRUCTURE	12th St PED OC/US 101 IC (New)	COUNTY HUM	RCVD. BY
TYPE	PC PS I-GIRDER DIST. 1	ROUTE 101	P.M.
LENGTH	203 X WIDTH 12 = 2436 SF		EST. NO. 1
PROJECT INCLUDES	1 STRUCTURES	QUANTITIES BY RLM	DATE 9/15/2016
AND $	ROADWORK	CHECKED BY	DATE

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	TRAFFIC CONTROL SYSTEM	LS	1	$ 72,000.00	$ 72,000.00
2	TEMPORARY RAILING (TYPE K)	LF	2000	$ 40.50	$ 81,000.00
3	BRIDGE REMOVAL (PORTION)	LS	0	$ 27,000.00	$ -
4	STRUCTURE EXCAVATION (BRIDGE)	CY	198	$ 157.50	$ 31,185.00
5	STRUCTURE BACKFILL (BRIDGE)	CY	124	$ 112.50	$ 13,950.00
6	FURNISH PILING (CLASS 90) (ALT "V")	LF	870	$ 45.00	$ 39,150.00
7	DRIVE PILING (CLASS 90) (ALT "V")	EA	29	$ 3,150.00	$ 91,350.00
8	STRUCTURAL CONCRETE, BRIDGE FOOTING	CY	32	$ 675.00	$ 21,600.00
9	STRUCTURAL CONCRETE, BRIDGE	CY	148	$ 1,575.00	$ 233,100.00
10	FRACTURE RIB TEXTURE	SF	460	$ 13.50	$ 6,210.00
11	DRILL & BOND DOWEL	LF	0	$ 36.90	$ -
12	FURNISH PC PS CONC GIRDER (30-40')	EA	2	$ 13,050.00	$ 26,100.00
13	FURNISH PC PS CONC GIRDER (40-50')	EA	2	$ 13,050.00	$ 26,100.00
14	FURNISH PC PS CONC GIRDER (50-60')	EA	2	$ 17,550.00	$ 35,100.00
15	FURNISH PC PS CONC GIRDER (60-70')	EA	2	$ 20,700.00	$ 41,400.00
16	ERECT PC PS CONC GIRDER	EA	8	$ 4,500.00	$ 36,000.00
17	JOINT SEAL	LF	50	$ 36.00	$ 1,800.00
17	BAR REINFORCING STEEL (BRIDGE)	LB	35870	$ 1.71	$ 61,337.70
19	TYPE 732 CONC BARRIER (MOD)	LF	466	$ 202.50	$ 94,365.00
20	CHAIN LINK RAILING (TYPE 7)	LF	400	$ 81.00	$ 32,400.00
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SUBTOTAL	$ 944,147.70
MOBILIZATION (10 %)	$ 104,905.30
SUBTOTAL STRUCTURE ITEMS	$ 1,049,053.00
CONTINGENCIES (25 %)	$ 262,263.25
BRIDGE TOTAL ($ 538 / SF	$ 1,311,316.25
BRIDGE REMOVAL (CONTINGENCIES INCL)	$ -
WORK BY RAILROAD OR UTILITY FORCES	$ -
GRAND TOTAL	$ 1,311,316.25
FOR BUDGET PURPOSES - USE	$ 1,312,000.00

COMMENTS: ______________

COSTS ESTIM FOR 2016 CONSTRUCTION

COMMENTS: ______________

MORRISON STRUCTURES, INC.

1890 Park Marina Drive, Suite 104
Redding, CA 96001

BRIDGE GENERAL PLAN ESTIMATE ☐				**OR PLANNING ESTIMATE** ☒		
STRUCTURE	Strongs Cr Br on Riverwalk Replace	4C-085	COUNTY	HUM	RCVD. BY	
TYPE	Concept 2C - CIP SLAB	DIST. 1	ROUTE	DINSMORE DR	P.M.	
LENGTH	99 X WIDTH 67	=	6633 SF		EST. NO.	1
PROJECT INCLUDES	1 STRUCTURES		QUANTITIES BY	RLM	DATE	8/29/2016
AND $	ROADWORK		CHECKED BY		DATE	

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)	CY	385	$ 157.50	$ 60,637.50
2	STRUCTURE BACKFILL (BRIDGE)	CY	290	$ 112.50	$ 32,625.00
3	FURNISH CLASS 90 PILING ALT "V"	LF	3312	$ 49.50	$ 163,944.00
4	DRIVE CLASS 90 PILING ALT "V"	EA	28	$ 1,800.00	$ 50,400.00
5	STRUCTURAL CONCRETE, BRIDGE	CY	690	$ 1,100.00	$ 759,000.00
6	JOINT SEAL (MR=1 ")	LF	134	$ 70.00	$ 9,380.00
7	BAR REINFORCING STEEL (BRIDGE)	LB	106150	$ 1.40	$ 148,610.00
8	CONCRETE BARRIER (TYPE 732 SW)	LF	280	$ 280.00	$ 78,400.00
9	TUBULAR HANDRAILING	LF	280	$ 70.00	$ 19,600.00
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SUBTOTAL	$ 1,322,596.50
MOBILIZATION (10 %)	$ 146,955.17
SUBTOTAL STRUCTURE ITEMS	$ 1,469,551.67
CONTINGENCIES (25 %)	$ 367,387.92
BRIDGE TOTAL ($ 277 / SF	$ 1,836,939.58
BRIDGE REMOVAL (CONTINGENCIES INCL)	$ 50,000.00
WORK BY RAILROAD OR UTILITY FORCES	$ -
GRAND TOTAL	$ 1,886,939.58
FOR BUDGET PURPOSES - USE	$ 1,887,000.00

COMMENTS:
Width of Bridge varies from 58' at BB
to 76' at EB (average = 67')
COSTS ESTIM FOR 2016 CONSTRUCTION

COMMENTS:

MORRISON STRUCTURES, INC.

1890 Park Marina Drive, Suite 104

Redding, CA 96001

BRIDGE GENERAL PLAN ESTIMATE ☐			**OR PLANNING ESTIMATE** ☒		
STRUCTURE	Dinsmore Dr. Strongs Cr Traffic Signal	New	COUNTY	HUM	RCVD. BY
TYPE	CIP SLAB	DIST. 1	ROUTE	DINSMORE DR	P.M.
LENGTH	157 X WIDTH 38	=	5966 SF		EST. NO. 1
PROJECT INCLUDES	1 STRUCTURES		QUANTITIES BY	RLM	DATE 8/29/2016
AND $	ROADWORK		CHECKED BY		DATE

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)	CY	210	$ 157.50	$ 33,075.00
2	STRUCTURE BACKFILL (BRIDGE)	CY	158	$ 112.50	$ 17,775.00
3	FURNISH CLASS 90 PILING ALT "V"	LF	3120	$ 49.50	$ 154,440.00
4	DRIVE CLASS 90 PILING ALT "V"	EA	26	$ 1,800.00	$ 46,800.00
5	STRUCTURAL CONCRETE, BRIDGE	CY	650	$ 1,050.00	$ 682,500.00
6	JOINT SEAL (MR=1 ")	LF	152	$ 63.00	$ 9,576.00
7	BAR REINFORCING STEEL (BRIDGE)	LB	100000	$ 1.33	$ 133,000.00
8	CONCRETE BARRIER (TYPE 732 SW)	LF	394	$ 248.00	$ 97,712.00
9	TUBULAR HANDRAILING	LF	394	$ 63.00	$ 24,822.00
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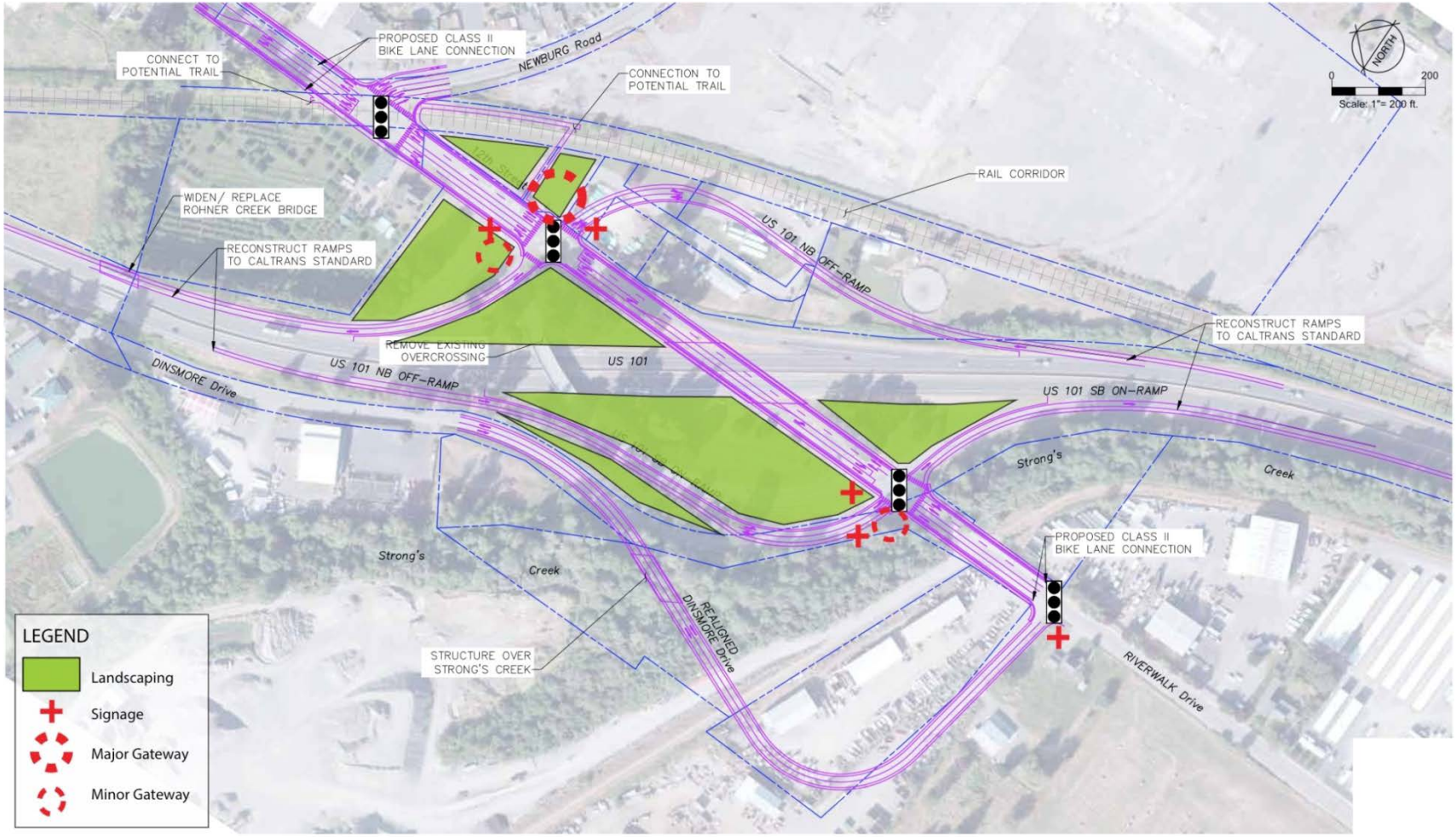
COMMENTS:

COSTS ESTIM FOR 2016 CONSTRUCTION

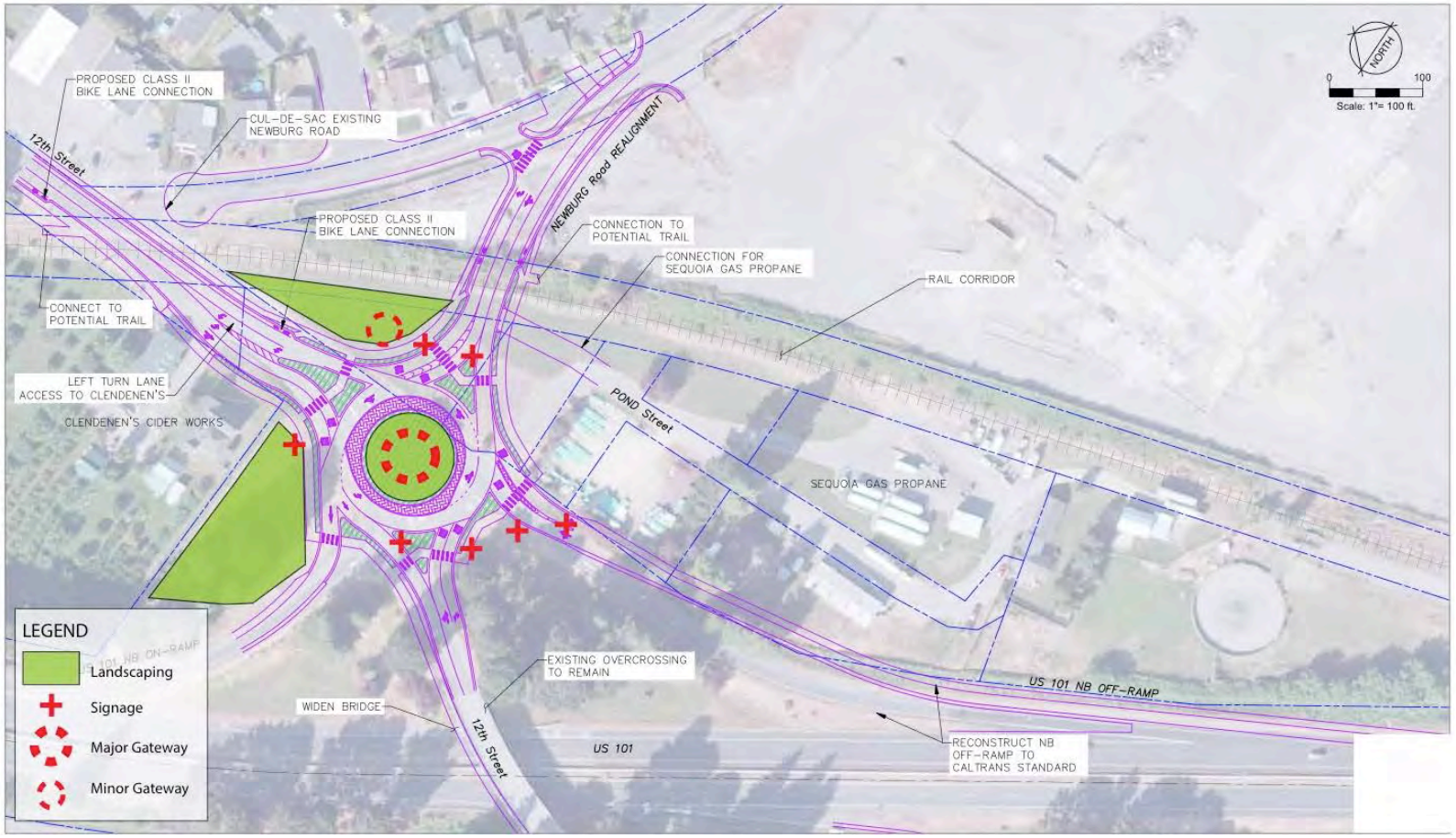
SUBTOTAL		$ 1,199,700.00
MOBILIZATION	(10 %)	$ 133,300.00
SUBTOTAL STRUCTURE ITEMS		$ 1,333,000.00
CONTINGENCIES	(25 %)	$ 333,250.00
BRIDGE TOTAL	($ 279 / SF	$ 1,666,250.00
BRIDGE REMOVAL (CONTINGENCIES INCL)		$ -
WORK BY RAILROAD OR UTILITY FORCES		$ -
GRAND TOTAL		$ 1,666,250.00
FOR BUDGET PURPOSES - USE		$ 1,667,000.00

COMMENTS:

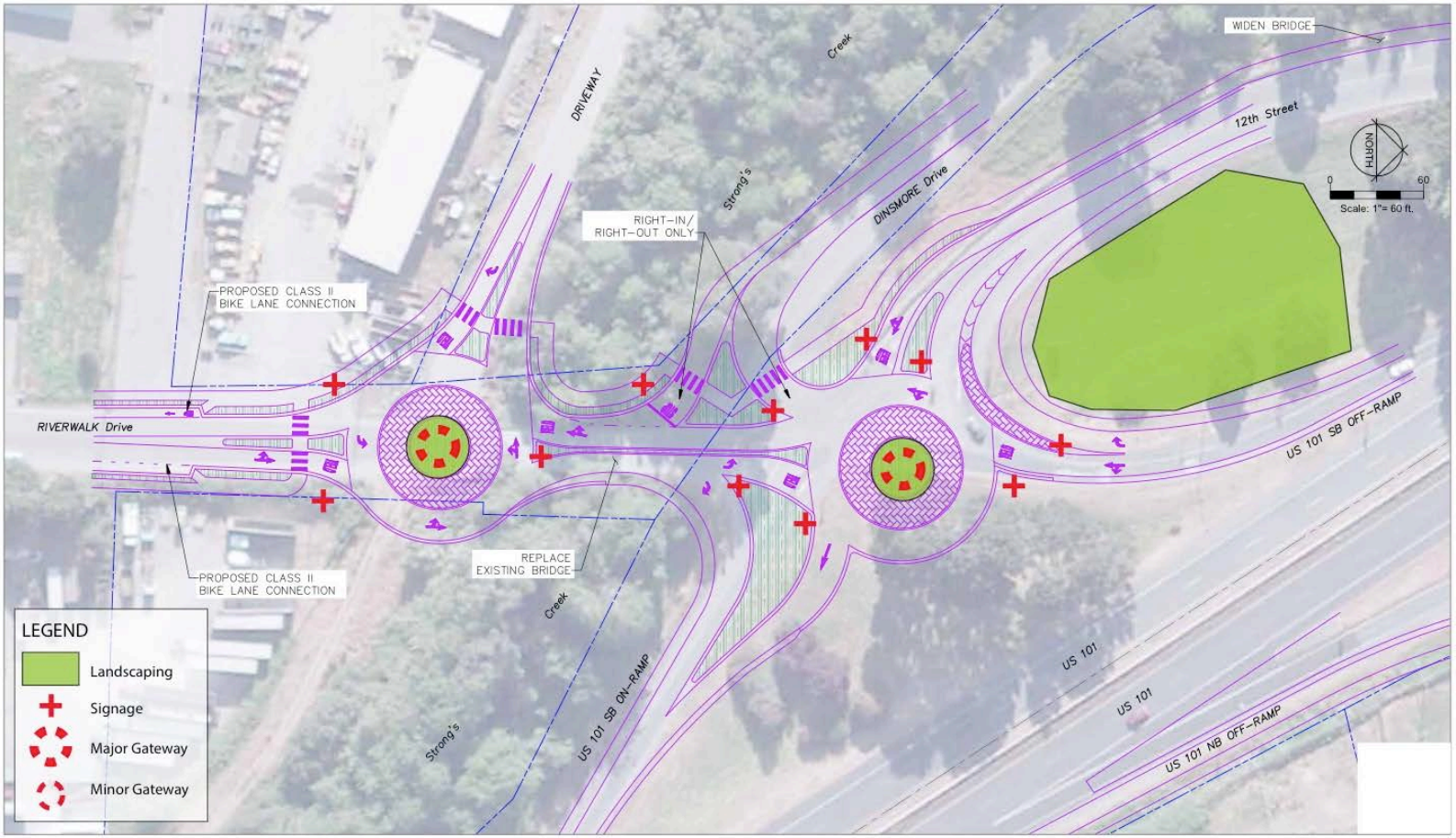
Attachment H - Landscaping/Gateway Concepts



12th Street Interchange Traffic Signal Concept – Landscaping Options



12th Street Interchange North Roundabout Concept – Landscaping Options



12th Street Interchange South Roundabout Concept 1 – Landscaping Options

Preliminary Opinion of Costs (Capital & Support)

12th Street Interchange Signal Concept

City of Fortuna

9/14/2021

25-3247-03/2132

Construction Costs

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$672,000.00	$672,000.00
2	Remove Roadside Sign	EA	35	$102.00	$3,570.00
3	Remove Concrete Sidewalk	SQFT	1970	$4.50	$8,865.00
4	Remove Concrete (Curb & Gutter)	LF	4500	$10.00	$45,000.00
5	Roadway Excavation	CY	13950	$67.00	$934,650.00
6	Embankment	CY	9334	$25.00	$233,350.00
7	Class 2 Aggregate Base	CY	22250	$70.00	$1,557,500.00
8	Hot Mix Asphalt (Type A)	TON	13190	$140.00	$1,846,600.00
9	Bridge (12th Street Over US 101)	LS	1	$4,500,000.00	$4,500,000.00
10	Bridge (Riverwalk Drive Over Strong's Creek)	LS	1	$1,500,000.00	$1,500,000.00
11	Bridge (Dinsmore Drive Realignment Over Strong's Creek	LS	1	$1,200,000.00	$1,200,000.00
12	Bridge (US 101 NB On-Ramp Over Rohner Creek)	LS	1	$550,000.00	$550,000.00
13	Detectable Warning Surface	SQFT	192	$35.00	$6,720.00
14	Minor Concrete (Curb and Gutter)	CY	265	$806.00	$213,590.00
15	Minor Concrete (Sidewalk)	CY	403	$680.00	$274,040.00
16	Storm Drain System	LS	1	$180,000.00	$180,000.00
17	Midwest Guard Rail System (Wood Post)	LF	350	$80.00	$28,000.00
18	Thermoplastic Traffic Stripe	LF	27620	$1.25	$34,525.00
19	Thermoplastic Pavement Marking	SQFT	4101	$6.00	$24,606.00
20	Signs	EA	40	$350.00	$14,000.00
21	Signal & Lighting	LS	4	$225,000.00	$900,000.00
22	Lighting and Sign Illumination	LS	1	$450,000.00	$450,000.00
23	Planting and Irrigation	SQFT	147000	$5.00	$735,000.00
24	Mobilization	LS	1	$1,524,100.00	$1,524,100.00
25	Minor/ Supplemental Items	%	25%	$15,240,016.00	$3,810,004.00
	Subtotal (Construction Costs)				$ 21,246,120.00
	Construction Contingency			25%	$ 5,311,530.00
	Total Construction Costs				**$ 26,557,650.00**
	Total Construction Budget (Rounded)				**$ 26,557,700.00**
Right of Way (Capital) and Utility Relocation Costs:					
1	Right Of Way	SQFT	215900	$20.00	$4,318,000.00
2	Utility Relocation	ALLOW	1	$200,000.00	$200,000.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 4,518,000.00**
	Total Project Capital Cost				**$ 31,075,700.00**
Project Support Costs					
1	PA&ED		Capital Costs	11%	$ 3,418,400.00
2	PS&E		Capital Costs	14%	$ 4,350,600.00
3	Right of Way Engineering & Acquisition		11-Parcels	$25k/EA	$ 275,000.00
4	Construction Support and Management		Con. Costs	15%	$ 3,983,700.00
	Total Project Support Costs				**$ 12,027,700.00**
	Total Estimated Project Costs				**$ 43,103,400.00**
	Rounded				**$ 43,110,000.00**

Assuptions

1. All new paving.
2. Only R/W costs are for private properties (not County, City, or State).
3. Bridge removal is included in the cost for each bridge.

Preliminary Opinion of Costs (Capital & Support)

12th Street Interchange Roundabout Concept - North

City of Fortuna

9/14/2021

25-3247-03/2132

Construction Costs

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$266,000.00	$266,000.00
2	Remove Roadside Sign	EA	16	$102.00	$1,632.00
3	Remove Asphalt Concrete Dike	LF	215	$4.00	$860.00
4	Remove Concrete (Curb & Gutter)	LF	2005	$10.00	$20,050.00
5	Remove Tree	EA	1	$1,400.00	$1,400.00
6	Roadway Excavation	CY	7140	$67.00	$478,380.00
7	Class 2 Aggregate Base	CY	9350	$70.00	$654,500.00
8	Hot Mix Asphalt (Type A)	TON	5290	$140.00	$740,600.00
9	Bridge Widening (12th Street Over US 101)	LS	1	$950,000.00	$950,000.00
10	Bridge Widening (NB 101 On-Ramp Over Rohner Creek	LS	1	$550,000.00	$550,000.00
11	Detectable Warning Surface	SQFT	660	$35.00	$23,100.00
12	Minor Concrete (Curb)	CY	35	$1,320.00	$46,200.00
13	Minor Concrete (Curb - Truck Apron)	CY	27	$1,160.00	$31,320.00
14	Minor Concrete (Curb and Gutter)	CY	231	$806.00	$186,186.00
15	Minor Concrete (Driveway)	CY	43	$420.00	$18,060.00
16	Minor Concrete (Stamped Concrete)	CY	7	$820.00	$5,740.00
17	Minor Concrete (Stamped Concrete - Truck Apron)	CY	100	$615.00	$61,500.00
18	Minor Concrete (Sidewalk)	CY	313	$680.00	$212,840.00
19	Storm Drain System	LS	1	$120,000.00	$120,000.00
20	Thermoplastic Traffic Stripe	LF	9610	$1.25	$12,012.50
21	Thermoplastic Pavement Marking	SQFT	1904	$6.00	$11,424.00
22	Signs	EA	40	$350.00	$14,000.00
23	Lighting & Electrical	LS	1	$200,000.00	$200,000.00
24	Planting and Irrigation	SQFT	21300	$5.00	$106,500.00
25	Mobilization	LS	1	$444,700.00	$444,700.00
26	Minor/ Supplemental Items	%	25%	$4,446,304.50	$1,111,576.13
	Subtotal (Construction Costs)				$ 6,268,580.63
	Construction Contingency			25%	$ 1,567,145.16
	Total Construction Costs				**$ 7,835,725.78**
	Total Construction Budget (Rounded)				**$ 7,835,800.00**
Right of Way (Capital) and Utility Relocation Costs:					
1	Right Of Way	SQFT	51700	$20.00	$1,034,000.00
2	Utility Relocation	ALLOW	1	$200,000.00	$200,000.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 1,234,000.00**
	Total Project Capital Cost				**$ 9,069,800.00**
Project Support Costs					
1	PA&ED		Capital Costs	11%	$ 997,700.00
2	PS&E		Capital Costs	14%	$ 1,269,800.00
3	Right of Way Engineering & Acquisition		4-Parcels	$25k/EA	$ 100,000.00
4	Construction Support and Management		Con. Costs	15%	$ 1,175,400.00
	Total Project Support Costs				**$ 3,542,900.00**
	Total Estimated Project Costs				**$ 12,612,700.00**
	Rounded				**$ 12,620,000.00**

Assuptions

1. All new paving.
2. Only R/W costs are for private properties (not County, City, or State).
3. Removing railroad tracks and equipment not included.

Preliminary Opinion of Costs (Capital & Support)

12th Street Interchange Roundabout Concept - South 1

City of Fortuna

9/14/2021

25-3247-03/2132

Construction Costs

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$300,000.00	$300,000.00
2	Remove Metal Beam Guard Railing	LF	298	$16.00	$4,768.00
3	Remove Roadside Sign	EA	14	$102.00	$1,428.00
4	Remove Asphalt Concrete Dike	LF	255	$4.00	$1,020.00
5	Remove Concrete (Curb & Gutter)	LF	941	$10.00	$9,410.00
6	Bridge Removal	LS	1	$140,000.00	$140,000.00
7	Remove Tree	EA	3	$1,400.00	$4,200.00
8	Roadway Excavation	CY	3860	$67.00	$258,620.00
9	Class 2 Aggregate Base	CY	5450	$70.00	$381,500.00
10	Hot Mix Asphalt (Type A)	TON	3050	$140.00	$427,000.00
11	Structural Concrete, Bridge	LS	1	$2,140,000.00	$2,140,000.00
13	Detectable Warning Surface	SQFT	360	$35.00	$12,600.00
14	Minor Concrete (Curb)	CY	50	$1,320.00	$66,000.00
15	Minor Concrete (Curb - Truck Apron)	CY	28	$1,160.00	$32,480.00
16	Minor Concrete (Curb and Gutter)	CY	106	$806.00	$85,436.00
17	Minor Concrete (Stamped Concrete)	CY	9	$820.00	$7,380.00
18	Minor Concrete (Stamped Concrete - Truck Apron)	CY	180	$615.00	$110,700.00
19	Minor Concrete (Sidewalk)	CY	172	$680.00	$116,960.00
20	Storm Drain System	LS	1	$100,000.00	$100,000.00
21	Midwest Guard Rail System (Wood Post)	LF	300	$80.00	$24,000.00
22	Thermoplastic Traffic Stripe	LF	5070	$1.25	$6,337.50
23	Thermoplastic Pavement Marking	SQFT	926	$6.00	$5,556.00
24	Signs	EA	50	$350.00	$17,500.00
25	Lighting & Electrical	LS	1	$260,000.00	$260,000.00
26	Planting and Irrigation	SQFT	12500	$5.00	$62,500.00
27	Mobilization	LS	1	$438,100.00	$438,100.00
28	Minor/ Supplemental Items	%	25%	$5,013,495.50	$1,253,373.88
	Subtotal (Construction Costs)				$6,266,869.38
	Construction Contingency			25%	$ 1,566,717.34
	Total Construction Costs				**$7,833,586.72**
	Total Construction Budget (Rounded)				**$7,833,600.00**
Right of Way (Capital) and Utility Relocation Costs:					
1	Right Of Way	SQFT	5100	$20.00	$102,000.00
2	Utility Relocation	ALLOW	1	$200,000.00	$200,000.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$302,000.00**
	Total Project Capital Cost				**$8,135,600.00**
Project Support Costs					
1	PA&ED		Capital Costs	11%	$ 895,000.00
2	PS&E		Capital Costs	14%	$ 1,139,000.00
3	Right of Way Engineering & Acquisition		2-Parcels	$25k/EA	$ 50,000.00
4	Construction Support and Management		Con. Costs	15%	$ 1,175,100.00
	Total Project Support Costs				**$ 3,259,100.00**
	Total Estimated Project Costs				**$ 11,394,700.00**
	Rounded				**$ 11,400,000.00**

Assuptions

1. All new paving.
2. Only R/W costs are for private properties (not County, City, or State).
3. Removing railroad tracks and equipment not included.

Preliminary Opinion of Costs (Capital & Support)

12th Street Interchange Roundabout Concept - South 2a

City of Fortuna

9/14/2021

25-3247-03/2132

Construction Costs

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$238,000.00	$238,000.00
2	Remove Metal Beam Guard Railing	LF	550	$16.00	$8,800.00
3	Remove Roadside Sign	EA	16	$102.00	$1,632.00
4	Remove Asphalt Concrete Dike	LF	482	$4.00	$1,928.00
5	Remove Concrete (Curb & Gutter)	LF	910	$10.00	$9,100.00
6	Remove Tree	EA	1	$1,400.00	$1,400.00
7	Roadway Excavation	CY	4590	$67.00	$307,530.00
8	Class 2 Aggregate Base	CY	4170	$70.00	$291,900.00
9	Hot Mix Asphalt (Type A)	TON	2350	$140.00	$329,000.00
10	Bridge (Riverwalk Drive Over Strong's Creek)	LS	1	$1,375,000.00	$1,375,000.00
11	Bridge Widening (12th Street Over US 101)	LS	1	$950,000.00	$950,000.00
12	Minor Concrete (Curb)	CY	26	$1,320.00	$34,320.00
13	Minor Concrete (Curb - Truck Apron)	CY	17	$1,160.00	$19,720.00
14	Minor Concrete (Curb and Gutter)	CY	96	$806.00	$77,376.00
15	Minor Concrete (Stamped Concrete - Truck Apron)	CY	90	$615.00	$55,350.00
16	Minor Concrete (Sidewalk)	CY	129	$680.00	$87,720.00
17	Storm Drain System	LS	1	$120,000.00	$120,000.00
18	Midwest Guard Rail System (Wood Post)	LF	515	$80.00	$41,200.00
19	Thermoplastic Traffic Stripe	LF	4630	$1.25	$5,787.50
20	Thermoplastic Pavement Marking	SQFT	403	$6.00	$2,418.00
21	Signs	EA	40	$350.00	$14,000.00
22	Lighting & Electrical	LS	1	$200,000.00	$200,000.00
23	Planting and Irrigation	SQFT	8200	$5.00	$41,000.00
24	Dinsmore Drive Realignment (2a)	LS	1	$2,086,000.00	$2,086,000.00
25	Mobilization	LS	1	$606,200.00	$606,200.00
26	Minor/ Supplemental Items	%	25%	$6,061,181.50	$1,515,295.38
	Subtotal (Construction Costs)				$8,420,676.88
	Construction Contingency			25%	$ 2,105,169.22
	Total Construction Costs				**$10,525,846.09**
	Total Construction Budget (Rounded)				**$10,525,800.00**
Right of Way (Capital) and Utility Relocation Costs:					
1	Right Of Way	SQFT	0	$20.00	$0.00
2	Utility Relocation	ALLOW	1	$200,000.00	$200,000.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 200,000.00**
	Total Project Capital Cost				**$10,725,800.00**
Project Support Costs					
1	PA&ED		Capital Costs	11%	$ 1,179,900.00
2	PS&E		Capital Costs	14%	$ 1,501,700.00
3	Right of Way Engineering & Acquisition		0-Parcels	$25k/EA	$ -
4	Construction Support and Management		Con. Costs	15%	$ 1,578,900.00
	Total Project Support Costs				**$ 4,260,500.00**
	Total Estimated Project Costs				**$ 14,986,300.00**
	Rounded				**$ 14,990,000.00**

Assuptions

1. All new paving.
2. Only R/W costs are for private properties (not County, City, or State).
3. Removing railroad tracks and equipment not included.

Preliminary Opinion of Costs (Capital Only)

Dinsmore Drive Realignment Alt 2a for 12th Street Interchange Roundabout Concept - SB Option 2a

City of Fortuna 9/13/2021

25-3247-03/2132

Construction Costs:

No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control	LS	1	$14,000.00	$14,000.00
2	Remove Tree	EA	8	$1,400.00	$11,200.00
3	Roadway Excavation	CY	1430	$67.00	$95,810.00
4	Class 2 Aggregate Base	CY	3840	$70.00	$268,800.00
5	Hot Mix Asphalt (Type A)	TON	2310	$140.00	$323,400.00
6	Bridge (Dinsmore Drive Realignment Over Strong's Cr	LS	1	$1,200,000.00	$1,200,000.00
7	Minor Concrete (Curb and Gutter)	CY	34	$806.00	$27,404.00
8	Minor Concrete (Sidewalk)	CY	42	$680.00	$28,560.00
9	Storm Drain System	LS	1	$50,000.00	$50,000.00
10	Thermoplastic Traffic Stripe	LF	4740	$1.25	$5,925.00
11	Thermoplastic Pavement Marking	SQFT	44	$6.00	$264.00
12	Signs	EA	8	$350.00	$2,800.00
13	Lighting & Electrical	LS	1	$50,000.00	$50,000.00
14	Planting and Irrigation	SQFT	1450	$5.00	$7,250.00
15					
	Subtotal (Construction Costs)				$2,085,413.00

Preliminary Opinion of Costs (Capital & Support)

12th Street Interchange Roundabout Concept - South 2b

City of Fortuna

9/14/2021

25-3247-03/2132

Construction Costs

No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control	LS	1	$238,000.00	$238,000.00
2	Remove Metal Beam Guard Railing	LF	550	$16.00	$8,800.00
3	Remove Roadside Sign	EA	16	$102.00	$1,632.00
4	Remove Asphalt Concrete Dike	LF	482	$4.00	$1,928.00
5	Remove Concrete (Curb & Gutter)	LF	910	$10.00	$9,100.00
6	Remove Tree	EA	1	$1,400.00	$1,400.00
7	Roadway Excavation	CY	4590	$67.00	$307,530.00
8	Class 2 Aggregate Base	CY	4170	$70.00	$291,900.00
9	Hot Mix Asphalt (Type A)	TON	2350	$140.00	$329,000.00
10	Bridge (Riverwalk Drive Over Strong's Creek)	LS	1	$1,375,000.00	$1,375,000.00
11	Bridge Widening (12th Street Over US 101)	LS	1	$950,000.00	$950,000.00
12	Minor Concrete (Curb)	CY	26	$1,320.00	$34,320.00
13	Minor Concrete (Curb - Truck Apron)	CY	17	$1,160.00	$19,720.00
14	Minor Concrete (Curb and Gutter)	CY	96	$806.00	$77,376.00
15	Minor Concrete (Stamped Concrete - Truck Apron)	CY	90	$615.00	$55,350.00
16	Minor Concrete (Sidewalk)	CY	129	$680.00	$87,720.00
17	Storm Drain System	LS	1	$120,000.00	$120,000.00
18	Midwest Guard Rail System (Wood Post)	LF	515	$80.00	$41,200.00
19	Thermoplastic Traffic Stripe	LF	4630	$1.25	$5,787.50
20	Thermoplastic Pavement Marking	SQFT	403	$6.00	$2,418.00
21	Signs	EA	40	$350.00	$14,000.00
22	Lighting & Electrical	LS	1	$200,000.00	$200,000.00
23	Planting and Irrigation	SQFT	8200	$5.00	$41,000.00
24	Dinsmore Drive Realignment (2b)	LS	1	$643,000.00	$643,000.00
25	Mobilization	LS	1	$461,900.00	$461,900.00
26	Minor/ Supplemental Items	%	25%	$5,080,081.50	$1,270,020.38
	Subtotal (Construction Costs)				$6,588,101.88
	Construction Contingency			25%	$ 1,647,025.47
	Total Construction Costs				**$8,235,127.34**
	Total Construction Budget (Rounded)				**$8,235,100.00**
Right of Way (Capital) and Utility Relocation Costs:					
1	Right Of Way	SQFT	0	$20.00	$0.00
2	Utility Relocation	ALLOW	1	$200,000.00	$200,000.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 200,000.00**
	Total Project Capital Cost				**$8,435,100.00**
Project Support Costs					
1	PA&ED		Capital Costs	11%	$ 927,900.00
2	PS&E		Capital Costs	14%	$ 1,181,000.00
3	Right of Way Engineering & Acquisition		0-Parcels	$25k/EA	$ -
4	Construction Support and Management		Con. Costs	15%	$ 1,235,300.00
	Total Project Support Costs				**$ 3,344,200.00**
	Total Estimated Project Costs				**$ 11,779,300.00**
	Rounded				**$ 11,780,000.00**

Assuptions

1. All new paving.
2. Only R/W costs are for private properties (not County, City, or State).
3. Removing railroad tracks and equipment not included.

Preliminary Opinion of Costs (Capital Only)

Dinsmore Drive Realignment Alt 2b for 12th Street Interchange Roundabout Concept - SB Option 2b

City of Fortuna — 9/13/2021

25-3247-03/2132

Construction Costs:

No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control	LS	1	$14,000.00	$14,000.00
2	Remove Tree	EA	5	$1,400.00	$7,000.00
3	Roadway Excavation	CY	1350	$67.00	$90,450.00
4	Class 2 Aggregate Base	CY	1980	$70.00	$138,600.00
5	Hot Mix Asphalt (Type A)	TON	950	$140.00	$133,000.00
6	Minor Concrete (Curb and Gutter)	CY	20	$806.00	$16,120.00
7	Minor Concrete (Sidewalk)	CY	285	$680.00	$193,800.00
8	Storm Drain System	LS	1	$20,000.00	$20,000.00
9	Thermoplastic Traffic Stripe	LF	1400	$1.25	$1,750.00
10	Thermoplastic Pavement Marking	SQFT	22	$6.00	$132.00
11	Signs	EA	3	$350.00	$1,050.00
12	Lighting & Electrical	LS	1	$20,000.00	$20,000.00
13	Planting and Irrigation	SQFT	1400	$5.00	$7,000.00
	Subtotal (Construction Costs)				$642,902.00

Preliminary Opinion of Costs (Capital & Support)

12th Street Interchange Roundabout Concept - South 2c

City of Fortuna

9/14/2021

25-3247-03/2132

Construction Costs

No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control	LS	1	$238,000.00	$238,000.00
2	Remove Metal Beam Guard Railing	LF	550	$16.00	$8,800.00
3	Remove Roadside Sign	EA	16	$102.00	$1,632.00
4	Remove Asphalt Concrete Dike	LF	482	$4.00	$1,928.00
5	Remove Concrete (Curb & Gutter)	LF	910	$10.00	$9,100.00
6	Remove Tree	EA	1	$1,400.00	$1,400.00
7	Roadway Excavation	CY	4590	$67.00	$307,530.00
8	Class 2 Aggregate Base	CY	4170	$70.00	$291,900.00
9	Hot Mix Asphalt (Type A)	TON	2350	$140.00	$329,000.00
10	Bridge (Riverwalk Drive Over Strong's Creek)	LS	1	$1,375,000.00	$1,375,000.00
11	Bridge Widening (12th Street Over US 101)	LS	1	$950,000.00	$950,000.00
12	Minor Concrete (Curb)	CY	26	$1,320.00	$34,320.00
13	Minor Concrete (Curb - Truck Apron)	CY	17	$1,160.00	$19,720.00
14	Minor Concrete (Curb and Gutter)	CY	96	$806.00	$77,376.00
15	Minor Concrete (Stamped Concrete - Truck Apron)	CY	90	$615.00	$55,350.00
16	Minor Concrete (Sidewalk)	CY	129	$680.00	$87,720.00
17	Storm Drain System	LS	1	$120,000.00	$120,000.00
18	Midwest Guard Rail System (Wood Post)	LF	515	$80.00	$41,200.00
19	Thermoplastic Traffic Stripe	LF	4630	$1.25	$5,787.50
20	Thermoplastic Pavement Marking	SQFT	403	$6.00	$2,418.00
21	Signs	EA	40	$350.00	$14,000.00
22	Lighting & Electrical	LS	1	$200,000.00	$200,000.00
23	Planting and Irrigation	SQFT	8200	$5.00	$41,000.00
24	Dinsmore Drive Realignment (2c)	LS	1	$266,000.00	$266,000.00
25	Mobilization	LS	1	$424,200.00	$424,200.00
26	Minor/ Supplemental Items	%	25%	$4,241,181.50	$1,060,295.38
	Subtotal (Construction Costs)				$5,963,676.88
	Construction Contingency			25%	$ 1,490,919.22
	Total Construction Costs				**$7,454,596.09**
	Total Construction Budget (Rounded)				**$7,454,600.00**
Right of Way (Capital) and Utility Relocation Costs:					
1	Right Of Way	SQFT	0	$20.00	$0.00
2	Utility Relocation	ALLOW	1	$200,000.00	$200,000.00
	Total Right of Way (Capital) and Utility Relocation Costs				**$ 200,000.00**
	Total Project Capital Cost				**$7,654,600.00**
Project Support Costs					
1	PA&ED		Capital Costs	11%	$ 842,100.00
2	PS&E		Capital Costs	14%	$ 1,071,700.00
3	Right of Way Engineering & Acquisition		0-Parcels	$25k/EA	$ -
4	Construction Support and Management		Con. Costs	15%	$ 1,118,200.00
	Total Project Support Costs				**$ 3,032,000.00**
	Total Estimated Project Costs				**$ 10,686,600.00**
	Rounded				**$ 10,690,000.00**

Assuptions

1. All new paving.
2. Only R/W costs are for private properties (not County, City, or State).
3. Removing railroad tracks and equipment not included.

Preliminary Opinion of Costs (Capital Only)

Dinsmore Drive Realignment 2c Alt for 12th Street Interchange Roundabout Concept - SB Option 2c

City of Fortuna 9/13/2021

25-3247-03/2132

Construction Costs:

No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control	LS	1	$14,000.00	$14,000.00
2	Remove Tree	EA	4	$1,400.00	$5,600.00
3	Roadway Excavation	CY	490	$67.00	$32,830.00
4	Class 2 Aggregate Base	CY	860	$70.00	$60,200.00
5	Hot Mix Asphalt (Type A)	TON	490	$140.00	$68,600.00
6	Minor Concrete (Curb and Gutter)	CY	15	$806.00	$12,090.00
7	Minor Concrete (Sidewalk)	CY	36	$680.00	$24,480.00
8	Storm Drain System	LS	1	$20,000.00	$20,000.00
9	Thermoplastic Traffic Stripe	LF	450	$1.25	$562.50
10	Thermoplastic Pavement Marking	SQFT	22	$6.00	$132.00
11	Signs	EA	3	$350.00	$1,050.00
12	Lighting & Electrical	LS	1	$20,000.00	$20,000.00
13	Planting and Irrigation	SQFT	1210	$5.00	$6,050.00
	Subtotal (Construction Costs)				**$265,594.50**

Attachment J - Right-of-Way and Property Ownership

ONTIVEROS & ASSOCIATES
INC
CONSULTING ENGINEERS AND SURVEYORS

RIGHT OF WAY MEMORANDUM

May 25, 2016

Base Mapping

The base map consists of the Caltrans highway map 1 HUM-1-F coordinated on the California Coordinate System, Zone 1. This developed the centerline of Hwy 101 and the right of way lines through the project area. Parcels relinquished by Caltrans as part of the Hwy 101 Project are also shown on this map. The eastern Caltrans right of way line is the western line of the railroad right of way through most of this area.

12th Street Interchange

Newburg Road - Book P of Deeds, Page 428 HCR describes the width of Newburg as 50 feet wide. Multiple tract maps were prepared on the North side of Newburg, however, no map references Book P of deeds or any other documentation for Newburg Road is listed on the maps. The Beacom subdivision map, recorded in Book 12 of Maps, page 138, lists the width for Newburg as 40 feet. The south side of Newburg in this area is all under one ownership by the Town of Scotia. Ground shots of existing improvements (back of walk to fence) indicate a width of 50 feet.

12th Street south of railroad crossing and north of the overpass - the area south of the railroad right of way is owned by Caltrans, and has a width of 75 feet based on the Caltrans mapping. The Caltrans map shows the railroad crossing being relinquished to the County of Humboldt in 1978 per 1487 OR 184. The Caltrans map 1-HUM-1-F does not clearly delineate the transition from Caltrans to City of Fortuna ownership immediately south of the rail road crossing. This was at one time Sandy Prairie Road so the right of way was already existing before the Hwy 101 project. The County of Humboldt has a pavement maintenance agreement with Caltrans for the County roads carried over, under, or to the connecting freeway dated April 15th 1963. The exhibit attached to this agreement shows the County area of responsibility to be from a line approximately 50 feet south of the rail road tracks across the overpass to Dinsmore Drive on the south side of the overpass. Clendenen is the owner of the parcel to the west of 12th St., and Sequia Gas/ McWhorter owns the multiple parcels to the east of 12th St., including the abandoned Pond street.

12th Street north of the railroad right of way, Parcel Map 1828 Book 16, page 28 shows a half width of 12th street as 30 feet, and Parcel Map 2817 Book 25, page 103 shows a full width of 12th street as 60 feet.

Dinsmore Drive/North end Riverwalk Drive - Caltrans relinquished this road to Humboldt County in 1963 per Book 760 Deeds, Page 517. The configuration shown is based on the Caltrans right of way map 1-HUM-1-F. In a letter dated January 10, 2005 between the City of Fortuna and the County of Humboldt, discusses the annexation & maintenance of Strongs Creek Road (Dinsmore Drive) by the City of Fortuna. The letter does not specifically describe the limits of maintenance. The bridge located on the north end of Riverwalk drive (over Strong's Creek) is shown to be in this Caltrans relinquishment area, however, the bridge itself does not appear to be listed in the County bridge maintenance logs. The specific location of the City/County change of ownership will need to be determined.

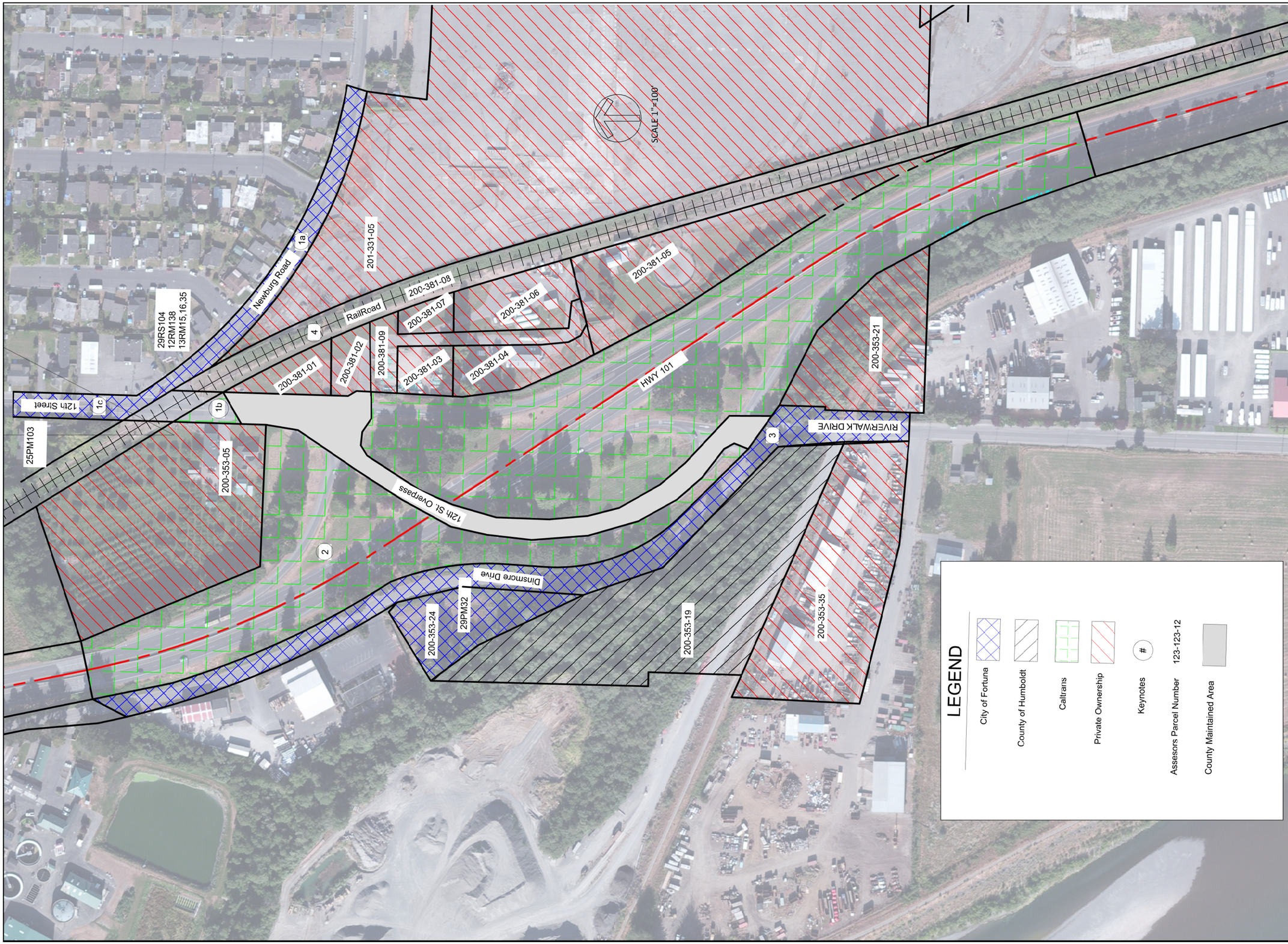
~~**Kenmar Road Interchange**~~

~~**Kenmar Road east of the Freeway** - No documentation could be found for this portion of Kenmar Road. The south right of way line shown is based upon the survey for the park and ride (see key note 6), and the County's Eel River Drive overlay project #213500. The north line is based upon field ties to features and said County overlay project. The State Park and Ride location is based on a survey for Caltrans. However, the survey has no recorder stamp, and the book and page referenced do not refer to this survey at the recorder's office. This map was provided by Caltrans.~~

~~In general this area has a complex right of way situation due to the multiple highways and roads that were here at one time. Additional research and surveying will be needed to determine the right of way location. The County of Humboldt has a pavement maintenance agreement with Caltrans for the County roads carried over, under, or to the connecting freeway dated April 15th 1963. The exhibit attached to this agreement shows the County area of responsibility to be from the west line of the railroad tracks to west line of Hwy 101 at the intersection with Riverwalk Drive.~~

~~**Eel River Drive** - The east line of Eel River Drive was mapped to some extent by the County during the overlay survey, however, the County surveyor's office also discusses the complexity of the right of way in the area, and the need for more surveying to determine the true location.~~

~~**Riverwalk Drive** – Riverwalk Drive west of Hwy 101 was relinquished to the County in 1963 per 760 OR 517. The east side of the right of way has been delineated in a survey from 1992 recorded in Book 53 surveys, page 34. There have not been any surveys filed on the west side of Riverwalk drive at this location. Ground shots indicate a distance of 50' between back of walk on the east side and top of slope on the west side.~~



O&A
ONTIVEROS & ASSOCIATES INC
CONSULTING ENGINEERS AND SURVEYORS
404 N. Fortuna Blvd. • Fortuna, CA 95540
Ph (707) 725-7410 • Fax (707) 725-7411
Ontiveros.Assoc@att.net

LICENSED LAND SURVEYOR
KARL V. PREBOR
PLS 8662
STATE OF CALIFORNIA

CONTRACTOR

PROJECT NAME

GHD FORTUNA INTERCHANGE PLANNING STUDY

SHEET TITLE

12TH STREET

PLOT INFORMATION

CAD DWG FILE: P:\15-092 GHD - FORTUNA PLANNING STUDY\CAD \RAWINGS\GHD PLANNING 4-04-16.DWG
PLOT DATE: 4/5/2016 12:06 PM
SAVE DATE: 4/5/2016 11:49 AM

REVISIONS

MARK	DATE	DESCRIPTION

PROJECT NO: 15-092
DATE: 4/2/16
DRAWN BY: kvp
CHK'D BY: bko

SUBMITTAL STATUS

SHEET 1 OF 2

Book P of Deeds, Page 428
Newberg Road

J. J. Newland
To
Board of Supervisors.

This Indenture, Made the Sixth day of August in the year of our Lord one thousand eight hundred and seventy five Between J. J. Newland of Humboldt County State of California party of first part and the Board of Supervisors and their successors in office the parties of the second part, Witnesseth, that the said party of the first part for and in consideration of the sum of four hundred dollars gold coin of the United State of America, to him in hand paid by the said parties of the second part, the receipt whereof is hereby acknowledged, has granted, bargained, and sold, conveyed and confirmed, and by these presents does grant, bargain and sell, convey and confirm, unto the said parties of the second part, all of that piece or parcel of land that is required for the purposes of a Public Highway lying and being in the premises deeded to party of first part by M. K. Robinson & wife on the 12th day of November 1872 said deed was recorded in Book M of Deeds page 157 and leading from the County Road that runs and leads from Rohnerville to the City of Eureka to Tells Mineral springs said piece of land so granted to parties of the second part shall be fifty feet in width and follow the survey and route of said road heretofore made by R. T. Herrick and filed with the Clerk of the Board of Supervisors March 17th 1873 in every particular but this That said road that runs between Rohnerville and the City of Eureka at the place in said survey named and run at right angles with the road that runs between Rohnerville and the City of Eureka until it comes in line with the new fence of party of first part inclosing the potatoe field thence according to the survey aforesaid.

Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging, or in anywise appertaining, and the reversion and reversions remainder and remainders, rents, issues and profits thereof.

To have and to hold, all and singular the above mentioned and described premises, together with the appurtenances unto the said parties of the second part and their successors in office.

In witness whereof, the said party of the first part has hereunto set his hand and seal the day and year first above written.

Signed Sealed and Delivered in the Presence of J. B. Simonds } J. F. J. Nowlan (Seal)

State of California } ss.
County of Humboldt } On this 4th day of August A.D. 1875 before me J. B. Simonds a Notary Public in and for said County duly commissioned and sworn, personally appeared J. F. J. Nowlan. known to me to be the person whose name is subscribed to the annexed instrument, and who duly acknowledged to me that he executed the same

(Seal)

In witness whereof I have hereunto set my and affixed my official seal at my office in Eureka the day and year in this Certificate first above written

J. B. Simonds
Notary Public.

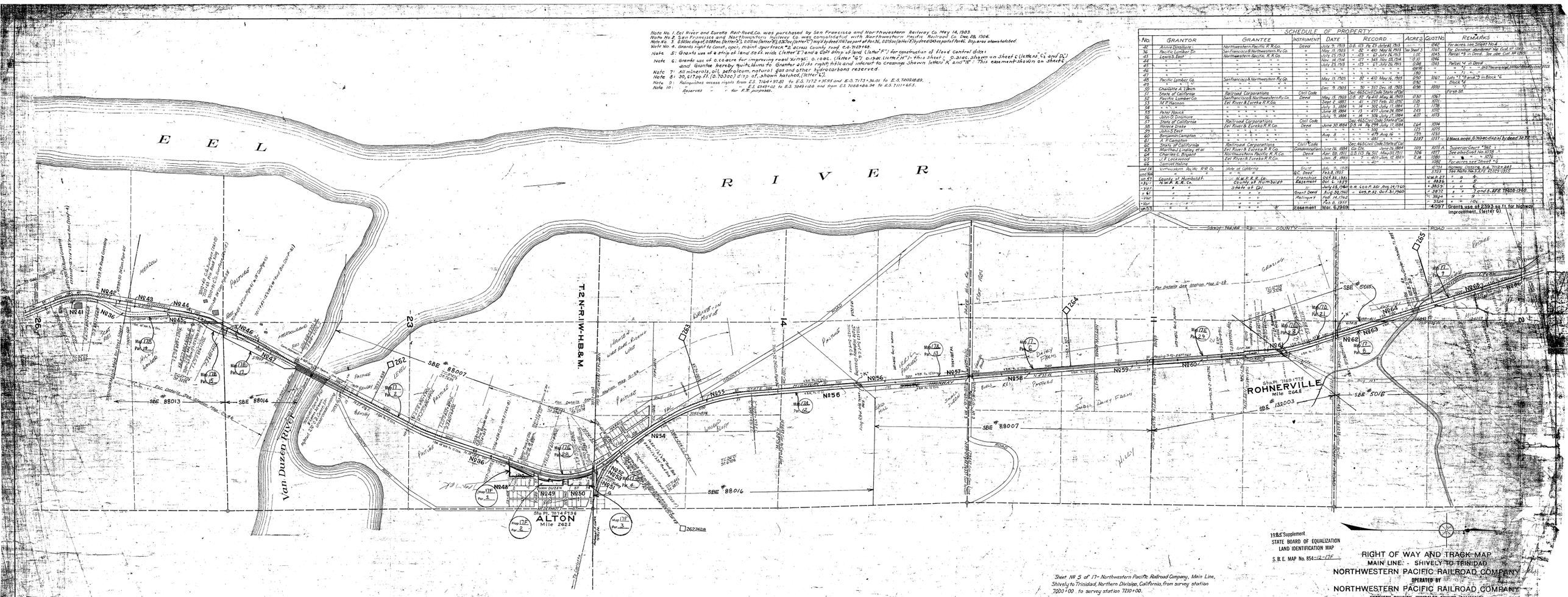
Recorded at the request of Board of Supervisors August 7th A.D. 1875 at 25 min. past 11 A.M.

Wm. McKenzie. Recorder

Note No. 1. Eel River and Eureka Rail-Road Co. was purchased by San Francisco and Northwestern Railway Co. May 14, 1903.
Note No. 2. San Francisco and Northwestern Railway Co. was consolidated with Northwestern Pacific Railroad Co. Dec 28, 1906.
Note No. 3. 0.545ac. disp. of, 0.088ac. (letter "A"), 0.015ac. (letter "B"), 0.367ac. (letter "C") acq'd by deed 1067 as part of Par. 36, 0.075ac (letter "D") by deed 1243 as part of Par. 46. Disp. area shown hatched.
Note No. 4. Grants right to Const., oper., maint. spur track #2 across County road e.s. 7129+68.
Note 5: Grants use of a strip of land 50 ft. wide (letter "E") and a 60 ft strip of land (letter "F") for construction of flood control dikes
Note 6: Grants use of 0.60 acre for improving road xings: 0.10ac. (letter "G") 0.19ac. (letter "H") - this sheet; 0.31ac. shown on Sheet 6 (letters "C₂" and "D₂") and Grantee hereby quitclaims to Grantor all its right, title and interest to crossings shown letters "K" and "N"; This easement shown on sheet 6.
Note 7: All minerals, oil, petroleum, natural gas and other hydrocarbons reserved.
Note 8: 30,617 sq. ft. (0.703ac.) disp. of, shown hatched, (letter "L").
Note 9: Relinquishes access rights from E.S. 7164+97.87 to E.S. 7172+35.95 and E.S. 7173+36.01 to E.S. 7209.18.89.
Note 10: " " " E.S. 6949+02 to E.S. 7049+12.8 and from E.S. 7088+86.94 to E.S. 7111+65.5.
Reserves " " for R.R. purposes.

SCHEDULE OF PROPERTY

No.	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	ACRES	CUST. No.	REMARKS
42	Annie Dinsmore	Northwestern Pacific R.R. Co.	Deed	July 9, 1913	D.B. 123 Pg. 23 July 10, 1913		1242	For acres see Sheet No. 4
36	Pacific Lumber Co.	San Francisco & Northwestern Ry. Co.	"	May 15, 1903	" 82 " 410 May 16, 1903	See Sheet 3	1067	For Crossings abandoned see Cust. Nº 1269
43	Lewis S. East	Northwestern Pacific R.R. Co.	"	July 25, 1913	" 123 " 67 July 26, 1913	1.02	1243	Parcel #3 in Deed. See also Cust. Nº 1269
44	" "	" " " "	"	Nov. 14, 1914	" 127 " 345 Nov. 28, 1914	0.10	1246	
45	" "	" " " "	"	July 25, 1913	" 123 " 67 July 26, 1913	0.08	1243	Parcel #4 in Deed
46	" "	" " " "	"	" " "	" " " " " " "	0.695	"	" #2 " ", 0f 0.77ac. orig. acqd., 0.075ac. disp. of by deed 3723.
47	" "	" " " "	"	" " "	" " " " " " "	1.80	"	" #1 " "
48	Pacific Lumber Co.	San Francisco & Northwestern Ry. Co.	"	May 15, 1903	" 82 " 410 May 16, 1903	0.90	1067	Lots #7, #8 and #9 in Block #6
49	" " "	" " " " " "	"	" " "	" " " " " " "	0.92	"	Block #4
50	Charlotte A. Lynch	" " " " " "	"	Dec. 9, 1905	" 90 " 557 Dec. 18, 1905	0.98	1070	" #2
51	State of California	Railroad Corporations	Civil Code		Sec. 465 Civil Code State of Cal.			First St.
52	Pacific Lumber Co.	San Francisco & Northwestern Ry. Co.	Deed	May 15, 1903	D.B. 82 Pg. 410 May 16, 1903	0.30	1067	
53	M. P. Hanson	Eel River & Eureka R.R. Co.	"	Sept. 2, 1887	" 41 " 237 Feb. 20, 1892	0.15	1071	
54	" " "	" " " " " "	"	July 3, 1884	" 14 " 302 July 17, 1884	1.71	1198	
55	Peter Hauck	" " " " " "	"	June 18, 1884	" 13 " 477 June 24, 1884	2.43	1072	
56	John O. Dinsmore	" " " " " "	"	July 9, 1884	" 14 " 306 July 17, 1884	4.07	1073	
57	State of California	Railroad Corporations	Civil Code		Sec. 465 Civil Code State of Cal.			
58	Horace Drake	Eel River & Eureka R.R. Co.	Deed	June 30, 1884	D.B. 14 Pg. 299 July 17, 1884	2.64	1074	
59	John S. East	" " " " " "	"	" " "	" " " 300 " " "	1.25	1075	
60	Benjamin Campton	" " " " " "	"	Aug. 8, "	" " " 479 Aug. 16 "	1.99	1235	
61	A. P. Campton	" " " " " "	"	" " "	" " " 481 " " "	2.197	1237	2.90acs. acqd., 0.703ac. disp. of by deed 3872
62	State of California	Railroad Corporations	Civil Code		Sec. 465 Civil Code State of Cal.			
63	Martha J. Lindley et al	Eel River & Eureka R.R. Co.	Condemnation	June 26, 1884	Co. Clk. June 26, 1884	1.03	1075 A	Superior Court #562
64	Charles C. Bryant	Northwestern Pacific R.R. Co.	Deed	Apr. 20, 1911	D.B. 113 Pg. 512 May 20, 1911	1.06	1077	See also Cust. No. 1078
65	J. F. Lockwood	Eel River & Eureka R.R. Co.	"	Jan. 8, 1883	" 7 " 405 Jan. 12, 1883	2.14	1080	" " " 1076
66	Samuel Huling	" " " " " "	"	" " "	" " " 407 " " "	-	1082	For acres see Sheet #6
und 56	Northwestern Pacific R.R. Co.	State of California	Grant	July 9, 1918			1073A	Highway Crossing, e.s. $7112+24^{3}$
und 36,46	" " "	" " "	Q.C. Deed	Feb. 8, 1955			3723	See Note No. 3. AFE. 62029-1955
un. 57	County of Humboldt	N.W.P. R.R. Co.	Franchise	Oct. 22, 1951			N.W.P. 27	" " 4.
" 36-1	N.W.P. R.R. Co.	County of Humboldt	Easement	Oct. 6, 1959			" 3836	" " 5.
" Var.	" "	State of Cal.	"	July 25, 1960	O.R. 600 P. 351 Aug. 24, 1960		" 3859	" " 6.
" 61	" "	" " "	Grant Deed	Aug. 30, 1960	" 609, P. 52, Oct. 31, 1960		" 3872	" " 7 and 8. AFE. 79608-1960.
" Var.	" "	" " "	Relinqm't	Feb. 14, 1962			" 3924	" " 9
" Var.	" "	" " "	"	Feb 8, 1955			" 3724	" " 10.
un. 53	" "	" " "	Easement	Mar. 6, 1969			4097	Grants use of 2393 sq.ft. for highway improvement. (letter G)



Sheet Nº 5 of 17 - Northwestern Pacific Railroad Company, Main Line, Shively to Trinidad, Northern Division, California, from survey station 7000+00 to survey station 7210+00.

G. H. Hicks
Assistant Valuation Engineer.

1985 Supplement
STATE BOARD OF EQUALIZATION
LAND IDENTIFICATION MAP
S. B. E. MAP No. 854-12-17F

Legend.
.... Relinquishment of access rights.

RIGHT OF WAY AND TRACK MAP
MAIN LINE - SHIVELY TO TRINIDAD
NORTHWESTERN PACIFIC RAILROAD COMPANY
OPERATED BY
NORTHWESTERN PACIFIC RAILROAD COMPANY
NORTHERN DIVISION, HUMBOLDT COUNTY, CALIFORNIA
FROM STATION 7000+00 TO STATION 7210+00
Scale: 1 Inch - 400 feet
JUNE 30th, 1916
OFFICE OF CHIEF ENGINEER MAINTENANCE
SAN FRANCISCO, CALIFORNIA

V-4
5

61636
5

Note No. 1 4^{86} acs. acq'd. of which 1^{07} acs. shown as Par. 98; 1^{70} acs. shown as Par. 99; 0^{43} acs. shown as Par. 100; 0^{40} acs. shown as Par. 101; 0^{25} acs. shown as Par. 102 and on map 7 0^{90} acs. shown as Par. 138; 0^{08} acs. shown as Par. 139 and 0^{03} acs. shown as Par. 140. Of the 1^{70} acs. shown as Par 99 were 0^{17} acs. disposed of by deed 3049 shown hatched and by letter "E"

Note No. 2 1^{57} acs acq'd of which 0^{06} acs. shown as Par. 103; 0^{17} acs. shown as Par. 104 and on Map 7 1^{34} acs. shown as Par. 141

Note No. 3 Quitclaims 1^{51} acs. being same as Par. 104 on this map and Par. 141 on map 7.

Note No. 4 7^{138} acs. disposed of; 0^{117} acs. acq'd. by Par. 88 shown by letter "A", 0^{018} acs. acq'd. by Par. 92 shown by letter "B", 1^{377} acs. acq'd. by Par. 93 shown by letter "C", 0^{700} acs. acq'd. by Par. 94 shown by letter "D" 0^{170} acs. acq'd. by Par. 99 shown by letter "E" and on map 7 0^{701} acs acq'd by Par. 94 shown by letter "A", 1^{425} acs. acq'd. by Par. 95 shown by letter "B", 0^{060} acs. being all of Par. 96, 0^{860} acs being all of Par. 97. 0^{01} acs. being all of Par. 98 and 1^{700} acs. acq'd. by Par. 108 shown by letter "C"

Note No 5 The 1^{97} acs. previously shown in area column as Par. 88 has been decreased by 0^{117} acs. having been disp of by deed 3049 and is now shown hatched and by letter "A"

Note No 6 " 0^{21} " " " " " " " 92 " " " 0^{018} " " " " " " " " " " " " "B"

Note No. 7 " 2^{77} " " " " " " " 93 " " " 1^{377} " " " " " " " " " " " " "C"

Note No. 8 " 1^{85} " " " " " " " 94 on this map and Par. 94 on map 7 has been decreased by 1^{401} acs. having been disposed of by deed 3049. Of these 1^{401} acs are 0^{700} acs. shown hatched and by letter "D" on this map and 0^{701} acs. shown hatched and by letter "A" on map 7.

Note No. 9 The 1^{11} acs. previously shown in area column as Par. 81 has been decreased by 0^{34} acs. having been disposed of by deed 1090-A and is now shown hatched and by letter "X"

Note No. 10 " 1^{39} " " " " " " " 83 " " " 1^{01} " " " " " " " " " " " " "Y"

Note No. 11: Grants use of 0^{320} ac for highway purposes shown by letter "F".

Note No. 12 Eel River and Eureka Rail-Road Co. was purchased by San Francisco and Northwestern Railway Co. May 14, 1903.

Note No. 13 San Francisco and Northwestern Railway Co. was consolidated with Northwestern Pacific Railroad Co. Dec. 28, 1906.

Note No 14: Grants use of 26500 sq. ft. for a 10" sewer pipe, a 12' wide strip between E.S. 7238+22^{6} and 7264+12.

Note No. 15: Grants use of a 50 ft. wide strip of land for highway purposes, shown by letter "W"

Note No. 16 Grants right of way beneath tracks for constructing and maintaining a 2" water pipe line at E.S. 7259+58

Note No. 17 " " to const, oper. maint. two culverts for drainage purpose (letter Z')

Note No. 18: " " " " " " 6" sewer pipe beneath side tracks opp. C.S. 7254+75.

Note No. 19: " use of 780 sq. ft. (letter "K") and 2250 sq. ft. (letter "J") for highway slopes and of 0.080c. (letter "H") for slopes and drainage.

Note No. 20: Grants right to install a 10" transite sewer pipe line across R/W. e.s. 7281+32

Note 21: " " " a 18" sewer pipe ~~within a 24" casing~~ across R/W. at e.s. 7238+67

Note 22: " " " " 12 ft. wide strip of land for installing a 42" R.C.C. drain pipe (letter "A_2")

Note 23: " use of 0.32 acre (letter "B_2") for construction of overhead Hwy. Xing.

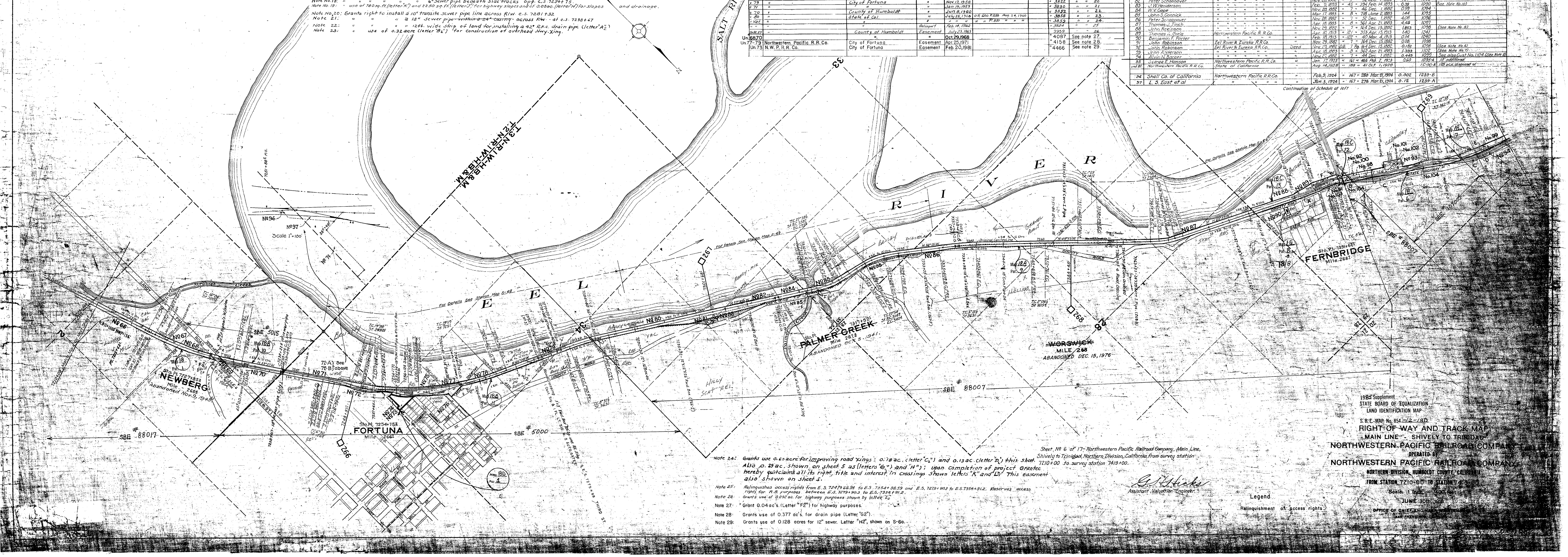
SCHEDULE OF PROPERTY

No.	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	ACRES	CUST. NO.	REMARKS
98	Sarah Anne Heckman Hansen	Northwestern Pacific R.R. Co.	B.&S. Deed	Apr. 12. 1927	D.B. 182 - 187 April 28. 1927	1^{07}	3048	Par. 1 in deed. See Note No. 1
99	" " " "	" " " "	" "	" " "	" " " " " "	1^{53}	"	Part of Par. 2 in deed " " "
100	" " " "	" " " "	" "	" " "	" " " " " "	0^{43}	"	Par 3 in deed " " "
101	" " " "	" " " "	" "	" " "	" " " " " "	0^{40}	"	Par. 4 in deed " " "
102	" " " "	" " " "	" "	" " "	" " " " " "	0^{25}	"	Par. 5 in deed " " "
103	County of Humboldt	Northwestern Pacific R.R. Co.	Vacation	Aug. 10. 1927		0^{06}	Ord. 2 1/2	See Note No. 2
104	" " "	" " " "	"	" " "		0^{17}	"	" " " "
	Sarah Anne Heckman Hansen	" " " "	Q. C. Deed	Apr. 12. 1927	D.B. 182 - 190 April 28. 1927		3047	See Note No 3
und. 88	Northwestern Pacific R.R. Co.	State of California	Deed	June 20. 1931			3049	See Note No. 4
Und. 89	"	County of Humboldt	Lic. Agrmt	Dec. 31, 1946			3548	See Note No. 11.
Und. var.	"	City of Fortuna	Easement	Dec. 3, 1951			3669	" " " 14.
Und. Var.	"	State of California	"	Oct. 20, 1953	O.R. 270, P. 92. Nov. 12, 1953		3693	For highway purposes (letter "Z")
Und 91	"	County of Humboldt	Easement	Oct. 6, 1911	D.B. 123, P. 180 Oct. 6, 1911		3695	See Note No. 15
Und 75	N.W.P.R.R. Co.	City of Fortuna	Easement	July 23, 1956			3753	See note 16
" 85	"	State of Cal.	"	Apr. 19, 1957			NWP. 3771	" 17
" 6	"	City of Fortuna	"	Apr. 12, 1958			" 3804	See note 18
" Var.	"	State of California	"	Aug. 6, 1958	O.R. 506, P. 532, Oct. 14, 1958		" 3813	" " 19.
" 79	"	City of Fortuna	"	Nov. 17, 1958			" 3822	" " 20
" 71	"	"	"	Jan. 19, 1959			" 3830	" " 21
" 70	"	County of Humboldt	"	Jun. 8, 1960			" 3852	" " 22
" 80	"	State of Cal.	"	July 25, 1960	O.R. 600 P. 358 Aug. 24, 1960		" 3858	" " 23.
" Var.	"	"	"	" " "	" " P. 351 " " "		" 3859	" " 24.
" "	"	"	Relinqm't	Feb. 14, 1962			" 3924	" " 25
Un 88, 89	"	County of Humboldt	Easement	July 23, 1963			3959	" " 26
Un. 68, 70		"	"	Oct. 29, 1968			" 4087	See note 27.
Un. 77-79	Northwestern Pacific R.R. Co.	City of Fortuna	Easement	Apr. 25, 1971			" 4158	See note 28.
Un. 73	N.W.P.R.R. Co.	City of Fortuna	Easement	Feb. 20, 1981			" 4466	See note 29.

SCHEDULE OF PROPERTY

No	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	ACRES	CUST. NO.	REMARKS
66	Samuel Huling	Eel River & Eureka R.R. Co.	Deed	Jan. 8, 1883	D.B. 7 Pg. 407 Jan. 12, 1883	1.73	1082	See also Cust. No. 1079
67	Daniel French	" " " " " "	"	June 18, 1884	" 13 " 476 June 24, 1884	0.27	1081	
68	R. Cameron	" " " " " "	Condemnation	Sept 1, 1884	County Clerk Sept. 1, 1884	0.82	1081 A	Superior Court #561
69	State of California	Railroad Corporations	Civil Code		Sec. 465 Civil Code State of Cal.			
70	R. Cameron	Eel River & Eureka R.R. Co.	Condemnation	Sept. 1, 1884	County Clerk Sept. 1, 1884	1.35	1081 A	Superior Court #561
71	Henry Rohner	" " " " " "	"	Aug. 28, 1884	" Aug. 28, 1884	2.46	1082 A	" " #558
72	Mary A. Rohner	San Francisco & Northwestern Ry. Co.	Deed	May 2, 1904	D.B. 87 Pg. 501 June 22, 1904	0.28	1239	
73	G. F. Gushaw	Eel River & Eureka R.R. Co.	"	Jan. 30, 1885	" 15 " 798 Feb. 11, 1885	1.26	1083	
74	" " "	" " " " " "	"	" " "	" " " " " " "	0.16	1083	See No. 74 below
74	Eel River & Eureka R.R. Co.	Humboldt County	"	July 8, 1889	" 31 " 488 July 10, 1889	0.16	1083 A	
75	G. F. Gushaw	Eel River & Eureka R.R. Co.	"	" 10, 1884	" 14 " 307 " 17, 1884	1.76	1084	
76	" " "	" " " " " "	"	" " "	" " " " " " "	0.61	1084	See No. 76 below
76	Eel River & Eureka R.R. Co.	G. F. Gushaw	"	Feb. 3, 1885	" 15 " 767 Feb. 11, 1885	0.61	1084½	
77	Christina A. Peugh	Eel River & Eureka R.R. Co.	"	" 23, 1897	" 56 " 591 Mar. 17, 1897	0.87	1086	See also Cust. Nos. 1085-1086½
78	F. M. Friedenbach	" " " " " "	"	June 18, 1884	" 13 " 473 June 24, 1884	0.68	1087	
79	A. Robinson	" " " " " "	"	" 23, 1884	" 13 " 474 " " "	2.27	1234	
80	Daniel Snider	" " " " " "	"	Mar. 24, 1883	" 8 " 126 Mar. 24, 1883	2.88	1093	
81	Joseph Rolley	" " " " " "	"	Feb. 23, 1893	" 45 " 452 Feb. 24, 1893	0.77	1089	(See Note No. 9)
82	Peter Schoonover	" " " " " "	"	Nov. 28, 1882	" 7 " 52 Dec. 1, 1882	1.24	1096	
83	J. W. Henderson	" " " " " "	"	Feb. 9, 1893	" 45 " 394 Feb. 14, 1893	0.38	1090	(See Note No. 10)
84	W. V. Cope	" " " " " "	"	Nov. 28, 1882	" 7 " 46 Dec. 1, 1882	0.59	1094	
85	John S. Connick	" " " " " "	"	Mar. 17, 1883	" 8 " 718 June 2, 1883	1.44	1095	
86	Peter Schoonover	" " " " " "	"	Nov. 28, 1882	" 7 " 52 Dec. 1, 1882	4.08	1096	
87	Thomas J. Finch	" " " " " "	"	Apr. 18, 1883	" 8 " 361 Apr. 21, 1883	4.48	1097	
88	John Robinson	" " " " " "	"	Nov. 29, 1882	" 7 " 164 Dec. 15, 1882	1.853	1098	(See Note No. 5)
89	Thomas A. Greig	Northwestern Pacific R.R. Co.	"	Apr. 10, 1913	" 121 " 353 Apr. 15, 1913	1.40	1241	
90	Benjamin F. Porter	" " " "	"	Feb. 18, 1913	" 122 " 40 Mar. 4, 1913	0.14	1240	
91	John Robinson	Eel River & Eureka R.R. Co.	"	Nov. 29, 1882	" 7 " 164 Dec. 15, 1882	0.08	1098	
92	John Robinson	Eel River & Eureka R.R. Co.	Deed	Nov. 29, 1882	D.B. 7 Pg. 164 Dec. 15, 1882	0.192	1098	(See Note No. 6)
93	John Anderson	" " " " " "	"	Apr. 18, 1883	" 8 " 362 Apr. 21, 1883	1.393	1102	(See Note No. 7)
94	Alvin N. Barber	" " " " " "	"	Nov. 27, 1882	" 7 " 44 Dec. 1, 1882	0.449	1099	See also Cust No. 1104 (See Note 8)
95	George E. Hanson	Northwestern Pacific R.R. Co.	"	Jan. 17, 1923	" 161 " 466 Feb. 2, 1923	0.60	1095-A	10' additional
und. 81	Northwestern Pacific R.R. Co.	State of California	"	Aug. 14, 1928	" 188 " 41 Oct. 1, 1928		1090-A	1^{35} acs. disposed of
96	Shell Co. of California	Northwestern Pacific R.R. Co.	"	Feb. 9, 1924	" 167 " 280 Mar. 21, 1924	0.002	1239-B	
97	L. S. East et al	" " "	"	Jan. 3, 1924	" 167 " 278 Mar. 21, 1924	0.12	1239-A	

Continuation of Schedule at left



Note 24: Grants use 0.60 acre for improving road Xings: 0.18 ac. (letter "C_2") and 0.13 ac. (letter "D_2") this sheet. Also 0.29 ac, shown on sheet 5 as (letters "G_1") and "H"); upon completion of project Grantee hereby quitclaims all its right, title and interest in crossings shown letters "K" and "L". This easement also shown on sheet 5.

Note 25: Relinquishes access rights from E.S. 7241+66.94 to E.S. 7254+98.59 and E.S. 7279+90.3 to E.S. 7354+91.2. Reserves access rights for R.R. purposes between E.S. 7279+90.3 to E.S. 7354+91.2.

Note 26: Grants use of 0.092 ac. for highway purposes shown by letter "E_2"

Note 27: Grant 0.04 ac's. (Letter "F2") for highway purposes.

Note 28: Grants use of 0.377 ac's. for drain pipe (Letter "G2").

Note 29: Grants use of 0.128 acres for 12" sewer. Letter "H2", shown on S-6a.

Sheet № 6 of 17 - Northwestern Pacific Railroad Company, Main Line, Shively to Trinidad, Northern Division, California, from survey station 7210+00 to survey station 7419+00.

G. H. Hicks
Assistant Valuation Engineer.

Legend

.... Relinquishment of access rights.

1985 Supplement
STATE BOARD OF EQUALIZATION
LAND IDENTIFICATION MAP
S.B.E. MAP No. 854-12-18D

RIGHT OF WAY AND TRACK MAP
MAIN LINE - SHIVELY TO TRINIDAD
NORTHWESTERN PACIFIC RAILROAD COMPANY
OPERATED BY
NORTHWESTERN PACIFIC RAILROAD COMPANY
NORTHERN DIVISION, HUMBOLDT COUNTY, CALIFORNIA
FROM STATION 7210+00 TO STATION 7419+00
Scale: 1 Inch = 400 feet
JUNE 30th, 1918
OFFICE OF CHIEF ENGINEER [illegible]
SAN FRANCISCO, CALIFORNIA

B.P.R. DIV. No.	STATE	FEDERAL PROJECT No.	FISCAL YEAR	SHEET No.
	CALIF.			

DIST.	COUNTY	ROUTE	SECTION	SHEET No.	TOTAL SHEETS

DISTRICT ENGINEER

APPROVED

SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
3595	Henry V. Belisle et al	State of California	Grant Deed	10-20-56	Book 427 O.R., Page 501	+access rights. Quitclaim 3595-A
3596	Benjamin A. McWhorter et ux	" " "	" "	2-19-57	" " "	" " "
3597	Blanche Nina Koble	" " "	" "	3-21-60	" 586 " " 291	" " "
3598	Andrew L. Clendenen	" " "	" "	7-6-60	" 598 " " 10	
3599	Jacob Sering et ux	" " "	" "	10-24-56	" 425 " " 47	" " " & temporary easement
3600	Rosa Perenin	" " "	" "	7-25-60	" 602 " " 386	
3601	Celso Pedrotti et ux	" " "	" "	9-11-56	" 417 " " 159	" " " Quitclaim 3601-A
3602	Charlotte E. Musser	" " "	Temp. Easement	11-14-56	" 434 " " 114	
3603	Frank Rohner - Estate of	" " "	Executor's Deed	6-17-57	" 451 " " 527	" " "
3698	Andrew L. Clendenen	" " "	Grant Deed	7-6-60	" 598 " " 13	" " "
3700	Corinna Pedrazzini et al	" " "	Temp. Easement	10-16-56	" 423 " " 284	For channel change
264	State of California	City of Fortuna	Director's Deed	10-15-58	" 511 " " 302	
4510	Northwestern Pacific R.R.	State of California	See Case 3615			
3615	" " "	" " "	Easement	7-25-60	" 600 " " 351	Parcel 3 5-265.6
3699-3711	" " "	" " "	Relinquishment	2-14-62	" 682 " " 161	Access rights
440	State of California	Celso Pedrotti et ux	Director's Deed	5-23-63	" 741 " " 195	
427	" " "	Sequoia L.P. Gas	" "	3-27-63	" 732 " " 384	
433	" " "	County of Humboldt	Relinquishment	10-30-63	" 760 " " 517	
524	" " "	City of Fortuna	Director's Deed	11-21-63	" 775 " " 681	
973	" " "	A. L. CLENDENEN	" "	4-18-68	" 960 " " 512	Recorded 5/13/68 5/29/68
1161-A	" " "	Co. of Humboldt	Relinquishment	5-3-78	" 1487 " " 184	RR Xing

Map Filed _____

PRA. DIV. No.	STATE	FEDERAL PROJECT No.	FISCAL YEAR	SHEET No.	SHEETS
	CALIF.				

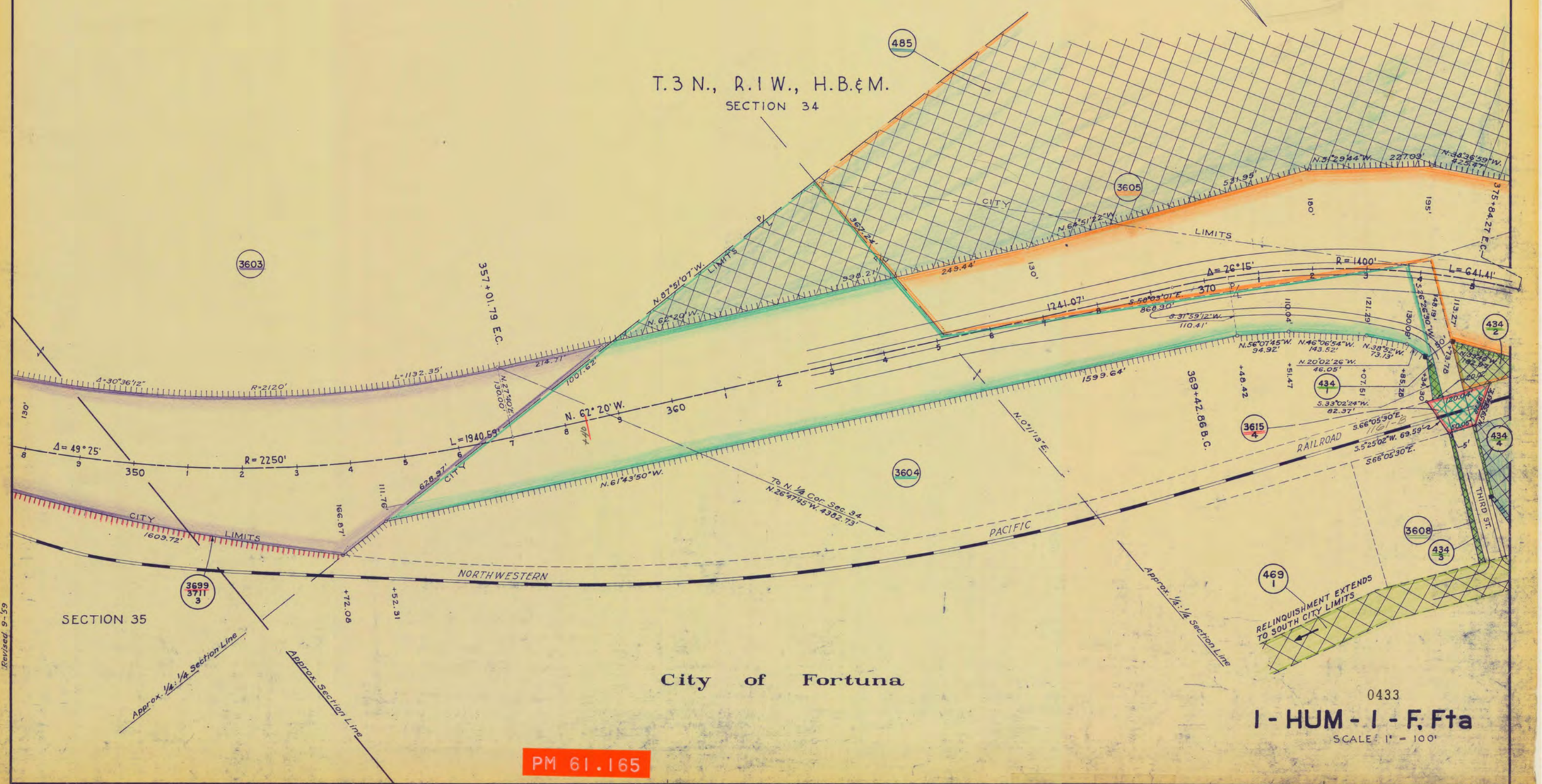
DIST.	COUNTY	ROUTE	SECTION	SHEET No.	TOTAL SHEETS

DISTRICT ENGINEER

APPROVED

SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
3603	Frank Rohner	State of California	Executor's Deed	6-17-57	Bk. 451 O.R. Pg. 527	and access rights
3604	C. B. Harris	" " "	Final Order of Condemnation	5-2-58	" 488 " " 140	and access rights
3604-A	C. B. Harris	" " "	" " " "	5-2-58	" 488 " " 140	
3605	O. J. Soderman et ux	" " "	Grant Deed	1-18-56	" 380 " " 48	
3608	Standard Oil Co.	" " "	Easement	3-20-57	" 447 " " 415	
4511	Northwestern Pacific R.R.	" " "	"			See 3615
3615	" " "	" " "	"	7-25-60	" 600 " " 351	Parcel 4 5-266-5
3699-3711	" " "	" " "	Relinquishment	2-14-62	" 682 " " 161	Access rights
434	State of California	City of Fortuna	"	10-30-63	" 760 " " 511	
485	" " "	Tom McWhorter et al	Director's Deed	9-26-63	" 760 " " 71	
469	" " "	City of Fortuna	Relinquishment	11-21-63	" 763 " " 608	
11618	"	"	"	8-2-77	" 1431 " " 21	R.R. Crossing



Return to: Clerk of the Board

BOARD OF SUPERVISORS, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

RECORDED AT REQUEST OF 121

Certified copy of portion of proceedings, Meeting of June 21, 1983 Clerk of the Board

VOL 1705 OFFICIAL RECORDS PG 484

RESOLUTION NO. 83-86

JUN 22 9 07 AM '83

HUMBOLDT COUNTY RECORDS
GRACE [illegible] RECORDER

VACATING A PORTION OF POND STREET
(FORTUNA AREA; COUNTY ROAD NO. 3G335)

(5) Susan [illegible] DEPUTY

FEE $ none

WHEREAS, a freeholders petition was filed with the Department of Public Works requesting the vacation of a portion of Pond Street in the Fortuna area; and

WHEREAS, pursuant to such filing the matter was set for a public hearing to be held on Tuesday, June 7, 1983, at the hour of 1:45 p.m. in the Supervisors' Chambers, Humboldt County Courthouse, Eureka, California; and

WHEREAS, notice of said hearing was duly published and posted as required by law; and

WHEREAS, said hearing was duly held at the time and place specified in said notice, and evidence was taken at said hearing that the portion to be vacated is not necessary for present or prospective public use;

NOW, THEREFORE, BE IT RESOLVED as follows:

1. This Board of Supervisors finds that all of the recitations made hereinabove are true and correct.

2. The portion of Pond Street proposed to be vacated is not needed for present or prospective public use.

3. This Board of Supervisors finds that the right-of-way proposed to be abandoned hereby is not useful as a non-motorized transportation facility, as defined in Section 156 of the Streets and Highways Code.

BOARD OF SUPERVISORS, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

Certified copy of portion of proceedings, Meeting of June 21, 1983

4. That portion of Pond Street described in Exhibit A, which is attached hereto and made a part hereof by this reference, be and the same hereby is ordered vacated.

5. The Clerk of the Board of Supervisors is directed to record a certified copy of this resolution in the office of the County Recorder.

Adopted on motion by Supervisor Pritchard **, seconded by Supervisor** Chesbro **and the following vote:**

AYES:	**Supervisors—**	Renner, Pritchard, Chesbro, Walsh, Sparks
NOES:	**Supervisors—**	None
ABSENT:	**Supervisors—**	None
ABSTAIN:	**Supervisors—**	None

STATE OF CALIFORNIA
County of Humboldt } ss

I, ROBERT E. HANLEY, Clerk of the Board of Supervisors, County of Humboldt, State of California, do hereby certify the foregoing to be a full, true and correct copy of the original made in the above entitled matter by said Board of Supervisors at a meeting held in Eureka, California as the same now appears of record in my office.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Seal of said Board of Supervisors

ROBERT E. HANLEY June 21, 1983

Clerk of the Board of Supervisors of the County of Humboldt, State of California

(9)

"Exhibit A"

LEGAL DESCRIPTION

All that portion of Pond Street (CoRdNo 3G335) in the northwest quarter of Section 2, Township 2 North, Range 1 West, Humboldt Base and Meridian, which lies within the following described boundaries:

Commencing at a point from which the southeast corner of said Section 2 bears S. 44° 07' 45" E., 5,636.55 feet and from which point Engineer's Station "F" 323+25.76 P.O.T. of the State of California Department of Public Works' survey from Alton Grade Crossing to 0.2 mile west of West City Limits of Fortuna (State Highway I-Hum-1-F, Fta,G) bears S. 55° 13' W., 348.41 feet; thence, S. 34° 10' 55" E., 19.06 feet to the TRUE POINT OF BEGINNING; thence, S. 1° 45' 08" W., 55 feet to an intersection with course (4) described in deed to the State of California recorded May 10, 1960, in Book 586 of Official Records, page 291, Humboldt County Records, as having a bearing and length of N. 89° 52' 52" W., 187.37 feet; thence, S. 89° 52' 52" E., along said course, 109.64 feet to an intersection with course (1) described in Parcel 2 in deed to the State of California, recorded April 8, 1957 in Book 439 of Official Records, page 51, Humboldt County Records as "thence, from a tangent that bears N. 1° 01' W., along a curve to the left with a radius of 280 feet, through an angle of 5° 46'

15", a distance of 28.20 feet to the northerly line of said parcel of land"; thence, southerly, along said curve, 28.20 feet to the southerly terminus thereof; thence, S. 1° 01' E., 388.55 feet; thence, along a curve to the left, tangent to the last preceding course, with a radius of 70 feet, through an angle of 53° 29' 29", a distance of 65.35 feet to the southerly line of the parcel of land described in the Agreement of Sale between the Department of Veterans Affairs of the State of California and Henry Vernon Belisle, recorded March 3, 1950 in Book 123 of Official Records, page 123, Humboldt County Records; thence, N. 80° 25' 53" E., along said southerly line, 80 feet to the westerly line of the parcel of land described as Parcel 2 in deed to Ben A. McWhorter, recorded in Book 278 of Official Records, page 296, Humboldt County Records; thence, northerly, along said westerly line, 20 feet to the southeasterly terminus of the course described in Director's Deed to Ben A. McWhorter, recorded July 9, 1957 in Book 451 of Official Records, page 277, Humboldt County Records, as having a bearing and length of S. 70° 30' E., 68.00 feet; thence, N. 70° 30' W., along said course, 68.00 feet to the westerly terminus thereof; thence, N.1° 01' W., 416.67 feet to an intersection with course (4) described in deed to the State of California recorded May 10, 1960 in Book 586 of Official Records, page 291, Humboldt County Records, as having a bearing and length of N. 89° 52' 52" W., 187.37 feet; thence, S. 89° 52' 52" E., along said course, 19.67

feet to the westerly right of way line of the Northwestern Pacific Railroad; thence northerly, along said westerly line, 50.96 feet to a point that bears S. 86° 42' 22" E. from the TRUE POINT OF BEGINNING; thence, N. 86° 42' 22" W, 147.80 feet to the TRUE POINT OF BEGINNING.

Reserving and excepting a permanent easement and right of way to Pacific Gas and Electric Company, a California corporation, for structures and facilities enumerated in Section 959.1 of the Streets and Highways Code of the State of California.

General Acknowledgement
STATE OF CALIFORNIA) ss
COUNTY OF Humboldt)
On this 16th day of January, in the year 1991, before me, the undersigned a Notary Public, State of California, duly commissioned and sworn, personally appeared Donald E. Galt,
_____) to be the person(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he, she or they) executed the same.
IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal in the County of Humboldt the day and year in this certificate first above written.
Greta L. Kinsey
Notary Public, State of California
My Commission Expires 9-14-92

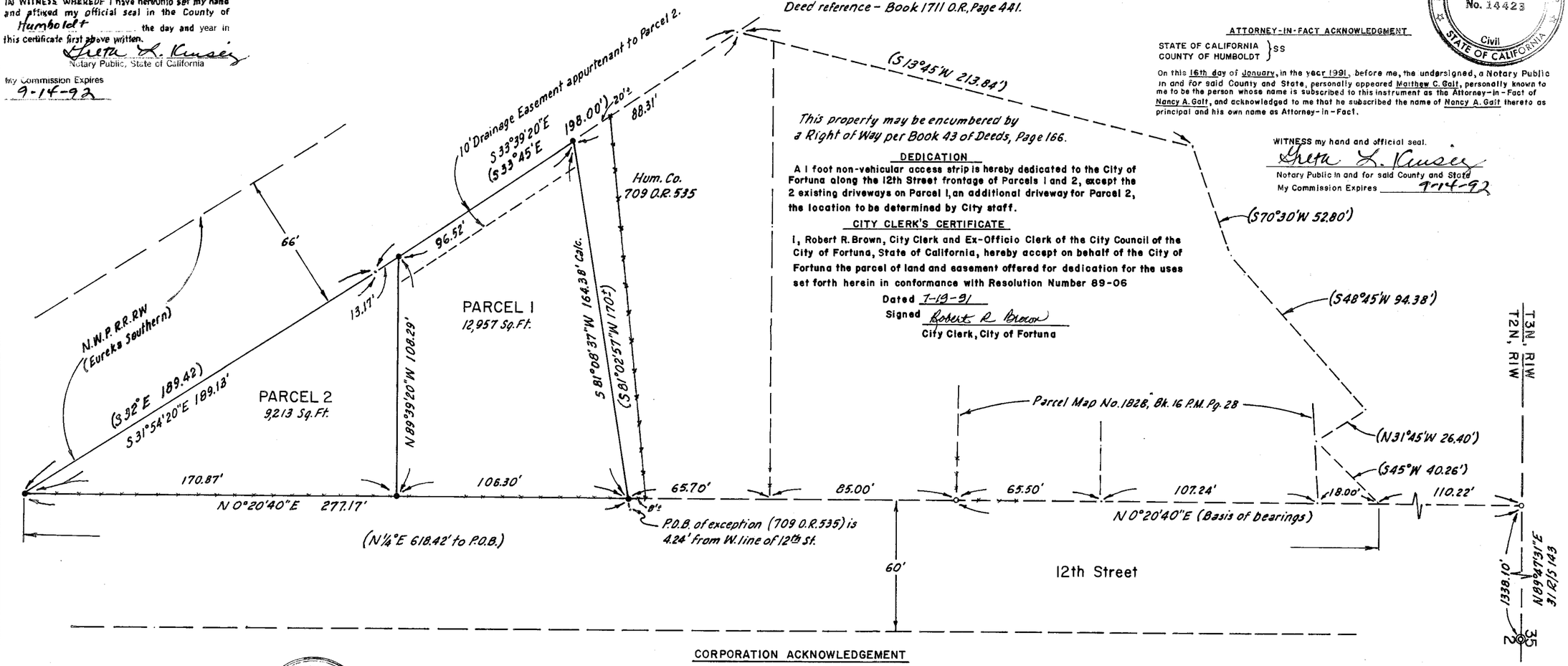
OWNER'S STATEMENT
KNOW ALL MEN BY THESE PRESENTS:
That the undersigned, being a party having a record title interest in the real property being subdivided by this map, do hereby consent to the preparation and recordation of this map, and to the dedication of the easements for the purposes as shown thereon.
Dated this _____ day of _____, 19 91
Donald E. Galt
Nancy A. Galt by Matthew C. Galt
Her attorney in Fact
Raymond L. Noggle Loan Administrator 1-18-91
Coast Central Credit Union

Basis of bearings is Parcel Map No. 1828 filed in Book 16 of Parcel Maps, Page 28, H.C.R.
(See also Survey No. 27, Bk. 1A of Surveys, Pg. 28)

NOTES
◎ ○ Monuments found as shown on Parcel Map No. 1828. (Bk. 16 P.M. Pg. 28)
● 3/4"x30" Pipes set, marked with a brass tag "RCE 12650".
(——) Deed bearings and distances.
Existing fences.
Deed reference - Book 1711 O.R. Page 441.

CITY ENGINEER'S STATEMENT
This map conforms with the requirements of the Subdivison Map Act and local ordinances.
Signed: Joseph H. Steenblik 7-18-91
City Engineer
Lic. Exp. 3-31-93
REGISTERED PROFESSIONAL ENGINEER JOSEPH H. STEENBLIK No. 14423 Civil STATE OF CALIFORNIA

ATTORNEY-IN-FACT ACKNOWLEDGMENT
STATE OF CALIFORNIA
COUNTY OF HUMBOLDT } SS
On this 16th day of January, in the year 1991, before me, the undersigned, a Notary Public in and for said County and State, personally appeared Matthew C. Galt, personally known to me to be the person whose name is subscribed to this instrument as the Attorney-in-Fact of Nancy A. Galt, and acknowledged to me that he subscribed the name of Nancy A. Galt thereto as principal and his own name as Attorney-in-Fact.
WITNESS my hand and official seal.
Greta L. Kinsey
Notary Public in and for said County and State
My Commission Expires 9-14-92



This property may be encumbered by a Right of Way per Book 43 of Deeds, Page 166.

DEDICATION
A 1 foot non-vehicular access strip is hereby dedicated to the City of Fortuna along the 12th Street frontage of Parcels 1 and 2, except the 2 existing driveways on Parcel 1, an additional driveway for Parcel 2, the location to be determined by City staff.

CITY CLERK'S CERTIFICATE
I, Robert R. Brown, City Clerk and Ex-Officio Clerk of the City Council of the City of Fortuna, State of California, hereby accept on behalf of the City of Fortuna the parcel of land and easement offered for dedication for the uses set forth herein in conformance with Resolution Number 89-06
Dated 7-19-91
Signed Robert R. Brown
City Clerk, City of Fortuna

ENGINEER'S STATEMENT
This map was prepared by me or under my direction and is based upon a field survey in conformance with the requirements of the Subdivision Map Act and local ordinance at the request of Don & Nancy Galt on 8/15/90. I hereby state that this parcel map substantially conforms to the approved or conditionally approved tentative map, if any.
Robert L. Winkelhaus
R.C.E. No. 12650
License Expires 3/31/93

REGISTERED PROFESSIONAL ENGINEER ROBERT L. WINKELHAUS No. 12650 CIVIL STATE OF CALIFORNIA

I hereby certify that all monuments are of the character and occupy the position indicated, and the monuments are sufficient to enable the survey to be retraced.
Robert L. Winkelhaus
RCE 12650

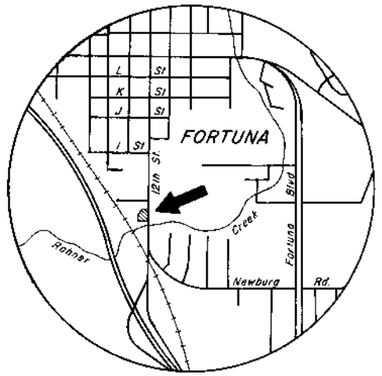
CORPORATION ACKNOWLEDGEMENT
STATE OF CALIFORNIA
COUNTY OF Humboldt S.S.
On this 18 day of January, 1991, before me, Maxine Hanson a Notary Public in and for said County and State, resididing therein, duly commissioned and sworn, personally appeared Raymond L. Noggle personally known to me to be the person who executed the within instrument as Loan Administrator, on on behalf of the corporation therein named, and acknowledged to me that such corporation executed the within instrument pursuant to its articles and by-laws and a resolution of its Board of Directors.
IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal, in and for said County and State, the day and year first above written.
Maxine Hanson
Notary Public, State of California
County of Humboldt
My commission expires 2-3-92

1991-16379-1
COUNTY RECORDER'S CERTIFICATE
Filed this 23rd Day of July, 1991, 9:00 AM
in Book 25 of Parcel Maps at page 103,
Humboldt County Records, at the request of ROBERT L. WINKELHAUS.
Signed Vicki Sullady Deputy for
CAROLYN CRNICH
County Recorder, Humboldt County
FEE: $6.00

PARCEL MAP NO. 2817
FOR
DON & NANCY GALT
IN THE CITY OF FORTUNA, CA.
IN SECTION 2, T2N, R1W, H.B.&M.

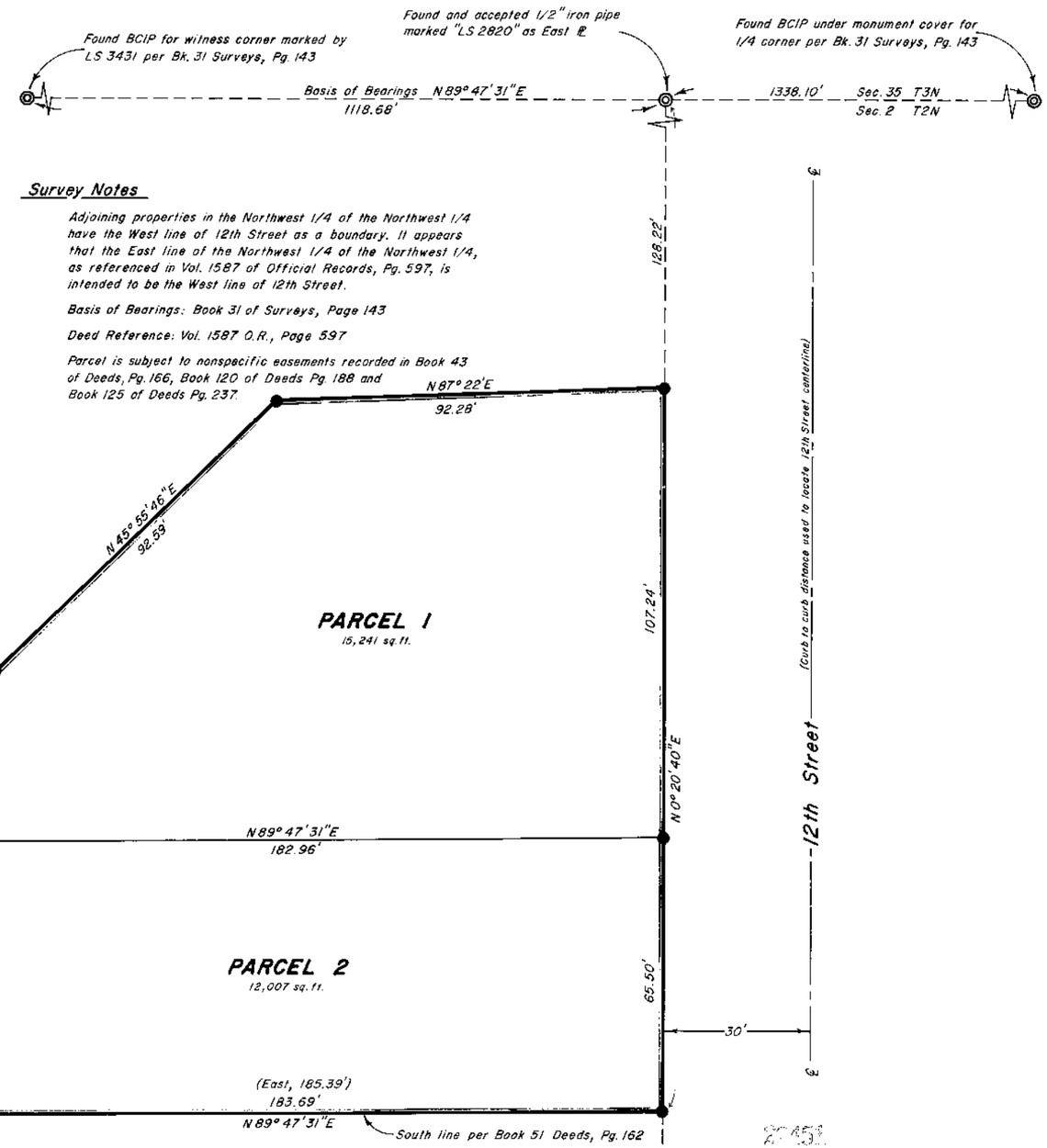
SHEET 1 OF 1 SCALE: 1"=30'

BOOK 25 OF PARCEL MAPS, PAGE 103



Vicinity Map

Scale 1" = 1/4 Mile



Survey Notes

Adjoining properties in the Northwest 1/4 of the Northwest 1/4 have the West line of 12th Street as a boundary. It appears that the East line of the Northwest 1/4 of the Northwest 1/4, as referenced in Vol. 1587 of Official Records, Pg. 597, is intended to be the West line of 12th Street.

Basis of Bearings: Book 31 of Surveys, Page 143

Deed Reference: Vol. 1587 O.R., Page 597

Parcel is subject to nonspecific easements recorded in Book 43 of Deeds, Pg. 166, Book 120 of Deeds Pg. 188 and Book 125 of Deeds Pg. 237.

LEGEND

- ● Monuments set by this survey are 1/2" x 30" galv. iron pipe with plastic plug stamped "RCE 12650"
- ◎ Monuments found by this survey as noted
- ( ) Deed bearings and distances

City Engineer's Certificate

This map conforms with the requirements of the Subdivision Map Act and local ordinance.

Dated Oct 2, 1980

Signed Robert P. Winzler RCE 9878
Winzler & Kelly
City Engineer, City of Fortuna

OWNER'S CONSENT

Know All Men by These Presents:

That the undersigned being a party having a record title interest in the real property being subdivided by this map, do hereby consent to the preparation and recordation of this map, and to the dedication of the easements for the purpose as shown thereon.

DATED this 2nd day of July, 1980.

Rosemary A. Austin

General A[illegible]
STATE OF [illegible]
COUNTY OF Humboldt } ss

On this 2nd day of July, in the year 1980, before me, Dean R. Winkelhaus a Notary Public, State of California, duly commissioned and sworn, personally appeared Rosemary A. Austin, known to me (or proved to me on the oath of [illegible]) to be the person(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that (he, she or they) executed the same.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal in the County of Humboldt the day and year in this certificate first above written.

Dean R. Winkelhaus
Notary Public, State of California

My Commission Expires
September 20, 1983

DEAN R. WINKELHAUS
NOTARY PUBLIC
HUMBOLDT COUNTY, CALIFORNIA
My commission expires Sept. 20, 1983

ENGINEER'S CERTIFICATE

This map was prepared by me or under my direction and is based upon a field survey

In conformance with the requirements of the Subdivision Map Act and local ordinance at the request of Rosemary A. Austin on 9-13-79. I hereby state that this parcel map substantially conforms to the approved or conditionally approved tentative map, if any.

Robert L. Winkelhaus
R.C.E. No. 12650

REGISTERED PROFESSIONAL ENGINEER
ROBERT L. WINKELHAUS
No. 12650
CIVIL
STATE OF CALIFORNIA

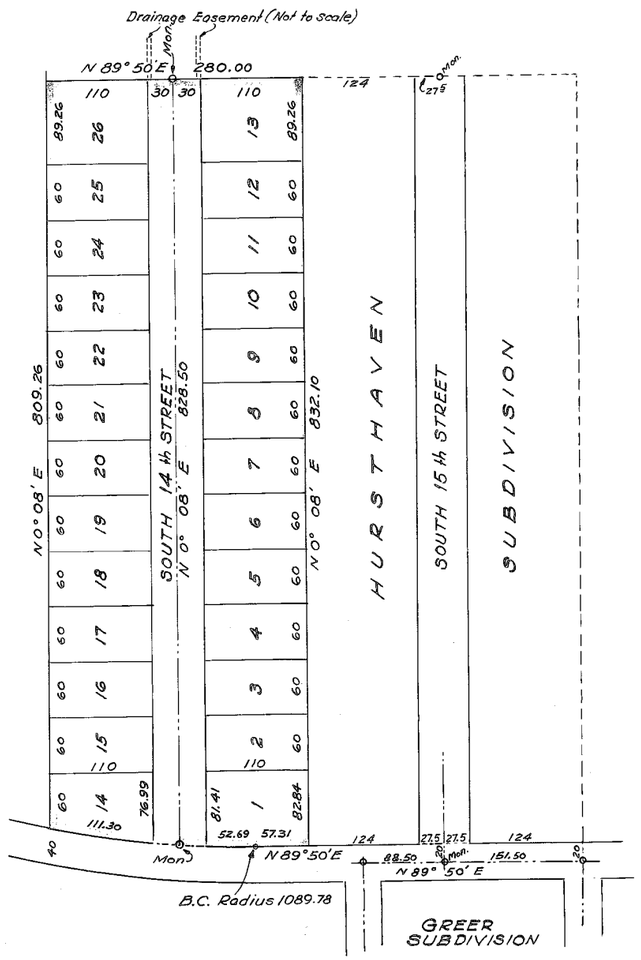
COUNTY RECORDER'S CERTIFICATE

Filed this 14th Day of Nov., 1980 at 3:21 P.M.
In Book 16 of PARCEL Maps at page 28
Humboldt County Records, at the request of ROBERT L. WINKELHAUS.
Signed Grace Jackson
County Recorder, Humboldt County
FEE: $5.00

PARCEL MAP NO. 1828
FOR
ROSEMARY A. AUSTIN
IN THE CITY OF FORTUNA
IN SECTION 2, T2N R1W, H.B.&M.
SHEET 1 OF 1 SCALE 1"=20'

Winkelhaus Engineering
554 N. Fortuna Blvd. Fortuna, CA 95540
(707) 725-6156

BOOK 16 OF PARCEL MAPS, PAGE 28



Basis of Bearings = Same as Hursthaven, Greer and Highway Subdivisions

Scale : 1 inch = 100 feet

North

DRAINAGE EASEMENT

I the undersigned being the owner of the lands lying North of the Beacom Subdivison as shown hereon do hereby grant to the County of Humboldt a drainage easement for waters flowing Northward from South 14th Street across my lands and into Rohner Creek.

Signed Joseph A. Fortunato
Dated May 20 1953

COUNTY AUDITOR'S CERTIFICATE

I certify that there are no unpaid County or Special School Taxes against any of the land shown on this map designated, BEACOM SUBDIVISION, in Humboldt County, California, except taxes due and not yet payable.

Dated MAY 25th 1953

Signed Vere M. Quist
Auditor of the County of Humboldt, State of California.

ENGINEER'S CERTIFICATE

I hereby certify that this map designated BEACOM SUBDIVISION, in Humboldt County, California, is correctly drawn from my survey of the lands herein represented and that sufficient monuments were left on the ground being iron pipe 36 inches long with copper tags stamped "R. E. 960" at the locations shown from which the Survey can be retraced.

Signed Paul M. Schmook
Paul M. Schmook, Registered Civil Engineer No. 960

PLANNING COMMISSION'S APPROVAL

I, Wesley D. Hill Secretary of the Planning Commission of Humboldt County, State of California, hereby certify that the said Commission, at a meeting held on May 21, 1953, recommended approval and acceptance of the attached map. Dated May 25, 1953.

Signed Wesley D. Hill
Secretary of the Planning Commission of the County of Humboldt, State of California.

COUNTY SURVEYORS CERTIFICATE

I, J. A. Giacomini, County Surveyor for the County of Humboldt, State of California, hereby certify that I have examined the attached map, that the subdivision is substantially the same as it appeared on the Tentative Map and any approved alteration thereto; that all provisions of Part 2, Division IV of the Business and Professions Code and any local ordinances applicable at the time of approval of the Tentative Map have been complied with, and that the attached map of BEACOM SUBDIVISION, in Humboldt County, California is technically correct.

In witness whereof I have hereunto set my Hand and affixed my seal.

Signed James A. Giacomini
Dated May 22, 1953

COUNTY CLERKS CERTIFICATE OF ACCEPTANCE

I, FRED J. MOORE, JR., County Clerk and Ex officio Clerk of the Board of Supervisors of the County of Humboldt, State of California, hereby certify that the Board of Supervisors, at a meeting held on May 25 1953 of which a quorum was present, approved and accepted on behalf of the Public, the parcels of land offered for dedication for the uses set forth on the attached map in conformity with the terms of the dedication.

Signed Fred J. Moore Jr., County Clerk

COUNTY CLERK'S CERTIFICATE

I hereby certify that a bond in the amount fixed by the Board of Supervisors of Humboldt County, State of California, to wit Sixty Dollars ($60.-) was presented, filed and accepted by the said Board of Supervisors on the 4th day of June 1953, guaranteeing the payment of all taxes not yet payable which are a lien at the time of filing of this map designated BEACOM SUBDIVISION, in Humboldt County, California, against the lands shown thereon.

Dated June 4, 1953 by order of 5-25-53

Signed Fred J. Moore Jr.
County Clerk and Ex officio Clerk of the Board of Supervisors of Humboldt County, State of California.

Filed at the request of James H. Beacom
this 5th day of June 1953, at 52 min, past 1 o'clock P. M. in Book 12 of Maps, page 138.

Signed Emma Cox Alcala
County Recorder, County of Humbodt, State of California.

By Helen M. Barnett Deputy

Fee $5.00

OWNER'S CONSENT

Know all men by these presents:
That we the undersigned, being the owners of all the lands embraced within the boundaries of BEACOM SUBDIVISION, in Humboldt County, California as shown on this map, do hereby consent to the making and filing of this map and to the dedication of road as shown thereon and release all claims to said road thereby designated.

Dated April 30, 1953
Signed James H. Beacom
Signed Helen H. Beacom

State of California
County of Humboldt SS
On this 30 day of April 1953, before me, Will Glenn Gerry a Notary Public in and for said County and State, personally appeared JAMES H. BEACOM and HELEN H. BEACOM known to me to be the persons whose names are subscribed to the foregoing Owners Consent and acknowledge to me that they executed the same.
Witness my hand and Official Seal this 30 day of April 1953.

Will Glenn Gerry
Notary Public in and for the County of Humboldt State of California. My Commission expires January 31 1957

TRUSTEE'S AND BENEFICIARY'S CONSENT

And we, THE BELCHER ABSTRACT & TITLE COMPANY, A CORPORATION, and STARR A. HAMILTON and EDITH R. HAMILTON being the Trustee and Beneficiaries, respectively, named in that certain Deed of Trust made April 21 1953 recorded in Book 247 Page 275 of the official records of Humboldt County, do hereby consent to the making and filing of this map and to the dedication of the road as shown thereon, and release all claims to said road thereby designated.

Signed J. R. Belcher
Belcher Abstract & Title Company, a Corporation.
By J. R. Belcher
President
F. J. Soares
Secretary

Date Apr. 30th 1953 Signed Starr A. Hamilton
Edith R. Hamilton
Beneficiaries

State of California
County of Humboldt SS
On this 30 day of April 1953, before me George W. Wade a Notary Public in and for said County, residing therein, duly commissioned and sworn, personally appeared I. R. Belcher known to me to be the President of the Corporation that executed the within instrument and acknowledged to me that such corporation executed the same. In witness whereof, I have hereunto set my hand and affixed my official seal at my office in the said County of Humboldt, the day and year in this certificate first above written.

George W. Wade
Notary Public in and for the County of Humboldt, State of California.
My Commission expires July 24th 1956

State of California
County of Humboldt SS
On this 30 day of April 1953, before me Will Glenn Gerry a Notary Public in and for said Humboldt County, STARR A. HAMILTON and EDITH R. HAMILTON known to me to be the persons whose name are subscribed to the within instrument and acknowledged that they executed the same. In witness whereof, I have hereunto set my hand and affixed my official seal at my office in the said County of Humboldt, the day and year in this certificate first above written.

Will Glenn Gerry
Notary Public in and for County of Humboldt
State of California. My Commission expires January 31 1957

MAP OF BEACOM SUBDIVISION

IN SECTION 2
TOWNSHIP 2 NORTH RANGE 1 WEST
HUMBOLDT MERIDIAN

ONE SHEET.

Book 12 of Maps, Page 138.

OWNER'S STATEMENT

KNOW ALL MEN BY THESE PRESENTS: The undersigned, being a municipal corporation vested under the laws of the State of California and the sole party holding any record title interest to the land shown within this Subdivision, does hereby consent to the preparation and recordation of this map and offer for dedication and do hereby dedicate for public use the rights of way and public utilities as shown on this map.

Signed: [signature] Dated: 10-1-96

Signed: _____ Dated: _____

NOTARY CERTIFICATE

State of California)
County of Humboldt)ss

On October 1, 1996, before me, Virginia L. Vance, a Notary Public in and for the State of California, personally appeared

Dale W. Neiman

personally known to me / ~~proven to me on the basis of satisfactory evidence~~ / to be the person(s) whose name(s) is/~~are~~ subscribed to the within Instrument, and acknowledged to me that he/she/~~they~~ executed the same in his/~~her~~/~~their~~ authorized capacit(y)(ies), and that by his/her/~~their~~ signature(~~s~~) on the Instrument, the person(~~s~~), or the entity upon half of which the person(s) acted, executed the Instrument.

WITNESS:

Signature: Virginia L. Vance Expires: 5-4-98

TAX COLLECTOR'S CERTIFICATE

I, Stephen A. Strawn, Tax Collector of Humboldt County, California, hereby certify that on this date according to the records of this office, there are no tax liens due against the land within this Subdivision or Parcel Map described as Assessor's Parcel No. 200 - 353 - 22,23 for unpaid State, County, Municipal or Local Taxes or Special Assessments collected as property taxes, except taxes or special assessments not yet due and payable.

I further certify that taxes or assessments which are a lien, but not yet payable, have been estimated at $ None and a tax bond in this amount has been collected and deposited with this office on behalf of the Board of Supervisors.

Stephen A. Strawn
Humboldt County Tax Collector

Dated: 10-1-96 By: Sue Johnson
Deputy

1996-22701-2

COUNTY RECORDER'S STATEMENT

Filed this 2nd day of October, 1996 at 2:32 PM in Book 29 of Parcel Maps at Page 32 & 33
Humboldt County Records at the request of Michael W. Sattel.

Carolyn Crnich
Humboldt County Recorder

Deputy

Fee: $

DEDICATION NOTES

The portions of the following described Parcel lying within the boundaries of this Subdivision are hereby dedicated as shown hereon, for the uses and purposes as set forth herein:

PARCEL A is dedicated to the City of Fortuna as a Public Utilities Easement along Strongs Creek and Rohner Creek appurtenant to Parcels 2 and 3, and for all purposes incidental thereto.

PARCEL B is dedicated across Parcel 2 to the owner of Parcel 1 for ingress and egress, public utilities and all purposes incidental thereto.

PARCEL C is dedicated across Parcel 3 to the owner of Parcels 2 for ingress and egress, public utilities and all other purposes incidental thereto.

CITY PLANNER'S STATEMENT

I, Lisa Shikany Meyers, City Planner for the City of Fortuna, Humboldt County, California hereby state that the tentative map for this Subdivision was approved by the City of Fortuna and that this Parcel Map is substantially the same as the approved tentative map and any approved alterations thereof and that this Parcel Map complies with the Conditions of Approval for the tentative map pursuant to Resolution 96-

Signed: [signature] Dated: 10-1-96
Lisa Shikany Meyers, City Planner

CITY ENGINEER'S STATEMENT

I, Michael W. Sattel, City Engineer for the City of Fortuna, Humboldt County, California, state that I have examined this map on this 1st day of October, 1996 for conformance with the requirements of Section 66410 of the State Government Code. I hereby state that all provisions of the Subdivision Map Act and all applicable local ordinances have been met and the accompanying map is technically correct.

Signed: [signature]
Michael W. Sattel, City Engineer
R.C.E. 30,850, Expires 3/31/2000

CITY CLERK'S STATEMENT

I, Dale W. Neiman, City Clerk and Ex Officio Clerk of the City of Fortuna, Humboldt County, State of California, hereby accept this map on behalf of the City of Fortuna, including the rights of way, easements and parcels of land offered for dedication for the uses as set forth herein, and consent to the adjustment of the property lines described herein, in conformity with Resolution P96-

Signed: [signature] Dated: 10-1-96
Dale W. Neiman, City Clerk
City of Fortuna

SURVEYOR'S STATEMENT

This map was prepared by me or under my direction and is based upon a field survey in conformance with the requirements of the Subdivision Map Act and local ordinance at the request of Dale W. Neiman on 8-15-96. I hereby state that this parcel map substantially conforms to the approved tentative map.

Signed: [signature] Dated: 10/1/96
Michael W. Sattel
R.C.E. 30,850 Expired 3/31/2000

REGISTERED CIVIL ENGINEER MICHAEL W. SATTEL 30850 3/31/2000 CIVIL STATE OF CALIFORNIA

PARCEL MAP NO. 3124
FOR
CITY OF FORTUNA
IN THE NW 1/4 OF SECTION 2
T2N, R1W, HUMBOLDT MERIDIAN
HUMBOLDT COUNTY, STATE OF CALIFORNIA
SCALE 1" = 100' OCTOBER 1996

SHEET 1 OF 2

CORNER NOTES

(1) - Found State of California Right of Way Monuments which are described in Grant Deed 417 O.R. 159

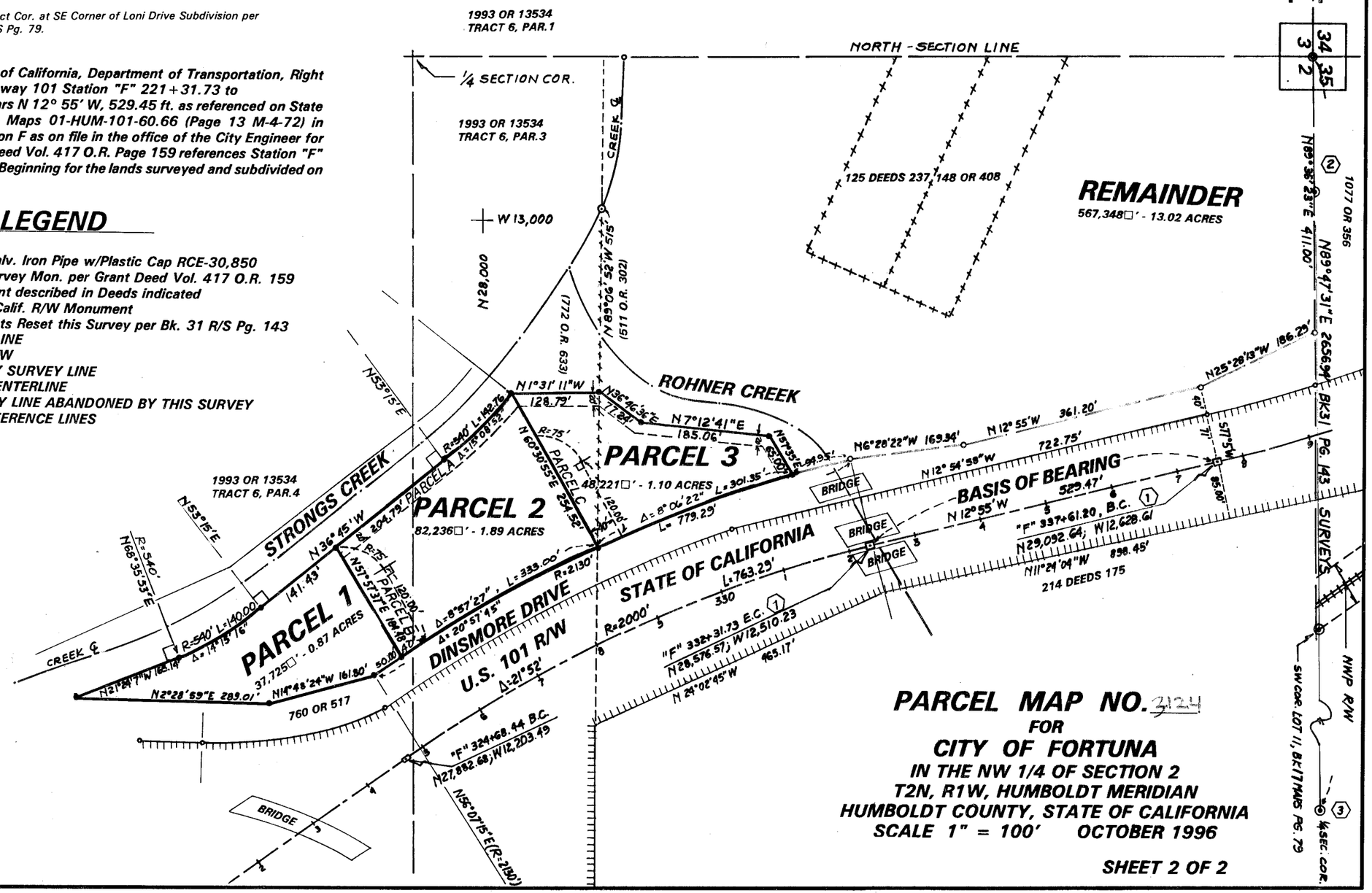
(2) - Found nail and tag marked LS 3441 174.48 ft. N 88°05' E of Sect. Cor, 2,3,34 & 35 per Field Note 6 Bk. 31 R/S Pg. 143. The witness corner set N 89°47' 27" E, 200.00 ft. had been removed. Reset by this survey from ties to found monuments in Loni Drive per Bk. 17 MAPS Pg. 79.

(3) - Reset 1/4 Sect Cor. at SE Corner of Loni Drive Subdivision per Bk. 17 MAPS Pg. 79.

BASIS OF BEARING: State of California, Department of Transportation, Right of Way Maps for U.S. Highway 101 Station "F" 221+31.73 to "F" 337+61.20, which bears N 12° 55' W, 529.45 ft. as referenced on State of California Right of Way Maps 01-HUM-101-60.66 (Page 13 M-4-72) in District 1, on Route 1 Section F as on file in the office of the City Engineer for the City of Fortuna. Grant Deed Vol. 417 O.R. Page 159 references Station "F" 337+61.20 as the Point of Beginning for the lands surveyed and subdivided on this map.

LEGEND

- Set 1" Galv. Iron Pipe w/Plastic Cap RCE-30,850
- Found Survey Mon. per Grant Deed Vol. 417 O.R. 159
- Angle Point described in Deeds indicated
- State of Calif. R/W Monument
- Monuments Reset this Survey per Bk. 31 R/S Pg. 143
- PARCEL LINE
- STATE R/W
- FREEWAY SURVEY LINE
- CREEK CENTERLINE
- PROPERTY LINE ABANDONED BY THIS SURVEY
- DEED REFERENCE LINES



PARCEL MAP NO. 3124
FOR
CITY OF FORTUNA
IN THE NW 1/4 OF SECTION 2
T2N, R1W, HUMBOLDT MERIDIAN
HUMBOLDT COUNTY, STATE OF CALIFORNIA
SCALE 1" = 100' OCTOBER 1996

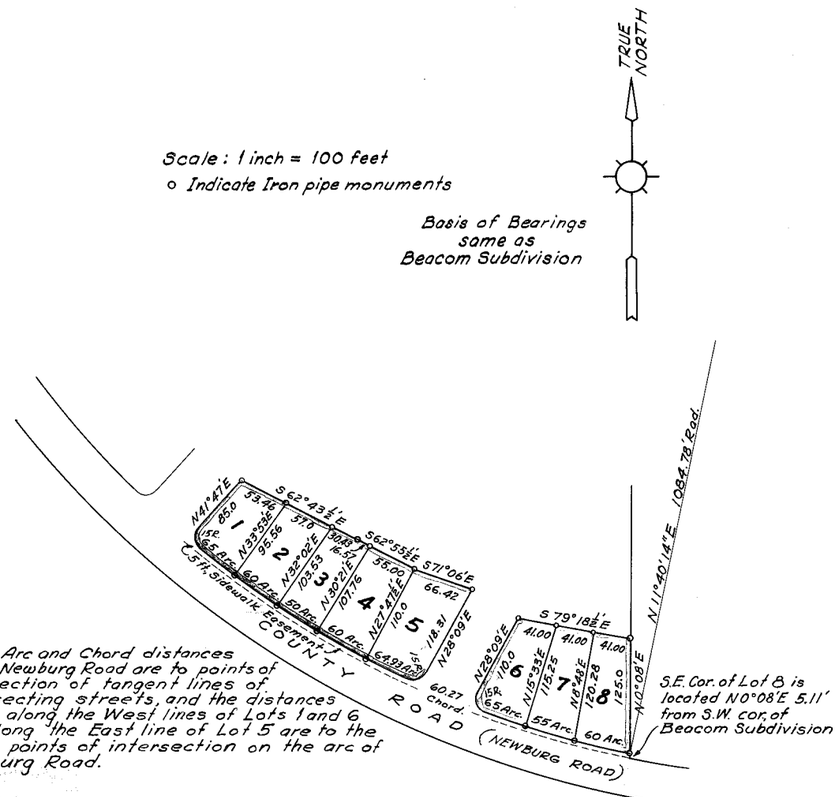
SHEET 2 OF 2

BOOK 29 PARCEL MAPS, PAGE 33

Scale: 1 inch = 100 feet

o Indicate Iron pipe monuments

Basis of Bearings same as Beacom Subdivision



Note: Arc and Chord distances along Newburg Road are to points of intersection of tangent lines of intersecting streets, and the distances shown along the West lines of Lots 1 and 6 and along the East line of Lot 5 are to the same points of intersection on the arc of Newburg Road.

TRUSTEE'S AND BENEFICIARY'S CONSENT

The BELCHER ABSTRACT & TITLE COMPANY, A CORPORATION and Starr A. Hamilton and Edith R. Hamilton being the Trustee and Beneficiaries, respectively, named in that certain Deed of Trust made September 6th 1954 recorded in Book 307 of Official Records Page 199 of the Humboldt County Records, do hereby consent to the making and filing of this map and to the dedication of roads as shown thereon, and release all claims to said roads thereby designated.

Signed Belcher Abstract & Title Company, a Corporation.
By [signature] President
[signature] Secretary

Dated Sept. 20th 1954
Signed Starr A. Hamilton
Edith R. Hamilton
Beneficiaries

State of California
County of Humboldt } SS

ACKNOWLEDGEMENT

On this 20th day of Sept. 1954, before me, H. W. Lambert a Notary Public in and for said County, residing therein, duly commissioned and sworn, personally appeared I. R. Belcher known to me to be the President of the Corporation that executed the within instrument and acknowledged to me that such corporation executed the same.
In witness whereof, I have hereunto set my hand and affixed my official seal at my office in the said County of Humboldt the day and year in this certificate first above written.

H. W. Lambert
Notary Public in and for the County of Humboldt, State of California.
My Commission Expires December 22nd 1957.

State of California
County of Humboldt } SS

ACKNOWLEDGEMENT

On this 20th day of Sept. 1954 before me I. R. Belcher, a Notary Public in and for said Humboldt County, residing therein, duly commissioned and sworn personally appeared Starr A. Hamilton and Edith R. Hamilton known to me to be the persons whose names are subscribed to the within instrument and acknowledged that they executed the same. In witness whereof, I have hereunto set my hand and affixed my official seal at my office in the said County of Humboldt the day and year in this certificate first above written.

[signature]
Notary Public in and for the County of Humboldt State of California.
My Commission Expires Mar 31 1956

12757

Filed at the request of Belcher Abstract & Title Company this 21st day of September 1954, at 20 min. past 3 o'clock P.M. in Book 13 of Maps, Page 15
Signed Emma Cox Alcala
County Recorder, County of Humboldt, State of California.
By Penny Kaling Deputy
Fee $5.00

ACCEPTANCE

The City Council of the City of Fortuna, Humboldt County, California hereby approve the accompanying AMENDED MAP OF SANDY PRAIRIE SUBDIVISION in the City of Fortuna and accept on behalf of the public the dedication of the sidewalk easement shown thereon.
All of which appears by an order duly passed and entered in minutes of the Council this 7th day of September 1954.

City Council of the City of Fortuna Humboldt County, California.

Carl C. Brown
Fred Krieg
Frank Grunert
Wm. J. Rochlin
T. G. Lippert

Attest: Fay P. Callarman
City Clerk and Ex-officio Clerk of the City Council of the City of Fortuna, California.

Received and filed this ____ day of ____ 1954 at ____ M.

County Recorder of Humboldt County, State of California

SURVEYOR'S CERTIFICATE

I hereby certify that I made the Survey represented on this map and that the map is an accurate depiction thereof, and that there are sufficient monuments left on the ground from which the survey can be retraced, the character and location of which is shown on this sheet.
Witness my hand and seal this 20th day of September 1954

Paul M. Schmook
Paul M. Schmook, Licensed Surveyor
No 1282 for State of California.

CITY CLERK'S & CITY ENGINEER'S CERTIFICATE

We, P. M. Schmook City Engineer, and Fay M. Callarman City Clerk of the City of Fortuna in Humboldt County, California, hereby certify that this AMENDED MAP OF SANDY PRAIRIE SUBDIVISION in the City of Fortuna consisting of one sheet has been examined by us; that the land subdivided is within the limits of said City of Fortuna; that the City Planning Commission did recommend that the City Council of the City of Fortuna approve the accompanying AMENDED MAP OF SANDY PRAIRIE SUBDIVISION that we have examined the map, and the data given thereon and the consent certificates and other parts thereof, and find the same correct and suitable and conformable to the provisions of the State laws regarding subdivision maps; and we approve the same and recommend to the Council of the City of Fortuna that they approve the map and accept the dedications thereon.
Dated this 20th day of September 1954.

Fay P. Callarman
City Clerk of City of Fortuna, Humboldt County, California.

P. M. Schmook
City Engineer of City of Fortuna, Humboldt County, California.

TAX AND ASSESSMENT CERTIFICATE

I hereby certify that the lands subdivided upon this AMENDED MAP OF SANDY PRAIRIE SUBDIVISION in the City of Fortuna are in Humboldt County, California, and are within the limits of the incorporated City of Fortuna, that there are no liens for unpaid State or County taxes against the lands thereon subdivided.
I further certify that I am the officer in charge of special assessments in unincorporated territory in said County and that the lands subdivided upon this map are not subject to any special assessments which have not been paid in full.

Nell M. Dick
County Auditor of Humboldt County, State of California.

I estimate that the taxes now a lien but not yet payable will amount to $____

Nell M. Dick
County Auditor of Humboldt County, State of California.
By [signature] Deputy

A certified check in the amount of $ -0- has been deposited with the Humboldt County Board of Supervisors to guarantee payment of taxes not yet payable. Tax Bond paid by Brookside Addition on Sept. 20, 1954.

Fred Moore
Clerk of the Board of Supervisors
Humboldt County, State of California.

We hereby certify that the lands subdivided upon this AMENDED MAP OF SANDY PRAIRIE SUBDIVISION in the City of Fortuna are in Humboldt County, California, and are within the limits of the incorporated City of Fortuna; that there are no liens for unpaid taxes levied by said City of Fortuna against the lands thereon subdivided, except taxes not yet payable. We further certify that we are the officers in charge of special assessment districts within the said City of Fortuna and that there are no special assessment districts within said City of Fortuna which would include the lands subdivided upon this map and that the lands subdivided upon this map are not subject to any special assessments which have not been paid in full.
Dated this 20th day of September 1954.

Fay P. Callarman
City Clerk of the City of Fortuna, State of California.

Fay P. Callarman
City Tax Collector of the City of Fortuna, State of California.

I hereby certify that a certified check in the amount of $39.21 has been deposited with the City Assessor of the City of Fortuna to cover the current years taxes on the lands embraced on this map belonging to Wilbur T. Greer and Amy L. Greer, husband and wife, for the fiscal year ending June 30 1955

Fay P. Callarman
City Assessor of the City of Fortuna, State of California

OWNER'S CONSENT AND DEDICATION

We, Wilbur T. Greer and Amy L. Greer, husband and wife, declare that we are the sole owners of the land subdivided on this map consisting of one sheet; that there is no person other than ourselves except the holder of the outstanding Deed of Trust whose consent is necessary to pass a clear title to the subdivided lands shown upon this map; that we caused this land to be surveyed and laid out as shown and consent to and approve this map, and we hereby dedicate to the public use the sidewalk easement shown hereon.

Wilbur T. Greer
Amy L. Greer

State of California
County of Humboldt } SS

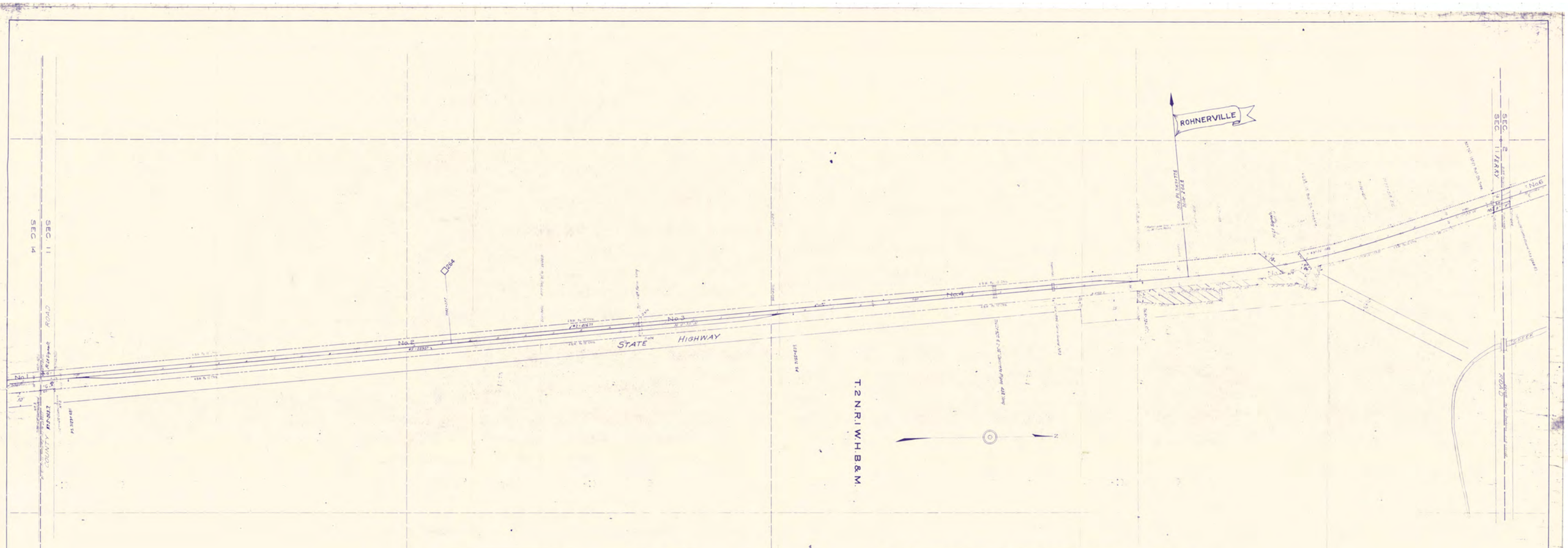
On this 20th day of September 1954, before me, Eugene B. Lucas a Notary Public in and for the above County and State, personally appeared Wilbur T. Greer and Amy L. Greer, husband and wife, personally known to me to be the persons whose names are subscribed to the above consent and dedication, and acknowledged to me that they executed the same.
In witness whereof I have hereunto subscribed my name and affixed my official seal.

Eugene B. Lucas
Notary Public in and for the County of Humboldt, State of California.
My Commission expires April 3 1956

AMENDED MAP OF SANDY PRAIRIE SUBDIVISION IN THE CITY OF FORTUNA

HUMBOLDT COUNTY, CALIFORNIA

ONE SHEET



SCHEDULE OF PROPERTY

No.	Deed No.	GRANTOR	GRANTEE	Instrument	Date	Record	Acres	REMARKS
1	1774	J. D. Cottemyer	Eel River & Eureka R.R. Co.	Deed	July 9, 1904	Co. Rec. Vol. 109 p. 1	0.40	
2	1774	H. Drake	" " "	"	June 30,	" " 109	0.40	
3	1775	J. E. East	" " "	"	"	" " 109	1.00	
4	1776	Benjamin Compton	" " "	"	Aug. 6,	" " 109 Aug. 16	1.00	
5	1777	A. P. Compton	" " "	"	" 26,	" " 109 " 26	0.25	
6	1777-A	Martha J. Lindsay	" " "	Condemnation	June 26,	" " 109 June 26		270 lin. lks. wide, 0.703 ac. is partly deed 1872
un-1	Not P.T.	County of Humboldt	The N.W.P.R.R. Co.	Franchise	Oct. 27, 1911			See Note 3.
6	3836	N.W.P.R.R. Co.	County of Humboldt	Easement	Oct. 6, 1929		4.0	
1-Vac.	3859	"	State of Cal.	"	July 28, 1960	Co. Rec. Vol. 1960 Aug. 24, 1960	1.0	
1-Vac.	3872	"	"	Agmt. Decl.	Aug. 30, 1960	" " " Vol. 1960 Oct. 31, 1960	0.4	
1-Vac.	3874	"	"	Relinq't	Feb. 14, 1962			

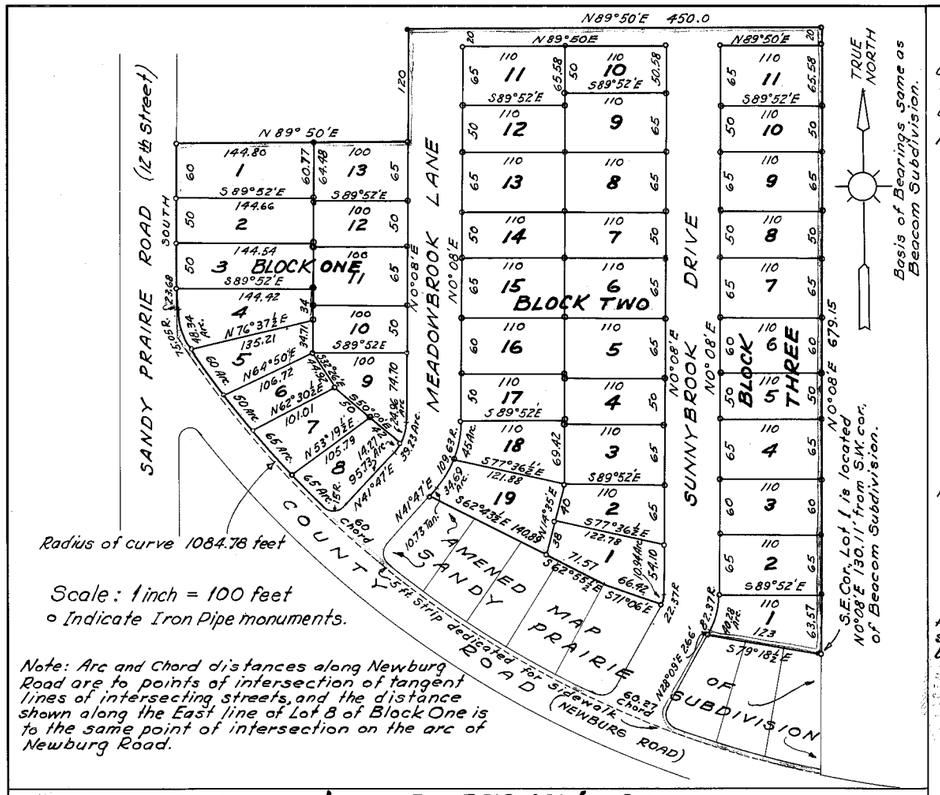
Note No. 1: Eel River and Eureka Rail-Road Co. was purchased by San Francisco and Northwestern Railway in May, 1903.
Note No. 2: San Francisco and Northwestern Railway Co. was consolidated with Northwestern Pacific Railroad Co. in June, 1914.
Note No. 3: Grants right to build, open, maint. track across County road E.S. 1124-146.
Note 4: Grants use of a 50 ft. wide strip of land (Letter "E") and a 6 ft. strip of land (Letter "F") for construction of road control lines. See Sh. 2-5a.
Note 5: Grants use of 0.60 acre for improving road "Limps": 0.10 ac. (Letter "G") at mile 0.6 lines H, I thru block, Also 0.50 ac. shown on Sheet 4, (letters "C" and "D"). Grantee hereby quitclaims to Grantor all its right, title and interest to existing, shown letters "K" and "L" and will abandon use of same.
Note 6: All minerals, oil, natural gas, petroleum, and other hydrocarbons reserved.
Note 7: 30,617 sq. ft. (0.703 ac.) strip of, shown hatched, (letter "L").

NW.P.R.R.
ROHNERVILLE
HUMBOLDT CO.
SCALE: 1 INCH = 100 FEET
SEPT. 1965

Legend
Relinquishment of access rights.

6/604

V-4
S-5b



Note: Arc and Chord distances along Newburg Road are to points of intersection of tangent lines of intersecting streets, and the distance shown along the East line of Lot 8 of Block One is to the same point of intersection on the arc of Newburg Road.

TRUSTEE'S AND BENEFICIARY'S CONSENT

The BELCHER ABSTRACT & TITLE COMPANY, A CORPORATION and Starr A. Hamilton and Edith R. Hamilton being the Trustee and Beneficiaries, respectively, named in that certain Deed of Trust made September 6th 1954 recorded in Book 307 of Official Records Page 199 of the Humboldt County Records, do hereby consent to the making and filing of this map and to the dedication of roads as shown thereon, and release all claims to said roads thereby designated.

Signed _____
Belcher Abstract & Title Company, a Corporation.
By _____ President
_____ Secretary

Dated Sept 20th 1954
Signed Starr A. Hamilton
Edith R. Hamilton
Beneficiaries

ACKNOWLEDGEMENT

State of California
County of Humboldt } SS
On this 20th day of Sept 1954, before me, H.W. Lambert a Notary Public in and for said County, residing therein, duly commissioned and sworn, personally appeared I. R. Belcher known to me to be the President of the Corporation that executed the within instrument and acknowledged to me that such corporation executed the same.
In witness whereof, I have hereunto set my hand and affixed my official seal at my office in the said County of Humboldt, the day and year in this certificate first above written.

H.W. Lambert
Notary Public in and for the County of Humboldt, State of California

My Commission Expires December 22nd 1957

ACKNOWLEDGEMENT

State of California
County of Humboldt } SS
On this 20th day of Sept 1954, before me I. R. Belcher, a Notary Public in and for said _____ County, residing therein, duly commissioned and sworn personally appeared Starr A. Hamilton and Edith R. Hamilton known to me to be the persons whose names are subscribed to the within instrument and acknowledged that they executed the same.
In witness whereof, I have hereunto set my hand and affixed my official seal at my office in the said County of Humboldt, the day and year in this certificate first above written.

_____
Notary Public in and for the _____ County of Humboldt, State of California.

My Commission Expires Mar 31 1956

12758
Filed at the request of Belcher Abstract & Title Company this 21st day of September 1954, at 21 min. past 3 o'clock P.M., in Book 13 of Maps page 16.

Signed Emma Cox Alcala
County Recorder, County of Humboldt, State of California
By Fanny Kealy Deputy

Fee $5.00

ACCEPTANCE

The City Council of the City of Fortuna, Humboldt County, California hereby approve the accompanying map of BROOKSIDE ADDITION to the City of Fortuna and accept on behalf of the public the dedication of the streets and alley shown thereon.
All of which appears by an order duly passed and entered in minutes of the Council this 7th day of September 1954.

City Council of the City of Fortuna Humboldt County, California.

Carl C. Brown
Fred Krieg
Frank Grunert
Wm. J. Rothlin
R. A. Lippert

Attest: Fay P. Callarman
City Clerk and ex-officio Clerk of the City Council of the City of Fortuna, California.

Received and filed this _____ day of _____ 1954 at _____ M.

_____
County Recorder of Humboldt County, State of California.

SURVEYOR'S CERTIFICATE

I hereby certify that I made the Survey represented on this map and that the map is an accurate depiction thereof, and that there are sufficient monuments left on the ground from which the survey can be retraced, the character and location of which is shown on this sheet.
Witness my hand and seal this 20th day of September 1954

Paul M. Schmook
Paul M. Schmook, Licensed Surveyor No. 1282 for State of California.

CITY CLERK'S & CITY ENGINEER'S CERTIFICATE

We, P. M. Schmook City Engineer, and Fay M. Callarman City Clerk of the City of Fortuna in Humboldt County, California, hereby certify that this map of BROOKSIDE ADDITION to the City of Fortuna consisting of one sheet has been examined by us; that the land subdivided is within the limits of said City of Fortuna; that the City Planning Commission did recommend that the City Council of the City of Fortuna approve the accompanying map of BROOKSIDE ADDITION, that we have examined the map, and the data given thereon and the consent certificates and other parts thereof and find the same correct and suitable and conformable to the provisions of the State laws regarding subdivision maps; and we approve the same and recommend to the Council of the City of Fortuna that they approve the map and accept the dedications thereon.

Dated this 20th day of September 1954

Fay P. Callarman
City Clerk of City of Fortuna, Humboldt County, California.

P M Schmook
City Engineer of City of Fortuna, Humboldt County, California.

TAX AND ASSESSMENT CERTIFICATE

I hereby certify that the lands subdivided upon this map of BROOKSIDE ADDITION to the City of Fortuna are in Humboldt County, California, and are within the limits of the incorporated City of Fortuna that there are no liens for unpaid State or County taxes against the lands thereon subdivided.
I further certify that I am the officer in charge of special assessments in unincorporated territory in said County and that the lands subdivided upon this map are not subject to any special assessments which have not been paid in full.

Nell M. Dick
County Auditor of Humboldt County, State of California.

I estimate that the taxes now a lien but not yet payable will amount to $ 245.22

Nell M. Dick
County Auditor of Humboldt County, State of California.
By J. Bumungo
Deputy

A certified check in the amount of $400.00 has been deposited with the Humboldt County Board of Supervisors to guarantee payment of taxes not yet payable.
Dated: Sept 20. 1954

Geo. J. Moore
Clerk of the Board of Supervisors Humboldt County, State of California.

We hereby certify that the lands subdivided upon this map of BROOKSIDE ADDITION to the City of Fortuna are in Humboldt County, California, and are within the limits of the incorporated City of Fortuna; that there are no liens for unpaid taxes levied by said City of Fortuna against the lands thereon subdivided, except taxes not yet payable. We further certify that we are the officers in charge of special assessment districts within the said City of Fortuna and that there are no special assessment districts within said City of Fortuna which would include the lands subdivided upon this map and that the lands subdivided upon this map are not subject to any special assessments which have not been paid in full.
Dated this 20th day of September 1954

Fay P. Callarman
City Clerk of the City of Fortuna, State of California.

Fay P. Callarman
City Tax Collector of the City of Fortuna, State of California.

I hereby certify that a certified check in the amount of $89.21 has been deposited with the City Assessor of the City of Fortuna to cover the current years taxes on the lands embraced on this map belonging to Wilbur T. Greer and Amy L. Greer, husband and wife, for the fiscal year ending June 30 1955

Fay P. Callarman
City Assessor of the City of Fortuna, State of California

OWNER'S CONSENT AND DEDICATION

We, Wilbur T. Greer and Amy L. Greer, husband and wife, declare that we are the sole owners of the land subdivided on this map consisting of one sheet; that there is no person other than ourselves except the holder of the outstanding Deed of Trust whose consent is necessary to pass a clear title to the subdivided lands, shown upon this map; that we caused this land to be surveyed and laid out as shown, and consent to and approve this map, and we hereby dedicate to the public use the sidewalk easement shown hereon, and the streets shown thereon.

Wilbur T. Greer
Amy L. Greer

State of California
County of Humboldt SS
On this 20th day of September 1954, before me, Eugene B. Lucas a Notary Public in and for the above County and State, personally appeared Wilbur T. Greer and Amy L. Greer, husband and wife, personally known to me to be the persons whose names are subscribed to the above consent and dedication, and acknowledged to me that they executed the same.
In witness whereof I have hereunto subscribed my name and affixed my official seal.

Eugene B. Lucas
Notary Public in and for the County of Humboldt, State of California
My Commission expires April 3 1956

MAP OF BROOKSIDE ADDITION TO THE CITY OF FORTUNA

HUMBOLDT COUNTY, CALIFORNIA
ONE SHEET

200-353-021

DEPARTMENT OF PUBLIC WORKS
COUNTY OF HUMBOLDT
MAILING ADDRESS: 1106 SECOND STREET, EUREKA, CA 95501-0579
AREA CODE 707/FAX 445-7409

ARCATA-EUREKA AIRPORT TERMINAL
McKINLEYVILLE
AVIATION 839-5401

PUBLIC WORKS BUILDING
SECOND & L ST., EUREKA

ADMINISTRATION	445-7491	NATURAL RESOURCES	445-7741
BUSINESS	445-7652	PARKS	445-7651
ENGINEERING	445-7377	ROADS & EQUIPMENT MAINT.	445-7421
ARCHITECT	445-7493		

CLARK COMPLEX
HARRIS & H ST., EUREKA
LAND USE 445-7205

January 10, 2005

Duane Rigge, City Manager
City of Fortuna
POB 545
Fortuna CA 95540

RE: ANNEXATION BY THE CITY OF FORTUNA OF COUNTY ROADS ADJACENT TO THE CITY OF FORTUNA

Allen Campbell, Director, Humboldt County Department of Public Works, has requested that I provide you some information. It is in response to a request by you associated with roads proposed for annexation that were discussed in our previous letters. The previous letters discussed the annexation of Strongs Creek Road (known by the City as Dinsmore Drive), Twelfth Street, a portion of Rohnerville Road, a portion of Eel River Drive, and Drake Hill Road.

The information requested was regarding the County's cost of maintenance of the roads over the last five years and what it would cost if the County was to perform the desired future maintenance of the surface of the roads. The following is a description of the road, the County's past cost of the maintenance of the road, and an estimate of the cost to maintain the roads to the desired standard. The desired standard of maintenance consists of sealing the roads at a 12 to 14 year period and resurfacing the roads every 25 years. The County cost for sealing a road is estimated to be $0.12 per square foot and a $1.30 per square foot for resurfacing a road. These are the prices used currently by the County in the estimation of costs for maintenance of new subdivision roads.

STRONGS CREEK ROAD

This portion of road lies south of the city limits of Fortuna to the intersection of Riverwalk Drive. The County has not spent any funds on this road for the last 5 years or longer. When the City annexed the portion of land at the end of the road, the then city manager of Fortuna provided a letter to LAFCO and the County indicating that they would maintain this portion of Strongs Creek Road for the County as consideration of approval of the annexation.

roads\cityoffo.doc

The portion of Strongs Creek Road in the County is approximately 640 feet in length and has an average width of 26 feet. The cost of sealing the road would be estimated at $2,000 and $21,632 for resurfacing the road at today's cost.

TWELFTH STREET

This portion of road lies within the limits of the CalTrans right of way for State Highway 101. It lies between the railroad tracks, over the overpass, to the intersection of Strongs Creek Road and Riverwalk Drive. The County entered into an agreement with CalTrans to be responsible for the surface of the road. CalTrans is responsible for the overpass structure.

The County has spent $37 over the last five years on this portion of road. The length of road is approximately 1,530 feet and has an average width of 30 feet. The cost of resealing the road is estimated at $5,500 and $69,670 for resurfacing the road.

ROHNERVILLE ROAD

This portion of road lies north of Loop Road to the south line of the park. The road has been presumed by the City to be located in the City. The Campton Heights and Fortuna High School annexations by the City appear to have not included this portion of road. The County has not been providing maintenance of the road. The road was presumed by the City to be within the city limits of Fortuna and has been maintained by the City for a number of years.

EEL RIVER DRIVE

This portion of road lies between Drake Hill Road and Kenmar Road. It does not front any developable property located in the County. CalTrans and NWP Railroad front the west side of the road. The entire east side of the road serves lands located in the City. It is approximately 0.93 mile in length and has an average width of 24 feet. The County has spent approximately $26,000 on this road in the last 5 years. The majority of the cost was associated with clean up of the movement of earth off of property owned by the City. The slide occurred in 2002.

The cost of resealing the road is estimated to be approximately $14,142 and $153,205 for resurfacing the road.

DRAKE HILL ROAD

This portion of road is located between Rohnerville Road and Eel River Drive. The City is located along the entire north side of the road. The north side of the road is zoned and planned for residential development. The south side of the road located in the County is mainly zoned and planned for agricultural use. The road is 1.25 miles in length and is approximately 22 feet in width. The County has spent approximately $79,000 in maintenance of this road in the last 5 years. Approximately $67,000 of the maintenance cost was associated with resurfacing Drake Hill Road between Thelma Drive and Rohnerville Road in 2002. This stretch of road is where the heaviest density of residential property is located within the City.

The cost of resealing the road is estimated to be approximately $17,424 and $188,760 is estimated for resurfacing the road.

If you have any additional questions regarding the roads or this letter, please don't hesitate to contact this office.

Sincerely,

Harless McKinley
Land Use Division
445-7205

roads\cityoffo.doc

US-101 PM 60.5
Vicinity of 12th St Overcrossing
R/W Boundries with City of Fortuna

Aerial.dgn 1/23/2007 11:30:53 AM

FREEWAY MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into, in duplicate, this 15th day of April, 1963, by and between the State of California, acting by and through the Department of Public Works, Division of Highways, hereinafter for convenience referred to as "the State", and the County of Humboldt, hereinafter for convenience referred to as "the County", witnesseth:

WHEREAS, on November 6, 1958, a Freeway Agreement was executed between the County and the State relating to the development of that portion of State Highway Route 1 in the County of Humboldt between 0.6 mile north of Route 35 and 0.3 mile north of Fortuna as a freeway, and

WHEREAS, under the provisions of said Freeway Agreement, the County agreed to certain adjustments in the County road system, and for the carrying of certain County roads over or under or to a connection with the freeway, and

WHEREAS, said freeway has now been completed or is nearing completion, and the parties mutually desire to clarify the division of maintenance responsibility as to separation structures, and County roads or portions thereof, within the freeway limits.

NOW, THEREFORE, IT IS AGREED:

1. ROADWAY SECTIONS

The County will maintain, at County expense, all portions of County roads and appurtenant structures and bordering areas, colored in yellow on the attached map marked Exhibit "A" and made a part hereof by this reference.

2. VEHICULAR OVERCROSSINGS

The State will maintain, at State expense, the entire structure below the top of the concrete deck surface, exclusive of any bituminous surface treatment thereof. The County will maintain, at County expense, the top of the concrete deck surface, together with any bituminous surface treatment thereon, and all portions of the structure above the concrete deck surface, and shall perform such other work as may be necessary to insure an impervious and otherwise suitable surface. The County will also maintain all traffic service facilities provided for the benefit or control of County road traffic.

3. VEHICULAR UNDERCROSSINGS

The State will maintain the structure proper. The roadway section, including the traveled way, shoulders, curbs, sidewalks, walls, drainage installations and traffic service facilities, will be maintained by the County.

4. EFFECTIVE DATE

This agreement shall be effective upon the date of its execution by the State; it being understood and agreed, however, that the execution of this agreement shall not affect any pre-existing obligations of the County to maintain designated areas pursuant to prior written notice from the State that work in such areas, which the County has agreed to maintain pursuant to the terms of the Freeway Agreement, has been completed.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

J. C. WOMACK
STATE HIGHWAY ENGINEER

By CHAS. E. WAITE
Deputy State Highway Engineer

APR 15 1963

COUNTY OF HUMBOLDT

By NORMAN R. ROBERTSON
Chairman, Board of Supervisors

~~By~~ FRED J. MOORE, Jr. (SEAL)
County Clerk

By W. E. SCHUSSMAN

Approval Recommended

SAM HELWER
District Engineer

EDWARD L. TINNEY
Maintenance Engineer

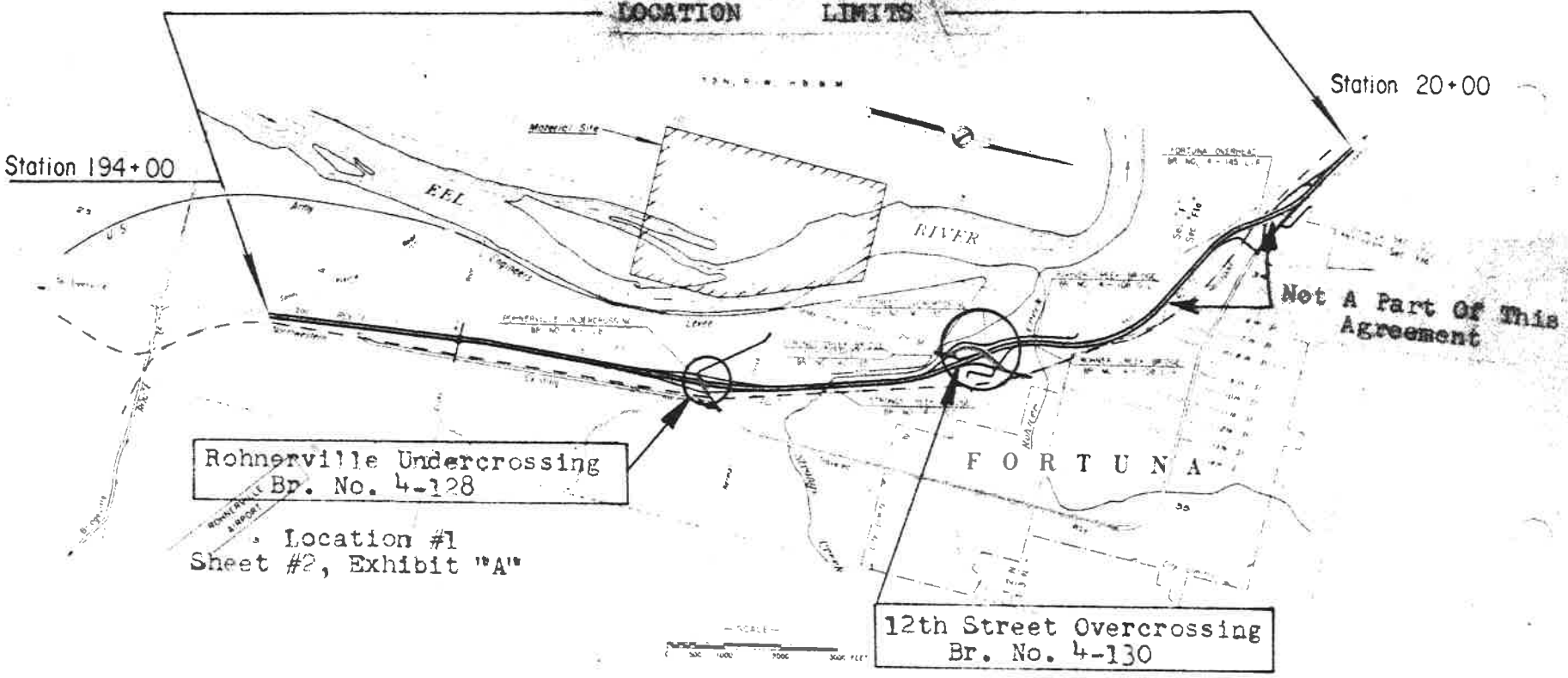
Approved as to form:

RICHARD C. EAST
Attorney for Department

Attorney

EXHIBIT "A"

In Humboldt County
between 0.4 mile north of Route 35 and 0.3 mile north of Fortuna
Road I-Hum-1-F,G
FREEWAY



AREA TO BE MAINTAINED BY COUNTY

VICINITY MAP
SHEET 1 OF 3

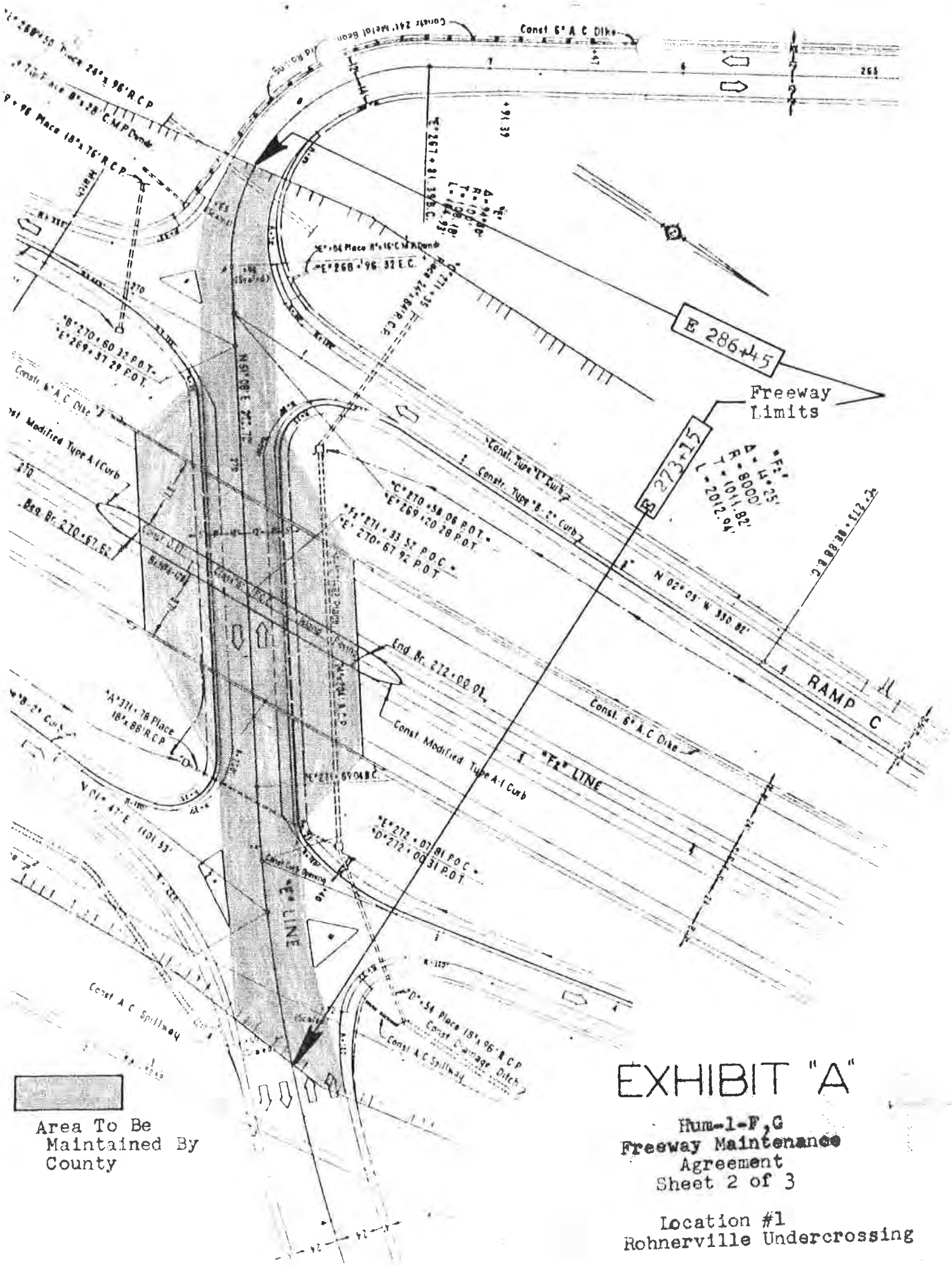
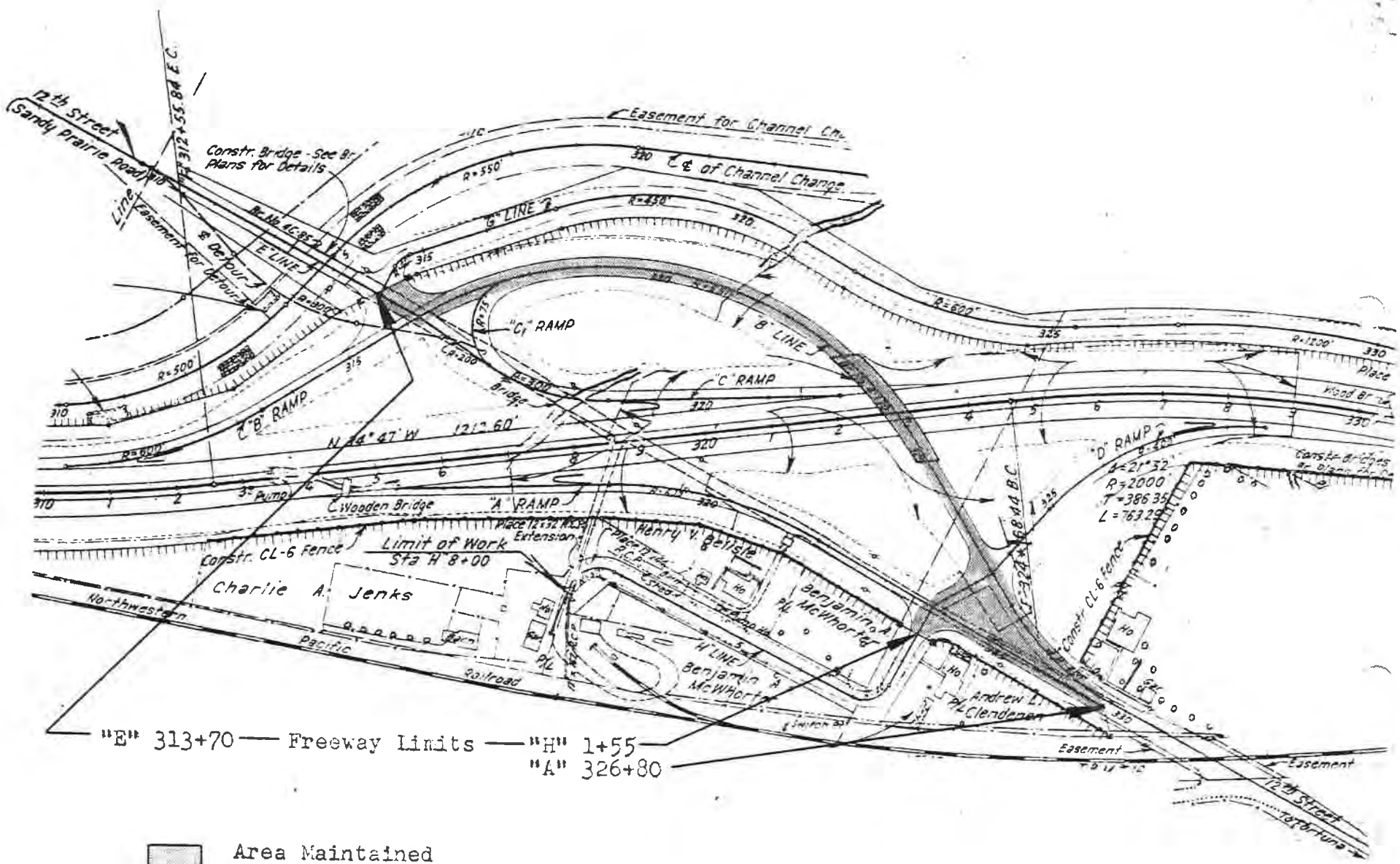


EXHIBIT "A"

Hum-1-F,G
Freeway Maintenance
Agreement
Sheet 2 of 3

Location #1
Rohnerville Undercrossing



Area Maintained
By County

EXHIBIT "A"
Hum-1-F,G
Freeway Maintenance
Agreement
Sheet 3 of 3

Location #2
12th Street Overcrossing


20035204
20035328
20035315
20101106
20101113
04033317
04033222
04033137
20103116
04033312
04033219
04033136
04033311
04033218
04033135
road
04033215
04033134
04033319
04033214
04033133
20035305
04033303
04033211
04033132
road
04033302
04033301
04033210
04033131
04033206
04033130
04033207
04033129
20038101
04033201
04033128
20035326
20035312
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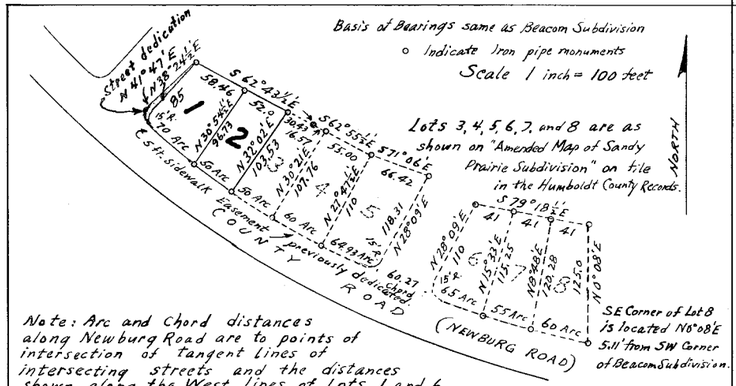
20038104
20133105
20038108
20035311
Hwy 101
20035202



Note: Arc and Chord distances along Newburg Road are to points of intersection of tangent lines of intersecting streets and the distances shown along the West lines of Lots 1 and 6 and along the East line of Lot 5 are to the same points of intersection on the arc of Newburg Road.

TRUSTEE'S AND BENEFICIARY'S CONSENT

The Continental Auxiliary Company, a Corporation and Bank of America National Trust & Savings Association being the Trustee and Beneficiary, respectively, named in that certain Deed of Trust made Nov. 4, 1954 1955 recorded in Book 314 of O.R. Page 609 of the Humboldt County Records, do hereby consent to the making and filing of this map and to the dedication of roads as shown thereon, and release all claims to said roads thereby designated.

Dated August 25 1955.

Signed
Continental Auxiliary Company,
a Corporation
By J. Toner

Signed
Bank of America
National Trust &
Savings Association
By A. Crager

ACKNOWLEDGEMENT

State of California } SS
County of Humboldt }

On this 27th day of Aug. 1955, before me, EUGENE B. LUCAS a Notary Public in and for said County, residing therein, duly commissioned and sworn, personally appeared E. TONER known to me to be the OFFICER of the corporation, that executed the within instrument and acknowledged to me that such corporation executed the same. In witness whereof, I have hereunto set my hand and affixed my official seal at my office in the said County of Humboldt, the day and year in this certificate first above written.

Eugene B Lucas
Notary Public in and for the
County of Humboldt, State of California.

My Commission Expires Apr 3 1956

ACKNOWLEDGEMENT

State of California } SS
County of Humboldt }

On this 27th day of Aug. 1955, before me, EUGENE B. LUCAS a Notary Public in and for said County, residing therein, duly commissioned and sworn, personally appeared E. TONER known to me to be the OFFICER of the Association, that executed the within instrument and acknowledged to me that such Association executed the same. In witness whereof, I have hereunto set my hand and affixed my official seal at my office in the said County of Humboldt, the day and year in this certificate first above written.

Eugene B Lucas
Notary Public in and for the
County of Humboldt, State of California.

My Commission Expires Apr 3 1956

SURVEYOR'S CERTIFICATE

I hereby certify that I made the Survey represented on this map and that the map is an accurate depiction thereof, and that there are sufficient monuments left on the ground from which the survey can be retraced, the character and location of which are shown on this sheet.

Witness my hand and seal this 25th day of August 1955.

Paul M. Schmook
Paul M. Schmook, Licensed Surveyor
No. 1282 for the State of California.

CITY CLERK'S & CITY ENGINEER'S CERTIFICATE

We, Paul M. Schmook, City Engineer, and Fay P. Callarman, City Clerk of the City of Fortuna in Humboldt County, California hereby certify that this SECOND AMENDED MAP OF SANDY PRAIRIE SUBDIVISION in the City of Fortuna consisting of one sheet has been examined by us, that the land subdivided is within the limits of said City of Fortuna, that the City Planning Commission did recommend that the City Council of the City of Fortuna approve the accompanying SECOND AMENDED MAP OF SANDY PRAIRIE SUBDIVISION, that we have examined the map and the data given thereon and the consent certificates and other parts thereof, and find the same correct and suitable and conformable to the provisions of the State laws regarding subdivision maps, and we approve the same and recommend to the Council of the City of Fortuna that they approve the map.

Dated this 27th day of August 1955.

By FAY P. CALLARMAN
Deputy Pat Machado
City Clerk of the City of Fortuna
Humboldt County, California

Paul M. Schmook
City Engineer of the City of Fortuna
Humboldt County, California

ACCEPTANCE

The City Council of the City of Fortuna, Humboldt County, California hereby approve the accompanying SECOND AMENDED MAP OF SANDY PRAIRIE SUBDIVISION in the City of Fortuna, and accept on behalf of the public the street dedication shown thereon.

All of which appears by an order duly passed and entered in minutes of the Council this 27th day of August 1955.

City Council of the City of Fortuna Humboldt County California

Carl C. Brown
R. A. Lippert
Wm. J. Rohlin
Fred Krieg

Attest: FAY P. CALLARMAN
By Deputy Pat Machado
City Clerk and Ex-officio Clerk of the City Council
of the City of Fortuna, California.

I HEREBY CERTIFY THAT A CERTIFIED CHECK IN THE AMOUNT OF $ None HAS BEEN DEPOSITED WITH THE CITY ASSESSOR OF THE CITY OF FORTUNA TO COVER THE CURRENT YEARS TAXES ON THE LANDS EMBRACED ON THIS MAP BELONGING TO WILBUR T. GREER AND AMY L. GREER, HUSBAND AND WIFE, FRED W. SCHOLES AND CLEO L. SCHOLES, HUSBAND AND WIFE AND JAMES R. STEWART AND BETTY L. STEWART, HUSBAND AND WIFE, FOR THE FISCAL YEAR ENDING June 30 1956.

FAY P. CALLARMAN
By Deputy Pat Machado
CITY ASSESSOR OF THE CITY OF FORTUNA, STATE OF CALIFORNIA.

TAX AND ASSESSMENT CERTIFICATE

I HEREBY CERTIFY THAT THE LANDS SUBDIVIDED UPON THIS SECOND AMENDED MAP OF SANDY PRAIRIE SUBDIVISION IN THE CITY OF FORTUNA ARE IN HUMBOLDT COUNTY, CALIFORNIA, AND ARE WITHIN THE LIMITS OF THE INCORPORATED CITY OF FORTUNA, THAT THERE ARE NO LIENS FOR UNPAID STATE OR COUNTY TAXES AGAINST THE LANDS THEREON SUBDIVIDED.

I FURTHER CERTIFY THAT I AM THE OFFICER IN CHARGE OF SPECIAL ASSESSMENTS IN UNINCORPORATED TERRITORY IN SAID COUNTY AND THAT THE LANDS SUBDIVIDED UPON THIS MAP ARE NOT SUBJECT TO ANY SPECIAL ASSESSMENTS WHICH HAVE NOT BEEN PAID IN FULL.

Joseph W. Cummings
COUNTY AUDITOR OF HUMBOLDT COUNTY, STATE OF CALIFORNIA.

I ESTIMATE THAT THE TAXES NOW A LIEN BUT NOT YET PAYABLE WILL AMOUNT TO $ 23.47

COUNTY AUDITOR OF HUMBOLDT COUNTY, STATE OF CALIFORNIA.
BY Noel Long DEPUTY.

A CERTIFIED CHECK IN THE AMOUNT OF $ — HAS BEEN DEPOSITED WITH THE HUMBOLDT COUNTY BOARD OF SUPERVISORS TO GUARANTEE PAYMENT OF TAXES NOT YET PAYABLE. TAX BOND PAID BY BROOKSIDE ADDITION ON 8-29 1955.

Fred Moore
CLERK OF THE BOARD OF SUPERVISORS, HUMBOLDT COUNTY, STATE OF CALIFORNIA.

WE HEREBY CERTIFY THAT THE LANDS SUBDIVIDED UPON THIS SECOND AMENDED MAP OF SANDY PRAIRIE SUBDIVISION IN THE CITY OF FORTUNA ARE IN HUMBOLDT COUNTY, CALIFORNIA, AND ARE WITHIN THE LIMITS OF THE INCORPORATED CITY OF FORTUNA; THAT THERE ARE NO LIENS FOR UNPAID TAXES LEVIED BY SAID CITY OF FORTUNA AGAINST THE LANDS THEREON SUBDIVIDED, EXCEPT TAXES NOT YET PAYABLE.

WE FURTHER CERTIFY THAT WE ARE THE OFFICERS IN CHARGE OF SPECIAL ASSESSMENT DISTRICTS WITHIN THE SAID CITY OF FORTUNA AND THAT THERE ARE NO SPECIAL ASSESSMENT DISTRICTS WITHIN SAID CITY OF FORTUNA WHICH WOULD INCLUDE THE LANDS SUBDIVIDED UPON THIS MAP AND THAT THE LANDS SUBDIVIDED UPON THIS MAP ARE NOT SUBJECT TO ANY SPECIAL ASSESSMENTS WHICH HAVE NOT BEEN PAID IN FULL.

DATED THIS 27th DAY OF August 1955.

FAY P. CALLARMAN
BY DEPUTY Pat Machado
CITY CLERK OF THE CITY OF FORTUNA, STATE OF CALIFORNIA.

FAY P. CALLARMAN
BY DEPUTY Pat Machado
CITY TAX COLLECTOR OF THE CITY OF FORTUNA, STATE OF CALIFORNIA.

OWNER'S CONSENT AND DEDICATION

WE, WILBUR T. GREER AND AMY L. GREER, HUSBAND AND WIFE, FRED W. SCHOLES AND CLEO L. SCHOLES, HUSBAND AND WIFE AND JAMES R. STEWART AND BETTY L. STEWART, HUSBAND AND WIFE, DECLARE THAT WE ARE THE OWNERS OF THE LAND SUBDIVIDED ON THIS MAP CONSISTING OF ONE SHEET; THAT THERE IS NO PERSON OTHER THAN OURSELVES EXCEPT THE HOLDER OF THE OUTSTANDING DEED OF TRUST WHOSE CONSENT IS NECESSARY TO PASS A CLEAR TITLE TO THE SUBDIVIDED LANDS SHOWN UPON THIS MAP; THAT WE CONSENT TO AND APPROVE THIS MAP, AND WE HEREBY DEDICATE TO THE PUBLIC USE THE STREET SHOWN HEREON.

Fred W. Scholes
Cleo L. Scholes
James R. Stewart
Betty L. Stewart
Wilbur T. Greer
Amy L. Greer

STATE OF CALIFORNIA }
COUNTY OF HUMBOLDT } SS

ON THIS 27th DAY OF August 1955, BEFORE ME, EUGENE B. LUCAS A NOTARY PUBLIC IN AND FOR THE ABOVE COUNTY AND STATE, PERSONALLY APPEARED WILBUR T. GREER AND AMY L. GREER, HUSBAND AND WIFE, FRED W. SCHOLES AND CLEO L. SCHOLES, HUSBAND AND WIFE AND JAMES R. STEWART AND BETTY L. STEWART, HUSBAND AND WIFE, PERSONALLY KNOWN TO ME TO BE THE PERSONS WHOSE NAMES ARE SUBSCRIBED TO THE ABOVE CONSENT AND DEDICATION, AND ACKNOWLEDGED TO ME THA THEY EXECUTED THE SAME.

IN WITNESS WHEREOF I HAVE HEREUNTO SUBSCRIBED MY NAME AND AFFIXED MY OFFICIAL SEAL.

Eugene B Lucas
NOTARY PUBLIC IN AND FOR COUNTY OF HUMBOLDT, STATE OF CALIFORNIA.

MY COMMISSION EXPIRES Apr 3 1956

13778

FILED AT THE REQUEST OF Humboldt Land Title Co. THIS 2nd DAY OF September 1955, AT 44 MIN. PAST 3 O'CLOCK P. M.

SIGNED
Emma Lee Clark
COUNTY RECORDER, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA.

Fee $1.00 BY Fancy Keeling DEPUTY.

Second Amended Map of
Lots 1 & 2
SANDY PRAIRIE SUBDIVISION
in the CITY OF FORTUNA
HUMBOLDT COUNTY, CALIFORNIA
ONE SHEET

RECORDING REQUESTED BY:
HUMBOLDT COUNTY
DEPARTMENT OF PUBLIC WORKS

AFTER RECORDING RETURN TO:
DEPARTMENT OF PUBLIC WORKS
3033 H STREET
EUREKA CA 95501

1999-8138-4
Recorded — Official Records
Humboldt County, California
Carolyn Crnich, Recorder
Recorded by HUMBOLDT CNTY
Exempt from payment of fees
Clerk: MM Total: 0.00
Mar 16, 1999 at 13:01

RE: NEWBURG ROAD,
CO. RD. 3H115
APN 200-411-43

EASEMENT DEED

DONALD R. SCHOENHOFER and STACEY S. SCHOENHOFER, husband and wife, convey to the COUNTY OF HUMBOLDT, a political subdivision of the State of California, an easement for public highway purposes and incidents thereto over the following described land in the unincorporated area of the County of Humboldt, State of California, described as:

(SEE ATTACHED EXHIBIT "A")

Dated this 5th day of February, 1999.

OWNERS:

DONALD R. SCHOENHOFER

STACEY ~~C.~~ S SCHOENHOFER

(1)

NOTARY ACKNOWLEDGMENT

STATE OF California)
: SS
COUNTY OF Humboldt)

Capacity claimed by signer:
☑Individual; ☐Trustee(s); ☐Attorney-in-Fact; ☐Guardian/Conservator;
☐Corporate Officer(s) _____ Title(s);
☐Partner(s) -- ☐Limited, ☐General
☐Other _____

On February 5, 1999 before me, S. Holcomb, a Notary Public in and for said State, personally appeared Donald R. Schoenhofer and Stacey S. Schoenhofer ☑ personally known to me --*or*-- ☐ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

S. Mhl
(Signature of Notary)
County of Humboldt
My commission expires 8-30-01

S. HOLCOMB
Comm. #1149936
NOTARY PUBLIC
HUMBOLDT COUNTY, CALIFORNIA
My commission expires Aug. 30, 2001

f:pwrk\agg&deed\schoenhofer\20041143.ded

EXHIBIT A

That real property situated in the County Of Humboldt, State of California, described as follows:

That portion of the Southeast Quarter of Section 36, Township 3 North, Range 1 West, Humboldt Meridian, more particularly described as follows:

Beginning on the South Line of the Southeast Quarter of said Section 36 at a point thereon South 89 Degrees 52 minutes, 36 seconds East, 1543.99 Feet from the Southwest corner of said Southeast Quarter.

Thence North 25 Degrees, 27 minutes, West, 1861.03 Feet;

Thence North 19 Degrees, 52 minutes, West, 50.93 Feet;

Thence North 33 Degrees, 52 minutes, 21 seconds, West, 77.67 Feet;

Thence North 36 Degrees, 26 minutes, West, 41.50 Feet

Thence North 26 Degrees, 50 minutes, 12 seconds, West, 30.0 Feet

Thence North 36 Degrees, 26 minutes, West, 137.34 Feet to the Southerly line of the county road known as Newburg Road and the **True Point Of Beginning.**

Thence North 36 Degrees, 31 minutes, 11 seconds, West, 23.52 Feet;

Thence North 53 Degrees, 48 minutes, 46 seconds, East, 179.73 Feet;

Thence South 36 Degrees, 31 minutes, 58 seconds, East, 25.00 Feet;

Thence South 53 Degrees, 48 minutes, 46 seconds, West, 179.73 Feet;

Thence North 36 Degrees, 31 minutes, 11 seconds, West, 1.48 Feet to the **True Point Of Beginning.**

Basis Of Bearing From
Book 58 Of Surveys, Page 93, Humboldt County Records

LICENSED LAND SURVEYOR
RAYMOND G. HABERSTOCK
No. 3431
STATE OF CALIFORNIA

Exp. 6/2000

1999-8138-4

This is to certify that the interest in real property conveyed by the **EASEMENT DEED** dated February 5, 1999, from **DONALD R. SCHOENHOFER** and **STACEY S. SCHOENHOFER**, husband and wife, to the **COUNTY OF HUMBOLDT**, a political subdivision of the State of California, is hereby accepted by the Grantee. The Grantee consents to recordation thereof. Such acceptance and consent to recordation are made pursuant to Resolution No. 99-1, dated January 5, 1999, and Board Order No. C-15, dated March 9, 1999.

Stan Dixon

STAN DIXON, Chair of the Humboldt
County Board of Supervisors

ATTEST:

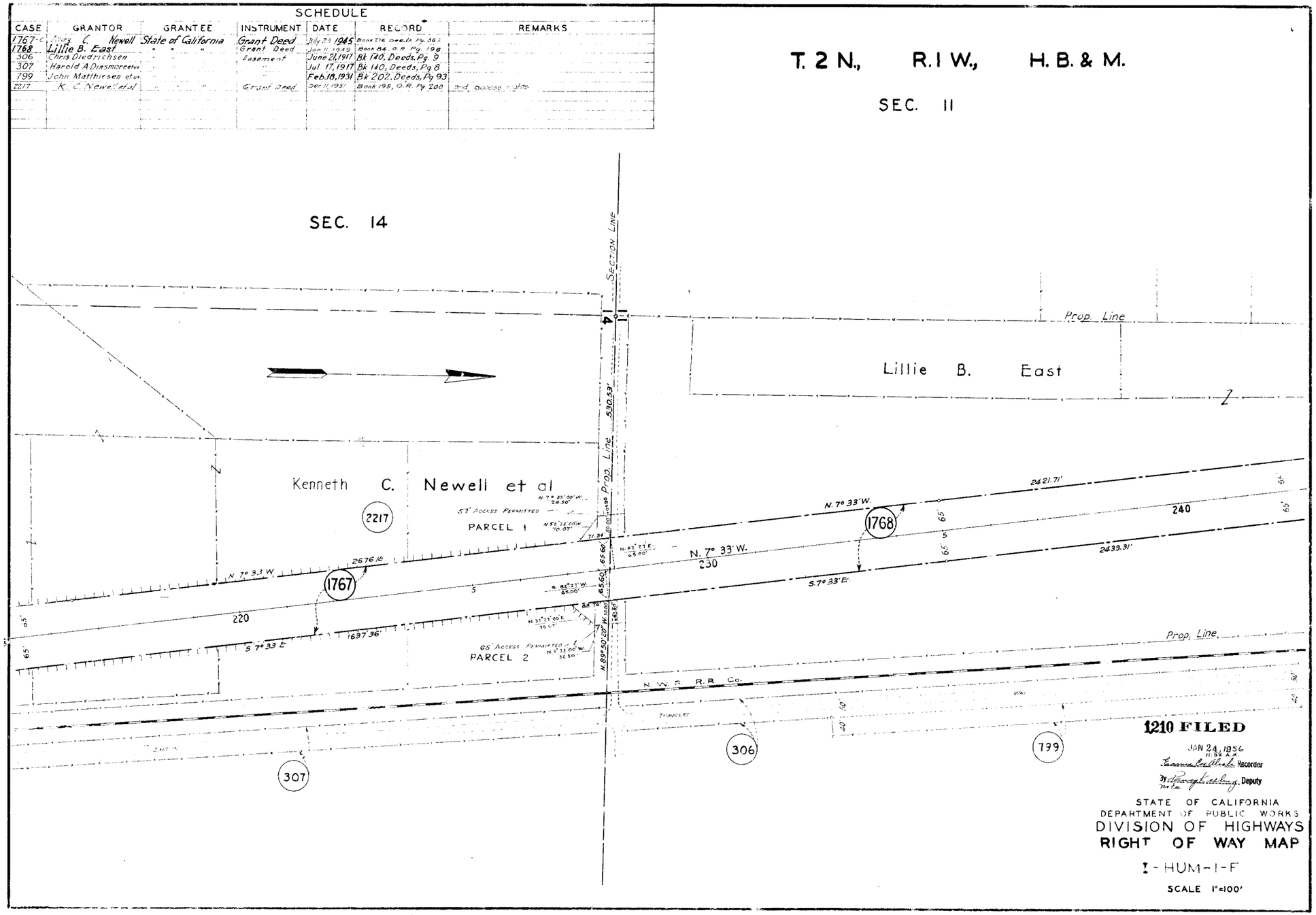
LORA CANZONERI
Clerk of the Board of
Supervisors

Lora Canzoneri

March 9, 1999

SCHEDULE

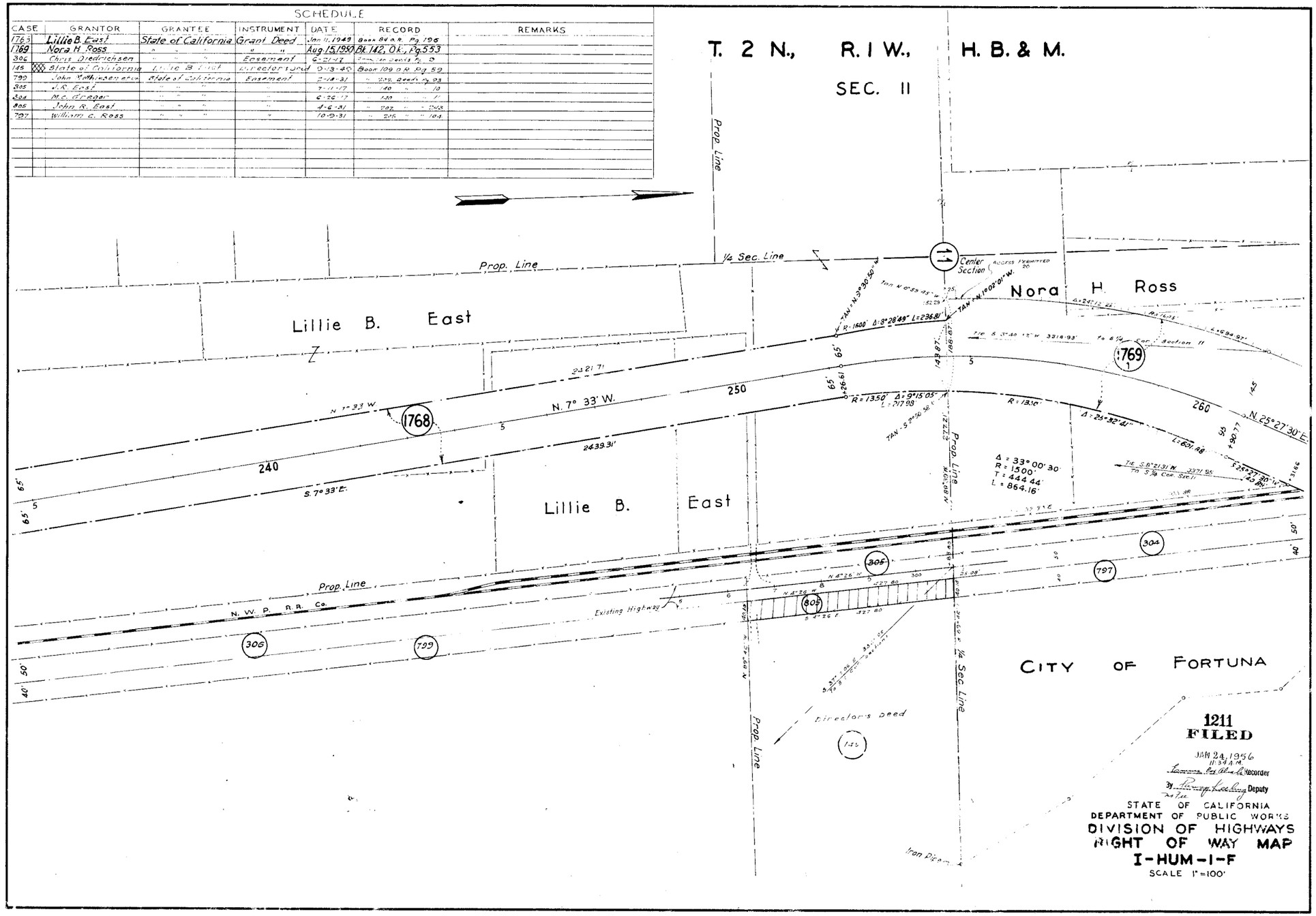
CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
1767-C	Kenneth C. Newell	State of California	Grant Deed	July 25 1945	Book 216 Deeds Pg. 365	
1768	Lillie B. East	" " "	Grant Deed	Jan 11 1949	Book 84 O.R. Pg. 198	
306	Chris Diedrichsen	" "	Easement	June 21, 1917	Bk 140, Deeds, Pg. 9	
307	Harold A Dinsmore et ux	" "	"	Jul 17, 1917	Bk 140, Deeds, Pg 8	
799	John Matthiesen et ux	" "	"	Feb. 18, 1931	Bk 202, Deeds, Pg 93	
2217	K. C. Newell et al	" " "	Grant Deed	Dec 11, 1951	Book 195, O.R. Pg 200	and access rights



HIGHWAY MAPS # 3 PAGE 147

SCHEDULE

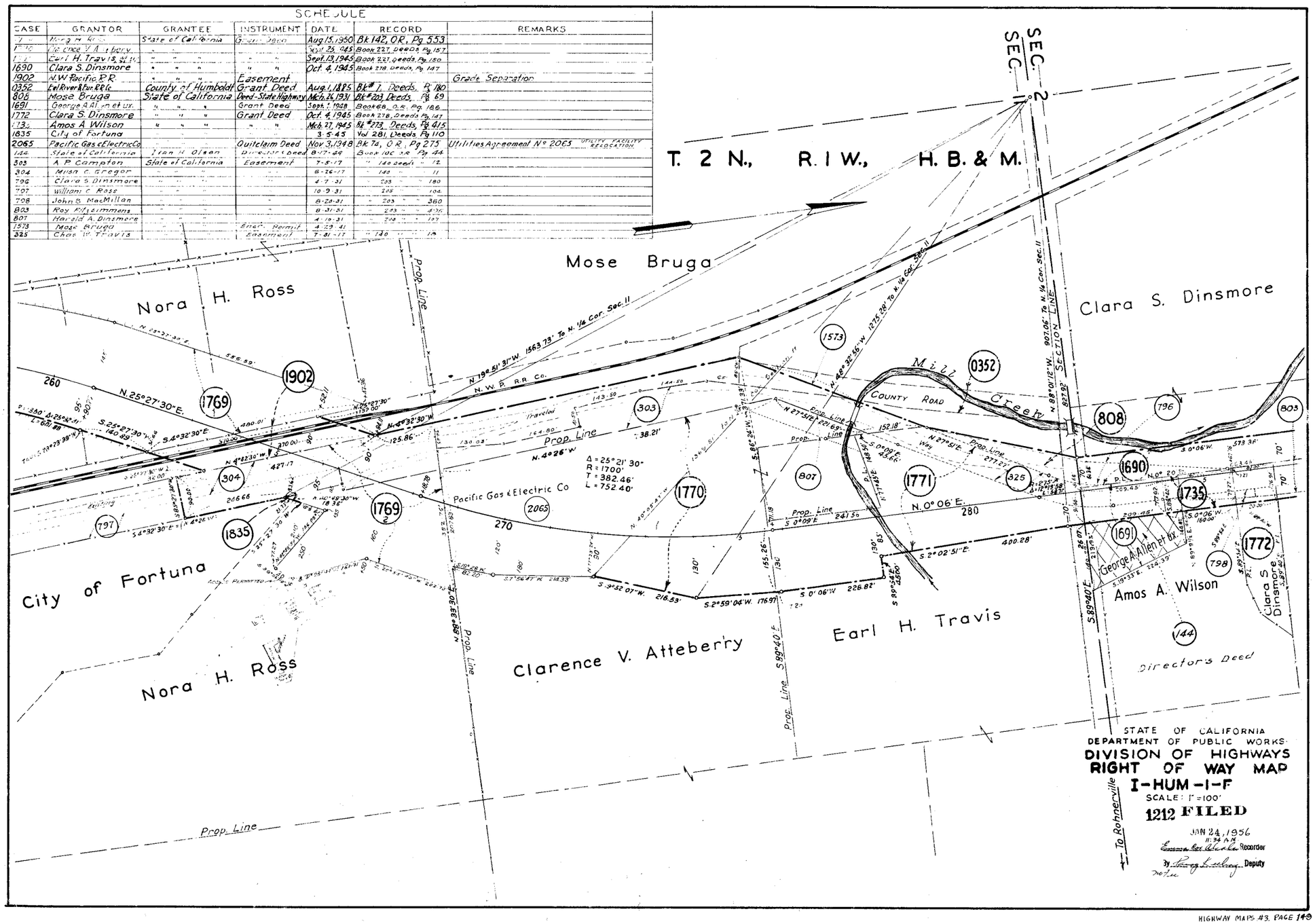
CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
1763	Lillie B. East	State of California	Grant Deed	Jan 11, 1949	Book 84 O.R. Pg 196	
1769	Nora H Ross	" " "	" "	Aug 15, 1950	Bk 142, Off. Pg 553	
306	Chris Diedrichsen	" " "	Easement	6-21-17	Book 10 Deeds Pg 3	
145	State of California	L. to B. East	Director's Deed	0-13-40	Book 109 O.R. Pg 59	
799	John Mathiesen et ux	State of California	Easement	2-18-31	" 270, Deeds Pg 93	
305	J.R. East	" " "	"	7-11-17	" 140 " " 10	
304	M.C. Gregar	" " "	"	6-26-17	" 130 " " 11	
805	John R. East	" " "	"	4-6-31	" 207 " " 248	
797	William C. Ross	" " "	"	10-9-31	" 205 " " 104	



HIGHWAY MAPS #3, PAGE 148

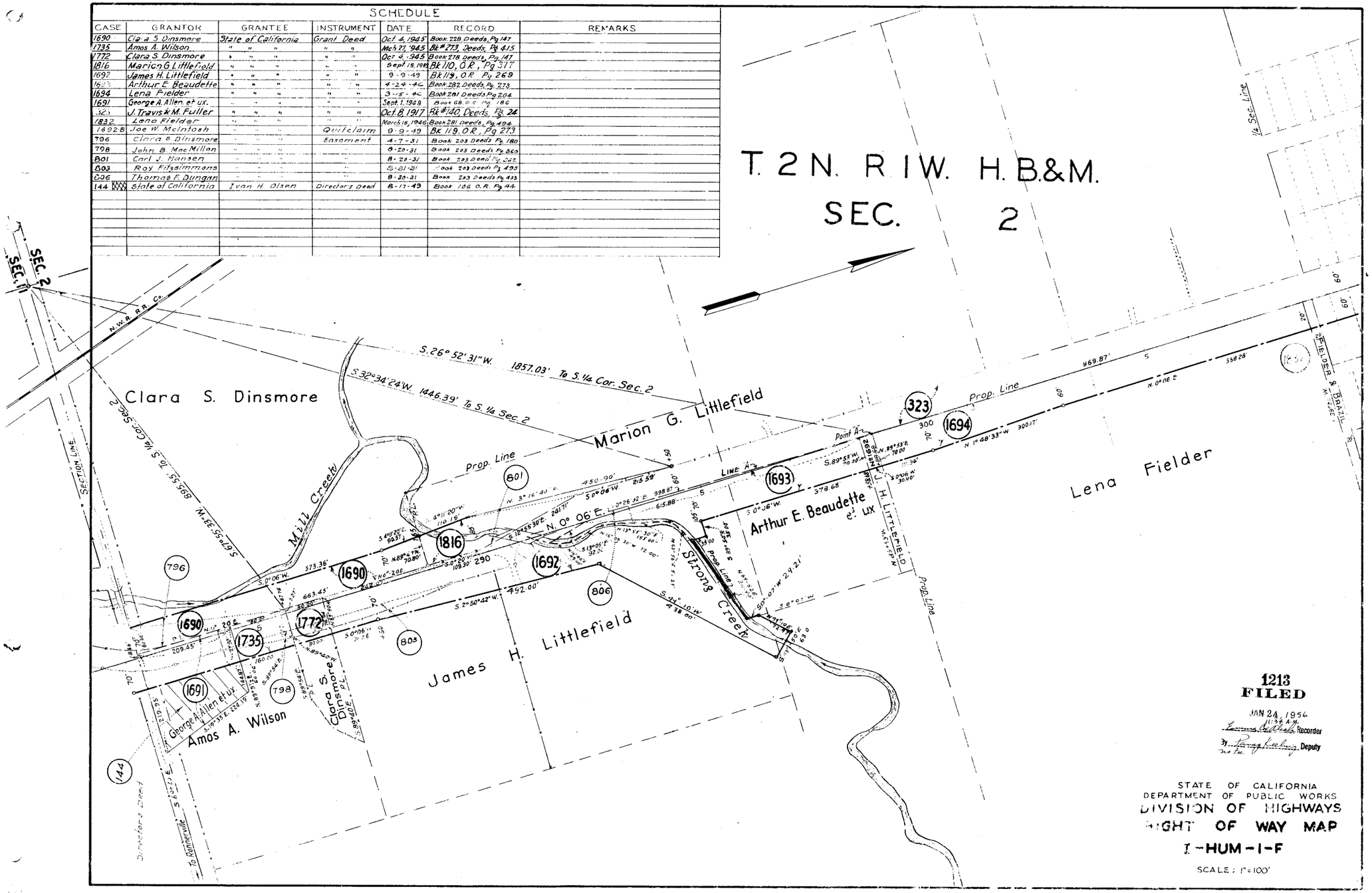
SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
1	Morgan Kane	State of California	Grant Deed	Aug 15, 1950	Bk 142, OR, Pg 553	
1[illegible]10	Clarence V. Atteberry	" "	" "	Sept 26, 1945	Book 227, Deeds Pg 157	
1[illegible]	Earl H. Travis, et ux	" "	" "	Sept. 13, 1945	Book 227, Deeds Pg 150	
1690	Clara S. Dinsmore	" " "	" "	Oct. 4, 1945	Book 278, Deeds, Pg 147	
1902	N.W. Pacific R.R.	" " "	Easement			Grade Separation
0352	Eel River & Pac. RR Co.	County of Humboldt	Grant Deed	Aug 1, 1895	Bk #7, Deeds, Pg 180	
808	Mose Bruga	State of California	Deed-State Highway	Mch. 26, 1931	Bk #203, Deeds, Pg 69	
1691	George A. Allen et ux.	" " "	Grant Deed	Sept. 1, 1928	Book 68, O.R. Pg. 186	
1772	Clara S. Dinsmore	" " "	Grant Deed	Oct. 4, 1945	Book 278, Deeds Pg. 141	
1735	Amos A. Wilson	" " "	" "	Mch. 27, 1945	Bk #273, Deeds, Pg 415	
1835	City of Fortuna	" " "	" "	3-5-45	Vol 281, Deeds Pg 110	
2065	Pacific Gas & Electric Co	" " "	Quitclaim Deed	Nov 3, 1948	Bk 7a, O.R., Pg 275	Utilities Agreement No 2065 UTILITY FACILITY RELOCATION
144	State of California	Tran H. Olsen	Director's Deed	8-17-49	Book 10C O.R. Pg 44	
303	A. P. Compton	State of California	Easement	7-5-17	" 140 Deeds " 12	
304	Milan C. Gregor	" " "	" "	6-26-17	" 140 " " 11	
796	Clara S. Dinsmore	" " "	" "	4-7-31	" 203 " " 180	
797	William C. Ross	" " "	" "	10-9-31	" 203 " " 104	
798	John B. MacMillan	" " "	" "	8-28-31	" 203 " " 360	
803	Roy Fitzsimmons	" " "	" "	8-31-31	" 203 " " 436	
807	Harold A. Dinsmore	" " "	" "	4-10-31	" 203 " " 187	
1573	Mose Bruga	" " "	Encr. Permit	4-29-31		
325	Chas. W. Travis	" " "	Easement	7-31-17	" 140 " " 19	



SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
1690	Clara S Dinsmore	State of California	Grant Deed	Oct 4, 1945	Book 228 Deeds, Pg 147	
1735	Amos A. Wilson	" " "	" "	Mch 27, 1945	Bk # 273, Deeds, Pg 415	
1772	Clara S Dinsmore	" " "	" "	Oct 4, 1945	Book 228 Deeds, Pg 147	
1816	Marion G Littlefield	" " "	" "	Sept 15, 1949	Bk 110, O.R., Pg 317	
1692	James H. Littlefield	" " "	" "	9-9-49	Bk 119, O.R. Pg 269	
1693	Arthur E Beaudette	" " "	" "	4-24-46	Book 287 Deeds, Pg 273	
1694	Lena Fielder	" " "	" "	3-15-46	Book 281 Deeds Pg 204	
1691	George A. Allen et ux.	" " "	" "	Sept. 1, 1928	Book 68 O.R. Pg 186	
323	J. Travis & M. Fuller	" " "	" "	Oct 8, 1917	Bk # 140, Deeds, Pg 24	
1832	Lena Fielder	" " "	" "	March 15, 1946	Book 281 Deeds, Pg 494	
1892 B	Joe W McIntosh	" " "	Quitclaim	9-9-49	Bk 119, O.R., Pg 273	
796	Clara S Dinsmore	" " "	Easement	4-7-31	Book 203 Deeds Pg 180	
798	John B. MacMillan	" " "	"	8-20-31	Book 203 Deeds Pg 260	
801	Carl J. Hansen	" " "	"	8-28-31	Book 203 Deeds Pg 282	
803	Ray Fitzsimmons	" " "	"	8-21-31	Book 203 Deeds Pg 495	
806	Thomas F. Dungan	" " "	"	8-30-31	Book 203 Deeds Pg 433	
144	State of California	Ivan H Olsen	Directors Deed	8-17-49	Book 106 O.R. Pg 44	



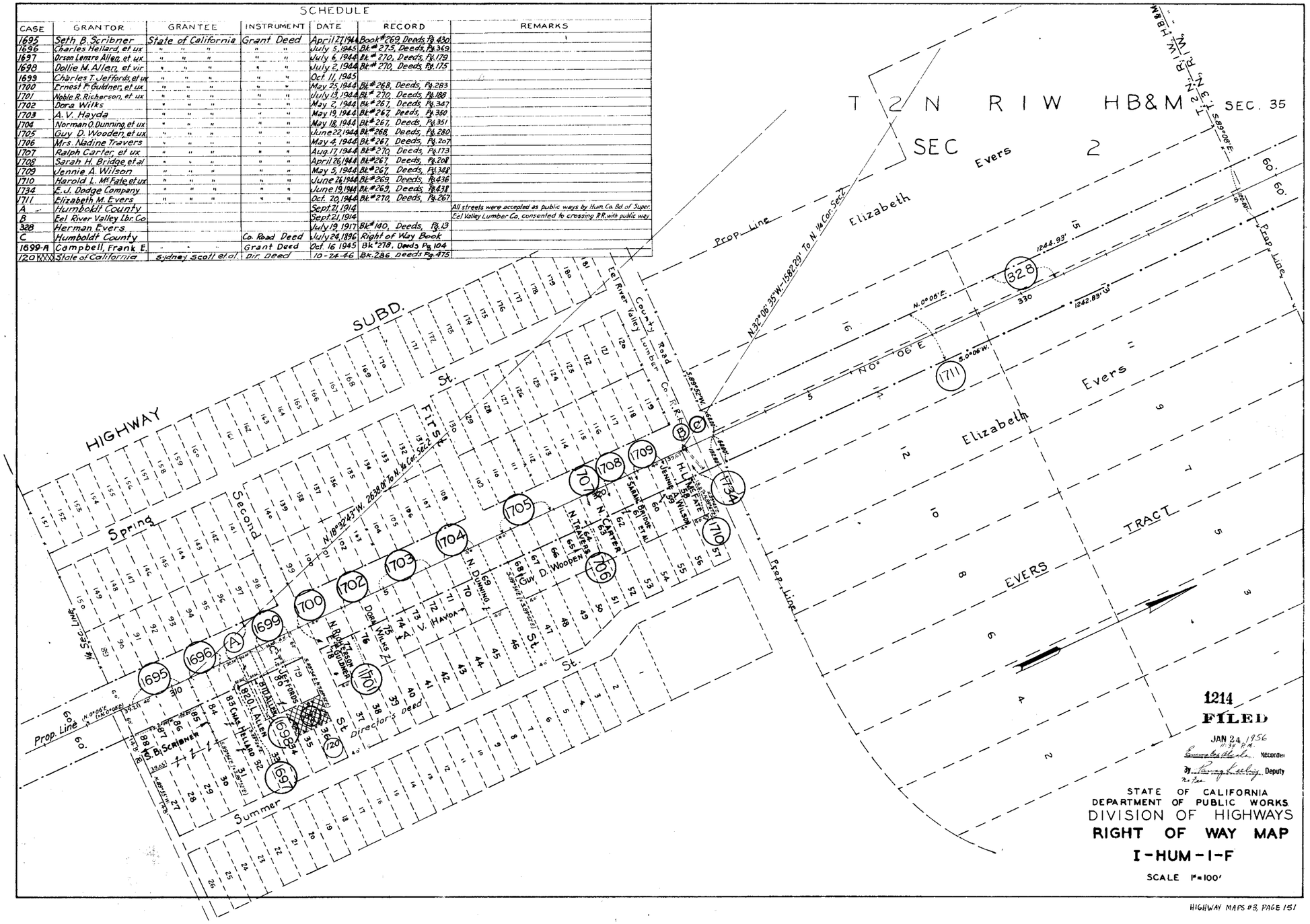
1213
FILED
JAN 24, 1956
11:34 A.M.
Recorder
By Deputy

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
RIGHT OF WAY MAP
I-HUM-1-F
SCALE: 1"=100'

HIGHWAY MAPS #3, PAGE 150

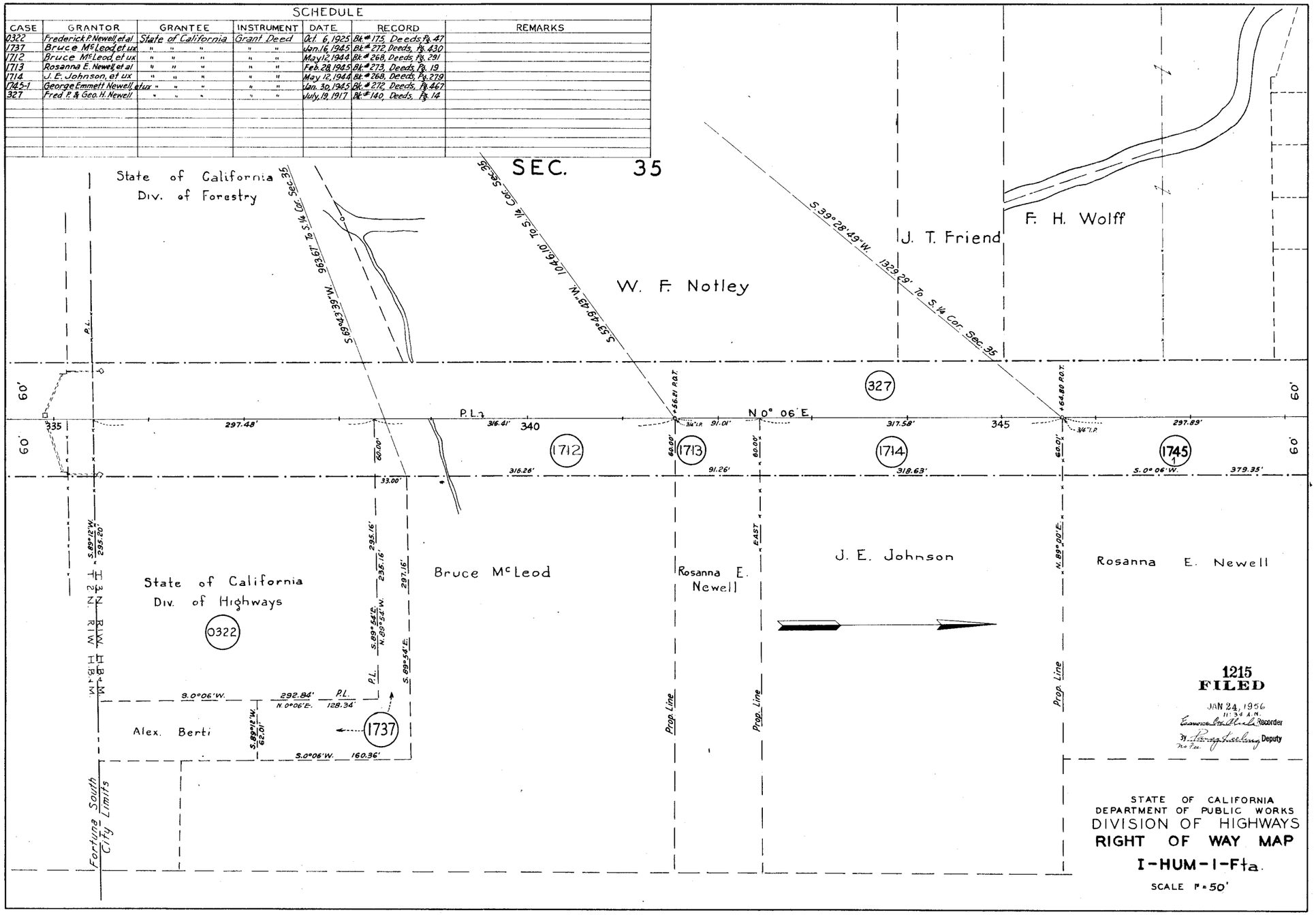
SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
1695	Seth B. Scribner	State of California	Grant Deed	April 27, 1944	Book #269 Deeds, Pg. 430	
1696	Charles Hellard, et ux	" " "	" "	July 5, 1945	Bk. # 275, Deeds, Pg. 349	
1697	Orsen Lentre Allen, et ux	" " "	" "	July 6, 1944	Bk. # 270, Deeds, Pg. 179	
1698	Dollie M. Allen, et vir	" " "	" "	July 2, 1944	Bk. # 270, Deeds, Pg. 175	
1699	Charles T. Jeffords, et ux	" " "	" "	Oct. 11, 1945		
1700	Ernest F. Guldner, et ux	" " "	" "	May 25, 1944	Bk. # 268, Deeds, Pg. 283	
1701	Noble R. Richerson, et ux	" " "	" "	July 13, 1944	Bk. # 270, Deeds, Pg. 188	
1702	Dora Wilks	" " "	" "	May 2, 1944	Bk. # 267, Deeds, Pg. 347	
1703	A. V. Hayda	" " "	" "	May 19, 1944	Bk. # 267, Deeds, Pg. 350	
1704	Norman O. Dunning, et ux	" " "	" "	May 18, 1944	Bk. # 267, Deeds, Pg. 351	
1705	Guy D. Wooden, et ux	" " "	" "	June 22, 1944	Bk. # 268, Deeds, Pg. 280	
1706	Mrs. Nadine Travers	" " "	" "	May 4, 1944	Bk. # 267, Deeds, Pg. 207	
1707	Ralph Carter, et ux	" " "	" "	Aug. 17, 1944	Bk. # 270, Deeds, Pg. 173	
1708	Sarah H. Bridge, et al	" " "	" "	April 26, 1944	Bk. # 267, Deeds, Pg. 208	
1709	Jennie A. Wilson	" " "	" "	May 5, 1944	Bk. # 267, Deeds, Pg. 348	
1710	Harold L. McFate, et ux	" " "	" "	June 26, 1944	Bk. # 269, Deeds, Pg. 436	
1734	E. J. Dodge Company	" " "	" "	June 19, 1944	Bk. # 269, Deeds, Pg. 431	
1711	Elizabeth M. Evers	" " "	" "	Oct. 20, 1944	Bk. # 270, Deeds, Pg. 267	
A	Humboldt County			Sept. 21, 1914		All streets were accepted as public ways by Hum. Co. Bd. of Super.
B	Eel River Valley Lbr. Co.			Sept. 21, 1914		Eel Valley Lumber Co. consented to crossing P.R. with public way.
328	Herman Evers			July 19, 1917	Bk. # 140, Deeds, Pg. 13	
C	Humboldt County		Co. Road Deed	July 24, 1896	Right of Way Book	
1699-A	Campbell, Frank E.	" " "	Grant Deed	Oct. 16 1945	Bk. #278, Deeds Pg. 104	
120	State of California	Sydney Scott et al	Dir. Deed	10-24-46	Bk. 286 Deeds Pg. 475	



HIGHWAY MAPS #3, PAGE 151

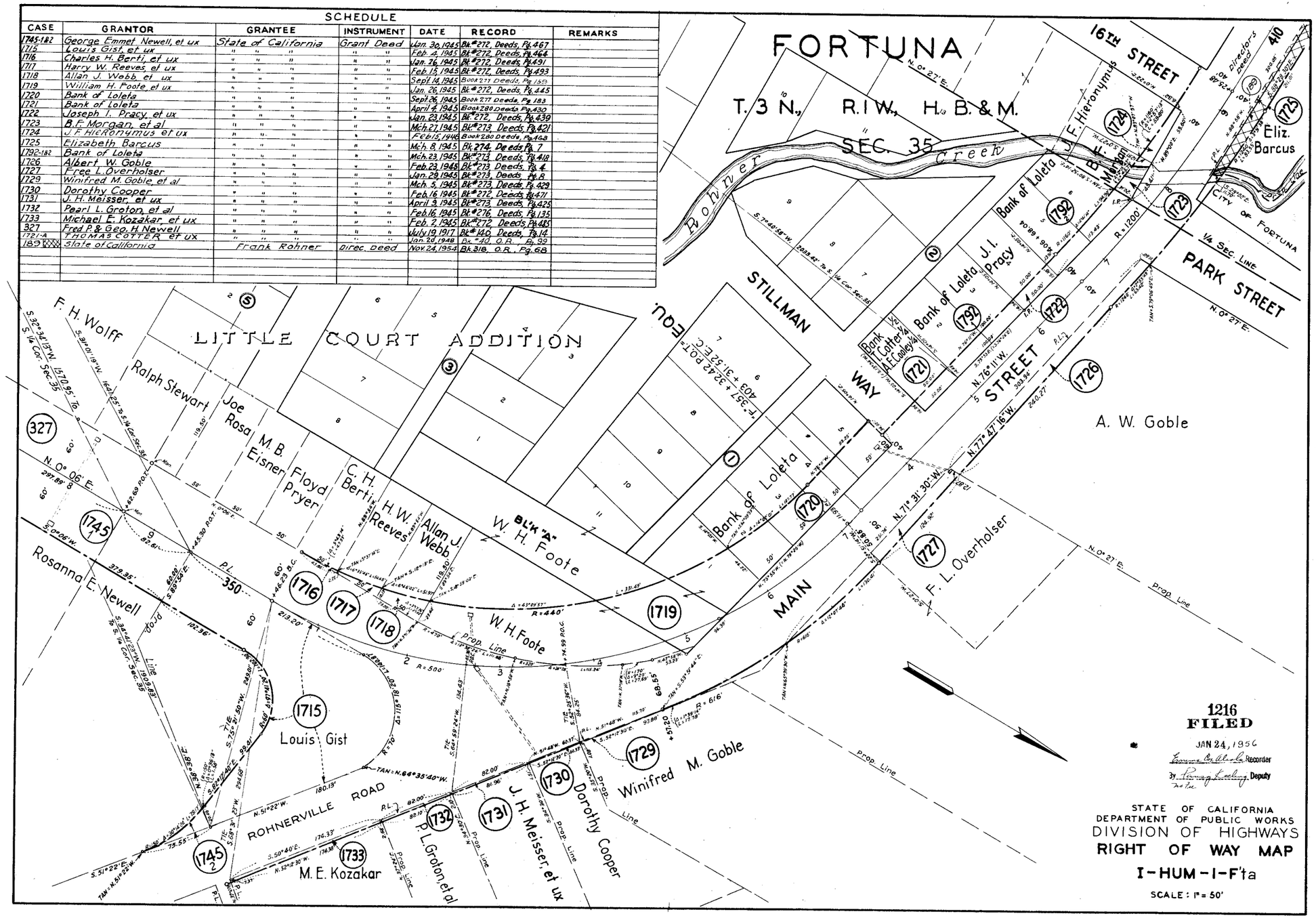
SCHEDULE						
CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
0322	Frederick P. Newell et al	State of California	Grant Deed	Oct 6, 1925	Bk. # 175, Deeds Pg. 47	
1737	Bruce McLeod et ux	" " "	" "	Jan. 16, 1945	Bk. # 272, Deeds, Pg. 430	
1712	Bruce McLeod et ux	" " "	" "	May 12, 1944	Bk. # 268, Deeds, Pg. 291	
1713	Rosanna E. Newell et al	" " "	" "	Feb. 28, 1945	Bk. # 273, Deeds, Pg. 19	
1714	J. E. Johnson, et ux	" " "	" "	May 12, 1944	Bk. # 268, Deeds, Pg. 279	
1745-1	George Emmett Newell, et ux	" " "	" "	Jan. 30, 1945	Bk. # 272, Deeds, Pg. 467	
327	Fred P. & Geo. H. Newell	" " "	" "	July 19, 1917	Bk. # 140, Deeds, Pg. 14	



HIGHWAY MAPS #3, PAGE 152

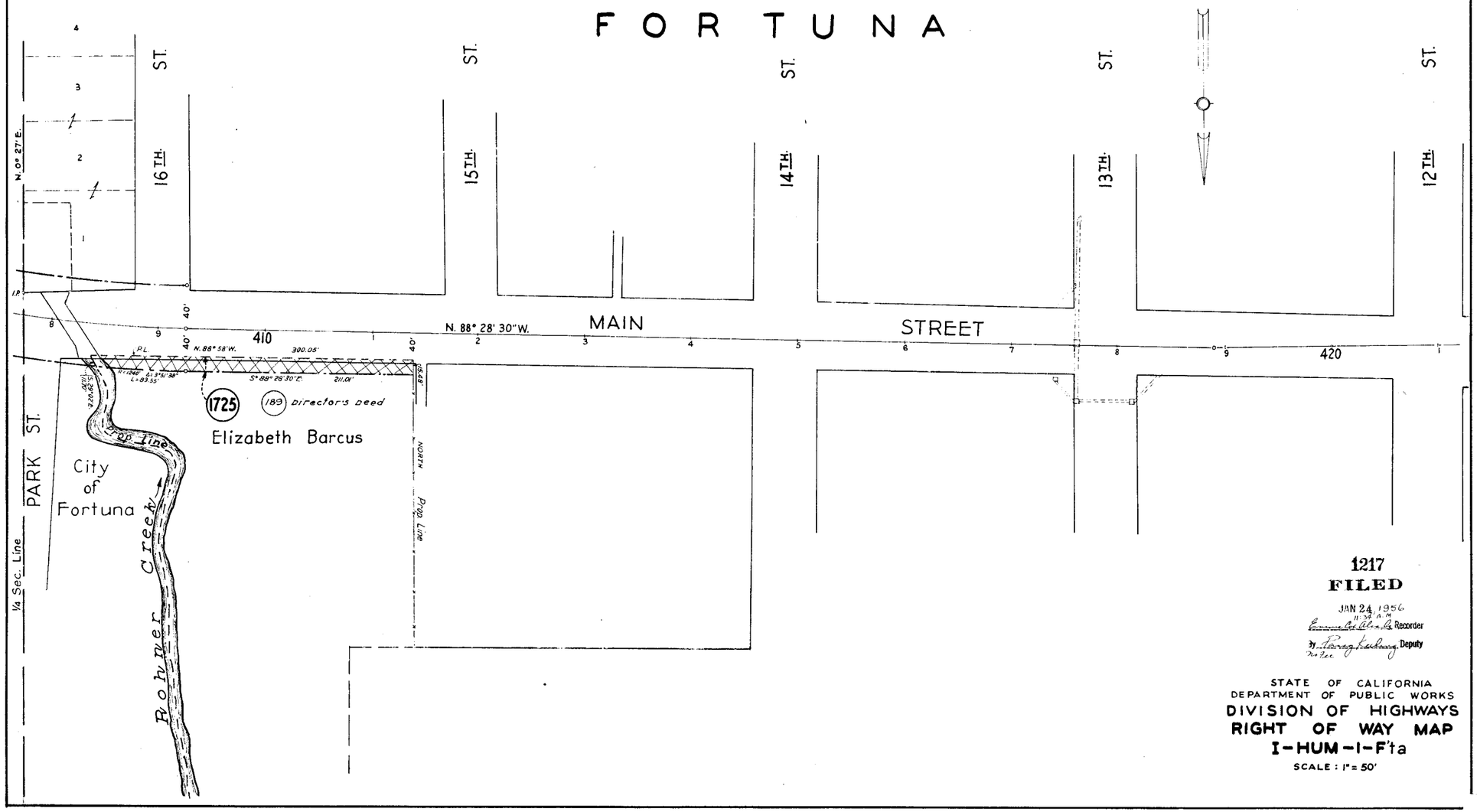
SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
1745-1&2	George Emmet Newell, et ux	State of California	Grant Deed	Jan. 30, 1945	Bk. #272, Deeds, Pg. 467	
1715	Louis Gist, et ux	" " "	" "	Feb. 4, 1945	Bk. #272, Deeds, Pg. 464	
1716	Charles H. Berti, et ux	" " "	" "	Jan. 26, 1945	Bk. #272, Deeds, Pg. 491	
1717	Harry W. Reeves, et ux	" " "	" "	Feb. 15, 1945	Bk. #272, Deeds, Pg. 493	
1718	Allan J. Webb, et ux	" " "	" "	Sept. 14, 1945	Book 277 Deeds, Pg. 159	
1719	William H. Foote, et ux	" " "	" "	Jan. 26, 1945	Bk. #272, Deeds, Pg. 445	
1720	Bank of Loleta	" " "	" "	Sept. 26, 1945	Book 277 Deeds, Pg. 183	
1721	Bank of Loleta	" " "	" "	April 4, 1945	Book 280 Deeds, Pg. 430	
1722	Joseph I. Pracy, et ux	" " "	" "	Jan. 23, 1945	Bk. #272, Deeds, Pg. 439	
1723	B. F. Morgan, et al	" " "	" "	Mch. 27, 1945	Bk. #273, Deeds, Pg. 421	
1724	J. F. Hieronymus et ux	" " "	" "	Feb. 15, 1946	Book 280 Deeds, Pg. 468	
1725	Elizabeth Barcus	" " "	" "	Mch. 8, 1945	Bk. 274, Deeds Pg. 7	
1792-1&2	Bank of Loleta	" " "	" "	Mch. 23, 1945	Bk. #273, Deeds, Pg. 418	
1726	Albert W. Goble	" " "	" "	Feb. 23, 1945	Bk. #273, Deeds, Pg. 4	
1727	Fred L. Overholser	" " "	" "	Jan. 29, 1945	Bk. #273, Deeds, Pg. 8	
1729	Winifred M. Goble, et al	" " "	" "	Mch. 5, 1945	Bk. #273, Deeds, Pg. 429	
1730	Dorothy Cooper	" " "	" "	Feb. 16, 1945	Bk. #272, Deeds, Pg. 471	
1731	J. H. Meisser, et ux	" " "	" "	April 9, 1945	Bk. #273, Deeds, Pg. 425	
1732	Pearl L. Groton, et al	" " "	" "	Feb. 16, 1945	Bk. #276, Deeds, Pg. 135	
1733	Michael E. Kozakar, et ux	" " "	" "	Feb. 7, 1945	Bk. #272, Deeds, Pg. 485	
327	Fred P. & Geo. H. Newell	" " "	" "	July 19, 1917	Bk. #140, Deeds, Pg. 14	
1721-A	THOMAS COTTER, et ux	" " "	" "	Jan. 20, 1948	Bk. #40, O.R., Pg. 99	
189	State of California	Frank Rohner	Direc. Deed	Nov. 24, 1954	Bk. 318, O.R., Pg. 68	



HIGHWAY MAPS #3, PAGE 153

SCHEDULE						
CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
1725	Elizabeth Barcus	State of California	Grant Deed	Mch. 8, 1945	Bk. 274, Deeds Pg. 7	
189	State of California	Frank Rohner	Direc. Deed	Nov. 24, 1954	Bk. 318, O.R. Pg. 68	



1217
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11:58 A.M.
Recorder
By Deputy

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS
RIGHT OF WAY MAP
I-HUM-1-F'ta
SCALE: 1" = 50'

HIGHWAY MAPS #3, PAGE 154

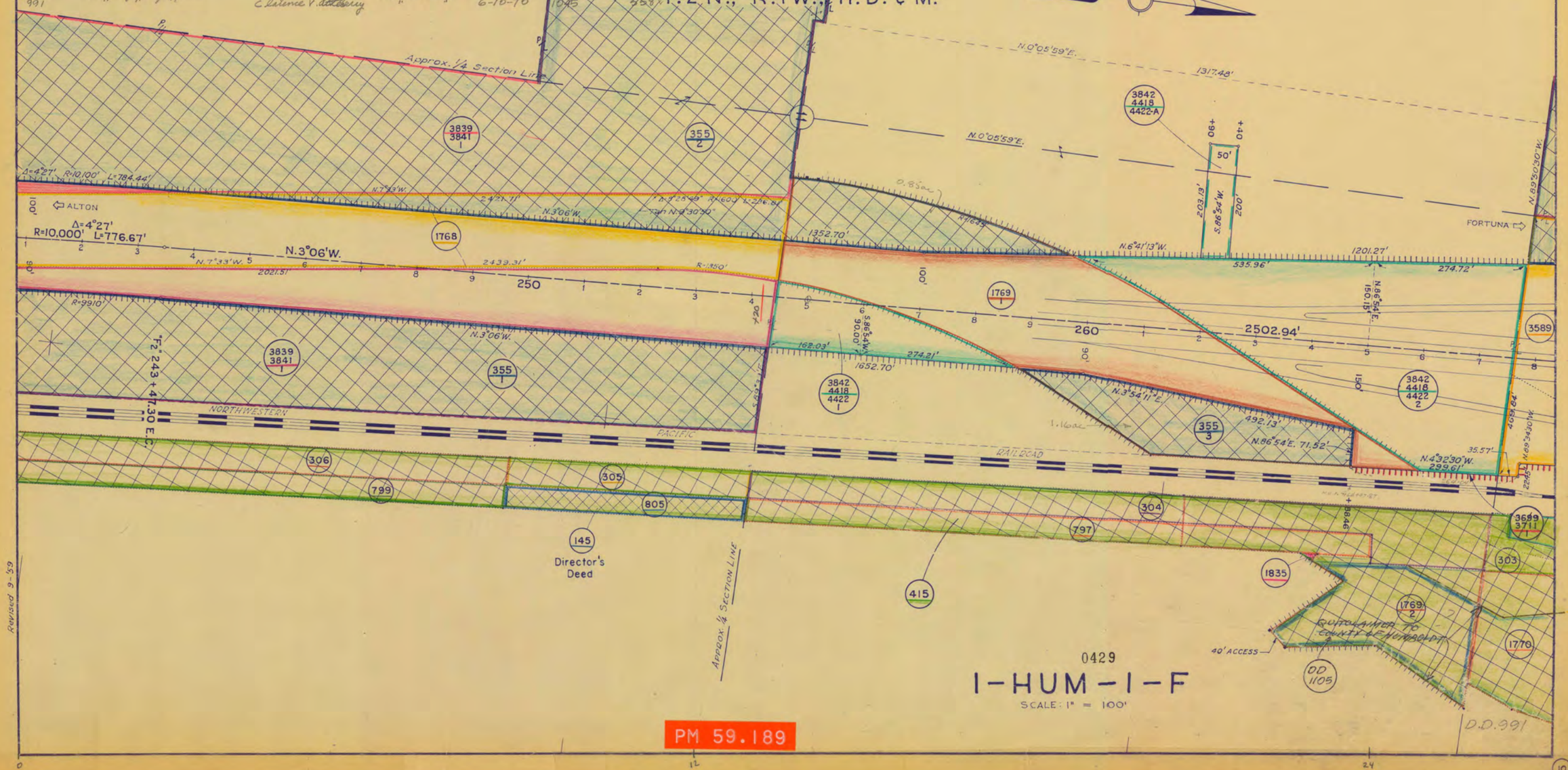
Map Filed

DIV. NO.	CALIF.	YEAR	NO.	SHEET

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS

SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
303	A. P. Campton	State of California	Easement	7-5-17	Bk. 140 Deeds, Pg. 12	
304	Musa C. Gregor	" " "	"	6-26-17	" 140 " " 11	
305	J. R. East	" " "	"	7-11-17	" 140 " " 10	
306	Chris Diedrichsen	" " "	"	6-21-17	" 140 " " 9	
797	William C. Ross	" " "	"	10-9-31	" 205 " " 104	
799	John Matthiesen et ux	" " "	"	2-18-31	" 202 " " 93	
805	John R. East	" " "	"	4-6-31	" 202 " " 243	
145	State of California	Lillie B. East	Director's Deed	9-13-49	" 109 O.R. " 59	
1768	Lillie B. East	State of California	Grant Deed	1-11-49	" 84 " " 196	STATE QT. CLAIMED TO COUNTY OF HUMBOLDT. BK. 1010 PG. 596
1769	Nora H. Ross	" " "	" "	8-15-50	" 142 " " 553	and access rights
1770	Clarence V. Attebery	" " "	" "	9-25-45	" 227 Deeds, " 157	
1835	City of Fortuna	" " "	" "	3-5-45	" 281 " " 110	
3589	Clement V. Bruga	" " "	" "	4-30-56	" 395 O.R. " 12	and access rights
3839 3841	Amelia G. Alward	" " "	" "	6-27-58	" 501 O.R. " 433	
3842						
4418	Alexander B. Garrison et ux	" " "	Grant Deed	11-2-60	" 622 " " 578	
4422						
3842						
4418	Alexander B. Garrison et ux	" " "	Easement	6-16-61	" 655 " " 625	
4422-A						
355	State of California	A. B. Garrison et ux	Director's Deed	5-24-61	" 647 " " 479	
415	" " "	County of Humboldt	Relinquishment	1-23-63	" 722 " " 640	
3699-3711	N. W. P. R.R. Co.	State of California	"	2-14-62	" 682 " " 161	Rel. of access rights
1105	State of California	Douglas E. Lamon	Director's Deed	5-15-70	1042 625	
991	" " "	C. Clarence V. Attebery	" "	6-10-70	1045 958	

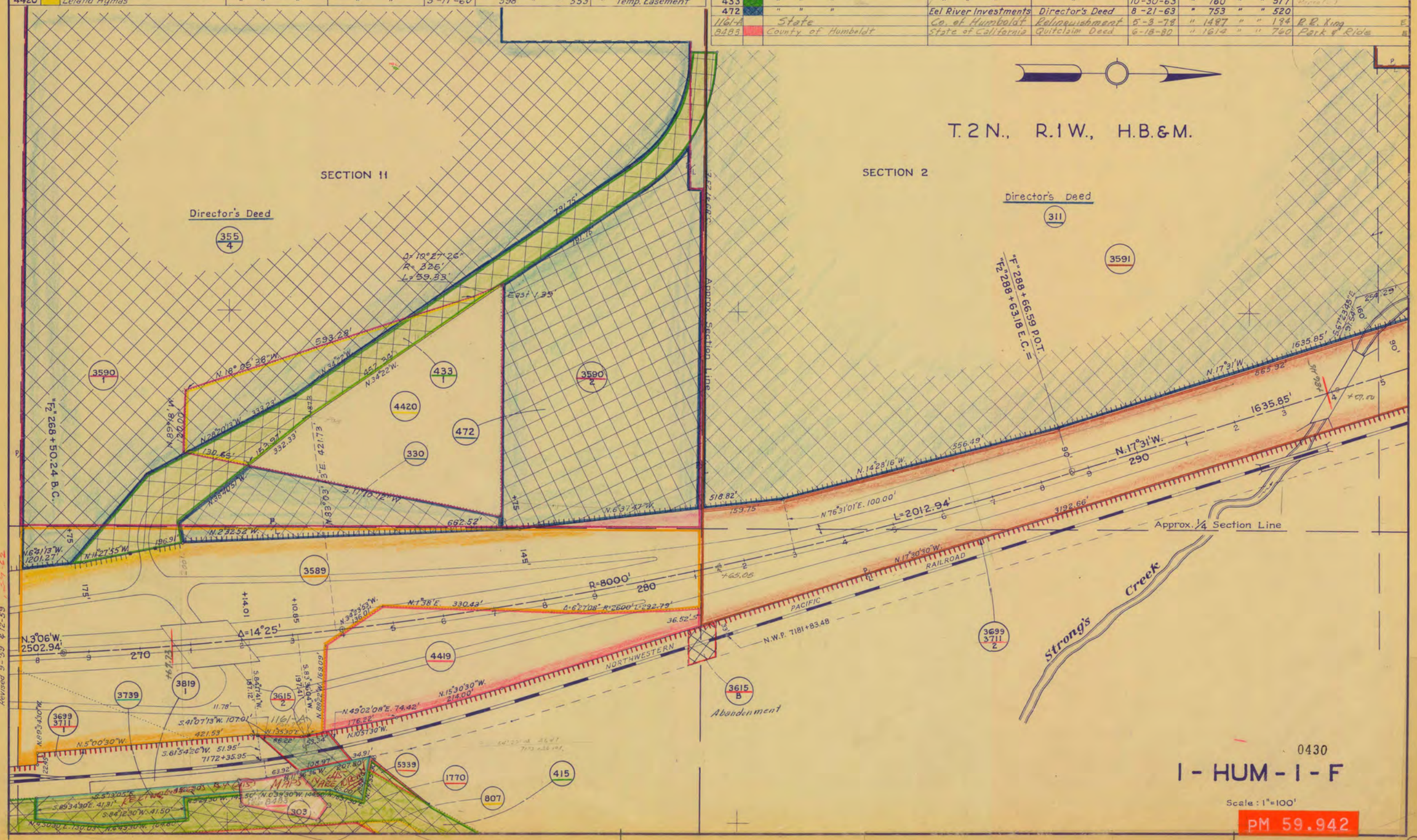


P.M. DIV. No.	STATE	FEDERAL PROJECT No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
	CALIF.				

SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
303	A. P. Campton	State of California	Easement	7-5-17	Book 140 Deeds, Page 12	
807	Harold A. Dinsmore	" " "	"	4-10-31	" 203 " " 107	
1770	Clarence V. Attebery	" " "	Grant Deed	9-25-45	" 227 " " 157	
3589	Clement V. Bruga	" " "	" "	4-30-56	" 395 O.R., " 12	+ access rights
3590	Leland Hymas et ux	" " "	" "	6-1-56	" 403 " " 303	" " "
3591	Calif. Institute For Cancer Research	" " "	" "	6-2-59	" 543 " " 182	Quitclaims 3591-A,B,C&D
3738	Northwestern Pacific Railroad	" " "	See Case 3615—Parcel 2			
3819	" " "	" " "	Easement		" " "	
4419	C.V. Bruga	" " "	Grant Deed	10-15-59	" 563 " " 437	And Access Rights
4420	Leland Hymas	" " "	" "	5-11-60	" 598 " " 553	" Temp. Easement

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
3739	Northwestern Pacific Railroad	State of California	Grant Deed	8-30-60	Book 609 O.R., Page 52	
311	State of California	Fortuna Plywood Co.	Director's Deed	3-24-60	" 582 " " 325	
330	" " "	Leland Hymas et ux	" "	10-25-60	" 609 " " 234	
3615	Northwestern Pacific R.R. Co.	State of California	Easement	7-25-60	" 600 " " 351	Parcel 2 264.6
	" " " "	" " "	"	"	" " " " "	Parcel B 5-264.7 Aban.
355	State of California	A.B. Garrison et ux	Director's Deed	5-24-61	" 647 " " 479	
3699-3711	Northwestern Pacific R.R. Co.	State of California	Relinquishment	2-14-62	" 682 " " 161	Access rights
5339	C. V. Bruga	" " "	Easement	9-26-62	" 707 " " 469	For slopes
415	State of California	County of Humboldt	Relinquishment	1-23-63	" 722 " " 640	
433	" " "	" " "	"	10-30-63	" 760 " " 517	
472	" " "	Eel River Investments	Director's Deed	8-21-63	" 753 " " 520	
1161-A	State	Co. of Humboldt	Relinquishment	5-3-78	" 1487 " " 194	R.R. Xing
8483	County of Humboldt	State of California	Quitclaim Deed	6-18-80	" 1614 " " 760	Park & Ride



PRA DIV. No.	STATE	FEDERAL PROJECT No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
	CALIF.				

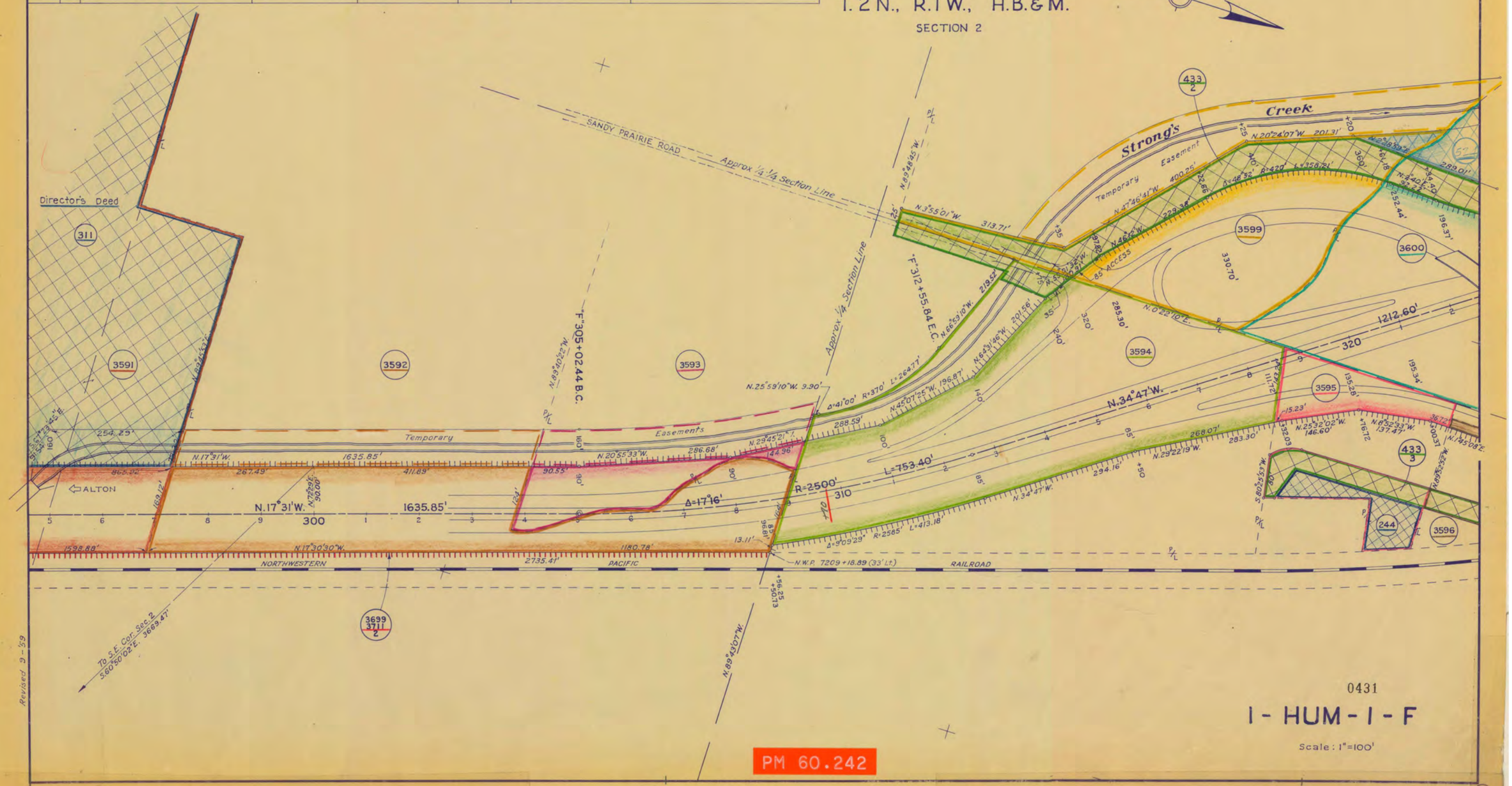
DIST.	COUNTY	ROUTE	SECTION	SHEET No.	TOTAL SHEETS
I					

DISTRICT ENGINEER

APPROVED

SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
3591	Calif. Institute for Cancer Research	State of California	Grant Deed	6-2-59	Book 543 O.R., Page 182	Quitclaims 3591-A,B,C&D
3592	Renus Oman et ux	" " "	" "	9-28-56	" 418 " " 343	
3593	Ruth Schroder	" " "	" "	10-9-56	" 420 " " 86	
3594	Charlie A. Jenks et ux	" " "		11-17-59	" 567 " " 377	And Access Rights
3595	Henry V. Belisle et al	" " "	" "	10-20-56	" 427 " " 501	
3596	Benjamin A. McWhorter et ux	" " "	" "	2-19-57	" 439 " " 51	
3599	Jacob Sering et ux	" " "	" "	10-24-56	" 425 " " 47	
3600	Rosa Perenin	" " "	" "	7-25-60	" 602 " " 386	
244	State of California	Ben A. McWhorter	Director's Deed	6-19-57	" 451 " " 277	
311	" " "	Fortuna Plywood Co.	" "	3-24-60	" 582 " " 325	
3699-3711	Northwestern Pacific R.R. Co.	State of California	Relinquishment	2-14-62	" 682 " " 161	Access rights
433	State of California	County of Humboldt	"	10-30-63	" 760 " " 517	Parcels 2 and 3

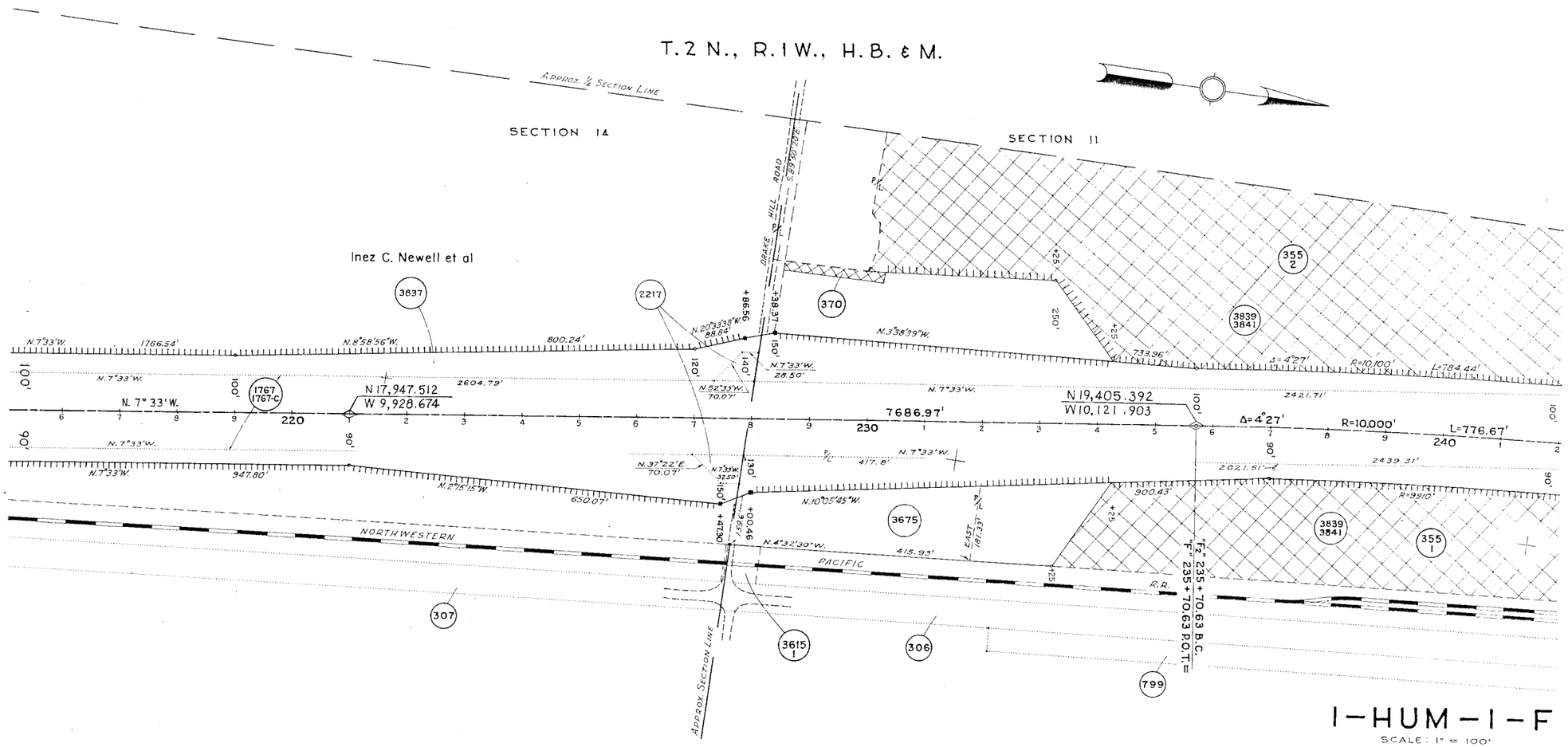


D.P.R. SHT. No.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CALIF.				

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS

B.D. Van Zandt CE 8436

APPROVED



This Project on
LOCAL COORDINATE SYSTEM

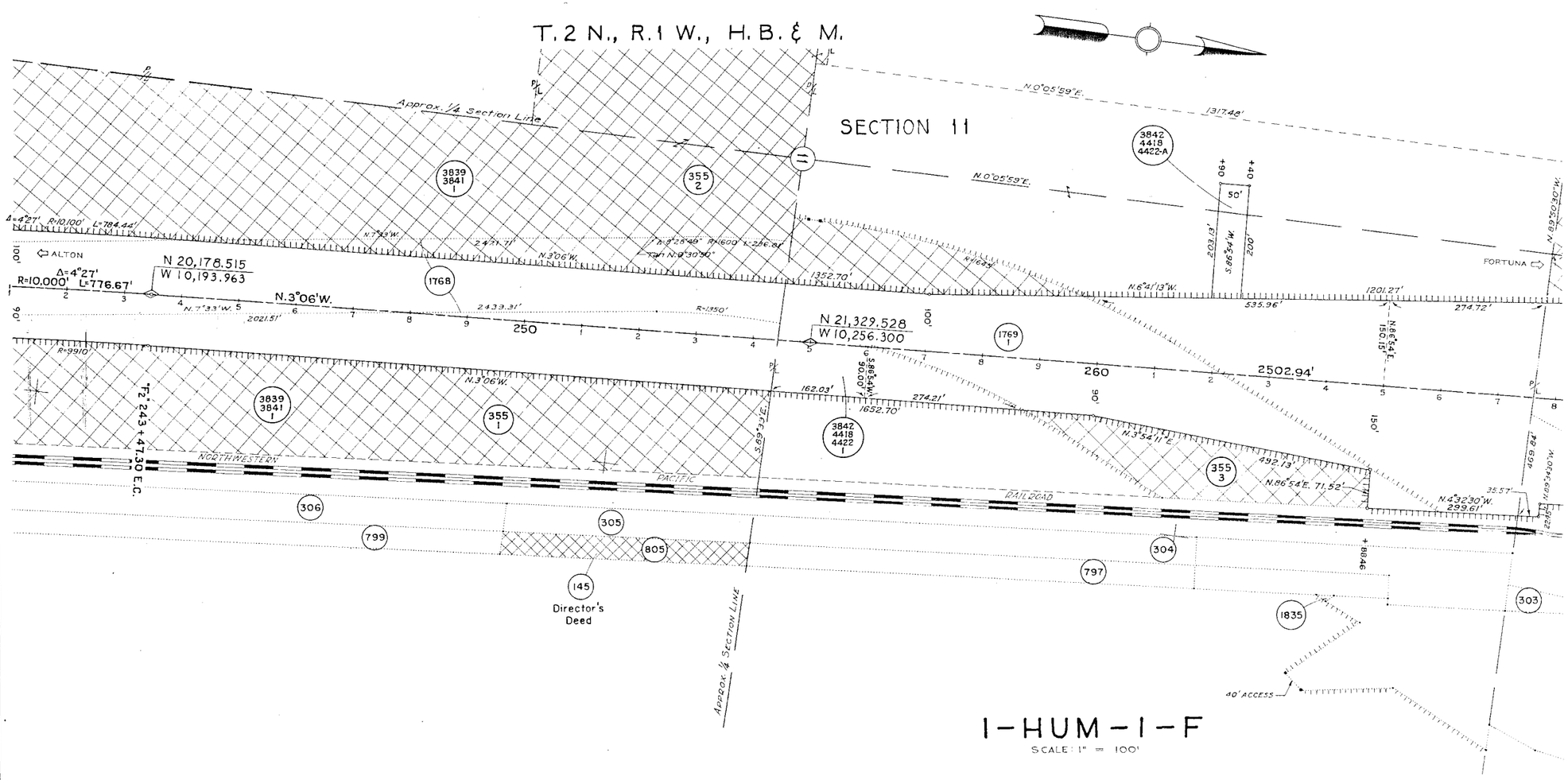
◇ = C.H.C. Survey Monument in Place
◎ = C.H.C. R/W Monument in Place
• = Found Survey Point

PROJECT ENGINEER	DATE	DESIGN ENGINEER	DATE	APPROVAL RECOMMENDED BY	DATE

7	CALIF.				
DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS

Bill Van Zandt CE 8436

APPROVED



This Project on
LOCAL COORDINATE SYSTEM

◇ = C.H.C. Survey Monument in Place
◎ = C.H.C. R/W Monument in Place
• = Found Survey Point

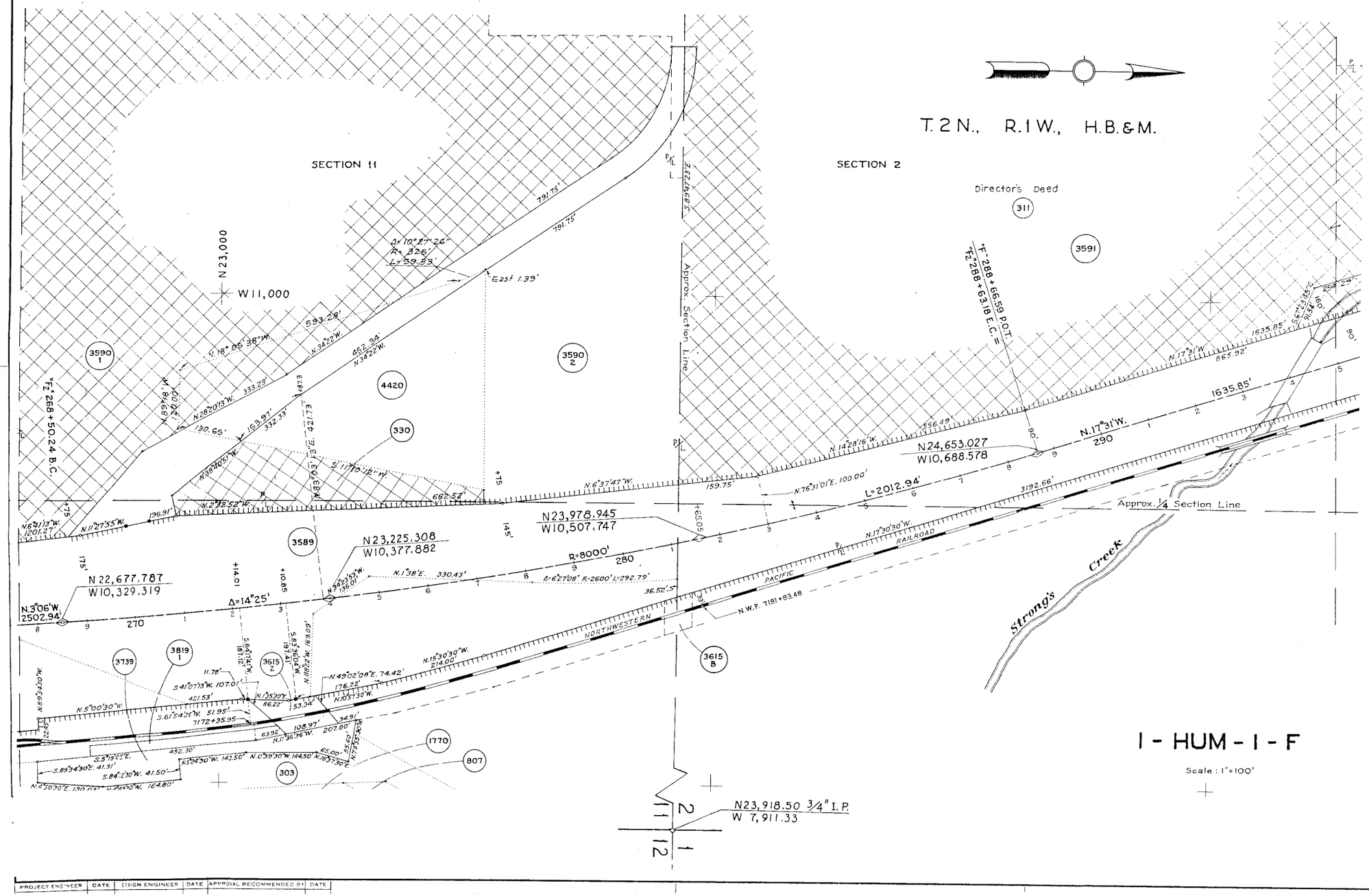
PROJECT ENGINEER	DATE	DESIGN ENGINEER	DATE	APPROVAL RECOMMENDED BY	DATE

		PROJECT NO.	YEAR	No.	SHEETS
7	CALIF.				

DIST.	COUNTY	ROUTE	SECTION	SHEET No.	TOTAL SHEETS

B.W. Van Zandt CE 8436

APPROVED



N 23,918.50 3/4" I.P.
W 7,911.33

I - HUM - I - F

Scale: 1"=100'

This Project on
LOCAL COORDINATE SYSTEM

◇ = C.H.C. Survey Monument in Place
◎ = C.H.C. R/W Monument in Place
• = Found Survey Point

PROJECT ENGINEER	DATE	DESIGN ENGINEER	DATE	APPROVAL RECOMMENDED BY	DATE

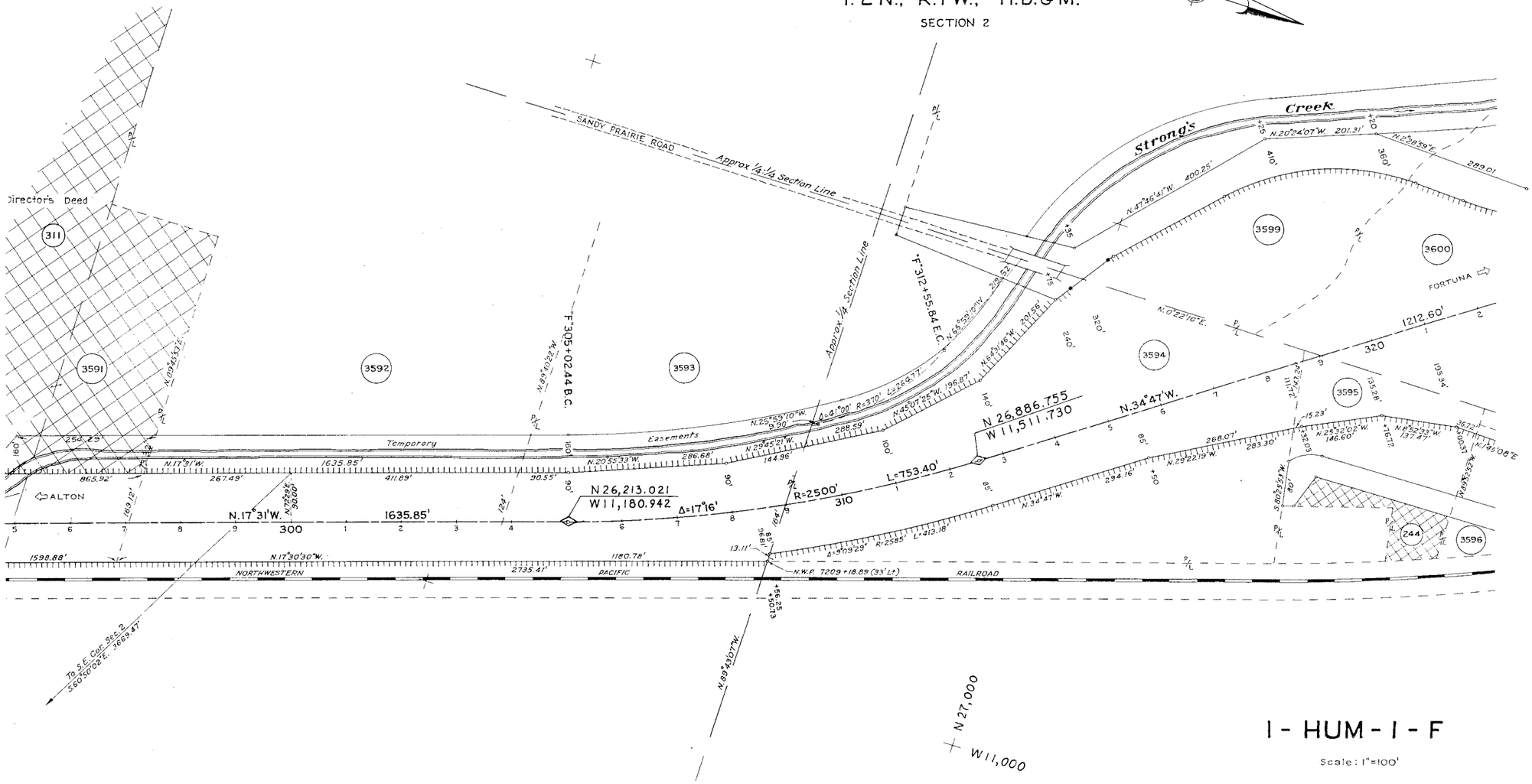
7	CALIF				
2-64	COUNTY	ROUTE	SECTION	SHEET No.	TOTAL SHEETS

B. A. Van Zandt CE 8436

APPROVED

T. 2 N., R. 1 W., H.B.&M.

SECTION 2



1 - HUM - 1 - F

Scale: 1"=100'

This Project on
LOCAL COORDINATE SYSTEM

◇ = C.H.C. Survey Monument in Place
◎ = C.H.C. R/W Monument in Place
• = Found Survey Point

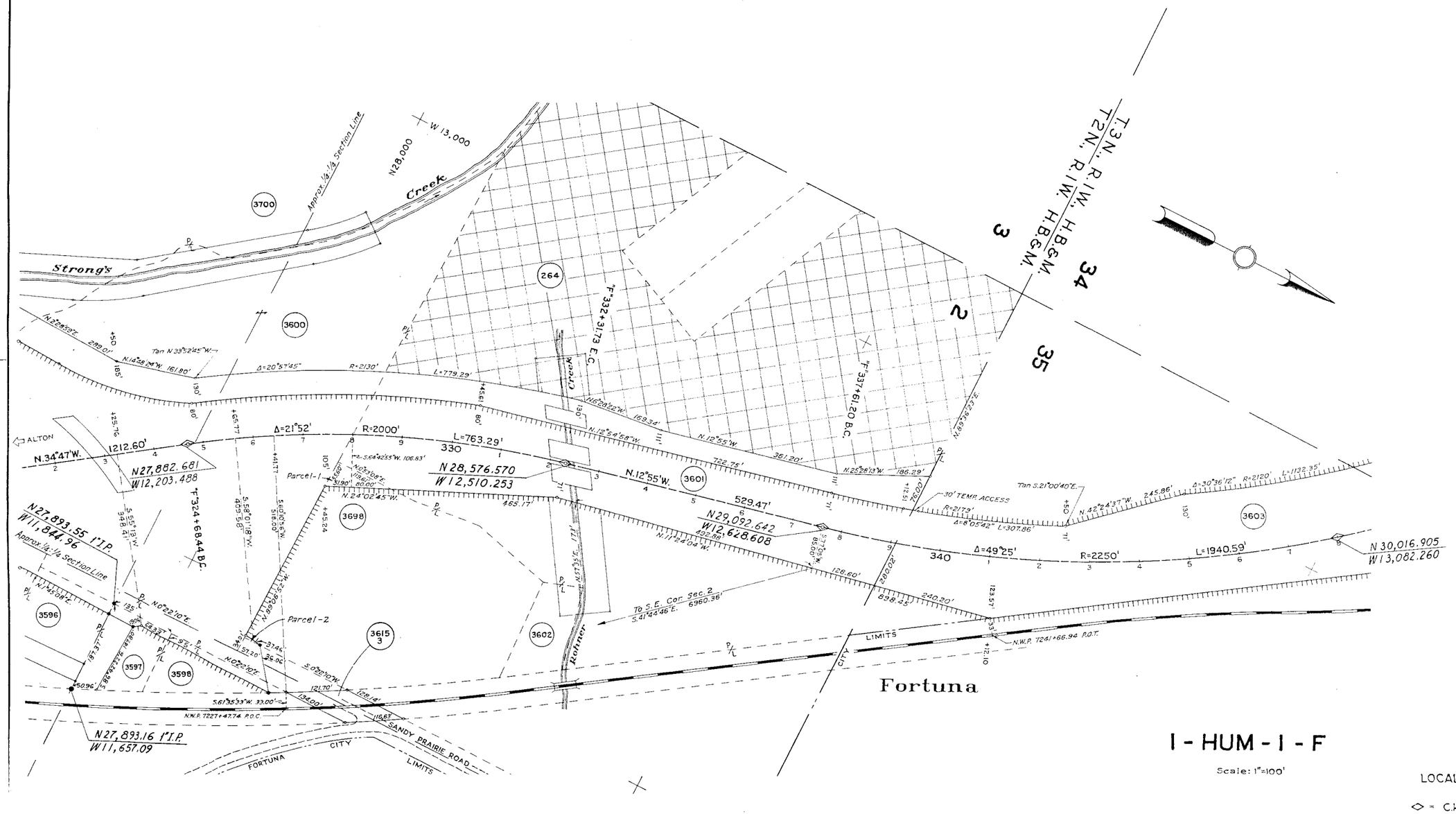
PROJECT ENGINEER	DATE	DESIGN ENGINEER	DATE	APPROVAL RECOMMENDED BY	DATE

DIST.	STATE	FEDERAL PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CALIF.				

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS

B. D. Van Zandt CE 8436

APPROVED



1 - HUM - 1 - F

Scale: 1"=100'

This Project on
LOCAL COORDINATE SYSTEM

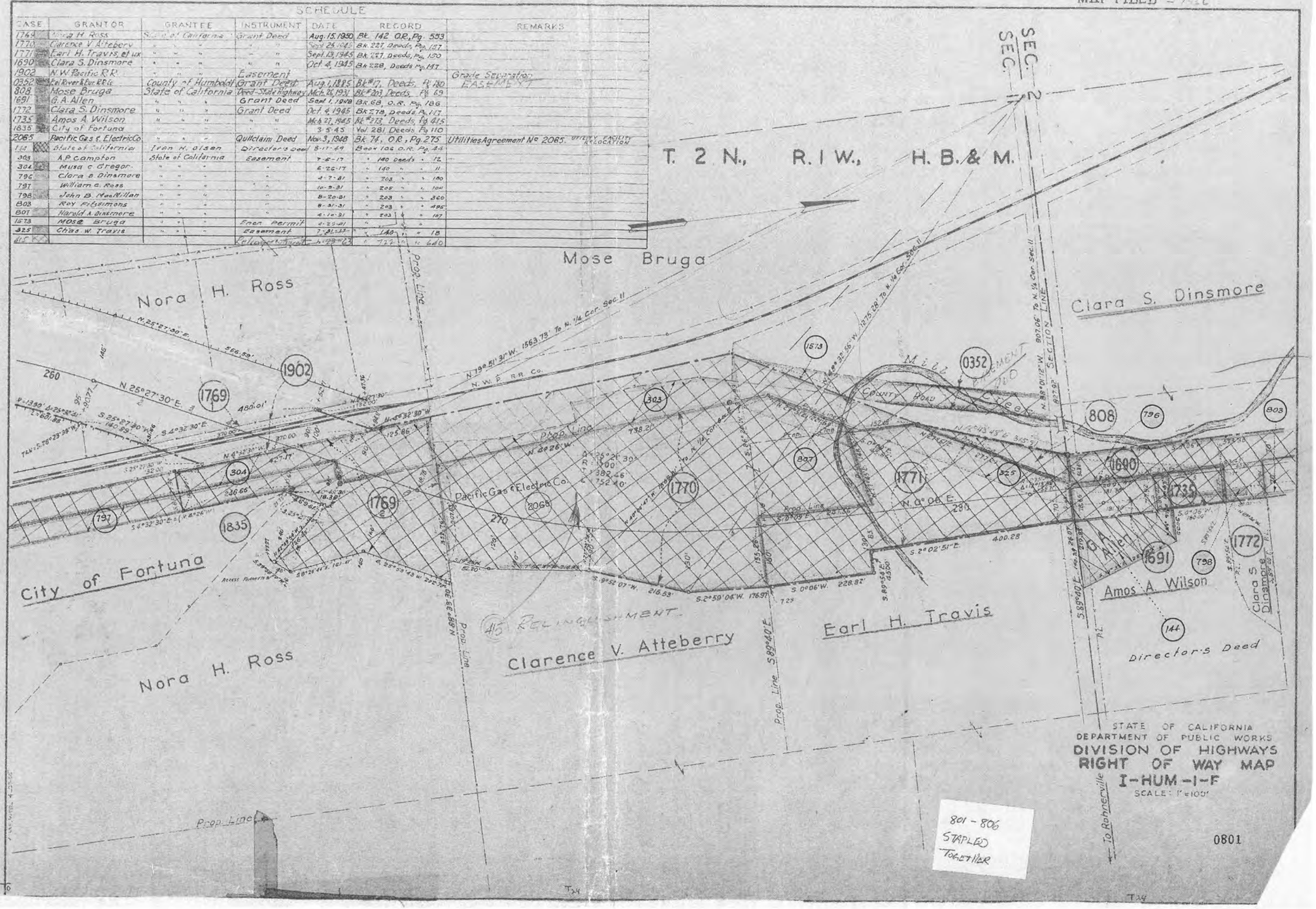
◇ = C.H.C. Survey Monument in Place
◎ = C.H.C. R/W Monument in Place
• = Found Survey Point

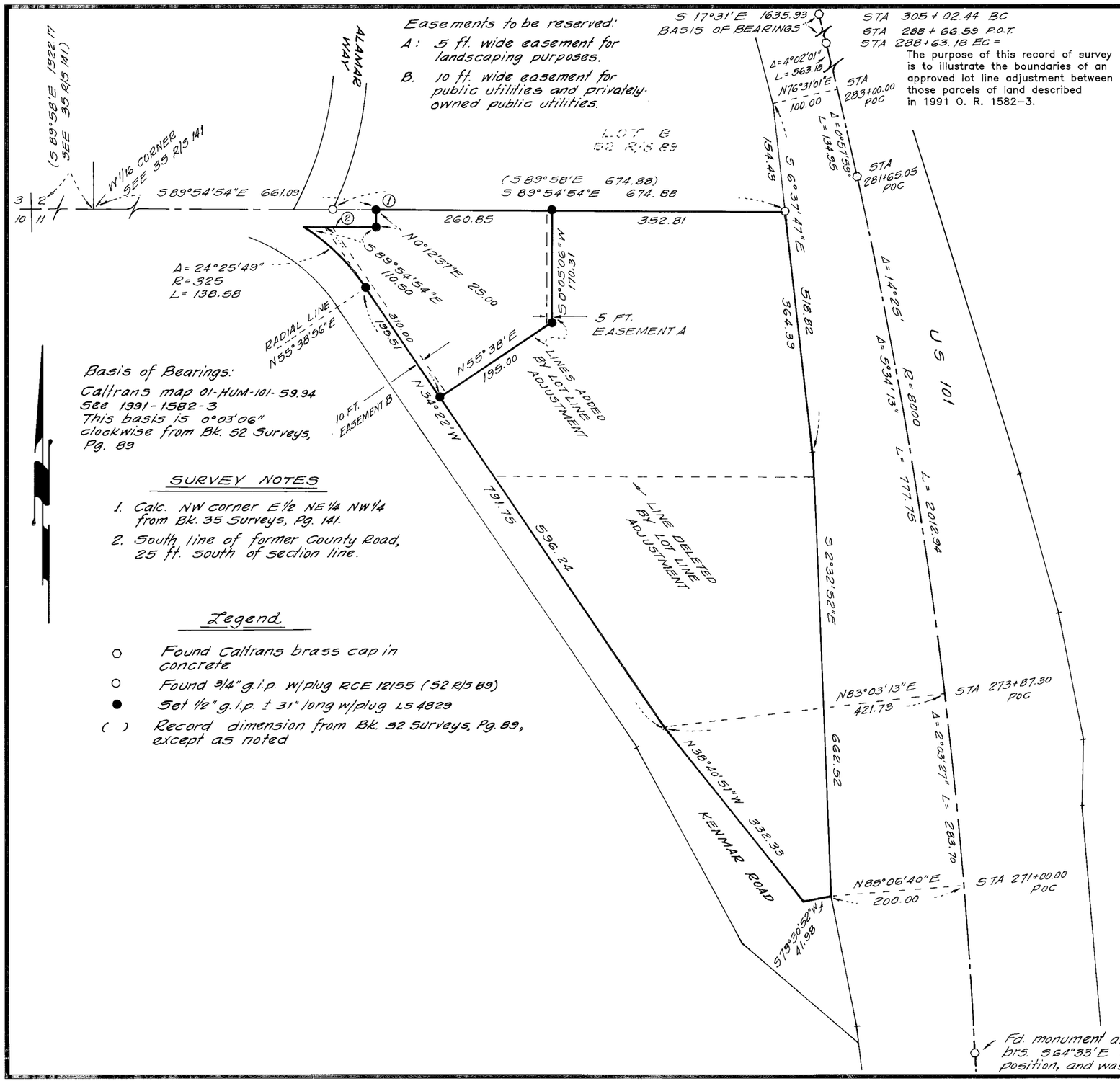
PROJECT ENGINEER	DATE	DESIGN ENGINEER	DATE	APPROVAL RECOMMENDED BY	DATE

MAP FILED - 1956

SCHEDULE

CASE	GRANTOR	GRANTEE	INSTRUMENT	DATE	RECORD	REMARKS
1769	Nora H. Ross	State of California	Grant Deed	Aug. 15, 1950	Bk. 142 O.R., Pg. 583	
1770	Clarence V. Atteberry	" " "	" "	Sept 26, 1949	Bk. 227, Deeds, Pg. 137	
1771	Earl H. Travis, et ux	" " "	" "	Sept. 13, 1945	Bk. 227, Deeds, Pg. 150	
1690	Clara S. Dinsmore	" " "	" "	Oct. 4, 1945	Bk. 228, Deeds Pg. 137	
1902	N.W. Pacific R.R.	" " "	Easement			Grade Separation EASEMENT
0352	Eel River & Tur. RR Co	County of Humboldt	Grant Deed	Aug. 1, 1895	Bk. #7, Deeds, Pg. 180	
808	Mose Bruga	State of California	Deed-State Highway	Mch. 26, 1931	Bk. #203, Deeds, Pg. 69	
1691	G. A. Allen	" " "	Grant Deed	Sept 1, 1949	Bk. 68, O.R. Pg. 186	
1772	Clara S. Dinsmore	" " "	Grant Deed	Oct. 4, 1945	Bk. #78, Deeds, Pg. 117	
1735	Amos A. Wilson	" " "	" "	Mch 27, 1945	Bk. #213, Deeds, Pg. 415	
1835	City of Fortuna	" " "	" "	3-5-45	Vol. 281, Deeds, Pg. 110	
2065	Pacific Gas & Electric Co		Quitclaim Deed	Nov. 3, 1948	Bk. 76, O.R., Pg. 275	Utilities Agreement No 2065. UTILITY FACILITY RELOCATION
144	State of California	Iven H. Olsen	Director's Deed	8-17-49	Book 106 O.R. Pg. 44	
303	A.P. Compton	State of California	Easement	7-6-17	" 140 Deeds " 12	
304	Musa C Gregor.	" " "	"	6-26-17	" 140 " " 11	
796	Clara B Dinsmore	" " "	"	4-7-81	" 203 " " 180	
797	William C. Ross	" " "	"	10-9-81	" 203 " " 104	
798	John B. MacMillan	" " "	"	8-20-81	" 203 " " 360	
803	Roy Fitzsimmons	" " "	"	8-31-31	" 203 " " 495	
801	Harold A. Dinsmore	" " "	"	4-10-31	" 203 " " 107	
1573	Mose Bruga	" " "	Encr. Permit	4-29-81	" "	
325	Chas. W. Travis	" " "	Easement	7-31-37	" 140 " " 18	
415			Relinquishment	4-23-63	" 727 " " 640	





Basis of Bearings:
Caltrans map 01-HUM-101-59.94
See 1991-1582-3
This basis is 0°03'06" clockwise from Bk. 52 Surveys, Pg. 89

SURVEY NOTES

1. Calc. NW corner E½ NE¼ NW¼ from Bk. 35 Surveys, Pg. 141.
2. South line of former County Road, 25 ft. south of section line.

Legend

- ○ Found Caltrans brass cap in concrete
- ○ Found 3/4" g.i.p. w/plug RCE 12155 (52 R/S 89)
- ● Set 1/2" g.i.p. ± 31" long w/plug LS 4829
- ( ) Record dimension from Bk. 52 Surveys, Pg. 89, except as noted

COUNTY SURVEYOR'S STATEMENT

This map has been examined in accordance with section 8766 of the Land Surveyor's Act this 29th day of May, 1992.

County Surveyor

R.C.E. 11980

License expires 3/31/93

SURVEYOR'S STATEMENT

This map correctly represents a survey made by me or under my direction in conformance with the requirements of the Land Surveyor's Act at the request of Ronald J. Harris, in March, 1992.

Michael J. O'Hern

Michael J. O'Hern L.S. 4829
License expires 9/30/92

LICENSED LAND SURVEYOR MICHAEL J. O'HERN No. 4829 STATE OF CALIFORNIA

1992-15647-1

RECORDER'S STATEMENT

Filed this 2nd day of June, 1992, at 2:39 PM in Book 53 of Surveys at page 34, Humboldt County Records at the request of Kelly-O'Hern Associates.

Carolyn Crnich
County Recorder

By M Hedinger
Deputy

Fee $6.00

RECORD OF SURVEY
for
RONALD J. HARRIS
in the CITY OF FORTUNA
N 1/2 SECTION 11 T2N R1W H.M.
Humboldt County
State of California

Kelly-O'Hern Associates
Eureka, California

May, 1992 Scale: 1"=100'

PAGE 1 OF 1

BOOK 53 OF SURVEYS, PAGE 34

SCANNED

BOARD OF SUPERVISORS, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

Certified copy of portion of proceedings, Meetings of June 8, 1960

IN THE MATTER OF EXECUTING INDENTURE WITH NORTHWESTERN PACIFIC RAILROAD COMPANY CONCERNING NEWBURG DRAINAGE STRUCTURE.

12 4 ct

Upon the motion of Supervisor Barellica, seconded by Supervisor Robertson, Sam E. Merryman, Jr., Chairman of this Board of Supervisors, is hereby authorized to execute on behalf of the County of Humboldt an Indenture, dated this date, by and between the County of Humboldt and the Northwestern Pacific Railroad Company. Said indenture grants to the County the right to construct, reconstruct, maintain and operate a drainage structure beneath that certain property of said Railroad as referred to therein and related to the Newburg drainage structure in accordance with the terms and conditions of said indenture. The Auditor is hereby authorized and directed to draw a warrant payable to the Northwestern Pacific Railroad Company in the amount of fifty dollars ($50.00) as consideration in full for the signing of said indenture.

AYES: Supervisors— Lindley, Barellica, Robertson, Petterson, Merryman
NOES: Supervisors— None
ABSENT: Supervisors— None

STATE OF CALIFORNIA, }
County of Humboldt } ss.

I, FRED J. MOORE, JR., County Clerk of the County of Humboldt, State of California, and ex-officio Clerk of the Board of Supervisors of the County of Humboldt, do hereby certify the foregoing to be full, true and correct copies of the original orders made in the above entitled matters by said Board of Supervisors, at a meeting held in Eureka, California, on June 8, 1960 and as the same now appears of record in my office.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Seal of said Board of Supervisors this 9th day of June, 1960

FRED J. MOORE, JR.
County Clerk and ex-officio Clerk of the Board of Supervisors of the County of Humboldt, State of California

By [signature]
Deputy Clerk.

L&M

THIS INDENTURE, made this _____ day of _____, 1959, by and between NORTHWESTERN PACIFIC RAILROAD COMPANY, a corporation of the State of California, herein termed "Railroad", and COUNTY OF HUMBOLDT, a political subdivision of the State of California, herein termed "Grantee".

WITNESSETH:

1. Railroad, for and in consideration of the faithful performance by Grantee of all the terms, covenants and conditions herein contained, hereby grants to Grantee the right to construct, reconstruct, maintain and operate a 42-inch reinforced concrete drainage pipe, hereinafter termed "structure" beneath the property of Railroad, at or near Fortuna, in the County of Humboldt, State of California, in the location shown enclosed within red lines upon the print of Railroad's San Rafael Drawing X-6778, revised October 23, 1959, hereto attached and made a part hereof.

This indenture will be supplemented to include a legal description of the property if requested by either party in writing.

[illegible] right and obligation of Railroad, its successors and assigns, to use all the property described herein in the performance of its duty as a common carrier, and, for that purpose, there is reserved unto Railroad, its successors and assigns, the right (consistent with the rights herein granted) to construct, reconstruct, maintain and use existing and future railroad tracks, facilities and appurtenances and existing and future transportation, communication and pipe line facilities and appurtenances in, upon, over, under, across and along said property.

3. This grant is made subject to all licenses, leases, easements, restrictions, conditions, covenants, encumbrances, liens and claims of title which may affect said property and the word GRANT as used herein shall not be construed as a covenant against the existence of any thereof.

4. The rights herein granted to Grantee shall lapse and become void if the construction of said structure upon said property is not commenced within one (1) year from the date first herein written.

5. Grantee shall bear the entire cost and expense of constructing, reconstructing and maintaining said structure upon said property. Grantee agrees that all work upon or in connection with said structure shall be done at such times and in such manner as not to interfere in any way whatsoever with the operations of Railroad. The plans for and the construction of said structure shall be subject to the approval of Railroad.

Grantee agrees to reimburse Railroad for the cost and expense to Railroad of furnishing any materials or performing any labor in connection with the construction, reconstruction, maintenance and removal of said structure, including, but not limited to, the installation and removal of such falsework and other protection beneath or along Railroad's tracks, and the furnishing of such watchmen, flagmen and inspectors as Railroad deems necessary.

[illegible]

6. [illegible]

7. Grantee, its agents and employees, shall have the privilege of entry on said property for the purpose of constructing, reconstructing, maintaining and making necessary repairs to said structure. Grantee agrees to keep said property in a good and safe condition free from waste, so far as affected by Grantee's operations, to the satisfaction of Railroad. If Grantee fails to keep said property in a good and safe condition free from waste, then Railroad may perform the necessary work at the expense of Grantee, which expense Grantee agrees to pay to Railroad upon demand.

8. In the event any work upon or in connection with said structure or its appurtenances, to be done upon or adjacent to the tracks and property of Railroad, should be let to a contractor by Grantee, such work shall not be begun until such contractor [illegible] has entered into an agreement with the railroad company [illegible] said property, satisfactory to said company and indemnifying [illegible] and against all claims, liability, cost and expense [illegible] the performance of the work to be done by such contractor.

Such contractor shall furnish, at the expense of and without expense to Railroad, a reliable surety bond, in the amount and in a form satisfactory to said company, guaranteeing [illegible] performance of

all the terms, covenants and conditions contained in said agreement, and a certified copy of a policy of Public Liability and Property Damage Insurance, within limits specified by, and in a form satisfactory to, said company, covering the contractual liability assumed by contractor in said agreement to be entered into with said company by such contractor.

9. Should Grantee, its successors or assigns, at any time abandon the use of said property or any part thereof, or fail at any time to use the same for the purpose contemplated herein for a continuous period of one (1) year, the right hereby given shall cease to the extent of the use so abandoned or discontinued, and Railroad shall at once have the right, in addition to but not in qualification of the rights hereinabove reserved, to resume exclusive possession of said property or the part thereof the use of which is so discontinued or abandoned.

Upon termination of the rights and privileges hereby granted, Grantee, at its own cost and expense, agrees to remove said structure from said property and restore said property as nearly as practicable to the same state and condition in which it existed prior to the construction of said structure. Should Grantee in such event fail, neglect or refuse to remove said structure and restore said property, such removal and restoration may be performed by Railroad at the expense of Grantee, which expense Grantee agrees to pay to Railroad upon demand.

10. This indenture shall inure to the benefit of and be binding upon the successors and assigns of the parties hereto.

11. For the rights herein given, Grantee shall pay to Railroad the sum of Fifty (50) Dollars.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed as of the day and year first herein written. (In duplicate)

NORTHWESTERN PACIFIC RAILROAD COMPANY

By_____
(Title)

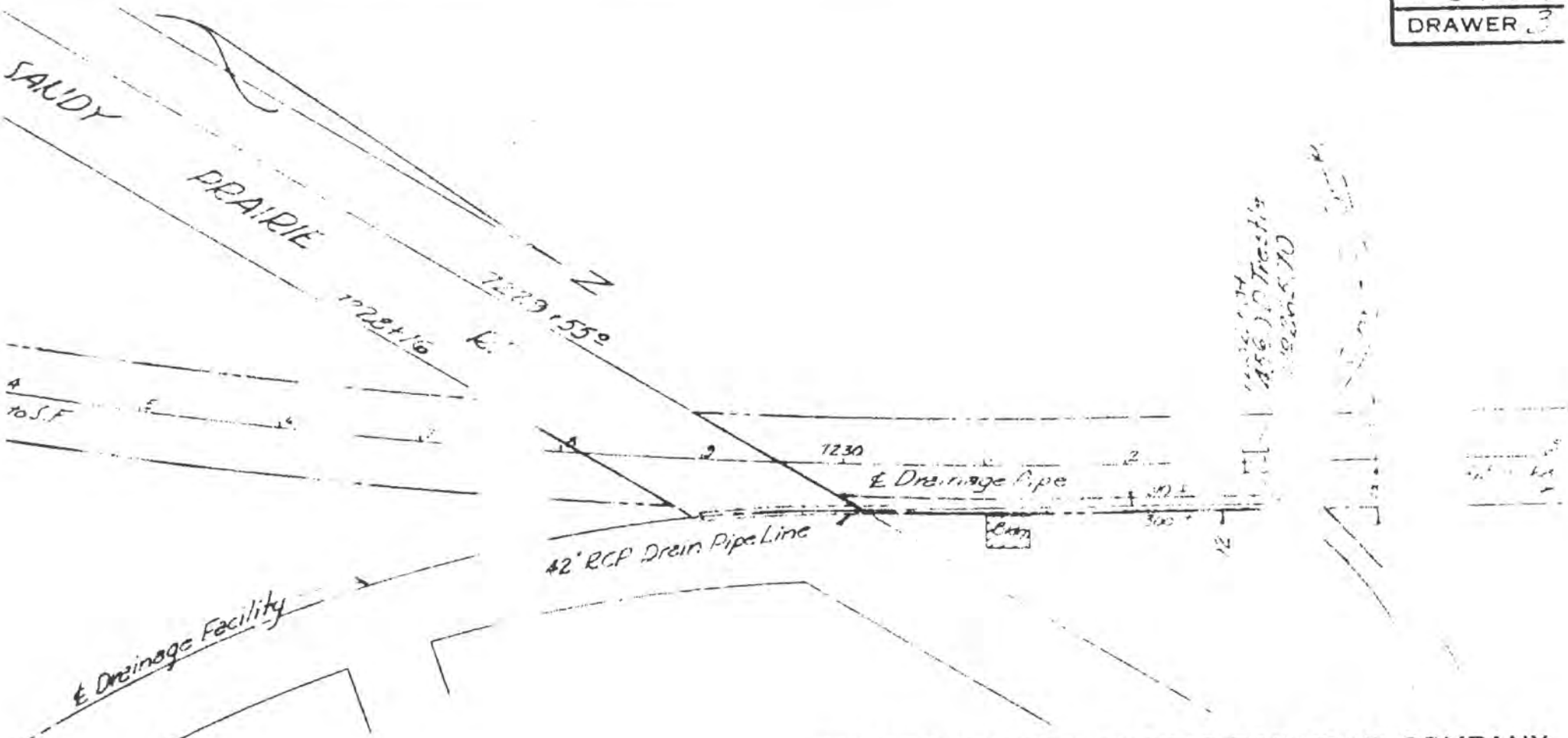
Attest:_____
(Assistant Secretary)

COUNTY OF HUMBOLDT

By_____
Chairman, Board of Supervisors

_____
Clerk, Board of Supervisors

SAN RAFAEL
X- 67,785
DRAWER 3



LEGEND

- - - - - N.W.P. Property Lines

——— Red - Pipe Line to be covered by Agmt.

NORTHWESTERN PACIFIC RAILROAD COMPANY

FORTUNA

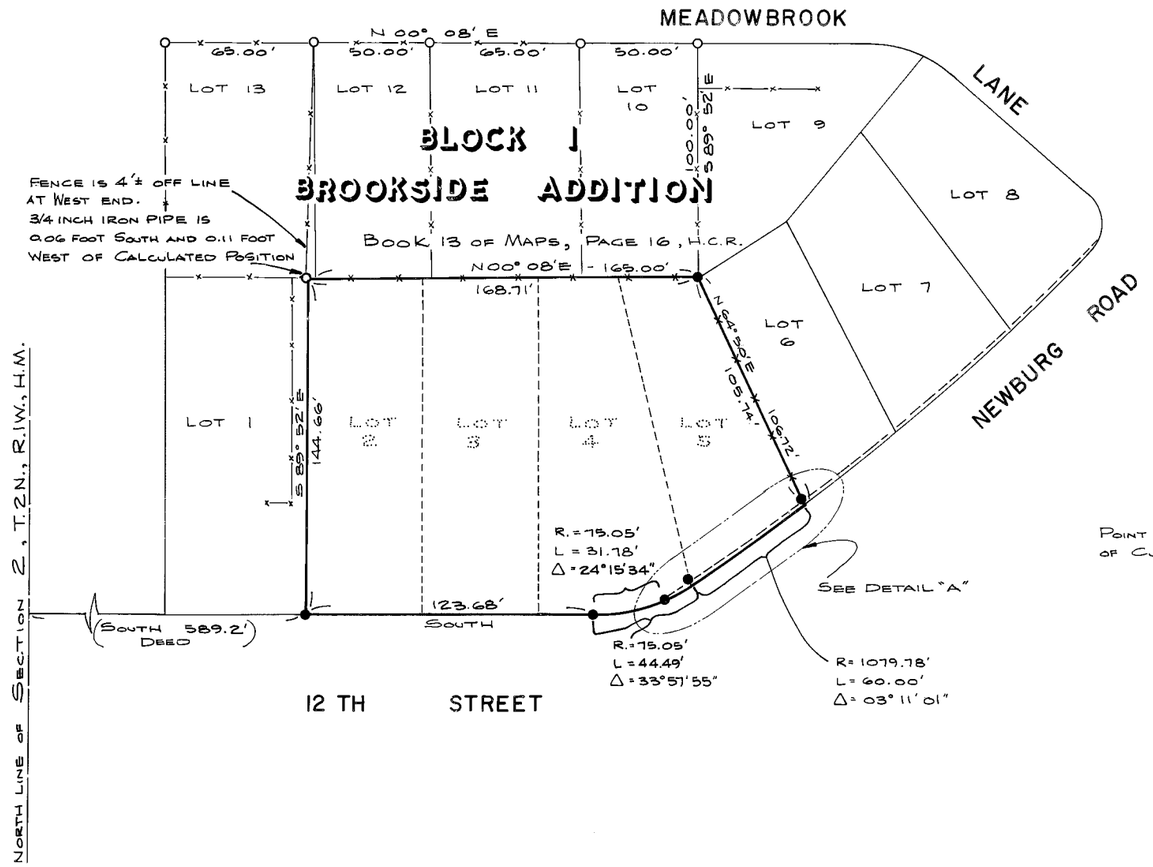
MP 266.1

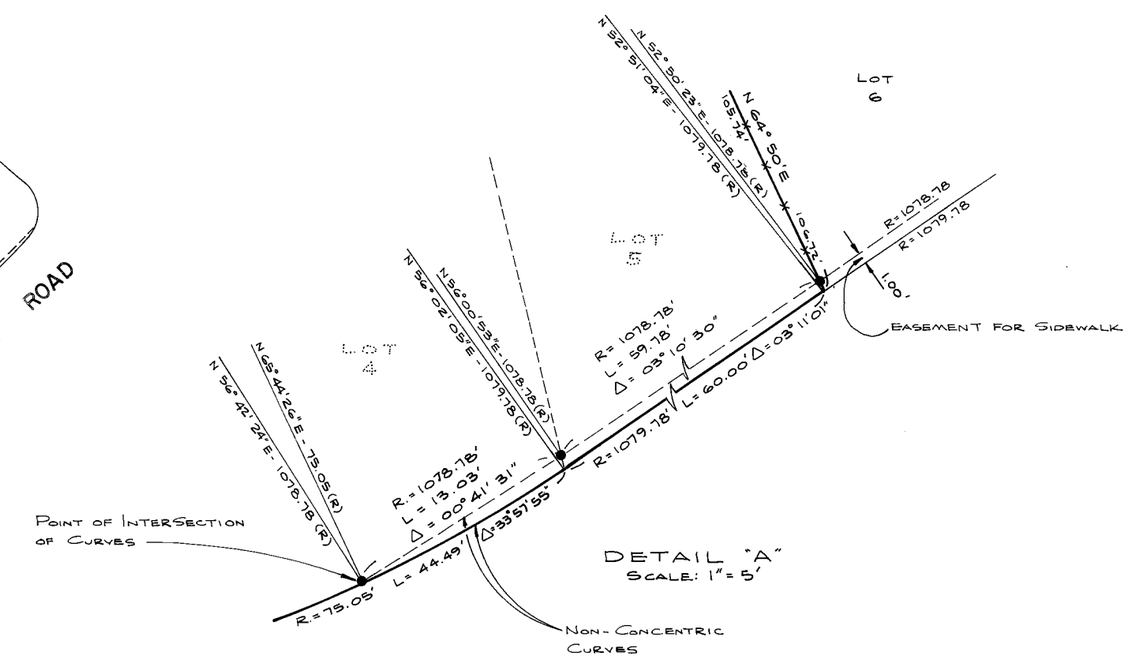
AGREEMENT WITH COUNTY OF HUMBOLDT TO CONSTRUCT & MAINTAIN 42 INCH RCP DRAINAGE PIPE LINE

Scale 1" = 100'

Sept 1, 1959

Rev. Oct 23, 1959





LEGEND

- O Found 3/4 inch iron pipe as shown in Book 13 of Maps, Page 16, H.C.R.
- ● 5/8 inch re-bar and aluminum cap stamped "LS 3945 PC 1974", set by this survey.

REFERENCES

Book 281 of Official Records, Page 148
Book 521 of Official Records, Page 234
Book 568 of Official Records, Page 47

Basis of Bearing is Book 13 of Maps, Page 16, Humboldt County Records.

SURVEYOR'S CERTIFICATE

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE LAND SURVEYOR'S ACT AT THE REQUEST OF MURCHISON CONSTRUCTION COMPANY IN FEBRUARY 19 74.

Michael R. McGee
MICHAEL R. McGEE LS 3945

3679

RECORDER'S CERTIFICATE

FILED THIS 1ST DAY OF MARCH 19 74 AT 10:51 A.M. IN BOOK 29 OF SURVEYS AT PAGE 104 HUMBOLDT COUNTY RECORDS, AT THE REQUEST OF GERALD H. GRIFFITH AND ASSOCIATES.

Emma Cox Alcala
COUNTY RECORDER
BY Grace Jackson
FEE $5.00

COUNTY SURVEYOR'S CERTIFICATE

THIS MAP HAS BEEN EXAMINED FOR CONFORMANCE WITH THE REQUIREMENTS OF THE LAND SURVEYOR'S ACT THIS 26TH DAY OF FEBRUARY 19 74

Gary C. Mulcahy
COUNTY SURVEYOR

RECORD OF SURVEY
FOR
MURCHISON CONSTRUCTION COMPANY
IN
NW 1/4 SECTION 2, T.2N., R.1W., H.M.

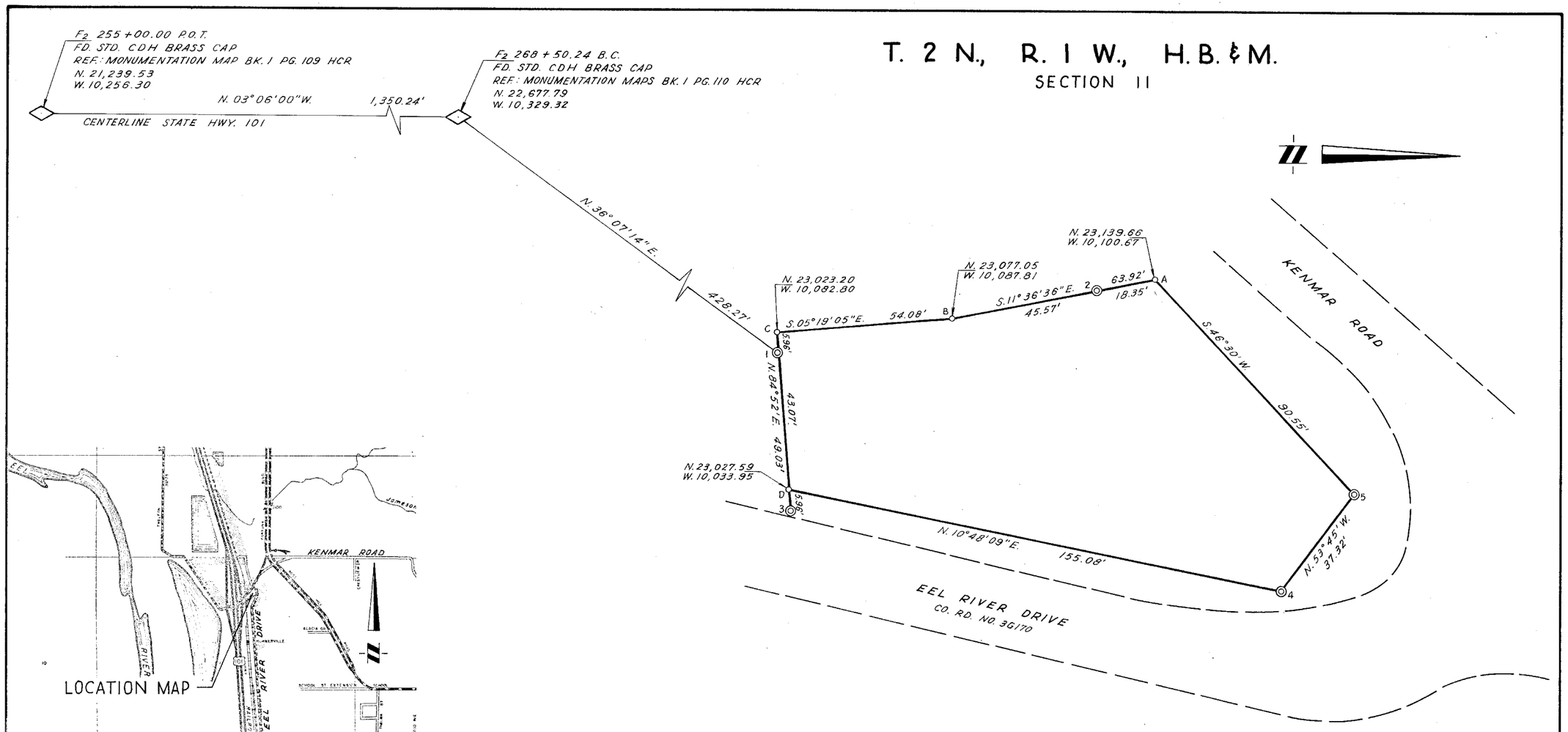
COUNTY OF HUMBOLDT, STATE OF CALIFORNIA
SCALE 1" = 40' FEBRUARY 19 74

GERALD H. GRIFFITH & ASSOCIATES

SHEET 1 OF 1
173-400-1

T. 2 N., R. 1 W., H.B.&M.

SECTION 11



BEARINGS BASED ON MONUMENTATION MAPS BOOK 1
PAGES 109 & 110 HCR BETWEEN STATION 255 AND 268+50.24 B.C.

CONTACT CALTRANS SURVEY DEPT.
FOR CONTROL POINT DESCRIPTIONS

LEGEND

◇ = DOT SURVEY MONUMENT IN PLACE

◎ = 1" DIA. IRON PIPE WITH DOT PLUG & TACK

○ = UNMONUMENTED ANGLE POINT

SURVEYOR'S CERTIFICATE

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE LAND SURVEYOR'S ACT AT THE REQUEST OF DEPARTMENT OF TRANSPORTATION IN AUGUST, 1980

SIGNED George P. Otterbeck
GEORGE P. OTTERBECK
CE 29557

REGISTERED PROFESSIONAL ENGINEER
GEORGE P. OTTERBECK
No. 29557
CIVIL
STATE OF CALIFORNIA

RECORDER'S CERTIFICATE

FILED FOR RECORD THIS_____

DAY OF_____, 19____

AT _____M. IN BOOK_____

OF_____, AT PAGE_____, AT THE

REQUEST OF DEPARTMENT OF TRANSPORTATION

SIGNED_____
COUNTY RECORDER

COUNTY SURVEYOR'S CERTIFICATE

This map has been examined for conformance with the requirements of the Land Surveyor's Act this____day of_____, 19____

_____
County Surveyor

RECORD OF SURVEY

OF STATE HIGHWAY LANDS
IN HUMBOLDT COUNTY, CALIFORNIA
FOR

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

1656 UNION STREET EUREKA

IN SEC 11 T. 2 N., R. 1 W., H.B.&M.

SCALE: 1" = 20' DATE AUGUST 1980

CO	ROUTE	POST MILE	SHEET 1 OF 1
HUM	101	59.5	/

BK. 38 OF SURVEYS PG. 59

RECORD OF SURVEY
CONTROL MONUMENTATION MAP

LOCATED WITHIN
SECTIONS 29 & 32, T4N, R1W,
SECTIONS 5,8,17,20,28 & 29, T3N, R1W,
SECTIONS 2 & 11, T2N, R1W,
HUMBOLDT MERIDIAN,
HUMBOLDT COUNTY, CALIFORNIA
AUGUST 2007

SURVEYOR'S NOTES

1. THE PURPOSE OF THIS SURVEY IS TO DOCUMENT NEWLY ESTABLISHED CONTROL AND TO PERPETUATE THE LOCATIONS OF EXISTING CENTERLINE REFERENCE MONUMENTS WHICH WERE DESTROYED IN 2007 DURING THE CALTRANS MEDIAN PROJECT ON HIGHWAY 101 BETWEEN POST MILES 58.9 - 60.5 AND 63.2 - 70.0.

2. HORIZONTAL CONTROL FOR THIS SURVEY WAS CONSTRAINED TO THE FOLLOWING CCS83(1991.35), ZONE 1, (METRIC) GEODETIC CONTROL MONUMENTS AS PUBLISHED BY THE NATIONAL GEODETIC SURVEY. COMBINED GRID FACTOR FOR THIS PROJECT IS 0.999893228 AT "HUM 101 66.42 GPS" WITH A CONVERGENCE ANGLE OF - 01°26'39".

STATION	LATITUDE	LONGITUDE	ELLIP HEIGHT	ELEVATION
HPGN D CA 01 PA	40°35'20.25799"	124°15'20.10610"	-22.10	9.08
HPGN D CA 01 QB	40°44'40.52926"	124°11'57.65351"	-18.71	12.03
HPGN D CA 01 PB	40°38'21.21783"	124°12'11.85946"	79.92	10.85*

* = ESTABLISHED BY DIGITAL LEVELS IN JANUARY 2004

3. NGS CONTROL MONUMENT "ROHNPORT" WAS OCCUPIED DURING THIS SURVEY. ANY ATTEMPT TO HOLD THE PUBLISHED VALUES FOR THIS POINT RESULTED IN UNSATISFACTORY RESULTS AND WAS THEREFORE ALLOWED TO FLOAT. COORDINATES SHOWN FOR THIS MONUMENT ARE THE "UPDATED" VALUES ESTABLISHED BY THIS SURVEY.

4. STATIC GPS OBSERVATIONS PERFORMED IN JANUARY 2004 USING TRIMBLE 4700 AND 5700 DUAL FREQUENCY RECEIVERS WITH FIXED HEIGHT TRIPODS. BASELINE PROCESSING AND LEAST SQUARES ADJUSTMENT WAS PERFORMED USING TRIMBLE GEOMATICS OFFICE VERSION 1.63.

5. GPS AND CONVENTIONAL CONTROL MONUMENTS WERE SET IN NOVEMBER 2003.

6. DIFFERENTIAL LEVELS WERE PERFORMED IN JANUARY 2004 USING A TOPCON DL-102C DIGITAL LEVEL. THE FOLLOWING NAVD88 BENCHMARKS PUBLISHED BY THE NATIONAL GEODETIC SURVEY WERE USED DURING THIS SURVEY.

STATION	ELEVATION (METRIC)
M 1401	(PID LV0660) 15.783
W 1086	(PID LV0234) 15.573
X 1086	(PID LV0236) 14.841
C 1087 RESET	(PID LV0243) 32.909
L 1401	(PID LV0659) 62.416
F 1087	(PID LV0248) 72.145
G 1087 RESET	(PID LV0250) 85.838
K 1087	(PID LV0255) 1.695 * (1.652)
K 1401	(PID LV0657) 1.741 * (1.729)
L 1087	(PID LV0259) 1.657 * (1.631)
M 1087	(PID LV0260) 12.364 * (12.352)
N 1087 RESET	(PID LV0258) 6.657

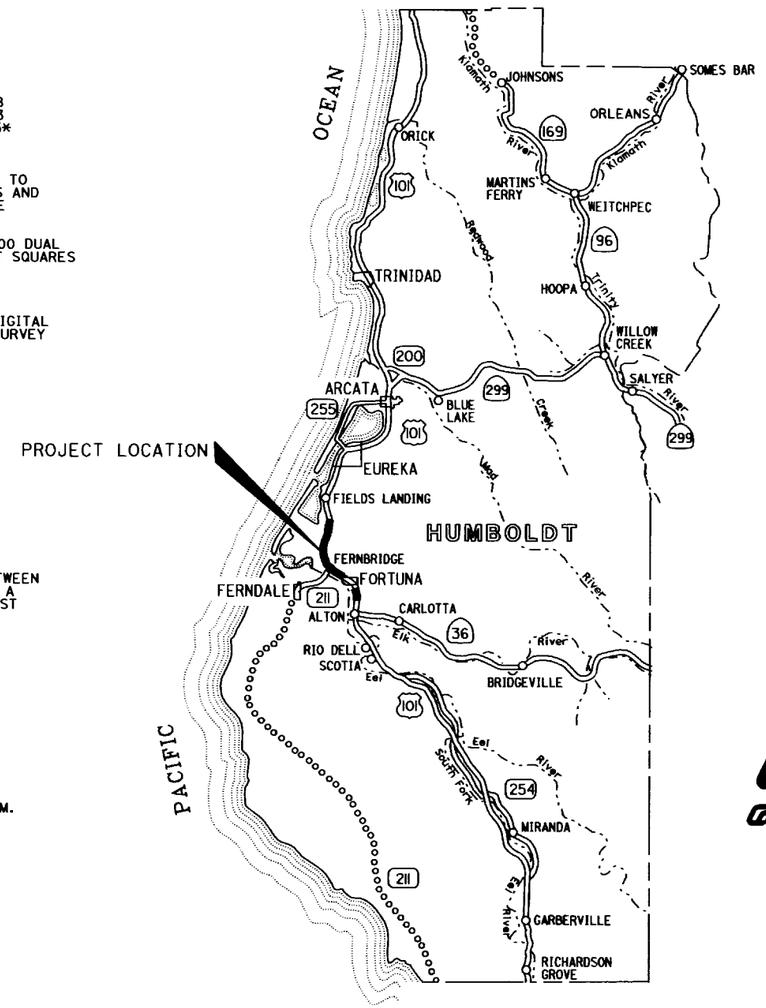
* DENOTES SETTLEMENT (ELEVATION ESTABLISHED BY THIS SURVEY)

7. CONVENTIONAL CONTROL AND RECOVERY OF CENTERLINE MONUMENTS WAS PERFORMED BETWEEN NOVEMBER 2003 AND JUNE 2004 USING A LEICA TCRA 1103-PLUS TOTAL STATION AND A TRIMBLE TSCE DATA COLLECTOR WITH SURVEY CONTROLLER VER 10.70. THE FINAL LEAST SQUARES ADJUSTMENT WAS PROCESSED USING TRIMBLE GEOMATICS OFFICE VER 1.63.

8. A PROJECT REPORT IS AVAILABLE AT THE CALTRANS DISTRICT OFFICE LOCATED AT 1656 UNION STREET, EUREKA, CA 95501. REFERENCE EA IS 43840 SR 03175 & 03187.

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE NORTH AMERICAN DATUM OF 1983, CALIFORNIA COORDINATE SYSTEM, ZONE 1, HOLDING THE PUBLISHED VALUES FOR MONUMENTS HPGN D CA 01 PA, HPGN D CA 01 PB AND HPGN D CA 01 QB AS PUBLISHED BY THE NATIONAL GEODETIC SURVEY USING A COMBINED GRID FACTOR OF 0.999893228 AND CONVERGENCE ANGLE OF -1°26'39" AT 66.42 GPS. HAVING AN ELEVATION OF 80.127 M.



LOCATION MAP
NO SCALE

SURVEYOR'S STATEMENT

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE PROFESSIONAL LAND SURVEYORS' ACT AT THE REQUEST OF THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION (CALTRANS) IN AUGUST 2007.

Richard E. Beale — 9/22/10
RICHARD EARL BEALE — DATE

NORTH REGION OFFICE OF SURVEYORS
DISTRICT 1 SURVEY SUPPORT, EUREKA

PROFESSIONAL LAND SURVEYOR — RICHARD EARL BEALE — No. 7861 — Exp. 12/31/10 — STATE OF CALIFORNIA

COUNTY SURVEYOR'S STATEMENT

THIS MAP HAS BEEN EXAMINED IN ACCORDANCE WITH SECTION 8766 OF THE PROFESSIONAL LAND SURVEYORS' ACT THIS 1ST DAY OF OCTOBER, 2010.

BY: David J. Ryan
DAVID J. RYAN LS 6212 COUNTY SURVEYOR

LICENSED LAND SURVEYOR — DAVID J RYAN — 6212 — STATE OF CALIFORNIA

RECORDER'S STATEMENT

FILED THIS 1st DAY OF October, 2010
AT 1:32 P.M.
IN BOOK 68 OF SURVEYS AT PAGES 25, 26, 27 & 28
AT THE REQUEST OF CALTRANS.

BY:
CAROLYN CRNICH, HUMBOLDT COUNTY RECORDER

FILE # 2010-21578-4

BY:
DEPUTY COUNTY RECORDER

NO FEE REQUIRED PER GOVERNMENT CODE 6103

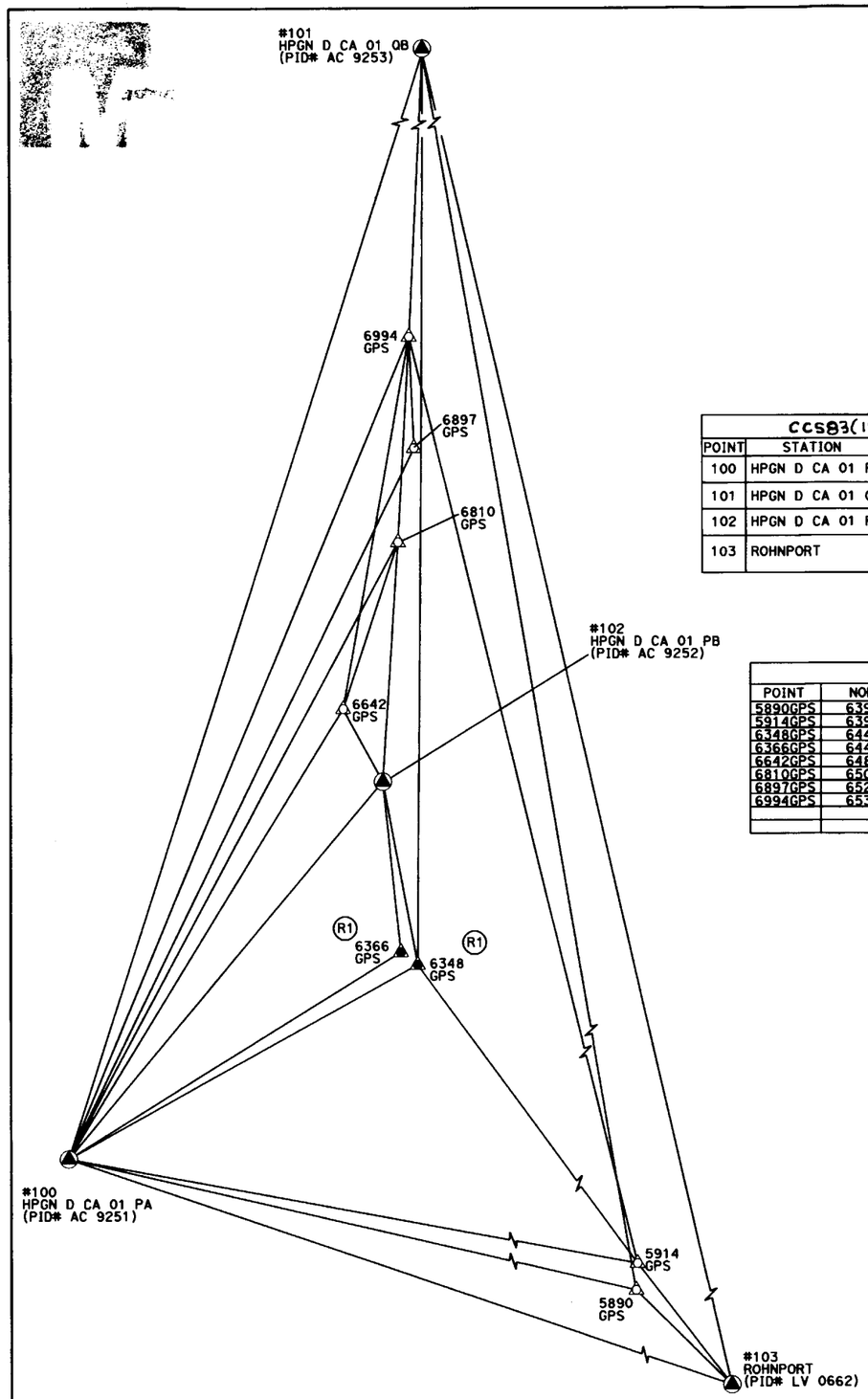
Caltrans

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

ALONG HIGHWAY 101 BETWEEN ALTON AND FIELDS LANDING IN THE UNINCORPORATED AREA OF HUMBOLDT COUNTY AND THE CITY OF FORTUNA

DIST	COUNTY	ROUTE	POST MILES	SHEET NO.	TOTAL SHEETS
01	HUM	101	58.9/70.1	1	4



LOCATED WITHIN
SECTIONS 29 & 32, T4N, R1W,
SECTIONS 5,8,17,20,28, & 29, T3N, R1W,
SECTIONS 2 & 11, T2N, R1W,
HUMBOLDT MERIDIAN,
HUMBOLDT COUNTY, CALIFORNIA
AUGUST 2007

CCS83(1991.35), ZONE 1, NAVD88, METRIC **FOUND GEODETIC CONTROL**

POINT	STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	HPGN D CA 01 PA	641878.612	1819091.350	9.08	3.25" ALUMINUM SURVEY DISK ON ALUMINUM ALLOY ROD ENCASED IN PVC IN CONCRETE STAMPED "CA HPGN DENSIFICATION STA 01 PA 1993".
101	HPGN D CA 01 QB	659032.849	1814283.820	12.03	3.25" ALUMINUM SURVEY DISK ON ALUMINUM ALLOY ROD ENCASED IN PVC IN CONCRETE STAMPED "CA HPGN DENSIFICATION STA 01 QB 1993".
102	HPGN D CA 01 PB	647345.625	1813656.529	110.85	3.25" ALUMINUM SURVEY DISK ON ALUMINUM ALLOY ROD ENCASED IN PVC IN CONCRETE STAMPED "CA HPGN DENSIFICATION STA 01 PB 1993".
103	ROHNPORT	637731.965 637732.002*	1819470.277 1819470.423*	112.753*	ROD ENCASED IN PVC IN CONCRETE STAMPED "ROHNPORT 1987", NOT HELD FOR CONTROL

* AS PUBLISHED BY THE NATION GEODETIC SURVEY

GPS CONTROL ESTABLISHED BY THIS SURVEY

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
5890GPS	639095.408	1818084.450	16.578	1" GIP WITH 2.25" BRASS DISK STAMPED "58.90 GPS 2003"
5914GPS	639482.457	1818104.356	16.247	1" GIP WITH 2.25" BRASS DISK STAMPED "59.14 GPS 2003"
6348GPS	644695.261	1814161.770	36.998	0.75" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 63.48", R1
6366GPS	644876.935	1813916.854	35.771	0.75" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 63.66", R1
6642GPS	648397.474	1813080.575	80.127	1" GIP WITH 2.25" BRASS DISK STAMPED "66.42 GPS 2003"
6810GPS	650807.989	1813877.982	6.095	1" GIP WITH 2.25" BRASS DISK STAMPED "68.10 GPS 2003"
6897GPS	652167.739	1814110.979	3.174	1" GIP WITH 2.25" BRASS DISK STAMPED "HUM 101 68.97 GPS"
6994GPS	653777.294	1814042.416	4.149	1" GIP WITH 2.25" BRASS DISK STAMPED "HUM 101 69.94 GPS"

ROTATE GRID BEARINGS
1°26'39" COUNTERCLOCKWISE TO
OBTAIN GEODETIC (TRUE) BEARINGS

CONVERGENCE ANGLE
1°26'39" AT
66.42 GPS

SCALE 1:50000
0 1000 2000

LEGEND
- FOUND GEODETIC CONTROL MONUMENT
- SET CALTRANS GPS MONUMENT
- FOUND CALTRANS GPS MONUMENT (R1)
- (R1) BOOK 64 OF SURVEYS, PAGES 146 & 147

NOTES
1. SOME MONUMENT SYMBOLS HAVE BEEN MOVED GRAPHICALLY TO ALLOW FOR CLAIRITY.
2. NOT ALL BASELINES USED IN THE ADJUSTMENT ARE SHOWN.

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

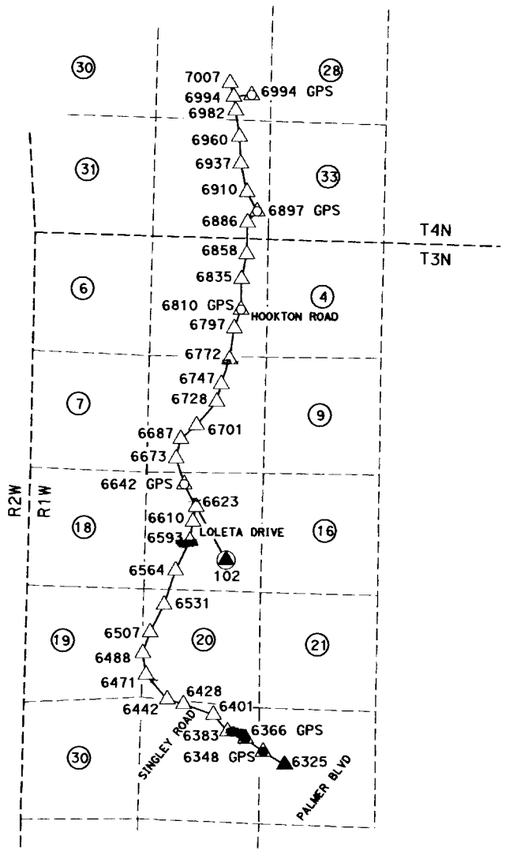
NORTH REGION
OFFICE OF SURVEYORS

ALONG HIGHWAY 101 BETWEEN
ALTON AND FIELDS LANDING
IN THE UNINCORPORATED AREA
OF HUMBOLDT COUNTY AND
THE CITY OF FORTUNA

DIST	COUNTY	ROUTE	POST MILES	SHEET NO.	TOTAL SHEETS
01	HUM	101	58.9/70.1	2	4

BOOK 68 OF SURVEYS, PAGE 26

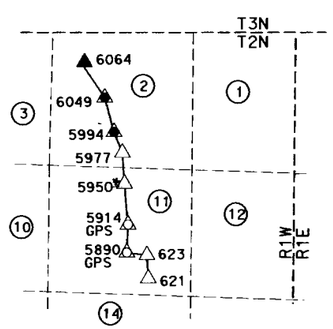
LOCATED WITHIN
SECTIONS 29 & 32, T4N, R1W,
SECTIONS 5,8,17,20,28 & 29, T3N, R1W,
SECTIONS 2 & 11, T2N, R1W,
HUMBOLDT MERIDIAN,
HUMBOLDT COUNTY, CALIFORNIA
AUGUST 2007



CONVENTIONAL CONTROL

CCS83(1991.35), ZONE 1, NAVD88, METRIC

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
621	638760.198	1818215.300	16.628	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "02002-621"
623	639081.887	1818197.812	16.545	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "02002-623"
5890GPS	639095.408	1818084.450	16.578	SET 1" GIP WITH 2.25" WITH CONCRETE COLLAR BRASS DISK STAMPED "58.90 GPS 2003"
5914GPS	639482.457	1818104.356	16.247	SET 1" GIP WITH 2.25" WITH CONCRETE COLLAR BRASS DISK STAMPED "59.14 GPS 2003"
5950	640048.662	1818057.189	20.830	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "59.50 2003"
5977	640478.536	1818031.999	15.365	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "59.77 2003"
5994GPS	640764.725	1817916.843	15.212	FOUND ¾" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 59.94" (R1, R2)
6049GPS	641243.774	1817790.489	14.391	FOUND ¾" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 60.49" (R1, R2)
6064	641736.254	1817459.174	14.680	FOUND ¾" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 60.64" (R2)
6325	644512.521	1814456.488	29.500	FOUND ¾" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 63.25" (R2)
6348GPS	644695.261	1814161.770	36.998	FOUND ¾" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 63.48" (R1, R2)
6366GPS	644876.935	1813916.854	35.771	FOUND ¾" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 63.66" (R1, R2)
6383	644976.941	1813669.003	34.172	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "63.83 2003"
6401	645207.057	1813473.861	29.385	SET ¾" IRON PIPE WITH 2.25" BRASS DISK STAMPED "SINGLEY 1 64.01 2003"
6428	645356.801	1813057.663	23.612	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "64.28 2003"
6442	645424.222	1812834.897	26.838	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "64.42 2003"
6471	645764.966	1812539.414	50.614	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "64.71 2003"
6488	646063.662	1812496.391	62.605	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "64.88 2003"
6507	646349.960	1812601.275	63.727	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "65.07 2003"
6531	646731.811	1812795.379	59.384	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "65.31 2003"
6564	647206.140	1812956.764	66.069	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "65.64 2003"
102	647345.625	1813656.529	110.85	FOUND 3.25" ALUMINUM SURVEY DISK ON ALUMINUM ALLOY ROD ENCASED IN PVC IN CONCRETE STAMPED "CA HPGN DENSIFICATION STA 01 PB 1993"
6593	647616.208	1813157.768	71.513	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "65.93 2003"
6610	647902.952	1813203.998	76.609	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "66.10 2003"
6623	648082.740	1813246.893	74.545	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "66.23 2003"
6642GPS	648397.474	1813080.575	80.127	SET 1" GIP WITH 2.25" BRASS DISK WITH CONCRETE COLLAR STAMPED "66.42 GPS 2003"
6673	648758.842	1812970.494	87.445	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "66.73 2003"
6687	649024.716	1813034.350	92.100	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "66.87 2003"
6701	649212.844	1813255.520	83.535	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "67.01 2003"
6728	649537.428	1813538.671	69.977	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "67.28 2003"
6747	649783.818	1813599.732	55.484	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "67.47 2003"
6772	650122.442	1813716.012	33.920	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "67.72 2003"
6797	650551.665	1813784.699	8.606	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "67.97 2003"
6810GPS	650807.989	1813877.982	6.095	SET 1" GIP WITH 2.25" BRASS DISK WITH CONCRETE COLLAR STAMPED "68.10 GPS 2003"
6835	651229.581	1813888.458	3.709	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "68.35 2003"
6858	651576.060	1813963.094	2.456	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "68.58 2003"
6886	652014.778	1813974.406	2.186	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "68.86 2003"
6897GPS	652167.739	1814110.979	3.174	SET 1" GIP WITH 2.25" BRASS DISK WITH CONCRETE COLLAR STAMPED "HUM 101 68.97 GPS"
6910	652435.854	1813969.742	1.621	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "69.10 2003"
6937	652829.477	1813887.032	2.043	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "69.37 2003"
6960	653200.778	1813869.650	1.995	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "69.60 2003"
6982	653562.945	1813820.785	2.358	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "PC 69.82"
6994	653755.051	1813795.901	3.348	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "PC 69.94"
6994GPS	653777.294	1814042.416	4.149	SET 1" GIP WITH 2.25" BRASS DISK WITH CONCRETE COLLAR STAMPED "HUM 101 69.94 GPS"
7007	653946.755	1813744.951	4.630	SET ⅝" REBAR WITH 1.5" ALUMINUM CAP STAMPED "PC 70.07"



ROTATE GRID BEARINGS 1°26'39" COUNTERCLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS

CONVERGENCE ANGLE 1°26'39" AT 66.42 GPS

SCALE 1:50000

0 1000 2000

LEGEND

- FOUND GEODETIC CONTROL MONUMENT
- SET CALTRANS GPS MONUMENT
- FOUND CALTRANS GPS MONUMENT (R1)
- SET CALTRANS CONTROL MONUMENT
- FOUND CALTRANS CONTROL MONUMENT (R2)
- (R1) BOOK 64 OF SURVEYS, PAGES 146 & 147
- (R2) BOOK 67 OF SURVEYS, PAGES 56 - 64
- (XX) SECTION NUMBER

NOTE

SOME MONUMENT SYMBOLS HAVE BEEN MOVED GRAPHICALLY TO ALLOW FOR CLAIRITY.

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

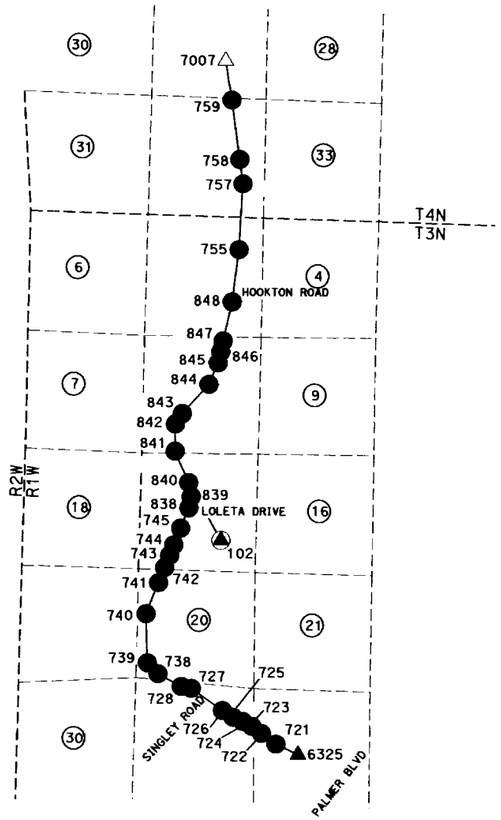
NORTH REGION
OFFICE OF SURVEYORS

ALONG HIGHWAY 101 BETWEEN ALTON AND FIELDS LANDING IN THE UNINCORPORATED AREA OF HUMBOLDT COUNTY AND THE CITY OF FORTUNA

DIST	COUNTY	ROUTE	POST MILES	SHEET NO.	TOTAL SHEETS
01	HUM	101	58.9/70.1	3	4

BOOK 68 OF SURVEYS, PAGE 27

LOCATED WITHIN
SECTIONS 29 & 32, T4N, R1W,
SECTIONS 5,8,17,20,28 & 29, T3N, R1W,
SECTIONS 2 & 11, T2N, R1W,
HUMBOLDT MERIDIAN,
HUMBOLDT COUNTY, CALIFORNIA
AUGUST 2007

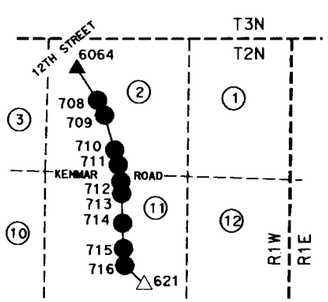


CONVENTIONAL CONTROL
CCS83(1991.35), ZONE 1, NAVD88, METRIC

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
6064	641736.254	1817459.174	14.680	FOUND ¾" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 60.64" (R2)
708	641291.600	1817744.875	13.883	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 312+55.84 (R6)
709	641083.792	1817840.502	14.168	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 305+42.44 (R6)
710	640604.723	1817978.587	15.485	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 288+66.59/288+63.18 (R6)
711	640397.864	1818028.542	16.025	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 281+65.05 (R6)
712	640167.226	1818062.442	20.202	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION BCIC 274+00.00 (R6)
713	640000.096	1818073.112	20.116	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 268+50.24 (R6)
714	639588.754	1818085.086	16.979	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 255+00.00 (R6)
715	639237.889	1818095.334	16.858	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 243+47.30 (R6)
716	639001.751	1818111.402	17.329	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 235+70.63 (R6)
621	638760.198	1818215.300	16.628	SET ⅜" REBAR WITH 1.5" ALUMINUM CAP STAMPED "02002-621"
6325	644512.521	1814456.488	29.50	FOUND ¾" REBAR WITH 1.5" ALUMINUM CAP STAMPED "HUM 101 63.25" (R2)
721	644527.177	1814413.721	30.151	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 93+76.77 (R3)
722	644676.402	1814212.074	36.574	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 102+00.00 (R3)
723	644774.387	1814079.668	37.379	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 107+40.38 (R3)
724	644849.817	1813944.765	36.048	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 112+48.85 (R3)
725	644901.232	1813817.241	34.972	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 116+83.12 (R3)
726	644995.148	1813671.645	33.545	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 122+72.09 (R3)
727	645302.266	1813239.856	25.039	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 140+36.17 (R4)
728	645329.736	1813101.169	24.308	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 145+00.00 (R4)
738	645507.061	1812778.383	28.318	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 157+27.55 (R4)
739	645659.388	1812633.133	39.678	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 164+18.17 (R4)
740	646333.398	1812616.537	60.849	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 188+00.00 (R4)
741	646760.715	1812790.831	59.662	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 203+14.12 (R4)
742	646968.494	1812875.606	62.592	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 210+50.00 (R4)
743	647137.786	1812944.652	64.669	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 216+50.00 (R4)
744	647285.529	1813004.893	66.888	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 221+73.59 (R4)
745	647514.091	1813098.163	70.210	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 229+83.69 (R5)
102	647345.625	1813656.529	110.85	FOUND 3.25" ALUMINUM SURVEY DISK ON ALUMINUM ALLOY ROD ENCASED IN PVC IN CONCRETE STAMPED "CA HPGN DENSIFICATION STA 01 PB 1993"
838	647793.347	1813212.092	72.285	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 239+73.74 (R5)
839	647949.322	1813245.671	73.184	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 245+00.00 (R5)
840	648143.649	1813210.037	75.012	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 251+53.58 (R5)
841	648586.771	1813023.217	83.057	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 267+31.28 (R5)
842	648962.741	1813027.077	89.600	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 280+00.00 (R5)
843	649104.178	1813124.256	88.379	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 285+66.35 (R5)
844	649500.576	1813494.964	70.697	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 303+50.00 (R5)
845	649795.949	1813623.238	54.460	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 314+12.19 (R5)
846	649955.647	1813661.017	44.469	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 319+50.38 (R5)
847	650103.387	1813696.018	35.514	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 324+48.68 (R5)
848	650634.437	1813821.843	6.265	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 342+38.78 (R5)
755	651346.903	1813919.944	3.736	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 366+00.00 (R5)
757	652253.764	1813977.231	2.274	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 395+88.75 (R5)
758	652589.575	1813933.398	2.223	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 407+00.00 (R5)
759	653405.672	1813826.972	2.084	FOUND 2.25" BRASS DISK IN CONCRETE, CENTERLINE STATION 434+00.00 (R5)
7007	653946.755	1813744.951	4.630	SET ⅜" REBAR WITH 1.5" ALUMINUM CAP STAMPED "PC 70.07"

R1 BOOK 64 OF SURVEYS, PAGES 146 & 147
R2 BOOK 67 OF SURVEYS, PAGES 56 - 64
R3 CALTRANS AS-BUILTS 59-1TC7-F
R4 CALTRANS AS-BUILTS 57-1TC6 + 58-1TC5
R5 CALTRANS AS-BUILTS 61-1T13C10-F
R6 CALTRANS AS-BUILTS 61-1T13C16-F

NOTE: ALL MONUMENTS REFERENCED BY R3, R4, R5 AND R6 WERE DESTROYED DURING CONSTRUCTION IN 2007.



ROTATE GRID BEARINGS 1°26'39" COUNTERCLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS

CONVERGENCE ANGLE 1°26'39" AT 66.42 GPS

SCALE 1:50000
0 1000 2000

LEGEND
- FOUND GEODETIC CONTROL MONUMENT
- △ SET CALTRANS CONTROL MONUMENT
- ▲ FOUND CALTRANS CONTROL MONUMENT
- ● FOUND CENTERLINE MONUMENT

NOTE
SOME MONUMENT SYMBOLS HAVE BEEN MOVED GRAPHICALLY TO ALLOW FOR CLAIRITY.

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

ALONG HIGHWAY 101 BETWEEN ALTON AND FIELDS LANDING IN THE UNINCORPORATED AREA OF HUMBOLDT COUNTY AND THE CITY OF FORTUNA

DIST	COUNTY	ROUTE	POST MILES	SHEET NO.	TOTAL SHEETS
01	HUM	101	58.9/70.1	4	4

BOOK 68 OF SURVEYS, PAGE 28

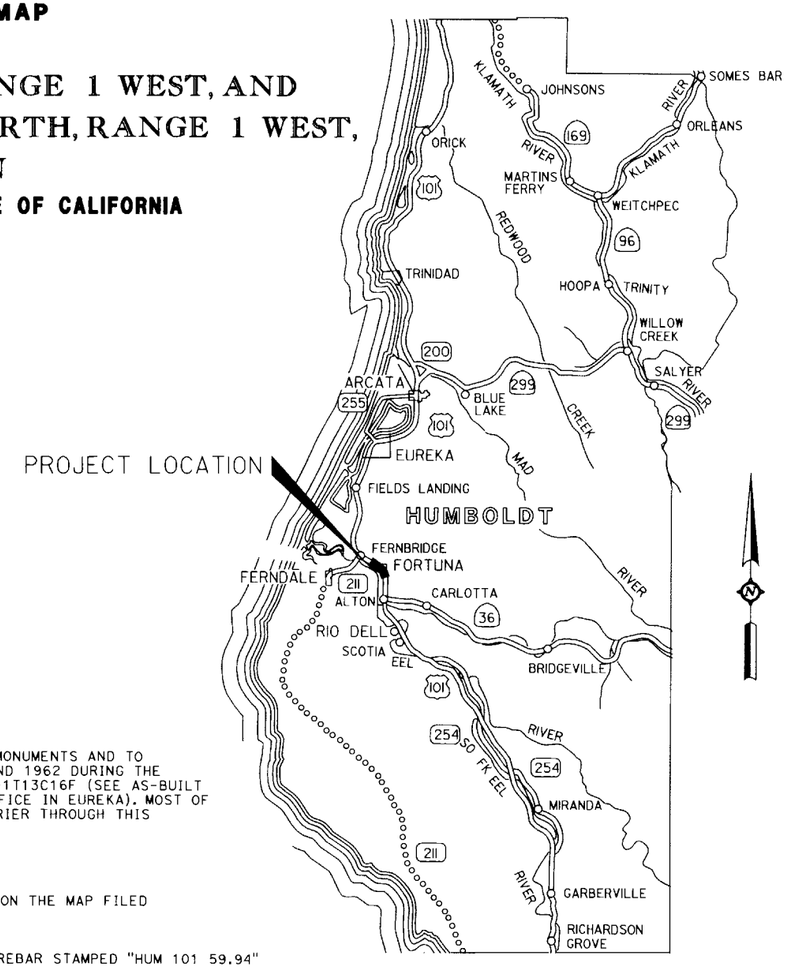
RECORD OF SURVEY

CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP
STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND SECTIONS 28, 29, 33, 34 & 35, TOWNSHIP 3 NORTH, RANGE 1 WEST, HUMBOLDT MERIDIAN

CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

OCTOBER 1999



LOCATION MAP

NOT TO SCALE

BASIS OF BEARINGS

THE BASIS OF BEARING FOR THIS SURVEY IS THE NORTH AMERICAN DATUM OF 1983, EPOCH 1991.35, HOLDING THE CCS83 ZONE 1 GRID COORDINATES AS PUBLISHED BY THE NATIONAL GEODETIC SURVEY AS SHOWN IN THE "PRIMARY CONTROL" TABLE HEREON.

PURPOSE OF SURVEY

THE PURPOSE OF THIS SURVEY IS TO SHOW THE RELATIONSHIP BETWEEN THE NEW CONTROL MONUMENTS AND TO PERPETUATE THE LOCATIONS OF CENTERLINE MONUMENTS WHICH WERE SET BETWEEN 1958 AND 1962 DURING THE CONSTRUCTION OF THIS SECTION OF HIGHWAY 101 UNDER CONTRACT NUMBERS 59-1TC7 & 61-1T13C16F (SEE AS-BUILT PLANS IN DRAWERS 10-32-03 (R3) & 10-93-11 (R2) ON FILE AT THE CALTRANS DISTICT OFFICE IN EUREKA). MOST OF THESE MONUMENTS WERE DESTROYED DURING THE CONSTRUCTION OF A CONCRETE MEDIAN BARRIER THROUGH THIS PORTION OF STATE HIGHWAY 101 IN 2002.

SURVEYOR'S NOTES

1. HORIZONTAL CONTROL FOR THIS SURVEY WAS CONSTRAINED TO THE MONUMENTS AS SHOWN ON THE MAP FILED IN BOOK 64 OF SURVEYS, PAGES 146 AND 147 (A SURVEY PERFORMED USING METRIC UNITS).

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 59.94	2102242.269	5964282.176	49.92	1 ½" ALUM CAP ON ¾" REBAR STAMPED "HUM 101 59.94"
HUM 101 60.49	2103813.948	5963867.629	47.21	1 ½" ALUM CAP ON ¾" REBAR STAMPED "HUM 101 60.49"
HUM 101 63.48	2115137.840	5951962.519	121.34	1 ½" ALUM CAP ON ¾" REBAR STAMPED "HUM 101 63.48"
HUM 101 63.66	2115733.846	5951158.983	117.35	1 ½" ALUM CAP ON ¾" REBAR STAMPED "HUM 101 63.66"

2. COMBINED GRID FACTOR FOR THIS PROJECT IS 0.9999030 AT "HUM 101 61.68" WITH A CONVERGENCE ANGLE OF - 01°25'06".

3. CONTROL MONUMENTS WERE SET IN DECEMBER, 1999.

4. FIELDWORK WAS PERFORMED UNDER THE DIRECTION OF BARTON FLOYD CREWS, PLS 6744 IN DECEMBER, 1999, USING A LEICA TCA 1103 TOTAL STATION AND HEWLETT PACKARD 200LX DATA COLLECTOR WITH CALTRANS DATA COLLECTION SOFTWARE.

5. LEAST SQUARES ADJUSTMENT WAS PERFORMED USING CALTRANS POST PROCESSING SOFTWARE (CTDAP, RELEASE 8).

6. ALL ELEVATIONS WERE ESTABLISHED USING TRIGONOMETRIC PROCEDURES.

7. A PROJECT REPORT IS AVAILABLE AT THE CALTRANS DISTRICT OFFICE LOCATED AT 1656 UNION STREET, EUREKA, CA 95501. THE REFERENCE E.A. IS 40270 SR 99158.

SURVEYOR'S STATEMENT

THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE PROFESSIONAL LAND SURVEYORS' ACT AT THE REQUEST OF THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION - CALTRANS IN JANUARY 2008.

PROFESSIONAL LAND SURVEYOR — PATRICK WARD MORRILL — Exp. 3/31/2010 — No. 6191 — STATE OF CALIFORNIA

Patrick W. Morrill

PATRICK WARD MORRILL PLS 6191
LICENSE EXPIRATION DATE: 3-31-2010
NORTH REGION OFFICE OF SURVEYORS

COUNTY SURVEYOR'S STATEMENT

THIS MAP HAS BEEN EXAMINED IN ACCORDANCE WITH SECTION 8766 OF THE PROFESSIONAL LAND SURVEYORS' ACT THIS 30TH DAY OF OCTOBER, 2009.

David J. Ryan

DAVID JAMES RYAN, PLS 6212 — DATE
HUMBOLDT COUNTY SURVEYOR

LICENSE EXPIRATION DATE: MARCH 31, 2010

LICENSED LAND SURVEYOR — DAVID J. RYAN — 6212 — STATE OF CALIFORNIA

RECORDER'S STATEMENT

FILED THIS 2ND DAY OF NOVEMBER, 2009 AT 2:50 P.M. IN BOOK 67 OF SURVEYS AT PAGES 56-64, AT THE REQUEST OF CALTRANS.

CAROLYN CRNICH
HUMBOLDT COUNTY RECORDER

FILE # 2009-24342-9

BY: L Holman
DEPUTY COUNTY RECORDER

NO FEE REQUIRED PER GOVERNMENT CODE 6103

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP
IN THE CITY OF FORTUNA, HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	1 OF 9

SURVEYS BOOK 67 PAGE 56

RECORD OF SURVEY

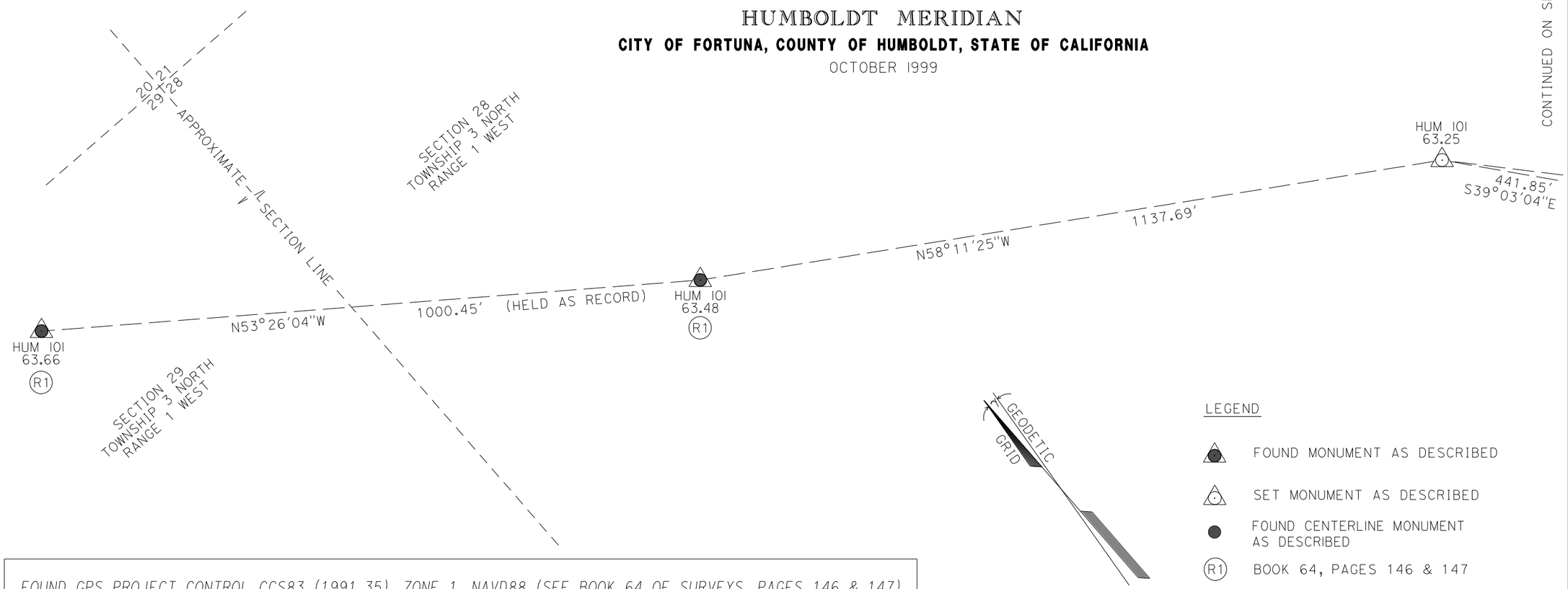
CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP

STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND
SECTIONS 28, 29, 33, 34 & 35, TOWNSHIP 3 NORTH, RANGE 1 WEST,
HUMBOLDT MERIDIAN

CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

OCTOBER 1999



FOUND GPS PROJECT CONTROL CCS83 (1991.35), ZONE 1, NAVD88 (SEE BOOK 64 OF SURVEYS, PAGES 146 & 147)

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 63.48	2115137.840	5951962.519	121.34	*FOUND 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 63.48" (R1)*
HUM 101 63.66	2115733.846	5951158.983	117.35	*FOUND 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 63.66" (R1)*

PROJECT CONTROL ESTABLISHED BY THIS SURVEY

	STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
	HUM 101 63.01	2113518.768	5953845.025	69.06	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 63.01"*
	HUM 101 63.25	2114538.163	5952929.328	96.79	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 63.25"*

SCALE 1" = 100'

0 100 200

CONVERGENCE ANGLE
-1°25'06"
AT HUM 101 61.68

NOTE: ROTATE GRID BEARINGS 1°25'06" COUNTER CLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS.

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND
MONUMENT PERPETUATION MAP
IN THE CITY OF FORTUNA,
HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	2 OF 9

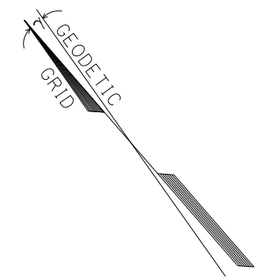
RECORD OF SURVEY

CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP
STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND SECTIONS 28, 29, 33, 34 & 35, TOWNSHIP 3 NORTH, RANGE 1 WEST, HUMBOLDT MERIDIAN

CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

OCTOBER 1999



SCALE 1" = 100'

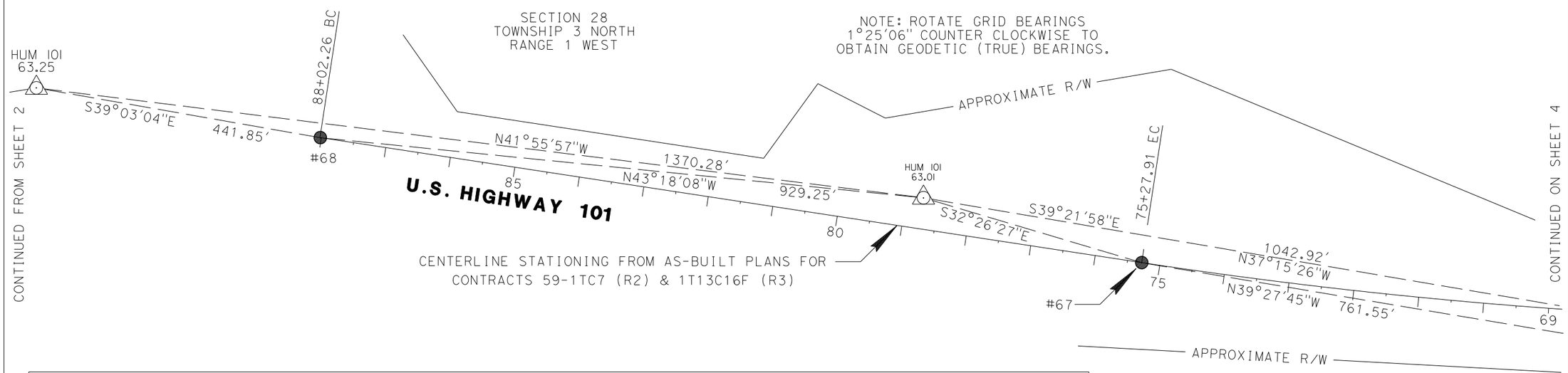
0 100 200

CONVERGENCE ANGLE
-1°25'06"
AT HUM 101 61.68

NOTE: ROTATE GRID BEARINGS 1°25'06" COUNTER CLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS.

LEGEND

- FOUND MONUMENT AS DESCRIBED
- SET MONUMENT AS DESCRIBED
- FOUND CENTERLINE MONUMENT AS DESCRIBED
- (R2) AS BUILT PLANS FOR CONTRACT 59-1TC7 IN DRAWER 10-93-11 CALTRANS DISTRICT 1 OFFICE.
- (R3) AS BUILT PLANS FOR CONTRACT 61-1T13C16F IN DRAWER 10-32-03 CALTRANS DISTRICT 1 OFFICE.



PROJECT CONTROL ESTABLISHED BY THIS SURVEY (CCS83 (1991.35), ZONE 1, NAVD88, US SURVEY FEET)

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 62.79	2112636.283	5954516.260	74.65	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 62.79"*
HUM 101 63.01	2113518.768	5953845.025	69.06	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 63.01"*
HUM 101 63.25	2114538.163	5952929.328	96.79	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 63.25"*

CENTERLINE MONUMENTS FOUND BY THIS SURVEY

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
#66	2112712.474	5954506.523	74.30	*FOUND 2 ¼" BRASS DISK IN CONCRETE CENTERLINE STATION "68+29.78 BC" (R2), DESTROYED 2002*
#67	2113224.231	5954032.239	72.43	*FOUND 2 ¼" BRASS DISK IN CONCRETE CENTERLINE SATATION "75+27.91 EC" (R2), DESTROYED 2002*
#68	2114195.027	5953207.700	81.75	*FOUND 2 ¼" BRASS DISK IN CONCRETE CENTERLINE STATION "88+02.26 BC" (R2), DESTROYED 2002*

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND
MONUMENT PERPETUATION MAP

IN THE CITY OF FORTUNA,
HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	3 OF 9

RECORD OF SURVEY

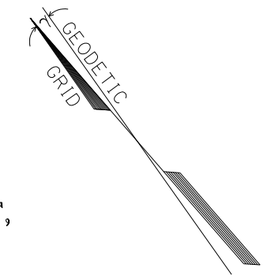
CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP

STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND SECTIONS 28, 29, 33, 34 & 35, TOWNSHIP 3 NORTH, RANGE 1 WEST, HUMBOLDT MERIDIAN

CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

OCTOBER 1999



SCALE 1" = 100'

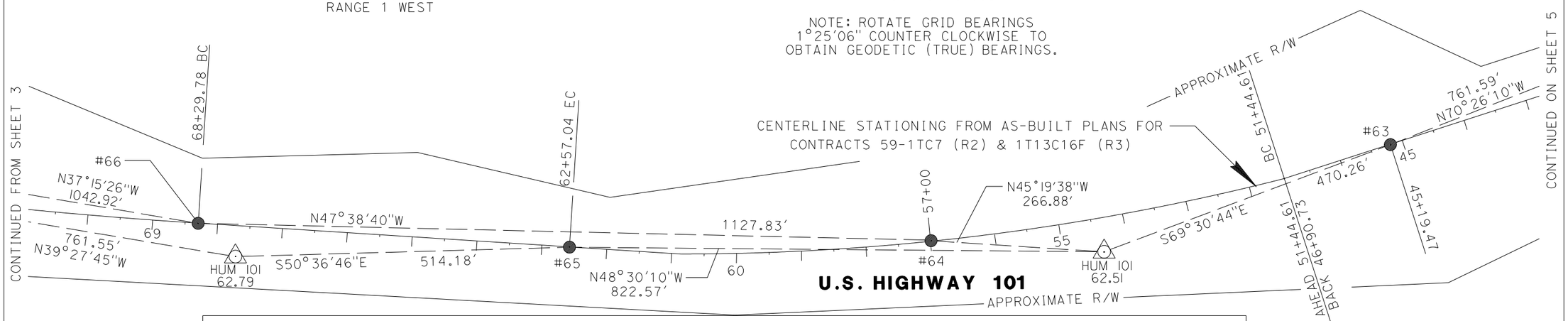
0 100 200

CONVERGENCE ANGLE
-1°25'06"
AT HUM 101 61.68

NOTE: ROTATE GRID BEARINGS 1°25'06" COUNTER CLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS.

LEGEND

- FOUND MONUMENT AS DESCRIBED
- SET MONUMENT AS DESCRIBED
- FOUND CENTERLINE MONUMENT AS DESCRIBED
- (R2) AS BUILT PLANS FOR CONTRACT 59-1TC7 IN DRAWER 10-93-11 CALTRANS DISTRICT 1 OFFICE.
- (R3) AS BUILT PLANS FOR CONTRACT 61-1T13C16F IN DRAWER 10-32-03 CALTRANS DISTRICT 1 OFFICE.



PROJECT CONTROL ESTABLISHED BY THIS SURVEY (CCS83 (1991.35), ZONE 1, NAVD 88, US SURVEY FEET)

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 62.31	2111345.370	5956687.887	70.55	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 62.31"*
HUM 101 62.51	2111764.989	5955529.749	82.11	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 62.51"*
HUM 101 62.79	2112636.283	5954516.260	74.65	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 62.79"*
HUM 101 63.01	2113518.768	5953845.025	69.06	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 63.01"*

CENTERLINE MONUMENTS FOUND BY THIS SURVEY

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
#63	2111600.396	5955970.260	76.64	*FOUND 2 ¼" BRASS DISK IN CONCRETE CENTERLINE STATION 45+19.47 (R2), DESTROYED 2002*
#64	2111952.620	5955339.963	78.04	*FOUND 2 ¼" BRASS DISK IN CONCRETE CENTERLINE STATION 57+00 (R2), DESTROYED 2002*
#65	2112310.008	5954913.655	73.01	*FOUND 2 ¼" BRASS DISK IN CONCRETE CENTERLINE STATION 62+57.04 EC (R2), DESTROYED 2002*
#66	2112712.474	5954506.523	74.30	*FOUND 2 ¼" BRASS DISK IN CONCRETE CENTERLINE STATION 68+29.78 BC (R2), DESTROYED 2002*

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND
MONUMENT PERPETUATION MAP

IN THE CITY OF FORTUNA,
HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	4 OF 9

RECORD OF SURVEY

CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP
STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND
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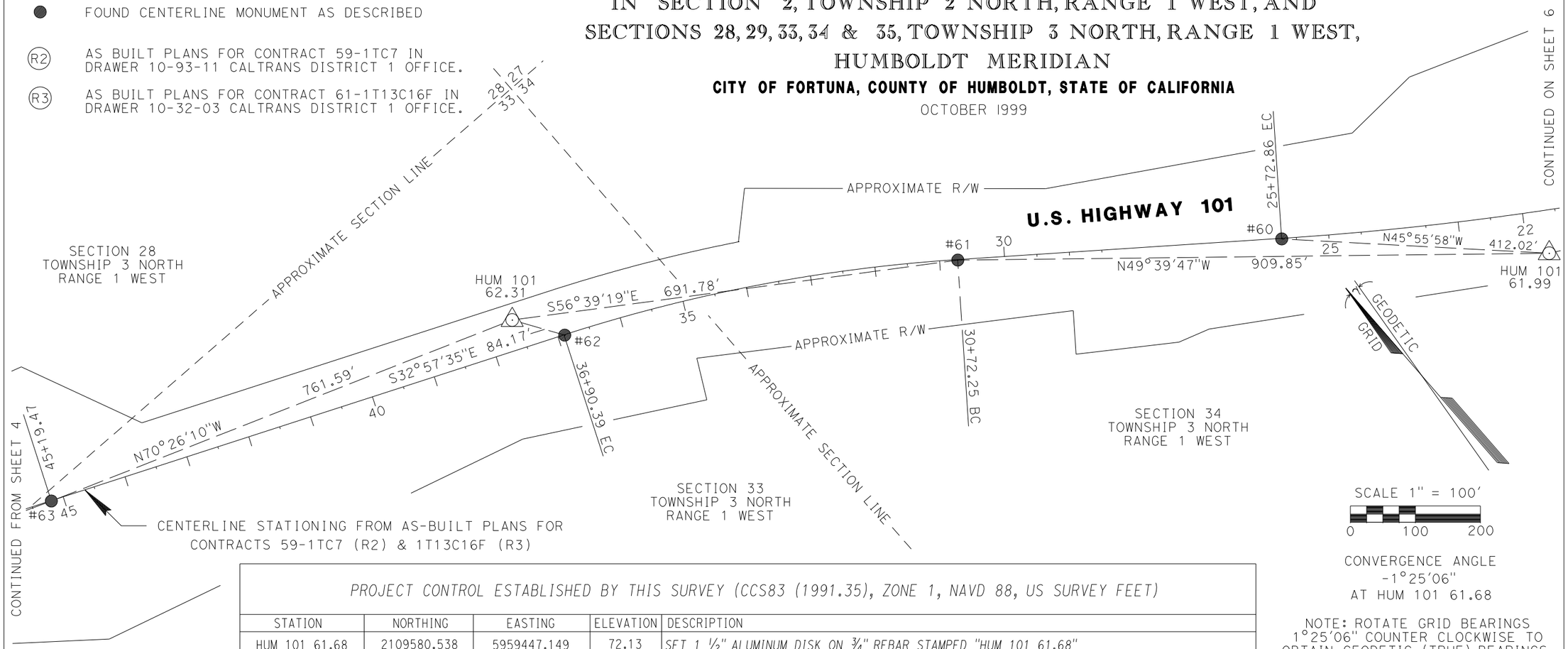
HUMBOLDT MERIDIAN

CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

OCTOBER 1999

LEGEND

- FOUND MONUMENT AS DESCRIBED
- SET MONUMENT AS DESCRIBED
- FOUND CENTERLINE MONUMENT AS DESCRIBED
- (R2) AS BUILT PLANS FOR CONTRACT 59-1TC7 IN DRAWER 10-93-11 CALTRANS DISTRICT 1 OFFICE.
- (R3) AS BUILT PLANS FOR CONTRACT 61-1T13C16F IN DRAWER 10-32-03 CALTRANS DISTRICT 1 OFFICE.



CONVERGENCE ANGLE
-1°25'06"
AT HUM 101 61.68

NOTE: ROTATE GRID BEARINGS 1°25'06" COUNTER CLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS.

PROJECT CONTROL ESTABLISHED BY THIS SURVEY (CCS83 (1991.35), ZONE 1, NAVD 88, US SURVEY FEET)

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 61.68	2109580.538	5959447.149	72.13	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 61.68"*
HUM 101 61.99	2110376.193	5957959.314	74.56	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 61.99"*
HUM 101 62.31	2111345.370	5956687.887	70.55	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 62.31"*
HUM 101 62.51	2111764.989	5955529.749	82.11	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 62.51"*

CENTERLINE MONUMENTS FOUND BY THIS SURVEY

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
#60	2110662.757	5957663.265	72.67	*FOUND 2 ¼" BRASS DISK IN CONCRETE 25+72.86 EC (R2), DESTROYED 2002*
#61	2110965.119	5957265.782	70.98	*FOUND 2 ¼" BRASS DISK IN CONCRETE 30+72.25 BC (R2), DESTROYED 2002*
#62	2111274.750	5956733.677	69.34	*FOUND 2 ¼" BRASS DISK IN CONCRETE 36+90.39 EC (R2), DESTROYED 2002*
#63	2111600.396	5955970.260	76.64	*FOUND 2 ¼" BRASS DISK IN CONCRETE 45+19.47 (R2), DESTROYED 2002*

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND
MONUMENT PERPETUATION MAP
IN THE CITY OF FORTUNA,
HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	5 OF 9

RECORD OF SURVEY

CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP
STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND
SECTIONS 28, 29, 33, 34 & 35, TOWNSHIP 3 NORTH, RANGE 1 WEST,
HUMBOLDT MERIDIAN

CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

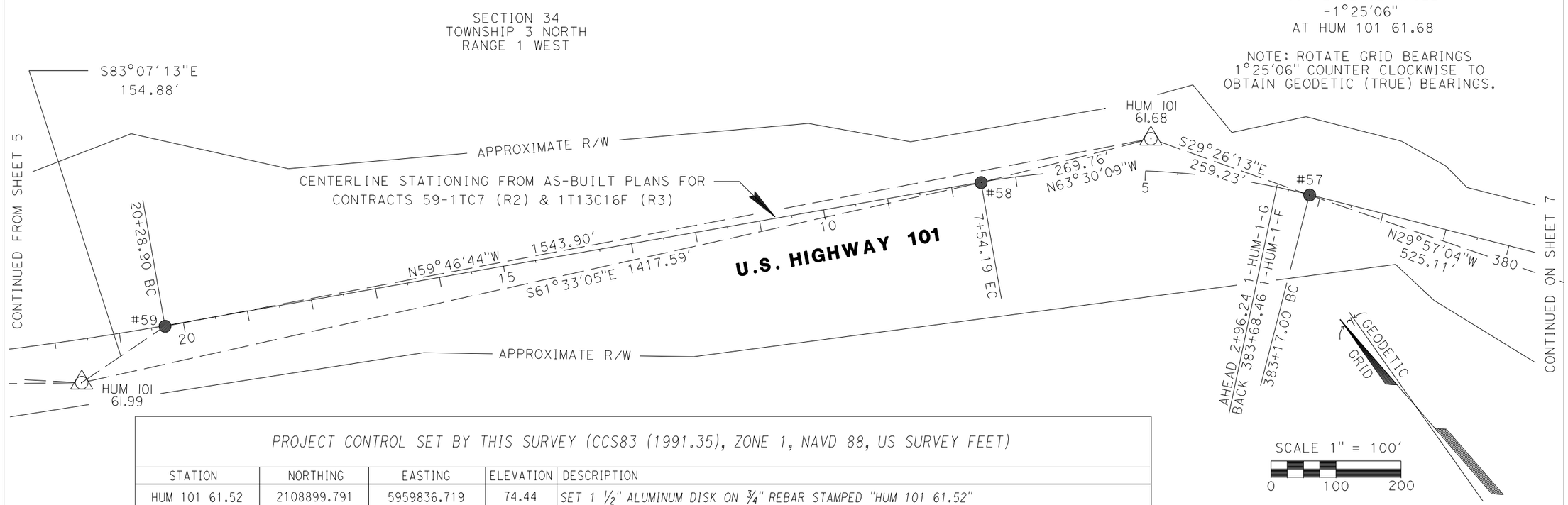
OCTOBER 1999

LEGEND

- FOUND MONUMENT AS DESCRIBED
- SET MONUMENT AS DESCRIBED
- FOUND CENTERLINE MONUMENT AS DESCRIBED
- (R2) AS BUILT PLANS FOR CONTRACT 59-1TC7 IN DRAWER 10-93-11 CALTRANS DISTRICT 1 OFFICE.
- (R3) AS BUILT PLANS FOR CONTRACT 61-1T13C16F IN DRAWER 10-32-03 CALTRANS DISTRICT 1 OFFICE.

CONVERGENCE ANGLE
-1°25'06"
AT HUM 101 61.68

NOTE: ROTATE GRID BEARINGS 1°25'06" COUNTER CLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS.



PROJECT CONTROL SET BY THIS SURVEY (CCS83 (1991.35), ZONE 1, NAVD 88, US SURVEY FEET)

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 61.52	2108899.791	5959836.719	74.44	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 61.52"*
HUM 101 61.68	2109580.538	5959447.149	72.13	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 61.68"*
HUM 101 61.99	2110376.193	5957959.314	74.56	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 61.99"*
HUM 101 62.31	2111345.370	5956687.887	70.55	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 62.31"*

CENTERLINE MONUMENTS FOUND BY THIS SURVEY

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
#57	2109354.777	5959574.550	73.01	*FOUND 2 ¼" BRASS DISK IN CONCRETE "383+17.00 BC" (R3), DESTROYED 2002*
#58	2109700.895	5959205.723	67.55	*FOUND 2 ¼" BRASS DISK IN CONCRETE "7+54.19 EC" (R3), DESTROYED 2002*
#59	2110357.639	5958113.084	74.68	*FOUND 2 ¼" BRASS DISK IN CONCRETE "20+28.90 BC" (R2), DESTROYED 2002*

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND
MONUMENT PERPETUATION MAP
IN THE CITY OF FORTUNA,
HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	6 OF 9

SURVEYS BOOK 67 PAGE 61

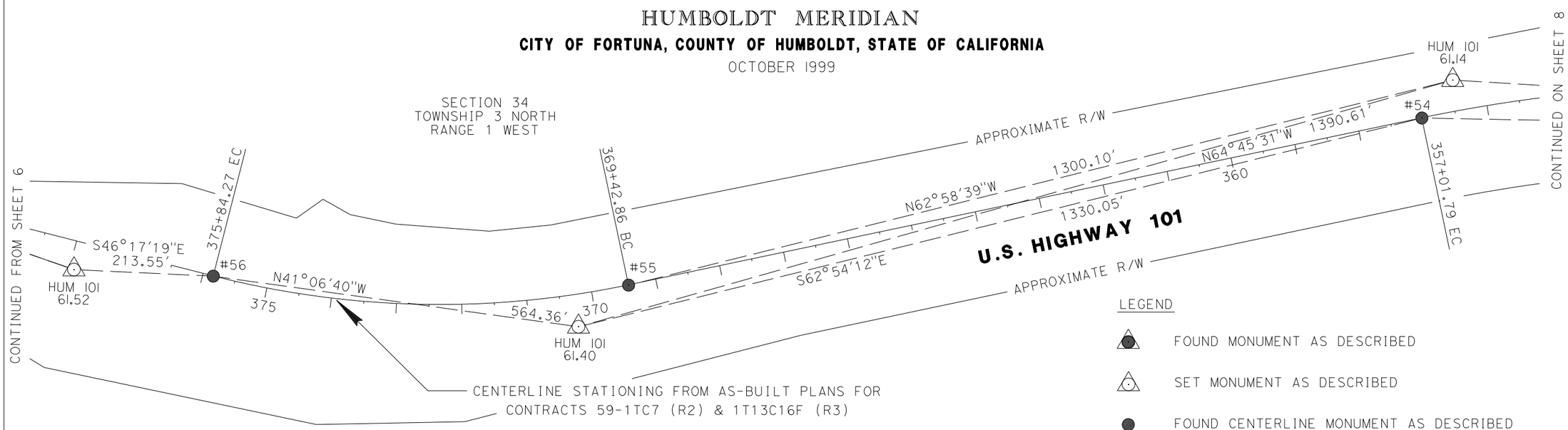
RECORD OF SURVEY

CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP
STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND
SECTIONS 28, 29, 33, 34 & 35, TOWNSHIP 3 NORTH, RANGE 1 WEST,
HUMBOLDT MERIDIAN

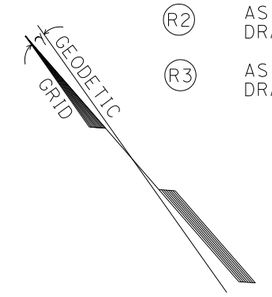
CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

OCTOBER 1999



LEGEND

- FOUND MONUMENT AS DESCRIBED
- SET MONUMENT AS DESCRIBED
- FOUND CENTERLINE MONUMENT AS DESCRIBED
- (R2) AS BUILT PLANS FOR CONTRACT 59-1TC7 IN DRAWER 10-93-11 CALTRANS DISTRICT 1 OFFICE.
- (R3) AS BUILT PLANS FOR CONTRACT 61-1T13C16F IN DRAWER 10-32-03 CALTRANS DISTRICT 1 OFFICE.



CONVERGENCE ANGLE
-1°25'06"
AT HUM 101 61.68

NOTE: ROTATE GRID BEARINGS 1°25'06" COUNTER CLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS.

SCALE 1" = 100'

0 100 200

PROJECT CONTROL ESTABLISHED BY THIS SURVEY (CCS83 (1991.35), ZONE 1, NAVD 88, US SURVEY FEET)

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 61.14	2107734.013	5961619.989	46.64	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 61.14"*
HUM 101 61.40	2108327.017	5960362.154	55.17	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 61.40"*
HUM 101 61.52	2108899.791	5959836.719	74.44	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 61.52"*
HUM 101 61.68	2109580.538	5959447.149	72.13	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 61.68"*

CENTERLINE MONUMENTS FOUND BY THIS SURVEY

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
#54	2107721.188	5961546.220	44.20	*FOUND 2 ¼" BRASS DISK IN CONCRETE "357+01.79 EC" (R3), DESTROYED 2002*
#55	2108324.704	5960461.822	49.03	*FOUND 2 ¼" BRASS DISK IN CONCRETE "369+42.86 BC" (R3), DESTROYED 2002*
#56	2108752.223	5959991.079	68.88	*FOUND 2 ¼" BRASS DISK IN CONCRETE "375+84.27 EC" (R3), DESTROYED 2002*

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND
MONUMENT PERPETUATION MAP
IN THE CITY OF FORTUNA,
HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	7 OF 9

RECORD OF SURVEY

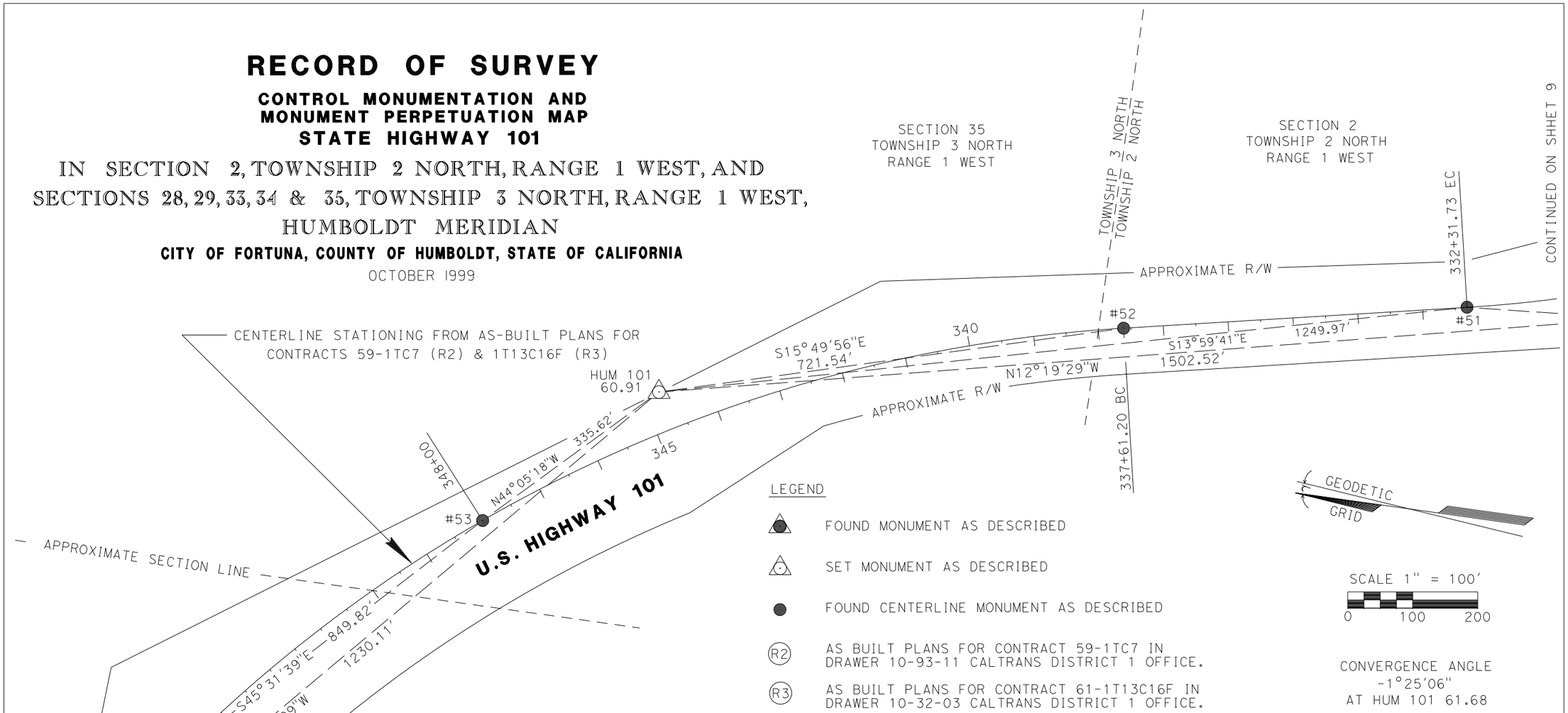
CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP

STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND SECTIONS 28, 29, 33, 34 & 35, TOWNSHIP 3 NORTH, RANGE 1 WEST, HUMBOLDT MERIDIAN

CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

OCTOBER 1999



PROJECT CONTROL ESTABLISHED BY THIS SURVEY (CCS83 (1991.35), ZONE 1, NAVD 88, US SURVEY FEET)

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 60.64	2105429.693	5962780.640	48.28	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 60.64"*
HUM 101 60.91	2106897.591	5962459.925	51.08	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 60.91"*
HUM 101 61.14	2107734.013	5961619.989	46.64	*SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "CALTRANS HUM 101 61.14"*

CENTERLINE MONUMENTS FOUND BY THIS SURVEY

STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
#51	2105684.722	5962762.212	48.30	*FOUND 2 ¼" BRASS DISK IN CONCRETE "332+31.73 EC" (R3), DESTROYED 2002*
#52	2106203.422	5962656.779	47.98	*FOUND 2 ¼" BRASS DISK IN CONCRETE "337+61.20 BC" (R3)*
#53	2107138.656	5962226.412	46.79	*FOUND 2 ¼" BRASS DISK IN CONCRETE "348+00.00" (R3), DESTROYED 2002*
#54	2107721.188	5961546.220	44.20	*FOUND 2 ¼" BRASS DISK IN CONCRETE "357+01.79 EC" (R3), DESTROYED 2002*

NOTE: ROTATE GRID BEARINGS 1°25'06" COUNTER CLOCKWISE TO OBTAIN GEODETIC (TRUE) BEARINGS.

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP
IN THE CITY OF FORTUNA, HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	8 OF 9

RECORD OF SURVEY

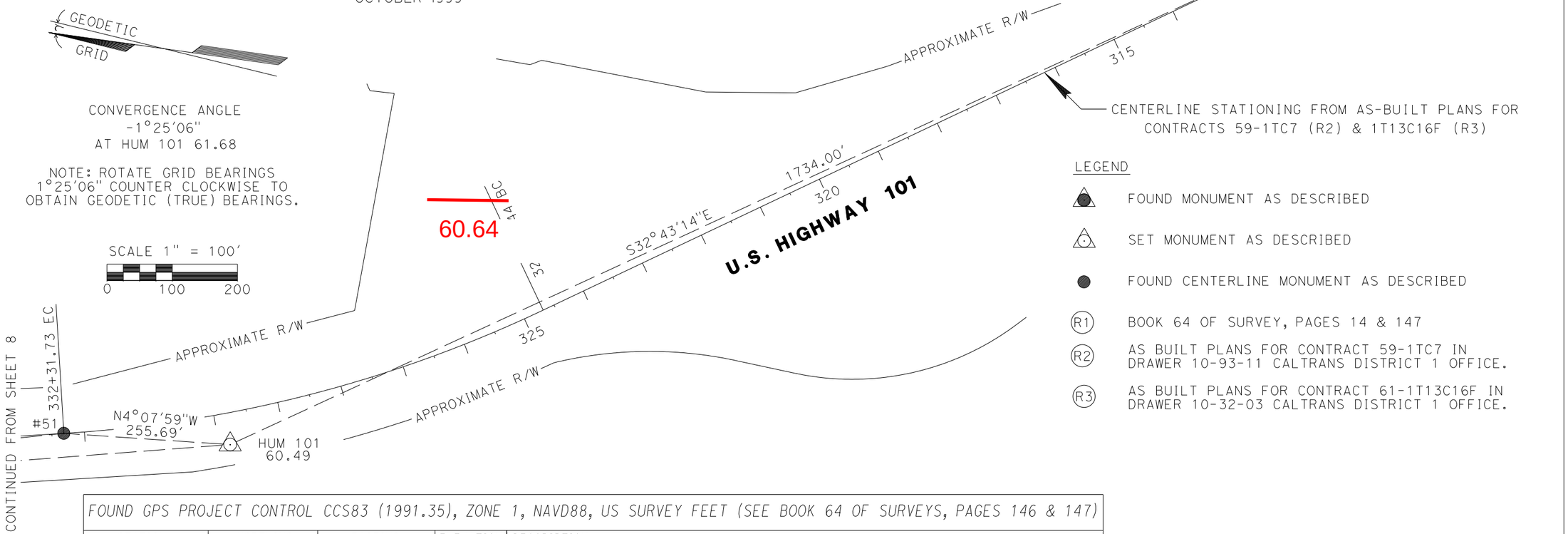
CONTROL MONUMENTATION AND MONUMENT PERPETUATION MAP

STATE HIGHWAY 101

IN SECTION 2, TOWNSHIP 2 NORTH, RANGE 1 WEST, AND SECTIONS 28, 29, 33, 34 & 35, TOWNSHIP 3 NORTH, RANGE 1 WEST, HUMBOLDT MERIDIAN

CITY OF FORTUNA, COUNTY OF HUMBOLDT, STATE OF CALIFORNIA

OCTOBER 1999



FOUND GPS PROJECT CONTROL CCS83 (1991.35), ZONE 1, NAVD88, US SURVEY FEET (SEE BOOK 64 OF SURVEYS, PAGES 146 & 147)				
STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 59.94	2102242.269	5964282.176	49.91	FOUND 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 59.94" (R1)
HUM 101 60.49	2103813.948	5963687.629	47.21	FOUND 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 60.49" (R1)
PROJECT CONTROL ESTABLISHED BY THIS SURVEY				
STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
HUM 101 60.64	2105429.693	5962780.640	48.28	SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 60.64"
HUM 101 60.91	2106897.591	5962459.925	51.08	SET 1 ½" ALUMINUM DISK ON ¾" REBAR STAMPED "HUM 101 60.91"
CENTERLINE MONUMENTS FOUND BY THIS SURVEY				
STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
#50	2103970.848	5963717.945	44.72	FOUND 2 ¼" BRASS DISK IN CONCRETE "312+55.84 EC" (R3), DESTROYED 2002
#51	2105684.722	5962762.212	48.30	FOUND 2 ¼" BRASS DISK IN CONCRETE "332+31.73 EC" (R3)

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION (CALTRANS)

NORTH REGION
OFFICE OF SURVEYORS

RECORD OF SURVEY
CONTROL MONUMENTATION AND
MONUMENT PERPETUATION MAP
IN THE CITY OF FORTUNA,
HUMBOLDT COUNTY
STATE HIGHWAY 101

CO.	RTE.	P.M.	SHEET NUMBER
HUM	101	59.9/63.1	9 OF 9

200-353-021

DEPARTMENT OF PUBLIC WORKS
COUNTY OF HUMBOLDT
MAILING ADDRESS: 1106 SECOND STREET, EUREKA, CA 95501-0579
AREA CODE 707/FAX 445-7409

ARCATA-EUREKA AIRPORT TERMINAL
McKINLEYVILLE
AVIATION 839-5401

PUBLIC WORKS BUILDING
SECOND & L ST., EUREKA

ADMINISTRATION	445-7491	NATURAL RESOURCES	445-7741
BUSINESS	445-7652	PARKS	445-7651
ENGINEERING	445-7377	ROADS & EQUIPMENT MAINT.	445-7421
ARCHITECT	445-7493		

CLARK COMPLEX
HARRIS & H ST., EUREKA
LAND USE 445-7205

January 10, 2005

Duane Rigge, City Manager
City of Fortuna
POB 545
Fortuna CA 95540

RE: ANNEXATION BY THE CITY OF FORTUNA OF COUNTY ROADS ADJACENT TO THE CITY OF FORTUNA

Allen Campbell, Director, Humboldt County Department of Public Works, has requested that I provide you some information. It is in response to a request by you associated with roads proposed for annexation that were discussed in our previous letters. The previous letters discussed the annexation of Strongs Creek Road (known by the City as Dinsmore Drive), Twelfth Street, a portion of Rohnerville Road, a portion of Eel River Drive, and Drake Hill Road.

The information requested was regarding the County's cost of maintenance of the roads over the last five years and what it would cost if the County was to perform the desired future maintenance of the surface of the roads. The following is a description of the road, the County's past cost of the maintenance of the road, and an estimate of the cost to maintain the roads to the desired standard. The desired standard of maintenance consists of sealing the roads at a 12 to 14 year period and resurfacing the roads every 25 years. The County cost for sealing a road is estimated to be $0.12 per square foot and a $1.30 per square foot for resurfacing a road. These are the prices used currently by the County in the estimation of costs for maintenance of new subdivision roads.

STRONGS CREEK ROAD

This portion of road lies south of the city limits of Fortuna to the intersection of Riverwalk Drive. The County has not spent any funds on this road for the last 5 years or longer. When the City annexed the portion of land at the end of the road, the then city manager of Fortuna provided a letter to LAFCO and the County indicating that they would maintain this portion of Strongs Creek Road for the County as consideration of approval of the annexation.

roads\cityoffo.doc

The portion of Strongs Creek Road in the County is approximately 640 feet in length and has an average width of 26 feet. The cost of sealing the road would be estimated at $2,000 and $21,632 for resurfacing the road at today's cost.

TWELFTH STREET

This portion of road lies within the limits of the CalTrans right of way for State Highway 101. It lies between the railroad tracks, over the overpass, to the intersection of Strongs Creek Road and Riverwalk Drive. The County entered into an agreement with CalTrans to be responsible for the surface of the road. CalTrans is responsible for the overpass structure.

The County has spent $37 over the last five years on this portion of road. The length of road is approximately 1,530 feet and has an average width of 30 feet. The cost of resealing the road is estimated at $5,500 and $69,670 for resurfacing the road.

ROHNERVILLE ROAD

This portion of road lies north of Loop Road to the south line of the park. The road has been presumed by the City to be located in the City. The Campton Heights and Fortuna High School annexations by the City appear to have not included this portion of road. The County has not been providing maintenance of the road. The road was presumed by the City to be within the city limits of Fortuna and has been maintained by the City for a number of years.

EEL RIVER DRIVE

This portion of road lies between Drake Hill Road and Kenmar Road. It does not front any developable property located in the County. CalTrans and NWP Railroad front the west side of the road. The entire east side of the road serves lands located in the City. It is approximately 0.93 mile in length and has an average width of 24 feet. The County has spent approximately $26,000 on this road in the last 5 years. The majority of the cost was associated with clean up of the movement of earth off of property owned by the City. The slide occurred in 2002.

The cost of resealing the road is estimated to be approximately $14,142 and $153,205 for resurfacing the road.

DRAKE HILL ROAD

This portion of road is located between Rohnerville Road and Eel River Drive. The City is located along the entire north side of the road. The north side of the road is zoned and planned for residential development. The south side of the road located in the County is mainly zoned and planned for agricultural use. The road is 1.25 miles in length and is approximately 22 feet in width. The County has spent approximately $79,000 in maintenance of this road in the last 5 years. Approximately $67,000 of the maintenance cost was associated with resurfacing Drake Hill Road between Thelma Drive and Rohnerville Road in 2002. This stretch of road is where the heaviest density of residential property is located within the City.

The cost of resealing the road is estimated to be approximately $17,424 and $188,760 is estimated for resurfacing the road.

If you have any additional questions regarding the roads or this letter, please don't hesitate to contact this office.

Sincerely,

Harless McKinley
Land Use Division
445-7205

roads\cityoffo.doc

US-101 PM 60.5
Vicinity of 12th St Overcrossing
R/W Boundries with City of Fortuna

Aerial.dgn 1/23/2007 11:30:53 AM

FREEWAY MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into, in duplicate, this 15th day of April, 1963, by and between the State of California, acting by and through the Department of Public Works, Division of Highways, hereinafter for convenience referred to as "the State", and the County of Humboldt, hereinafter for convenience referred to as "the County", witnesseth:

WHEREAS, on November 6, 1958, a Freeway Agreement was executed between the County and the State relating to the development of that portion of State Highway Route 1 in the County of Humboldt between 0.6 mile north of Route 35 and 0.3 mile north of Fortuna as a freeway, and

WHEREAS, under the provisions of said Freeway Agreement, the County agreed to certain adjustments in the County road system, and for the carrying of certain County roads over or under or to a connection with the freeway, and

WHEREAS, said freeway has now been completed or is nearing completion, and the parties mutually desire to clarify the division of maintenance responsibility as to separation structures, and County roads or portions thereof, within the freeway limits.

NOW, THEREFORE, IT IS AGREED:

1. ROADWAY SECTIONS

The County will maintain, at County expense, all portions of County roads and appurtenant structures and bordering areas, colored in yellow on the attached map marked Exhibit "A" and made a part hereof by this reference.

2. VEHICULAR OVERCROSSINGS

The State will maintain, at State expense, the entire structure below the top of the concrete deck surface, exclusive of any bituminous surface treatment thereof. The County will maintain, at County expense, the top of the concrete deck surface, together with any bituminous surface treatment thereon, and all portions of the structure above the concrete deck surface, and shall perform such other work as may be necessary to insure an impervious and otherwise suitable surface. The County will also maintain all traffic service facilities provided for the benefit or control of County road traffic.

3. VEHICULAR UNDERCROSSINGS

The State will maintain the structure proper. The roadway section, including the traveled way, shoulders, curbs, sidewalks, walls, drainage installations and traffic service facilities, will be maintained by the County.

4. EFFECTIVE DATE

This agreement shall be effective upon the date of its execution by the State; it being understood and agreed, however, that the execution of this agreement shall not affect any pre-existing obligations of the County to maintain designated areas pursuant to prior written notice from the State that work in such areas, which the County has agreed to maintain pursuant to the terms of the Freeway Agreement, has been completed.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

J. C. WOMACK
STATE HIGHWAY ENGINEER

By CHAS. E. WAITE
Deputy State Highway Engineer

APR 15 1963

COUNTY OF HUMBOLDT

By NORMAN R. ROBERTSON
Chairman, Board of Supervisors

~~By~~ FRED J. MOORE, Jr. (SEAL)
County Clerk

By W. E. SCHUSSMAN

Approval Recommended

SAM HELWER
District Engineer

EDWARD L. TINNEY
Maintenance Engineer

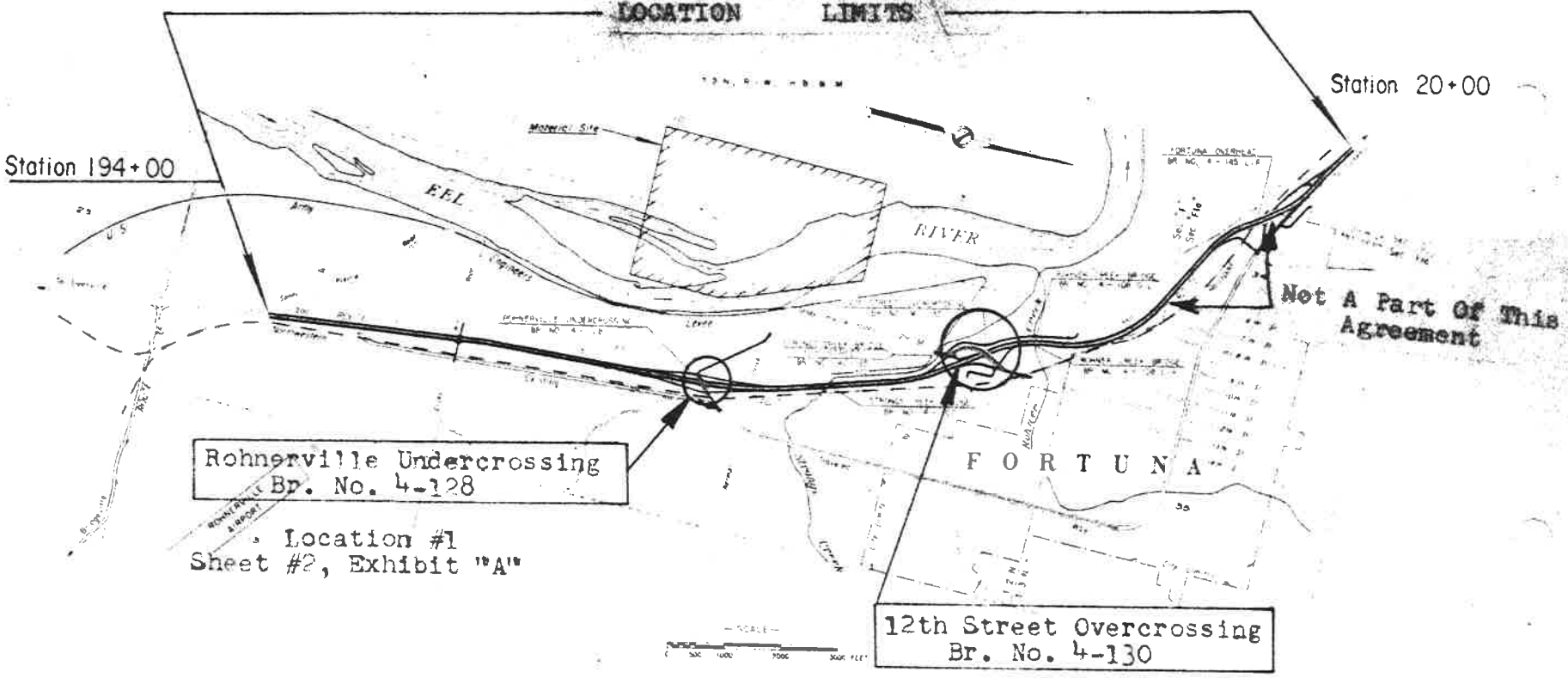
Approved as to form:

RICHARD C. EAST
Attorney for Department

Attorney

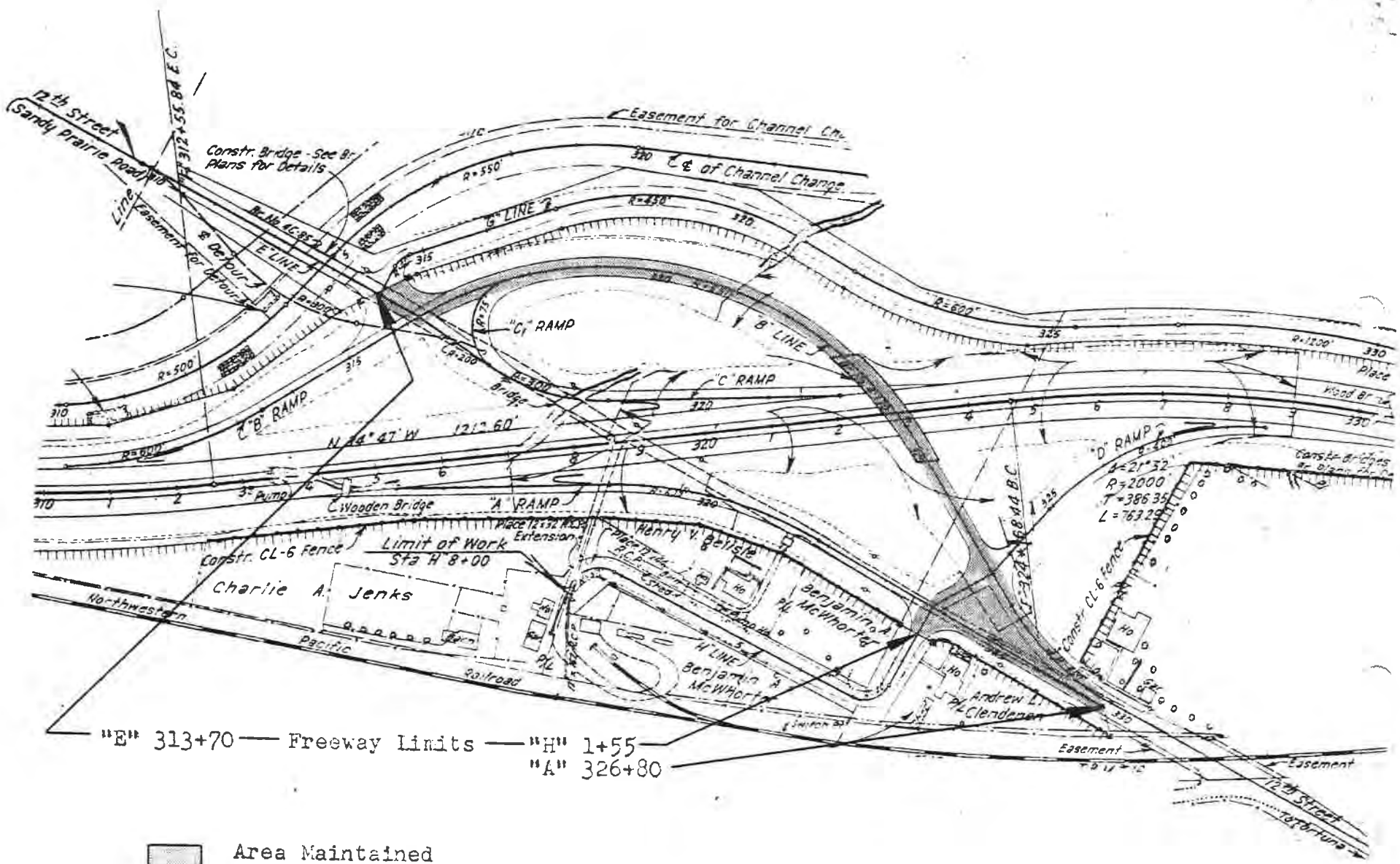
EXHIBIT "A"

In Humboldt County
between 0.4 mile north of Route 35 and 0.3 mile north of Fortuna
Road I-Hum-1-F,G
FREEWAY



AREA TO BE MAINTAINED BY COUNTY

VICINITY MAP
SHEET 1 OF 3



Area Maintained
By County

EXHIBIT "A"
Hum-1-F,G
Freeway Maintenance
Agreement
Sheet 3 of 3

Location #2
12th Street Overcrossing


20035204
20035328
20035315
20101106
20101113
04033317
04033222
04033137
20103116
04033312
04033219
04033136
04033311
04033218
04033135
road
04033215
04033134
04033319
04033214
04033133
20035305
04033303
04033211
04033132
road
04033302
04033301
04033210
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20035326
20035312
20038102
20035325
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20038107
20038109
20035324
20038104
20133105
20038108
20035311
Hwy 101
20035202

Attachment K - Environmental Constraints Analysis

Environmental Constraints Analysis

Fortuna Highway 101/Riverwalk Area Connectivity Project

May 2016

Table of Contents

Table Index

Figure Index

Appendices

Appendix A (USFWS Listed/Proposed Threatened and Endangered Species for the Fortuna Quad)

Appendix B (CNDDB Occurrence Report)

Appendix C (Site Photographs)

1. Introduction

1.1 Project Summary

The Fortuna Highway 101/Riverwalk Connectivity Planning Study focuses on the 12th Street and Kenmar Road crossings of Highway 101, and includes an evaluation of the existing conditions, identification of deficiencies from Caltrans standards, and the development of conceptual alternatives intended to provide multi-modal mobility and accessibility for all users through both interchanges, with the goal of improving safety and ensuring the continued commercial viability of the Riverwalk Area. The results of the study will provide the foundation for future project development phases with the goal of implementation of improvement projects at the 12th Street and Kenmar Interchanges.

The overall objectives of the project are to:

- Provide improved accessibility and connectivity between the Downtown and the Riverwalk Area for all users
- Support growth of business in the Riverwalk and Downtown areas by increasing the capacity of the 12th Street and Kenmar Interchanges while considering planned commercial growth
- Support economic growth by developing strategies to improve access to the Riverwalk and Downtown areas
- Improve the safety at the Kenmar and 12th Street Interchanges

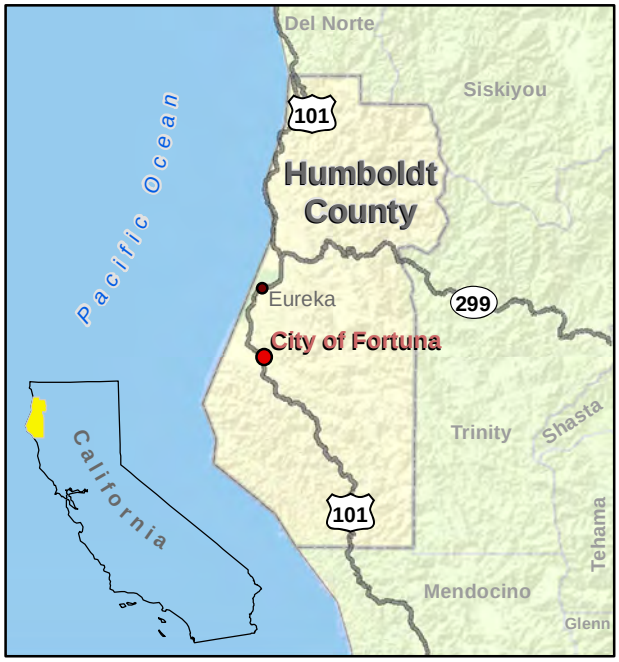
1.2 Purpose of the Report

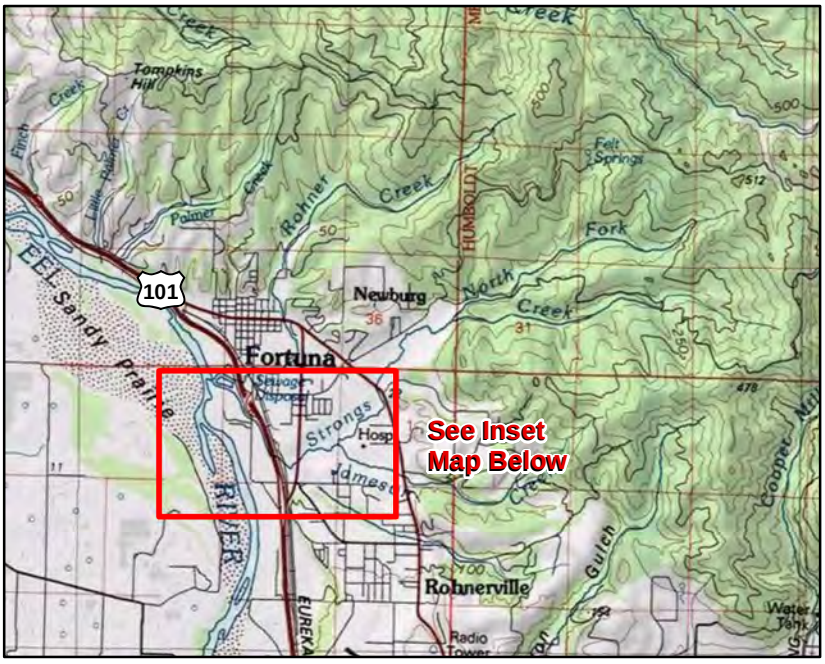
This Environmental Constraints Analysis is intended to document the biological conditions/constraints within the Study Area. A reconnaissance-level site investigation of existing conditions was conducted throughout the study area in February 2016, to identify the presence or potential presence of biological resources listed under the Federal Endangered Species Act (ESA), the presence of wetlands and Waters of the US as regulated by the US Army Corps of Engineers (USACE), the presence or potential presence of species listed as endangered or threatened under the California Endangered Species Act (CESA) or considered a species of special concern (SSC) by the California Department of Fish and Wildlife (CDFW), or the potential for special-status plant species having a rare plant ranking as determined by the California Native Plant Society (CNPS) rare plant inventory, and to present the potential of sensitive habitats as listed by the CDFW. This report also discusses the necessary steps required for the project to comply with federal, state, and local regulatory environmental compliance requirements and provides basic permit information. No permits or environmental compliance documents were collected, initiated, or completed for this effort, nor were regulatory agencies contacted for additional information.

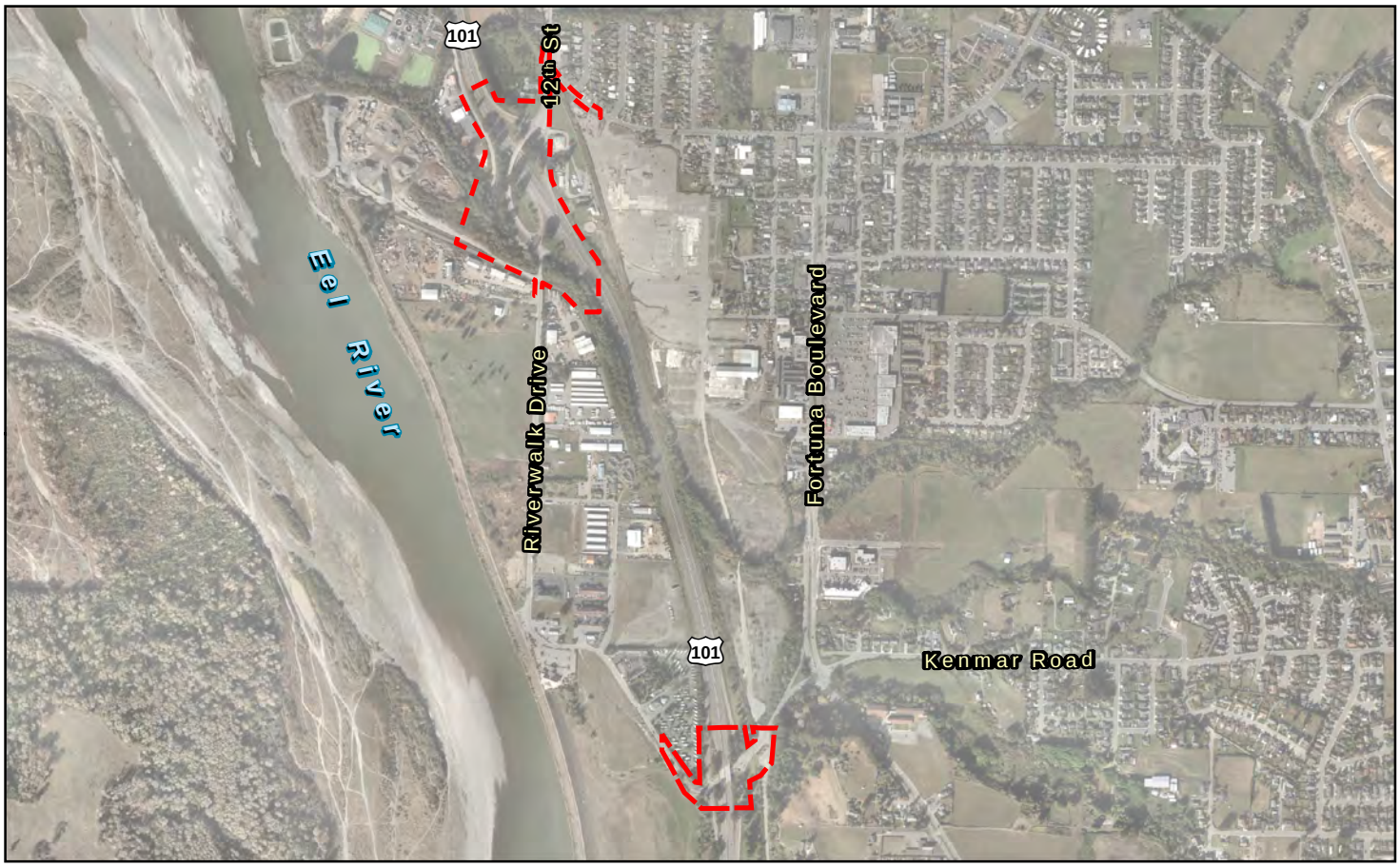
1.3 Location

This Environmental Constraints Analysis is being undertaken in Fortuna, Humboldt County, California. Fortuna is approximately 14 miles south of Eureka and can be accessed from Highway 101. A vicinity map is included as Figure 1.

The project study boundary (PSB) covers approximately 35 acres around the Kenmar Road and 12th Street interchanges for Highway 101. The PSB is depicted in Figures 2a and 2b and 3, and these areas were analyzed to evaluate the likeliness of environmental features and potential project constraints or likelihood of permitting requirements.







Project Areas

Paper Size 8.5" x 11" (ANSI A)
0 200 400 600 800 1,000
Feet
Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 10N

N

HCAOG
Highway 101, Fortuna Downtown and Riverwalk Area
Complete Streets and Connectivity Planning Study

Job Number 11109149
Revision A
Date 07 Apr 2016

Vicinity Map

Figure 1

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

G:\111\11109149 HCAOG Hwy 101 Fortuna Downtown-Riverwalk\08-GIS\Maps\Figures\Recon_WetlandsHabitat\F1_Vicinity.mxd

Data source: City of Fortuna Aerial, 2010; GHD data, 2013; USA Topo Maps; Streetmap USA. Created by:gldavidson

Study Boundary
Potential Wetland
Riparian
Strongs Creek
FH Valves
Water Valves
Hydrant
Water Mains
Drain Inlet; Curb Inlet
Headwall
Storm Water Mains
SS MH
SS Cleanout
SS Gravity Main
SS Pressurized Main

Paper Size 8.5" x 11" (ANSI A)
0 25 50 75 100 125 150
Feet
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

HCAOG
Highway 101, Fortuna Downtown and Riverwalk Area
Complete Streets and Connectivity Planning Study

Job Number 11109149
Revision A
Date 17 May 2016

Reconnaissance Level
Biological Investigation

Figure 2a

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

G:\111\11109149 HCAOG Hwy 101 Fortuna Downtown-Riverwalk\08-GIS\Maps\Figures\Recon_WetlandsHabitat\F2a_12th_Street_South.mxd

 Data source: City of Fortuna GIS: utiliteis; GHD: wetland/habitat reconnaissance 2-29-2016 Created by:gldavidson

Study Boundary
Creek
FH Valves
Water Valves
Hydrant
Water Mains
Drain Inlet; Curb Inlet
Headwall
Storm Water Mains
SS MH
SS Cleanout
SS Gravity Main
SS Pressurized Main

Paper Size 8.5" x 11" (ANSI A)
0 25 50 75 100 125 150
Feet
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

HCAOG
Highway 101, Fortuna Downtown and Riverwalk Area
Complete Streets and Connectivity Planning Study

Job Number 11109149
Revision A
Date 07 Apr 2016

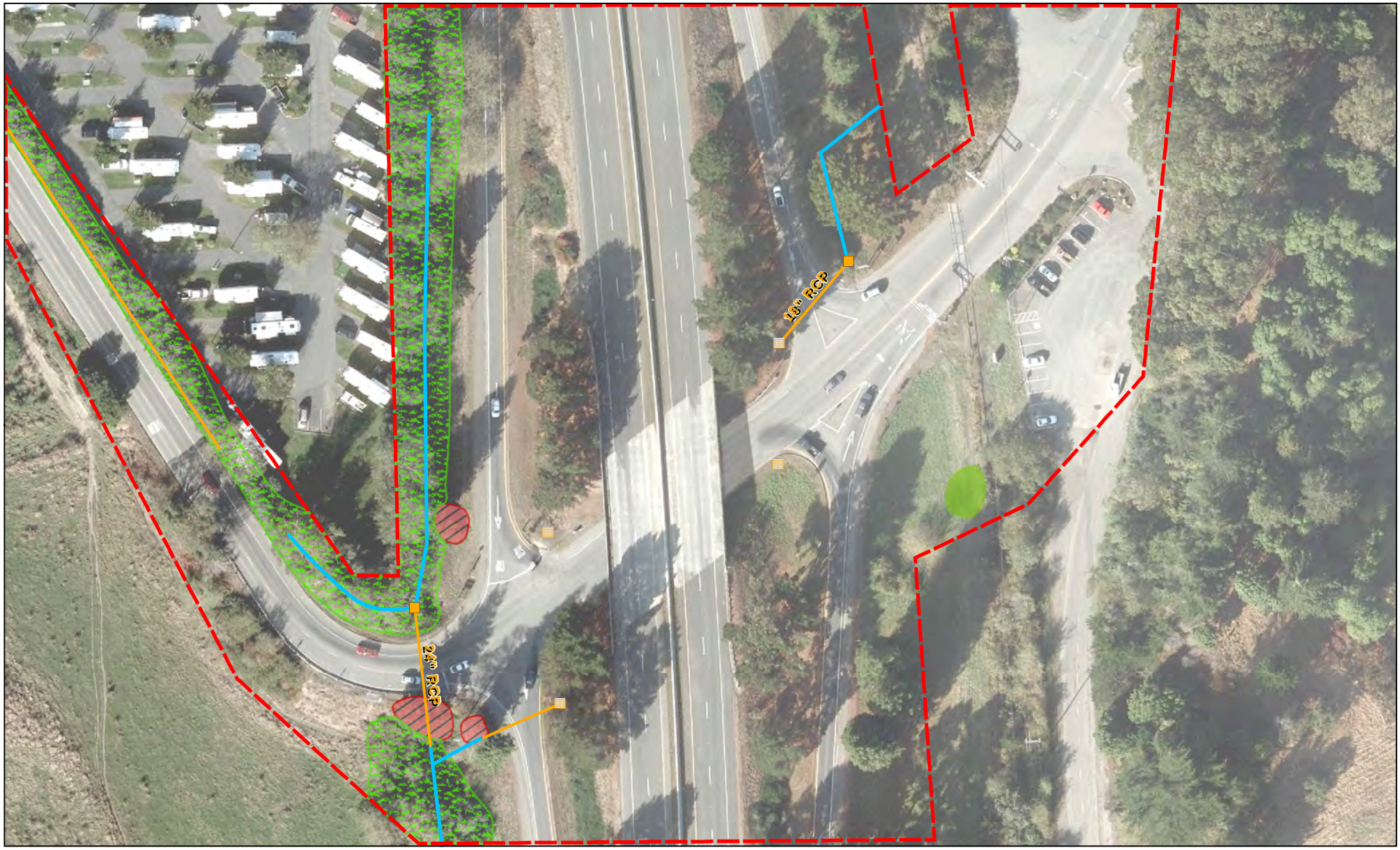
Reconnaissance Level
Biological Investigation

Figure 2b

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

G:\111\11109149 HCAOG Hwy 101 Fortuna Downtown-Riverwalk\08-GIS\Maps\Figures\Recon_WetlandsHabitat\F2b_12th_Street_North.mxd

 Data source: City of Fortuna GIS: utiliteis; GHD: wetland/habitat reconnaissance 2-29-2016 Created by:gldavidson



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0 25 50 75 100

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

Drain Inlet; Curb Inlet
Headwall
Storm Water Mains
Potential Wetland Ditch
Study Boundary
Potential Wetland
Redwoods
Riparian

HCAOG
Highway 101, Fortuna Downtown and Riverwalk Area
Complete Streets and Connectivity Planning Study

Job Number 11109149
Revision A
Date 07 Apr 2016

Reconnaissance Level
Biological Investigation

Figure 3

G:\111\11109149 HCAOG Hwy 101 Fortuna Downtown-Riverwalk\08-GIS\Maps\Figures\Recon_WetlandsHabitat\F3_Kenmar.mxd

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Data source: City of Fortuna GIS: Storm Drain, aerial imagery; GHD: wetland/habitat reconnaissance 2-29-2016 Created by:gldavidson

1.4 Overview of Study Area

The Study Areas are located in the western part of Fortuna, a city with a population of 11,926 as of the 2010 census. There are two distinct Study Areas located approximately one mile apart, and these are described in greater detail below.

The 12th Street PSB is an elongated irregularly shaped area oriented along the north-south centerline of 12th Street and Riverwalk Drive, and bisected by Highway 101 (Figure 2a and 2b). The area north of Highway 101 consists of paved roads and maintained grassy right of way with a few scattered ornamental trees, and is bordered by residential and commercial development. There are few natural feastures remaining in this section. South of Highway 101, Strong's Creek and associated riparian habitat makes up the southern end of the PSB, with a narrow area of shrubs and trees just to the north between Dinsmore Drive and 12th Street, and grassy swales with scattered Monterey cypress between the southern arc of 12th Street and Highway 101.

The Kenmar PSB is oriented generally northeast/southwest (Figure 3). The larger portion east of Highway 101 includes a steep slope with non-native eucalyptus at the extreme east end, with a parking lot immediately to the west. Continuing west, an inactive rail line runs through a series of mostly open areas of low herbaceous growth with scattered Monterey cypress. West of Highway 101 and associated ramps is an ephemeral ditch which has developed a riparian-like area dominated by dense shrub and sapling cover, and which includes a few redwoods of moderate size near the intersection of Riverwalk Drive and the Highway 101 ramps. The southwest limit of the PSB coincides with the top of a grade dropping down to the adjacent Eel River floodplain, which is not included in the PSB.

Wetland and riparian habitats are discussed in further detail below.

2. Methods

2.1 Research Methods

The initial analysis consisted of review of existing environmental literature and data results from database queries of potential on-site sensitive species which were evaluated using the Fortuna United States Geoligical Survey (USGS) 7.5 quadrangle. The database queries include the California Natural Diversity Database (CNDDB) [CDFW February 2016]; the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants [CNPS February 2016]; and lists of special-status species and natural communities that may occur in the project area as provided by the U.S. Fish and Wildlife Service (USFWS) [USFWS, 2016].

Additional existing data was reviewed when available, such as soil and ecological maps and descriptions generated by the Natural Resources Conservation Service (NRCS) and wetlands mapping from USFWS National Wetlands Inventory (NWI) [USFWS 1987]. NWI maps are compiled using a variety of remote sensing data sources, including aerial photographs, infrared photography, and soils data. NWI maps do not necessarily represent an accurate extent of jurisdictional wetlands in the Study Area. Finally, the CalFlora database in conjunction with the Jepson Herbarium database was consulted for site specific species cross referencing for potential rare plants in the project vicinity. When available, Geographic Information System (GIS) data was overlaid with the PSB.

2.2 Environmental Reconnaissance Survey Methods

On February 20, 2016, GHD field staff performed a reconnaissance level investigation of environmental and biological resources within the two PSB's. The survey was meant to identify the potential for environmental impacts and to identify potential permits that would result from implementing the project. This field reconnaissance effort, focused on identifying the potential presence of wetland, riparian, and special-status plant species (listed as rare, threatened, endangered, or candidate for rare, threatened, or endangered species listing under the state or federal Endangered Species Acts, CNPS rare plant ranking, or of local importance) or habitats present within the proposed project trail segments. The project area topographic maps, aerial photography maps, the California Department of Fish and Wildlife CNDDB and CNPS Rare Plant Inventory were consulted using the Fortuna quadrangle prior to and during the survey to determine potential sensitive species or habitat occurrence.

Field work was conducted by walking each of the proposed PSB units and visually documenting findings through photographs and notes. Each location with a potential wetland or areas potentially containing special status species and/or habitats, was noted. These areas would then be recommended for further investigations or protocol level surveys in order to fulfill potential permit requirements as described in further detail in Section 3 of this report.

The likelihood of certain permits increases in locations in which the project intersects certain features. For instance, the likelihood of a USACE Clean Water Act 404 and CDFW 1600 permit increases in locations in which the project crosses a blue line stream. Section 4 considers each permit, discusses the nature of the permit, and identifies the threshold triggers for each permit.

3. Results

3.1 Special Status Plants, Animals, & Habitats Literature Results

A compilation of flora and fauna obtained from the literature search can be found in Table 1 below. The combined list identifies six animal species and three plant species with a moderate or high potential to be present in the PSB. A list of federal endangered, threatened and candidate species for the Fortuna USGS quadrangle was downloaded from the web site of the USFWS Arcata Field Office on March 4, 2016 (Appendix A). The USFWS lists are often of a general nature and do not indicate presence, merely the need for further review. The CNDDB Occurrence Report Rare Find 4 lists species potentially present in the project vicinity, and includes the Fortuna quadrangle (Appendix B). Several of these were subsequently excluded because of an absence of suitable habitat.

Table 1. Listed/Proposed Rare, Threatened and Endangered Species

Scientific Name	Common Name	Status	Habitat	Potential to Occur
Antrozous pallidus	Pallid bat	SSC	Dry rocky woodlands	Low, no suitable habitat
Arborimus pomo	Sonoma tree vole	SSC	Conifer forest	Low, no large stands of suitable habitat
Pekania (Martes) pennanti	Fisher	FC	Mature forest	None; no suitable habitat present
Ardea herodius	Great Blue Heron	None	Colonial nester, tall trees, marshes	Low, several miles to nearest known rookeries
Charadrius alexandrinus nivosus	Western Snowy Plover	FT	Beaches and dunes above high tide line, river gravel bars	None; no suitable habitat present
Coccyzus americanus	Yellow-billed Cuckoo	FT	Dense extensive riparian forest	Low; nearest documented recent records near Cock Robin Island
Brachyramphus marmorata	Marbled Murrelet	FT	Old-growth redwood and Douglas fir forest	None; no suitable habitat present
Riparia riparia	Bank Swallow	ST	Nests in vertical banks/cliffs along rivers	Low for nesting; known from the Eel near Fernbridge so nearby foraging

				is possible
Strix occidentalis caurina	Northern Spotted Owl	FT	Mature forest	None; no suitable habitat present
Emys (Actinymys) marmorata	Western pond turtle	SSC	Ponds, rivers, marshes	Moderate
Rana aurora	Northern Red-legged Frog	SSC	Emergent wetlands and stream margins, and nearby wet meadows and woods	High especially in riparian areas
Rana boylii	Foothill Yellow-legged Frog	SSC, federal proposed	Margins of shallow rocky streams and riffles	High; known to occur in the Eel and tributaries
Oncorhynchus kisutch	S. OR/N. CA Coho Salmon	FT	Rivers and tributaries	Moderate; historic records from Strong's Creek
Oncorhynchus mykiss	N. CA Steelhead	FT	Rivers and tributaries	High; recent records from the lower Strong's Creek watershed
Oncorhynchus tshawytscha	CA Coastal Chinook	FT	Rivers and larger tributaries	Moderate; present in Eel near Fortuna
Spirinchus thalyichthys	Longfin Smelt	FC, ST	Estuaries, may enter freshwater to spawn	Low; present in lower 4.5 miles of Eel, historic (1956) seasonal occurrence up to Van Duzen mouth

Important habitat features include Strong's Creek and an associated riparian corridor in the south and southwest portion of the 12th Street PSB, and several large individual redwoods in the western part of the Kenmar PSB. While these habitat features are not extensive, they could harbor sensitive animals or plants and have habitat and aesthetic value.

A number of plant species identified as rare by the CNPS occur in the Fortuna quadrangle; CEQA requires that these species be considered in the planning process, thus a protocol level study is recommended during the appropriate bloom period (Table 2). Appendix B contains the CNDDB occurance report. If rare species are located mitigation measures may be required. At least one of these species (Siskiyou checkerbloom) sometimes grows within maintained road right-of-way.

Table 2. Potential Rare Plant Occurrence and Bloom Periods

Scientific Name	Common Name	Rare Plant Rank	Bloom Time	Habitat	Liklihood to Occur
Fissidens pauperculus	Minute pocket moss	1B.2	n/a	Damp soil in dry stream beds and banks	Moderate
Sidalcia malviflora ssp. *patula*	Siskiyou checkerbloom	1B.2	May-August	Coastal scrub, coastal prairie, road cuts	Moderate
Clarkia amoena ssp. *whitneyi*	Whitney's farewell-to-spring	1B.1	June-August	Coastal bluff, coastal scrub	Moderate, based on a 1955 record from "west of Fortuna."
Gilia capitata ssp. *pacifica*	Pacific gilia	1B.2	April-August	Coastal scrub, coastal prairie	Low

4. Environmental Permits and Processes Discussion

4.1 California Environmental Quality Act

Review under the California Environmental Quality Act (CEQA) is required whenever a state or local government entity initiates a project, funds a project, or issues a permit decision. The CEQA document is prepared or overseen by a designated lead agency. An Initial Study determines the appropriate level of environmental review; for a project such as this one limited to relatively small portions of an urban fringe area but including a salmonid stream and associated riparian areas, there is a possibility that an Environmental Impact Report (EIR) would be required. However, if all identified impacts can be avoided or adequately mitigated, a Mitigated Negative Declaration (MND) may be adequate. The City of Fortuna would most likely be the CEQA lead agency for the project. Other likely agencies include the Humboldt County Association of Governments, Caltransor other non-federal agencies with permitting authority over the project.

Compliance with the National Environmental Policy Act (NEPA) is required whenever there is federal involvement in the project. If the ultimate project includes federal funding, it would trigger NEPA analysis; in addition, federal involvement may also include approval or issuance of permits. If the project does not qualify for a Categorical Exclusion (CE) or Programmatic Categorical Exclusion (PCE), additional environmental documentation under NEPA may be necessary prior to project approval of funding by a federal agency. Caltrans would most likely be the NEPA lead agency for the project.

4.2 Other CEQA/NEPA Considerations:

From a CEQA/NEPA perspective, project segmentation may occur when the project as described and analyzed in a single CEQA or NEPA process does not encompass the entire project. Segmentation can occur when portions of a project that are dependent on other portions of the project to make them functional are evaluated in separate documents. An example would be if each interchange were analyzed in separate CEQA documents but then constructed simultaneously. In this example, the “entire project” would consist of both interchanges, even though the project was analyzed in two separate documents and therefore “segmented.” However, if the components could not function without the other, then these projects must be analyzed in the same document. Alternatively, if the projects are analyzed in separate documents, they must be analyzed in the cumulative impacts section of the document. Therefore, if the two interchanges are considered a single project, then the document should address all project components.

If a project has reasonably foreseeable additional components, they must be analyzed concurrently as part of a single project. The flaw of segmentation is that it can divide larger projects into smaller components, which, when viewed independently, may not lead to the identification of the full range and intensity of impacts resulting from the entire project when viewed as a whole. Linear infrastructure network projects (e.g. transmission lines, pipe networks, roads, trails) may present a special challenge when considering whether a project is in danger of being segmented, as there may be no clear cut method of determining where an individual project starts and ends - and

whether it should be analyzed as part of a larger project or as an individual action simply occurring on a larger network. Following court decisions, the standard for determining whether a road project is an individual action warranting individual CEQA/NEPA analysis is if it is: of substantial length; and is between logical termini, such as population centers or major crossroads, etc; and has independent utility.

4.2.1 Cultural Resources

Preparation of CEQA/NEPA documents would trigger a need for cultural resources studies in at least some portions of the PSB. Reconnaissance level studies and inclusion of reasonable mitigation measures would likely be suitable for most areas, unless those studies identify concentrations of cultural resources.

4.2.2 Other Special Studies for CEQA/NEPA

CEQA and NEPA require special studies for key resources that may be impacted by the project. For instance, the Protocol level surveys for special-status plants and animals would serve as special studies. Other special studies that could be required include aesthetic studies, air quality studies, geologic studies, hazardous materials studies, noise studies, and traffic studies. At this time, it is unknown if any of these studies would be required. However, it is possible that special studies could be required for parts of the project. For example, geotechnical surveys may be required in the creek crossing locations.

4.3 Permits

4.3.1 U.S. Army Corps of Engineers (USACE) Section 404 Nationwide Permit

The USACE regulates discharges of dredged or fill material into Waters of the United States under Section 404 of the Clean Water Act (CWA). The project may result in unavoidable fill of some jurisdictional wetlands or Waters of the U.S. during project implementation. There are also potential stream crossings, although the project will likely be designed to avoid or minimize impacts to wetlands or waters of the U.S. However, if filling of wetlands or waters of the U.S. are unavoidable, the project will require a USACE Section 404 Permit. The project may qualify for a streamlined USACE Nationwide Permit. Prior to authorizing wetland fill under Section 404, a wetland delineation must be submitted and verified by the USACE. Impacts that cause a loss of jurisdictional wetland will require an approved wetland mitigation and monitoring plan (MMP), accompanied by an adaptive management plan and long term maintenance plan.

A formal wetland delineation is recommended during the planning phase of any segment which crosses a potential wetland identified in this report, and for those areas where ditches (potential Waters of the U.S.) occur adjacent to the roads, in order to verify potential wetlands or Waters of the U.S. and to request a jurisdictional determination. Wherever ground disturbing work would occur below the ordinary high water mark (OHWM) of a stream crossing, a delineation and 404 permit would also be required. Potential wetlands and waters of the U.S. are shown on Figures 2a and 2b and 3, and include Strong's Creek, several drainage ditches, and a few small degraded wet depressions and swales.

4.3.2 Regional Water Quality Control Board (RWQCB)

Section 401 Water Quality Certification and National Pollutant Discharge Elimination System (NPDES) Requirements: Pursuant to section 401 of the federal CWA, projects that require a

USACE permit for discharge of dredge or fill material must obtain water quality certification to confirm compliance with state water quality requirements. If the project results in unavoidable fill of wetlands or Waters of the U.S., Section 401 Certification from the RWQCB will be required. The RWQCB may encourage a CRAM evaluation of impacted habitats and mitigation for compensation of impacts.

The CWA requires that any discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge complies with a NPDES permit. These regulations require that discharges of stormwater from construction projects that cause one or more acres of soil disturbance must be in compliance with an NPDES permit. If the project disturbs more than one acre of soil, it must comply with the construction general stormwater permit issued by the State Water Resource Control Board. The construction general permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

Additionally, the RWQCB may take jurisdiction on a variety of drainage ditches and swales identified in the PSB and a formal delineation of the features will be required throughout the PSB.

4.3.3 California Department of Fish & Wildlife Section 1602

Under Fish and Game Code Section 1602 (Streambed Alteration), the CDFW has jurisdiction over proposed activities that may substantially modify a river, stream, or lake. The PSB includes portions of Strong's Creek and several shallow ditches, and depending on final design direct or indirect impacts could occur in some of these locations. Additionally, CDFW jurisdiction extends at least to the top of bank and may sometimes include adjacent riparian zones. As a result, a 1600 Lake and Streambed Alteration Agreement including special conditions to avoid or minimize impacts is anticipated.

4.3.4 Federal Endangered Species Act Compliance (Protocol Level Surveys and Biological Assessments)

Based on available knowledge at this time, the project is not expected to result in any adverse impacts to federally threatened or endangered species or habitats, and GHD does not anticipate the need for formal Section 7 ESA consultation (this assumes no instream work). However, when a USACE permit is required for impacts to jurisdictional wetlands or other waters and the project has the potential to cause adverse impacts to federally-listed threatened or endangered species, the USACE must initiate consultation with the USFWS and/or the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the ESA. Although unlikely for the proposed project, because no impacts to threatened, or endangered species are currently anticipated, if future studies determine that a listed species is present or if a species is added to the list and is present in the area, and if adverse effects are possible, then informal or formal consultation, including preparation of a Biological Assessment, may be required.

Potential issues include salmonids (steelhead, coho, chinook) which occur in the Eel River and tributaries including Strong's Creek. If project activities require dewatering of any portion of the creek, of if there is a possibility of sediment input to the stream or any other potential instream impact, then Section 7 consultation including preparation of a Biological Assessment may be necessary.

There is no documentation of terrestrial listed species in the project study boundary; however, if they are found to occur near the PSB, a variety of requirements ranging from pre-construction protocol surveys to seasonal noise and visual buffers during construction would be triggered, depending on distance to the nest.

4.3.5 California Endangered Species Act (Protocol Level Surveys and Biological Assessments):

The California Endangered Species Act (CESA) requires consultation with the CDFW when preparing CEQA documents to ensure that the lead agency actions do not jeopardize the existence of listed species.

A number of state listed or state sensitive species could potentially occur close to the PSB including bank swallow, northern red-legged frog, foothill yellow-legged frog, western pond turtle, and others. However no site-specific surveys are available at this time.

By incorporating the development of reasonable avoidance or mitigation measures in the CEQA document, such as seasonal work windows and buffer zones around bird and bat habitats and native migratory bird nests during the nesting season and pre-construction surveys for other species impacts can likely be reduced to less than significant. However, a thorough review is recommended, especially where wetland, stream, drainage ditches, or riparian impacts may occur.

4.3.6 Migratory Bird Treaty Act (Avian Surveys)

The Migratory Bird Treaty Act (MBTA) protects all native species of birds. USFWS has statutory authority to enforce the MBTA. To avoid impacts to nesting birds it is recommended that to the extent practical, construction activity occur outside the nesting season (approximately March 15 to August 15 in Humboldt County). This will be most crucial near riparian areas and large trees. If it is not possible to avoid the nesting season then avian surveys should occur within seven days prior to disturbance, and if active nests are identified then the biologist shall establish appropriate buffers. For common species typical of urban sites these are often very small, although buffers for raptors or special-status birds can be much larger (100 to 500 feet). Additonal protections for birds or requirements for avoidance are found in the Fish and Game Code and are often a part of CEQA compliance and mitigation measures.

4.3.7 California Department of Transportation (Caltrans)

Encroachment Permits (EP) and/or other agreements may be required for use of or alterations to any area within a Caltrans right-of-way.

A Humboldt County EP will be required if any work encroaches into County right-of-way. Additionally, a Humboldt County grading permit will need to be obtained for grading work in the County right-of-way which exceeds the thresholds identified in the County Grading Ordinance.

4.3.8 California State Lands Commission

The State Lands Commission (SLC) has jurisdiction over sovereign public lands, including the beds of California's naturally navigable rivers, lakes and streams, as well as the state's tide and submerged lands along the state's more than 1,100 miles of coastline, extending from the shoreline to three miles offshore. The location and extent of sovereign lands are generally defined by reference to the ordinary high and low water marks of tidal and navigable waterways. Because the boundaries of these lands are often legally based upon the last natural extent and location of the subject water body, they are not necessarily apparent from a present day site inspection, and substantial research is needed to define the extent of the state's ownership interests. Because the project crosses tributaries associated with the Eel River, further inquiry regarding the extent of SLC's jurisdiction should be conducted.

4.3.9 Permit Summary

In summary, a variety of permits and related environmental review would be necessary for project planning and design. In general, agencies are more supportive of projects when they are a part of the early planning and collaboration process. Currently, the proposed project would occur mostly within already disturbed areas, and environmental impacts are most likely if design features cross wetland or riparian areas. Any work within the identified creek crossings or wetlands would also trigger various permit requirements. The present document is intended to identify potential permits and environmental planning considerations at a project-wide scale.

5. Conclusions

5.1 Potential Permits and Environmental Constraints

The project area is shown on Figures 1 through 3. Appendix C contains representative photographs of the different habitats or constraints observed during the field reconnaissance effort.

The project will require a formal wetland delineation following USACE protocol to identify impacts to wetland habitat or waters of the U.S.; particularly in the areas identified as potential wetland, ditch, and stream crossings. Parts of the PSB contains what appear to be drainage ditches that could fall under either the USACE and/or RWQCB jurisdiction. The types of ditches identified in Figures 2a and 2b and 3 and shown in photographs in Appendix C include drainage ditches with evident flow paths connected by culverts, drainages comprised of hydrophytic vegetation, and swales.

Potential biological surveys required for implementing this proposed project include, at a minimum, a protocol level intensive botanical site inventory of vascular plant species, with emphasis on species identified in the database queries. This survey will need to be conducted at the appropriate season(s) to locate flowering individuals of listed species.

A few state special concern wildlife species have been reported within the general project vicinity, and others could occur although no recent field data is available for the PSB. Federally listed salmonids have been reported in other parts of Strong's Creek in the past and are presumed to be present. The PSB also contains several large redwoods and other large trees and other viable habitat for migratory nesting birds as well as riparian habitat. Therefore, these areas may need to be further assessed with CEQA special studies in order to identify and offset adverse impacts to the potential fauna along these routes. Additional non-biological studies may be required by CEQA/NEPA.

6. References

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Appendices

Appendix A (USFWS Listed/Proposed Threatened and Endangered Species for the Fortuna Quad)

Candidate species included

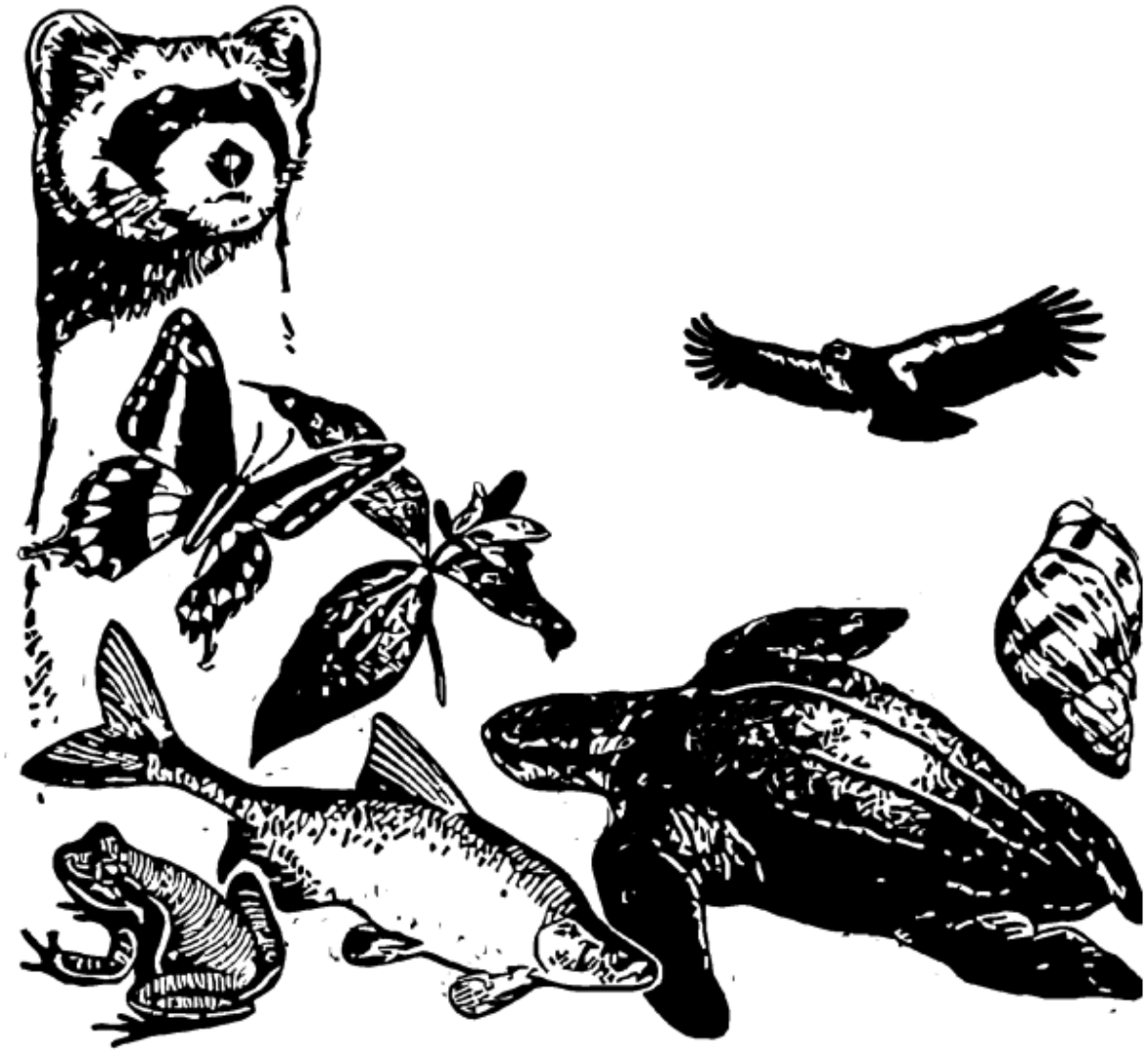
U.S. Fish & Wildlife Service

12th Street Interchange

IPaC Trust Resources Report

Generated March 04, 2016 03:19 PM MST, IPaC v3.0.0

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



IPaC - Information for Planning and Conservation (http://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

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U.S. Fish & Wildlife Service

IPaC Trust Resources Report

NAME

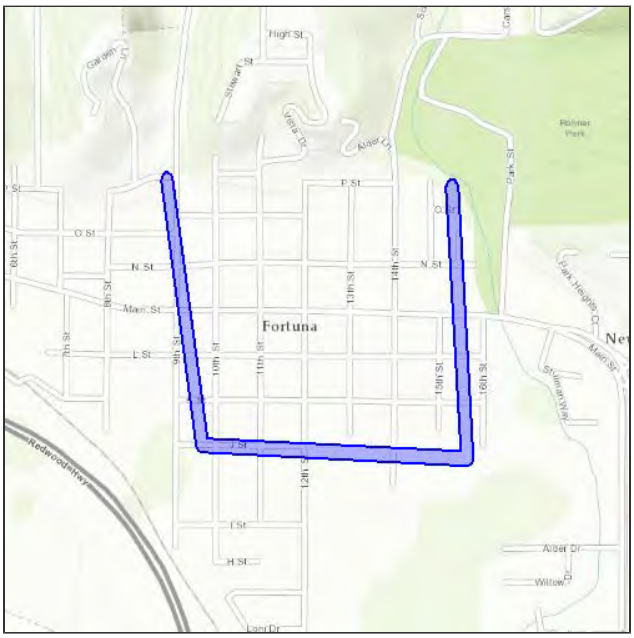
12th Street Interchange

LOCATION

Humboldt County, California

IPAC LINK

http://ecos.fws.gov/ipac/project/3IDEK-YDXKJ-BBLBW-TO465-QKA2Y4



U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the Endangered Species Program of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Birds

Marbled Murrelet Brachyramphus marmoratus — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B08C

Northern Spotted Owl Strix occidentalis caurina — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B08B

Western Snowy Plover Charadrius alexandrinus nivosus — Threatened

CRITICAL HABITAT
There is **final** critical habitat designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B07C

Yellow-billed Cuckoo Coccyzus americanus — Threatened

CRITICAL HABITAT
There is **proposed** critical habitat designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06R

Flowering Plants

Beach Layia Layia carnosa — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q34T

Menzies' Wallflower Erysimum menziesii — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q29W

Western Lily Lilium occidentale — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q1Y0

Mammals

Fisher Martes pennanti — Proposed Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=A0HS

Critical Habitats

This location overlaps all or part of the critical habitat for the following species:

Steelhead Critical Habitat Final designated

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E08D#crithab

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

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1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
  http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds
  http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data
  http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/akn-histogram-tools.php

The following species of migratory birds could potentially be affected by activities in this location:

Allen's Hummingbird Selasphorus sasin — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0LI

Bald Eagle Haliaeetus leucocephalus — Bird of conservation concern
Year-round
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B008

Burrowing Owl Athene cunicularia — Bird of conservation concern
Year-round
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0NC

Calliope Hummingbird Stellula calliope — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0K3

Fox Sparrow Passerella iliaca — Bird of conservation concern
Season: Wintering

Lewis's Woodpecker Melanerpes lewis — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HQ

Long-billed Curlew Numenius americanus — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06S

Marbled Godwit Limosa fedoa — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JL

Olive-sided Flycatcher Contopus cooperi — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0AN

Peregrine Falcon Falco peregrinus — Bird of conservation concern
Year-round
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU

Purple Finch Carpodacus purpureus — Bird of conservation concern
Year-round

Short-billed Dowitcher Limnodromus griseus — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JK

Short-eared Owl Asio flammeus — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD

Snowy Plover Charadrius alexandrinus — Bird of conservation concern
Season: Breeding

Western Grebe aechmophorus occidentalis — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0EA

Whimbrel Numenius phaeopus — Bird of conservation concern
Season: Wintering
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JN

Willow Flycatcher Empidonax traillii — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0F6

Yellow Warbler dendroica petechia ssp. brewsteri — Bird of conservation concern
Season: Breeding
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0EN

Red Knot Calidris canutus ssp. roselaari Bird of conservation concern

Season: Wintering

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0G6

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

There are no wetlands in this location

Appendix B (CNDDB Occurrence Report)

Fortuna Quad

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad is (Fortuna (4012452))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	None	G2G3	S1S2	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3T4	S2	1B.2
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S3	2B.2
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	None	G3	S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC

Record Count: 19

Appendix C (Site Photographs)


Strong’s Creek and associated riparian area


Riverwalk Drive bridge, looking east toward Hwy 101


Dinsmore Drive north of bridge, with riparian edge on left


Dinsmore Drive north of Riverwalk Drive, looking north. Riparian on left, willow and Monterey cypress on right


Southbound Hwy 101 exit ramp at 12th Street, looking NE


Potential wetland swale within area shown in photo above, looking NW with 12th Street in background

Eucalyptus on slope east of Kenmar Rd. interchange and parking lot

Parking lot, looking west toward Hwy 101 with inactive rail line in middle ground


Potential wetland south of Kenmar, between rail line and Hwy 101 ramp, looking south


Ditch/potential wetland north of Kenmar and east of Hwy 101, looking north


Ephemeral ditch north of Kenmar and west of Hwy 101, with adjacent riparian area


Degraded riparian habitat north of Kenmar/Riverwalk and west of Hwy 101


Redwood west of Hwy 101 and north of Kenmar/Riverwalk


Ephemeral ditch flowing toward Eel River floodplain, south of Kenmar/Riverwalk and west of Hwy 101. Note redwood in top right.

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