August, 2015

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EA #04-2G7100, RU: 245
Program ID: 0412000459

PROJECT REPORT

On Route US 101, in Santa Clara County

From US 101/East Dunne Avenue Interchange in Morgan Hill

To Santa Clara/San Mateo County Line in Palo Alto

I have reviewed the right of way information contained in this Project Report and the R/W Data Sheet attached hereto, and find the data to be complete, current, and accurate:

8-11-15

Mark L. Weaver
Deputy District Director – Right-of-Way & Land Surveys

Date

APPROVAL RECOMMENDED:

Dina El-Tawansy 8-11-15

Dina El-Tawansy
Project Manager

Date

APPROVED:

Lenka Culik-Caro 8/11/15

Helena "Lenka" Culik-Caro
Deputy District Director Design

Date

This Project Report 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.

August 5, 2015

Ramesh Sathiamurthy, P.E.
Registered Civil Engineer
URS Corporation

Date

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1. Introduction

Santa Clara Valley Transportation Authority (VTA), in cooperation with the California Department of Transportation (Caltrans), proposes to convert the existing High Occupancy Vehicle (HOV) lanes along the United States Highway 101 (US 101) to High Occupancy Toll (HOT) lanes (hereafter known as express lanes) and add a second express lane in both directions from Cochrane Road in Morgan Hill to State Route (SR) 85 in San Jose, and from Blossom Hill Road in San Jose to North Fair Oaks Avenue in Sunnyvale. The US 101 Express Lanes Project will also convert the US 101/State Route (SR) 85 HOV direct connectors in Mountain View to express lane connectors and conform to the express lanes proposed by the SR 85 Express Lanes Project (EA 04-4A7900), creating a network through Santa Clara County. The total length of the project is 37.65 miles, which consists of 36.55 miles on US 101 and 1.1 miles on SR 85 (See Attachment A – Project Vicinity & Location Map).

Express lanes are a demand management tool used to manage traffic congestion and provide travel options for highway users. They provide a means for better utilization of HOV lanes capacity by allowing solo drivers to use the express lanes for a fee while still allowing all eligible carpool lane users to use them for free. Additionally, they provide an option to solo drivers to use the facility on an as needed basis by taking advantage of the HOV lane capacity while maintaining the overall performance of the lane when the HOV lane is underutilized.

VTA prepared an express lanes feasibility study and implementation plan that evaluated several alternatives for US 101. The study evaluated the feasibility of several alternatives based on geometrics, traffic, cost, and right-of-way impacts. The screening analysis for the US 101 corridor recommended a single build alternative with two design variations that were discussed in the Project Study Report-Project Development Study (PSR-PDS) that was approved by Caltrans on August 6, 2012.

The two design variations identified in the PSR-PDS for the Build Alternative provided a dual express lane facility and resulted in a range of impacts and costs. Design Variation 1 proposed a Rapid Delivery Approach and required justification and approval of several non-standard features. This variation implemented the dual express lanes system with non-standard cross sectional elements that minimized the need for new right-of-way, outside widening, and structure reconstruction. Design Variation 1 maximized the use of the existing pavement cross section with a combination of inside and outside widening to create the additional pavement needed to accommodate the second express lane.

Design Variation 2 proposed a facility in substantial compliance with the design standards per the Caltrans Highway Design Manual (HDM). This variation relied substantially on outside widening of the freeway cross-section, including widening of existing structures, replacing overcrossings, right-of-way acquisition, and relocation of residences, businesses, and frontage roads that are adjacent to the existing right-of-way throughout the corridor.

Upon further evaluation of the environmental impacts, construction costs, and feasibility, the two design variations presented in the PSR-PDS were reduced to a single Build Alternative to be carried forward for full analysis during the Project Approval & Environmental Document (PA&ED) phase. The Draft Project was approved by Caltrans on December 30, 2014 for public circulation.

The Build Alternative incorporates cross sectional features described in Design Variation 2 for the majority of the southern segment of the project between East Dunne Avenue and SR 85 interchange in San Jose where a wide median exists. Features described in Design Variation 1 were incorporated into the Build Alternative where physical and environmental constraints exist north of the SR 85 interchange in San Jose.

The proposed US 101 Express Lanes Project consists of a combination of a one and two-lane express lane facility separated from the general purpose lanes by a striped buffer, where needed for safety and operational considerations, with combined entry and exit points that follow the Caltrans M4 weave access design detail, shown in Attachment B (which is similar to the southern California carpool lanes system weave access zones detail).

In the northbound direction, a single express lane is added on US 101 at East Dunne Avenue in Morgan Hill and a second express lane is introduced at Cochrane Road in Morgan Hill where conversion of the existing HOV lane begins. The dual express lanes extend to the SR 85/US 101 interchange in San Jose where the #1 express lane (leftmost express lane) continues onto northbound SR 85 via the HOV/Express connector, while the #2 express lane (rightmost express lane) continues on US 101 in a single express lane configuration 3.0 miles north. A second express lane is introduced north of the Blossom Hill Road interchange and continues as a dual express lanes facility through San Jose, Santa Clara, and Sunnyvale until just north of the North Fair Oaks Avenue interchange where the two express lanes merge into a single express lane. The single express lane facility then continues from just north of the North Fair Oaks Avenue interchange to the SR 85/US 101 interchange in Mountain View. North of the SR 85/US 101 interchange in Mountain View, the project proposes to convert the existing dual HOV lanes (currently under construction by the US 101 Auxiliary Lanes Project, EA #04-4A3304) to dual express lanes. The buffer terminates at approximately 1 mile south of the Oregon Expressway/Embarcadero Road interchange in Palo Alto, and the dual express lanes merge into a single express lane facility and ends just before the Oregon Expressway/Embarcadero Road interchange in Palo Alto.

In the southbound direction, the express lane begins approximately 0.5 miles south of the Oregon Expressway/Embarcadero Road interchange in Palo Alto. The project proposes to convert the existing dual HOV lanes (currently under construction by the US 101 Auxiliary Lanes Project, EA #04-4A3304) to express lanes. The express lane buffer begins on US 101 at the Rengstorff Avenue interchange in Mountain View. The #1 express lane (leftmost express lane) continues on SR 85 via the HOV/Express connector while the #2 express lane (rightmost express lane) continues onto US 101 as a single express lane from SR 85 interchange in Mountain View to just north of the North Fair Oaks Avenue interchange in

Sunnyvale. A second express lane is introduced just north of the North Fair Oaks Avenue interchange and a dual express lanes facility continues through Sunnyvale, Santa Clara, and San Jose until just north of the Blossom Hill Road interchange in San Jose where the two express lanes merge into a single express lane. The facility continues with a single express lane through the SR 85/US 101 interchange in San Jose. A second express lane enters US 101 from the southbound SR 85 HOV/Express connector (SR 85 Express Lanes Project, EA #04-4A7900). The project then extends the dual express lanes facility to just north of the Cochrane Road interchange in Morgan Hill where the existing HOV lane terminates. The project is also proposed to construct a new HOV/express lane further south on US 101 from Cochrane Road to East Dunne Avenue interchange. The new HOV/express lane restriction will end just north of the East Dunne Avenue interchange and will continue as a general purpose lane.

Auxiliary lanes are proposed in the following locations:

- Northbound US 101 between Lawrence Expressway and Fair Oaks Avenue
- Northbound US 101 between Great America Parkway and Lawrence Expressway
- Southbound US 101 between Lawrence Expressway and Great America Parkway
- Northbound US 101 between Old Bayshore Road and North 1st Street

The project assumes that the northbound and southbound HOV direct connectors in San Jose will be converted to express lane connectors by the SR 85 Express Lanes Project in advance of US 101 Express Lanes Project implementation. The northbound and southbound HOV connectors in Mountain View will be converted to express connectors by the US 101 Express Lanes Project, completing the express lane network for the two freeways. However, the SR 85 Express Lanes Project and the US 101 Express Lanes Project can be built and operated independently of each other (See Independent Utility section later in this report).

The Electronic Toll System (ETS) for the express lanes facility will be constructed, managed and maintained by VTA through a cooperative agreement with Caltrans. Agreements with other agencies such as Bay Area Toll Authority (BATA) and California Highway Patrol (CHP) will also be executed to allow for tolling and enforcement of the facility. The ETS is a combination of electronic toll collection, detection of traffic in the express lanes and general purpose lanes, video surveillance and enhanced tools for CHP enforcement. The express lanes will have dynamic pricing where toll rates will vary based on level of congestion in the express lanes and general purpose lanes in real-time.

The estimated total cost of the project (in 2015 dollars) is $431 million. The cost includes $7.5M for PA&ED, $33.5 for Plans, Specifications, and Estimates (PS&E), $5.9M for Right-of-Way and Utility Relocation, $355.7M for capital construction cost, and $28.4M for construction support. The project does not require any permanent right-of-way acquisition. The project is currently funded through the project approval and environmental clearance phase from VTA local funding sources. VTA is working with local, state, and federal agencies to identify funding sources for design and construction of the project.

The project is listed in the Santa Clara Valley Transportation Plan 2040 (VTP 2040) and in the Metropolitan Transportation Commission's (MTC's) Regional Transportation Plan 2040 (RTP) (Plan Bay Area) as Reference Number 240466 "US 101 in Santa Clara County from San Mateo/Santa Clara County line to Cochrane Road - convert HOV lanes to express lanes" and the total funding included is $479.88 million.

2. Recommendation

It is recommended that this Project Report be approved with the Build Alternative and that the project proceed to the final design phase. The Project Development Team (PDT) identified the Build Alternative as the preferred alternative on March 12, 2015, after considering comments received during the public comment period. The affected local agencies have been invited, participated, and consulted throughout the PDT process with respect to the recommended plan, that their views have been considered, and that these local agencies are in general accord with the plan as presented.

3. Background

3.1 Project History

Assembly Bill 2032, signed by Governor Schwarzenegger in 2004, provides legislative authority for VTA to implement and operate two corridors with express lanes within Santa Clara County. These express lanes facilitate use of available capacity in HOV lanes by allowing solo commuters to use, for a fee, the lanes that ordinarily would have been available for only carpoolers, transit, motorcycles, and vehicles with clean air stickers. The fees would change dynamically in response to existing congestion levels and available capacity in the carpool lanes.

VTA has followed through on the authority granted by AB 2032 to develop the Silicon Valley Express Lanes Program. The following is a brief timeline on the major developments related to this program:

- September 2003 - VTA staff presented a presentation on HOT Lanes to the VTA Board of Directors as per Ad Hoc Financial Stability Committee recommendation.
- September 2004 - Governor Schwarzenegger signed AB 2032 allowing VTA and two other agencies to conduct, administer, and operate a value pricing program on any two transportation corridors included in the carpool lane system as a demonstration.
- November 2004 - Professor Asha Weinstein of San Jose State University prepared a working paper assessing the equity implications of HOT lanes for VTA.
- September 2005 - The VTA Board of Directors authorized VTA staff to proceed with the preliminary engineering phase for the development of HOT lanes on SR 85 and/or US 101 on the basis of the findings from the feasibility study.
- December 2005 - VTA staff completed the HOT Lane Feasibility Study.

- January 2007 - VTA staff commenced the preliminary engineering phase for SR 85 and US 101 HOT lanes with the aim of identifying the first segment for HOT lane implementation in Santa Clara County.
- October 2007 - Governor Schwarzenegger signed AB 574 allowing VTA to operate HOT lanes on a permanent basis by removing the "demonstration" status and also allowing issuance of bonds, backed by HOT lane program revenues, to finance HOT lanes construction.
- March 2008 - The VTA Board of Directors approved VTP 2035 project lists for submittal to Metropolitan Transportation Commission (MTC), including a list of HOT lane projects.
- July 2008 - MTC approved a $223 billion Regional Transportation Plan for the Bay Area that describes a regional network of express lanes (MTC Resolution 3868) consisting of about 500 miles of carpool lane conversion to express lanes operations and another 300 miles of new express lanes to complete the gaps and extend the existing carpool network in the Bay Area. MTC also approved the HOT Network Implementation Principles as part of this resolution.
- December 2008 - The VTA Board of Directors approved the Silicon Valley Express Lanes Program for implementation including the SR 85 and US 101 Express Lanes Project.
- October 2010 - Caltrans approved the SR 85 Express Lanes Project Study Report (EA# 04-4A790K).
- March 2012 - The SR 237/I-880 express lane direct connectors are open to the public (EA# 04-0G4604).
- August 2012 - VTA prepared a PSR-PDS (EA# 04-2G710K) for the US 101 Express Lanes Project. The PSR-PDS was approved in August 2012.
- December, 2013 - Caltrans approved the SR 85 Express Lanes Draft Project Report and Environmental Document for public circulation (EA# 04-4A7900).
- April 2015 - Caltrans approved the SR 85 Express Lanes Project Report and Environmental Document (EA# 04-4A7900).
- June 2015 - Caltrans approved the SR 237 Express Lane Phases 2 Project Study Report/Project Report and Environmental Document (EA# 04-4H280K).

3.2 Community Interaction

VTA, in an effort to gauge public sentiment about the adoption of express lanes for SR 85 and US 101 in Santa Clara County, began a public outreach and education program in 2008. The first phase included:

- Interviews with a polling group of approximately 750 Santa Clara County citizens using the following methods. This research included:
    - Telephone surveys of 681 SR 85 and US 101 users,
    - 4 focus groups of HOV users and solo drivers who use both roadways,
    - 13 one-on-one interviews with community stakeholders,
    - An analysis of media coverage.
- VTA outreach staff participated in fifteen public events.
- VTA staff held meetings with business, environmental and community groups to give presentations.
- VTA and Caltrans held an open house meeting on October 19, 2011 in the City of Saratoga to present the SR 85 Express Lane Project to the communities who live along the corridor.

The findings of early public outreach (before PA&ED) indicated:

- There were no "deal-breakers" identified for stakeholders, business and community groups, or commuters;
- Stakeholders were supportive;
- The opportunity exists to leverage ten successful such projects in operation in the US; and,
- The express lanes will attract enough users to be financially successful, but not so many that the express lanes will be too crowded.

As part of the Feasibility Study, VTA also conducted an equity study with San Jose State University titled "Assessing the Equity Implications of HOT Lanes".

Community outreach efforts continued throughout the PA&ED process for the US 101 Express Lanes Project. The following outreach efforts have taken place:

- Old Mountain View Neighborhood Association Meeting on January 14, 2013
- Saratoga City Council Meeting on January 16, 2013
- West Valley Mayors and Managers Meeting on January 23, 2013
- San Jose District 2 City Council on February 4, 2013
- Transportation Summit on February 23, 2013
- San Jose District 5 City Council on March 27, 2013
- Berryessa Citizens Advisory Council on June 10, 2013
- San Jose Kiwanis Club, September 16, 2013
- SR 85 Express Lanes Project Public Meetings, January 14 and January 16, 2014

- SR 85 Express Lanes Project Presentation to Cupertino City Council, February 5, 2014
- City of Mountain View Open House on April 9, 2014
- City of Mountain View A La Cart Art and Wine Festival on May 3 and May 4, 2014
- City of Santa Clara Open House on July 21, 2014
- Moffett Business Group on September 8, 2014
- Santa Clara County Roads Commission on November 10, 2014
- Almaden Valley Community Association on December 8, 2014
- Vietnamese Tet Festival on February 21, 2014 and February 22, 2014
- Winchester Boulevard Neighborhood on April 15, 2015

In addition, representatives from the cities of Morgan Hill, San Jose, Santa Clara, Sunnyvale, Mountain View and Palo Alto and from the County of Santa Clara Roads and Airports attended the project development team meetings and provided their comments and inputs on the proposed project.

Community outreach efforts will continue for the project through the PS&E and construction phases.

3.3 Existing Facility

3.3.1 US 101

US 101 is the principal arterial serving local and interregional traffic along the Santa Clara Valley, the Peninsula, and the greater San Francisco Bay Area. US 101 is a north-south freeway in the Federal Aid Primary System, extending most of the length of California from the Oregon border to Los Angeles. The freeway also connects the San Francisco business district and San Francisco International Airport to San Jose and Silicon Valley to the south.

US 101 in Santa Clara County is a 52.55-mile-long freeway that connects San Benito County to San Mateo County, through the cities of Gilroy, Morgan Hill, San Jose, Santa Clara, Sunnyvale, Mountain View, and Palo Alto. The facility within the project limits consists of 3 general purpose lanes and one HOV lane in each direction, with auxiliary lanes in some locations. Auxiliary lanes exist along US 101 to facilitate merging operations between interchanges.

Auxiliary lanes exist along this project limit at the following northbound interchange segment locations:

- Capitol Expressway to Tully Road
- Tully Road to I-280/I-680
- I-280/I-680 to Julian/McKee Road
- Old Oakland Road to I-880
- Brokaw Road to Trimble Road-De La Cruz Boulevard
- Montague/San Tomas Expressway to Bowers Avenue/Great America Parkway
- Moffett Boulevard to N. Shoreline Boulevard
- N. Shoreline Boulevard to Amphitheatre Parkway
- Amphitheatre Parkway to San Antonio Road
- San Antonio Road to Oregon Expressway/Embarcadero Road

Auxiliary lanes exist along this project limit at the following southbound interchange segment locations:

- Oregon Expressway/Embarcadero Road to San Antonio Road
- Old Middlefield Way to SR 85
- N. Shoreline Boulevard to Moffett Boulevard
- SR 237 to N. Mathilda Avenue
- Bowers Avenue/Great America Parkway to Montague/San Tomas Expressway
- Trimble Road/De La Cruz Boulevard to SR 87
- N. 4th Street to Old Oakland Road
- Julian/McKee Road to I-280/I-680
- I-280/I-680 to Tully Road
- Tully Road to Capitol Expressway
- Capitol Expressway to Yerba Buena Road

US 101 intersects SR 85 (at its northern and southern ends), SR 237, Interstate 280 (I-280), I-680, I-880, and SR 87 providing north and south gateways into Silicon Valley. This stretch of freeway serves as an important trade corridor between the Central Valley, Central Coast, and the San Francisco Bay Area, additionally connecting commuters to technology and professional service industries in Santa Clara County.

US 101 was adopted into the State Highway System in 1929. Portions of the route in Santa Clara County were improved to a conventional four-lane highway in 1947 through 1960. Portions of US 101 were improved to a six-lane facility in 1958 and to an eight-lane freeway in 1971 through 1989.

US 101 within the project limits is typically an eight-lane divided freeway with auxiliary lanes in some segments. The width of the existing median on US 101 within the project limits varies between 6 and 76 feet. The existing lane widths on US 101 are 11 to 12 feet with an 8 to 10-foot-wide outside shoulder and a varying 2 to 10-foot wide inside shoulder in both directions. The posted speed limit along US 101 is 65 miles per hour (mph).

3.3.2 SR 85 in Mountain View

SR 85 is a north-south freeway that begins in south San Jose and loops around the southwestern portion of the Santa Clara Valley, through Los Gatos, Campbell, Saratoga, Cupertino, Sunnyvale, Los Altos, and Mountain View. The freeway, along its entire length, is named the West Valley Freeway. SR 85 is a full access-controlled freeway consisting typically of two mixed-flow lanes and one HOV lane in each direction.

The portions of SR 85 (between I-280 to US 101) that fall within the US 101 Express Lanes project limits were built between 1965 and 1967 as four lanes (two in each direction). The HOV lanes were added and completed in 1998. The HOV Direct Connectors were constructed in 2007.

3.3.3 Bridges, Interchanges, and Overcrossings on US 101

US 101 and its bridges, interchanges and overcrossing within the project limits can be traced back to as early as the 1930's. Since then numerous improvement projects have taken place to accommodate increasing travel demand in the Bay Area. Construction of overpasses within the cities of Santa Clara, Sunnyvale and Mountain View occurred in the 1960's. In Morgan Hill, construction of overpasses within its city limits from East Dunne to Burnett Avenue occurred in the 1970's. Improvements throughout southern San Jose continued into the 1980's. Freeway widening and seismic retrofit projects continued through the 1980's and 1990's as well as interchange improvements in the 2000's. Table 3.3.3-1 below shows the structures within the project limits and the year of construction and improvements.

Table 3.3.3-1 - List of Structures

Bridge No.	Postmile	Bridge Name	No. of Spans	Constructed	Widened
37-334	16.00	East Dunne Avenue Overcrossing	2	1972	2000
37-335	16.78	East Main Avenue Overcrossing	2	1972	
37-341	17.82	Cochrane Road Overcrossing	2	1972	
37-342	18.70	Burnett Avenue Overcrossing	2	1980	
37-349	19.21	Coyote Creek	3L/3R	1980	2003
37-344	21.25	Coyote Creek Golf Drive Undercrossing	2L/2R	1980	2002
37-404	21.6	Utility Facilities Undercrossing	1L/1R	1982	2002
37-546	23.10	Bailey Avenue Overcrossing	2	2004	
37-339	25.31	Metcalf Road Overcrossing	2	1982	
37-346	26.47	Coyote Creek Undercrossing	3L/3R	1980	2004
37-347	27.0	Bernal Road Undercrossing	2L/2R	1982	2004

Bridge No.	Postmile	Bridge Name	No. of Spans	Constructed	Widened
37-0628E	26.70	US 101-85/S101 HOV Connector	4	2004	
37-0548G	26.78	N101-N85/101 Connector	4	1994	
37-0634F	26.90	S101-N85 Connector Viaduct	3	2004	
37-108	29.72	Coyote Road Undercrossing	3L/3R	1947	1990
37-102	29.83	Coyote Creek	4L/4R	1947	1990
37-217	30.10	Hellyer Avenue Overcrossing	3	1965	
37-409	31.00	Yerba Buena Road Undercrossing	1L/1R	1989	
37-218	31.70	Capitol Expressway Overcrossing	4	1965	1978
37-95	33.03	Tully Road Overcrossing	4	2012	
37-142	34.55	Story Road Overcrossing	4	1967	
37-285	34.87	I-280/I-680/101	3	1974	
37-352	34.85	N&S101- N280&N680 Connector	55	1974	1982
37-353	34.87	S680&S280-S101 Connector	55	1974	1982
37-222	35.46	San Antonio Street Overcrossing	2	1993	
37-48	35.76	Santa Clara Street Overcrossing	2	1993	
37-123	36.12	Julian/McKee Overcrossing	2	1993	
37-97	36.37	Silver Creek	3	1957	1992
37-122	36.56	East San Jose Underpass	2	1993	
37-39	36.69	Coyote Creek	6	1940	1992
37-121	36.94	Mabury Road/E Taylor Street Overcrossing	2	1992	
37-113	37.41	Berryessa Road/ East Hedding Overcrossing	2	1993	
37-114	37.73	Oakland Road Overcrossing	2	1993	
37-115	37.99	North San Jose Underpass	2	1993	
37-118	38.09	10th Street Overcrossing	4	1993	
37-119	38.30	Junction I-880/US 101 Separation	4	1997	
37-116	39.29	North 1st Street Undercrossing	4	1959	1993
37-490	39.44	Brokaw Road Undercrossing	2	1993	
37-403R	3	Junction 87/101 Separation	7	1992	

Bridge No.	Postmile	Bridge Name	No. of Spans	Constructed	Widened
37-183	39.91	Junction 87/101 Connector Separation	3	1992	
37-403L	39.92	Junction 87/101 Separation	11	1992	
37-037	40.19	Guadalupe River	4	1937	2005
37-180	40.70	De La Cruz Boulevard Overcrossing	4	1961	
37-36	41.04	Agnew Underpass	2	1961	
37-17	41.07	Lafayette Street Overcrossing	4	1961	
37-391	41.08	Lafayette Street Overcrossing	2	1975	
37-166	41.98	San Tomas Expressway Overcrossing	4	1961	1983
37-41	42.25	San Tomas Aquino Creek	3	1961	1985
37-390	42.73	Bowers Avenue Overcrossing	2	1975	
37-399	43.32	Calabazas Creek	3	1960	1977
37-152	43.85	Lawrence Expressway	2	1998	
37-395	44.64	Ahwanee Avenue Pedestrian Overcrossing	4	1976	
37-168	44.83	North Fair Oaks Avenue Overcrossing	4	1961	
37-663	45.00	South Borregas Avenue Pedestrian Overcrossing	12	2009	
37-177	45.68	North Mathilda Avenue Overcrossing	4	1961	
37-178	46.13	Junction SR 237/101 Bridge	4	1959	1979
37-72	47.01	Moffett Field Overhead	4	1961	1989
37-105	47.89	Moffett Boulevard Overcrossing	2	1957	
37-34	48.04	Stevens Creek	2	1932	2007
37-05725	48.08	Junction NSR 85/101 Off Ramp to Shoreline	3	2007	
37-0611G	48.09	Junction SR85/US101 Connector	4	2007	
37-0610E	48.14	Junction SR/85/US101 HOV Connector	3	2007	
37-0547K	48.28	S101 On Ramp/S101-S85 Separation	4	2007	
37-153	48.60	Shoreline Boulevard Overcrossing	2	1992	
37-671	48.28	Permanente Creek Trail Pedestrian Overcrossing	15	2012	

Bridge No.	Postmile	Bridge Name	No. of Spans	Constructed	Widened
37-573	48.97	N101 Off Ramp/ 101 Separation	3	2005	
37-572	49.07	N85 Off Ramp/101 Separation	3	2004	
37-143	49.61	Rengstorff Avenue Overcrossing	4	1961	
37-449	49.61	Rengstorff Avenue Overcrossing	4	1990	
37-146	50.32	San Antonio Road Overcrossing	4	1960	1989
37-174	50.66	Adobe Creek	1	1960	1989, 2013
37-40	51.37	Matadero Creek	2	1960	1989, 2013
37-149	52.01	Oregon Expressway Overcrossing	4	1965	
37-323	52.01	Oregon Expressway Pedestrian Overcrossing	16	1968	
37-150	52.17	Embarcadero Road Overcrossing	4	1960	

3.3.4 Existing Traffic Operation System Equipment Locations

Table 3.3.4-1 shows a list of existing Traffic Operation System (TOS) elements that are within or near the project limit. Some elements are under construction and likely to be completed by the time this project comes through, consequently final placement has yet to be determined. Some traffic monitoring stations (TMS) are part of Ramp Metering installations.

Table 3.3.4-1 – Existing TOS Equipment

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
Changeable Message Sign (CMS)	SCL	101	16.47	N	South of Main Ave Overcrossing
CMS	SCL	101	18.90	S	North of Burnett Ave Overcrossing
CMS	SCL	101	24.89	N	South of Metcalf Rd
CMS	SCL	101	29.70	S	South of Hellyer Ave Interchange (South of Coyote Rd Undercrossing)
CMS	SCL	101	32.40	N	South of Tully Rd Interchange
CMS	SCL	101	41.10	N	North of Lafayette St Overcrossing
CMS	SCL	101	43.30	S	0.4 Miles South of Lawrence Expwy

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
CMS	SCL	101	51.52	S	South of Embarcadero Rd Overcrossing (North of Matadero Creek)
Closed Circuit Television (CCTV)	SCL	101	16.00	N	Just North of E Dunne Ave
CCTV	SCL	101	16.60	N	Just South of E Main Ave
CCTV	SCL	101	17.82	N	Cochrane Road Loop on-ramp to NB 101
CCTV	SCL	101	18.50	S	South of Burnett Ave
CCTV	SCL	101	19.30	S	Coyote Creek
CCTV	SCL	101	20.25	N	South of Coyote Creek Golf Dr Interchange
CCTV	SCL	101	21.26	N	Just South of Coyote Creek Golf Dr
CCTV	SCL	101	22.30	N	South of Bailey Ave Interchange
CCTV	SCL	101	23.41	S	Bailey Ave Overcrossing
CCTV	SCL	101	24.15	N	South of Metcalf Rd
CCTV	SCL	101	25.32	N	Just North of Metcalf Rd
CCTV	SCL	101	26.00	N	North of Metcalf Rd
CCTV	SCL	101	27.01	N	Silicon Valley Blvd/Bernal Rd Loop on-ramp to NB 101
CCTV	SCL	101	28.55	S	Blossom Hill Rd Diagonal on-ramp to SB 101
CCTV	SCL	101	29.72	S	2400' South of Hellyer Ave (600' South of Coyote)
CCTV	SCL	101	30.10	S	Hellyer Ave Loop
CCTV	SCL	101	30.90	N	200' North of Yerba Buena Rd
CCTV	SCL	101	31.01	S	Yerba Buena Rd Diagonal off-ramp
CCTV	SCL	101	31.74	N	NB 101 loop off-ramp to WB Capitol Expressway
CCTV	SCL	101	32.94	S	SB 101 loop off-ramp to EB Tully Rd
CCTV	SCL	101	34.51	N	Story Rd/NB 280 Collector
CCTV	SCL	101	34.87	S	Route 280 to SB 101 (Story Rd)
CCTV	SCL	101	35.25	N	Route 280 to NB 101
CCTV	SCL	101	35.74	N	Alum Rock Ave Diagonal
CCTV	SCL	101	36.14	N	McKee Rd Diagonal
CCTV	SCL	101	37.70	S	Oakland Rd./13th St Diagonal
CCTV	SCL	101	38.25	S	SB I-880 to SB 101
CCTV	SCL	101	38.35	N	NB I-880 to NB 101
CCTV	SCL	101	38.80	N	300' North of Old Bayshore Hwy
CCTV	SCL	101	39.26	N	N. First St Loop
CCTV	SCL	101	39.59	N	Brokaw Rd
CCTV	SCL	101	40.25	N	1700' North of 101/87 Interchange
CCTV	SCL	101	40.74	S	SB De La Cruz loop on-ramp to SB 101
CCTV	SCL	101	41.07	N	500' North of Lafayette Street Overcrossing
CCTV	SCL	101	41.93	N	NB Montague Expwy loop on-ramp to NB 101

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
CCTV	SCL	101	42.80	N	Bowers/Great America Diagonal on-ramp to NB 101
CCTV	SCL	101	44.01	N	NB Lawrence Expwy loop on-ramp to NB 101
CCTV	SCL	101	44.83	N	Fair Oaks Diagonal on-ramp to NB 101
CCTV	SCL	101	45.65	S	Mathilda Ave Diagonal
CCTV	SCL	101	45.68	N	NB Mathilda Ave to NB 101
CCTV	SCL	101	46.48	N	NB 101 Loop Connector to WB 237
CCTV	SCL	101	47.03	S	Ellis St Diagonal
CCTV	SCL	101	47.05	N	Ellis St Diagonal
CCTV	SCL	101	47.91	S	SB Moffett Blvd loop on-ramp to SB 101
CCTV	SCL	101	48.62	S	N Shoreline Blvd Loop
CCTV	SCL	101	48.93	S	Old Middlefield Way Diagonal
CCTV	SCL	101	48.99	N	Shoreline Blvd diagonal on-ramp to NB 101
CCTV	SCL	101	49.58	S	SB 101 loop off-ramp to Rengstorff Ave
CCTV	SCL	101	49.70	N	Rengstorff Ave diagonal on-ramp to NB 101
CCTV	SCL	101	50.32	N	San Antonio Ave off-ramp from NB 101
CCTV	SCL	101	51.99	S	Oregon Expwy Diagonal
CCTV	SCL	101	52.17	N	Just North of Embarcadero Rd
CCTV	SCL	85	23.01	N	South of W Middlefield Rd Overcrossing
CCTV	SCL	85	23.48	S	Moffett Blvd Loop on-ramp
CCTV	SCL	85	23.70	N	South of NB 101 Connector
Highway Advisory Radios (HAR)	SCL	101	26.97	N	Silicon Valley Loop on-ramp to NB 101
HAR	SCL	101	35.00	N	Just North of 101/280/680 Interchange
HAR	SCL	101	45.80	N	Mathilda Diagonal off from NB 101
HAR	SCL	101	51.96	N	Just South of Oregon Expwy
Extinguishable Message Signs (EMS)	SCL	101	16.60	S	South of East Main Ave
EMS	SCL	101	26.37	S	South of SB85 Connector to SB 101
EMS	SCL	101	27.71	N	2600' North of Bernal Rd
EMS	SCL	101	33.70	S	North of Tully Road
EMS	SCL	101	35.60	N	Alum Rock Ave Diagonal off-ramp from NB 101
EMS	SCL	101	45.80	S	Mathilda Ave. Loop on-ramp to SB 101
EMS	SCL	101	46.50	N	North of 101/237 Interchange
EMS	SCL	101	48.97	N	North of Middlefield Way
EMS	SCL	101	49.22	N	Just South of Oregon Expwy
Traffic Monitoring Stations (TMS)	SCL	101	15.90	S	Just South of E Dunne Ave
TMS	SCL	101	16.40	S	North of E Dunne Ave

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
TMS	SCL	101	16.70	N	700' South of E Main Ave
TMS	SCL	101	16.70	S	South of E Main Ave
TMS	SCL	101	17.20	S	Laurel Rd
TMS	SCL	101	17.20	N	Laurel Rd
TMS	SCL	101	17.95	S	South of Burnett Ave
TMS	SCL	101	18.30	S	North of Cochrane Rd
TMS	SCL	101	18.30	S	North of Cochrane Rd
TMS	SCL	101	18.75	N	Just North of Burnett Ave Overcrossing
TMS	SCL	101	18.80	S	North of Burnett Ave
TMS	SCL	101	19.23	N	Coyote Creek
TMS	SCL	101	19.50	S	North of Coyote Creek
TMS	SCL	101	20.30	N	South of Coyote Creek Golf Dr Interchange
TMS	SCL	101	20.30	S	South of Coyote Creek Golf Dr Interchange
TMS	SCL	101	20.80	S	Just South of Coyote Creek Golf Dr
TMS	SCL	101	21.05	N	Coyote Creek Golf Dr
TMS	SCL	101	21.80	S	North of Coyote Creek Golf Dr
TMS	SCL	101	21.90	N	North of Coyote Creek Golf Dr
TMS	SCL	101	22.29	N	2000' North of Coyote Creek Golf Dr
TMS	SCL	101	22.80	N	South of Bailey Ave Interchange
TMS	SCL	101	22.80	S	South of Bailey Ave Interchange
TMS	SCL	101	23.90	S	North of Bailey Ave Interchange
TMS	SCL	101	23.90	S	North of Bailey Ave Interchange
TMS	SCL	101	24.40	S	5000' North of Bailey Ave
TMS	SCL	101	24.40	N	5000' North of Bailey Ave
TMS	SCL	101	24.90	N	South of Metcalf Rd
TMS	SCL	101	25.32	N	Metcalf Rd Overcrossing
TMS	SCL	101	25.32	S	Metcalf Rd Overcrossing
TMS	SCL	101	25.90	N	North of Metcalf Rd
TMS	SCL	101	25.90	S	North of Metcalf Rd
TMS	SCL	101	26.45	S	South of SR 85 Connector
TMS	SCL	101	26.53	S	South of SR 85 Connector
TMS	SCL	101	26.78	S	SB 85 Connector / South of Bernal Rd
TMS	SCL	101	27.22	S	Bernal Rd Diagonal off-ramp
TMS	SCL	101	27.30	S	Just North of Bernal Rd
TMS	SCL	101	27.60	N	North of Bernal Rd
TMS	SCL	101	27.60	S	North of Bernal Rd
TMS	SCL	101	27.65	N	0.58 mi North of Bernal Rd
TMS	SCL	101	27.65	S	0.58 mi North of Bernal Rd

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
TMS	SCL	101	28.50	S	Just South of Blossom Hill Rd
TMS	SCL	101	28.79	S	Just North of Blossom Hill Rd
TMS	SCL	101	29.00	S	North of Blossom Hill Rd
TMS	SCL	101	29.30	N	South of Coyote Rd
TMS	SCL	101	30.00	N	Hellyer Ave Diagonal off-ramp
TMS	SCL	101	30.15	S	Hellyer Ave Loop
TMS	SCL	101	31.00	N	Yerba Buena Rd Overcrossing
TMS	SCL	101	31.00	N	Yerba Buena Rd Overcrossing
TMS	SCL	101	31.40	N	South of E Capitol Expwy
TMS	SCL	101	32.10	N	North of E Capitol Expwy
TMS	SCL	101	32.20	S	North of E Capitol Expwy
TMS	SCL	101	32.70	N	South of Tully Rd Interchange
TMS	SCL	101	33.27	N	North of Tully Rd Interchange
TMS	SCL	101	34.00	N	280/680 Connector
TMS	SCL	101	34.00	N	280/680 Connector
TMS	SCL	101	34.00	S	South of Story Rd
TMS	SCL	101	34.49	N	Story Rd Interchange
TMS	SCL	101	34.50	S	Story Rd Interchange
TMS	SCL	101	34.60	S	Story Rd Loop
TMS	SCL	101	34.60	S	Story Rd Loop
TMS	SCL	101	34.74	S	North of Story Rd
TMS	SCL	101	35.20	S	200' South of San Antonio St
TMS	SCL	101	35.20	N	200' South of San Antonio St
TMS	SCL	101	35.64	N	Alum Rock Ave Diagonal off-ramp
TMS	SCL	101	35.84	S	Alum Rock Ave Diagonal off-ramp
TMS	SCL	101	36.11	N	McKee Rd Overcrossing
TMS	SCL	101	36.26	S	McKee Rd Diagonal off-ramp
TMS	SCL	101	36.60	S	South of E Taylor St
TMS	SCL	101	36.60	N	South of E Taylor St
TMS	SCL	101	37.61	N	Just South of Oakland Rd
TMS	SCL	101	37.79	S	Just North of Oakland Rd
TMS	SCL	101	38.73	S	Old Bayshore Hwy off-ramp
TMS	SCL	101	38.80	N	Old Bayshore Hwy
TMS	SCL	101	38.80	S	Old Bayshore Hwy
TMS	SCL	101	39.28	N	North 1st St Undercrossing
TMS	SCL	101	39.28	S	North 1st St Undercrossing
TMS	SCL	101	40.59	N	De La Cruz Blvd Diagonal off-ramp
TMS	SCL	101	40.65	S	De La Cruz Blvd Loop

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
TMS	SCL	101	40.75	S	Trimble Rd
TMS	SCL	101	41.16	N	0.44 mi North of De La Cruz Blvd
TMS	SCL	101	41.16	N	0.44 mi North of De La Cruz Blvd
TMS	SCL	101	41.79	S	Just South of San Tomas Expwy
TMS	SCL	101	41.87	S	Just South of San Tomas Expwy
TMS	SCL	101	42.08	N	San Tomas Expwy off-ramp
TMS	SCL	101	42.19	S	San Tomas Expwy off-ramp
TMS	SCL	101	42.77	S	Great America Pkwy off-ramp
TMS	SCL	101	43.30	S	South of Lawrence Expwy
TMS	SCL	101	43.30	N	South of Lawrence Expwy
TMS	SCL	101	43.64	N	0.89 mi North of Great America Pkwy/Bowers Ave
TMS	SCL	101	43.64	S	0.89 mi North of Great America Pkwy/Bowers Ave
TMS	SCL	101	43.79	N	Lawrence Expwy off-ramp
TMS	SCL	101	43.83	S	Lawrence Expwy
TMS	SCL	101	44.40	N	South of N Fair Oaks Ave
TMS	SCL	101	44.40	S	South of N Fair Oaks Ave
TMS	SCL	101	44.70	S	N Fair Oaks Ave on-ramp
TMS	SCL	101	44.87	S	N Fair Oaks Ave Loop on-ramp
TMS	SCL	101	44.87	N	N Fair Oaks Ave Loop on-ramp
TMS	SCL	101	45.00	N	N Fair Oaks Diagonal on-ramp
TMS	SCL	101	45.10	S	North of N Fair Oaks Interchange
TMS	SCL	101	45.72	S	N Mathilda Ave off-ramp
TMS	SCL	101	46.02	S	EB 237 off-ramp
TMS	SCL	101	46.48	S	North of 237 Interchange
TMS	SCL	101	46.48	N	North of 237 Interchange
TMS	SCL	101	47.30	N	North of Ellis St Interchange
TMS	SCL	101	47.65	S	South of Moffett Blvd Interchange
TMS	SCL	101	47.78	N	Moffett Blvd off-ramp
TMS	SCL	101	48.62	S	N Shoreline Blvd off-ramp
TMS	SCL	101	50.40	S	San Antonio Ave Diagonal off-ramp
TMS	SCL	101	50.40	N	San Antonio Ave Diagonal off-ramp
TMS	SCL	101	51.00	N	North of San Antonio Ave Interchange
TMS	SCL	101	51.40	S	South of Oregon Expwy Interchange
TMS	SCL	101	51.40	N	South of Oregon Expwy Interchange
TMS	SCL	101	51.90	N	Just South of Oregon Expwy Overcrossing
TMS	SCL	101	52.16	N	Embarcadero Rd
TMS	SCL	101	52.40	N	North of Embarcadero Rd Interchange
TMS	SCL	85	23.01	NS	South of E Middlefield Rd Overcrossing

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
TMS	SCL	85	23.48	NS	Moffett Blvd
TMS	SCL	85	23.60	NS	North of Moffett Blvd
TMS	SCL	85	23.87	S	SB 101 to SR 85 Connector
Off-ramp Detection	SCL	101	16.265	S	SB off-ramp to E Dunne Ave
Off-ramp Detection	SCL	101	17.546	N	NB off-ramp to Cochrane Rd
Off-ramp Detection	SCL	101	18.145	S	SB off-ramp to Cochrane Rd
Off-ramp Detection	SCL	101	21.04	N	NB off-ramp to Coyote Creek Golf Dr
Off-ramp Detection	SCL	101	21.51	S	SB off-ramp to Coyote Creek Golf Dr
Off-ramp Detection	SCL	101	25.67	N	NB off-ramp to NB SR-85 HOV Flyover
Off-ramp Detection	SCL	101	26.237	N	NB off-ramp to NB SR-85
Off-ramp Detection	SCL	101	26.85	N	NB off-ramp to Bernal Rd
Off-ramp Detection	SCL	101	27.221	S	SB off-ramp to Bernal Rd
Off-ramp Detection	SCL	101	27.444	S	SB off-ramp to NB SR-85
Off-ramp Detection	SCL	101	28.185	N	NB off-ramp to SR-82/Blossom Hill Rd
Off-ramp Detection	SCL	101	28.911	S	SB off-ramp to SR-82/Blossom Hill Rd
Off-ramp Detection	SCL	101	29.931	N	NB off-ramp to Hellyer Ave
Off-ramp Detection	SCL	101	30.281	S	SB off-ramp to Hellyer Ave
Off-ramp Detection	SCL	101	30.857	N	NB off-ramp to Yerba Buena Rd
Off-ramp Detection	SCL	101	31.133	N	NB off-ramp to Capitol Expwy
Off-ramp Detection	SCL	101	31.348	S	SB off-ramp to Yerba Buena
Off-ramp Detection	SCL	101	31.554	N	NB off-ramp to EB Capitol Expwy
Off-ramp Detection	SCL	101	31.841	S	SB off-ramp to EB Capitol Expwy
Off-ramp Detection	SCL	101	31.95	S	SB off-ramp to Capitol Expwy
Off-ramp Detection	SCL	101	32.784	N	NB off-ramp to Tully Rd
Off-ramp Detection	SCL	101	32.894	N	NB off-ramp to EB Tully Rd
Off-ramp Detection	SCL	101	33.171	S	SB off-ramp to EB Tully Rd
Off-ramp Detection	SCL	101	33.335	S	SB off-ramp to Tully Rd
Off-ramp Detection	SCL	101	34.113	N	NB off-ramp to I-280 & I-680
Off-ramp Detection	SCL	101	34.224	N	NB off-ramp to Story Rd
Off-ramp Detection	SCL	101	34.454	N	NB off-ramp to EB Story Rd
Off-ramp Detection	SCL	101	34.631	S	SB off-ramp to EB Story Rd
Off-ramp Detection	SCL	101	34.671	N	NB off-ramp to NB I-680
Off-ramp Detection	SCL	101	34.791	S	SB off-ramp to Story Rd
Off-ramp Detection	SCL	101	35.03	S	SB off-ramp to NB I-680
Off-ramp Detection	SCL	101	35.198	S	SB off-ramp to I-280/I-680
Off-ramp Detection	SCL	101	35.593	N	NB off-ramp to SR-130/Santa Clara St
Off-ramp Detection	SCL	101	35.782	N	NB off-ramp to Julian St/McKee Rd
Off-ramp Detection	SCL	101	35.861	S	SB off-ramp to SR-130/Santa Clara St

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
Off-ramp Detection	SCL	101	36.047	S	SB off-ramp to SR-130/Santa Clara St
Off-ramp Detection	SCL	101	36.059	N	NB off-ramp to Julian St/McKee Rd
Off-ramp Detection	SCL	101	36.234	S	SB off-ramp to McKee Rd/Julian St
Off-ramp Detection	SCL	101	37.603	N	NB off-ramp to Oakland Rd
Off-ramp Detection	SCL	101	37.851	S	SB off-ramp to Oakland Rd
Off-ramp Detection	SCL	101	38.176	N	NB off-ramp to NB I -880
Off-ramp Detection	SCL	101	38.261	S	SB off-ramp to NB I-880
Off-ramp Detection	SCL	101	38.354	N	NB off-ramp to SB I-880
Off-ramp Detection	SCL	101	38.442	S	SB off-ramp to SB I-880
Off-ramp Detection	SCL	101	38.781	N	NB off-ramp to Old Bayshore Hwy
Off-ramp Detection	SCL	101	39.161	N	NB off-ramp to N 1st St/Brokaw Rd
Off-ramp Detection	SCL	101	39.586	S	SB off-ramp to N 1st St/Brokaw Rd
Off-ramp Detection	SCL	101	40.007	S	SB off-ramp to Guadalupe Pky/SR-87
Off-ramp Detection	SCL	101	40.554	N	NB off-ramp to Trimble Rd
Off-ramp Detection	SCL	101	40.671	S	SB off-ramp to Trimble Rd
Off-ramp Detection	SCL	101	40.734	N	NB off-ramp to SB De La Cruz Blvd
Off-ramp Detection	SCL	101	40.841	S	SB off-ramp to SB De La Cruz
Off-ramp Detection	SCL	101	41.749	N	NB off-ramp to San Tomas Expwy
Off-ramp Detection	SCL	101	41.862	N	NB off-ramp to San Tomas Expwy
Off-ramp Detection	SCL	101	42.086	S	SB off-ramp to San Tomas Expwy
Off-ramp Detection	SCL	101	42.202	S	SB off-ramp to San Tomas Expwy
Off-ramp Detection	SCL	101	42.533	N	NB off-ramp to Great America Pky
Off-ramp Detection	SCL	101	43.034	S	SB off-ramp to Great America Pky
Off-ramp Detection	SCL	101	43.753	N	NB off-ramp to NB Lawrence Expwy
Off-ramp Detection	SCL	101	43.953	S	SB off-ramp to SB Lawrence Expwy
Off-ramp Detection	SCL	101	44.734	N	NB off-ramp to Fair Oaks Ave
Off-ramp Detection	SCL	101	44.791	S	SB off-ramp to NB Fair Oaks Ave
Off-ramp Detection	SCL	101	44.981	S	SB off-ramp to Fair Oaks Ave
Off-ramp Detection	SCL	101	45.544	N	NB off-ramp to NB Mathilda Ave
Off-ramp Detection	SCL	101	45.734	N	NB off-ramp to SB Mathilda Ave
Off-ramp Detection	SCL	101	45.821	S	SB off-ramp to SB Mathilda Ave
Off-ramp Detection	SCL	101	46.111	S	SB off-ramp to EB SR-237
Off-ramp Detection	SCL	101	46.154	N	NB off-ramp to WB SR-237
Off-ramp Detection	SCL	101	46.854	N	NB off-ramp to Ellis St
Off-ramp Detection	SCL	101	47.241	S	SB off-ramp to Ellis St
Off-ramp Detection	SCL	101	47.764	N	NB off-ramp to EB Moffett Blvd
Off-ramp Detection	SCL	101	47.851	S	SB off-ramp to EB Moffett Blvd
Off-ramp Detection	SCL	101	47.934	S	SB off-ramp to WB Moffett Blvd

TYPE	COUNTY	ROUTE	~PM	DIRECTION	LOCATION
Off-ramp Detection	SCL	101	48.011	S	SB off-ramp to WB Moffett Blvd
Off-ramp Detection	SCL	101	48.201	S	SB off-ramp to SB SR-85
Off-ramp Detection	SCL	101	48.514	N	NB off-ramp to Shoreline Blvd/Middlefield
Off-ramp Detection	SCL	101	48.674	N	NB off-ramp to Shoreline Blvd
Off-ramp Detection	SCL	101	48.691	S	SB off-ramp to SB Shoreline Blvd
Off-ramp Detection	SCL	101	48.824	N	NB off-ramp to Old Middlefield Way
Off-ramp Detection	SCL	101	49.534	N	NB off-ramp to N Rengstorff Ave
Off-ramp Detection	SCL	101	49.581	S	SB off-ramp to Rengstorff Ave
Off-ramp Detection	SCL	101	49.674	N	NB off-ramp to SB Rengstorff Ave
Off-ramp Detection	SCL	101	50.134	N	NB off-ramp to San Antonio Rd
Off-ramp Detection	SCL	101	50.271	S	SB off-ramp to NB San Antonio Rd
Off-ramp Detection	SCL	101	50.401	S	SB off-ramp to SB San Antonio Rd
Off-ramp Detection	SCL	101	52.061	S	SB off-ramp to Oregon Expwy
Off-ramp Detection	SCL	101	52.291	S	SB off-ramp to EB Embarcadero Rd
Off-ramp Detection	SCL	101	52.401	S	SB off-ramp to Oregon Expwy/Embarcadero Rd
Off-ramp Detection	SCL	85	23.304	N	NB off-ramp to Moffett Blvd

Note: Some TMS are part of Ramp Metering installations.

3.3.5 Existing Ramp Metering Equipment Locations

The following is a list of existing ramp metering that are within or near the project limit:

Table 3.3.5-1 – Existing Ramp Metering Equipment

COUNTY	ROUTE	PM	DIRECTION	LOCATION
SCL	101	16.175	N	NB on-ramp from E Dunne Ave
SCL	101	17.576	S	SB on-ramp from EB Cochrane Rd
SCL	101	17.783	N	NB on-ramp from EB Cochrane Rd
SCL	101	17.857	S	SB on-ramp from WB Cochrane Rd
SCL	101	17.987	N	NB on-ramp from WB Cochrane Rd
SCL	101	21.05	S	SB on-ramp from Coyote Creek Golf Dr
SCL	101	21.46	N	NB on-ramp from Coyote Creek Golf Dr
SCL	101	23.153	N	NB on-ramp EB Bailey Ave
SCL	101	26.688	S	SB on-ramp from SB SR-85/Bernal Rd
SCL	101	26.705	S	SB on-ramp from Bernal Rd
SCL	101	27.015	N	NB on-ramp from EB Bernal Rd
SCL	101	27.219	N	NB on-ramp from WB Bernal Rd
SCL	101	28.442	S	SB on-ramp from SB SR-82 (EB)
SCL	101	28.501	N	NB on-ramp from EB Blossom Hill Rd

COUNTY	ROUTE	PM	DIRECTION	LOCATION
SCL	101	28.665	S	SB on-ramp from NB SR-82 (WB)
SCL	101	28.794	N	NB on-ramp from WB Blossom Hill Rd
SCL	101	30.047	N	NB on-ramp from Hellyer Ave
SCL	101	30.151	S	SB on-ramp from Hellyer Ave
SCL	101	30.749	S	SB on-ramp from Yerba Buena Rd
SCL	101	31.185	N	NB on-ramp from Yerba Buena Rd
SCL	101	31.297	S	SB on-ramp from Capitol Expwy
SCL	101	31.571	S	SB on-ramp from EB Capitol Expwy
SCL	101	31.752	S	SB on-ramp from WB Capitol Expwy
SCL	101	31.825	N	NB on-ramp from WB Capitol Expwy
SCL	101	31.874	N	NB on-ramp from Capitol Expwy
SCL	101	32.853	S	SB on-ramp from Tully Rd
SCL	101	32.901	S	SB on-ramp from EB Tully Rd
SCL	101	33.088	N	NB on-ramp from EB Tully Rd
SCL	101	33.272	N	NB on-ramp from Tully Rd
SCL	101	34.964	N	NB on-ramp from I-280/Story Rd
SCL	101	35.108	N	NB on-ramp from SB I-680
SCL	101	35.644	S	SB on-ramp from SR-130/Santa Clara St
SCL	101	35.821	S	SB on-ramp from Julian St/McKee Rd
SCL	101	35.839	N	NB on-ramp from SR-130
SCL	101	36.223	N	NB on-ramp from WB McKee Rd
SCL	101	37.612	S	SB on-ramp from Oakland Rd
SCL	101	37.842	N	NB on-ramp from Oakland Rd
SCL	101	38.174	S	SB on-ramp from NB I-880
SCL	101	38.257	N	NB on-ramp from NB I-880
SCL	101	38.352	S	SB on-ramp from SB I-880
SCL	101	39.281	N	NB on-ramp from N 1st St
SCL	101	39.591	N	NB on-ramp from Brokaw Rd
SCL	101	40.096	N	NB on-ramp from Guadalupe Pky
SCL	101	40.591	S	SB on-ramp from NB De La Cruz Blvd
SCL	101	40.654	N	NB on-ramp from De La Cruz Blvd
SCL	101	40.751	S	SB on-ramp from SB De La Cruz Blvd
SCL	101	40.814	N	NB on-ramp from SB De La Cruz
SCL	101	41.792	S	SB on-ramp from San Tomas Expwy
SCL	101	41.868	S	SB on-ramp from San Tomas Expwy
SCL	101	42.08	N	NB on-ramp from San Tomas Expwy
SCL	101	42.194	N	NB on-ramp from San Tomas Expwy
SCL	101	42.575	S	SB on-ramp from Great America Pky

COUNTY	ROUTE	PM	DIRECTION	LOCATION
SCL	101	42.696	N	NB on-ramp from NB Great America Pky
SCL	101	42.772	S	SB on-ramp from SB Great America Pky
SCL	101	42.947	N	NB on-ramp from SB Great America Pky
SCL	101	43.762	S	SB on-ramp from NB Lawrence Expwy
SCL	101	43.823	N	NB on-ramp from NB Lawrence Expwy
SCL	101	43.894	S	SB on-ramp from SB Lawrence Expwy
SCL	101	43.936	N	NB on-ramp from SB Lawrence Expwy
SCL	101	44.701	S	SB on-ramp from NB Fair Oaks Ave
SCL	101	44.871	S	SB on-ramp from SB Fair Oaks Ave
SCL	101	44.884	N	NB on-ramp from Fair Oaks Ave
SCL	101	45.631	S	SB on-ramp from NB Mathilda Ave
SCL	101	45.644	N	NB on-ramp from NB Mathilda Ave
SCL	101	45.721	S	SB on-ramp from SB Mathilda Ave
SCL	101	46.024	S	SB on-ramp from EB SR-237
SCL	101	46.254	N	NB on-ramp from WB SR-237
SCL	101	46.811	S	SB on-ramp from Ellis St
SCL	101	47.247	N	NB on-ramp from Ellis St
SCL	101	47.781	S	SB on-ramp from EB Moffett Blvd
SCL	101	47.854	N	NB on-ramp from EB Moffett Blvd
SCL	101	47.931	S	SB on-ramp from WB Moffett Blvd
SCL	101	48.014	N	NB on-ramp from WB Moffett Blvd
SCL	101	48.301	N	NB on-ramp from NB SR-85
SCL	101	48.461	S	SB on-ramp from NB Shoreline Blvd
SCL	101	48.621	S	SB on-ramp from SB Shoreline Blvd
SCL	101	48.864	N	NB on-ramp from Shoreline Blvd
SCL	101	48.881	S	SB on-ramp from Old Middlefield Way
SCL	101	49.501	S	SB on-ramp from N Rengstorff Ave
SCL	101	49.754	N	NB on-ramp from Rengstorff Ave
SCL	101	50.332	N	NB on-ramp from NB San Antonio Rd
SCL	101	50.404	N	NB on-ramp from SB San Antonio Rd
SCL	101	51.891	S	SB on-ramp from Oregon Expwy/Embarcadero
SCL	101	51.951	S	SB on-ramp from EB Oregon Expwy
SCL	101	52.002	S	SB on-ramp from EB Embarcadero Rd
SCL	101	52.274	N	NB on-ramp from EB Embarcadero Rd
SCL	101	52.344	N	NB on-ramp from Oregon Expy/Embarcadero Rd
SCL	85	23.014	N	NB on-ramp from Central Expwy
SCL	85	23.481	S	SB on-ramp from Moffett Blvd

4. Purpose and Need

4.1 Project Purpose

The purpose of the proposed project is to:

- Manage traffic in the congested segments of US 101 between the East Dunne Avenue Interchange in Morgan Hill and the Oregon Expressway/Embarcadero Road Interchange in Palo Alto; and
- Maintain consistency with provisions defined in Assembly Bill (AB) 2032 (2004) and AB 574 (2007) to implement Express Lanes in an HOV lane system in Santa Clara County. Subsequently, California Streets and Highways Code Sections 149.6-149.8 were updated to allow for the designation of HOV lanes as HOT lanes. This purpose is also consistent with the US 101 South Corridor System Management Plan, which includes this project as one of its Baseline Improvement Projects for 2015.

4.2 Project Need

In Santa Clara County, US 101 has the following identified deficiencies that create the need for the proposed project; each discussed in more detail below.

4.3 Problem, Deficiencies, and Justification

4.3.1 Transportation Demand

In Santa Clara County, US 101 typically has three mixed-flow lanes and a single HOV lane in each direction, with auxiliary lanes (lanes that extend from on-ramps to off-ramps) in some segments. US 101 within the project limits carries up to 245,000 vehicles per day[1], including HOV traffic (Caltrans 2011)[2] between Morgan Hill in the south and Palo Alto in the north.

The high transportation demands in several segments of the mixed-flow lanes leads to substantial congestion and reduced speeds for single occupancy vehicles (SOVs). During the peak periods (6 AM to 10 AM and 3 PM to 6 PM), US 101 cannot accommodate all of the traffic demands in the corridor, causing "bottlenecks" in numerous segments of the mixed-flow lanes. As a result, the mixed-flow lanes function below the posted speed limit in some segments.

In addition to congestion in mixed-flow lanes, drivers in HOV lanes also experience delays in some segments on US 101 between SR 85 in San Jose and SR 85 in Mountain View. AB 2032 (2004) sets the requirement that HOV lanes must operate at least at Level of Service (LOS) C or D, which indicates minimal delays and corresponds to a target threshold of

[1] Traffic and Vehicle Data Systems Unit, http://traffic-counts.dot.ca.gov/2011all/Route101.html
[2] Caltrans 2011. Traffic Operational Assessment, San Francisco Bay Area Backbone Express Lanes Network, August 31, 2011, California Department of Transportation, District 4 - Office of Highway Operations.

approximately 1,650 (vehicles per hour) vph per HOV lane. The 1,650 vph threshold is intended to provide HOVs with reliable travel time savings.

Based on existing traffic conditions and field observations, the following general purpose lane bottlenecks have been identified.[3]

Northbound AM

- Tully Road Loop On-Ramp to Tully Road Diagonal On-Ramp: The queue from this bottleneck forms around 7:10 AM and dissipates by 9:30 AM. It extends back to the Hellyer Avenue On-Ramp (approximately 3.6 miles), overlapping with a secondary bottleneck observed within this bottleneck. The segment between Capitol Expressway On-Ramp and Tully Road Off-Ramp was observed to be a secondary bottleneck.

- McKee On-Ramp and Old Oakland Rd Off-Ramp: The queue from this bottleneck forms around 7:15 AM and dissipates by 9:30 AM. It extends back to the Alum Rock Ave Off-Ramp (approximately 1.5 miles). At times, the segment between Oakland Road On-Ramp to northbound I-880 Off-Ramp was observed to be a secondary bottleneck or even the controlling bottleneck in this area.

- Trimble Road On-Ramp to Montague Expressway Off-Ramp: The queue from this bottleneck forms around 7:10 AM and dissipates by 10:00 AM. It extends back to the Old Bayshore Highway Off-Ramp (approximately 2.5 miles).

- Shoreline Boulevard On-Ramp to northbound Rengstorff Avenue Off-Ramp: The queue from this bottleneck forms around 7:00 AM and dissipates by 10:00 AM. It extends back to the Moffett Boulevard Off-Ramp (approximately 1.5 miles).

Southbound AM

- University Avenue On-Ramp and Oregon Expressway Off-Ramp – The queue from this bottleneck forms around 7:45 AM and dissipates by 9:45 AM. It extends beyond the Woodside Road Interchange (approximately 5.0 miles).

- Oregon Expressway On-Ramp to San Antonio Road Off-Ramp: The queue from this minor bottleneck forms around 8:30 AM and dissipates by 9:45 AM and is mainly controlled by the University Avenue to Oregon Expressway bottleneck. It extends approximately 0.5 miles north of the Embarcadero Road Off-Ramp.

Northbound PM

- Oregon Expressway/Embarcadero Road On-Ramp to University Avenue Off-Ramp: The queue from this bottleneck forms around 3:45 PM and dissipates by 7:00 PM. It

[3]DKS Associates. Traffic Operation Analysis Report, Final, prepared for Santa Clara Valley Transportation Authority February, 2014

extends back through the Oregon Expressway/Embarcadero Road interchange, and is largely controlled by the upstream bottleneck from San Antonio Road to Oregon Expressway identified below.

- San Antonio Road On-Ramp to Oregon Expressway/Embarcadero Road Off-Ramp: The queue from this bottleneck forms around 3:45 PM and dissipates by 6:45 PM. It extends back to the Ellis Street Off-Ramp (approximately 3.8 miles), overlapping with a secondary bottleneck observed within this bottleneck. The segment between Shoreline Boulevard On-Ramp and northbound Rengstorff Avenue Off-Ramp was observed to be a secondary bottleneck.

Southbound PM

- Oregon Expressway/Embarcadero Road On-Ramp to San Antonio Road Off-Ramp: The queue from this bottleneck forms around 4:10 PM and dissipates by 7:10 PM. It extends back to between the Marsh Road and Woodside interchanges in San Mateo County (approximately 4.0 mi).

- Rengstorff Avenue On-Ramp to Old Middlefield Way On-Ramp: The queue from this bottleneck forms around 4:10 PM and dissipates by 6:45 PM. It extends back to the San Antonio Road Off-Ramp (approximately 1.0 mile) where the queue spills over and merges with the Oregon Expressway to San Antonio Road bottleneck identified above.

- De La Cruz Boulevard On-Ramp to State Route 87 Off-Ramp: The queue from this bottleneck forms around 3:15 PM and dissipates by 7:00 PM. It extends back to the Lawrence Expressway Off-Ramp (approximately 3.6 miles) although some data shows the queue extends only to the San Tomas/Montague Expressway interchange.

- Oakland Road On-Ramp to McKee Road Off-Ramp: The queue from this bottleneck forms around 4:10 PM and dissipates by 6:35 PM. It extends beyond the 4th Street on-Ramp (approximately 2.0 miles).

- I-280/I-680 On-Ramp to Tully Off-Ramp – The queue from this bottleneck forms around 3:00 PM and dissipates by 7:00 PM. It extends back to the Santa Clara Street on-Ramp (approximately 2.0 miles).

- Tully Road on-Ramp to Capitol Expressway off-Ramp– The queue from this bottleneck forms around 4:30 PM and dissipates by 7:00 PM. It extends back to the SB Story Road Off-Ramp (approximately 2.2 miles) where the queue spills over and merges with the queue from the I-280/I/680 bottleneck identified above. A contributing factor to this bottleneck is that the demand for the Capitol/Yerba Buena off-ramp exceeds capacity causing a queue to spillback onto southbound US 101 in the right two lanes.

US 101 HOV Lanes

High demands also occur in the existing HOV lanes resulting in these lanes also functioning below an acceptable speed which, in turn, diminishes the incentive for drivers to carpool. At the federal level, 23 U.S.C. 166 (d) established a minimum average operating speed of 45 mph that HOV facilities with exempted vehicles must maintain. AB 2032 (2004) sets the requirement that HOV lanes must operate at least at a Level of Service (LOS) C (or LOS D with Caltrans approval), which indicates minimal delays and corresponds to a target threshold of approximately 1,650 vph per HOV lane. The 1,650 vph threshold is intended to provide HOVs with reliable travel time.

Based on this threshold, parts of the northbound and southbound HOV lanes are already at or approaching capacity in the downtown San Jose area (Caltrans 2011), as well between SR 85 in Mountain View and Oregon Expressway/Embarcadero Road. The San Francisco Bay Area Backbone Express Lanes Network report (Caltrans 2011) notes that because of the existing high demand for the HOV lanes, an additional lane would need to be constructed in both directions to provide a two-lane express lane facility with sufficient capacity.

4.3.2 Projected Travel Demand

The following describes the projected future traffic operations on US 101 and projected future traffic growth.

US 101 Corridor

Traffic conditions are expected to worsen in the future with continued development in the region and along US 101 within the project limits. The congested areas previously noted will expand in distance, and the periods of peak congestion will extend over a longer time. Over the next 25 years, Santa Clara County is predicted to grow by over 500,000 residents and 400,000 jobs, increases of 27.5 and 45.6 percent, respectively. Over the same period, the County expects to increase the capacity of the roadway system by 5 to 6 percent.

Traffic on US 101 is also projected to increase in the form of both regional trips and local trips to and from locations along the US 101 corridor. The ability to accommodate traffic growth will be constrained by the existing capacity of the freeway. The US 101 corridor is bordered by residential, commercial and industrial development throughout most of the project limits. The adjoining land uses limit the potential to expand US 101 to meet existing or future demand without resulting in substantial property acquisitions and residential and business relocations.

Growth in travel demand on US 101 is expected to cause morning and afternoon peak traffic conditions to spread into longer periods of time when unacceptable delays persist. Congestion will increase in the mixed-flow lanes, and the HOV lanes will experience delays and no longer provide the travel time benefits intended for the facility. Traffic demand for the northbound HOV lane is expected to increase to over 2,000 vph in 2035. The resulting

delays can reasonably be expected to diminish the public's incentive to carpool or use public transit in the US 101 HOV lanes.

4.3.3 Legislation

In 2004 the California Legislature passed Assembly Bill 2032 authorizing the VTA, as part of a demonstration project, to conduct, administer, and operate a value pricing and transit development program under which single occupant vehicles (SOVs) may use designated HOV lanes at certain times of the day for a fee. In 2007, Assembly Bill 574 was passed, removing the "demonstration" category from the law and allowing VTA to implement a value pricing program permanently within any two corridors in the Santa Clara County HOV lane system.

The enabling legislation stipulates that revenue collected from the express lanes will provide a new source of revenue needed to support transportation improvements and transit projects within the corridor.

The future plan will include implementation of improvements, as practical, in the corridor to restore the facility to standard geometry. Per the guidelines established in California Assembly Bill AB 574, Sec 2, 149.6 (e) (3), specific to VTA's Express Lanes Program, the net revenue generated from the Express Lanes after payment of all the expenses related to maintenance, operation, construction and administration of the facility, will be allocated according to an expenditure plan adopted by VTA.

Caltrans' Deputy Directive DD-43-R1 dated May 29, 2015 provides provisions on how toll revenues generated from managed lane facilities on the State Highway System can be used which include:

- Tolls shall be collected electronically and use congestion pricing to manage demand.
- Toll revenues shall be used to pay for debt service related to development of the managed lanes project, the costs of administering, operating, and maintaining the managed lanes, including CHP enforcement activities, capital expenses, and reserves for these purposes.
- Unless financing requirements or State laws dictate otherwise, excess toll revenues shall be used for projects or programs that improve or preserve safety, operations, or travel reliability for any transportation mode or provide new or enhanced travel options in the corridor in which the tolls were collected. Excess toll revenues may also be used to augment, but not replace, State resources used for maintenance and operation of adjacent general-purpose lanes.
- A toll revenue expenditure plan shall be developed by Caltrans and the regional transportation agency. This plan shall be updated annually. In some instances, State laws may dictate the process for development of the expenditure plan.
- An agreement shall be made with the CHP regarding enforcement and an Enforcement Plan shall be developed.
- If Caltrans will not be operating the managed lanes, the regional transportation agency shall develop, in cooperation with the CHP and Caltrans, an Incident Management

Plan. The Incident Management Plan shall be updated through the life of the project as needed.

- A Concept of Operations shall be developed. This document shall, at a minimum, describe the design and operational characteristics of the managed lanes, enforcement, incident management, and agency and stakeholder coordination. The Concept of Operations shall be prepared during the Project Initiation Document phase and finalized in the Project Approval and Environmental Document phase. It shall be updated through the life of the project as needed.
- Caltrans, the regional transportation agency, and other stakeholders, as appropriate, shall enter into agreements that define overall roles, responsibilities, and requirements related to maintenance and operation of the managed lanes, use of toll revenues, risk management, data sharing, performance monitoring, and annual audits and reports. If the regional transportation agency will have tolling authority, the agreements will include reimbursement to Caltrans for costs incurred relative to the development, operation, maintenance, or improvement of the managed lanes.

4.3.4 Independent Utility and Logical Termini

The project meets requirements for independent utility and logical termini. The project limits encompass the majority of the urbanized length of US 101 within Santa Clara County. Therefore, the project includes sufficient area to address all needed project improvements and their potential environmental impacts. The express lanes were designed and evaluated for traffic performance as an individual project, and would operate with independent utility regardless of whether any other improvements are made to US 101 or adjacent facilities.

The project will not prevent consideration of alternatives for other foreseeable transportation improvements on US 101. The following projects have been identified within or adjacent to the limits of the US 101 Express Lanes Project in the MTC's RTP 2040 (Plan Bay Area):

- SR 85 express lanes from US 101 in Mountain View to US 101 in South San Jose – Reference Number 230674 (currently undergoing environmental review)

- Construct US 101 Mabury Road/Taylor Street Interchange – Reference Number 22965 (currently in the planning phase)

- SR 237 express lanes from North Mathilda Avenue to SR 85 – Reference Number 230677

- Improve US 101 southbound Trimble Road/De La Cruz Boulevard/Central Expressway interchange – Reference Number 21722 (currently in the planning phase)

- Reconfigure local roadway and interchange at US 101/Blossom Hill Road in San Jose – Reference Number 21785

- Construct a lane on southbound US 101 from south of Story Road to Yerba Buena Road, and modify the US 101/Tully Road interchange to a partial cloverleaf – Reference Number 22134 (Construction completed in 2012)

- Improve US 101/Capital Expressway interchange (includes new northbound on-ramp from Yerba Buena Road) – Reference Number 22142. Construction completed in May 2014.

- Widen westbound SR 237 on-ramp from SR 237 to northbound US 101 to 2 lanes and add an auxiliary lane on northbound US 101 from the SR 237 on-ramp to the Ellis Street interchange – Reference Number 22145

- Extend Mary Avenue north across SR 237 (includes reconfiguring the US 101/North Mathilda Avenue interchange) – Reference Number 22153

- Reconstruct the interchange at US 101 and Montague Expressway – Reference Number 230262

- Widen southbound US 101 off-ramp at Cochrane Road from two to three lanes – Reference Number 230350

- Implement local roadway improvements to Old Oakland Road over US 101 – Reference Number 230492

- Construct auxiliary lanes on US 101 in Mountain View and Palo Alto from SR 85 to Embarcadero Road – Reference Number 230531 (currently under construction)

The proposed project will not preclude implementation of these planned improvements. For other regional express lane projects, the addition of express lanes will be independently considered on SR 87 and SR 237 within Santa Clara County. The range of design alternatives considered for those projects would not be affected by express lanes on US 101.

4.4 Regional and System Planning

The proposed modifications by this Project are consistent with regional and local planning, as discussed below.

4.4.1 Identify Systems

US 101 is a major north-south corridor extending from Los Angeles to the Oregon border. Within the project limits, US 101 is primarily an interregional commute corridor through Santa Clara County, and has major regional significance to the San Francisco Bay Area.

4.4.2 State Planning

Although US 101 is not part of the Interstate System, it is a principal arterial and part of the National Highway System (NHS), is a Strategic Highway Network (STRAHNET) route, and is part of the State Highway Extra Legal Load (SHELL) route system, which permits transport of loads exceeding limits of length, height, or weight as stated in the California Vehicle Code, Section 15. Caltrans' Interregional Transportation Strategic Plan (ITSP), adopted in 1998 and revised in 2013, classifies US 101 as one of the 34 "High Emphasis Routes" and one of the 10 "Focus Routes within the legislatively adopted Interregional Road System (IRRS)." High Emphasis Routes are routes that receive priority for improvements, while Focus Routes are a subset of High Emphasis Routes, making them the highest priority for completion to minimum facility standards within the 20-year period planning horizon. Focus routes serve as a system of high-volume primary arteries to which other state highway routes can connect for purposes of longer interregional trips and access into statewide gateways.

US 101 is a National Truck Network route and a Surface Transportation Assistance Act (STAA) route, and functions as a principal truck route between the Central Valley, Central Coast, and San Francisco Bay Areas. There are no truck advisories on US 101 within the project limits.

US 101 was identified in the California Department of Transportation 2002 Global Gateways Development Plan as one of California's top-priority global gateways and as one of the key international trade corridors in California. The 1998 Interregional Transportation Strategic Plan designated US 101 as a "High-Emphasis Route" with priority for programming and construction to minimum facility standards for freeways or expressways. The inclusion of US 101 in the High-Emphasis Route category highlights its critical importance to interregional travel and to the State.

In 2002, Caltrans District 4 prepared a Preliminary Draft Transportation Corridor Concept Report (TCCR) for Corridor #14 which covers US 101 South (from Santa Clara SR 85 to San Benito SR 156). This TCCR listed a number of projects that include freeway widening to accommodate additional general purpose and HOV lanes and interchange modifications. Several of the identified projects in the TCCR have already been built or are currently under construction.

In 2010, Caltrans completed a Corridor System Management Plan (CSMP) for US 101 in Santa Clara and San Mateo counties. The study limits of the US 101 South CSMP extend for approximately 58 miles from the San Mateo/San Francisco county border near US 101/Candlestick Park to the US 101/SR 85 interchange in San Jose. These limits were set based on the geographic locations of the projects that received funding from the Corridor Mobility Improvement Account (CMIA). The projects that received CMIA funds along the US 101 South corridor are:

- U.S 101 Highway Widening – Yerba Buena to I-280/I-680 Interchange in San Jose
- US 101 Auxiliary Lanes – SR 85 to Embarcadero Road in Mountain View and Palo Alto
- US 101 Auxiliary Lanes – Marsh Road to Embarcadero Road in Menlo Park and Palo Alto

The US 101 South CSMP is a transportation planning document that studied the facility based on comprehensive performance assessments and evaluations. Recommended strategies include ITS, freeway operation and capital expansion strategies, as well as off-system strategies for transit, bicycle and pedestrian modes. For the Santa Clara County portion of the study, the highway projects listed in VTP 2035 (VTA countywide transportation plan) are used as the recommended strategies. VTP 2035 also identifies the following US 101 Express Lane projects:

- H3 US 101 US 101 Express Lanes: San Mateo county line to SR 85 in Mountain View (Conversion)
- H4 US 101 US 101 Express Lanes: SR 85 (San Jose) to Cochrane Road (Conversion)
- H5 US 101 US 101 Express Lanes: SR 85 in Mountain View to SR 85 in San Jose (Conversion)

VTA has since updated and approved VTP 2040, which will be discussed in Section 4.4.4 – Local Planning.

4.4.3 Regional Planning

MTC functions as both the Regional Transportation Planning Agency (State designation) and, for federal purposes, as the region's Metropolitan Planning Organization (MPO) for the San Francisco Bay Area. As such, it is responsible for regularly updating the Regional Transportation Plan (RTP), a comprehensive and financially constrained blueprint for the development of highway, mass transit, railroad, airport, seaport, bicycle and pedestrian facilities. MTC also plays a major role in building regional consensus among the region's many transit systems. State and federal laws have also given MTC an important role in financing Bay Area transportation improvements. Under Senate Bill 375, along with an updated RTP, each metropolitan region in California must develop a Sustainable Communities Strategy (SCS) that promotes compact, mixed-use commercial and residential development that is walkable, bikeable and close to mass transit, jobs, schools, shopping, parks, recreation and other amenities. MTC's "Plan Bay Area" report, adopted in July 2013, serves as the San Francisco Bay Area's RTP and SCS.

Plan Bay Area (http://www.mtc.ca.gov/planning/plan_bay_area) also lists programmed and planned projects, which includes US 101, within a 28-year financially constrained planning horizon. Planned and programmed projects near the US 101 Express Lane project area are listed below in Table 4.4.3-1. The subject US 101 Express Lane Project is included as RTP ID# 240466.

Table 4.4.3-1 – Projects Near US 101 Express Lane Project

County	Route	Project Description	Planned/ Programmed	CTC Project Category	Cost ($1000)	Proposed Completion Year	RTP ID#
SCL	101	Widen U.S. 101 from Monterey Street to Route 129 - project development	Planned	Sys Expn	$7,000	2015	21714
SCL	101	Implement express lanes on U.S. 101 between 10th Street and Route 25	Planned	Sys Expn	$51,600	2030	240492
SCL	101	Improve interchange at U.S. 101/Buena Vista Avenue	Planned	Sys Mgmt	$31,992	2021	21702
SCL	101	Widen interchange at U.S. 101/Hellyer Avenue	Planned	Sys Expn	$17,865	2025	21786
SCL	101	Construct a lane on southbound U.S. 101 using the existing median from south of Story Road to Yerba Buena Road; modify the U.S. 101/Tully road interchange to a partial cloverleaf		Sys Expn	$96,530	2040	22134
SCL	101	Improve interchange at U.S. 101/Mabury Road/Taylor Street	Programmed	Sys Mgmt	$62,649	2030	22965
SCL	101	Improve interchange at U.S. 101/Old Oakland Road	Planned	Sys Mgmt	$24,113	2019	230492
SCL	101	Improve interchange at U.S. 101/Zanker Road/Skyport Drive/Fourth Street	Planned	Sys Mgmt	$112,521	2025	22979
SCL	101	Improve interchange at U.S. 101 southbound Trimble Road/De la Cruz Boulevard/Central Expressway	Programmed	Sys Mgmt	$42,865	2025	21722
SCL	101	Improve interchange at Montague Expressway/U.S. 101	Programmed	Sys Mgmt	$17,544	2015	230262
SCL	101	Construct auxiliary lane on southbound U.S. 101 from Great America Parkway to	Planned	Sys Mgmt	$3,048	2018	230410

County	Route	Project Description	Planned/ Programmed	CTC Project Category	Cost ($1000)	Proposed Completion Year	RTP ID#
		Lawrence Expressway					
SCL	101	Extend Mary Avenue north across Route 237 (includes reconfiguring the Mathilda Avenue/U.S. 101 interchange, re-routing Moffett Park Drive and modifying the Route 237 eastbound/Mathilda Avenue northbound flyover)	Planned	Sys Expn	$69,350	2016	240443
SCL	101	Construct auxiliary lane on southbound U.S. 101 from Ellis Street to eastbound Route 237	Planned	Sys Mgmt	$4,128	2018	22845
SCL	101	Construct auxiliary lanes on U.S. 101 in Mountain View and Palo Alto, from Route 85 to Embarcadero Road	Planned	Sys Mgmt	$105,570	2013	230531
SCL	101	Improve southbound U.S. 101 between San Antonio Road to Carleston Road/Rengstorff Avenue	Planned	Sys Mgmt	$51,388	2035	240436
SCL	101	Improve interchange at U.S. 101/Oregon Expressway/Embarcadero Road	Planned	Sys Mgmt	$128,295	2035	240441
SCL	101	Implement express lanes on U.S. 101 between Masten Avenue and 10th Street	Planned	Sys Expn	$70,170	2026	240491
SCL	101	Implement express lanes on U.S. 101 between Cochrane Road and Masten Avenue	Planned	Sys Expn	$110,420	2022	240485
SCL	101	Convert U.S. 101 HOV lanes to express lanes between Whipple Avenue and Cochrane Road	Programmed	Sys Expn	$479,880	2017	240466
SCL	101	Widen interchange at U.S. 101/Blossom Hill Road	Programmed	Sys Expn	$24,496	2019	21785

4.4.4 Local Planning

The Santa Clara Valley Transportation Authority (VTA) has been designated as the Congestion Management Agency for Santa Clara County. In addition to being responsible for public transit services and countywide transportation planning, VTA manages the county's transportation sales tax program (Measure A).

In 1976 Santa Clara was the first county to approve a half cent local sales tax increase to help support the County Transit District. Santa Clara County voters approved another one-eighth cent sales tax in 2008 to fund operating and maintaining the BART extension (measure B). In total five-eighth of a cent are levied for transit projects and operations. In August 2014, VTA finalized its Valley Transportation Plan 2040 (VTP 2040), which is updated every 5 years.

The US 101 Express Lanes Project has been identified in the VTP 2040 as Project H2. Other projects have been identified within or adjacent to the limits of the US 101 Express Lanes Project in the VTP 2040 as well, as shown in Table 4.4.4-1.

Table 4.4.4-1 – Projects Identified in the VTP 2040

VTP ID	Route	Project Title and Description	Cost (2013 $M)
H2	101	**Convert Existing HOV Lanes to Express Lanes on US 101 from Whipple Ave. in San Mateo County to Cochrane Rd. in Morgan Hill** Convert 34 miles of the existing HOV lane on US 101 between Cochrane Rd. and Whipple Ave. in San Mateo County to express lane operation. The proposed facility will implement two lanes of express lanes within the existing footprint to accommodate the projected travel demand for US 101.	$465.0
H8	101	**US 101 Express Lanes: Cochrane Rd. to Masten Ave.** Build new express lanes on US 101 between Cochrane Rd. and Masten Ave.	$107.0
H9	101	**US 101 Express Lanes: Masten Ave. to 10th St.** Build new express lanes on US 101 between Masten Ave. and 10th St	$68.0
H19	101	**Double Lane Southbound US 101 off-ramp to Southbound SR 87** Widen the existing ramp by providing a secondary lane on the off-ramp at SR 87.	$1.0
H24	101	**Montague Expwy. and US 101 Interchange Improvements** Construct partial interchange at US 101 and Montague Expwy.	$17.0
H25	101	**US 101 Southbound/Trimble Rd./De La Cruz Blvd./Central Expwy. Interchange Improvements** Modify existing loop cloverleaf ramp from Southbound US 101 to Trimble Rd. into a partial cloverleaf ramp (diagonal ramp with signalized intersection). Modify the Southbound US 101 on-ramp from De La Cruz Blvd./Central Expwy. to 1 mixed flow lane, 1 HOV lane with ramp metering	$39.0

VTP ID	Route	Project Title and Description	Cost (2013 $M)
		equipment. The on-ramp will be modified to improve merging onto Southbound US 101. The De La Cruz Blvd. bridge across US 101 will be widened from four to six lanes. The segment between De La Cruz Blvd./Trimble Rd. intersections to bridge overcrossing will be widened by an additional lane.	
H26	101	**US 101/Blossom Hill Rd. Interchange Improvements** Reconfigure interchange at US 101/Blossom Hill Rd. in San Jose; modifications are on the local roadway system, including widening of Blossom Hill Rd. over US 101.	$23.0
H27	101	**US 101/Mabury Rd./Taylor St. Interchange Improvements** Construct a new interchange with full access to the US 101 freeway. The project will provide access to US 101 for the heavy local commuter traffic that currently is forced to use the congested Old Oakland Rd. interchange (north of Mabury Rd.). The interchange would also act as the primary access to the future Berryessa BART station.	$57.0
H28	101	**US 101/Old Oakland Rd. Interchange Improvements** Interchange improvements at US 101 and Old Oakland Rd. and possible widening on Old Oakland Rd.	$23.0
H29	101	**US 101/Hellyer Ave. Interchange Improvements** Widening the overcrossing from two to four lanes and installing traffic signals at each of the two off-ramp intersections. Widen the intersection with the southbound on- and off-ramps to include a second eastbound through-lane and a separate left turn pocket. Widen the southbound off-ramp will be widened to provide two left-turn lanes. At the intersection of the northbound off-ramp, widen Hellyer from one to two lanes in the eastbound direction and the westbound left turn pocket.	$16.0
H30	101	**US 101/Zanker Rd./Skyport Dr./Fourth St. Interchange Improvements** Constructs a new interchange connecting Zanker Rd. and Old Bayshore Hwy. with North Fourth St. and Skyport Drive at US 101. The interchange will provide an overcrossing across US 101 to improve limited existing connectivity across US 101 to the North San Jose employment centers. In addition, the interchange would improve access to Mineta International Airport (San Jose) from US 101. The existing intersections at North First St. and Skyport Drive, North Fourth St. and Old Bayshore Hwy., Northbound US 101 on- and off-ramp, Northbound US 101 off-ramp to Brokaw Rd. will be modified to construct this interchange.	$104.0
H31	101	**US 101/Buena Vista Ave. Interchange Improvements** Constructs a full interchange at US 101 and Buena Vista Ave. The interchange includes a flyover southbound on-ramp to braid with the existing truck exit at the CHP Inspection Station. Off-Ramp diagonal ramps will be	$31.0

VTP ID	Route	Project Title and Description	Cost (2013 $M)
		constructed.	
H33	237	**SR 237/Mathilda Ave. and US 101/Mathilda Ave. Interchange Improvements** Modify US 101/Mathilda and SR 237/Mathilda interchanges, reducing to one signalized intersection and increasing intersection spacing in the Mathilda Ave./SR 237 interchange area. Project to include ramp improvements, addition of auxiliary lanes, and construction of new ramp configurations.	$17.0
H42	101	**US 101 Southbound Improvements: San Antonio Rd. to Charleston Rd./Rengstorff Ave.** Construct Southbound improvements on US 101 from San Antonio Rd. to Charleston Rd./Rengstorff Ave.	$22.0
H43	101	**US 101/Oregon Expwy./Embarcadero Rd. Improvements** Construct improvements to US 101/Oregon Expwy./Embarcadero Rd. interchange	$55.0
H48	101	**US 101 Southbound Auxiliary Lane: Great America Pkwy. to Lawrence Expwy.** Construct auxiliary lanes on US 101 from Great America Pkwy. to Lawrence Expwy.	$3.0
H49	101	**Southbound Auxiliary Lane Improvement Between Ellis St. and SR 237** Construct a US 101 Southbound auxiliary lane from Ellis St. interchange to Eastbound Route 237. The project will reduce queue backup onto Southbound US 101 mainline during the morning peak period by providing additional storage. The project may also include Traffic Operation Systems (TOS) elements.	$4.0

The following local roadway improvement projects shown in Table 4.4.4-2 are identified in the VTP 2040 within the project limits:

Table 4.4.4-2 – Local Roadway Improvements Identified in the VTP 2040

VTP ID	Sponsor	Project Title and Description	Cost (2013 $M)
R25	San Jose	**Oakland Rd. Improvements from US 101 to Montague Expwy.** Provides median island landscaping and operational improvements in roadway corridor between North San Jose and Downtown San Jose area; widens Oakland Rd. from four to six lanes.	$11.6
R28	San Jose	**Zanker Rd. Widening** Widen Zanker Rd. from four to six lanes to support traffic circulation in North San Jose area.	$62.6

The following local bicycle and pedestrian improvement projects shown in Table 4.4.4-3 are identified in the VTP 2040 within the project limits:

Table 4.4.4-3 – Local Bicycle and Pedestrian Improvements Identified in the VTP 2040

VTP ID	Sponsor	Project Title and Description	Cost (2013 $M)
B7	Gilroy	**Western Ronan Channel SCWVD Service Rd. Trail** Convert an existing unpaved creek-side maintenance road that is closed to the public to a multi-use public trail for use by bicyclists and pedestrians.	$2.9
B11	Palo Alto	**US 101/Adobe Creek Bicycle-Pedestrian Bridge** Construct a year-round, Class I overcrossing of Hwy. 101 to replace the existing, seasonal Lefkowitz Tunnel.	$9.5
B15	San Jose	**Blossom Hill Rd./Silver Creek Valley Rd. Multi-Use Path** Construct a multi-use path connecting the Monterey Rd. Pedestrian Overcrossing at Blossom Hill Rd. with the Coyote Creek Trail east of Hwy. 101. The path will run along the eastern side of Monterrey Rd. between the bicycle/pedestrian bridge south of Blossom Hill to the Northbound Blossom Hill off-ramp at Monterey; along the Northbound off-ramp; and along the north side of Blossom Hill/Silver Creek Valley Rd. over Hwy. 101 to Coyote Creek Trail.	$6.1
B23	San Jose	**Havana Dr./Holly Hill Dr. Bike/Pedestrian Bridge at US 101** Construct a 10-foot-wide, 380-foot-long bicycle and pedestrian bridge over Hwy. 101, connecting the east side with Class I, II, and III bikeways in San Jose.	$8.5
B32	San Jose	**Park Ave./San Fernando St./San Antonio Bikeway** Provide enhanced on-street crosstown bikeway (bike lanes, sharrows, signs) between San Jose/Santa Clara city limits with Diridon Transit Center, Downtown San Jose, San Jose Creek Trails (Los Gatos, Guadalupe, Coyote), SJSU and east San Jose.	$0.3
B36	Santa Clara	**Calabazas Creek Trail: From SR 237 to Calabazas Blvd.** Construct Class I trail and bicycle/pedestrian overcrossing of Hwy. 101 and Central Expwy.	$14.2
B37	Santa Clara	**Lafayette St. Bike Lanes: Agnew Rd. to Reed St.** Install Class II bicycle lanes with bicycle detection at signalized intersections.	$1.0
B63	Sunnyvale	**Mathilda Ave. Bike Lanes: US 101 to El Camino Real** Provide bike lanes from US 101 to El Camino Real.	$4.1
B86	Morgan Hill	**Main Ave. Bike Lanes: Butterfield Blvd. to Condit Rd.** Construct Class II bike lanes on Main Ave.	$0.2
B87	Morgan Hill	**Sobrato High School Bike Access Improvements: Bike Path Southeast from Burnett Ave. to Coyote Creek Trail** Construct a bridge over Coyote Creek, shoulder widening and striping to	$0.5

VTP ID	Sponsor	Project Title and Description	Cost (2013 $M)
		provide bike access from Sobrato High School east to existing Coyote Creek Trail System.	
B101	San Jose	**Coyote Creek Trail (Oakland Rd. to Watson Park)** Complete the creek trail in the Berryessa BART station segment.	$8.7
B114	Santa Clara County	**Coyote Creek Trail: Metcalf Rd. to Malaguerra Ave.** Reconstruct trail to include widening and installation of two bridges at low-flow crossings of Coyote Creek.	$3.2

4.4.5.1 VTA Bus Service

VTA operates local bus services throughout Santa Clara County as well as express bus services between Monterey, Salinas, and San Jose, that run on segments of US 101 within the project limits:

- Line 104 Penitencia Creek Transit Center to Palo Alto
- Line 120 Fremont BART to Lockheed Martin Transit Center/Moffett Industrial Park-Shoreline
- Line 121 Gilroy Transit Center to Lockheed Martin Transit Center/Moffett Industrial Park
- Line 122 South San Jose to Lockheed Martin Transit Center/Moffett Industrial Park
- Line 168 Gilroy Transit Center to San Jose Diridon Transit Center
- Line 972 MST 55 Monterey - San Jose Express Bus
- Line 971 Dumbarton Express Bus Route

In addition, the following local bus services cross US 101 within the project limits but do not run directly on US 101:

Table 4.4.5.1-1 - Local VTA Bus Lines Crossing US 101

Line #	Description
Line 16	Morgan Hill Main & Dewitt to Burnett Ave
Line 42	Kaiser San Jose to Evergreen Valley College
Line 70	Capitol LRT Station to Great Mall/Main Transit Center

Line #	Description
Line 26	Sunnyvale/Lockheed Martin Transit Center to Eastridge Transit Center
Line 27	Good Samaritan Hospital to Kaiser San Jose
Line 522	Palo Alto Transit Center to Eastridge Transit Center
Line 22	Palo Alto Transit Center to Eastridge Transit Center via El Camino
Line 64	Almaden LRT Station to McKee & White via Downtown San Jose
Line 61	Good Samaritan Hospital to Sierra & Piedmont via Bascom
Line 62	Good Samaritan Hospital to Sierra & Piedmont via Union
Line 12	San Jose Civic Center to Eastridge Transit Center via San Jose Flea Market
Line 66	Kaiser San Jose to Milpitas/Dixon Road via Downtown San Jose
Line 181	Fremont BART Station to San Jose Diridon Transit Center
Line 58	West Valley College to Alviso
Line 330	Almaden Expwy and Camden to Tasman Drive
Line 60	Winchester Transit Center to Great America
Line 57	West Valley College to Great America
Line 328	Almaden Expwy and Camden to Lockheed Martin/Moffett Industrial Park
Line 55	De Anza College to Great America
Line 54	De Anza College to Sunnyvale/Lockheed Martin Transit Center

Line #	Description
Line 51	De Anza College to Moffett Field/Ames Center
Line 40	La Avenida and Inigo to Foothill College

4.4.5.2 VTA Light Rail Service

VTA operates the following light rail service within the US 101 project limits:

- The Mountain View – Winchester Line runs parallel to US 101 between the SR 237 and Ellis Street interchanges then crosses US 101 at Ellis Street interchange at Bayshore/NASA Station.
- The Alum Rock – Santa Teresa Line crosses US 101 at N. First Street between The Karina and Metro/Airport stations.

4.4.5.3 Caltrain Service

Caltrain runs train service from San Francisco to Gilroy. In some segments of the Caltrain tracks, Caltrain runs parallel to US 101. The tracks do not cross US 101 within the project limits. The South County Circulation Study published by VTA in 2008 recommended an increase in Caltrain's service between Gilroy and San Jose.

Altamont Commuter Express Service

The Altamont Commuter Express (ACE) is a commuter train that runs between Stockton and San Jose. It crosses US 101 at the Agnew Underpass located south of the Lafayette Street overcrossing.

AMTRAK Capital Corridor Service

The National Railroad Passenger Corporation, also known as AMTRAK, is the nation's intercity passenger rail operator of 21,000 route miles in 46 states, the District of Columbia and three Canadian provinces. AMTRAK Capital Corridor operates between the cities of Auburn and San Jose. It shares the same tracks with ACE in Santa Clara and San Jose and crosses US 101 at the Agnew Underpass located south of the Lafayette Street overcrossing.

Bay Area Rapid Transit Service

The Bay Area Rapid Transit (BART) is a rapid transit system serving the San Francisco Bay Area. The heavy-rail public transit and subway system connects San Francisco with cities in the East Bay and suburbs in northern San Mateo County. Currently BART does not cross US 101 within the project limits. However, a three-phase extension of BART to Silicon Valley is currently in progress. Phase I, the Warm Springs extension, which is currently under construction and is scheduled to open in 2015, will extend BART from its current southern terminus in Fremont to the Warm Springs District in Fremont. Phase II, the Berryessa

Extension which is currently under construction and expects to be open in late 2016, extends BART from Warm Springs to the Berryessa neighborhood in East San Jose. This extension ends at the State right-of-way line just east of US 101 between Mabury Road and McKee Road interchanges. Phase III, the Silicon Valley Extension which is currently in the environmental clearance phase, extends BART from its terminus under Phase II to the Santa Clara Caltrain station. The Phase III extension will extend BART under US 101 and continues in a tunnel under Santa Clara Street through downtown San Jose to the Diridon/Arena Station, and then turns north and travels on the west side of the Norman Y. Mineta San Jose International Airport to the Santa Clara Caltrain station.

4.4.5.4 Park and Ride Facilities

There are numerous park and ride facilities that exist along the US 101 corridor within the Express Lanes project limits. Services from Park and Ride lots include but are not limited to VTA Busses, VTA Light Rail, Caltrain, and local shuttles. Table 4.4.5.4-1 provides further details for each Park and Ride facility.

Table 4.4.5.4-1 - Park and Ride Facilities

City	Facility	Lines Served	Parking Capacity
Morgan Hill	Morgan Hill Caltrain Station	15, 121, 168, MST 55, Caltrain (Limited Service)	486
Morgan Hill	Morgan Hill Transit Center	15, 16, 68	50
San Jose	Santa Teresa Light Rail Station	42, 68, 102, 122, 182, 304, VTA Light Rail, IBM Light Rail Shuttle	1155
San Jose	Blossom Hill Caltrain Station	42, IBM Light Rail Shuttle, Caltrain (limited service)	425
San Jose	Capitol Caltrain Station	66, 68, 304, Caltrain (Limited Service)	378
San Jose	Eastridge Transit Center	12, 22, 26, 31, 39, 43, 70, 71, 77, 103, 522	135
Santa Clara	Santa Clara Caltrain Station	10, 22, 32, 60, 522, ACE, BEE , Caltrain	321
Santa Clara	River Oaks Light Rail Station	58, VTA Light Rail	22
Santa Clara	Great America Light Rail Station	140, 330, Light Rail, ACE, ACE Shuttles, Amtrak-Capitol Corridor, Capitol Corridor Shuttles	189
Sunnyvale	Sunnyvale Caltrain Station	32, 53, 54, 55, 304, Caltrain	477
Sunnyvale	Moffett Park Light Rail Station	VTA Light Rail	93
Mountain View	Whisman Light Rail Station	VTA Light Rail	52

City	Facility	Lines Served	Parking Capacity
Mountain View	Downtown Mountain View Caltrain Station	34, 35, 52, Mountain View VTA Light Rail, Mary/ Moffett Employer Shuttle, North Bayshore Employer Shuttle, Shoreline Employer Shuttle, Caltrain	338
Mountain View	San Antonio Caltrain Station	32, 34, 35, 40, 88, Caltrain	199
Palo Alto	Page Mill at El Camino	22, 101, 102, 103, 104, 182, 522, Dumbarton Express, SamTrans KX	38
Palo Alto	California Caltrain Station	89, Dumbarton Express, Marguerite Shuttle, Caltrain	159

4.4.5.5 Additional Planning

The South County Circulation Study published by VTA in 2008 also recommended operational improvements to VTA's local bus service, express bus service, and bus rapid transit service. It also recommended an increase in Caltrain's service between Gilroy and San Jose.

At the southern end of the project limits, VTA's VTP 2040 identifies US 101 as having proposed dual HOV lanes in both directions in the future between Cochrane Road and SR 25.

Several projects are planned by the local cities along the corridor. These projects were listed in the local planning section above.

4.5 Traffic

An Existing Conditions Report was prepared for the project and approved by Caltrans in February 2013. A Forecasted Travel Demand Memorandum was prepared for the project which was approved in June 2013. The findings and conclusions from both reports are summarized below.

4.5.1 Existing Traffic Conditions

Existing conditions represent the weekday AM and PM peak periods which are defined as 6:00 AM to 10:00 AM and 3:00 PM to 7:00 PM. The traffic volume dataset for the US 101 corridor was derived from several sources including:

- Caltrans Traffic Census database (2007-2010);
- 2009 Caltrans Annual Average Daily Truck Traffic Database;
- VTA's 101 Ramp Metering Study;
- The Bay Area 2009 HOV Lanes Report;
- Caltrans Performance Measurement System (PeMS); and

- Project-specific traffic volume counts conducted in April 2011.

The HOV lane usage information for the study area was derived from the Bay Area HOV Lane Report 2009 and traffic counts collected in 2011. The existing HOV percentages during the peak period vary between 11% and 21% with the highest percentages being between Montague Expressway in Santa Clara and Fair Oaks Boulevard in Sunnyvale. The HOV lane percentage illustrates the relative proportion of vehicles using the HOV lanes over the vehicles using all mainline lanes, including the HOV and mixed-flow lanes.

The existing (2009) peak-hour traffic demand volumes within the project limits are summarized in Tables 4.5.1-1 and 4.5.1-2.

Table 4.5.1-1: Northbound Existing Conditions Peak Hour Traffic Demand Volumes

Northbound Mainline Segment	Existing Demand (Vehicles)	
	AM Peak Hour (7 AM to 8 AM)	PM Peak Hour (5 PM to 6 PM)
Segment No. 1 - Dunne Avenue to Bernal Road (PM 16.01 to 26.78)		
Dunne Off - Dunne NB On	4524	2830
Dunne NB On – Dunne SB On	5086	3030
Dunne SB On - Cochrane Off	5831	3220
Cochrane Off - Cochrane NB On	5231	2770
Cochrane NB On - Cochrane SB On	5836	3480
Cochrane SB On - Coyote Creek Off	6302	3650
Coyote Creek Off - Coyote Creek On	6273	3630
Coyote Creek On - Bailey Off	6307	3670
Bailey Off - Bailey On	6057	3580
Bailey On - SR 85 HOV Connector Off	6424	4000
SR85 HOV Connector Off - SR 85 GP Connector Off	5578	3580
SR 85 GP Connector Off - Bernal Off	4842	2210
Segment No. 2 – Bernal Road to I-880 (PM 26.78 to 38.30)		
Bernal Off - Bernal NB On	4273	2050
Bernal NB On - Bernal SB On	4913	2940
Bernal SB On - Blossom Hill Off	5154	3150
Blossom Hill Off - Blossom Hill EB On	4644	2840
Blossom Hill EB On - Blossom Hill WB On	5706	4100
Blossom Hill WB On - Hellyer Off	6299	4480

Northbound Mainline Segment	Existing Demand (Vehicles)	
	AM Peak Hour (7 AM to 8 AM)	PM Peak Hour (5 PM to 6 PM)
Hellyer Off - Hellyer On	6234	4350
Hellyer On - Yerba Buena Off	7252	5010
Yerba Buena Off - Capitol Off	7060	4610
Capitol Off - Capitol Loop On	6631	3650
Capitol Diagonal On - Tully Off	8394	5720
Tully Off - Tully NB Loop On	7390	5080
Tully NB Loop On - Tully NB Diagonal On	8346	5710
Tully NB Diagonal On - I-280/I-680 Off	9086	6790
I-280/I-680 Off - Story Rd Off	6046	3360
Story Off - Story On	5866	2900
Story On - I-280/I-680 SB On	6546	4100
I-280/I-680 SB On - Santa Clara Off	7666	4710
Santa Clara Off - McKee Off	7436	4100
McKee Off - Santa Clara On	6546	3430
Santa Clara On - McKee On	7236	3830
McKee On - Oakland Off	7776	4330
Oakland Off - Oakland On	7166	3820
Oakland On - I-880 NB Off	8456	4420
Segment No. 3 – I-880 to SR 237 (PM 38.30 to 46.13)		
I-880 NB Off - I-880 NB On	6926	2920
I-880 NB On - I-880 SB Off	7646	3460
I-880 SB Off - Bayshore Off	6686	2910
Bayshore Off - Bayshore On	6486	2840
Bayshore On - Brokaw Off	7326	3140
Brokaw Off - N 1st St On	6686	2710
N 1st St On - E Brokaw Rd On/Access End	6946	2930
E Brokaw Rd On/Access End - De La Cruz Off	7456	3760
De La Cruz Off - SR 87/Guadalupe On	6066	3190
SR 87/Guadalupe On - De La Cruz NB On	7676	4770
De La Cruz NB On - De La Cruz SB On	7976	4990

Northbound Mainline Segment	Existing Demand (Vehicles)	
	AM Peak Hour (7 AM to 8 AM)	PM Peak Hour (5 PM to 6 PM)
De La Cruz SB On - Montague Off	8196	5630
Montague Off - Montague On	7256	4500
Montague On - Great America Off	8696	6040
Great America Off - Great America NB On	7436	5060
Great America NB On - Great America SB On	7566	5290
Great America SB On - Lawrence Off	7776	5970
Lawrence Off - Lawrence NB On	6706	4620
Lawrence NB On - Lawrence SB On	7266	5050
Lawrence SB On - Fair Oaks Off	7976	5370
Fair Oaks Off - Fair Oaks On	7206	4510
Fair Oaks On - Mathilda NB Off	7846	4910
Mathilda NB Off - Mathilda NB On	7226	4720
Mathilda NB On - Mathilda SB Off	7556	4970
Mathilda SB Off - SR 237 Off	6926	4230
Segment No. 4 – SR 237 to Oregon Expressway/Embarcadero Road (PM 46.13 to 52.17)		
SR 237 Off - SR 237 On	6216	3340
SR 237 On - Ellis Off	7116	4280
Ellis Off - Ellis On	6746	4010
Ellis On - Moffett Off	6826	4500
Moffett Off - Moffett On	6606	4250
Moffett On - Shoreline Off	6826	4530
Shoreline Off - SR 85 On	6006	3950
SR 85 On - SR 85 HOV Connector On	8066	5260
SR 85 HOV Connector On - Middlefield Off	8566	5640
Middlefield Off - Shoreline On	7796	4440
Shoreline On - Rengstorff NB Off	8376	5340
Rengstorff NB Off - Rengstorff SB Off	8256	5280
Rengstorff SB Off - Rengstorff On	8026	5030
Rengstorff On - San Antonio Off	8426	5760
San Antonio Off - San Antonio NB On	7716	5290

Northbound Mainline Segment	Existing	
	Demand (Vehicles)	
	AM Peak Hour (7 AM to 8 AM)	PM Peak Hour (5 PM to 6 PM)
San Antonio NB On - San Antonio SB On	8236	6090
San Antonio SB On - Oregon/Embarcadero Off	8256	6320
Oregon/Embarcadero Off - Oregon/Embarcadero On	6866	5180
North of Oregon/Embarcadero	7646	6850

Table 4.5.1-2: Southbound Existing Conditions Peak Hour Traffic Demand Volumes

Southbound Mainline Segment	Existing	
	Demand (Vehicles)	
	AM Peak Hour (7 AM to 8 AM)	PM Peak Hour (5 PM to 6 PM)
Segment No. 5 - Oregon Expressway/Embarcadero Road to SR 237 (PM 52.17 to 46.13)		
North of Oregon\Embarcadero	7690	6750
Oregon\Embarcadero Off - Oregon\Embarcadero On	6000	5380
Oregon\Embarcadero On - SB San Antonio Off	7260	7080
SB San Antonio Off - NB San Antonio Off	6880	6270
NB San Antonio Off - Charleston On	6710	6230
Charleston On - Rengstorff Off	7100	7320
Rengstorff Off - Rengstorff On	6530	6900
Rengstorff On - Middlefield On	6710	7470
Middlefield On - Shoreline Off	7230	8090
Shoreline Off - SR85 HOV Connector Off	6780	7590
SR85 HOV Connector Off - SR85 GP Off	6550	7050
SR85 GP Off - SB Shoreline On	5330	4460
SB Shoreline On - NB Shoreline On	5440	5130
NB Shoreline On - Moffett Off	5700	5440
Moffett Off - Moffett On	5500	5210
Moffett On - Ellis Off	5710	5530
Ellis Off - Ellis On	5250	5370

Southbound Mainline Segment	Existing	
	Demand (Vehicles)	
	AM Peak Hour (7 AM to 8 AM)	PM Peak Hour (5 PM to 6 PM)
Ellis On - EB SR237 Off	5390	5770
Segment No. 6 - SR 237 to McKee Road (PM 46.13 to 36.14)		
EB SR237 Off - EB SR237 On	3720	4270
EB SR237 On - SB Mathilda Off	4550	4880
SB Mathilda Off - SB Mathilda On	4280	4430
SB Mathilda On - NB Mathilda On	4390	5490
NB Mathilda On - SB Fair Oaks Off	4740	5980
SB Fair Oaks Off - SB Fair Oaks On	4380	5280
SB Fair Oaks On - NB Fair Oaks Off	4550	5710
NB Fair Oaks Off - NB Fair Oaks On	4480	5540
NB Fair Oaks On - SB Lawrence Expy Off	4860	5790
SB Lawrence Expy Off - SB Lawrence Expy On	4250	4430
SB Lawrence Expy On - NB Lawrence Expy On	4570	4750
NB Lawrence Expy On - Great America Pkwy Off	5180	5360
Great America Pkwy Off - SB Great America Pkwy On	4540	4650
SB Great America Pkwy On - NB Great America Pkwy On	4730	5360
NB Great America Pkwy On - Montague Expy Off	4910	5870
Montague Expy Off - SB Montague Expy On	4130	4600
SB Montague Expy On - De La Cruz Off	4790	5690
De La Cruz Off - SB De La Cruz On	4540	5410
SB De La Cruz On - Trimble Off	4760	6010
Trimble Off - NB De La Cruz On	4310	5930
NB De La Cruz On - Guadalupe\SR87 Off	4880	7820
Guadalupe\SR87 Off - 1st\Brokaw Off	3540	5570
1st\Brokaw Off - 4th\Zanker On	2780	4890
4th\Zanker On - SB I-880 Off	3160	6330
SB I-880 Off - SB I-880 On	2770	5790
SB I-880 On - NB I-880 Off	3810	6950
NB I-880 Off - NB I-880 On	3480	6690
NB I-880 On - Oakland Off	4030	7920

Southbound Mainline Segment	Existing	
	Demand (Vehicles)	
	AM Peak Hour (7 AM to 8 AM)	PM Peak Hour (5 PM to 6 PM)
Oakland Off - Oakland On	3390	6680
Oakland On - McKee Off	3930	7950
Segment No. 7 - McKee Road to SR 85 (San Jose) (PM 36.14 to 26.78)		
McKee Off - Santa Clara Off	3500	7230
Santa Clara Off - McKee On	3250	6520
McKee On - Santa Clara On	3960	7440
Santa Clara On - I-280\680 Off	4510	8150
I-280\680 Off - Story Off	3260	6140
Story Off - Story On	2810	4550
Story On - I-280/680 On	3230	4840
I-280/680 On - Tully Off	6000	7530
Tully Off - Tully On	4790	5730
Tully On - Capitol Expy Off	5390	6490
Capitol Expy Off - Capitol Expy On	3730	3880
Capitol Expy On - Yerba Buena On	4520	4880
Yerba Buena On - Hellyer Off	5000	5300
Hellyer Off - Hellyer On	4560	4680
Hellyer On - Blossom Hill Off	4680	4810
Blossom Hill Off - WB Blossom Hill On	3560	3250
WB Blossom Hill On - EB Blossom Hill On	3840	3500
EB Blossom Hill On - NB SR85 Off	4050	3740
Segment No. 8 - SR 85 (San Jose) to Dunne Avenue (PM 26.78 to 16.01)		
NB SR85 Off - Bernal Off	3610	3410
Bernal Off - SB SR85 GP/Bernal On	2930	2770
SB SR85 GP/Bernal On - SR85 HOV Direct Connector On/Access Start	4010	4830
SR85 HOV Direct Connector On - Bailey Off	4160	5470
Bailey Off - Bailey On	3960	5180
Bailey On - Coyote Creek Off	4030	5350
Coyote Creek Off - Coyote Creek On	3970	5320
Coyote Creek On - Cochrane Off	3990	5350

Southbound Mainline Segment	Existing Demand (Vehicles)	
	AM Peak Hour (7 AM to 8 AM)	PM Peak Hour (5 PM to 6 PM)
Cochrane Off - WB Cochrane On	3260	4390
WB Cochrane On - EB Cochrane On	3330	4520
EB Cochrane On - Dunne Off	3560	5130
Dunne Off - Dunne On	3200	4180
Dunne On - Tennant Off	3540	4720

Annual Average Daily Traffic

Traffic growth in recent years has impacted the US 101 corridor in the project area. Between 2002 and 2012, annual average daily traffic (AADT) has increased from 1,342,000 to 1,518,000 (13 percent increase) on US 101 between East Dunne Avenue in Morgan Hill and McKee Road in San Jose. The AADT has generally decreased for the remainder of the project limits between McKee Road in San Jose and Oregon Expressway/Embarcadero Road in Palo Alto, from 3,356,000 to 3,168,000 (6 percent decrease). Table 4.5.1-3 below shows a comparison of the 2002 and 2012 growth in regional freeway traffic.

Table 4.5.1-3 Comparison of 2002 and 2012 Growth in Regional Freeway Traffic

Segment	2002 Volume (AADT)	2012 Volume (AADT)	Change in AADT	Percent Change
Dunne Avenue to Cochrane Road	105000	127000	22000	21.0%
Cochrane Road to Route 85 North, Bernal Road	101000	135000	34000	33.7%
Route 85 North, Bernal Road to Route 82 North	88000	124000	36000	40.9%
Route 82 North to Hellyer Avenue	126000	154000	28000	22.2%
Hellyer Avenue to Capitol Expressway	139000	168000	29000	20.9%
Capitol Expressway to Tully Road	197000	209000	12000	6.1%
Tully Road to Route 280 West/680 North	244000	248000	4000	1.6%
Route 280 West/680 North to Route 130 East, Santa Clara Street	190000	195000	5000	2.6%
Route 130 East, Santa Clara Street to McKee Road	152000	158000	6000	3.9%
McKee Road to Oakland Road	184000	173000	-11000	-6.0%
Oakland Road to Route 880	187000	178000	-9000	-4.8%
Route 880 to North Fourth Street	160000	133000	-27000	-16.9%
North Fourth Street to North First Street	149000	135000	-14000	-9.4%
North First Street to Guadalupe Parkway	154000	132000	-22000	-14.3%
Guadalupe Parkway to De La Cruz Boulevard	190000	183000	-7000	-3.7%
De La Cruz Boulevard to San Tomas Expressway	172000	168000	-4000	-2.3%

Segment	2002 Volume (AADT)	2012 Volume (AADT)	Change in AADT	Percent Change
San Tomas Expressway to Great America Parkway	178000	173000	-5000	-2.8%
Great America Parkway to Lawrence Expressway	162000	164000	2000	1.2%
Lawrence Expressway to Fair Oaks Avenue	163000	157000	-6000	-3.7%
Fair Oaks Avenue to Matilda Avenue	158000	154000	-4000	-2.5%
Matilda Avenue to Route 237	147000	140000	-7000	-4.8%
Route 237 to Ellis Street	169000	160000	-9000	-5.3%
Ellis Street to Moffett Boulevard	170000	158000	-12000	-7.1%
Moffett Boulevard to Route 85 South	171000	159000	-12000	-7.0%
Route 85 South to Middlefield Road	235000	205000	-30000	-12.8%
Middlefield Road to Rengstorff Avenue	205000	200000	-5000	-2.4%
Rengstorff Avenue to San Antonio Road	192000	190000	-2000	-1.0%
San Antonio Road to Oregon Expressway/Embarcadero Road	210000	206000	-4000	-1.9%

Source: Annual Average Daily Traffic (AADT) Counts from http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm

4.5.2 Forecasted Traffic Conditions

The Forecasted Travel Demand Memorandum presented the 2009, 2015, and 2035 travel demand forecast results used to support the traffic operations and preliminary toll revenue analysis for the project. The traffic operations analysis was prepared in June of 2014 which relies on the corridor growth developed from these forecasts. Future (2015 and 2035) peak-hour traffic demand volumes within the project limit are summarized in Table 4.5.2-1 through 4.5.2-4.

Table 4.5.2-1: 2015 Northbound Future Conditions Peak Hour Traffic Demand Volumes

Northbound - Mainline Segment	2015 AM peak hour (7 to 8 AM)		2015 PM peak hour (5 to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Segment No. 1 - Dunne Avenue to Bernal Road (PM 16.01 to 26.78)				
Dunne Off - Dunne NB On/EXP Lane Start	5335	5365	2944	2975
Dunne NB On/ EXP Lane Start – Dunne SB On	5908	5940	3162	3204
Dunne SB On - Cochrane Off	6653	6685	3352	3394
Cochrane Off - Cochrane NB On/Dual EXP Lane Start	5976	6008	2902	2944
Cochrane NB On/Dual EXP Lane Start - Cochrane SB On	6642	6676	3733	3776
Cochrane SB On - Access End	7108	7142	3906	3948
Access End - Coyote Creek Off	7108	7142	3906	3948
Coyote Creek Off - Coyote Creek On	7080	7113	3886	3928

Northbound - Mainline Segment	2015 AM peak hour (7 to 8 AM)		2015 PM peak hour (5 to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Coyote Creek On - Bailey Off	7113	7146	3926	3968
Bailey Off - Bailey On	6925	6957	3835	3876
Bailey On - Access Start	7407	7445	4255	4296
Access Start - SR 85 HOV Connector Off	7407	7445	4255	4296
SR85 HOV Connector Off - SR 85 GP Connector Off	5810	6220	3856	4026
SR 85 GP Connector Off - Bernal Off	5061	5412	2291	2353
Segment No. 2 – Bernal Road to I-880 (PM 26.78 to 38.30)				
Bernal Off - Bernal NB On	4492	4843	2121	2182
Bernal NB On - Bernal SB On	5174	5525	3106	3167
Bernal SB On - Coyote Off	5414	5765	3340	3402
Coyote Off - Blossom Hill EB On	4905	5256	3003	3059
Blossom Hill EB On - Blossom Hill WB On	6104	6565	4339	4395
Blossom Hill WB On - Access Start	6704	7204	4730	4785
Access Start - Access End	6704	7204	4730	4785
Access End - Hellyer Off	6704	7204	4730	4785
Hellyer Off - Hellyer On	6639	7139	4589	4645
Hellyer On - Yerba Buena Off	7657	8157	5261	5317
Yerba Buena Off - Capitol Off	7390	7882	4861	4917
Capitol Off - Yerba Buena On	6961	7453	3844	3900
Yerba Buena On - Capitol Loop On	7560	7998	4219	4275
Capitol Loop On - Capitol Diagonal On	7710	8371	4709	4568
Capitol Diagonal On - Tully Off	8933	9573	5981	6037
Tully Off - Access Start	7821	8488	5246	5305
Access Start - Access End	7821	8488	5246	5305
Access End - Tully NB Loop On	7821	8488	5246	5305
Tully NB Loop On - Tully NB Diagonal On	9015	9827	5958	6017
Tully NB Diagonal On - I-280/I-680 Off	9787	10641	7082	7144
I-280/I-680 Off - Story Rd Off	6726	7580	3604	3700
Story Off - Access Start	6546	7400	3144	3240
Access Start - Access End	6546	7400	3144	3240
Access End - Story On	6546	7400	3144	3240
Story On - I-280/I-680 SB On	7234	8088	4381	4478
I-280/I-680 SB On - Santa Clara Off	8427	9346	5017	5114
Santa Clara Off - Access Start	8082	8945	4328	4431
Access Start - McKee Off	8082	8945	4328	4431
McKee Off - Access End	7013	7847	3588	3696
Access End - Santa Clara On	7013	7847	3588	3696
Santa Clara On - McKee On	7767	8630	4007	4115

Northbound - Mainline Segment	2015 AM peak hour (7 to 8 AM)		2015 PM peak hour (5 to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
McKee On - Oakland Off	8372	9266	4547	4679
Oakland Off - Oakland On	7762	8656	4037	4169
Oakland On - I-880 NB Off	9081	9976	4825	4985
Segment No. 3 – I-880 to SR 237 (PM 38.30 to 46.13)				
I-880 NB Off - I-880 NB On	7433	8325	3121	3355
I-880 NB On - I-880 SB Off	8153	9045	3686	3920
I-880 SB Off - Bayshore Off	7193	8085	3059	3336
Bayshore Off - Bayshore On	6889	7776	2875	3175
Bayshore On - Brokaw Off	7883	8770	3260	3560
Brokaw Off - Access Start	7011	7893	2721	3042
Access Start - N 1st St On	7011	7893	2721	3042
N 1st St On - E Brokaw Rd On/Access End	7377	8260	3032	3356
E Brokaw Rd On/Access End - De La Cruz Off	8028	8932	4063	4453
De La Cruz Off - SR 87/Guadalupe On	6631	7367	3479	3869
SR 87/Guadalupe On - De La Cruz NB On	8266	9000	5101	5504
De La Cruz NB On - Access Start	8584	9323	5342	5753
Access Start - De La Cruz SB On	8584	9323	5342	5753
De La Cruz SB On - Montague Off/Access Extension	8828	9567	6051	6530
Montague Off/Access Extension - Access End	7686	8033	4741	5166
Access End - Montague On	7686	8033	4741	5166
Montague On - Great America Off	9408	9780	6593	7186
Great America Off - Great America NB On	8131	8502	5580	6135
Great America NB On - Great America SB On/Access Start	8263	8649	5810	6396
Access Start - Access End	8473	8867	6490	7126
Access End/Lawrence Off - Lawrence NB On	7341	7602	5107	5559
Lawrence NB On - Lawrence SB On	7939	8202	5587	6039
Lawrence SB On - Fair Oaks Off/Access Start	8803	9067	5956	6408
Access Start - Fair Oaks On	8033	8188	5059	5435
Fair Oaks On - Access End	8673	8844	5524	5901
Access End - Mathilda NB Off	8673	8844	5524	5901
Mathilda NB Off - Mathilda NB On	7998	8154	5267	5621
Mathilda NB On - Mathilda SB Off	8338	8504	5559	5913
Mathilda SB Off - SR 237 Off	7685	7777	4741	4947
Segment No. 4 – SR 237 to Oregon Expressway/Embarcadero Road (PM 46.13 to 52.17)				
SR 237 Off - SR 237 On	7087	7166	3851	4020
SR 237 On - Ellis Off/Access Start	7987	8066	4899	5068
Ellis Off/Access Start - Access End	7574	7628	4563	4721
Access End - Ellis On	7574	7628	4563	4721

Northbound - Mainline Segment	2015 AM peak hour (7 to 8 AM)		2015 PM peak hour (5 to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Ellis On - Moffett Off	7782	7837	5159	5327
Moffett Off - Moffett On	7562	7596	4819	4981
Moffett On - Shoreline Off/Access Start	7911	7958	5111	5272
Shoreline Off - SR 85 On	7054	7076	4405	4568
SR 85 On - SR 85 HOV Connector On	9143	8958	5764	5833
SR 85 HOV Connector On - Middlefield Off	9801	10043	6169	6242
Middlefield Off - Shoreline On	9031	9273	4969	5042
Shoreline On - Rengstorff NB Off	9736	9980	5901	5974
Rengstorff NB Off - Rengstorff SB Off	9501	9709	5841	5914
Rengstorff SB Off - Rengstorff On	9271	9467	5591	5664
Rengstorff On - San Antonio Off	9767	9964	6489	6563
San Antonio Off - San Antonio On	8924	9080	6003	6070
San Antonio On - EXP Lane End/Dual HOV Lane End	9632	9789	7126	7193
EXP Lane End/Dual HOV Lane End - Oregon/Embarcadero Off	9632	9789	7126	7193
Oregon/Embarcadero Off - Oregon/Embarcadero On	8164	8280	5949	6012
North of Oregon/Embarcadero	9075	9192	7641	7704

Table 4.5.2-2: 2015 Southbound Future Conditions Peak Hour Traffic Demand Volumes

Southbound Mainline Segment	2015 AM peak hour (7 AM to 8 AM)		2015 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Segment No. 5 - Oregon Expressway/Embarcadero Road to SR 237 (PM 52.17 to 46.13)				
University On - Ore/Embarcadero Off	8945	9052	8360	8902
Ore/Embarcadero Off - Ore/Embarcadero On	7035	7140	6886	7426
Oregon/Embarcadero On - SB San Antonio Off	8998	9235	8586	9300
SB San Antonio Off - NB San Antonio Off	8490	8726	7692	8399
NB San Antonio Off -Access End	8294	8528	7646	8358
Access End - Charleston On	8294	8528	7646	8358
Chareston On - Rengstorff Off	8684	8945	8736	9508
Rengstorff Off - Rengstorff On	7925	8186	8252	9024
Rengstorff On - Middlefield On	8105	8366	8822	9672
Middlefield On - SB Shoreline Off	8715	8980	9465	10316

Southbound Mainline Segment	2015 AM peak hour (7 AM to 8 AM)		2015 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
SB Shoreline Off - HOV Connector US101 SB To SR85 SB Off	8265	8530	8948	9799
HOV Connector US101 SB To SR85 SB Off - SB SR85 Off	7983	8014	8298	8785
SB SR85 Off - Shoreline On	6547	6857	5585	5779
NB Shoreline On (Diagonal) - Moffett Off	6983	7327	6713	6910
Moffett Off- Moffett On	6695	7039	6354	6595
Moffett On- Ellis Off/Access Start	7054	7400	6699	6972
Ellis Off/Access Start- Ellis On/Access End	6514	6888	6320	6743
Ellis On/Access End - EB SR237 Off	6730	7105	6879	7334
Segment No. 6 - SR 237 to McKee Road (PM 46.13 to 36.14)				
EB SR237 Off- EB SR237 On	4855	5164	5281	5733
EB SR237 On - Mathilda Off	5771	6104	6144	6603
Mathilda Off - SB Mathilda On (Loop)	5479	5798	5586	6083
SB Mathilda On (Loop) - NB Mathilda On (Diagonal)/Access Start	5636	5958	6646	7171
NB Mathilda On (Diagonal)/Access Start - SB Fair Oaks Off (Diagonal)/Access End	6022	6362	7178	7778
SB Fair Oaks Off (Diagonal)/Access End - SB Fair Oaks On (Loop)	5633	5979	6467	7078
SB Fair Oaks On (Loop) - NB Fair Oaks Off (Loop)	5859	6205	6960	7624
NB Fair Oaks Off (Loop) - NB Fair Oaks On (Diagonal)	5777	6122	6736	7410
NB Fair Oaks On (Diagonal) - SB Lawr. Expy Off	6190	6556	6986	7660
SB Lawr. Expy Off - SB Lawr. Expy On (Loop)	5508	5786	5559	6161
SB Lawr. Expy On (Loop) - NB Lawr. Expy On (Diagonal)	5890	6168	5898	6539
NB Lawr. Expy On (Diagonal) - G.A. Off/Access Start	6544	6847	6521	7191
G.A. Off/Access Start- SB G.A.On (Loop)/Access End	5885	6141	5803	6429
SB G.A. On (Loop) - NB G.A. On (Diagonal)	6084	6340	6524	7150
NB G.A. On (Diagonal) - Mont. Expy Off	6277	6537	7087	7744
Mont. Expy Off - Mont. Expy On	5284	5475	5603	6229
Mont. Expy On (Diagonal)/Access Start - De La Cruz Off	6125	6317	6875	7651
De La Cruz Off - Access End	5870	6055	6526	7264
Access End - De La Cruz On (Loop)	5870	6055	6526	7264
De La Cruz On (Loop) - De La Cruz Off (Loop)	6143	6328	7075	8082
De La Cruz Off (Loop) - De La Cruz On (Diagonal)	5639	5811	6965	7957
De La Cruz On (Diagonal) - Guadalupe\SR87 Off	6343	6516	8884	9884
Guadalupe\SR87 Off - 1st\Brokaw Off	4721	4886	6581	7581
1st\Brokaw Off - Access Start	3715	3860	5689	6695
Access Start - Access End	3715	3860	5689	6695

Southbound Mainline Segment	2015 AM peak hour (7 AM to 8 AM)		2015 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Access End - Bayshore On	3715	3860	5689	6695
Bayshore On - SB I-880 Off	4498	4643	7146	8152
SB I-880 Off - SB I-880 On (Loop)	4108	4253	6507	7489
SB I-880 On (Loop) - NB I-880 Off	5239	5384	7681	8800
NB I-880 Off - NB I-880 On (Diagonal)	4580	4653	7360	8410
NB I-880 On (Diagonal) - Oakland Off	5130	5203	8590	9657
Oakland Off - Oakland On/Access Start	4490	4551	7340	8396
Oakland On Access Start - Access End	5075	5137	8610	9666
Access End - McKee Off	5075	5137	8610	9666
Segment No. 7 - McKee Road to SR 85 (San Jose) (PM 36.14 to 26.78)				
McKee Off- Santa Clara Off	4599	4662	7853	8869
Santa Clara Off- McKee On	4328	4391	7128	8132
McKee On - Santa Clara On	5159	5222	8223	9256
Santa Clara On - I-280\680 Off	5941	6004	9236	10362
I-280\680 Off - Story Off	4438	4502	7226	8352
Story Off/Access Start - Access End	3972	4036	5636	6762
Access End - Story On	3972	4036	5636	6762
Story On - I-280/680 On	4729	4793	6514	7642
I-280/680 On - Tully Off	7619	7685	9978	11106
Tully Off/Access Start - Tully On (Loop)/Access End	6231	6297	8036	8879
Tully On (Loop)/Access End - Tully On (Diagonal)	6567	6630	8525	9368
Tully On (Diagonal) - Capitol Expy Off	6900	6966	9010	9862
Capitol Expy Off - Capitol Expy On (Loop)	5460	5526	6241	7495
Capitol Expy On (Loop) - Capitol Expy On (Diagonal)	5970	6036	6741	7995
Capitol Expy On (Diagonal) - Yerba Buena Off	6480	6546	7241	8495
Yerba Buena Off - Yerba Buena On	5929	5994	6218	7372
Yerba Buena On - Hellyer Off	6409	6474	6638	7792
Hellyer Off - Hellyer On	5969	6034	6007	7042
Hellyer On -Access Start	6110	6174	6152	7187
Access Start - Access End	6110	6174	6152	7187
Access End - Blossom Hill Off	6110	6174	6152	7187
Blossom Hill Off - WB Blossom Hill On (Loop)	4924	4989	4589	5586
WB Blossom Hill On (Loop) - EB Blossom Hill On (Diagonal)	5217	5282	4866	5865
EB Blossom Hill On (Diagonal) - NB SR85 Off	5472	5540	5149	6149
Segment No. 8 - SR 85 (San Jose) to Dunne Avenue (PM 26.78 to 16.01)				
NB SR85 Off - Bernal Off	5027	5094	4814	5784
Bernal Off - SB SR85 GP/Bernal On	4193	4260	4103	5005
SB SR85 GP/Bernal On - SR85 HOV Direct Connector	5546	5594	6167	7008

Southbound Mainline Segment	2015 AM peak hour (7 AM to 8 AM)		2015 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
On/Access Start				
SR85 HOV Direct Connector ON/Access Start - Access End	5787	5859	7372	8208
Access End - Bailey Off	5787	5859	7372	8208
Bailey Off - Bailey On	5536	5608	6835	7630
Bailey On - Coyote Creek Off	5638	5710	7005	7800
Coyote Creek Off - Coyote Creek On	5576	5648	6975	7770
Coyote Creek On - Access Start	5596	5668	7005	7800
Access Start - Access End	5596	5668	7005	7800
Access End - Cochrane Off	5596	5668	7005	7800
Cochrane Off - WB Cochrane On (loop)	4523	4595	5951	6689
WB Cochrane On (Loop) - EB Cochrane On (Diagonal)	4597	4669	6081	6819
EB Cochrane On (Diagonal) - EL End	4847	4919	6691	7429
EL End - Dunne Off	4847	4919	6691	7429
Dunne Off - Dunne On	4221	4292	5741	6465
Dunne On - Tennant Off	4634	4704	6305	7031

Table 4.5.2-3: 2035 Northbound Future Conditions Peak Hour Traffic Demand Volumes

Northbound Mainline Segment	2035 AM peak hour (7 AM to 8 AM)		2035 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Segment No. 1 - Dunne Avenue to Bernal Road (PM 16.01 to 26.78)				
Dunne Off - Dunne NB On/EXP Lane Start	6366	6474	3801	3802
Dunne NB On/ EXP Lane Start – Dunne SB On	7068	7176	4214	4220
Dunne SB On - Cochrane Off	7838	8057	4442	4452
Cochrane Off - Cochrane NB On/Dual EXP Lane Start	7161	7380	3904	3908
Cochrane NB On/Dual EXP Lane Start-Cochrane SB On	7866	8241	5114	5141
Cochrane SB On - Access End	8351	8849	5317	5343
Access End - Coyote Creek Off	8351	8849	5317	5343
Coyote Creek Off - Coyote Creek On	8323	8820	5297	5323
Coyote Creek On - Bailey Off	8356	8853	5337	5363
Bailey Off - Bailey On	8014	8510	5214	5241
Bailey On - Access Start	8596	9098	5672	5728

Northbound Mainline Segment	2035 AM peak hour (7 AM to 8 AM)		2035 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Access Start - SR 85 HOV Connector Off	8596	9098	5672	5728
SR85 HOV Connector Off - SR 85 GP Connector Off	6931	7603	4790	4928
SR 85 GP Connector Off - Bernal Off	5951	6708	2903	3243
Segment No. 2 – Bernal Road to I-880 (PM 26.78 to 38.30)				
Bernal Off - Bernal NB On	5382	5950	2722	3009
Bernal NB On - Bernal SB On	6140	6708	4075	4418
Bernal SB On - Coyote Off	6432	7000	4398	4757
Coyote Off - Blossom Hill EB On	5493	6076	3867	4206
Blossom Hill EB On - Blossom Hill WB On	6762	7471	5282	5656
Blossom Hill WB On - Access Start	7362	8115	5771	6176
Access Start - Access End	7362	8115	5771	6176
Access End - Hellyer Off	7362	8115	5771	6176
Hellyer Off - Hellyer On	7176	7901	5563	5968
Hellyer On - Yerba Buena Off	8194	8919	6420	6825
Yerba Buena Off - Capitol Off	7927	8567	6020	6425
Capitol Off - Yerba Buena On	7354	8058	4624	5029
Yerba Buena On - Capitol Loop On	8162	8944	5051	5593
Capitol Loop On - Capitol Diag On	8280	9423	5598	6118
Capitol Diag On - Tully Off	9453	10366	7021	7565
Tully Off - Access Start	8341	9281	6223	6748
Access Start - Access End	8341	9281	6223	6748
Access End - Tully NB Loop On	8341	9281	6223	6748
Tully NB Loop On - Tully NB Diag On	9535	10620	7008	7535
Tully NB Diag On - I-280/I-680 Off	10307	11434	8151	8693
I-280/I-680 Off - Story Rd Off	7124	8244	4673	5218
Story Off - Access Start	6911	8028	4213	4750
Access Start - Access End	6911	8028	4213	4750
Access End - Story On	6911	8028	4213	4750
Story On - I-280/I-680 SB On	7599	8756	5792	6357
I-280/I-680 SB On - Santa Clara Off	9068	10272	6607	7172
Santa Clara Off - Access Start	8597	9777	5619	6135
Access Start - McKee Off	8597	9777	5619	6135
McKee Off - Access End	7280	8513	4537	5009
Access End - Santa Clara On	7280	8513	4537	5009
Santa Clara On - McKee On	8379	9712	5124	5596
McKee On - Mabury Off	9410	10830	5853	6349
Mabury Off - Mabury On	8631	9935	5412	5863
Mabury On - Oakland Off	9387	10707	6173	6624

Northbound Mainline Segment	2035 AM peak hour (7 AM to 8 AM)		2035 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Oakland Off - Oakland On	8987	10289	5662	6114
Oakland On - I-880 NB Off	10344	11646	6519	6978
Segment No. 3 – I-880 to SR 237 (PM 38.30 to 46.13)				
I-880 NB Off - I-880 NB On	8670	9969	4791	5249
I-880 NB On - I-880 SB Off	9519	10850	5356	5814
I-880 SB Off - Bayshore Off	8495	9783	4552	5063
Bayshore Off - 4th St On	6972	8325	3644	4184
N 4th Street On - Access Start	7851	9353	4001	4557
Access Start - N 1st St On	7851	9353	4001	4557
N 1st St On - E Brokaw Rd On/Access End	8670	10193	4482	5054
E Brokaw Rd On/Access End - De La Cruz Off	9837	11360	6010	6713
De La Cruz Off - SR 87/Guadalupe On	8019	9306	5157	5860
SR 87/Guadalupe On - De La Cruz NB On	9720	11006	6834	7598
De La Cruz NB On - Access Start	10109	11399	7112	7910
Access Start - De La Cruz SB On	10109	11399	7112	7910
De La Cruz SB On - Montague Off/Access Extension	10442	11752	7948	8945
Montague Off/Access Extension - Access End	8386	9276	5967	6909
Access End - NB Montague On	8386	9276	5967	6909
NB Montague On - SB Montague On	9419	10308	7138	8080
SB Montague On - Great America Off	10451	11340	8308	9499
Great America Off - Great America NB On	9173	10062	7093	8232
Great America NB On - Great America SB On/Access Start	9308	10211	7352	8522
Access Start - Access End	9591	10551	8139	9395
Access End/Lawrence Off - Lawrence NB On	8368	9061	6504	7546
Lawrence NB On - Lawrence SB On	9001	9694	7047	8093
Lawrence SB On - Fair Oaks Off/Access Start	9891	10584	7416	8462
Access Start - Fair Oaks On	9107	9683	6248	7003
Fair Oaks On - Access End	9747	10361	6766	7523
Access End - Mathilda NB Off	9747	10361	6766	7523
Mathilda NB Off - Mathilda NB On	8405	8943	6385	7012
Mathilda NB On - Mathilda SB Off	8825	9363	6705	7341
Mathilda SB Off - SR 237 Off	9228	9768	6818	7455
Segment No. 4 – SR 237 to Oregon Expressway/Embarcadero Road (PM 46.13 to 52.17)				
SR 237 Off - SR 237 On	8218	8680	5271	5668
SR 237 On - Ellis Off/Access Start	9461	9931	6634	7081
Ellis Off/Access Start - Access End	8831	9265	6089	6380
Access End - Ellis On	8831	9265	6089	6380
Ellis On - Moffett Off	9065	9500	6811	7113

Northbound Mainline Segment	2035 AM peak hour (7 AM to 8 AM)		2035 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Moffett Off - Moffett On	8756	9190	6308	6513
Moffett On - Shoreline Off/Access Start	9105	9550	6814	7022
Shoreline Off - SR 85 On	8159	8575	6042	6208
SR 85 On - SR 85 HOV Connector On	10410	10255	7476	7449
SR 85 HOV Connector On - Middlefield Off	11126	11565	8024	8266
Middlefield Off - Shoreline On	10094	10533	6546	6632
Shoreline On - Rengstorff NB Off	11050	11489	7580	7667
Rengstorff NB Off - Rengstorff SB Off	10753	11189	7494	7563
Rengstorff SB Off - Rengstorff On	10481	10801	7161	7127
Rengstorff On - San Antonio Off	11004	11326	8246	8216
San Antonio Off - San Antonio On	9992	10306	7668	7602
San Antonio On - End of Buffer	10810	11126	8877	8819
End of Buffer - End of Express Lanes	10810	11126	8877	8819
End of Express Lanes - HOV Lane Drop	10810	11126	8877	8819
HOV Lane Drop - Oregon/Embarcadero Off	10810	11126	8877	8819
Oregon/Embarcadero Off - Oregon/Embarcadero On	9342	9617	7647	7569
North of Oregon/Embarcadero	10460	10736	9339	9261

Table 4.5.2-4: 2035 Southbound Future Conditions Peak Hour Traffic Demand Volumes

Southbound Mainline Segment	2035 AM peak hour (7 AM to 8 AM)		2035 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Segment No. 5 - Oregon Expressway/Embarcadero Road to SR 237 (PM 52.17 to 46.13)				
North of Oregon/Embarcadero	11052	11125	9972	10489
Oregon\Embarcadero Off - Oregon\Embarcadero On/Access Start	8968	9040	8126	8633
Oregon\Embarcadero On/Access Start - SB San Antonio Off (Diagonal)	11015	11297	9826	10507
SB San Antonio Off (Diagonal) - San Antonio On (Diagonal)	10279	10561	8536	9214
San Antonio On (Diagonal) - Access End	10560	10871	9376	10111
Access End - Rengstorff Off	10560	10871	9376	10111
Rengstorff Off - Rengstorff On	9699	10009	8699	9434
Rengstorff On - Middlefield On	10205	10583	9850	10704

Southbound Mainline Segment	2035 AM peak hour (7 AM to 8 AM)		2035 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Middlefield On - Shoreline Off	11156	11534	10934	11791
Shoreline Off - SR85 HOV Connector Off	10706	11084	10417	11274
SR85 HOV Connector Off - SR85 GP Off	10145	9952	9678	9709
SR85 GP Off - Shoreline On	7922	8327	6901	6920
Shoreline On - Moffett Off	8480	8508	8089	7772
Moffett Off - Moffett On	8128	8153	7720	7445
Moffett On - Ellis Off/Access Start	8796	8867	8200	7956
Ellis Off/Access Start - Ellis On/Access End	8187	8297	7789	7635
Ellis On/Access End - EB SR237 Off	8494	8612	8594	8517
Segment No. 6 - SR 237 to McKee Road (PM 46.13 to 36.14)				
EB SR237 Off - EB SR237 On	6234	6342	6690	6662
EB SR237 On - SB Mathilda Off	7296	7492	7564	7537
SB Mathilda Off - SB Mathilda On (Loop)	6799	6979	6893	6916
SB Mathilda On (Loop) - NB Mathilda On (Diagonal)/Access Start	6967	7153	8059	8156
NB Mathilda On (Diagonal)/Access Start - SB Fair Oaks Off (Diagonal)/Access End	7537	7850	8815	9060
SB Fair Oaks Off (Diagonal)/Access End - SB Fair Oaks On (Loop)	7148	7467	8104	8360
SB Fair Oaks On (Loop) - NB Fair Oaks Off (Loop)	7464	7786	8597	8954
NB Fair Oaks Off (Loop) - NB Fair Oaks On (Diagonal)	7317	7648	8291	8688
NB Fair Oaks On (Diagonal) - SB Lawr. Expy Off	7733	8119	8541	8952
SB Lawr. Expy Off - SB Lawr. Expy On (Loop)	6977	7219	7085	7385
SB Lawr. Expy On (Loop) - NB Lawr. Expy On (Diagonal)	7493	7806	7449	7986
NB Lawr. Expy On (Diagonal) - G.A. Off/Access Start	8181	8503	8123	8675
G.A. Off/Access Start - SB G.A.On (Loop)	7382	7563	7341	7883
SB G.A.On (Loop) - Access End	7688	7876	8158	8701
Access End - NB G.A.On (Diagonal)	7688	7876	8158	8701
NB G.A.On (Diagonal) - Mont. Expy Off	7964	8252	8930	9507
Mont. Expy Off - Mont. Expy On (Loop)	6539	6664	6996	7516
Mont. Expy On (Loop) - Mont. Expy On (Diagonal)/Access Start	6942	7086	7841	8473
Mont. Expy On (Diagonal)/Access Start - De La Cruz Off	7725	7905	8685	9430
De La Cruz Off - Access End	6828	6877	8201	8878
Access End - SB De La Cruz On (Loop)	6828	6877	8201	8878
SB De La Cruz On (Loop) - NB De La Cruz On (Diagonal)	7101	7168	8885	9693
NB De La Cruz On (Diagonal) - Guadalupe\SR87 Off	8258	8348	10899	11706

Southbound Mainline Segment	2035 AM peak hour (7 AM to 8 AM)		2035 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
Guadalupe\SR87 Off - 1st\Brokaw Off	6300	6365	8393	9291
1st\Brokaw Off - Access Start	5115	5155	7425	8357
Access Start - 4th\Zanker Off	5115	5155	7425	8357
4th\Zanker Off - Access End	4378	4373	6819	7686
Access End - 4th\Zanker On	4378	4373	6819	7686
4th\Zanker On - SB I-880 Off	5720	5721	7502	8400
SB I-880 Off - SB I-880 On (Loop)	5294	5331	6863	7737
SB I-880 On (Loop) - NB I-880 Off	6671	6738	8406	9303
NB I-880 Off - NB I-880 On (Diagonal)	5911	5793	8085	8913
NB I-880 On (Diagonal) - Oakland Off	6552	6468	9432	10284
Oakland Off - Oakland On/Access Start	5951	5816	8271	9123
Oakland On/Access Start - Taylor\Mabury Off	6667	6532	9541	10393
Taylor\Mabury Off - Taylor\Mabury On/Access End	6146	6009	9126	9921
Taylor\Mabury On/Access End - McKee Off	6536	6436	9642	10512
Segment No. 7 - McKee Road to SR 85 (San Jose) (PM 36.14 to 26.78)				
McKee Off - Santa Clara Off	5953	5840	8649	9395
Santa Clara Off - McKee On	5443	5340	7659	8431
McKee On - Santa Clara On	6588	6541	8782	9556
Santa Clara On - I-280\680 Off	7920	7886	10120	10995
I-280\680 Off - Story Off/Access Start	5879	5782	7841	8716
Story Off/Access Start - Access End	5089	5023	6249	7124
Access End - Story On	5089	5023	6249	7124
Story On - I-280/680 On	6229	6222	7127	8004
I-280/680 On - Tully Off/Access Start	9441	9434	10642	11522
Tully Off/Access Start - Tully On (Loop)/Access End	7798	7780	8489	9085
Tully On (Loop)/Access End - Tully On (Diagonal)	8166	8148	9050	9647
Tully On (Diagonal) - Capitol Expy Off	8528	8513	9635	10256
Capitol Expy Off - Capitol Expy On (Loop+Diagonal)	6595	6521	6866	7889
Capitol Expy On (Loop) - Capitol Expy On (Diagonal)	7259	7186	7493	8521
Capitol Expy On (Diagonal) - Yerba Buena Off	7922	7851	8119	9152
Yerba Buena Off - Yerba Buena On	7296	7201	6961	7932
Yerba Buena On - Hellyer Off	7799	7731	7381	8352
Hellyer Off - Hellyer On	7178	7092	6750	7602
Hellyer On - Access Start	7362	7276	6993	7845
Access Start - Access End	7362	7276	6993	7845
Access End - Blossom Hill Off	7362	7276	6993	7845
Blossom Hill Off - WB Blossom Hill On (Loop)	6050	5919	5416	6238
WB Blossom Hill On (Loop) - EB Blossom Hill On (Diagonal)	6406	6339	5891	6717

Southbound Mainline Segment	2035 AM peak hour (7 AM to 8 AM)		2035 PM peak hour (5 PM to 6 PM)	
	Demand (Vehicles)		Demand (Vehicles)	
	No Build	Build	No Build	Build
EB Blossom Hill On (Diagonal) - NB SR85 Off	6799	6791	6507	7349
Segment No. 8 - SR 85 (San Jose) to Dunne Avenue (PM 26.78 to 16.01)				
NB SR85 Off - Bernal Off	6328	6309	6127	6972
Bernal Off - SB SR85 GP/Bernal On	5020	4929	5214	5968
SB SR85 GP/Bernal On - SR85 HOV Direct Connector On/Access Start	6736	6451	7393	8743
SR85 HOV Direct Connector On/Access Start - Access End	7351	7143	8964	9774
Access End - Bailey Off	7351	7143	8964	9774
Bailey Off - Bailey On	6990	6781	8424	9170
Bailey On - Coyote Creek Off	7129	6920	8594	9340
Coyote Creek Off - Coyote Creek On	7058	6849	8564	9310
Coyote Creek On - Access Start	7078	6869	8594	9340
Access Start - Access End	7078	6869	8594	9340
Access End - Cochrane Off	7078	6869	8594	9340
Cochrane Off - WB Cochrane On (Loop)	5472	5255	7540	7758
WB Cochrane On (Loop) - EB Cochrane On (Diagonal)	5564	5347	7670	7888
EB Cochrane On (Diagonal) - EL End	5891	5674	8342	8562
EL End - Dunne Off	5891	5674	8342	8562
Dunne Off - Dunne On	5034	4816	7392	7562
Dunne On - Tennant Off	5542	5322	8080	8276
Tennant Off - Tennant On	4939	4719	7230	7426
Tennant On - End of Network	5252	5031	7804	8000

4.5.3 Truck Volumes

Truck percentage data for US 101 within the study area were derived from the 2009 Caltrans Annual Average Daily Truck Traffic Database. The data represent the number of trucks as a percentage of the vehicle composition for certain locations. This report listed average daily truck percentage at 10 locations in the study area, as shown in Table 4.5.3-1 below:

Table 4.5.3-1: Truck Percentages

Locations	Truck Percentage	Year Verified/ Estimated
Cochrane Road	8%	2001V
Jct. Rte.85, Bernal Road	9%	2001V
Jct. Rte. 82	8%	2001V
Jct. I-280/I-680	6%	2001E

Locations	Truck Percentage	Year Verified/ Estimated
Jct. Rte. 130	6%	2001V
Jct. Oakland Road	5%	2001V
Jct. I-880	5%	2001E
Jct. Lawrence Expressway	4%	2001V
• Jct. Rte. 237	4%	2001V
• Jct. Rte. 85	5%	2001V

Source: 2009 Caltrans Annual Average Daily Truck Traffic Database

4.5.4 Accident Analysis

Accident data for the US 101 corridor within the project limits was provided by Caltrans Traffic Accident Surveillance and Analysis System – Traffic System Network (TASAS-TSN) for the 3-year period from June 1, 2007 through May 31, 2010. The following tables summarize the accident data.

Table 4.5.4-1: Caltrans 3-Year Accident Analysis for Northbound Mainline from June 1, 2007 to May 31, 2010

Route	Number of Accidents	Accident Rate					
		Actual (per million vehicle miles)			Average (per million vehicle miles)		
	Total*	Total*	Fatal	F&I	Total*	Fatal	F&I
NB US 101 – PM 15.10 to 23.10	176	.33	.002	.08	.69	.004	.22
NB US 101 – PM 23.10 to 28.60	123	.35	.006	.11	.62	.003	.20
NB US 101 – PM 28.60 to 47.89	1,477	.83	.004	.22	.85	.003	.26
NB US 101 – PM 47.89 to 51.99	481	1.07	.000	.27	.96	.004	.30
TOTAL NORTHBOUND US101 FROM PM 15.10 to PM 51.99	2,257	2.58	.012	0.68	3.12	.014	.98
*Total accidents include fatalities plus injuries and those accidents involving property damage only. Key: F = Fatal; I = Injury							

Source: Caltrans Accident Data from TASAS Table B

NB = Northbound
PM = post mile

Accident data for northbound direction within the project limits is summarized in Table 4.5.4-1. Analysis of the TASAS Accident Summary shows 2,257 accidents occurred in the northbound direction on US101. There were 18 fatal accidents and 1,406 injuries reported within the project limits during the three years duration indicated.

From the reported accidents 297 were caused by improper turning, 93 were alcohol related, 44 were due to following too close, 1,339 were due to speeding, and the rest were due to other primary collision factors. Therefore, 59.3% of the accidents were caused by speeding and the majority resulting in rear end collision. The movement preceding the collision was primarily caused by slowing down or stopped vehicles due to traffic congestion conditions.

The total actual accident rate in the northbound direction is below the total average accident rate from PM 15.10 to PM 47.89. Between PM 47.89 and PM 51.99, the total actual accident rate is above the total average accident rate. TSAR summary shows 73% of the accidents were of rear end type of collision occurring during peak traffic congestion period between PM 47.89 and PM 51.99.

Table 4.5.4-2: Caltrans 3-Year Accident Analysis for Southbound Mainline from June 1, 2007 to May 31, 2010

Route	Number of Accidents	Accident Rate					
		Actual (per million vehicle miles)			Average (per million vehicle miles)		
	Total*	Total*	Fatal	F&I	Total*	Fatal	F&I
SB US 101 – PM 15.10 to 23.10	185	.34	.004	.11	.69	.004	.22
SB US 101 – PM 23.10 to 28.60	95	.27	.003	.08	.62	.003	.20
SB US 101 – PM 28.60 to 47.89	1,425	.80	.002	.22	.85	.003	.26
SB US 101 – PM 47.89 to 51.99	248	.55	.000	.15	.96	.004	.30
TOTAL SOUTHBOUND US101 FROM PM 15.10 to PM 51.99	1,953	1.96	.009	0.56	3.12	.014	.98
*Total accidents include fatalities plus injuries and those accidents involving property damage only. Key: F = Fatal; I = Injury							

Source: Caltrans Accident Data from TASAS Table B

NB = Northbound
PM = post mile

Accident data for southbound direction within the project limits is summarized in Table 4.5.4-2. Analysis of the TASAS Accident Summary shows 1,953 accidents occurred in the southbound direction on US 101. There were 7 fatal accidents and 552 injuries reported within the project limits during the three years duration indicated.

From the reported accidents 234 were caused by improper turning, 141 were alcohol related, 31 were due to following too close, 1,066 were due to speeding, and the rest were due to other primary collision factors. Therefore, 54.6% of the accidents were caused by speeding and the majority resulting in rear end collision. The movement preceding the collision was primarily caused by slowing down or stopped vehicles due to traffic congestion conditions.

The total actual accident rate in the southbound direction is below the total average accident rate for the entire corridor of the project.

4.5.5 Safety Analysis

Per Caltrans requirements under the TOPD (Traffic Operations Policy Directive Number 11-02, April 7, 2011), a safety analysis was performed by Caltrans for the project with findings discussed in a Traffic Safety Analysis Report (TSAR). Mitigation recommendations for incorporation into this project to address the safety findings are listed and discussed in the Safety Analysis Recommendations Memorandum (SARM, *Attachment J*). The SARM which

serves as a supplement to this report was signed by Caltrans with concurrence by Santa Clara Valley Transportation Authority (SCVTA) on October 29, 2014.

4.5.6 CHP Enforcement Safety Lighting

Lighting will be placed within CHP enforcement zones at the median to support enforcement activities.

5. Alternatives

This section describes the proposed action and the design alternatives that were developed by a multidisciplinary team to achieve the project's purpose and need, while avoiding or minimizing environmental impacts. Two alternatives are considered in this document: a Build Alternative (preferred) that would convert the existing HOV lanes on northbound and southbound US 101 to express lane facilities and widen US 101 to provide a second express lane for the majority of the corridor, and the No-Build Alternative.

A. Viable Alternatives

The approved Project Study Report-Project Development Study (PSR-PDS) presented one Build Alternative (express lanes) and a No-Build Alternative. The Project Development Team identified the Build Alternative as the preferred alternative after considering comments received during the public comment period.

In general, the Build Alternative would better accommodate projected population growth and travel demand growth than the No-Build Alternative. The Build Alternative would decrease delays in the majority of future year peak and non-peak periods while providing a means to maintain higher volumes of traffic.

5.1 No-Build Alternative

The No-Build Alternative proposes no modifications to the current US 101 corridor including the continuous access HOV lane other than routine maintenance and rehabilitation of the facility and any currently planned and programmed projects within the area. This alternative would result in continued deterioration of traffic conditions with the additional forecasted traffic demand in the future. This alternative does not meet the need and purpose of the proposed project. Rather, it provides a basis for the analysis and evaluation of the Build Alternative.

5.2 Build Alternative

The Build Alternative consists of converting the existing HOV lane along both northbound and southbound US 101 into an HOV/express lane and widening the freeway to add a second HOV/express lane for the majority of the corridor. The project also proposes to build a new HOV/express lane in the northbound direction between East Dunne Avenue and conforms to

the existing HOV lane at Cochrane Road, and in the southbound direction between Burnett Avenue and East Dunne Avenue. The HOV/express lanes would allow HOVs to continue to use the lanes without paying a toll and eligible SOVs to pay a toll.

The improvements will result in a controlled access dual express lane facility in both directions extending from just south of the Cochrane Road interchange in Morgan Hill to just south of the Oregon Expressway/Embarcadero Road interchange in Palo Alto in the northbound direction, and from just south of the Oregon Expressway/Embarcadero Road interchange to just South of the Burnett Avenue overcrossing in the Southbound direction with the exception of some locations near the SR 85 interchanges where a single Express Lane is proposed.

The limits of the single and dual express lanes segments are as follows:

In the northbound direction:

- Single express lane from East Dunne Avenue to Cochrane Road
- Dual express lanes from Cochrane Road to SR 85 (San Jose)
- Single express lane from SR 85 (San Jose) to Blossom Hill Road
- Dual express lanes from Blossom Hill Road to North Fair Oaks Avenue
- Single express lane from North Fair Oaks Avenue to SR 85 (Mountain View)
- Dual express lane from SR 85 (Mountain View) to San Antonio Road
- Single express lane from San Antonio Road to Oregon Expressway/Embarcadero Road

In the southbound direction:

- Single express lane from south of the Oregon Expressway/Embarcadero Road to San Antonio Road
- Dual express lanes from San Antonio Road to SR 85 (Mountain View)
- Single express lane from SR 85 (Mountain View) to North Mathilda Avenue
- Dual express lanes from North Mathilda Avenue to Blossom Hill Road
- Single express lane from Blossom Hill Road to SR 85 (San Jose)
- Dual express lanes from SR 85 (San Jose) to Cochrane Road
- Single express lane from Cochrane Road to East Dunne Avenue

The addition of the second HOV/express lane will involve a combination of inside and outside widening. Inside widening will occur within the US 101 segment south of the SR 85/US 101 Interchange in South Santa Clara County where a wide unpaved median exists. The outside widening will occur in the remaining segments of the corridor to accommodate the additional lanes.

5.2.1 Express Lane Access

The express lanes would be adjacent to the center median and separated from the general purpose lanes by a striped buffer zone. The buffer zone would have gaps in multiple locations where vehicles can enter and exit the express lanes facility referred as “access zones”.

Access to/from the express lane is controlled through a series of access zones, similar to the southern California carpool lanes system (weave access). The locations of these access zones were selected to serve, in order of priority: the freeway-to-freeway interchanges, the major arterials, and the local streets. The location of these access zones were selected to account for geometric, safety, environmental, and operational constraints in the corridor as much as possible. While majority of access zones meet the requirement established in TOP-D 11-02 for the distance from access zones to the nearest off- or on– ramps, those that did not meet this requirement were subject to a safety analysis by Caltrans that took into consideration the operational and geometrics constraints in the corridor. Some access zones were made longer than the minimum 2000-ft opening requirement to provide drivers with additional distances to weave into and out of the express lanes. These access zones will be further evaluated during the design phase for improved safety and operations.

Attachment B shows the proposed access zone locations schematic. Attachment C includes the typical cross sections and pavement delineation plans.

The project would include signage to advise express lane users that enter or exit the facility. Vehicles entering or exiting the facility across designated buffer zones are committing a traffic violation.

The project plans included in this Project Report (Attachment B and C) reflect a controlled access scenario; however access may be adjusted to maintain as much of the existing continuous access striping scheme, where appropriate, during the design phase of the project. The Bay Area Express Lane network plans to include 550 miles of Express Lanes by 2035 and is an open access system (via continuous access striping) except where access is limited via buffer striping or double white solid striping, as necessary, to enhance or preserve operational efficiency and traffic safety. Additional evaluation will take place during the design phase to validate the original assumptions, taking into account the project’s implementation strategy.

The open access system will include more adequate gaps in traffic stream and easier merging and weaving between the express lane and the general purpose lanes for vehicles and transit vehicles, specifically in segments where only one express lane is proposed, or when freeway interchanges are closely spaced. Controlled access will be provided to manage congestion where excessive weaving or conflict is expected with general purpose lanes.

Additional benefits to open access includes:

- Reduced signage clutter
- Better public acceptance
- More drivers’ familiarity

- Eliminates the 2-foot buffer.
- Enhanced maneuverability and easier access specifically during off-peak hours
- Regional express lane consistency

5.2.2 Proposed Typical Section

The proposed median width of US 101 will range from 22 to 76 foot wide with a median barrier in the center between East Dunne Avenue (PM 16.00) to just north of the Blossom Hill Road interchange (PM 29.17), and from 6 to 22 foot wide between just north of the Blossom Hill Road interchange (PM 29.17) and the Santa Clara/San Mateo county line (PM 52.55). The proposed mainline typical section consists of inside shoulders varying in width from 2 to 14 feet, 11-foot to 12-foot wide express lanes, 2 to 4-foot wide striped buffer, 11-foot to 12-foot wide general purpose lanes, and 10-foot wide outside shoulders. Side slopes will typically be 4:1 or flatter with steeper slopes proposed at some locations. The median barrier will consist of a concrete barrier for the majority of the corridor, with short segments of double thrie beam barrier in floodplain locations.

A 2-foot buffer is proposed throughout the project with the exception of one segment of 4-foot buffer from just north of Coyote Creek crossing (in San Jose) to Bailey Avenue where a wide median exists.

In the segment between Cochrane Road in Morgan Hill and SR 85 in San Jose, the project proposes inside widening to accommodate the second express lane. Because of the split profile between northbound and southbound US 101 in this segment, retaining walls are proposed in the median to accommodate the elevation difference between the two profiles. To accommodate wildlife connectivity through Coyote Valley in this segment, the project proposes a series of double thrie-beam barriers and type S and M concrete barrier openings where feasible.

5.2.3 US 101/SR 85 Direct Connector

At the south end of the project in southern San Jose, both the northbound and southbound HOV direct connectors from SR 85 to US 101 will be converted to express lane connectors by the SR 85 Express Lanes Project (EA #04-4A7900), allowing SOVs with valid FasTrak devices to use the direct connectors. It is assumed that the SR 85 Express Lanes Project will be in operation prior to the implementation of the US 101 Express Lanes Project.

At the north end of the project in Mountain View, the US 101 Express Lanes Project will convert the existing HOV connectors to express lane connectors and will connect to the SR 85 Express Lanes Project. The combination of the SR 85 and US 101 Express Lanes projects will provide a complete express lane system on both freeways that includes the direct connectors.

5.2.4 Express Lane Signage

Static and dynamic overhead signs as well as barrier-mounted roadside signs would provide the drivers the necessary information to make decisions. Each access zone would typically have the following signs:

- One overhead static advance information sign placed approximately 1-mile ahead of the access zone to notify drivers of an approaching entry/exit point
- One overhead Dynamic Message Sign (DMS) showing the toll amount to the downstream destination, placed approximately ¼ mile ahead of the access zone
- One local exits roadside sign providing the drivers with advance information of the downstream off-ramp destinations that are served by the upcoming access zone and the distance to the access zone. This sign will be mounted to the overhead DMS pole, approximately ¼ mile ahead of the access zone.
- One overhead express lane entrance static sign placed at the beginning of each access zone with an arrow pointing left
- One local exit roadside sign mounted to the express lane entrance sign pole showing the name of the exit ramps served by this access zone
- One “Fastrak or HOV 2+ Only” overhead static sign placed at the end of each access zone, with one or two arrows pointing down according to the number of express lanes

There are a total of 87 new overhead sign structures and 43 existing overhead sign structures that will be removed and replaced due to widening. Overhead and roadside Express Lane signage will match overhead express lane signage on nearby routes in appearance to maintain visual consistency, including color and shape of the poles and signs.

5.2.5 Horizontal and Vertical Alignment

The alignment of the widened facility will conform to the horizontal and vertical control established for the existing roadway. However, there are several non-standard horizontal and vertical design elements that do not meet the current design standards. These non-standard features are documented in the design exceptions fact sheets that have been prepared for the project and documented in section 5.2.8 of this report.

Ramp modifications are proposed at several on- and off-ramps to conform to the new mainline edge of traveled way. The extent of the ramp improvements vary by location and are described in the below table by the type of work involved.

Table 5.2.5-1: Proposed Modifications to Ramps

Direction	Interchange	Ramp	Type of Work
SB	East Dunne Avenue	Off-Ramp	Restriping
SB	Cochrane Avenue	Off-Ramp	Restriping
NB	Bailey Avenue	On-Ramp	Modification
SB	Bailey Avenue	Off-Ramp	Restriping
NB	Hellyer Avenue	On-Ramp	Modification
SB	Hellyer Avenue	Off-Ramp	Restriping
SB	Yerba Buena Road	On-Ramp	Modification
NB	Yerba Buena Road	Off-Ramp	Modification
NB	Capitol Expressway	Off-Ramp	Modification
SB	Tully Road	Diagonal On-Ramp	Modification
NB	Tully Road	Off-Ramp	Restriping
SB	Tully Road	Loop On-Ramp	Modification
NB	Tully Road	Loop On-Ramp	Modification
NB	Tully Road	Diagonal On-Ramp	Modification
SB	Tully Road	Off-Ramp	Modification
SB	I-280/I-680	On-Ramp	Modification
NB	I-280/I-680	Off-Ramp	Restriping
SB	Story Road	On-Ramp	Modification
NB	Story Road	Off-Ramp	Restriping
SB	Story Road	Off-Ramp	Restriping
NB	Story Road, I-280/I-680	On-Ramp	Modification
SB	I-280/I-680	Off-Ramp	Restriping
NB	I-680	On-Ramp	Modification
SB	Santa Clara Street	On-Ramp	Modification
NB	Alum Rock Avenue	Off-Ramp	Restriping
SB	Julian Street	On-Ramp	Modification
NB	McKee Road	Off-Ramp	Modification
SB	Santa Clara Street	Off-Ramp	Restriping
NB	Alum Rock Avenue	On-Ramp	Modification
SB	Julian Street	Off-Ramp	Restriping
NB	McKee Road	On-Ramp	Restriping
SB	Oakland Road	On-Ramp	Restriping
SB	I-880	Diagonal On-Ramp	Realign
SB	I-880	Loop Off-Ramp	Realign
SB	I-880	Loop On-Ramp	Realign
SB	I-880	Diagonal Off-Ramp	Realign
NB	Old Bayshore Hwy	Off-Ramp	Restriping
NB	Old Bayshore Hwy	On-Ramp	Modification
SB	N 4th Street	On-Ramp	Modification
NB	Brokaw Road	Off-Ramp	Restriping

Direction	Interchange	Ramp	Type of Work
NB	Brokaw Road	On-Ramp	Modification
NB	De La Cruz Blvd	Off-Ramp	Restriping
SB	SR 87	Off-Ramp	Restriping
NB	SR 87	On-Ramp	Restriping
SB	De La Cruz Blvd	Diagonal On-Ramp	Restriping
SB	De La Cruz Blvd	Loop On-Ramp	Modification
NB	Montague Expressway	Off-Ramp	Restriping
SB	Montague Expressway	On-Ramp	Restriping
NB	Montague Expressway	On-Ramp	Restriping
SB	Montague Expressway	Off-Ramp	Restriping
NB	Great America Parkway	Off-Ramp	Restriping
SB	Great America Parkway	Diagonal On-Ramp	Restriping
NB	Great America Parkway	Loop On-Ramp	Modification
SB	Great America Parkway	Loop On-Ramp	Modification
NB	Great America Parkway	Diagonal On-Ramp	Modification
SB	Great America Parkway	Off-Ramp	Modification
NB	Lawrence Expressway	Off-Ramp	Restriping
SB	Lawrence Expressway	Diagonal On-Ramp	Modification
SB	Lawrence Expressway	Loop On-Ramp	Modification
NB	Lawrence Expressway	Loop On-Ramp	Modification
NB	Lawrence Expressway	Diagonal On-Ramp	Modification
SB	Lawrence Expressway	Off-Ramp	Modification
NB	Fair Oaks Avenue	Off-Ramp	Restriping
SB	Fair Oaks Avenue	Diagonal On-Ramp	Restriping
SB	Fair Oaks Avenue	Loop Off-Ramp	Restriping
SB	Fair Oaks Avenue	Loop On-Ramp	Restriping
NB	Fair Oaks Avenue	On-Ramp	Restriping
SB	Fair Oaks Avenue	Diagonal Off-Ramp	Restriping
NB	Mathilda Avenue	Diagonal Off-Ramp	Restriping
SB	Mathilda Avenue	Off-Ramp	Restriping
SB	SR 237	On-Ramp	Restriping
SB	SR 237	Off-Ramp	Restriping
NB	SR 237	Off-Ramp	Restriping
NB	SR 237	On-Ramp	Restriping
NB	Ellis Street	Off-Ramp	Restriping
SB	Ellis Street	On-Ramp	Restriping
SB	Ellis Street	Off-Ramp	Restriping
NB	Ellis Street	On-Ramp	Restriping
SB	Moffett Blvd	Off-Ramp	Restriping

5.2.6 Retaining Walls

New retaining walls are proposed in the median of US 101 where inside widening is proposed and a split profile exists between northbound and southbound US 101. Retaining walls are proposed at overcrossing structures to accommodate additional cross sectional width under the structure. Additionally, existing retaining walls in conflict with the proposed widening will be reconstructed to accommodate the additional space needed for the project improvements. Table 5.2.6-1 below details these retaining wall locations.

Table 5.2.6-1 - Proposed Retaining Wall Locations

Control Line	Station		Location	Wall Height	Length
	From	To		FT	FT
"A"	310+00	315+00	Ctr	6	500
"A"	315+00	338+15	Ctr	10	2315
"A"	340+10	353+70	Ctr	6	1360
"A"	354+50	380+00	Ctr	8	2550
"A"	380+00	390+00	Ctr	6	1000
"A"	415+00	440+00	Ctr	4	2500
"A"	473+75	475+25	Ctr	4	150
"A"	476+75	477+50	Ctr	4	75
"A"	506+25	508+00	Ctr	4	175
"A"	508+00	510+00	Ctr	6	200
"A"	510+00	515+00	Ctr	8	500
"A"	515+00	540+00	Ctr	10	2500
"A"	540+00	542+00	Ctr	8	200
"A"	542+00	543+75	Ctr	6	175
"A"	549+25	551+20	Ctr	4	195
"A"	553+05	562+50	Ctr	4	945
"A"	797+00	804+25	Lt	18	725
"A"	840+15	844+40	Rt	14	425
"YNF"	65+70	67+85	Rt	22	215
"TSN"	77+45	78+65	Lt	8	120
"TNN"	77+50	78+70	Rt	6	120
"A"	1106+50	1106+95	Rt	6	45
"A"	1106+60	1107+05	Lt	6	45
"MKNF"	21+35	23+35	Rt	6	200
"JSN"	22+00	23+00	Lt	8	100
"ARNN"	42+00	43+80	Rt	8	180
"A"	1238+25	1239+90	Lt	8	165
"A"	1239+90	1240+35	Lt	8	45

Control Line	Station		Location	Wall Height	Length
	From	To		FT	FT
"A"	1240+35	1241+80	Lt	8	145
"A"	1244+50	1245+50	Lt	8	100
"A"	1245+50	1246+35	Lt	14	85
NB I-880 to SB US 101				10	635
SB US 101 to SB I-880				12	905
"BKNN"	24+75	29+05	Rt	6	430
"A"	1329+25	1335+35	Rt	6	610
"A"	1340+00	1341+05	Lt	6	105
"A"	1341+05	1341+75	Lt	6	70
"A"	1358+80	1374+10	Lt	5	1530
"A"	1490+40	1491+75	Lt	6	135
"A"	1490+45	1491+80	Rt	6	135
"LSN-L"	49+25	50+65	Lt	10	140
"LNN-L"	49+85	51+25	Rt	10	140

Architectural treatment will be added to the retaining walls where wall faces are in view from public to reduce visual impacts and enhance the corridor aesthetic quality.

5.2.7 Access Control Requirements

The project would not displace or relocate any residents, change any existing community boundaries, physically divide an established community, or create a new barrier to movement within the project corridor. Therefore, access to and from the project corridor and nearby streets would not change as a result of this project.

5.2.8 Non-Standard Design Features

The proposed project meets the Caltrans mandatory and advisory design standards outlined in the Caltrans HDM for freeway facilities on US 101, with the exceptions listed below:

Mandatory Design Exceptions

- Standard stopping sight distance on horizontal curves is not provided at 9 locations along the mainline and at 19 locations on affected ramps along US 101. Standard stopping sight distance on vertical curves is not provided at 9 locations along the mainline US 101. The proposed project is maintaining the existing sight distances along the corridor from East Dunne Avenue in Morgan Hill to Oregon Expressway in Palo Alto. Along the mainline, proposed non-standard stopping sight distances range

from 461 to 637 feet, providing design speeds no lower than 52 miles-per-hour (mph). Proposed stopping sight distances on affected ramps range from 125 to 652 feet.

- Standard shoulder width and horizontal clearances are not provided within some segments of the corridor. Existing non-standard inside and outside shoulder widths and horizontal clearance will remain along the corridor. Proposed new non-standard inside and outside shoulder widths and horizontal clearances are proposed at locations constrained by right-of-way limits, overcrossings, underpasses, or at other features that would require extensive construction costs, acquisition of right of way, and impacts to the adjacent natural environment to allow standard shoulder widths and horizontal clearances.
- Standard median width is not provided within some segments of the corridor. Proposed median widths range from 6 to 22 feet (compared to the standard 22 feet median width per the mandatory standard) along US 101 within the project limits. Proposed new non-standard median widths are proposed at locations constrained by right-of-way limits, overcrossings, underpasses, or at other features that would require extensive construction costs to allow standard median widths.
- Standard traveled way width is not provided in the express lanes and at various locations through the corridor in the general purpose lanes. Proposed non-standard traveled way widths in the general purpose lanes are proposed at locations constrained by right-of-way limits, overcrossing, underpasses, or at other features that would require extensive construction costs to allow standard traveled way widths.
- Standard weaving lengths and interchange spacing are not provided at 27 and 17 locations, respectively, along US 101 between various existing ramps and interchanges. The proposed project is maintaining the existing weaving lengths along the corridor.
- Standard deceleration length is not provided at some exit ramps being affected by the proposed project along US 101. The proposed project is maintaining the existing deceleration lengths at the affected ramps along the corridor.
- Standard horizontal curve radius is not provided at 19 locations on various entrance and exit ramps being affected by the proposed project along US 101. The proposed project is maintaining the existing horizontal curve radii. The proposed non-standard radii range from 38 to 500 feet.
- Standard grade is not provided at 2 locations along the mainline of US 101. The proposed project is maintaining the existing grades along the corridor. The proposed non-standard grades range from 3.198% to 3.219% (compared to the standard maximum grade of 3% for freeways and expressways along flat terrain).
- Standard vertical clearance is not provided at 20 locations along the mainline of US 101. The proposed project is maintaining the existing vertical clearances along the corridor. The proposed non-standard vertical clearances range from 14.95 to 18.22 feet.

Advisory Design Exceptions

- Standard median width is not provided within some segments of the corridor. Proposed median widths range from 22 to 36 feet (compared to the standard 36 feet median width per the advisory standard) along US 101 within the project limits. Proposed new non-standard median widths are proposed at locations constrained by right-of-way limits, overcrossings, underpasses, or at other features that would require extensive construction costs to allow standard median widths.
- Standard decision sight distance is not provided at 1 lane drop location along US 101 and at 24 exit ramp locations along US 101. The proposed project is maintaining the existing decision sight distance along the corridor. The decision sight distance at the lane drop location is 640 feet. The decision sight distance ranges from 240 to 1050 feet.
- Standard undecked bridge median width is not provided at 2 locations along US 101. The proposed project is not decking over the median at the 2 locations due to environmental and structural constraints.
- Standard outer separation is not provided at 12 locations along US 101. The proposed non-standard outer separation widths range from 12 to 24 feet at various locations between the mainline and frontage roads. Proposed new non-standard outer separation widths are proposed at locations constrained by right-of-way limits.
- Standard distance between successive on-ramps is not provided at 4 locations along US 101. The proposed project is maintaining the existing distance between successive on-ramps along the corridor. The distance between successive on-ramps at non-standard locations ranges from 541 to 954 feet.
- Standard distance between successive off-ramps is not provided at 3 locations along US 101. The proposed project is maintaining the existing distance between successive off-ramps along the corridor. The distance between successive off-ramps at non-standard locations ranges from 921 to 957 feet.
- Standard auxiliary lane use for weaving lengths less than 2,000 feet is not provided at 4 locations along US 101. The proposed project is maintaining the existing lack of auxiliary lane and weaving length less than 2,000 feet at the non-standard locations. The weaving lengths at locations without an auxiliary lane range from 1275 to 1966 feet.
- Standard auxiliary lane length at a merging branch connection is not provided at 1 location along US 101. The proposed project is maintaining the existing auxiliary lane length of 1,386 feet, compared to the standard length of 2,500 feet.
- Standard auxiliary lane length at a diverging branch connection is not provided at 3 locations along US 101. The proposed project is maintaining the existing auxiliary lane lengths, which range from 1,870 to 2,417 feet, compared to the standard length of 2,500 feet.

- Standard clear recovery zone width is not provided at 5 locations along US 101. Proposed new non-standard clear recovery zone widths are proposed at locations constrained by right-of-way limits, overcrossings, underpasses, or at other features that would require extensive construction costs to allow standard clear recovery zone widths.
- Standard departure angle is not provided at 21 off-ramps located along US 101. Ramp alignments with proposed non-standard departure angles match the existing ramp alignments.
- Standard entrance ramp geometry is not provided at 25 on-ramps located along US 101. Ramp alignments with proposed non-standard entrance geometry match the existing ramp alignments.
- Standard ramp lane drop transition rate is not provided at 12 metered on-ramps located along US 101. The proposed project is maintaining the existing ramp transition rate at the affected ramps with non-standard transition rates. These rates range from 15:1 to 29:1.
- Standard compound curve alignment is not provided at 9 ramp locations along US 101. Ramp alignments with proposed non-standard compound curves match the existing ramp alignments.
- Standard grade is not provided at various locations along US 101. The proposed project is maintaining the existing grade along US 101 within the project limits. The non-standard grades range from 0.018 % to 0.275 % compared to the standard minimum grade of 0.3 %.
- Standard vertical curve length is not provided at various locations along US 101. The proposed project is maintaining the existing vertical curve lengths along US 101 within the project limits. The non-standard curve lengths range from 100 to 650 feet compared to the minimum vertical curve length of 200 to 700 feet.

Coordination Efforts

A kickoff meeting was held on June 7, 2012 with Caltrans District 4 and Headquarters Design to discuss the proposed geometry. Their initial comments were incorporated into the project design, PSR-PDS, and Mandatory/Advisory Fact Sheets. The Draft Mandatory Fact Sheet was submitted to Caltrans Headquarters Design for review on March 8, 2012 and December 3, 2012. The Draft Advisory Fact Sheet was submitted to Caltrans Headquarters Design and District 4 Design South for review on December 11, 2012.

Several focus meetings were held to discuss the geometry at the challenging areas of the project typically where physical, right of way, and environmental constraints exist. A meeting was held on August 1, 2012 to discuss the widening of 10 creek bridges within the project limits. A follow-up meeting was held on August 30, 2012 where consensus was reached with Caltrans that 3 of the 10 creek bridges will be widened as part of a future

project. A copy of the commitment letter documenting the project's approach to the future creek bridge widening project and Caltrans concurrence can be found in Attachment L.

A meeting was held on August 8, 2012 to discuss the Traffic Safety challenges at the I-880 interchange. The project evaluated a collector-distributor ramp along southbound US 101 which would separate the weaving movements from the I-880/US 101 interchange from the mainline. A follow-up meeting was held on August 30, 2012 where consensus was reached with Caltrans that the collector-distributor ramp would worsen the existing weaving conditions and would not be incorporated. Comments from this meeting have been incorporated into the project geometry.

A meeting was held on September 12, 2012 to discuss the constraints at the Agnew UPRR and Lafayette Street overcrossing structures. The existing Lafayette Street and Agnew UPRR bridge spans constrain the available width on northbound and southbound US 101, which required shoulder and lane width reductions to add the second Express Lane. Replacing the two bridges would require raising the profile of the railroad line which would trigger the reconstruction of the adjacent at-grade intersections up and downstream of the highway crossing.

A workshop was held on March 13, 2013 to discuss the proposed non-standard features. The review comments from this meeting have been incorporated into the project geometry and Mandatory/Advisory Fact Sheets. Written comments on the Mandatory and Advisory Fact Sheets from Caltrans District 4 and Headquarters Design were received on May 8th, 2013. A meeting was held on September 26th, 2013 to discuss the responses to the comments on the Advisory and Mandatory Fact Sheets for this project, and input was incorporated into the Mandatory/Advisory Fact Sheets.

Collision Analysis

A collision analysis was conducted by Caltrans and recommendations were provided on March 26, 2014. The following mitigation measures were recommended for the project:

- As a result of the expected increase in weaving volumes this project will create and the closely spaced interchanges between PM 26.47 (Coyote Creek Bridge) and PM 52.55 (the northern project terminus), "enhanced" pavement delineation comprised of "extra-reflective"[4] material will be used for the striping within these limits.
- Where the inside shoulder will be 2 feet or less in width, place "Ultraguard"[5] stripe on the median barrier.

[4] "Extra reflective" materials - are high-performance glass beads applied on thermoplastic traffic stripes and pavement markings to enhance the visibility of traffic striping.
[5] The ULTRA Guard Safety System is a unique low-cost delineation alternative to mounted reflectors. This conspicuous system is applied directly on to guard rails and barriers giving drivers a continuous retro-reflective guide to changes in road direction or narrow shoulders.

- Where the inside shoulder is less than 8 feet in width, place reflective markers on top of the median barrier.
- Between PM 32.6 (NB off-ramp to Tully Road) and PM 39.4 (Brokaw Road Undercrossing), install median lighting between PM 39.4 (NB on-ramp from N 1st Street) and PM 39.8 (end of access opening).

These recommendations have been included in the project scope and added in the cost estimate (Attachment D) under Section 8 Contingencies.

Approvals

The review comments from all of the focus meetings have been incorporated into the project geometry and this report. The project improvements were also reviewed by Caltrans District 4 Design South, Santa Clara prior to submittal to Caltrans headquarters. The Final Fact Sheet for Mandatory Design Exceptions was submitted to Caltrans on September 29, 2014 and approved on November 12, 2014. The Final Fact Sheet for Advisory Design Exceptions was submitted to Caltrans on September 29, 2014 and approved on November 14, 2014.

TOPD Requirement Exceptions

A list of locations where the access openings do not meet the minimum standard distance from the on/off ramps, based on Traffic Operation Policy Directive (TOPD #11-02) requirements are shown in Table 5.2.8-1:

Table 5.2.8-1 – Non-Standard Distance to Access Opening

Location	Direction	Standard Distance (ft)	Non-Standard Distance (ft)
North First St loop on-ramp	NB	3200	2100
East Brokaw Rd on-ramp	NB	3200	275
Great America Pkwy loop on-ramp	SB	3200	205
Great America Pkwy on-ramp	NB	3200	2900
North Fair Oaks Ave on-ramp	NB	3200	480

The distance from northbound North First Street loop on-ramp to the end of the access zone is 2,100 feet, which is non-standard, in order to satisfy the standard weaving distance for HOV/Express Lane drivers getting out of the access opening to take the De La Cruz Boulevard exit. Northbound Great America Parkway on-ramp has a non-standard distance of 2,900 feet to the end of the access opening in order to satisfy the standard weaving distance for HOV/Express Lane drivers getting out of the access opening to take the Lawrence Expressway exit.

The three access openings that are less than 500 feet from the on-ramps shown in the table above are not for drivers coming in from those on-ramps because the distance to the egress is less than the distance per lane change, which is 800 feet based on TOPD requirement. Drivers coming on to the freeway from East Brokaw Road on-ramp, Great America Parkway loop on-ramp, and North Fair Oaks Avenue on-ramp will take the next access opening if they wish to drive on the HOV/Express Lane. Shifting the access opening up or downstream would create non-standard weaving distance at other ramps. Lengthening the access openings had an adverse effect on operations when modeled, as well as creating additional less-than-required weaving distances per TOPD requirement at other ramps.

These features were discussed with Caltrans Traffic Operations on July 16, 2014 and will be further refined during the design phase. Changes to be considered during design phase will include ancillary traffic control devices, including signage and striping, to guide motorists to designated access zones, conversion to open access Express Lanes, or combination of traffic control devices and open access design.

5.2.9 Express Lane Operations

Express lane operations would be tightly integrated with the monitoring of traffic speed and density, enforcement, incident management, and other subsystems to maintain free-flow conditions during peak periods which are defined as 6:00 AM to 10:00 AM and 3:00 PM to 7:00 PM. Static overhead signs would be installed to advise qualified HOV and SOV users as they approach an express lane entrance point. An overhead DMS located just before each entrance point would display the current toll rates. The DMS would display the price to a minimum of two downstream destinations, one being the next exit from the express lanes facility. The toll amounts displayed can be a combination of the next downstream off-ramps served by the exit, the downstream major system freeway interchange, and/or the final destination at the end of the facility.

The toll rates on the DMS would be updated every 3 to 6 minutes to reflect changing speed and traffic density measured at intervals along the express lanes. The toll rate displayed when a user enters the facility would be “locked” for that user for travel to any destination that is either explicit or implicit within the displayed destinations.

After entering the facility, all users would pass through a tolling zone. In each zone, an antenna mounted on an overhead structure would enable communication with FasTrak transponders mounted in the vehicles and a transaction indicator beacon to convey user type (paying user or non-paying user, which can be an eligible HOV or a violating SOV).

Prospective SOV users would be able to apply for a transponder through BATA’s Regional Customer Service Center (RCSC), FasTrak website, a partnering retail outlet, or a toll agency and, if approved, immediately receive a transponder. FasTrak accounts are maintained and managed at the RCSC by BATA’s service provider.

5.2.10 SOV Transaction Processing

To use the express lanes as an SOV, the user would need to mount a FasTrak transponder to the vehicle windshield. Upon entering the express lanes and then after passing underneath the tolling antennas, transaction records would be sent in near–real time from each toll zone controller to the Central Processing System (CPS) for processing and configuring trips in a specified format for communicating with the RCSC.

5.2.11 HOV Transaction Processing

All existing eligible HOVs would continue to be exempt from paying a toll in the US 101 express lanes. Eligible HOVs consist of:

- Passenger vehicles with two or more occupants,
- Transit or para-transit vehicles with no axle count limitation,
- Motorcycles, and
- Inherently Low Emission Vehicles (ILEVs) with a Department of Motor Vehicles (DMV)-issued white decal.

HOVs do not require a transponder to use the express lanes. Vehicles without a transponder would trigger an indicator light on the highway. CHP officers would monitor the indicator light and observe from a distance whether the identified vehicle is a qualified HOV.

5.2.12 Violation Processing

When the monitored "tag status" for a vehicle in the express lanes is invalid, the electronic monitoring information is processed to determine if a violation has occurred.

5.2.13 California Highway Patrol Enforcement Areas

Adequate enforcement of the express lanes system is a fundamental element for the system's success and needs to be considered during all phases of development. The design team has developed preliminary CHP enforcement locations where the horizontal and vertical geometry allow. The enforcement observation point locations, construction details, the enforcement vehicle to be used at each location, and the number and position of beacon lights that will be used to assist CHP officer in identifying potential violating vehicles have been discussed with CHP. The locations of these proposed CHP enforcement areas and the typical enforcement cross-sections are shown in Attachment C. Where possible, these enforcement zones are located on tangent sections and an adequate sight distance is provided. The geometric design of these enforcement zones and any associated design exceptions have been developed and discussed with Caltrans and the CHP.

Where it is physically feasible, CHP observation points are proposed downstream of the access points (tolling zone) and at intermediate locations between access points (tolling zones) where additional enforcement gantries would be provided. Typical observation points

would include the provision of offset barrier to protect the CHP officer and vehicle from oncoming traffic and would be positioned downstream of the tolling gantry. A beacon light mounted on the barrier will identify vehicles without a FasTrak transponder and helping identify potential violators. The CHP officer then will visually verify the occupancy in the suspect vehicle and determine whether it is a SOV in violation or a legitimate HOV. The officer will then pursue the violator or, if two officers operating in tandem, will radio the second officer downstream to pursue them, and direct them to a safe stopping place. The violating SOVs will be pulled over to the right shoulder and cited for the appropriate violation of the vehicle code.

Until technology advancement allows for fully automated enforcement and occupancy verification, it is proposed that the US 101 express lane facility be enforced manually by the CHP by visual observation of the occupancy level and the indicator lights on the gantries/barriers.

In addition, a Portable Reader - a handheld device designed to read a transponder ID number from SOVs and for verification by patrolling CHP officers will be considered for effective express lane enforcement. The Portable Reader enables a CHP officer to determine if there is a match with the stored tag status list. Subject to Title 21 limitations, the portable reader can also allow CHP officers to determine the date, time, and location code of the last time the transponder was read at a tolling zone.

5.2.14 Transportation Systems Management (TSM) and Transportation Demand Management (TDM) Alternatives

Transportation Systems Management (TSM) strategies increase the efficiency of existing facilities by accommodating a greater number of vehicle trips on a facility. Transportation Demand Management (TDM) focuses on regional means of reducing the number of vehicle trips and vehicle miles traveled (VMT) as well as increasing vehicle occupancy. TDM encourages transit use and ridesharing, which the proposed project would continue to facilitate. The project would increase the efficiency of the existing US 101 facility by allowing for more vehicles to travel within this corridor while minimizing expansion of the freeway.

5.2.15 Traffic Operations Analysis

A Traffic Operation Analysis Report (TOAR) was prepared for the project and was approved by Caltrans on July 10, 2014. The operating conditions were analyzed using the VISSIM micro-simulation tool with assumptions regarding how dynamic pricing implemented during the AM and PM peak periods would influence demand for the study years.

The traffic study area consists of the US 101 mainline, including on- and off-ramps and adjacent segments of SR 85 where it intersects US 101 in Mountain View. The project corridor has been divided into four study segments in each direction, which represent major system interchanges within the corridor. The four study segments in each direction are listed

below, along with a numeric designation that will be used throughout the tables in this section.

Segment	Northbound Segments
1	Dunne Avenue to Bernal Road (PM 16.01 to 26.78)
2	Bernal Road to I-880 (PM 26.78 to 38.30)
3	I-880 to SR 237 (PM 38.30 to 46.13)
4	SR 237 to Oregon Expressway/ Embarcadero Road (PM 46.13 to 52.17)

Segment	Southbound Segments
5	Oregon Expressway/ Embarcadero Road to SR 237 (PM 52.17 to 46.13)
6	SR 237 to McKee Road (PM 46.13 to 36.14)
7	McKee Road to SR 85 (San Jose) (PM 36.14 to 26.78)
8	SR 85 (San Jose) to Dunne Avenue (PM 26.78 to 16.01)

The traffic study analyzed peak period conditions, defined as 6 AM to 10 AM (AM peak) and 3 PM to 7 PM (PM peak), and peak hour conditions within the peak periods (7 AM to 8 AM and 5 PM to 6 PM). The primary travel direction is northbound in the AM peak and southbound in the PM peak.

The traffic forecast and operational analysis was conducted for existing conditions, a project opening year of 2015, and a horizon year of 2035. The traffic analysis studied future conditions both with (Build) and without (No Build) the proposed project. This comparison shows a complete picture of the future transportation environment that accounts for traffic from planned future development in the approved general plans of the cities in Santa Clara County. This comparison also accounts for planned growth in the region, as well as planned improvements to the transportation network. Unacceptable level of service is considered as LOS E or worse in the HOV/express lanes and LOS F for general purpose lanes.

For the traffic operations analysis, the existing condition is used to document known operational deficiencies and to serve as the baseline for traffic demand forecasting and simulation modeling. Year 2010 was established as the existing condition for this study, the most recent year for which data were available when the traffic studies began in 2011, supplemented with spot-check location counts conducted in 2011 to fine tune and validate the base year traffic model.

5.2.16 Existing Conditions

The LOS ratings for both the general purpose and HOV lanes for existing conditions on northbound US 101 are shown in Tables 5.2.16-1. During the AM peak, the northbound general purpose lanes at the Tully Road, McKee Road to I-880, De La Cruz Boulevard, and between Ellis Street and Rengstorff Avenue interchanges operate at an unacceptable level of service. High demands also occur in the existing HOV lanes at the Tully Road, McKee

Road, De La Cruz Boulevard, and Shoreline Boulevard bottlenecks, resulting in these lanes also functioning below an acceptable speed which, in turn, diminishes the incentive for drivers to carpool.

Table 5.2.16-1: Peak Hour Travel Conditions, Existing Conditions, Northbound AM

Segment	General Purpose	HOV
Segment No. 1 - Dunne Avenue to Bernal Road (PM 16.01 to 26.78)		
Dunne Off - Dunne NB On	C	-
Dunne NB On - Dunne SB On	D	-
Dunne SB On - Cochrane Off	D	-
Cochrane Off - Cochrane NB On/HOV Lane Start	D	-
Cochrane NB On/HOV Lane Start - Cochrane SB On	D	-
Cochrane SB On - Coyote Creek Off	D	-
Coyote Creek Off - Coyote Creek On	D	-
Coyote Creek On - Bailey Off	D	-
Bailey Off - Bailey On	D	C
Bailey on - SR 85 HOV Connector Off	D	C
SR85 HOV Connector Off - SR 85 GP Connector Off	D	B
SR 85 GP Connector Off - Bernal Off	C	B
Segment No. 2 - Bernal Road to I-880 (PM 26.78 to 38.30)		
Bernal Off - Bernal NB On	C	B
Bernal NB On - Bernal SB On	B	B
Bernal SB On - Coyote Off	C	B
Coyote Off - Blossom Hill EB On	C	B
Blossom Hill EB On - Blossom Hill WB On	D	B
Blossom Hill WB On - Hellyer off	D	B
Hellyer Off - Hellyer On	D	C
Hellyer On - Yerba Buena Off	E	C
Yerba Buena Off - Capitol Off	D	C
E Capitol Expy Off - E Capitol Expy On	D	B
E Capitol Expy On - Tully Rd Off	F	C
Tully Rd Off - Tully Rd NB On	F	C
Tully NB Loop On - Tully NB Diagonal On	F	C
Tully NB Diagonal On - I-280/I-680 Off	C	C
I-280/I-680 Off - Story Off	C	C
Story Rd Off - Story Rd On/I-280/I-680 NB On	C	B
Story On - I-280/I-680 SB On	D	B
I-280/I-680 SB On - Santa Clara Off	D	C
Santa Clara Off - McKee off	F	C
McKee Off - Santa Clara on	F	E
Santa Clara On - McKee On	F	D
McKee On - Oakland Off	F	D
Oakland Off - Oakland On	E	C
Oakland On - I-880 NB Off	E	C
Segment No. 3 - I-880 to SR 237 (PM 38.30 to 46.13)		
I-880 NB Off - I-880 NB On	C	C

Segment	General Purpose	HOV
I-880 NB On - I-880 SB Off	C	C
I-880 SB Off - Bayshore Off	C	C
Bayshore Off - Bayshore On	D	C
Bayshore On - Brokaw Off	E	C
Brokaw off - N 1st St On	D	C
N 1st St On - Brokaw On/Access End	D	C
Brokaw On - De La Cruz Off	D	C
De La Cruz Off - SR 87/Guadalupe On	F	C
SR 87/Guadalupe On - De La Cruz NB On	F	D
De La Cruz NB On - De La Cruz SB On	F	E
De La Cruz SB On - Montague Off	F	E
Montague Off - Montague On	D	C
Montague On - Great America Off	E	C
Great America Off - Great America NB On	D	C
Great America NB On - Great America SB On	D	C
Great America SB On - Lawrence Off	E	C
Lawrence Off - Lawrence NB On	D	B
Lawrence NB On - Lawrence SB On	E	B
Lawrence SB On - Fair Oaks Off	E	C
Fair Oaks Off - Fair Oaks On	D	B
Fair Oaks On - Mathilda NB Off	E	C
Mathilda NB Off - Mathilda NB On	E	B
Mathilda NB On - Mathilda SB Off	F	B
Mathilda SB Off - SR 237 Off	D	B
Segment No. 4 – SR 237 to Oregon Expressway/Embarcadero Road (PM 46.13 to 52.17)		
SR 237 Off - SR 237 On	D	B
SR 237 On - Ellis Off	D	B
Ellis St Off - Ellis St On	E	B
Ellis On - Moffett Off	F	C
Moffett Off - Moffett On	F	C
Moffett On - Shoreline Off	F	B
Shoreline Off - SR 85 On	F	B
SR 85 On - SR 85 HOV Connector On	F	B
SR 85 HOV Connector On - Middlefield Off	F	B
Middlefield Off - Shoreline On	F	D
Shoreline On - Rengstorff NB Off	F	D
Rengstorff NB Off - Rengstorff SB Off	E	C
Rengstorff SB Off - Rengstorff On	E	C
Lane drop - San Antonio Off	E	B
San Antonio Off - San Antonio NB On	D	B
San Antonio Rd NB On - San Antonio Rd SB On	D	B
San Antonio Rd SB On - Oregon/Embarcadero Off	E	B
Oregon/Embarcadero Off - Oregon/Embarcadero On	D	B
North of Oregon/Embarcadero	D	B

Notes: EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

The LOS ratings for both the general purpose and HOV lanes for existing conditions on southbound US 101 are shown in Tables 5.2.16-2. During the PM peak, the southbound general purpose lanes between Oregon Expressway/Embarcadero Road to Old Middlefield Way, at De La Cruz Boulevard, between I-880 to McKee Road, and between I-280/I-680 to Capitol Expressway interchanges operate at an unacceptable level of service. High demands also occur in the existing HOV lanes at the Rengstorff Avenue, De La Cruz Boulevard, Old Oakland Road, and Tully Road bottlenecks, resulting in these lanes also functioning below an acceptable speed which, in turn, diminishes the incentive for drivers to carpool.

Table 5.2.16-2: Peak Hour Travel Conditions, Existing Conditions, Southbound PM

Segment	General Purpose	HOV
Segment No. 5 - Oregon Expressway/Embarcadero Road to SR 237 (PM 52.17 to 46.13)		
On from University - Off to Oregon/Embarcadero	F	D
Off to Oregon/Embarcadero - On from Oregon/Embarcadero	F	D
On from Oregon/Embarcadero - Off to San Antonio	F	D
Off to SB San Antonio - Off to NB San Antonio	F	D
Off to NB San Antonio - On from Charleston	F	D
On from Charleston - Off to Rengstorff	F	E
Off to Rengstorff - On from N.Rengstorff	F	E
On from N.Rengstorff - On from Middlefield	F	D
On from Middlefield - Off to SB Shoreline	E	C
Off to SB Shoreline - Off to HOV Connector US101 SB To SR85 SB	D	B
Off to HOV Connector US101 SB To SR85 SB - Off to SB SR85	C	B
Off to SB SR85 - On from Shoreline	C	B
On from NB Shoreline (Diagonal) - Off to EB Moffett	C	A
Off to EB Moffett - On from EB Moffett	D	A
On from EB Moffett - Off to Ellis/Access Start	D	B
Off to Ellis - On from Ellis	D	B
On from Ellis/Access End - Off to EB SR237	D	B
Segment No. 6 - SR 237 to McKee Road (PM 46.13 to 36.14)		
Off to EB SR237 - On from EB SR237	C	B
On from EB SR237 - Off to SB Mathilda	C	B
Off to SB Mathilda - On from SB Mathilda (Loop)	C	B
On from SB Mathilda (Loop) - On from NB Mathilda (Diagonal)	C	B
On from NB Mathilda (Diagonal) - Off to SB Fair Oaks (Diagonal)	D	B
Off to SB Fair Oaks (Diagonal)/Access End - On from SB Fair Oaks (Loop)	D	C
On from SB Fair Oaks (Loop) - Off to NB Fair Oaks (Loop)	D	C
Off to NB Fair Oaks (Loop) - On from NB Fair Oaks (Diagonal)	D	C
On from NB Fair Oaks (Diagonal) - Off to SB Lawrence Expwy	D	C
Off to SB Lawrence Expwy - On from SB Lawr. Expwy (Loop)	C	B
On from SB Lawr. Expwy (Loop) - On from NB Lawr. Expwy (Diagonal)	C	B
On from NB Lawr. Expwy (Diagonal) - Off to Great	D	C

Segment	General Purpose	HOV
America/Bowers		
Off to Great America/Bowers- On from SB Great America/Bowers (Loop)	E	C
On from SB Great America/Bowers (Loop) - On from NB Great America/Bowers (Diagonal)	F	C
On from NB Great America/Bowers (Diagonal) - Off to San Tomas N\S/Mont. Expwy	F	D
Off to San Tomas N\S/Mont. Expwy - On from San Tomas N/S/Mont. Expwy	F	D
On from San Tomas N/S/Mont. Expwy (Diagonal) - Off to De La Cruz /Trimble	F	F
Off to De La Cruz/Trimble - On from De La Cruz/Trimble (Loop)	F	F
On from De La Cruz/Trimble (Loop) - Off to De La Cruz /Trimble (Loop)	F	E
Off to De La Cruz/Trimble (Loop) - On from De La Cruz/Trimble (Diagonal)	F	E
On from De La Cruz/Trimble (Diagonal) - Off to Guadalupe\SR87	F	D
Off to Guadalupe\SR87 - Off to 1st\Brokaw	C	C
Off to 1st\Brokaw - On from Bayshore	C	C
On from Bayshore - Off to SB I-880	D	C
Off to SB I-880 - On from SB I-880 (Loop)	E	D
On from SB I-880 (Loop) - Off to NB I-880	F	E
Off to NB I-880 - On from NB I-880 (Diagonal)	F	E
On from NB I-880 (Diagonal) - Off to N.13th St/Oakland	E	F
Off to N.13th St/Oakland - On from N.13th St/Oakland	F	E
On from N. 13th St/Oakland - Off to McKee	F	D
Segment No. 7 - McKee Road to SR 85 (San Jose) (PM 36.14 to 26.78)		
Off to McKee\Julian - Off to SR130\Alum Rock\Santa Clara	D	C
Off to SR130\Alum Rock\Santa Clara - On from Julian\McKee	D	C
On from Julian\McKee - On from SR130\Santa Clara	D	B
On from SR130\Santa Clara - Off to I-280\680	D	B
Off to I-280\680 - Off to Story	D	B
Off to Story - On from Story	F	D
On from EB Story - On from I-280/680	F	E
On from I-280/680 - Off to Tully	F	D
Off to Tully - On from Tully	F	E
On from Tully - Off to Capitol Expwy	E	C
Off to Capitol Expwy - On from Capitol Expwy	C	B
On from Capitol Expwy - On from Yerba Buena	C	B
On from Yerba Buena - Off to Hellyer	D	B
Off to Hellyer - On from Hellyer	C	A
On from Hellyer -Off to Blossom Hill	C	A
Off to SR82/Blossom Hill - On from NB SR82 (WB)/Blossom (Loop)	B	A
On from NB SR82 (WB)/Blossom (Loop) - On from SB SR82 (EB)/Blossom (Diagonal)	B	A
On from SB SR82 (EB)/Blossom (Diagonal) - Off to NB SR85	B	A
Segment No. 8 - SR 85 (San Jose) to Dunne Avenue (PM 26.78 to 16.01)		

Segment	General Purpose	HOV
Off to NB SR85 - Off to Bernal	B	A
Off to Bernal - On from SB SR85/Bernal	B	A
On from SB SR85/Bernal - On from HOV Direct Connector SB101	B	A
On from HOV Direct Connector SB101 - Off to Bailey	C	B
Off to Bailey - On from Bailey	C	B
On from Bailey - Off to Coyote Creek	C	B
Off to Coyote Creek - On from Coyote Creek	C	B
On from Coyote Creek - End of SB HOV lanes	C	B
End of SB HOV lanes - Cochrane Rd Off	D	-
Off to Cochrane - On from WB Cochrane (loop)	D	-
On from WB Cochrane (Loop) - On from EB Cochrane (Diagonal)	D	-
On from EB Cochrane (Diagonal) - EL End	D	-
Off to E. Dunne - On from E.Dunne	C	-
On from E.Dunne - Off to Tennant	D	-

Notes: EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

The existing peak hour travel times are summarized in table 5.2.16-3 below and are based on the VISSIM model results. HOV lane travel times through the project corridor are 12.6 minutes less than the general purpose lanes in the northbound direction in the AM peak hour and 21.3 minutes less in the southbound direction in the PM peak hour. Average travel times for each HOV lane segment group are close to the average "free-flow" times, defined as the number of minutes required to travel through the segment group at the posted speed limit of 65 mph.

Table 5.2.16-3: Peak Hour Travel Times in Minutes, Existing Conditions

Lane Type	Segment Group	Free Flow	Existing
AM Northbound			
General Purpose	1. Dunne Avenue On to Bernal Road On	10.1	11.4
	2. Bernal Road On to I-880	10.6	14.9
	3. I-880 to SR 237 On	7.3	10.5
	4. SR 237 On to Embarcadero Road On	5.4	8.7
	Total	*33.4*	*45.5*
HOV	1. Cochrane NB On/HOV Lane Start to Bernal Road On	8.4	8.2
	2. Bernal Road On to I-880	10.6	11.0
	3. I-880 to SR 237 On	7.3	7.9
	4. SR 237 On to Embarcadero Road On	5.4	5.8
	Total	*31.7*	*32.9*
AM Southbound			
General Purpose	5. Oregon Expressway/ Embarcadero Road On to SR 237	5.3	5.9
	6. SR 237 to McKee Road Off	8.9	9.4

Lane Type	Segment Group	Free Flow	Existing
	7. McKee Road Off to SR 85 (San Jose)	9.2	9.6
	8. SR 85 (San Jose) to Dunne Avenue Off	9.5	9.9
	Total	*32.9*	*34.8*
HOV	5. San Antonio Off to SR 237	3.9	3.8
	6. SR 237 to McKee Road Off	8.9	8.3
	7. McKee Road Off to SR 85 (San Jose)	9.2	8.5
	8. SR 85 (San Jose) to End HOV Lane	7.3	6.8
	Total	*29.3*	*27.4*
PM Northbound			
General Purpose	1. Dunne Avenue On to Bernal Road On	10.1	10.6
	2. Bernal Road On to I-880	10.6	11.4
	3. I-880 to SR 237 On	7.3	7.9
	4. SR 237 On to Embarcadero Road On	5.4	17.6
	Total	*33.4*	*47.5*
HOV	1. Cochrane NB On/HOV Lane Start to Bernal Road On	8.4	7.8
	2. Bernal Road On to I-880	10.6	9.8
	3. I-880 to SR 237 On	7.3	6.8
	4. SR 237 On to Embarcadero Road On	5.4	8.3
	Total	*31.7*	*32.7*
PM Southbound			
General Purpose	5. Oregon Expressway/ Embarcadero Road On to SR 237	5.3	10.0
	6. SR 237 to McKee Road Off	8.9	17.9
	7. McKee Road Off to SR 85 (San Jose)	9.2	15.9
	8. SR 85 (San Jose) to Dunne Avenue Off	9.5	10.3
	Total	*32.9*	*54.1*
HOV	5. San Antonio Off to SR 237	3.9	4.5
	6. SR 237 to McKee Road Off	8.9	11.4
	7. McKee Road Off to SR 85 (San Jose)	9.2	10.1
	8. SR 85 (San Jose) to End HOV Lane	7.3	6.8
	Total	*29.3*	*32.8*

Notes:
1. Travel times derived from Existing Conditions VISSIM models.
2. General purpose lanes travel time based on average travel time for all GP-lane "through" trips (i.e. those traveling entire segment).
3. HOV lane travel time based on sum of travel times for individual links within segment.
   HOV = high-occupancy vehicle

5.2.17 Opening Year (2015) Operational Analysis

This section summarizes the Opening Year (2015) traffic operating conditions for the US 101 Express Lanes Project for both the Build and No Build Alternatives from the Traffic Operation Analysis Report. The 2015 horizon year traffic operation analysis shows the following improvement in operations:

Northbound AM Peak Period:

- 55% reduction in total hours of delay
- 58% reduction in average delay
- 53% increase in average speed

Southbound PM Peak Period:

- 6% reduction in total hours of delay
- 8% reduction in average delay
- 7% increase in average speed

Degradation of operating conditions in the express lanes would be mitigated by Express Lane management strategy such as dynamic toll pricing, restriction of toll paying SOV and allowing HOV only, and design adjustments of access zones or buffer areas.

The peak hour travel conditions (LOS) of northbound US 101 for the No Build and the Build Alternatives are shown in Table 5.2.17-1 below. With the No Build Alternative, the northbound general purpose lanes from East Dunne Avenue to Cochrane Road in Morgan Hill, from Blossom Hill Road to Montague Expressway in San Jose, and from Great America Parkway in Santa Clara to Rengstorff Avenue in Mountain View are projected to operate at LOS F during the 2015 AM peak hour. The northbound HOV lane is predicted to have segments between Capitol Expressway and Tully Road in San Jose, between Story Road to McKee Road in San Jose, between De La Cruz Boulevard and Montague Expressway in Santa Clara, and around Fair Oaks Avenue in Sunnyvale that operate at or worse than LOS E during the 2015 AM peak hour.

The northbound general purpose lanes under the 2015 No Build condition are predicted to have no segments that operate at LOS F during the PM peak hour. The northbound HOV lane is predicted to have no segments that operate at or worse than LOS E during the 2015 PM peak hour.

With the Build Alternative, the northbound general purpose lanes from I-280/I-680 to Oakland Road and from Old Bayshore Road in San Jose to Montague Expressway in Santa Clara and from Great America Parkway in Santa Clara to Rengstorff Avenue in Mountain View are projected to operate at LOS F during the 2015 AM peak hour. The northbound HOV lane is predicted to have two segments that operate at LOS E between McKee Road

and Alum Rock/Santa Clara Street in San Jose, and between SR-237 and Ellis Street in Sunnyvale during the 2015 AM peak hour.

The northbound general purpose lanes under the 2015 Build condition are predicted to have one segment from De La Cruz Boulevard in San Jose to Montague Expressway in Santa Clara that operate at LOS F during the 2015 PM peak hour. The northbound HOV lane is predicted to have no segments that operate at or worse than LOS E during the 2015 PM peak hour.

Table 5.2.17-1: Peak Hour Conditions, Northbound 2015 No Build and Build

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Segment No. 1 – Dunne Avenue to Bernal Road (PM 16.01 to 26.78)								
Dunne Off - Dunne NB On	F	D	-	-	B	B	-	-
Dunne NB On – Dunne SB On	F	D	-	A	B	B	-	A
Dunne SB On - Cochrane Off	E	D	-	B	C	B	-	A
Cochrane Off - Cochrane NB On	D	C	-	C	B	B	-	A
Cochrane NB On - Cochrane SB On	E	D	B	B	C	B	A	A
Cochrane SB On - Access End	D	C	C	B	C	B	A	A
Access End - Coyote Creek Off	D	C	C	C	C	C	A	B
Coyote Creek Off - Coyote Creek On	D	C	C	C	B	B	B	A
Coyote Creek On - Bailey Off	D	C	C	C	B	B	B	A
Bailey Off - Bailey On	D	C	C	C	B	B	B	A
Bailey On - Access Start	D	D	C	C	B	C	B	A
Access Start - SR 85 HOV Connector Off	C	C	B	C	B	B	A	A
SR85 HOV Connector Off - SR 85 GP Connector Off	C	C	A	C	B	B	A	A
SR 85 GP Connector Off - Bernal Off	C	C	B	C	B	A	A	A
Segment No. 2 – Bernal Road to I-880 (PM 26.78 to 38.30)								
Bernal Off - Bernal NB On	C	B	B	C	A	A	A	A
Bernal NB On - Bernal SB On	B	B	B	C	B	B	A	A
Bernal SB On -	C	C	B	D	B	B	A	A

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Coyote Off								
Coyote Off - Blossom Hill EB On	D	C	B	D	B	B	A	A
Blossom Hill EB On - Blossom Hill WB On	F	D	B	D	C	C	A	A
Blossom Hill WB On - Access Start	F	D	C	D	C	C	A	A
Access Start - Access End	F	D	C	C	C	C	A	A
Access End - Hellyer Off	F	C	C	B	C	C	A	A
Hellyer Off - Hellyer On	F	D	C	B	C	C	A	A
Hellyer On - Yerba Buena Off	F	D	D	B	C	D	A	A
Yerba Buena Off - Capitol Off	F	D	D	B	C	C	A	A
Capitol Off - Yerba Buena On	F	D	E	B	C	C	A	A
Yerba Buena On - Capitol Loop On	F	D	F	B	C	C	A	A
Capitol Loop On - Capitol Diagonal On	F	C	F	B	C	B	A	A
Capitol Diagonal On - Tully Off	F	D	F	B	D	D	A	A
Tully Off - Access Start	F	E	F	B	D	D	A	A
Access Start - Access End	F	D	C	C	D	D	A	A
Access End - Tully NB Loop On	F	D	C	C	D	D	A	A
Tully NB Loop On - Tully NB Diagonal On	F	D	C	C	C	C	A	A
Tully NB Diagonal On - I-280/I-680 Off	F	D	D	C	D	D	A	A
I-280/I-680 Off - Story Rd Off	F	C	C	C	B	B	A	A
Story Off - Access Start	F	C	C	C	B	B	A	A
Access Start - Access End	F	C	E	D	B	B	A	A
Access End - Story On	F	D	E	C	B	B	A	A
Story On - I-280/I-680 SB On	F	E	D	C	C	C	A	A
I-280/I-680 SB On - Santa Clara Off	F	F	E	C	B	C	A	A
Santa Clara Off -	F	F	F	D	B	B	A	A

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Access Start								
Access Start - McKee Off	F	F	F	E	B	B	A	A
McKee Off - Access End	F	F	E	E	B	B	A	A
Access End - Santa Clara On	F	F	E	E	B	B	A	A
Santa Clara On - McKee On	F	F	D	C	C	C	B	A
McKee On - Oakland Off	F	F	D	C	C	C	A	A
Oakland Off - Oakland On	F	E	D	C	C	C	A	A
Oakland On - I-880 NB Off	F	E	D	C	C	C	A	A
Segment No. 3 – I-880 to SR 237 (PM 38.30 to 46.13)								
I-880 NB Off - I-880 NB On	F	D	D	C	A	B	A	A
I-880 NB On - I-880 SB Off	F	C	E	C	B	B	A	A
I-880 SB Off - Bayshore Off	F	D	D	C	A	B	A	A
Bayshore Off - Bayshore On	F	E	E	C	B	B	A	A
Bayshore On - Brokaw Off	F	F	D	C	B	B	A	A
Brokaw Off - Access Start	F	F	D	D	B	B	A	A
Access Start - N 1st St On	F	F	D	D	B	B	A	A
N 1st St On - E Brokaw Rd On/Access End	F	F	D	D	B	B	A	A
E Brokaw Rd On/Access End - De La Cruz Off	F	F	D	C	B	B	A	A
De La Cruz Off - SR 87/Guadalupe On	F	F	D	C	B	B	B	A
SR 87/Guadalupe On - De La Cruz NB On	F	F	D	C	C	D	B	A
De La Cruz NB On - Access Start	F	F	D	C	C	C	B	A
Access Start - De La Cruz SB On	F	F	D	C	C	E	B	A
De La Cruz SB On - Montague Off	F	F	E	C	E	F	C	A
Montague Off - Access End	F	D	E	C	E	C	C	A
Access End - Montague On	D	D	C	B	C	C	B	A

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Montague On - Great America Off	E	D	C	B	D	D	B	A
Great America Off - Great America NB On	E	D	C	B	C	D	B	A
Great America NB On - Great America SB On/Access Start	E	E	C	B	D	D	B	A
Access Start - Access End	F	F	C	B	D	D	B	A
Access End/Lawrence Off - Lawrence NB On	F	F	C	B	C	D	B	A
Lawrence NB On - Lawrence SB On	F	F	C	B	D	D	B	A
Lawrence SB On - Fair Oaks Off/Access Start	F	F	C	B	C	C	B	A
Access Start - Fair Oaks On	F	F	E	B	C	D	B	A
Fair Oaks On - Access End	F	F	D	B	D	D	B	A
Access End - EXP Lane Drop	F	F	D	B	D	D	B	A
EXP Lane Drop - Mathilda NB Off	F	F	D	D	D	D	B	A
Mathilda NB Off - Mathilda NB On	F	F	D	D	D	D	B	A
Mathilda NB On - Mathilda SB Off	F	F	D	C	D	D	B	A
Mathilda SB Off - SR 237 Off	F	F	C	D	C	C	B	A
Segment No. 4 – SR 237 to Oregon Expressway/Embarcadero Road (PM 46.13 to 52.17)								
SR 237 Off - SR 237 On	F	F	C	D	B	B	A	A
SR 237 On - Ellis Off/Access Start	F	F	C	E	C	C	B	B
Ellis Off/Access Start - Access End	F	F	C	D	C	C	A	B
Access End - Ellis On	F	F	C	C	C	C	A	A
Ellis On - Moffett Off	F	F	D	C	D	D	A	A
Moffett Off - Moffett On	F	F	D	C	C	D	A	A
Moffett On - Shoreline Off/Access Start	F	F	C	C	C	C	A	A
Shoreline Off - SR 85 On	F	F	B	C	C	C	A	A

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
SR 85 On - SR 85 HOV Connector On	F	F	B	C	C	C	A	A
SR 85 HOV Connector On - Middlefield Off	F	F	B	C	C	C	A	A
Middlefield Off - Shoreline On	F	F	B	C	B	B	A	A
Shoreline On - Rengstorff NB Off	F	F	D	C	C	C	A	A
Rengstorff NB Off - Rengstorff SB Off	F	F	D	C	C	C	A	A
Rengstorff SB Off - Rengstorff On	F	E	B	C	D	D	A	A
Rengstorff On - San Antonio Off	E	D	B	C	D	C	A	A
San Antonio Off - San Antonio On	D	D	B	C	D	D	A	A
San Antonio On - EXP Lane End/Dual HOV Lane End	D	D	A	B	D	D	A	A
EXP Lane End/Dual HOV Lane End - Oregon/Embarcadero Off	D	D	B	C	D	D	B	B
Oregon/Embarcadero Off - Oregon/Embarcadero On	D	D	B	C	D	D	B	B
North of Oregon/Embarcadero	D	D	B	C	D	D	C	C

Notes: EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

The peak hour travel conditions of southbound US 101 for the No Build and the Build Alternatives are shown in Table 5.2.17-2 below. With the No Build Alternative, the southbound general purpose lanes from Oregon Expressway/Embarcadero Road to San Antonio Road in Mountain View are projected to operate at Level of Service F during the 2015 AM peak hour. The southbound HOV lane is predicted to have no segments that operate at or worse than LOS E during the 2015 AM peak hour.

The southbound general purpose lanes under the 2015 No Build condition are predicted to have segments between University Avenue in Palo Alto and Rengstorff Avenue in Mountain View, between Montague Expressway in Santa Clara and De La Cruz Boulevard in San Jose, and between I-880 and McKee Road in San Jose that operate at LOS F during the 2015 PM peak hour. The southbound HOV lane is predicted to have two segments from University Avenue to Oregon Expressway/Embarcadero Road in Palo Alto, and from I-880 to Oakland Road in San Jose that operate at or worse than LOS E during the 2015 PM peak hour. The

minimum acceptable operating condition for an HOV lane is Level of Service D (California Streets and Highways Code Section 149.6[b]).

With the Build Alternative, the southbound general purpose lanes from Oregon Expressway/Embarcadero Road in Palo Alto to Charleston Road in Mountain View are projected to operate at LOS F during the 2015 AM peak hour. The southbound HOV lane is predicted to have no segments that operate at or worse than LOS E during the 2015 AM peak hour.

The southbound general purpose lanes under the 2015 Build condition are predicted to have segments between University Avenue in Palo Alto and Rengstorff Avenue in Mountain View, between Great America Parkway in Santa Clara and De La Cruz Boulevard in San Jose, between Old Bayshore Road and Oakland Road in San Jose, and between Cochrane Road and Dunne Avenue in Morgan Hill that operate at LOS F during the 2015 PM peak hour. The southbound HOV lane is predicted to have one segment that operate at or worse than LOS E between University Avenue and Oregon Expressway / Embarcadero Road in Palo Alto during the 2015 PM peak hour.

Table 5.2.17-2: Peak Hour Conditions, Southbound 2015 No Build and Build

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Segment No. 5 - Oregon Expressway/Embarcadero Road to SR 237 (PM 52.17 to 46.13)								
University On - Oregon/Embarcadero Off	E	E	C	C	F	F	F	F
Ore/Embarcadero Off - Oregon/Embarcadero On	E	F	C	C	F	F	E	E
Oregon/Embarcadero On - SB San Antonio Off	F	F	B	B	F	F	B	D
SB San Antonio Off - NB San Antonio Off	E	D	B	B	F	F	B	D
NB San Antonio Off -Access End	E	F	B	B	F	F	B	D
Access End - Charleston On	E	F	B	B	F	F	B	D
Charleston On - Rengstorff Off	E	E	B	B	F	F	B	C
Rengstorff Off - Rengstorff On	E	E	B	B	F	F	B	C
Rengstorff On - Middlefield On	E	E	B	B	E	E	B	C

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Middlefield On - SB Shoreline Off	D	D	B	B	D	D	B	C
SB Shoreline Off - HOV Connector US101 SB To SR85 SB Off	D	D	B	B	D	C	B	C
HOV Connector US101 SB To SR85 SB Off - SB SR85 Off	D	C	C	C	C	C	B	D
SB SR85 Off - Shoreline On	D	D	B	C	C	C	B	D
NB Shoreline On (Diagonal) - Moffett Off	D	D	B	C	D	C	B	D
Moffett Off- Moffett On	E	D	B	C	D	D	B	D
Moffett On- Ellis Off/Access Start	E	D	B	C	D	D	B	D
Ellis Off/Access Start- Ellis On/Access End	D	D	B	C	D	D	B	D
Ellis On/Access End - EB SR237 Off	D	D	B	C	D	D	B	D
Segment No. 6 - SR 237 to McKee Road (PM 46.13 to 36.14)								
EB SR237 Off- EB SR237 On	C	C	B	C	C	C	B	D
EB SR237 On - Mathilda Off	C	C	B	C	C	C	B	D
Mathilda Off - SB Mathilda On (Loop)	C	C	B	C	C	C	B	D
SB Mathilda On (Loop) - NB Mathilda On (Diagonal)/Access Start	C	C	B	B	C	C	B	D
NB Mathilda On (Diagonal)/Access Start - SB Fair Oaks Off (Diagonal)/Access End	D	D	B	A	D	D	B	B
SB Fair Oaks Off (Diagonal)/Access End - SB Fair Oaks On (Loop)	C	D	B	A	D	D	C	B
SB Fair Oaks On (Loop) - NB Fair Oaks Off (Loop)	C	C	B	A	D	D	C	B

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
NB Fair Oaks Off (Loop) - NB Fair Oaks On (Diagonal)	D	D	B	A	D	D	C	B
NB Fair Oaks On (Diagonal) - SB Lawr. Expy Off	D	D	B	A	D	D	C	B
SB Lawr. Expy Off - SB Lawr. Expy On (Loop)	C	D	B	A	C	D	B	B
SB Lawr. Expy On (Loop) - NB Lawr. Expy On (Diagonal)	D	D	B	A	D	D	B	B
NB Lawr. Expy On (Diagonal) - G.A. Off/Access Start	D	C	B	A	D	D	C	B
G.A. Off/Access Start- SB G.A.On (Loop)/Access End	D	D	B	A	D	F	B	C
SB G.A. On (Loop) - NB G.A. On (Diagonal)	D	D	B	A	D	F	C	C
NB G.A. On (Diagonal) - Mont. Expy Off	C	C	B	A	D	F	C	C
Mont. Expy Off - Mont. Expy On	C	C	B	A	D	F	C	C
Mont. Expy On (Diagonal)/Access Start - De La Cruz Off	D	D	B	A	F	F	D	D
De La Cruz Off - Access End	D	D	B	A	F	F	D	D
Access End - De La Cruz On (Loop)	D	D	B	A	F	F	D	C
De La Cruz On (Loop) - De La Cruz Off (Loop)	D	D	B	A	F	F	D	C
De La Cruz Off (Loop) - De La Cruz On (Diagonal)	D	D	B	A	F	E	D	C
De La Cruz On (Diagonal) - Guadalupe\SR87 Off	C	C	B	A	E	D	C	C
Guadalupe\SR87 Off - 1st\Brokaw Off	C	C	B	A	D	D	C	C
1st\Brokaw Off - Access Start	B	B	B	A	C	C	D	C

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Access Start - Access End	B	B	A	A	C	C	C	C
Access End - Bayshore On	B	B	A	A	C	C	C	C
Bayshore On - SB I-880 Off	B	B	A	A	E	F	C	C
SB I-880 Off - SB I-880 On (Loop)	B	B	A	A	F	F	D	C
SB I-880 On (Loop) - NB I-880 Off	B	B	A	A	F	F	E	C
NB I-880 Off - NB I-880 On (Diagonal)	C	C	A	A	F	F	E	C
NB I-880 On (Diagonal) - Oakland Off	B	B	A	A	F	F	E	C
Oakland Off - Oakland On/Access Start	C	C	A	A	F	F	F	C
Oakland On Access Start - Access End	C	C	B	A	F	E	D	D
Access End - McKee Off	C	C	B	A	F	E	D	D
Segment No. 7 - McKee Road to SR 85 (San Jose) (PM 36.14 to 26.78)								
McKee Off- Santa Clara Off	C	C	B	A	D	D	C	D
Santa Clara Off- McKee On	C	C	A	A	D	C	C	D
McKee On - Santa Clara On	C	C	A	A	D	C	B	D
Santa Clara On - I-280\680 Off	C	C	A	A	E	D	B	D
I-280\680 Off - Story Off	C	C	B	A	D	D	C	D
Story Off/Access Start - Access End	B	C	B	A	C	C	C	C
Access End - Story On	B	C	B	A	C	C	C	C
Story On - I-280/680 On	C	C	A	A	D	D	B	C
I-280/680 On - Tully Off	C	C	B	A	D	D	C	C
Tully Off/Access Start - Tully On (Loop)/Access End	C	C	B	A	D	D	C	B
Tully On (Loop)/Access End - Tully On (Diagonal)	C	C	A	A	C	D	B	B
Tully On (Diagonal) - Capitol Expy Off	B	B	A	A	C	C	B	B

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Capitol Expy Off - Capitol Expy On (Loop)	C	C	A	A	C	C	A	B
Capitol Expy On (Diagonal) - Yerba Buena Off	C	C	A	A	C	C	B	B
Yerba Buena Off - Yerba Buena On	D	D	B	A	D	D	B	B
Yerba Buena On - Hellyer Off	D	D	B	A	D	D	B	B
Hellyer Off - Hellyer On	D	D	B	A	D	D	B	B
Hellyer On -Access Start	C	D	B	A	D	D	B	B
Access Start - Access End	C	D	B	A	D	D	B	A
Access End - Blossom Hill Off	C	D	B	A	D	D	B	B
Blossom Hill Off - WB Blossom Hill On (Loop)	C	C	B	A	C	C	B	B
WB Blossom Hill On (Loop) - EB Blossom Hill On (Diagonal)	C	C	B	A	C	C	B	B
EB Blossom Hill On (Diagonal) - NB SR85 Off	C	B	B	A	C	C	B	B
Segment No. 8 - SR 85 (San Jose) to Dunne Avenue (PM 26.78 to 16.01)								
NB SR85 Off - Bernal Off	B	B	A	A	B	B	A	B
Bernal Off - SB SR85 GP/Bernal On	B	C	A	A	B	C	A	B
SB SR85 GP/Bernal On - SR85 HOV Direct Connector On/Access Start	B	B	A	A	B	B	A	B
SR85 HOV Direct Connector ON/Access Start - Access End	C	C	B	A	D	D	C	B
Access End - Bailey Off	C	C	B	A	D	D	C	B
Bailey Off - Bailey On	C	C	B	A	C	C	C	B
Bailey On - Coyote Creek Off	C	C	B	A	D	D	C	B
Coyote Creek Off - Coyote Creek On	C	C	B	A	D	D	C	B

Segment	2015 AM Peak Hour (7 to 8 AM)				2015 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Coyote Creek On - Access Start	C	C	B	A	D	D	C	C
Access Start - Access End	C	C	B	A	D	D	C	C
Access End - Cochrane Off	C	C	B	A	D	D	D	C
Cochrane Off - WB Cochrane On (loop)	C	C	-	A	D	F	-	C
WB Cochrane On (Loop) - EB Cochrane On (Diagonal)	C	C	-	A	D	F	-	C
EB Cochrane On (Diagonal) - EL End	C	C	-	C	E	F	-	C
EL End - Dunne Off	C	B	-	-	E	F	-	-
Dunne Off - Dunne On	C	C	-	-	D	F	-	-
Dunne On - Tennant Off	C	C	-	-	E	E	-	-

Notes: EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

Travel times for No Build and Build Alternatives in the general purpose and HOV/Express Lanes in 2015 are shown in Table 5.2.17-3 below. For reference, free flow or uncongested travel times are also provided. All travel times for 2015 northbound and southbound HOV segments are predicted to remain lower than in the corresponding general purpose lane segments. There is an 18.3 minute reduction in travel time in the general purpose lanes and a 5.4 minute reduction in travel time in the HOV/express lane from the No Build to the Build Alternative in the northbound AM peak hour.

Table 5.2.17-3: Peak Hour Travel Times in Minutes, 2015 No Build and Build

Lane Type	Segment	Free Flow	No Build	Build	Build - No Build Difference
AM Northbound					
General Purpose	1. Dunne Avenue On to Bernal Road On	10.1	11.7	10.9	-0.8
	2. Bernal Road On to I-880	10.6	28.6	14.3	-14.3
	3. I-880 to SR 237 On	7.3	18.1	15.2	-2.9
	4. SR 237 On to Embarcadero Road On	5.4	11.0	10.7	-0.3
	Total	*33.4*	*69.4*	*51.1*	*-18.3*
HOV/Express	1. Dunne Avenue On to Bernal Road On	10.1	10.8	10.0	-0.8

Lane Type	Segment	Free Flow	No Build	Build	Build - No Build Difference
	2. Bernal Road On to I-880	10.6	14.0	11.1	-2.9
	3. I-880 to SR 237 On	7.3	9.0	7.6	-1.4
	4. SR 237 On to Embarcadero Road On	5.4	6.2	5.9	-0.3
	Total	*33.4*	*40.0*	*34.6*	*-5.4*
AM Southbound					
General Purpose	5. San Antonio Off to SR 237	3.9	5.4	5.8	0.4
	6. SR 237 to McKee Road Off	8.9	10.4	11.0	0.6
	7. McKee Road Off to SR 85 (San Jose)	9.2	9.9	9.9	0.0
	8. SR 85 (San Jose) to Cochrane Road Off	7.7	7.9	7.9	0.4
	Total	*29.7*	*33.6*	*34.6*	*1.4*
HOV/Express	5. San Antonio Off to SR 237	3.9	4.2	4.4	0.2
	6. SR 237 to McKee Road Off	8.9	9.4	9.7	0.3
	7. McKee Road Off to SR 85 (San Jose)	9.2	8.9	9.0	0.1
	8. SR 85 (San Jose) to Cochrane Road Off	7.7	7.1	6.9	0.2
	Total	*29.7*	*29.6*	*30.0*	*0.8*
PM Northbound					
General Purpose	1. Dunne Avenue On to Bernal Road On	10.1	10.7	10.6	-0.1
	2. Bernal Road On to I-880	10.6	11.6	11.3	-0.3
	3. I-880 to SR 237 On	7.3	8.3	8.3	0.0
	4. SR 237 On to Embarcadero Road On	5.4	6.0	5.9	-0.1
	Total	*33.4*	*36.6*	*36.1*	*-0.5*
HOV/Express	1. Dunne Avenue On to Bernal Road On	10.1	10.0	9.4	-0.6
	2. Bernal Road On to I-880	10.6	9.9	10.1	0.2
	3. I-880 to SR 237 On	7.3	7.2	7.0	-0.2
	4. SR 237 On to Embarcadero Road On	5.4	5.1	5.4	0.3
	Total	*33.4*	*32.2*	*31.9*	*-0.3*
PM Southbound					
General Purpose	5. San Antonio Off to SR 237	3.9	7.9	8.2	0.3
	6. SR 237 to McKee Road Off	8.9	14.5	16.6	2.1
	7. McKee Road Off to SR 85 (San Jose)	9.2	10.2	10.1	-0.1
	8. SR 85 (San Jose) to Cochrane Road Off	7.7	8.0	8.1	0.5
	Total	*29.7*	*40.6*	*43.0*	*2.8*
HOV/Express	5. San Antonio Off to SR 237	3.9	4.3	4.5	0.2
	6. SR 237 to McKee Road Off	8.9	10.4	10.3	-0.1
	7. McKee Road Off to SR 85 (San Jose)	9.2	9.2	9.5	0.3
	8. SR 85 (San Jose) to Cochrane Road Off	7.7	7.4	7.3	0.3

Lane Type	Segment	Free Flow	No Build	Build	Build - No Build Difference
	Total	*29.7*	*31.3*	*31.6*	*0.7*

Notes:
1. AM peak hour defined as 7:00 to 8:00 AM. PM peak hour defined as 5:00 to 6:00 PM.
2. Free flow travel time is based on an assumed speed of 65 mph. In some cases, speeds may exceed 65 mph producing travel times that are less than free flow.
HOV = high-occupancy vehicle

The travel time results for the northbound direction reflect the relatively uncongested conditions expected during the 2015 PM peak hour. Over the length of the corridor, northbound travel times in both the general purpose and HOV/Express Lanes are approximately the same for both the No Build and Build alternatives. HOV/Express Lane users are expected to experience no travel time delay, while those in the general purpose lanes experience only minor delay.

The travel time results for the southbound direction reflect the relatively uncongested conditions in a majority of the corridor expected in that direction during the 2015 AM peak hour. For both the general purposes lanes and HOV/Express Lanes, there is little difference in travel times between the No Build and Build alternatives. HOV/Express Lane users are expected to experience essentially no travel time delay as average speeds exceed 60 mph.

Corridor travel times remain approximately the same for the Build and No Build alternatives for the general purpose lanes and the HOV/express lanes in the southbound direction in the PM peak hour; although the Build alternative travel times are slightly higher.

5.2.18 Design Year (2035) Operational Analysis

This section summarizes the Design Year (2035) traffic operating conditions for the US 101 Express Lanes project for both the Build and No Build Alternatives. The 2035 horizon year traffic operations analysis shows the following improvement in operations:

Northbound AM Peak Period:

- 4% reduction in total hours of delay
- 6% reduction in average delay
- 11% increase in average speed

Southbound PM Peak Period:

- 13% reduction in total hours of delay
- 18% reduction in average delay
- 23% increase in average speed

The peak hour travel conditions for northbound US 101 in 2035 are shown in Table 5.2.18-1 below. With the No Build Alternative, the northbound general purpose lanes between Coyote Creek in San Jose and Rengstorff Avenue in Mountain View are projected to operate at LOS F during the 2035 AM peak hour. The northbound HOV lane is predicted to have

segments between Coyote Creek and Bailey Avenue, between Yerba Buena Road and Capitol Expressway, at Tully Road and Story Road, between Santa Clara Street off-ramp and Santa Clara Street on-ramp, between McKee Road and I-880, between N 4th Street and N 1st Street in San Jose, and between Fair Oaks Avenue to Mathilda Road in Sunnyvale that operate at or worse than LOS E during the 2035 AM peak hour.

The northbound general purpose lanes under the 2035 No Build condition between De La Cruz Boulevard and Montague Expressway, between SR-237 and Moffett Boulevard, between Shoreline Boulevard off-ramp and Old Middlefield Way, and between Shoreline Boulevard on-ramp and San Antonio Road are projected to operate at LOS F during the 2035 PM peak hour. The northbound HOV lane from De La Cruz Boulevard to Montague Expressway is projected to operate at LOS E during the 2035 PM peak hour.

With the Build Alternative, the northbound general purpose lanes between Bailey Avenue in San Jose and Rengstorff Avenue in Mountain View are projected to operate at LOS F during the 2035 AM peak hour. The northbound HOV lane is predicted to have one segment that operate at LOS E around SR-85 in San Jose during the AM peak hour

The northbound general purpose lanes around Tully Road, between East Brokaw Road and De La Cruz Boulevard, and between Ellis Street and Moffett Boulevard are projected to operate at LOS F during the 2035 PM peak hour. The northbound HOV lane under the 2035 Build condition is predicted to have no segments that operate at or worse than LOS E during the 2035 PM peak hour.

Table 5.2.18-1: Peak Hour Conditions, Northbound 2035 No Build and Build

Segment	2035 AM Peak Hour (7 to 8 AM)				2035 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Segment No. 1 - Dunne Avenue to Bernal Road (PM 16.01 to 26.78)								
Dunne Off - Dunne NB On/EXP Lane Start	D	D	C	C	B	B	B	A
Dunne NB On/ EXP Lane Start – Dunne SB On	D	D	C	D	B	C	B	B
Dunne SB On - Cochrane Off	D	E	D	D	C	C	B	B
Cochrane Off - Cochrane NB On/Dual EXP Lane Start	D	E	D	D	B	B	B	B
Cochrane NB On/Dual EXP Lane Start-Cochrane SB On	E	E	D	C	C	C	B	B
Cochrane SB On - Access End	E	D	D	C	C	C	B	B
Access End - Coyote Creek Off	E	D	D	C	C	C	B	B
Coyote Creek Off - Coyote Creek On	F	D	F	C	C	C	B	B
Coyote Creek On - Bailey Off	F	E	F	C	C	C	B	B
Bailey Off - Bailey On	F	F	F	C	C	C	B	B

Segment	2035 AM Peak Hour (7 to 8 AM)				2035 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Bailey On - Access Start	F	F	F	C	C	C	B	B
Access Start - SR 85 HOV Connector Off	F	F	C	E	B	B	A	B
SR85 HOV Connector Off - SR 85 GP Connector Off	F	F	D	C	B	B	A	B
SR 85 GP Connector Off - Bernal Off	F	F	C	C	B	B	A	B
Segment No. 2 – Bernal Road to I-880 (PM 26.78 to 38.30)								
Bernal Off - Bernal NB On	F	F	B	C	B	A	A	B
Bernal NB On - Bernal SB On	F	F	D	C	B	B	A	B
Bernal SB On - Coyote Off	F	F	C	C	C	C	A	B
Coyote Off - Blossom Hill EB On	F	F	B	C	B	B	A	C
Blossom Hill EB On - Blossom Hill WB On	F	F	B	C	C	C	A	C
Blossom Hill WB On - Access Start	F	F	C	C	D	D	A	C
Access Start - Access End	F	F	C	C	D	C	A	B
Access End - Hellyer Off	F	F	C	B	D	C	A	B
Hellyer Off - Hellyer On	F	F	B	B	D	C	B	B
Hellyer On - Yerba Buena Off	F	F	C	B	D	D	A	B
Yerba Buena Off - Capitol Off	F	F	D	B	D	D	A	B
Capitol Off - Yerba Buena On	F	F	D	B	C	C	A	B
Yerba Buena On - Capitol Loop On	F	F	F	B	C	C	A	B
Capitol Loop On - Capitol Diag On	F	F	F	B	C	C	A	B
Capitol Diag On - Tully Off	F	F	A	B	D	E	A	B
Tully Off - Access Start	F	F	A	B	D	F	A	B
Access Start - Access End	F	F	A	C	D	F	A	B
Access End - Tully NB Loop On	F	F	A	B	D	F	A	B
Tully NB Loop On - Tully NB Diag On	F	F	B	B	D	F	A	B
Tully NB Diag On - I-280/I-680 Off	F	F	F	B	D	E	B	B
I-280/I-680 Off - Story Rd Off	F	F	D	B	B	C	B	B
Story Off - Access Start	F	F	D	B	B	B	B	B
Access Start - Access End	F	F	E	D	B	C	B	B
Access End - Story On	F	F	E	B	B	E	B	A
Story On - I-280/I-680 SB On	F	F	D	B	D	E	B	A
I-280/I-680 SB On - Santa Clara Off	F	F	D	B	C	C	B	A
Santa Clara Off - Access Start	F	F	E	B	B	C	B	A
Access Start - McKee Off	F	F	E	C	B	C	B	A

Segment	2035 AM Peak Hour (7 to 8 AM)				2035 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
McKee Off - Access End	F	F	E	C	B	C	B	A
Access End - Santa Clara On	F	F	E	C	B	C	B	A
Santa Clara On - McKee On	F	F	D	B	C	C	B	A
McKee On - Mabury Off	F	F	F	B	C	C	B	A
Mabury Off - Mabury On	F	F	F	B	C	D	B	A
Mabury On - Oakland Off	F	F	F	B	C	E	B	A
Oakland Off - Oakland On	F	F	F	B	D	D	B	A
Oakland On - I-880 NB Off	F	F	F	B	B	C	B	A
Segment No. 3 – I-880 to SR 237 (PM 38.30 to 46.13)								
I-880 NB Off - I-880 NB On	F	F	E	B	B	B	B	A
I-880 NB On - I-880 SB Off	F	F	E	B	B	B	B	A
I-880 SB Off - Bayshore Off	F	F	D	B	B	B	B	A
Bayshore Off - 4th St On	F	F	D	B	B	B	B	A
4th St On - Brokaw Off	F	F	F	C	B	B	A	A
Brokaw Off - Access Start	F	F	F	C	B	B	A	A
Access Start - N 1st St On	F	F	E	C	B	B	A	B
N 1st St On - E Brokaw Rd On/Access End	F	F	C	C	C	D	B	B
E Brokaw Rd On/Access End - De La Cruz Off	F	F	D	C	D	F	B	B
De La Cruz Off - SR 87/Guadalupe On	F	F	C	C	C	F	B	B
SR 87/Guadalupe On - De La Cruz NB On	F	F	C	C	E	F	C	B
De La Cruz NB On - Access Start	F	F	C	C	E	F	C	B
Access Start - De La Cruz SB On	F	F	C	C	F	F	C	B
De La Cruz SB On - Montague Off/Access Extension	F	F	D	C	F	F	E	B
Montague Off/Access Extension - Access End	F	F	D	C	F	C	E	B
Access End - NB Montague On	F	F	C	B	C	C	C	B
NB Montague On - SB Montague On	F	F	C	B	C	C	C	B
SB Montague On - Great America Off	F	F	B	B	D	D	C	B
Great America Off - Great America NB On	F	F	C	B	D	D	C	B
Great America NB On - Great America SB On/Access Start	F	F	C	B	E	D	B	B
Access Start - Access End	F	F	C	B	E	D	C	B
Access End/Lawrence Off - Lawrence NB On	F	F	C	A	C	D	B	B
Lawrence NB On - Lawrence SB On	F	F	C	A	D	D	B	B

Segment	2035 AM Peak Hour (7 to 8 AM)				2035 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Lawrence SB On - Fair Oaks Off/Access Start	F	F	C	A	C	C	B	B
Access Start - Fair Oaks On	F	F	F	A	C	D	B	B
Fair Oaks On - Access End	F	F	E	A	D	D	B	B
Access End - EXP Lane Drop	F	F	E	A	D	C	B	B
EXP Lane Drop - Mathilda NB Off	F	F	E	C	D	C	B	D
Mathilda NB Off - Mathilda NB On	F	F	E	C	D	D	B	D
Mathilda NB On - Mathilda SB Off	F	F	F	C	C	C	B	C
Mathilda SB Off - SR 237 Off	F	F	D	C	C	C	B	D
Segment No. 4 – SR 237 to Oregon Expressway/Embarcadero Road (PM 46.13 to 52.17)								
SR 237 Off - SR 237 On	F	F	C	C	C	C	B	D
SR 237 On - Ellis Off/Access Start	F	F	C	C	F	E	B	D
Ellis Off/Access Start - Access End	F	F	C	D	F	E	C	D
Access End - Ellis On	F	F	C	C	F	F	C	C
Ellis On - Moffett Off	F	F	C	C	F	F	C	C
Moffett Off - Moffett On	F	F	C	C	F	E	C	C
Moffett On - Shoreline Off/Access Start	F	F	B	C	E	D	B	C
Shoreline Off - SR 85 On	F	F	B	C	F	D	B	C
SR 85 On - SR 85 HOV Connector On	F	F	B	C	F	D	B	C
SR 85 HOV Connector On - Middlefield Off	F	F	B	C	F	D	A	B
Middlefield Off - Shoreline On	F	F	B	C	E	C	A	B
Shoreline On - Rengstorff NB Off	F	F	D	C	F	D	C	B
Rengstorff NB Off - Rengstorff SB Off	F	F	D	C	F	D	D	B
Rengstorff SB Off - Rengstorff On	F	E	B	C	F	D	B	B
Rengstorff On - San Antonio Off	E	D	B	C	F	C	B	B
San Antonio Off - San Antonio On	D	D	A	C	E	D	B	B
San Antonio On - End of Buffer	D	D	A	C	E	D	A	B
End of Buffer - End of Express Lanes	D	D	A	C	E	D	A	B
End of Express Lanes - HOV Lane Drop	D	D	A	B	E	D	A	B
HOV Lane Drop - Oregon/Embarcadero Off	D	E	B	C	D	E	C	B
Oregon/Embarcadero Off - Oregon/Embarcadero On	D	E	B	D	E	E	C	C
North of Oregon/Embarcadero	D	D	B	C	D	D	C	C

Notes: EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

The peak hour travel conditions for southbound US 101 in 2035 are shown in Table 5.2.18-2 below. With the No Build Alternative, the southbound general purpose lanes from University Avenue to Oregon Expressway/Embarcadero Road in Palo Alto are projected to operate at LOS F during the 2035 AM peak hour. The southbound HOV lane is predicted to have one segment that operates at LOS E from University Avenue to Oregon Expressway/Embarcadero Road in Palo Alto during the AM Peak hour.

The southbound general purpose lanes under the 2035 No Build condition between University Avenue in Palo Alto and De La Cruz Boulevard in San Jose, between Oakland Road and Taylor Street/Mabury Road, and between Story Road and I-280/I-680 are projected to operate at LOS F during the 2035 PM peak hour. The southbound HOV lane from University Avenue to Oregon Expressway/Embarcadero Road, at Rengstorff Avenue in Mountain View, Old Middlefield Way to Shoreline Boulevard, SR-85 to SR-237, Fair Oaks Avenue to Great America Parkway, Montague Expressway to De La Cruz Boulevard, and from Oakland Road to Taylor Street/Mabury Road are projected to operate at or worse than LOS E during the 2035 PM peak period.

With the Build Alternative, the southbound general purpose lanes from University Avenue to Oregon Expressway/Embarcadero Road in Palo Alto are projected to operate at LOS F during the 2035 AM peak hour. The southbound HOV lane is predicted to have no segments that operate at or worse than LOS E during the 2035 AM peak hour.

The southbound general purpose lanes under the 2035 Build condition between University Avenue in Palo Alto and De La Cruz Boulevard in San Jose, between Oakland Road and Taylor Street/Mabury Road, around SR-85, Cochrane Road, and East Dunne Avenue are projected to operate at LOS F during the 2035 PM peak hour. The southbound HOV lane from University Avenue to Ellis Street, Montague Expressway to De La Cruz Boulevard, and from Oakland Road to Taylor Street/Mabury Road are projected to operate at or worse than LOS E during the 2035 PM peak period.

According to the LOS results presented in Table 5.2.18-2, HOV/ express lanes for the Build Alternative are projected to operate at a worse LOS than the No Build Alternative. Continuous access design will be revisited in design phase to optimize operations for HOV/express lane operations.

Table 5.2.18-2: Peak Hour Conditions, Southbound 2035 No Build and Build

Segment	2035 AM Peak Hour (7 to 8 AM)				2035 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Segment No. 5 - Oregon Expressway/Embarcadero Road to SR 237 (PM 52.17 to 46.13)								
University On - Oregon\Embarcadero Off	F	F	E	D	F	F	F	F
Oregon\Embarcadero Off - Oregon\Embarcadero On/Access Start	F	F	D	D	F	F	F	D
Oregon\Embarcadero On/Access Start - SB San Antonio Off (Diagonal)	D	D	B	C	F	F	C	F
SB San Antonio Off (Diagonal) - San Antonio On (Diagonal)	E	D	B	C	F	F	C	F
San Antonio On (Diagonal) - Access End	D	C	B	C	F	F	C	F
Access End - Rengstorff Off	D	D	B	C	F	F	E	F
Rengstorff Off - Rengstorff On	E	D	B	C	F	F	E	F
Rengstorff On - Middlefield On	E	D	B	C	F	F	D	F
Middlefield On - Shoreline Off	E	D	B	C	F	F	E	F
Shoreline Off - SR85 HOV Connector Off	D	D	B	C	F	F	C	F
SR85 HOV Connector Off - SR85 GP Off	D	C	C	D	F	F	F	F
SR85 GP Off - Shoreline On	D	D	B	D	F	F	F	F
Shoreline On - Moffett Off	D	C	B	D	F	F	F	F
Moffett Off - Moffett On	D	D	B	D	F	F	F	F
Moffett On - Ellis Off/Access Start	E	D	C	D	F	F	F	F
Ellis Off/Access Start - Ellis On/Access End	E	E	B	C	F	F	F	F
Ellis On/Access End - EB SR237 Off	E	E	B	C	F	F	F	D
Segment No. 6 - SR 237 to McKee Road (PM 46.13 to 36.14)								
EB SR237 Off - EB SR237 On	C	C	B	C	F	F	E	D
EB SR237 On - SB Mathilda Off	C	C	B	C	F	F	D	D
SB Mathilda Off - SB Mathilda On (Loop)	D	D	B	C	F	F	C	D
SB Mathilda On (Loop) - NB Mathilda On (Diagonal)/Access Start	C	C	B	C	F	F	C	D
NB Mathilda On (Diagonal)/Access Start - SB Fair Oaks Off (Diagonal)/Access End	D	D	B	B	F	F	D	C
SB Fair Oaks Off (Diagonal)/Access End - SB Fair Oaks On (Loop)	D	D	B	B	F	F	C	C
SB Fair Oaks On (Loop) - NB Fair Oaks Off (Loop)	D	D	B	B	F	F	C	C
NB Fair Oaks Off (Loop) - NB Fair Oaks On (Diagonal)	D	D	B	B	F	F	C	C
NB Fair Oaks On (Diagonal) - SB Lawr. Expy Off	D	D	B	B	F	F	E	C
SB Lawr. Expy Off - SB Lawr. Expy On (Loop)	D	D	B	B	F	F	D	C
SB Lawr. Expy On (Loop) - NB Lawr. Expy On (Diagonal)	D	D	B	B	F	F	E	C
NB Lawr. Expy On (Diagonal) - G.A. Off/Access Start	D	D	C	B	F	F	F	C

Segment	2035 AM Peak Hour (7 to 8 AM)				2035 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
G.A. Off/Access Start - SB G.A.On (Loop)	D	D	C	B	F	F	D	D
SB G.A.On (Loop) - Access End	D	C	C	B	F	F	D	D
Access End - NB G.A.On (Diagonal)	E	D	C	B	F	F	D	C
NB G.A.On (Diagonal) - Mont. Expy Off	C	C	C	B	F	F	D	C
Mont. Expy Off - Mont. Expy On (Loop)	D	C	C	B	F	F	D	C
Mont. Expy On (Loop) - Mont. Expy On (Diagonal)/Access Start	C	C	B	B	F	F	E	D
Mont. Expy On (Diagonal)/Access Start - De La Cruz Off	E	E	C	B	F	F	F	E
De La Cruz Off - Access End	D	D	C	B	F	F	F	E
Access End - SB De La Cruz On (Loop)	D	D	C	B	F	F	F	D
SB De La Cruz On (Loop) - NB De La Cruz On (Diagonal)	D	C	B	B	F	F	F	D
NB De La Cruz On (Diagonal) - Guadalupe\SR87 Off	D	D	B	B	E	E	C	D
Guadalupe\SR87 Off - 1st\Brokaw Off	D	D	B	B	D	D	C	D
1st\Brokaw Off - Access Start	C	C	B	B	C	C	C	D
Access Start - 4th\Zanker Off	C	C	B	A	C	C	C	C
4th\Zanker Off - Access End	B	C	A	A	C	C	B	C
Access End - 4th\Zanker On	B	C	A	A	C	C	B	C
4th\Zanker On - SB I-880 Off	C	C	A	A	C	C	B	C
SB I-880 Off - SB I-880 On (Loop)	B	C	A	A	C	B	B	C
SB I-880 On (Loop) - NB I-880 Off	C	C	A	A	C	C	B	C
NB I-880 Off - NB I-880 On (Diagonal)	C	C	A	A	D	E	B	C
NB I-880 On (Diagonal) - Oakland Off	B	B	A	A	C	D	B	C
Oakland Off - Oakland On/Access Start	C	C	B	A	F	F	D	C
Oakland On/Access Start - Taylor\Mabury Off	C	C	B	B	F	F	E	E
Taylor\Mabury Off - Taylor\Mabury On/Access End	D	D	B	B	F	E	D	E
Taylor\Mabury On/Access End - McKee Off	C	C	B	A	D	D	D	C
Segment No. 7 - McKee Road to SR 85 (San Jose) (PM 36.14 to 26.78)								
McKee Off - Santa Clara Off	D	D	B	A	D	D	C	D
Santa Clara Off - McKee On	C	C	B	A	D	C	C	D
McKee On - Santa Clara On	C	C	B	A	D	C	B	D
Santa Clara On - I-280\680 Off	D	D	B	A	E	E	C	D
I-280\680 Off - Story Off/Access Start	D	D	B	A	D	D	C	D
Story Off/Access Start - Access End	C	C	B	A	D	D	C	C
Access End - Story On	C	C	B	A	D	E	C	C

Segment	2035 AM Peak Hour (7 to 8 AM)				2035 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Story On - I-280/680 On	D	D	B	A	F	E	C	C
I-280/680 On - Tully Off/Access Start	D	D	B	A	E	D	C	C
Tully Off/Access Start - Tully On (Loop)/Access End	D	D	B	B	D	D	C	B
Tully On (Loop)/Access End - Tully On (Diagonal)	C	C	B	B	C	D	B	B
Tully On (Diagonal) - Capitol Expy Off	C	C	B	B	D	C	B	B
Capitol Expy Off - Capitol Expy On (Loop+Diagonal)	C	C	B	B	C	D	A	B
Capitol Expy On (Diagonal) - Yerba Buena Off	C	C	B	B	C	D	B	B
Yerba Buena Off - Yerba Buena On	D	D	C	B	D	E	B	B
Yerba Buena On - Hellyer Off	E	E	C	B	D	E	B	B
Hellyer Off - Hellyer On	D	D	B	B	D	D	B	B
Hellyer On - Access Start	D	D	B	A	D	D	B	B
Access Start - Access End	D	D	B	A	D	D	B	A
Access End - Blossom Hill Off	D	D	B	B	D	D	B	C
Blossom Hill Off - WB Blossom Hill On (Loop)	C	C	B	B	C	C	B	C
WB Blossom Hill On (Loop) - EB Blossom Hill On (Diagonal)	C	D	B	B	C	D	B	C
EB Blossom Hill On (Diagonal) - NB SR85 Off	D	C	B	C	C	C	B	C
Segment No. 8 - SR 85 (San Jose) to Dunne Avenue (PM 26.78 to 16.01)								
NB SR85 Off - Bernal Off	C	C	B	C	C	F	A	C
Bernal Off - SB SR85 GP/Bernal On	C	C	B	C	C	F	A	C
SB SR85 GP/Bernal On - SR85 HOV Direct Connector On/Access Start	C	B	B	C	C	F	B	C
SR85 HOV Direct Connector On/Access Start - Access End	C	C	A	B	D	F	C	C
Access End - Bailey Off	D	C	C	B	E	C	D	C
Bailey Off - Bailey On	D	C	C	B	D	D	D	C
Bailey On - Coyote Creek Off	D	C	C	B	D	D	C	C
Coyote Creek Off - Coyote Creek On	D	C	C	B	D	D	C	C
Coyote Creek On - Access Start	D	C	B	B	D	D	C	C
Access Start - Access End	D	C	B	B	D	D	C	C
Access End - Cochrane Off	D	C	B	B	E	D	D	C
Cochrane Off - WB Cochrane On (Loop)	C	C	B	B	D	F	C	C
WB Cochrane On (Loop) - EB Cochrane On (Diagonal)	C	C	B	B	D	F	C	C
EB Cochrane On (Diagonal) - EL End	C	C	B	B	E	F	C	D
EL End - Dunne Off	C	C	B	B	E	E	C	D
Dunne Off - Dunne On	C	C	B	A	D	F	C	D

Segment	2035 AM Peak Hour (7 to 8 AM)				2035 PM Peak Hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Dunne On - Tennant Off	C	C	B	A	E	E	C	C

Notes: EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

Travel times for No Build and Build Alternatives in the general purpose and HOV/Express Lanes in 2035 are shown in Table 5.2.18-3 below. For reference, free flow or uncongested travel times are also provided. All travel times for 2035 northbound and southbound HOV segments are predicted to remain lower than in the corresponding general purpose lane segments. There is a 12.3 minute reduction in travel time in the general purpose lanes and an 11.9 minute reduction in travel time in the HOV/express lane from the No Build to the Build Alternative in the northbound AM peak hour.

Table 5.2.18-3: Peak Hour Travel Times, 2035 No Build and Build

Lane Type	Segment	Free Flow	No Build	Build	Build - No Build Difference
AM Northbound					
General Purpose	1. Dunne Avenue On to Bernal Road On	10.1	19.8	15.1	-4.7
	2. Bernal Road On to I-880	10.6	125.4	116.7	-8.7
	3. I-880 to SR 237 On	7.3	24.7	26.6	1.9
	4. SR 237 On to Embarcadero Road On	5.4	13.6	12.8	-0.8
	Total	*33.4*	*183.5*	*171.2*	*-12.3*
HOV/Express	1. Dunne Avenue On to Bernal Road On	10.1	10.1	10.5	0.4
	2. Bernal Road On to I-880	10.6	20.4	11.3	-9.1
	3. I-880 to SR 237 On	7.3	10.4	7.5	-2.9
	4. SR 237 On to Embarcadero Road On	5.4	6.3	6.0	-0.3
	Total	*33.4*	*47.2*	*35.3*	*-11.9*
AM Southbound					
General Purpose	5. San Antonio Off to SR 237	3.9	10.1	9.6	-0.6
	6. SR 237 to McKee Road Off	8.9	10.8	10.7	0.0
	7. McKee Road Off to SR 85 (San Jose)	9.2	10.1	10.0	-0.1
	8. SR 85 (San Jose) to Dunne Avenue Off	9.5	9.8	9.1	-0.7
	Total	*31.5*	*40.8*	*39.4*	*-1.4*
HOV/Express	5. San Antonio Off to SR 237	3.9	5.0	4.6	-0.4
	6. SR 237 to McKee Road Off	8.9	9.5	9.5	0.0

Lane Type	Segment	Free Flow	No Build	Build	Build - No Build Difference
	7. McKee Road Off to SR 85 (San Jose)	9.2	9.0	9.3	0.3
	8. SR 85 (San Jose) to Dunne Avenue Off	9.5	8.9	8.4	-0.5
	Total	*31.5*	*32.4*	*31.8*	*-0.6*
PM Northbound					
General Purpose	1. Dunne Avenue On to Bernal Road On	10.1	10.8	10.6	-0.2
	2. Bernal Road On to I-880	10.6	12.0	13.0	1.0
	3. I-880 to SR 237 On	7.3	8.6	10.2	1.6
	4. SR 237 On to Embarcadero Road On	5.4	9.1	6.6	-2.5
	Total	*33.4*	*40.5*	*40.4*	*-0.1*
HOV/Express	1. Dunne Avenue On to Bernal Road On	10.1	9.8	9.7	-0.1
	2. Bernal Road On to I-880	10.6	10.0	10.5	0.5
	3. I-880 to SR 237 On	7.3	7.2	7.2	0.0
	4. SR 237 On to Embarcadero Road On	5.4	5.9	5.7	-0.2
	Total	*33.4*	*32.9*	*33.1*	0.2
PM Southbound					
General Purpose	5. San Antonio Off to SR 237	3.9	37.6	44.3	6.7
	6. SR 237 to McKee Road Off	8.9	42.1	41.0	-1.1
	7. McKee Road Off to SR 85 (San Jose)	9.2	10.5	11.8	1.3
	8. SR 85 (San Jose) to Dunne Avenue Off	9.5	10.3	12.6	2.3
	Total	*31.5*	*100.5*	*109.7*	*9.2*
HOV/Express	5. San Antonio Off to SR 237	3.9	9.3	8.9	-0.4
	6. SR 237 to McKee Road Off	8.9	13.2	10.4	-2.8
	7. McKee Road Off to SR 85 (San Jose)	9.2	9.3	9.6	0.3
	8. SR 85 (San Jose) to Dunne Avenue Off	9.5	9.5	8.8	-0.7
	Total	*31.5*	*41.3*	*37.7*	*-3.6*

Notes:
1. AM peak hour defined as 7:00 to 8:00 AM. PM peak hour defined as 5:00 to 6:00 PM.
2. Free flow travel time is based on an assumed speed of 65 mph. In some cases, speeds may exceed 65 mph producing travel times that are less than free flow.
HOV = high-occupancy vehicle

In the northbound direction, the AM peak hour for the general purpose lanes show a 12.3 minute travel time savings between the No Build and Build Alternatives. The AM peak hour for the HOV/express lanes show an 11.9 minute travel time savings between the No Build and Build Alternatives. In the northbound direction, the Build Alternative in the PM peak hour produces slightly higher general purpose lane travel times compared to the No Build alternative through the middle of the corridor, but lower times in the northern segment. Over the entire length of the corridor, the total travel time is essentially the same (less than 1

minute difference) between the two alternatives for the PM peak hour in the general purpose lane. For both the No Build and Build Alternatives during the PM peak hour, HOV/express lane users are expected to experience little travel time delay.

In the southbound direction during the AM peak hour, the general purpose lanes travel times between the No Build and Build Alternatives vary by less than 1 minute. In the HOV/express lane in the AM peak hour, the differences in travel time between the two alternatives are negligible. Vehicles in the HOV/express lane experience little or no delay relative to free flow travel times in either alternative. In the southbound PM peak hour, there is a slight increase in travel times for the general purpose lanes between the No Build and Build Alternatives. In the HOV/express lanes, the total travel time shows a slight time savings between the No Build and Build Alternatives for the PM peak period.

Degradation of operating conditions in the express lanes would be mitigated by express lane management strategy such as dynamic toll pricing, restriction of toll paying SOV and allowing HOV only, and design adjustments of access zones or buffer areas. The proposed project includes a centralized express lane monitoring system and corresponding management strategy that will be used to regulate express lane demand in order to avoid any operational issues that violate federal and state standards for express lanes. The express lane management strategy includes dynamic toll pricing to regulate the number of toll-paying SOVs using the express lanes, even to the extent of restricting the express lanes to HOVs only. Physical design alterations such as conversion to continuous-access design, lengthening the access zones or reducing buffer areas, relocation of access zones, addition of a merge or weave lane at access zones, addition of general purpose auxiliary lanes, and construction of direct connector ramps, can be implemented to mitigate potential deficiencies.

The express lane operator will regularly monitor and report on the performance of the US 101 express lanes, measuring it against the speed and LOS standards established in federal and state laws. The express lane operator is required to take one or more management or design adjustment actions described above to restore express lane speeds and LOS to meet the applicable standards.

5.2.19 Ramp Metering/Traffic Operation System (TOS)

Traffic Operations Systems (TOS) equipment such as traffic monitoring stations, Closed Circuit Televisions, cabinets, and controllers would be installed along the outside edge of pavement within the existing right-of-way. Existing ramp metering equipment such as signal heads and poles, loops, conduits, controllers and cabinets, service cabinets, advance warning signs and pull boxes which is impacted as a result of the widening and shifting of lane lines will be replaced or relocated. Maintenance Vehicle Pullouts (MVP) would be installed in shoulder areas to allow access to the TOS equipment. The specific locations of these features will be developed during final project design.

A Ramp Metering Fact Sheet was prepared for this project and approved by Caltrans on December 15, 2014. The project proposes to maintain the existing non-standard conditions at a total of 15 on-ramps within the project limits. There are 11 on-ramps that do not have an

existing HOV preferential lane, 2 on-ramps that do not have standard CHP enforcement areas at metered locations and 2 on-ramps that do not have a standard metered multi-lane entrance ramp.

5.2.20 Context Sensitive Solutions and Complete Streets

The proposed US 101 Express Lanes project improvement does not impact local streets and intersections within the project limits. During PS&E design phase, opportunities to implement context sensitive solutions will be evaluated to integrate community, aesthetic and environmental values into the design in balance with safety, maintenance and funding feasibility goals. A collaborative approach involving project stakeholders from Caltrans, local agencies, and VTA will be initiated to seek solutions. Some context sensitive solutions such as highway planting and architectural treatment for retaining walls, abutment modifications and soundwalls will be evaluated during the PS&E design phase. The freeway does not function as a local street within the project limit; therefore, complete streets designs do not apply for this project (per Directive Policy-22).

5.2.21 Highway Planting

There will be removal of existing vegetation for inside and outside lane widening, in areas necessary to maintain clearances, and where bridge abutment work is proposed. Potentially affected vegetation has been categorized in the environmental document and includes landscaped (planted or maintained), ruderal (vegetation that typically colonizes disturbed lands), and natural (representative of natural conditions). The quantity of vegetation removed would ultimately be determined during final project design and serve as the basis for determining the amount of replacement landscape planting required for the project. Following construction, vegetation would be replaced where adequate setback occurs within the right-of-way, and where planting is feasible per Caltrans policies. Areas that may not be feasible to replant are estimated in the environmental document, and include segments of the highway with Classified Landscaped Freeway status.

Consistent with Caltrans policy, highway planting, including landscaping, irrigation systems, and plant establishment would be funded by the roadway contract, and designed and executed under a separate highway planting contract to follow the roadway contract. Landscape construction will be implemented within two years of completion of highway construction, and will include a three year plant establishment period.

Vegetation would be preserved, and protective measures employed, where no construction is planned. Construction staging areas would avoid existing planted areas to the extent feasible.

The estimated costs for the replacement landscaping have been included in the Preliminary Project Cost Estimate Summary (Attachment D).

5.2.22 Erosion Control

The project would avoid Environmentally Sensitive Areas (ESAs) in or adjacent to the project limits. The proposed ESAs include designated biological habitat and wetlands and other waters of the US Measures would be employed to prevent construction material or debris from entering surface waters or their channels. Best Management Practices (BMPs) for erosion control would be implemented and in place prior to, during, and after construction in order to ensure that no silt or sediment enters surface waters.

Standard Caltrans erosion control measures will be used to protect the transportation facility and to meet water quality discharge requirements. These measures include seeding, planting, rock slope protection, slope paving, and applicable new technologies such as bonded fiber matrix and turf reinforcement mat. In addition to temporary erosion control, the following other erosion control measures are proposed during the construction phase:

- Temporary silt fence
- Temporary drainage inlet protection
- Temporary check dams
- Temporary fiber rolls
- Temporary covers
- Temporary hydraulic mulch
- Temporary fence (Type ESA)

A detailed evaluation of project erosion control measures will be conducted during the PS&E stage in conjunction with design of storm water control measures using Caltrans guidelines for BMPs. Erosion control measures are further explained in detail in the project's Storm Water Data Report (For approval signature page, see Attachment I). Erosion control measures will be defined for the project and included in a Storm Water Pollution Prevention Plan (SWPPP) during final design phase as required by the National Pollutant Discharge Elimination System (NPDES) permit.

The estimated costs for the erosion control measures have been included in the Preliminary Project Cost Estimate Summary (Attachment D).

5.2.23 Noise Barriers

Existing sound walls are present along this corridor and already provide attenuation of freeway noise. The Noise Study Report (NSR) prepared for the project documented the assessment of existing and future (2035) traffic noise levels at noise sensitive receptors in the vicinity of the proposed project and identified whether or not additional noise abatement measures will be necessary for the project to comply with state and federal noise abatement/mitigation requirements.

The study area has existing noise barriers in the form of sound walls along parts of US 101 and along the portion of SR 85 in the project area. To better characterize the noise

environment and existing barriers along the 37.65-mile project corridor, the study area was divided into 16 segments. Single-family and multi-family residences (Category B land uses), active recreational areas (Category C land uses), schools (Category D land uses), churches (Category D land uses), hotels/motels (Category E land uses) are located along the project corridor. The segments, existing barriers, and land uses by activity category are summarized in Table 5.2.23-1.

Table 5.2.23-1: Noise Study Area Summary by Segment

Segment	Segment Description	Existing Barrier Heights (feet)	Land Uses by Activity Category
1	US 101 – Oregon Expressway to SR 85	10–16	B, C and D
2	US 101 – SR 85 to SR 237	8–15	B, C and E
3	US 101 – SR 237 to Lawrence Expressway	7–15	B and E
4	US 101 – Lawrence Expressway to San Tomas/Montague Expressway	12	B, C and E
5	US 101 – San Tomas/Montague Expressway to SR 87	None	B
6	US 101 – SR 87 to I-880	None	E
7	US 101 – I-880 to East Taylor Street	7–12	B
8	US 101 – East Taylor Street to I-280	10–14	B and C
9	US 101 – I-280 to Tully Road	12–13	B, C and E
10	US 101 – Tully Road to East Capitol Expressway	7–14	B, C and E
11	US 101 – East Capitol Expressway to Hellyer Avenue	10–16	B and C
12	US 101 – Hellyer Avenue to Blossom Hill Road	7–15	B and C
13	US 101 – Blossom Hill Road to SR 85/Bernal Road	7–12	B and C
14	US 101 – SR 85/Bernal Road to Bailey Avenue	12	B and C
15	US 101 – Bailey Avenue to Cochrane Road	10	B and C
16	US 101 – Cochrane Road to Tennant Avenue	7–9	B and E

In February, March, and April 2012, noise measurements were conducted to document the noise environment at sensitive land uses along the project corridor. Measurements were also conducted along US 101 in April 2008 for the US 101 Auxiliary Lanes Project (EA 4A330K; Illingworth and Rodkin 2008) and updated and validated for the US 101 Express Lanes Project in December of 2011.

A preliminary noise abatement analysis was conducted that identified the feasibility of constructing or replacing noise barriers to reduce traffic noise levels. None of the sound walls evaluated meet both the feasibility and reasonableness criteria, however, the final decision on the noise abatement will be made upon completion of the project design and the public involvement processes. The Noise Abatement Decision Report is discussed in Section 6.8.

5.2.24 Non-Motorized and Pedestrian Features

The US 101 Express Lane Project does not provide new pedestrian or bicycle facilities and does not modify or alter access to existing ones. Pedestrian and bicycle facilities exist along the local street interchanges within the project limits.

5.2.25 Needed Roadway Rehabilitation and Upgrading

The calculated mainline Traffic Index (TI) value of 14.5 to 16 was used for 40-year pavement designs and a TI value of 13 to 14 was used for 20-year pavement designs. Since it was not anticipated that there is a variation of design life along the length of the project or significant variation of existing pavement sections within these individual segments, two segments were analyzed to simplify the Life Cycle Cost Analysis:

1) East Dunne Avenue to SR 85 in San Jose
2) Lawrence Expressway to SR 85 in Mountain View

Within each of these segments, both rigid and flexible pavement exists; therefore, a separate analysis was performed for each case.

The two middle segments of the project, SR 85 (Mountain View) to I-880, and I-880 to Lawrence Expressway, applied the same alternatives as for East Dunne Avenue to SR 85 (San Jose), since these alternatives were the most conservative ones.

For Segment 1, the Life Cycle Cost Analysis indicated that for Case 1 (existing flexible pavement), Rubberized Hot Mix Asphalt -Type G, (RHMA-G) - flexible pavement with a 20-year design life is the most effective strategy and has the lowest total (agency plus user) cost. For Case 2 (existing rigid pavement), Continuously Reinforced Concrete Pavement (CRCP) - rigid pavement with a 40-year design life is the most effective strategy.

For Segment 2, the Life Cycle Cost Analysis indicated that for Case 1 (existing flexible pavement), Open Graded Friction Course/RHMA-G - flexible pavement with a 40-year design life is the most effective strategy and has the lowest total (agency plus user) cost. For Case 2 (existing rigid pavement), CRCP - rigid pavement with a 40-year design life is the most effective strategy.

Since the type of proposed pavement has a significant impact on the overall project cost, a meeting was held with Caltrans on February 5, 2013 to discuss the proposed pavement widening strategy. In locations with existing rigid pavement, several alternatives were evaluated for cost effectiveness, ride quality, and design life:

- Widen with a flexible pavement and overlay the existing rigid pavement to eliminate joints within lanes
- Widen with a flexible pavement and crack and seat and overlay the existing rigid pavement
- Widen with a rigid pavement and accept that there will be pavement joints within the lanes
- Saw-cut existing rigid pavement at the adjacent lane line to eliminate joint and widen with rigid pavement

No pavement rehabilitation is anticipated for this project. Additional cost is included in the project cost estimate to provide a fresh pavement surface for 13 miles of US 101 as recommended by Caltrans District 4 Design and Traffic Safety Departments and concurred by VTA on July 19, 2014. The limits identified to receive fresh surface is shown on the footnote of the Typical Sections in Attachment C. Specific locations and pavement treatment will be coordinated with Caltrans planned pavement rehabilitation and preventative maintenance projects to optimize the pavement strategy within the US 101 corridor during final design.

5.2.26 Bridge Modifications

Bridge widening will be required at 5 grade separations within the project limits, which can be found in Table 5.2.26-1. Modifications to existing overcrossing abutments are proposed at locations where cross sectional elements are constrained by the existing structures, which can be found in Table 5.2.26-2. The modifications are limited to "closing" the existing abutment by constructing a special retaining wall which increases the available width for the roadway under the structure.

Table 5.2.26-1: Proposed US 101 Bridge Widening Locations and Dimensions

Bridge No.	Post Mile	Bridge Location	Existing Bridge Dimensions (feet; approximate)	Type of Work
37-344	21.25	Coyote Creek Golf Drive Undercrossing	2 Span 70.1' Width, 169.9' Length L and 2 Span 70.8' Width, 198.1' Length R	Widen Bridge (Inside)
37-404	21.55	Utility Facility Undercrossing (Golf Course)	1 Span 81.7' Width, 84' Length L and 1 Span 82' Width, 84' Length R	Widen Bridge (Inside)
37-347	27.01	Bernal Road Undercrossing	2 Span 69.2' Width, 213.9' Length L and 2 Span 92.2' Width, 214.2' Length R	Widen Bridge (Inside)
37-108	29.72	Coyote Road Undercrossing	3 Span 71.8' Width, 131.9' Length L and 3 Span 71.8' Width, 131.9' Length R	Widen Bridge (Inside and Outside)
37-409	31.00	Yerba Buena Road Undercrossing	1 Span 69.9' Width, 159.7' Length L and 1 Span 69.9' Width, 159.4' Length R	Widen Bridge (Inside and Outside)

Table 5.2.26-2: Proposed Modification to Bridge Abutments

Bridge No.	Post Mile	Bridge Name	Type of Work
37-668	33.03	Tully Road Overcrossing	Modify Abutments
37-222	35.46	San Antonio Street Overcrossing	Modify Abutments
37-48	35.76	Santa Clara Street Overcrossing	Modify Abutments

Bridge No.	Post Mile	Bridge Name	Type of Work
37-123	36.12	Julian/McKee Overcrossing	Modify NB Abutment
37-115	37.99	North San Jose UP	Modify SB Abutment
37-118	38.09	10th Street Overcrossing	Modify SB Abutment
37-403R	39.90	Route 87/101 SEP	Modify SB Abutment
37-183G	39.91	Junction 87/101 SEP	Modify SB Abutment
37-390	42.73	Bowers Avenue Overcrossing	Modify Abutments
37-152	43.85	Lawrence Expressway	Modify Abutments

5.2.27 Cost Estimate

A detailed cost breakdown for the Build Alternative is included in Attachment D. Table 5.2.27-1 summarizes the cost estimate for the construction and support components. A 15% contingency was included in the capital cost.

Table 5.2.27-1: Summary of Construction and Support Cost Estimates

Build Alternative

	Cost
Roadway Items	$329.0 M
Structure Items	$6.2 M
Escalation to Construction mid-point (2017)	$20.5 M
Right-of-way & Utility Relocation	$5.9 M
Capital Total	**$361.6 M**
PA&ED and Final PS&E	$41.0 M
Construction Administration	$28.4 M
Support Total	**$69.4 M**
PROJECT TOTAL	**$431.0 M**

5.2.28 Future Construction

The following projects have been identified within or adjacent to the limits of the US 101 Express Lanes Project in the MTC's RTP 2040(Plan Bay Area):

Currently in the Feasibility Study/Project Initiation Document (PID) Phase:

- Improve US 101 southbound Trimble Road/De La Cruz Boulevard/Central Expressway interchange – Reference Number 21722
- Reconfigure local roadway and interchange at US 101/Blossom Hill Road in San Jose – Reference Number 21785
- Widen westbound Route 237 on-ramp from Route 237 to northbound US 101 to 2 lanes and add auxiliary lane on northbound US 101 from the Route 237 on-ramp to the Ellis Street interchange – Reference Number 22145
- Construct US 101/Mabury Road/E Taylor Street interchange – Reference Number 22965
- Construct a new interchange at US 101 and Montague Expressway – Reference Number 230262
- Improve US 101 southbound ramps at 10th Street – Reference Number 230347
- Widen southbound US 101 off-ramp at Cochrane Road from 2 to 3 lanes – Reference Number 230350
- Implement local roadway improvements to Old Oakland Road over US 101 – Reference Number 230492

Currently in PA&ED Phase:

- Route 237 express lanes from I-880 to Mathilda Avenue. PA&ED was completed on June 10, 2015. Final design is anticipated to begin Summer 2015 – Reference Number 230676
- SR 85 express lanes from US 101 in Mountain View to US 101 in South San Jose. PA&ED was completed on April 24, 2015. Final design is anticipated to begin Summer 2015 - Reference Number 230674
- Extend Mary Avenue north across Route 237 (includes reconfiguring the US 101/North Mathilda Avenue interchange) – Reference Number 22153

VTA Permit projects currently waiting for construction funds:

- Modify southbound US 101 to southbound SR 87 to a 2-lane off-ramp – EA 0412-NMC-01098
- Modify existing TOS equipment at northbound Old Bayshore Highway on-ramp and southbound North 4th Street on-ramp – EA 0412-NMC01081
- Widen to provide HOV preferential lane and install ramp metering at southbound Story Road loop and diagonal on-ramp – EA 04-4G1300

Currently in Construction Phase:

- Construct auxiliary lanes on US 101 in Mountain View and Palo Alto from Route 85 to Embarcadero Road – Reference Number 230531
- Improve US 101/Capitol Expressway interchange (includes new northbound on-ramp from Yerba Buena Road) – Reference Number 22142

The above project improvements have been taken into consideration for the traffic and environmental studies and in the project's proposed geometry.

5.3 Rejected Alternatives

Several alternatives were considered during the early stages of project development but were eliminated because they did not meet the project's purpose and need or would have unacceptable environmental impacts. The following describes these alternatives and why they were not advanced for further evaluation.

5.3.1 Dual Express Lanes throughout the Project Limits

Dual express lanes in both directions throughout the project limits were considered. Providing two lanes through the SR 85 (San Jose) interchange, SR 237 interchange, and the SR 85 (Mountain View) interchange required design exceptions for cross sectional elements that were undesirable. The alternative to acquiring the design exceptions was to reconstruct the interchange structures which would cause substantial environmental and Right of Way impacts and increase the project cost.

The project geometry was revised to include a single express lane for short segments south of the SR 85 interchange in Mountain View and north of the SR 85 interchange in San Jose.

5.3.2 Reversible Express Lanes

Reversible express lanes were considered between Cochrane Road in Morgan Hill and SR 85 in San Jose as part of the Value Analysis Study performed in January of 2013. The reversible express lanes would be constructed in the median of US 101 to allow for peak traffic flow to be accommodated for this segment, with access controls and barrier separation. The alternative was considered due to the directional traffic patterns between southern Santa Clara County and Silicon Valley.

The reversible express lane alternative introduced additional barriers, requiring additional outside mainline widening for the standard shoulder width and horizontal clearances required on either side of the barrier. This alternative would require replacement of the Coyote Creek Golf Drive and Utility Facilities (golf course) undercrossings and Burnett Avenue, Bailey Avenue, and Metcalf Road overcrossings as well as widening or replacement of the Coyote Creek Bridge. Due to the substantial environmental and Right of Way impacts and increases to project cost, the reversible express lane alternative was rejected.

6. Considerations Requiring Discussion

6.1 Hazardous Waste

The Initial Site Assessment (ISA) prepared for the proposed project evaluated the following:

- An Environmental Data Resources, Inc. (EDR) environmental information database search for known potential hazardous materials sites, including underground storage tanks (USTs); landfills; hazardous waste generation, treatment, storage, and disposal facilities; and subsurface contamination within a study area extending up to 1 mile from the project area (the right-of-way and adjacent areas within the project limits). This EDR report was performed for the entire project corridor

- A review of an existing ISA that addressed portions of the study area.

- Project staff visited the project area on August 4 and 5, 2011, to perform a site reconnaissance.

- A review of available historical aerial photographs and topographic maps of the project area and adjacent areas provided by EDR.

- For properties within or near the right-of-way that showed potential for environmental impacts to the soils and/or groundwater of the project area, Project staff reviewed the applicable available files from the Envirostor and Geotracker web-based databases maintained by the California Department of Toxic Substances Control (DTSC) and San Francisco Bay Regional Water Quality Control Board (RWQCB), respectively, and for the US Environmental Protection Agency (USEPA) Region 9.

The ISA did not include soil or groundwater sampling or sampling for asbestos, radon, lead-based paint, or lead in drinking water. It is possible that currently unrecognized contamination might exist in the project area.

The ISA has revealed a high likelihood that soil contaminated with Aerially Deposited Lead (ADL) is present. Based on recent projects within Santa Clara County, soils adjacent to US 101 within the project limits may be impacted by Naturally Occurring Asbestos (NOA). Thermoplastic paints on the freeway are likely to contain lead. Soils adjacent to US 101 may be impacted by pesticides based on the historic agricultural use of many areas within Santa Clara County.

In addition, thirteen potential hazardous materials sites outside the project area but within the study area were identified during performance of this ISA, as shown in Table 6.1-1. Eleven were identified as a result of environmental database searches and two were found as a result

of reviews of historical reports and a site reconnaissance. URS recommends additional investigation for potential impacts to the project area from historical or current conditions at these properties, in conjunction with the site investigation for ADL.

Table 6.1-1: Potential Hazardous Materials Sites Impacting the Project Area

Site No.	Source of Information	Owner or Occupant/ Address	Description
1 (2)	EDR report	**East Charleston Business Park** 2513 East Charleston Road, Mountain View, CA 94043	Open - Remediation; RWQCB (Region 2) lead; site is an operating office complex. COC - TCE. Groundwater monitoring being performed at the site on voluntary basis to remediate TCE and other halogenated VOCs. Groundwater has been encountered at 6 to 8 feet bgs and determined to flow in generally northerly direction toward the Bay. TCE has been identified as constituent of concern with detected levels up to 1,300 µg/L.
2 (2)	EDR report USEPA Region 9 Superfund website	**CTS Printex Corporation** Plymouth and Colony Streets, Mountain View, CA 94043	Inactive; CTS Printex Corp. manufactured printed circuit boards from 1966-1985; SWRCB (lead); COCs - acid waste water containing copper, lead, and organic wastes containing trichloroethane (TCA), TCE and other solvents. High levels of TCE, 1,1,1-TCA, and 1,1-DCE in monitoring wells downgradient of the site. In October 1986 California DHS certified closure of the facility. Company is pumping water and discharging to Mountain View sanitary sewer. The company continues to monitor to define plume of contaminated ground water. The RWQCB issued a cleanup and abatement order in March 1987.
3 (2)	EDR report USEPA Region 9 Superfund website	**Teledyne Semiconductors Inc.** • 1300 Terra Bella Avenue, Mountain View, CA 94043 • **Spectra-Physics Inc.** 1250 W Middlefield Road, Mountain View, CA 94042	Manufactured semiconductors since 1962; SWRCB (lead); NPL site. The site has used a variety of toxic chemicals, primary chlorinated organic solvents which contaminate ground water. Investigation in June 1984 revealed that contaminants had migrated to the north and had affected approximately 50 private domestic wells. Teledyne is planning on pumping the contaminated groundwater in upper aquifer to the surface for subsequent

Site No.	Source of Information	Owner or Occupant/ Address	Description
			treatment. • Spectra-Physics has manufactured electronic and gas lasers. Soil and GW samples collected contained TCE, TCA, and 1,2-DCE. In February 1990, Spectra Physics installed vapor extraction system to reduce influence of contaminants in soil. The Teledyne NPL site is being managed in conjunction with the Spectra-Physics NPL site, as the contaminant plumes have merged.
4 (2)	Site Reconnaissance and review of US 101 Auxiliary Lanes Project ISA	**Caltrans Maintenance Yard** Old Middlefield Way at southbound US 101 on-ramp	Caltrans maintenance yard
5 (3)	EDR report USEPA Region 9 Superfund website	**Former Moffett Field Naval Air Station** Moffett Field, Mountain View, CA 94035	Currently on the NPL. The major contaminants in groundwater are volatile organic compounds. Facilities at these sites have used a variety of toxic chemicals, primarily chlorinated organic solvents, which contaminated a common groundwater basin. Although these sites are listed separately, USEPA intends to apply an area-wide approach to the problem as well as take site-specific action as necessary.
6 (3)	EDR report SWRCB GeoTracker website	**Vacant** 870 Leong Drive, Mountain View, CA 94043	Former Denny's restaurant. Open - Site Assessment, RWQCB (Region 2), Cleanup Program Site. Potential Media Affected: Other Groundwater (uses other than drinking water), Soil, Under Investigation. Potential COCs: Other Chlorinated Hydrocarbons, TCE. Groundwater beneath the site is contaminated with chlorinated VOCs. There was no indication that a release of hazardous materials ever occurred at the site. Contamination at the site appears to be the result of various off-site sources.

Site No.	Source of Information	Owner or Occupant/ Address	Description
7 (3)	EDR report USEPA Region 9 Superfund website	**Intel Corporation/Fairchild Semiconductor/Memory and High Speed Logic/NEC Electronics America Inc.** 365 Middlefield Road/313 Fairchild Drive, Mountain View, CA	Intel Site: SWRCB- lead; VOCs (TCE, DCE, and vinyl chloride) have been detected in soil and shallow groundwater at the site and in shallow groundwater downgradient of the site. Since 1982 Intel has been pumping groundwater and treating by carbon adsorption. This is part of the MEW joint NPL cleanup site. Site believed to be currently occupied by Opcode, World Energy Labs and Skywatch Energy.
8 (4)	EDR report USEPA Region 9 Superfund website	**National Semiconductor** 2900 Semiconductor Drive, Santa Clara, CA 95051	National Semiconductor Corp. manufactures electronic equipment at a plant in Santa Clara. The facility occupies about 50 acres and is surrounded by residential, industrial, and commercial business areas. Monitoring wells on the site are contaminated with vinyl chloride, TCE, 1,1-DCE resulting from LUSTs. Contamination has migrated off-site affecting approximately 300,000 people who depend on drinking water wells located within 3 miles of the facility. Under direction by RWQCB, USEPA and CA-DHS, the company has commenced a program of pumping and treating groundwater contamination. Currently on the Final NPL.
9 (5)	EDR report SWRCB GeoTracker website	**Hellwig Family Limited** 1301 Laurelwood Road, Santa Clara, CA 95054	LUST Cleanup Site, Open - Site Assessment, Potential COC: Diesel, Fuel Oxygenates, Gasoline, MTBE. September 2011, site closure request submitted to SCCDEH (Low Risk Groundwater Fuel Release Case).
10 (5)	EDR report SWRCB GeoTracker website	**DTG Operations Inc.** 2251 Airport Boulevard, San Jose, CA 95131	Open - Site Assessment, Santa Clara County LOP, Cleanup Program Site, Potential COC: Gasoline, Other Petroleum. Possible sources of contamination are aboveground fuel storage tanks, car washes and likely oil-water separator. Six soil samples were collected and only analyzed for Total Recoverable Petroleum Hydrocarbons and reported concentrations between

Site No.	Source of Information	Owner or Occupant/ Address	Description
			230 and 2,300 parts per million (ppm).
11 (6)	EDR report SWRCB GeoTracker website	**Action Forklift** 1441 Terminal Avenue, San Jose, CA 95112	LUST Cleanup Site, Open - Site Assessment, Santa Clara County LOP, Potential COC: Gasoline. The soil vapor samples data indicate the presence of a wide range of hydrocarbon compounds in shallow soil vapor, with the highest concentrations generally occurring in soil-gas samples SV2, SV3, and SV4. For select compounds such as acetone and xylenes, the highest concentrations occur in SV5. A comparison of detected hydrocarbon levels in soil gas with available environmental screening levels (ESLs) for residential and commercial/industrial land use indicates that only benzene has exceeded residential ESLs. None of the detected chemicals exceeded available commercial/industrial ESLs, suggesting the absence of significant risks associated with the vapor intrusion exposure pathway. This work is summarized in PIERS' "Report of Additional Phase II Site Investigation" dated October 27, 2008.
12 (6)	EDR report SWRCB GeoTracker website	**Safety Kleen Corporation** 1147 10th Street, San Jose, CA 95112	Open - Inactive, RWQCB (Region 2), Cleanup Program Site, Potential COC: Solvents. Facility Status: Leak being confirmed. As of 2009, the site remains open with no other regulatory agency oversight activities being conducted by the lead agency (in this case, RWQCB). The site is listed as a SLIC, AST, Historic UST, and RCRA-SQG with known soil impacts from solvents. Groundwater impacts are unknown.
13 (7)	Site Reconnaissance	**PG&E electrical substation, Intersection of Metcalf Road and US 101**	Large electrical substation.

Based upon the findings and conclusions of the ISA, additional investigation during the design phase is recommended to determine any potential impacts to the project area from historical and current conditions at these properties, in conjunction with the site investigation for aerially-deposited lead. If dewatering is planned down gradient of any of the properties (to be determined during final design phase), groundwater samples should be collected to evaluate whether the known VOC releases would affect project construction activities. The ISA report was submitted to Caltrans in August of 2012 and was approved on October 31, 2012.

6.2 Value Analysis

Value Analysis (VA) principles have been used throughout the development of this project. A VA Study was conducted in January of 2013. The VA Study analyzed the conceptual plans and ensured the compatibility with the surrounding conditions. The preliminary recommendations were summarized in a subsequent VA Study report completed in April of 2013.

The following are the VA alternatives that have currently been accepted for implementation into the project:

- Eliminate or significantly reduce minor items in cost estimate
- Reduce project contingency to 20% (or less)

Based on the preliminary recommendations, the project cost estimate was revised which reduced the overall project cost. Remaining recommendations will be evaluated and implemented during the final design phase.

The following are the VA alternatives that require further study and analysis for ultimate implementation into the project. The potential change in cost, schedule, and performance will be further evaluated and refined as the project progresses through the design phase. At the point in time at which the following VA alternatives can be sufficiently validated for technical implementation into the project design, the cost savings, change in schedule, and performance changes will be updated to reflect the technically implemented concept and will be carried forward in the project cost and schedule estimates.

- Consider use of Construction Manager/General Contractor (CM/GC) for delivery of project
- Optimize the number of access points on both northbound and southbound directions
- Do not use 4-foot buffer and use 2-foot buffer where widening is required
- Reduce the lanes/shoulders to minimize the "sliver" of widening to the outside
- Minimize inside widening in the southern section between East Dunne Avenue and SR 85 South
- Minimally widen the inside shoulder in the southern section between South SR 85 and I-280
- Utilize flexible Asphalt Concrete (AC) pavement for portions that are widened

- Overlay on existing Portland Cement Concrete (PCC) pavement and continuous flexible Asphalt Concrete express lanes
- Combine overhead signage and hang on structures where feasible
- Do not widen structure at Bernal Road

6.3 Resource Conservation

The energy impacts of transportation projects are typically divided into two areas: (1) the direct energy required for ongoing operations, in this case, the use of petroleum-based fuels and alternative fuels for motor vehicle travel within the project area, and (2) the indirect energy required to produce the materials for and to carry out construction of the project. In the long term, the direct, or operating, energy requirements are usually greater and of primary importance.

The proposed project will improve traffic operations and facilitate traffic movements through the project area. The lessening of congestion and related traffic delay is associated with faster average travel speeds and more efficient vehicle operation compared to no-build conditions. Improved operations are likely to reduce vehicle energy use, whether in the form of petroleum fuels or alternative sources of energy. In addition, the improved speeds and schedule reliability would work as incentives for commuters and other travelers to use the express lanes, carpool and/or take advantage of local and express buses that would move freely along the express lanes. For these reasons, the proposed project would be anticipated to have a beneficial or, at worst case, neutral effect on direct energy use.

No major facilities can be salvaged or relocated from this project. However, whenever possible, existing roadway items such as signs, light standards, guardrails, and other associated hardware will be relocated or stockpiled to be used at a later date. Asphalt concrete pavement and concrete removed from existing ramps and structures could be reused as either base material or embankment material.

The potential for using recycled asphalt concrete or rubberized asphalt concrete will be determined during the final design phase.

6.4 Right-of-Way

6.4.1 General

The Build Alternative does not require permanent right of way acquisitions. However, there will be a need for twenty-one (21) temporary construction easements along properties abutting the proposed improvements on US 101, which are shown in Attachment E.

A right-of-way data sheet has been prepared based on the right-of-way needs of the conceptual design developed for the project which can also be found in Attachment E.

6.4.2 Relocation Impact Studies

Permanent residential or commercial properties acquisitions are not required for the Build Alternative therefore the preparation of the relocation impact studies is not required.

6.4.3 Airspace Lease Areas

Airspace leases are not within the project limits. Caltrans may consider airspace lease proposals in the future. All proposals should comply with Caltrans' Wireless Licensing Program, Encroachment Permits, Airspace Lease Environmental Checklist, Airspace Lease Plant Setback List, and Licensing Fees.

6.4.4 Railroad Involvement

Work within operating railroad right of way is not anticipated as part of this project. A short clause will be added to the special provisions during the final design phase notifying the contractor to stay out of the railroad right-of-way. If construction activities take place within twenty-five feet of the centerline of the nearest rail and even though the work is outside the railroad's right of way, the railroad/VTA may require that a flagger be present.

6.4.5 Utility and Other Owner Involvement

The project area contains overhead electric and communications lines and underground electric, gas, sanitary sewer, water, reclaimed water, communications, and fiber optic lines. Utilities in the project area were identified through site visits and reviews of utility plans obtained from Caltrans, VTA, utility providers, and local municipalities. Utility providers in the project area are listed below by category:

- Gas and electric—PG&E, City of Santa Clara, and City of Palo Alto, Calpine, Swissport, Air Products.
- Communications—AT&T, Comcast, Level 3, Verizon, Nextlink, Qwest, and MCI
- Water—City of Morgan Hill, San Jose Water Company, Santa Clara Valley Water District, California Water Service Company, Great Oaks Water Company, City of Sunnyvale Water Division, City of Mountain View Water Division, City of Palo Alto Water Division, and City and County of San Francisco
- Sanitary—City of Morgan Hill, City of San Jose, City of Santa Clara, City of Sunnyvale, City of Mountain View, City of Palo Alto, and City of Los Altos

Utility relocations will be necessary where there is a conflict with the proposed improvements. Every effort will be made to minimize utility conflicts and relocations.

A number of utilities are located within the Caltrans right of way and do not meet the Caltrans Utility Encroachment Policy. The majority of these utilities are not in conflict with

the proposed improvements and do not adversely affect highway safety and traffic operations, thus the project proposes to perpetuate the existing condition. The utilities are documented in the Utility Policy Variance Request (UPVR) which was reviewed by Caltrans District 4 Right of Way and Headquarters Division of Design in December of 2012, July of 2013, October 2013, and July of 2014. Caltrans Headquarters conceptually approved the UPVR and deferred final UPVR approval to PS&E Phase on October 17, 2014.

Verifications of utilities will be required. The need for positive location (potholing) as prescribed by the Policy on High and Low Risk Underground Facilities Within Highway Rights of Way (January, 1997) will be ascertained during the final design phase once utility facilities have been plotted. Utility relocations are anticipated. Table 6.4.5-1 shows the anticipated utility relocations for the project:

Table 6.4.5-1 - Anticipated Utility Relocations

	Facility	Owner	State Obligation	Local Obligation	Utility Owner Obligation
A.	6" distribution gas in 8" casing (extend casing), station “A” 1410+50	PG&E	$0	$30,000	$30,000
B.	20" water in 36" casing (extend casing), station “A” 1465+30	City of Santa Clara	$0	$80,000	$0
C.	U/G electric in 48" casing (extend casing), station “A” 1494+70	City of Santa Clara	$0	$330,000	$0
D.	12" water in casing (extend casing), station “A” 1510+70	City of Santa Clara	$0	$80,000	$0
E.	12" Recycled water in 24" casing (extend casing), station “A” 1512+20	City of Santa Clara	$0	$80,000	$0
F.	33” VCP sanitary sewer in 48” casing (extend casing), station “A” 1548+50	City of Sunnyvale	$0	$120,000	$0
G.	20” transmission gas in 30” casing (extend casing), station “A” 1551+70	PG&E	$0	$90,000	$0
H.	10” transmission gas in 16” casing (extend casing), station “A” 1551+90	PG&E	$0	$70,000	$0
I.	18” water in 30” casing (extend casing), station “A” 1551+30	City of Sunnyvale	$0	$80,000	$0
J.	4" distribution gas in 8" casing (extend casing), station “A” 1638+70	PG&E	$0	$30,000	$30,000
		Totals	$0	$990,000	$60,000

6.5 Environmental

The Initial Study with Proposed Mitigated Negative Declaration / Environmental Assessment (IS/EA) was prepared in accordance with Caltrans' environmental procedures, as well as State environmental regulations, and is the appropriate document for the project. The Draft IS/EA was approved by Caltrans on December 5, 2014 and circulated for public review, as described in more detail in Section 7.1 Public Hearing Process.

The Final Environmental Document is a Mitigated Negative Declaration under the California Environmental Quality Act (CEQA) and Finding of No Significant Impact (FONSI) under the National Environmental Policy Act (NEPA). The Final Environmental Document with Mitigated Negative Declaration and Finding of No Significant Impact (MND/FONSI) was approved by Caltrans on July 21, 2015. Attachment H includes the title and summary pages of the approved MND/FONSI.

6.5.1 Hydrology and Floodplain

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative.

A total of 13 receiving water bodies have been identified for the project. From south to north, these waterways are: Llagas Creek, Coyote Creek, Upper Silver Creek, Lower Silver Creek, Guadalupe River, San Tomas Aquino Creek, Calabazas Creek, Sunnyvale East Channel, Sunnyvale West Channel, Stevens Creek, Permanente Creek, Adobe Creek and Matadero Creek. The southernmost portion of the project, from East Dunne Avenue to Cochrane Avenue, is within the Central Coast Regional Water Quality Control Board (CCRWQCB). Flow from this area drains into Madrone Channel, which flows south toward Llagas Creek and eventually into Monterey Bay. Madrone Channel does not cross the US 101 alignment within the project limits. The remaining 12 receiving water bodies cross US 101 within the project limits with Coyote Creek crossing the roadway at four separate locations. All the waterway crossings within the project limits ultimately discharge to the San Francisco Bay.

A total of 29 floodplains are identified within the project limits using the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs). The project does not constitute a longitudinal encroachment of the base floodplain. Coyote Creek generally runs parallel to US 101 and crosses US 101 four times within the project limits. However, the project will not introduce fill that will decrease the flow area in the Coyote Creek floodplains. In addition, the project team is currently working with Caltrans to evaluate the possibility of retaining the existing double thrie beam barriers, or replace them with structures that will not attenuate flow within the project limits. At some locations, the project will replace the existing structures (e.g., existing concrete barriers) that may restrict flow in the floodplains, with new structures, but the existing flow characteristics will not change as a result of the new structures, and therefore, will not constitute a longitudinal encroachment.

Impervious areas will increase along US 101 as a result of the roadway widening. Stormwater runoff volumes and velocities from the project area are expected to increase with the implementation of the project due to the increase in impervious surfaces. The increase in impervious area, however, will be minimal in comparison to the overall size of the watersheds for the creeks or floodplains. A Location Hydraulic Study report for this project was prepared and was approved by Caltrans on July 26, 2013.

6.5.2 Highway Drainage

There will be an increase of impervious area due to pavement widening. This will result in increases to peak stormwater runoff and a reduction of pervious surfaces available for infiltration. This increase however does not pose a significant risk as detailed in the Location Hydraulic Study (LHS) report. This increase to stormwater runoff is minimal in the comparison to the watershed area for each creek. The largest increase to impervious area is less than 0.4% as detailed in the LHS report, with no special mitigation measures required.

The LHS report also identifies existing hydrologic and hydraulic conditions, highway drainage design elements, and hydrologic and hydraulic design criteria which were prepared for the project. The existing drainage systems within the project limits consist of roadside ditches, cross culverts, longitudinal culverts, asphalt concrete dikes, and concrete curbs with inlets to collect storm water at shoulders. The existing roadway drainage facilities would either be modified to fit the new drainage features or be removed and replaced by new drainage systems. The change to the drainage system would result in changes in the interception of surface runoff. The proposed drainage systems will be developed during the final design phase.

There will be no mainline alignment modifications or significant changes in grade proposed as part of the project. There will be no bridge, cross culvert, or channel modifications at the major waterway crossings as part of this project, and all overall existing drainage patterns will be maintained. At various areas, there will be wet pavement issues caused by subsurface water. Such issues will be investigated and addressed during the design phase.

6.5.3 Water Quality and Storm Water Runoff

A Storm Water Data Report (SWDR) and a Water Quality Study Report (WQS) have been prepared for the US 101 Express Lanes Project. These reports cover all known water quality issues, all potential water quality impacts, disturbed soil areas as well as all potential treatment BMP locations. A total of 13 receiving water bodies have been identified in this project; 12 which lead to the San Francisco Bay and 1 channel which flows to Monterey Bay. The project would have a disturbed soil area of approximately 220 acres and would increase impervious surface areas by approximately 60.61 acres. Impacts to water quality, storm water runoff, and groundwater recharge would not be substantial in comparison to the overall watershed and groundwater area.

Temporary and permanent erosion control BMPs will be included in the project to prevent an adverse change in downstream water quality. Measures will include feasible temporary (short-term) and permanent (long-term) BMPs. Feasible treatment BMPs that will be considered during the final design phase include biofiltration devices, infiltration devices, media filters, and detention devices. The required Storm Water Pollution Prevention Plan will include storm water BMPs for temporary soil stabilization, sediment control, tracking control, wind erosion control, non-storm water management, and waste management/materials pollution control. The signature page of the approved SWDR for the project can be found in Attachment I.

6.5.4 Wetlands

Approximately 4.27 acres of potential jurisdictional wetlands and waters of the US (1.03 acres of wetlands; 3.24 acres of waters of the US) were identified in the Biological Study Area (BSA). Waters of the State within the BSA include the waters of the US and 0.09 acre of wetlands that do not have connectivity to traditional navigable waters. Waters in the BSA include perennial, intermittent, and ephemeral streams and freshwater wetlands. The project would not result in impacts to or fill within any wetlands or waters under the jurisdiction of the US Army Corps of Engineers (USACE) in the BSA. However, the project would permanently affect 0.06 acre of waters of the State.

All proposed construction would be limited to the defined project area. Environmentally sensitive areas (ESAs) adjacent to the project area will be identified on contract plans and discussed in the Special Provisions of contract specifications. The ESAs will include areas designated in the environmental document and biological reports as wetlands or waters that have been specifically identified to avoid during construction. ESA provisions may include, but are not limited to, the use of temporary orange fencing to delineate the proposed limit of work in areas adjacent to sensitive resources or to delineate and exclude sensitive resources from potential construction impacts. Contractor encroachment into ESAs will be prohibited (including the staging/operation of heavy equipment or casting of excavation materials). ESA provisions will be implemented as a first order of work and remain in place until all construction is completed.

The Caltrans Standard Specifications require the Contractor to submit a Water Pollution Control Plan to minimize water pollution impacts. These Best Management Practices (BMPs) include, but are not limited to ESA fencing, erosion control measures, and vehicle and equipment cleaning and storage measures to minimize risk of discharge into wetlands, riparian areas or other sensitive land cover. All temporarily disturbed areas, such as staging areas, will be returned to pre-project or ecologically improved conditions within 1 year of completing construction or the impact will be considered permanent.

6.5.5 Biological Resources

The US 101 corridor primarily consists of paved freeway surrounded by landscaped, graded roadsides and bordered by soundwalls. These areas lack native plants and high-quality or natural habitat for wildlife. With the exception of stream crossings, the areas that support native plants and natural habitat for wildlife are limited to the project segment south of Yerba Buena Road. Disturbance of upland vegetation by construction equipment and workers could result in permanent and temporary impacts to potential upland dispersal habitat for several special-status species. In addition, project construction has the potential to affect nesting migratory birds and nesting raptors, and bat species.

BMPs would be implemented during project construction to ensure that potential impacts to special-status species and habitats are avoided and minimized to the greatest extent practicable. Resource-specific avoidance and minimization measures are proposed to protect special-status species as described in Appendix G of the IS/EA (Environmental Commitment Record). These measures include preconstruction surveys, buffers around ESAs, worker training on sensitive resources, and biological monitoring. Upon completion of the project, all areas that have been temporarily affected will be restored to approximately original site conditions.

Impacts to the California red-legged frog, California tiger salamander, bay checkerspot butterfly, coyote ceanothus, Santa Clara Valley dudleya, and Metcalf Canyon jewel-flower would be mitigated under the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). Mitigation under the HCP/NCCP would consist of an in-lieu payment for impacts to upland dispersal habitat, cattail wetland habitat, and/or serpentine grasslands. If mitigation under the HCP/NCCP is not feasible, mitigation would be implemented off-site in coordination with the US Fish and Wildlife Service (USFWS). Caltrans requested a Letter of Concurrence from the U.S. Fish and Wildlife Service that addresses project related effects to those species. The U.S. Fish and Wildlife Service issued a Biological Opinion on March 10, 2015 (FF08ESMF00-2014-F-0534-2).

6.5.6 Cultural Resources

The records search and background research identified 26 cultural resources—22 archaeological sites, three combined archaeological/built environment resources, and one built environment resource—and two Native American reburial areas that were previously recorded within or adjacent to the Areas of Potential Effect (APE).

Through field reconnaissance and background research it was determined that three previously recorded archaeological sites, one previously recorded built environmental resource, and one reburial area are not present within the APE. This reduced the number of archaeological sites within the APE to 22.

The 22 sites within the APE consist of 10 that were evaluated by prior studies and were determined eligible for listing in the National Register of Historic Places (NRHP) and the

California Register of Historic Resources (CRHR), and 12 that have not been evaluated for listing in the NRHP.

A geoarchaeological model of weighted sensitivity for buried archaeological sites was created for the APE. This model reveals that approximately 60 percent of the APE is located in an area with very high or high sensitivity for buried archaeological resources; approximately 24 percent of the APE is located in an area with moderate sensitivity for buried archaeological resources; and approximately 16 percent of the APE is located in an area with low or very low to no sensitivity for buried archaeological resources.
It is Caltrans' policy to avoid cultural resources whenever possible. Further investigations may be needed if the site(s) cannot be avoided by the project. If buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. Additional survey will be required if the project changes to include areas not previously surveyed.

Refer to the IS/EA for a complete discussion of biological and cultural resources in the project area.

6.5.7 Paleontology

The project area is mapped as Mesozoic igneous and metamorphic rocks, overlain by the Plio-Pleistocene Santa Clara Formation, which is in turn is overlain by Pleistocene and Holocene alluvial sediments. Generally the northern half of the Project Study Area (PSA) crosses surficial Holocene deposits of great depth. The southern half of the PSA crosses surface exposures of the igneous and metamorphic rocks, the Santa Clara Formation, Pleistocene alluvium, and Holocene units.

Research conducted for the Paleontological Evaluation Report/Paleontological Mitigation Plan (PER/PMP; URS 2013j) indicates that Pleistocene alluvial fan deposits and the Pliocene/Pleistocene Santa Clara Formation have yielded invertebrate and vertebrate fossil finds. No fossil finds are known from any other formations in the project corridor. An archival records search conducted by the University of California Museum of Paleontology (UCMP) indicated that no fossils have been found in the project corridor; however, three fossil localities were identified within 2 miles of the project corridor.

The project's Paleontological Evaluation Report (PER)/Paleontological Mitigation Plan (PMP) approved by Caltrans on February 15, 2013 provides for full-time monitoring only of grading and trenching of the limited surface exposures of Pleistocene alluvial fan deposits (totaling 0.6 linear miles) and surface exposures of the Santa Clara Formation (totaling 1.7 linear miles).

6.6 Air Quality Conformity

The project would not conflict with or obstruct implementation of the applicable air quality plan and would meet all transportation conformity requirements. The project is included in the Metropolitan Transportation Commission's (MTC's) 2013 Regional Transportation Plan (RTP) (Reference Number 240466), which was found to conform by MTC on July 18, 2013, and FHWA and Federal Transit Administration (FTA) made a regional conformity determination on August 12, 2013. The project is also included in the 2013 Transportation Improvement Program (TIP), which was adopted by MTC on July 18, 2013 (TIP ID No. SCL110002). The MTC's 2013 Transportation Improvement Program was found to conform by FHWA and FTA on August 12, 2013.

The design concept and scope of the proposed project is consistent with the project description in the 2013 RTP, the 2013 TIP, and the traffic assumptions of the MTC's regional emissions analysis. The project is in conformity with the State Implementation plan (SIP) and will not otherwise interfere with timely implementation of any Transportation Control Measures (TCM) in the applicable SIP.

The project conducted consultation with the MTC Task Force for $PM_{2.5}$ conformity analysis on December 6, 2012 and it was determined to not be a project of air quality concern. The findings of that determination were included in the IS/EA that was circulated for public review and comment. A final determination on project-level conformity was issued by the FHWA and is included in the IS/EA.

6.7 Title VI Considerations

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in the IS/EA.

Additionally, VTA is also committed to ensuring that no person is excluded from participation in, denied the benefits of, or discriminated against under its project, programs or activities on the basis of race, color, creed, national origin, sex or age as provided in Title VI of the Civil Rights Act and 49 United States Code Section 5332.

ADA compliance is not applicable to the US 101 Express Lanes Project as the project does not propose any improvements on local intersections or streets. The proposed US 101 Express Lanes Project will increase freeway efficiency by utilizing the available unused capacity in the HOV lane which will provide congestion relief and travel time savings for all users on US 101.

6.8 New Noise Protocol

The project will comply with all current federal and Caltrans policies related to noise.

7. Other Considerations As Appropriate

7.1 Public Hearing Process

Caltrans and VTA circulated the IS/EA for public review and comment from January 12, 2015 to February 26, 2015. Each of the agencies and individuals received printed or electronic copies of the document or mailers with information about the public meetings for the project and a link to the IS/EA on the Caltrans District 4 environmental documents website. In addition, mailers were sent to all addresses within 0.25 mile of the project corridor. The mailer was translated into five languages (Spanish, Vietnamese, Korean, Chinese and Tagalog). A copy of the IS/EA was made available at the San Jose, Morgan Hill, Mountain View, Palo Alto, Santa Clara and Sunnyvale public library reference shelves for public review. Also, the meeting notice was posted on the VTA website (www.vta.org/expresslanes), VTA blog post (http://bit.ly/1wcm47a), VTA Facebook page, VTA Twitter account, and on the VTA web page for the project (http://www.vta.org/projects-andprograms/vta-express-lanes-us-101-express-lanes-project). An email was also sent to 1,500 recipients on the VTA gov email list.

The Notice of Availability was placed in the following newspapers on the following days: local English-language newspapers (*Gilroy Dispatch*, January 16, 2015, *Los Altos Town Crier*, January 14, 2015, *Mercury News*, January 12, 2015, *Morgan Hill Times*, January 16, 2015, *Mountain View Voice*, January 16, 2015, *Palo Alto Post*, January 14, 2015, *Santa Clara Weekly*, January 14, 2015 and *Sunnyvale Sun*, January 16, 2015); and foreign-language newspapers that serve the project corridor (*El Observador*, January 16, 2015-Spanish, *Korea Daily Times*, January 16, 2015-Korean, *Philippines Today*, January 14, 2015-Tagalog, *Sing Tao Daily*, January 16, 2015-Chinese, and *Viet Nam*, December 30, 2015-Vietnamese).

Three open house public meetings were held for the proposed project. Fact sheets were available in English, Spanish, Vietnamese, Korean, Chinese and Tagalog.

- The first public meeting was held on Thursday, January 22 2015, from 5:30 p.m. to 7:30 p.m. at the Mountain View City Council Chambers, 500 Castro Street, Mountain View. Thirteen members of the public attended, as well as a reporter from the *Mountain View Voice.*

- The second public meeting was held on Wednesday, January 28 2015, from 6 p.m. to 8 p.m. at the VTA Downtown Customer Service Center, 55-A W. Santa Clara Street, San Jose. Fourteen members of the public attended.

- The third public meeting was held on Wednesday, February 4 2015, from 5:30 p.m. to 7:30 p.m. at the Southside Community Center, 5585 Cottle Road, San Jose. Thirteen members of the public attended.

In total, 30 public comments were submitted during the comment period by postal mail, e-mail and comment cards collected at the public meetings. Appendix J on the IS/EA presents the public comments and the project team's responses.

7.2 Route Matters

7.2.1 Freeway Agreements and New Connections

This project will not alter access; therefore no superseding freeway agreements will be warranted.

The overall Electronic Toll System (ETS) for the express lanes facility will be constructed, operated and maintained by VTA. A longitudinal encroachment exception will be obtained for the express lanes tolling system located within State right of way. In addition, the following agreements will be needed to operate and maintain the express lanes facility:

- Cooperative Agreement
- Construction Cooperative Agreement
- Maintenance and Operations Agreement
- Customer Service and Toll Collection Agreement
- Reimbursable services agreements

7.2.2 Route Adoptions

All improvements associated with the proposed project would occur within the existing right-of-way and is substantially contiguous to the existing freeway. Therefore, the project does not require any route adoption.

7.2.3 Relinquishments

Relinquishments are not anticipated as part of this project.

7.3 Permits

Environmental Permits

The following permits, reviews, and approvals would be required for project construction:

Table 7.3-1 Permits and Approvals Required

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service (USFWS)	Section 7 consultation for threatened and endangered species.	● The Biological Assessment was submitted to the USFWS in March 2014 to address species protected under Section 7 of the FESA.

Agency	Permit/Approval	Status
		● Biological Opinion issued on March 10, 2015 (FF05ESMF00-2014-0534-2).
Federal Highway Administration (FHWA)	Concurrence with project's conformity to Clean Air Act and other requirements.	● Air quality studies were submitted by Caltrans to FHWA for concurrence on March 19, 2015. FHWA issued their conformity determination on April 20, 2015.
State Historic Preservation Officer (SHPO)	Concurrence on findings with respect to historic resources and Section 106 requirements.	● SHPO concurred with the Department's eligibility determinations in June 2014. In November 2014, the Department concluded the cultural resources finding for this project as No Adverse Effect with Standard Conditions – Environmentally Sensitive Areas (ESAs).
U.S. Army Corps of Engineers (USACE)	Concurrence on delineation of waters of the United States within the project's study area. There are no identified impacts within the project construction area.	● Caltrans consulted with the USACE by forwarding them a copy of the Wetland Delineation on February 14, 2014. USACE concurrence of wetland delineation is anticipated during the design phase of the project.
California Department of Fish and Wildlife (CDFW)	Section 1602 Lake and Streambed Alteration Permit and Incidental Take Permit	● Permit applications will be submitted during the project design phase.
San Francisco Bay Regional Water Quality Control Board (RWQCB)	Section 401 Water Quality Certification; National Pollutant Discharge Elimination System (NPDES) approval for work greater than one acre.	● Application for Section 401 Water Quality Certification or waiver will be submitted during the project design phase. ● A Notice of Intent and the Storm Water Pollution Prevention Plan (SWPPP) will be submitted prior to construction.
Santa Clara Valley Water District (SCVWD) and local cities	Encroachment permit for work within a right-of-way.	● Applications for encroachment permits will be submitted during the project design phase or prior to construction.

7.4 Cooperative Agreements

A Cooperative Agreement addressing the PA&ED, Design, and Right of Way clearance has been executed between Caltrans and VTA using the Cooperative Agreement Report (CAR)

as the authorizing document. The executed Cooperative Agreement 4-2374 dated August 10, 2011 is attached in Attachment K.

7.5 Other Agreements

Construction Cooperative Agreement between VTA and Caltrans will be required for the project. The Construction Cooperative Agreement will be developed during the PS&E phase of this project. A Cooperative Agreement Report (CAR) will be prepared and required prior to execution of the Construction Cooperative Agreement.

Operations and Maintenance Agreement (VTA and Caltrans) VTA will be responsible for the Operations and Maintenance of the Express Lanes until the Operations and Maintenance Agreement is signed which will identify utility cost sharing, Freeway Service Patrol and towing operations, accident clearance, responsibilities, roles and limits of responsibilities.

Customer Service and Toll Collection Agreement (VTA and BATA) to establish the customer service, toll collection, and transaction processing responsibilities and the associated cost sharing and funds transfer between BATA and VTA.

Reimbursable services agreements (VTA and CHP) will be executed to provide express lanes enforcement.

Tolling Agreement (VTA and FHWA) will be executed to authorize use of federal funds for tolling on SR 85.

Signed AB2250 Section 14106 (a) agreement requires any toll revenues generated from a managed lane on the state highway system that is administered by a local agency shall be expended only within the respective corridor in which the managed lane is located.

7.6 Involvement with a Navigable Waterway

Consultations with the US Coast Guard and the California State Lands Commission have shown that there are no Navigable Waterways within the project limits.

7.7 Transportation Management Plan for Use During Construction

A Transportation Management Plan (TMP) will be required during the construction of proposed improvements to minimize delay and inconvenience to the traveling public. The TMP for the project will be developed and refined during the design phase, supported by detailed traffic studies to evaluate traffic operations. The proposed construction includes roadway work that will require lane closures and/or detouring that will require installation of temporary railing (K-rail) during construction to provide safety to workers and to isolate the work zone from the adjacent traffic. The need for temporary lane closures during off-peak hours or at night, or short-term detour routes for ramp closures will be identified during the final design phase. No full mainline closures, ramp closures, or local street closures for extended periods of time are anticipated. The TMP will include briefing local public officials

and a public information program to inform the public of project progress and upcoming closures and detours. The TMP will also include a press release to notify and inform motorist, business, community groups, local entities, emergency services, and politicians of upcoming closures or detours.

Other aspects of the TMP may include coordination with ridesharing agencies, transit operators, emergency services, and neighborhood and special interest groups; consideration of construction strategies and contract incentives; CHP and local law enforcement involvement and development of contingency plans. Various TMP elements such as portable Changeable Message Signs and a CHP Construction Zone Enhanced Enforcement Program (COZEEP) may be utilized to alleviate and minimize delay to the traveling public.

The construction time for the proposed work is estimated at 640 days and the preliminary TMP cost is estimated at $2.751M.

A copy of the TMP Data Sheet prepared for the project is included in Attachment F.

7.8 Stage Construction

Due to the high-traffic volumes and existing delays, any construction activity on US 101 requires that stage construction be considered to minimize impacts to the traveling public. Through a multi-stage approach, the existing number of lanes would be maintained and shoulder widths would vary from a minimum of 2-ft to 10-ft, where feasible. Temporary railing (K-rail) and temporary traffic screens will be utilized for traffic and worker safety.

The project is anticipated to involve four main stages of construction, which are summarized as follows:

1. Stage One will include inside widening of US 101 in the median area which involves shifting traffic to the outside, restriping the existing freeway for the traffic shift, and placing K-rail in preparation of the work. Median widening includes construction of retaining walls, concrete barriers, and double thrie beam barriers, inside widening of undercrossing structures, drainage, grading, and infrastructure work (tolling equipment, overhead signs, etc.).

2. Stage Two will include outside widening of US 101 which involves shifting traffic to the inside, restriping the existing freeway for the traffic shift, and placing K-rail in preparation of the outside widening work. Outside widening includes construction of retaining walls and concrete barriers, abutment modifications, outside widening of undercrossing structures, drainage, and grading.

3. Stage Three will include ramp widening which involves shifting traffic, restriping the ramps, and placing K-rail in preparation of the ramp work. Ramp widening includes construction of retaining walls and concrete barriers, drainage, and grading.

4. Stage Four will include the overlay (as needed) and the final striping for the express lane facility.

During construction, temporary lane closures will be required, but full freeway closures are not expected.

7.9 Accommodation of Oversize Loads

The project will not restrict the movement of oversized loads through the area. During bridge construction at local street grade separations, a temporary reduction in vertical and horizontal clearances (lane widths and shoulder restrictions) may occur. These reductions will meet false work design standards for minimum vertical clearance, maintain the existing clearances, and provide standard-width traffic openings.

7.10 Graffiti Control

Generally, this project is located in an urban area and therefore it is considered a graffiti-prone area. The project proposes new retaining walls, and a significant number of overhead signs for the express lanes, graffiti control features such as anti-graffiti coatings on retaining walls, bridge railings, and overhead signs that allow easier clean-up and maintenance will be incorporated into the design.

8. Funding/Programming

8.1 Programming

In October 2007, Governor Schwarzenegger signed AB 574 allowing VTA to operate express lanes on a permanent basis by removing the "demonstration" status and allowing issuance of bonds, backed by express lanes program revenues, to finance express lanes construction.

The anticipated total project cost breakdown by phase and fiscal year is shown in the table below.

Table 8.1-1: Funding by Fiscal Year and Project Phase

Fiscal Year	PA&ED	PS&E	Right of Way	Capital Construction	Construction Support	Total
Prior Fiscal Years	$5,500,000					$5,500,000
FY13 – FY14	$2,000,000	$6,500,000				$8,500,000
FY14 – FY15		$8,500,000				$8,500,000
FY15 – FY16		$12,500,000	$5,900,000			$18,400,000
FY16 – FY17		$6,000,000		$20,425,000	$2,100,000	$28,525,000
FY17 – FY18				$98,425,000	$8,100,000	$106,525,000
FY18 – FY19				$118,425,000	$9,100,000	$127,525,000
FY19 – FY20				$18,425,000	$9,100,000	$127,525,000
Total	$7,500,000	$33,500,000	$5,900,000	$355,700,000	$28,400,000	$431,000,000

The project has been considered to be implemented in preliminary strategic segments. The implementation plan by segments approach includes dividing the project into operational segments that could be developed as standalone projects. The selection process is recognizing segments requiring only a conversion of existing carpool lanes versus those that included the addition of new lanes. The significance with this distinction is the difference in implementation costs between simpler conversion only segments and those requiring additional new lanes. The next step in identifying segments is to look at operationally significant break points in the corridor such as the major freeway interchanges.

Four segments of US 101 have been identified with approximate segment limits using major freeways as references. The following is a brief summary of each of the resulting segments:

1. Segment 101A - This segment from the San Mateo County line to SR 237 is a conversion only segment, including the conversion of a dual carpool lane segment between SR85 and Embarcadero/Oregon Expressway interchange in Mountain View and Palo Alto, as well as the conversion of existing US 101/SR 85 HOV lane direct connectors to express lane connectors.
2. Segment 101B - This segment from SR 237 to I-880 is a segment with the addition of a second express lane in each direction of US 101. The project's right-of-way impacts (TCEs and utility relocations) occur entirely within this segment.
3. Segment 101C - This segment from I-880 to SR 85 in San Jose is also a segment with addition of a second express lane for most of the distance in each direction, except at the transition locations.
4. Segment 101D - This segment from SR 85 in San Jose to East Dunne Avenue in Morgan Hill is a segment with addition of a second express lane for most of the distance in each freeway direction between SR85 and Cochrane Road, and the extension of an HOV/express lane in both directions from Cochrane Road to East Dunne Avenue on US 101.

Additional criteria will be further evaluated during PS&E phase for the selection of segments to move into construction. These criteria include, but not limited to, logical termini of the express lane segments for operation independently and efficiently, overall cost to complete the design, ability to make use of existing roadway infrastructure (such as HOV direct connectors), impact to congestion relief, ability to generate adequate revenue for construction financing and operations and maintenance of the completed system.

8.2 Funding

The future funding sources potentially include local funding, bonding against future revenues, TIFIA loans, federal grants, and/or regional and state programs.

VTA is working with local, state, and federal agencies to identify funding sources for design, right of way, and construction of the US 101 Express Lanes Project.

A summary of Capital and Support costs is presented in Table 8.2-1.

Table 8.2-1: Capital and Support Estimates

Funding Source	PA&ED	PS&E	Construction Support	Right of Way	Capital Construction	Total
VTA Local LPR	$7,500,000					$7,500,000
Future Funding Sources include VTA Local LPR, Bonding Against Future Revenues, TIFIA Loans, federal grants, and/or regional and state programs.		$33,500,000	$28,400,000	$5,900,000	$355,700,000	$423,500,000
Total	$7,500,000	$33,500,000	$28,400,000	$5,900,000	$355,700,000	$431,000,000

9. Schedule

The following is the current major milestone schedule for the project:

Table 9-1: Project Schedule - Major Milestones

Project Milestones	Delivery Date (Month/ Year)
PA&ED	August 2015
Project PS&E	August 2016
Right of Way Certification	October 2016
Ready to List	December 2016
Contract Completion Acceptance	June 2020

10. Risks

A risk management plan and associated risk register (Attachment G) was prepared for the project and will be maintained through the entire project development process. A Risk Management Workshop was conducted by the PDT on December 11, 2013. The risk register is discussed during the monthly PDT meetings. The team reviews the risk register monthly, shares lessons learned from other projects to reduce threats to project objectives, and updates the risk registry when new risks are identified. The risk management plan was approved by Caltrans on June 15, 2014.

Examples of some of the significant risks associated with the project that are included in the Risk Register include:

- Hazardous Materials Encountered. Because of the age and history of the US 101 corridor, it is possible that initial testing will reveal hazardous materials needing additional investigation causing project costs to increase.
- Unexpected Environmental Issues during Construction. Unexpected environmental issues (archaeological, biological, etc.) could lead to schedule delays and increased mitigation costs.
- Floodplain Issues. The project improvements do not introduce obstructions (solid barriers, walls, etc.) within the floodplain at this time. Additions of walls and/or solid barriers during the final design phase will be closely monitored and avoided if possible.
- Base Mapping. If the topographic surveys during the final design phase reveals unexpected conditions it could increase project cost. To mitigate this, the designers have performed extensive field visits during the PA-ED phase.
- Cross Slope Correction. If the topographic survey reveals an unacceptable cross slope, the project will be required to correct it. Correcting the cross slope would result in an increase to the construction cost.
- Positive Locating of Utilities. The project will positively locate (pothole) the utility crossings during the PS&E phase. If potholing efforts reveal utilities requiring relocation, it would increase the project cost and potentially delay the schedule.
- Utility Relocation. There is a risk that each of the following utilities may need to be relocated. The following costs were included in the preliminary cost estimate to mitigate that risk.

Table 10-1 Existing Utilities Affected by the Build Alternative

Facility	Owner	Project Cost
6" distribution gas in 8" casing (extend casing)	PG&E	$30,000
20" water in 36" casing (extend casing)	City of Santa Clara	$80,000
U/G electric in 48" casing (extend casing)	City of Santa Clara	$330,000
12" water in casing (extend casing)	City of Santa Clara	$80,000
12" recycled water in 24" casing (extend casing)	City of Santa Clara	$80,000
33" VCP sanitary sewer in 48" casing (extend casing)	City of Sunnyvale	$120,000
20" transmission gas in 30" casing (extend casing)	PG&E	$90,000
10" transmission gas in 16" casing (extend casing)	PG&E	$70,000
18" water in 30" casing (extend casing)	City of Sunnyvale	$80,000
4" distribution gas in 8" casing (extend casing)	PG&E	$30,000
	Total	$990,000

These and other risks have been identified so that appropriate mitigation or avoidance measures can be developed to ensure the timely and successful completion of the project.

11. Project Reviews

11.1 Geometric Drawing Review

Lawrence T. Moore, Caltrans HQ Project Delivery Coordinator, has reviewed and provided comments to the Geometric Drawings (GeDs) on March 8, 2012, December 3, 2012, and February 13, 2014. The noted mandatory design exceptions have been reviewed and approved by Lawrence T. Moore on November 12, 2014. The noted advisory design exceptions have been reviewed and approved by Tung Ly, District Design Office Chief, on November 14, 2014.

On September 25, 2014, comments to the Draft Project Report were received from Lawrence T. Moore, HQ Design Reviewer and were subsequently incorporated. There were no comments received from HQ Design Reviewer on the Project Report.

11.2 District 4 Functional Units Review

Other District 4 Functional Units such as Caltrans Hydraulics, Right-of-Way, Utilities, Water Pollution Control, Design, Geotechnical, Materials, Project Safety/Design Coordinator, Maintenance, Pedestrian & Bicycle Branch, Traffic Safety, Landscape Architecture, Air/Noise, and Traffic Operations have reviewed the Draft Project Report and comments have been incorporated.

Caltrans District 4 Hydraulics, Construction, Materials, Landscape Architecture, Right-of-Way, Maintenance, Traffic Safety, System Planning, Project Safety/Design Coordination, Ramp Metering, Water Pollution Control, TOS Development “B” Branch, Design South, and Utilities have reviewed the Project Report and comments have been incorporated.

11.3 Other Reviews

Constructability Review: Joey Morrison of District 4 Constructability Review has reviewed the Draft Project Report on June 17, 2014 and no comments were received. There were no comments received on the Project Report in 2015. Further Constructability Reviews will be performed at the 65% and 95% of PS&E phase. Comments and recommendations from those reviews will be incorporated into the final PS&E.

Pavement Strategy Review: The proposed pavement structural sections have been developed. Life Cycle Cost Analysis for 40-yr design pavement was reviewed and approved by Caltrans on November 25, 2013. The Pavement Strategy Checklist is included in Attachment M for reference.

Headquarters Traffic Liaison Review: The Caltrans HQ Traffic Liaison reviewed the project features.

Traffic Safety Analysis Review: The Traffic Safety Analysis was prepared by Ramiel Guttierez and Elizabeth Del Rosario of the District 4 Traffic Safety Division and approved on October 29, 2014.

Traffic Operations Analysis: The Traffic Operations Analysis was reviewed by Lance Hall and Paul Ma of the District 4 Traffic Operations Division and approved on July 10, 2014.

Program Advisor Review: Nick Saleh (Caltrans District Division Chief) and Dina El-Tawansy (Caltrans Regional Project Manager) reviewed the Draft Project Report. Comments from Nick Saleh were provided on December 16, 2014 and were subsequently incorporated. The Draft Project Report was approved by Caltrans for public circulation on December 30, 2014. Helena "Lenka" Culik-Caro (Deputy District Director Design), Skip Sowko (District Division Chief Design), Dina El-Tawansy, and Nick Saleh reviewed the Project Report. Comments were provided on July 2, 2015 and subsequently incorporated. Mark L. Weaver (Deputy District Director Right-of-Way & Land Surveys) reviewed the Project Report and provided comments on July 28, 2015, which were subsequently incorporated.

12. FHWA Coordination

This project is considered to be a High Profile Project (HPP) in accordance with the current Federal Highway Administration (FHWA) and Department of Transportation (Caltrans) Joint Stewardship and Oversight Agreement. A High Profile Project Agreement is included in Attachment N.

The project's System Engineering Management Plan and Concept of Operations reports were submitted to FHWA for review on November 6, 2013 and May 27, 2014. FHWA comments were received on December 4, 2013 and were incorporated into the reports. The System Engineering Management Plan and Concept of Operations Reports were approved by FHWA on July 2, 2014. The two reports were also provided to Caltrans on November 6, 2013 and May 27, 2014.

13. Project Personnel

Caltrans Regional Project Manager	Dina El-Tawansy	(510) 286-7236
Caltrans District Division Chief, Division of Project/Program Management South	Nick Saleh	(510) 286-6355
Caltrans Design Office Chief	Tung Ly	(510) 286-5076
Caltrans Senior Transportation Engineer	Hassan Nikzad	(510) 622-0767
Caltrans Design	Caroline Pineda	(510) 622-0773
Caltrans HQ Project Delivery Coordinator	Lawrence T. Moore	(916) 275-2942
Caltrans Environmental Analysis	Cristin Hallissy	(510) 622-8717
VTA Highway Program Manager	Gene Gonzalo	(408) 952-4236
VTA Deputy Highway Program Manager	Chris Metzger	(408) 952-4219
VTA Project Manager	Lam Trinh	(408) 952-4217
VTA Environmental Manager	Tom Fitzwater	(408) 321-5705
VTA Senior Environmental Planner	Roy Molseed	(408) 321-5784
URS Principle in Charge/Project Manager	Ramsey Hissen	(408) 961-8426
URS Deputy Project Manager	Ramesh Sathiamurthy	(510) 874-3141
URS Environmental Manager	Jeff Zimmerman	(510) 874-3005
URS Project Engineer	Lan Ho	(408) 961-8416

14. List of Attachments

Attachment A **Project Vicinity & Location Map**

Attachment B **Access Locations Map**

Attachment C **Build Alternative**

Typical Sections
Pavement Delineation Plans
CHP Enforcement Conceptual Plan
Access Detail

Attachment D **Cost Estimate**

Attachment E **Right-of-Way Data Sheet / ROW Requirement Map**

Attachment F **Transportation Management Plan Data Sheet**

Attachment G **Risk Management Plan & Risk Register**

Attachment H **Final Environmental Document (Title and Summary Pages)**

Attachment I **Storm Water Data Report Addendum with Signature Page**

Attachment J **Safety Analysis Recommendations Memorandum**

Attachment K **Cooperative Agreement**

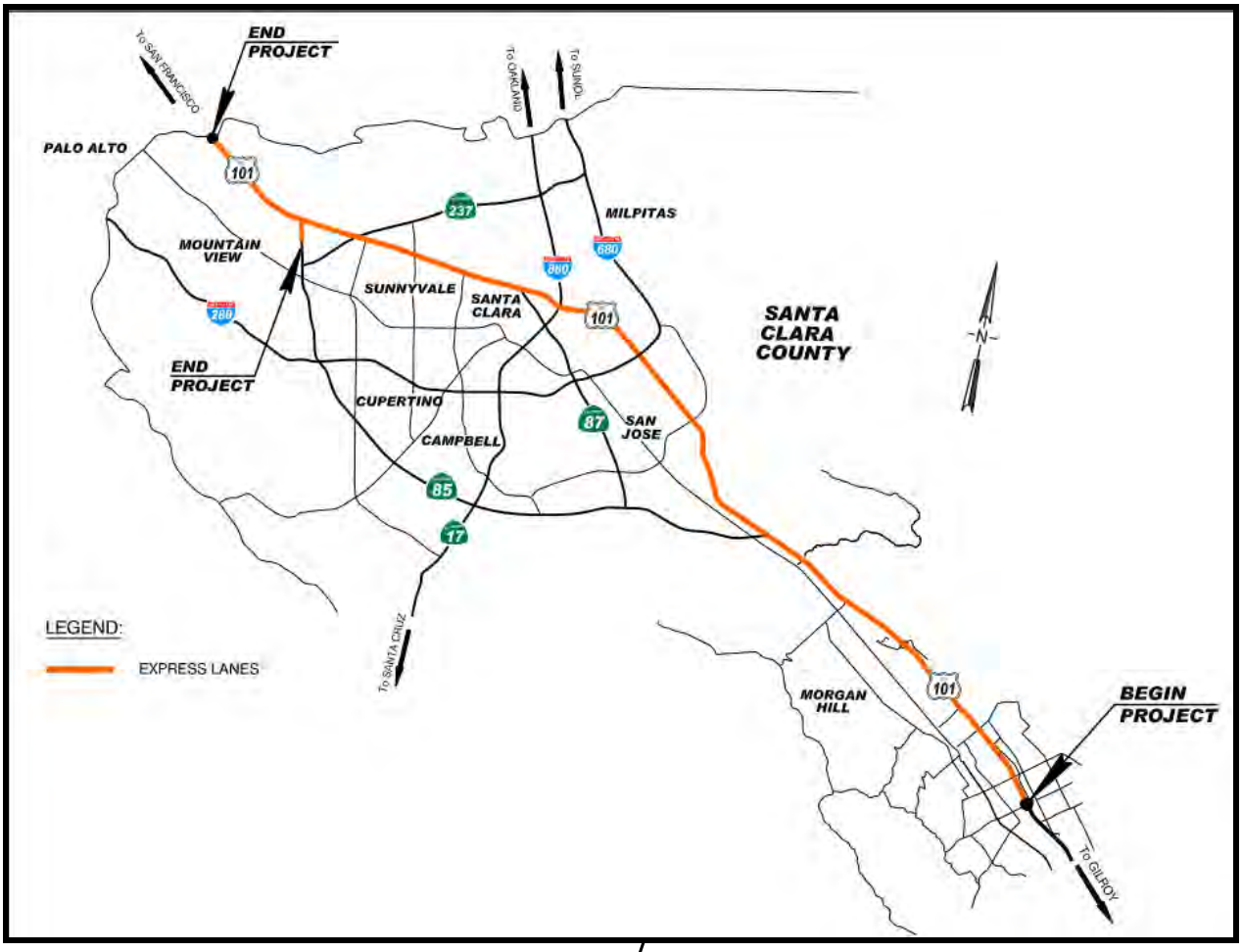
Attachment L **Project's Approach for the Future Creek Bridge Widening**

Attachment M **Pavement Strategy Checklist**

Attachment N **High Profile Project Agreement**

Attachment A

Project Vicinity & Location Map

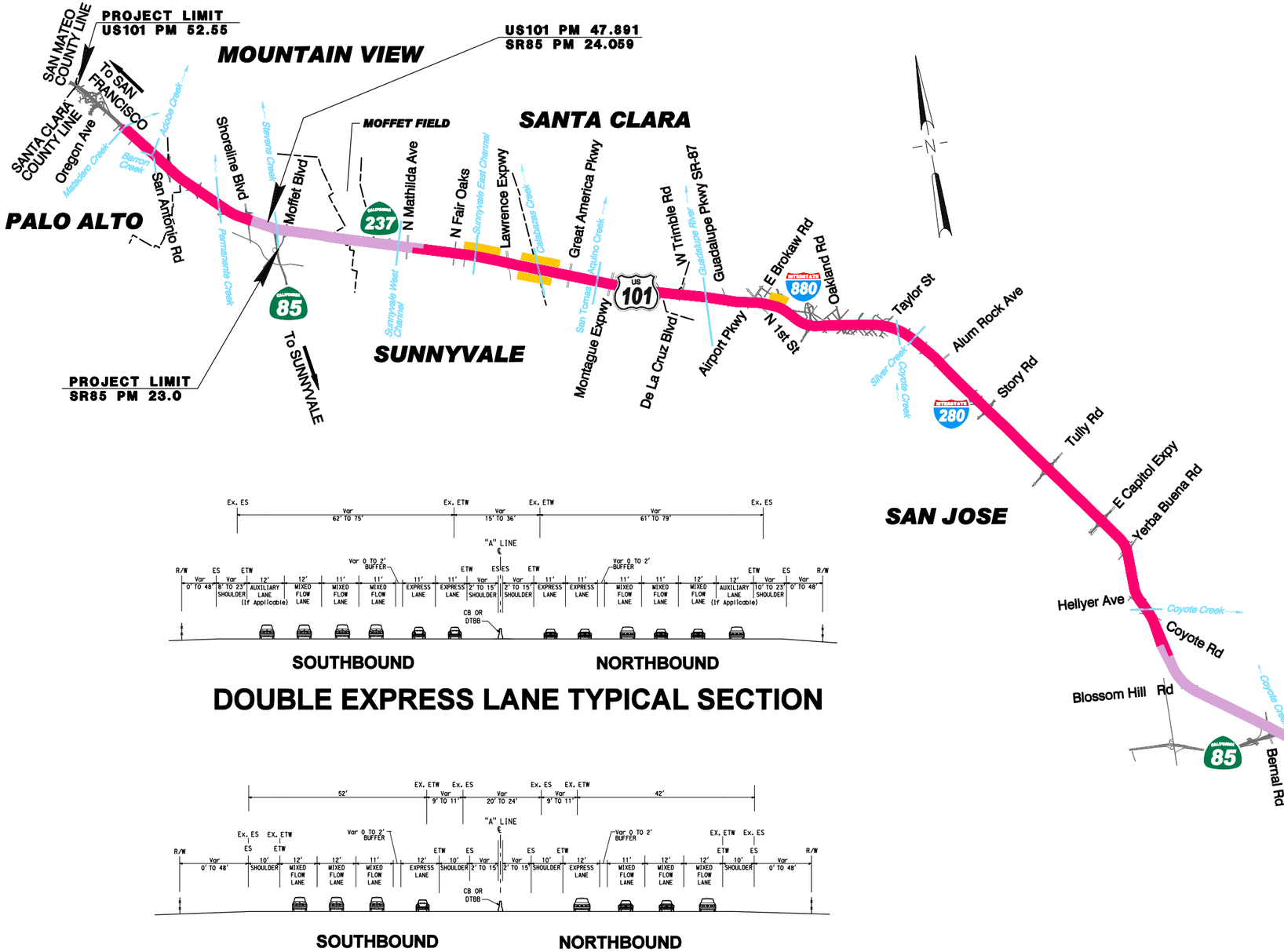


NO SCALE

US 101 Express Lanes Project
E Dunne Ave to San Mateo/Santa Clara County Line

PROJECT LOCATION & VICINITY

Attachment A



URS

SANTA CLARA Valley Transportation Authority

Caltrans

US 101 Express Lanes Project
E. DUNNE AVE TO SANTA CLARA/SAN MATEO COUNTY LINE

NOT TO SCALE

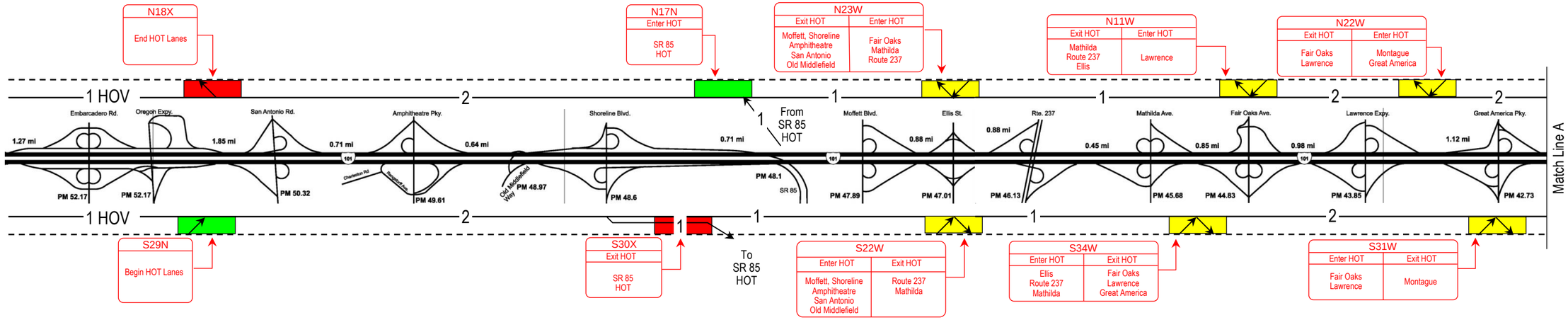
Figure A

August 2014

Attachment B

Access Location Map

US 101 Express Lanes Project

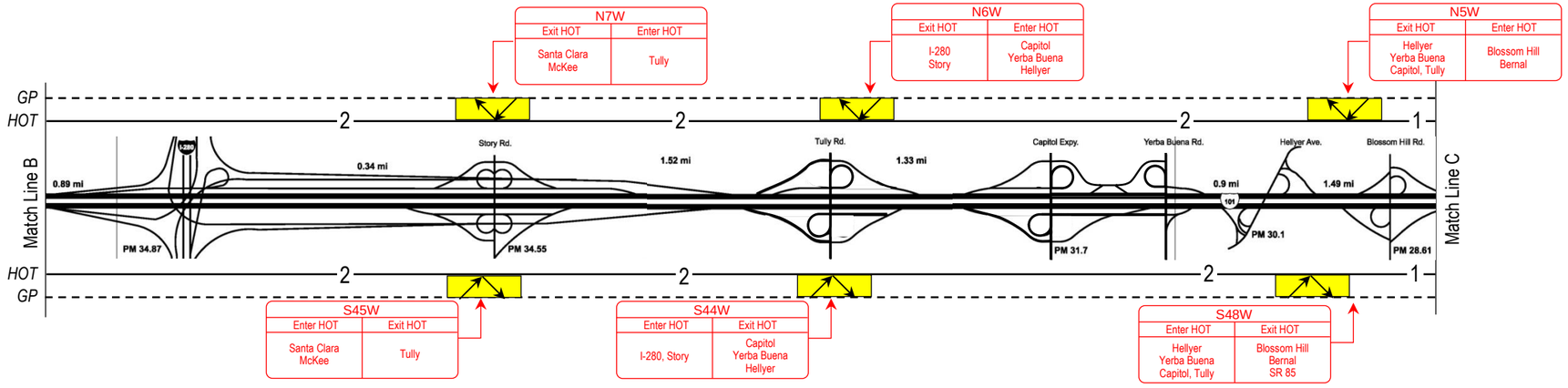


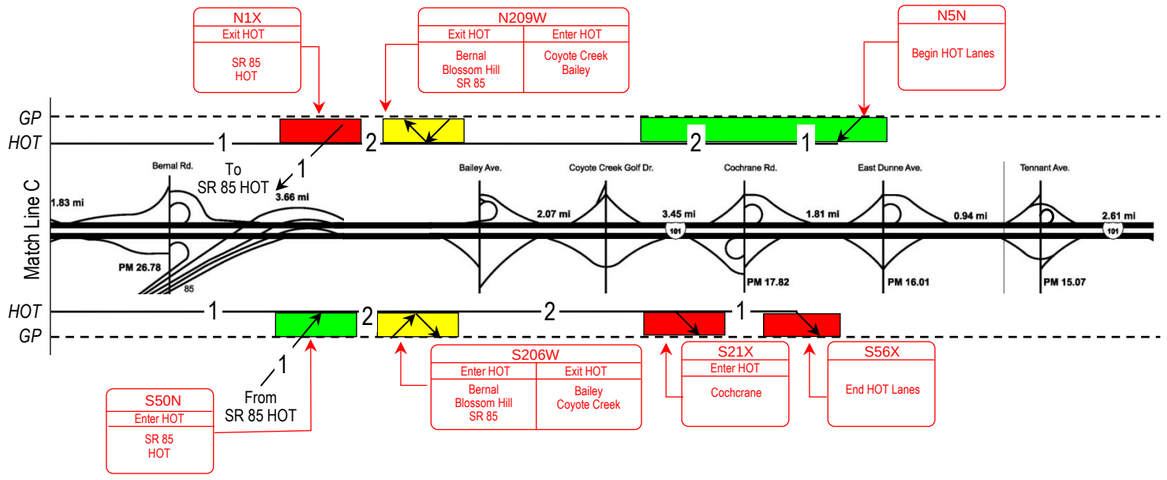
US 101 Express Lane Project
(Two HOT Lanes with M4 Detail at Access Points)

ATTACHMENT B

MAY 2015

US 101 Express Lanes Project





LEGEND

HOV – High Occupancy Vehicle Lane
HOT - High Occupancy/Toll Lane
GP – General Purpose Lanes
→ Planned Movement
– 1 – Number of HOT Lanes in Segment

N2 — Access Point
Enter HOT | Exit HOT — Movement
XXX | XXX — Interchanges Served

HOT Lane Entry Zone
HOT Lane Exit Zone
HOT Lane Entry and Exit Zone

US 101 Express Lane Project
(Two HOT Lanes with M4 Detail at Access Points)

ATTACHMENT B
MAY 2015

04 - SCl - 101 - PM 16.00/52.55
04 - SCl - 85 - PM 23.0/24.1
EA #04-2G7100, RU: 245
Program ID: 0412000459

Attachment C

Build Alternative

Typical Sections/Pavement Delineation Plans/CHP Enforcement Conceptual Plan/Access Detail

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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THE LIMITS IDENTIFIED TO RECEIVE FRESH SURFACE ARE
FROM STATIONS: "A" 809+00 TO "A" 934+50
"A" 1142+00 TO "A" 1484+50
"A" 1539+50 TO "A" 1668+00

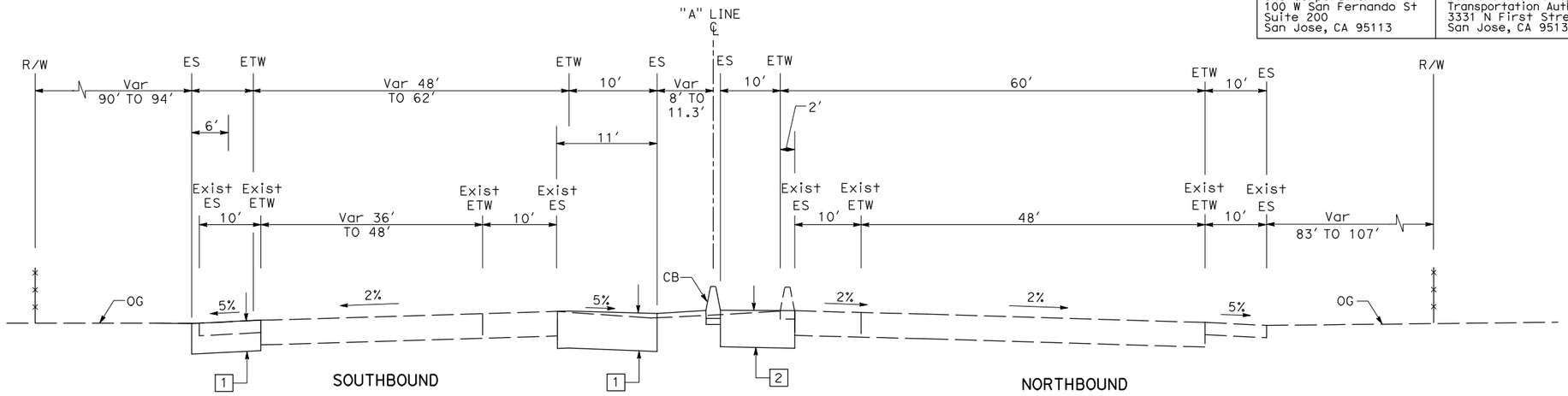
PROPOSED PAVEMENT STRUCTURE SECTIONS:

[1] TRAVELED WAY AND Shld
- 0.15′ RHMA-G
- 0.55′ HMA (Type A)
- 0.70′ LCB
- 1.10′ Class 4 AS
- -- SEG (Class B1)

[2] TRAVELED WAY AND Shld
- 0.85′ CRCP
- 0.25′ ATPB
- 0.25′ HMA (Type A)
- 0.50′ Class 4 AS
- 1.00′ Class 3 Perm

[3] TRAVELED WAY AND Shld
- 0.10′ OGFC
- 0.15′ RHMA-G
- 1.60′ HMA (Type A)
- 0.50′ Class 3 AB
- -- SEG (Class B1)

[4] TRAVELED WAY AND Shld
- 0.85′ CRCP
- 0.25′ HMA (Type A)
- 0.70′ Class 4 AS
- 1.00′ LIME STABILIZATION



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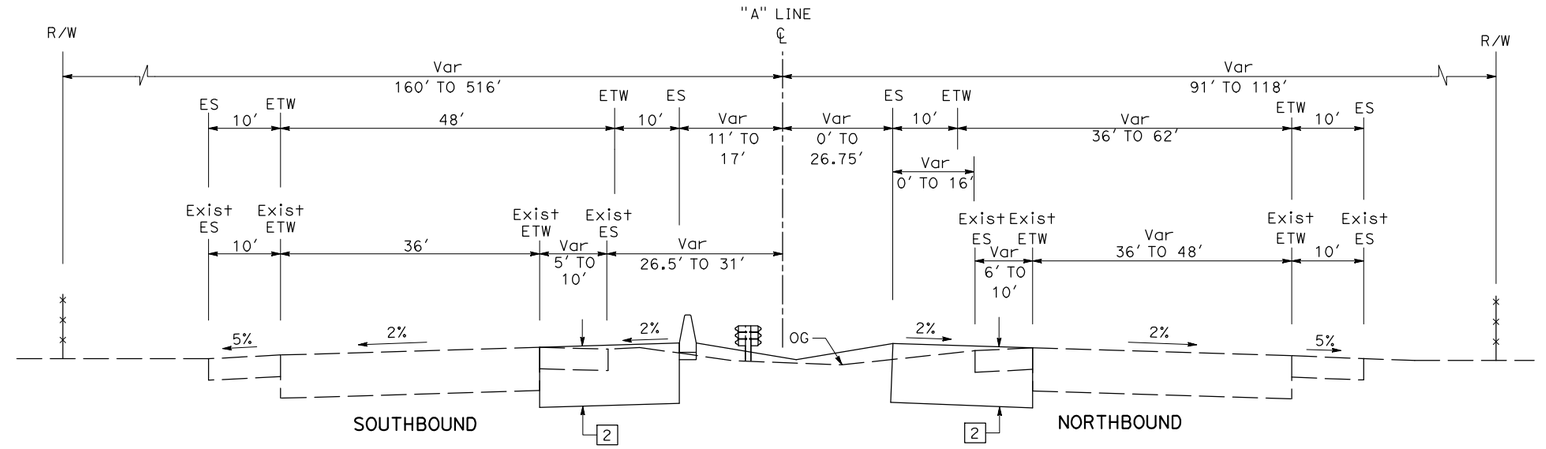
INSIDE SHOULDER
"A" 160+83.00 TO 169+28.00

INSIDE SHOULDER
"A" 161+00.00 TO "A" 169+28.00

OUTSIDE SHOULDER
"A" 171+10.71 TO "A" 195+00.00



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INSIDE SHOULDER
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INSIDE SHOULDER
"A" 61+62.92 TO "A" 161+00.00

OUTSIDE SHOULDER
"A" 61+52.92" TO "A" 171+10.71

FOR NOTES AND LEGEND
SEE SHEET PD-1

ROUTE 101

TYPICAL CROSS SECTIONS

NO SCALE

X-1

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DATE REVISED	XX/XX/11
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CALCULATED-DESIGNED BY	
CHECKED BY	
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN

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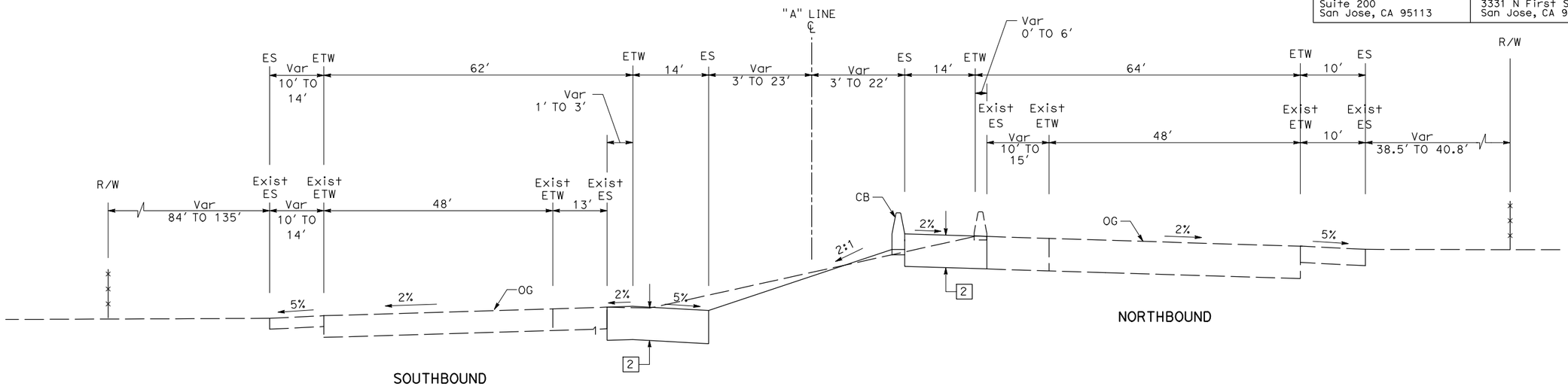

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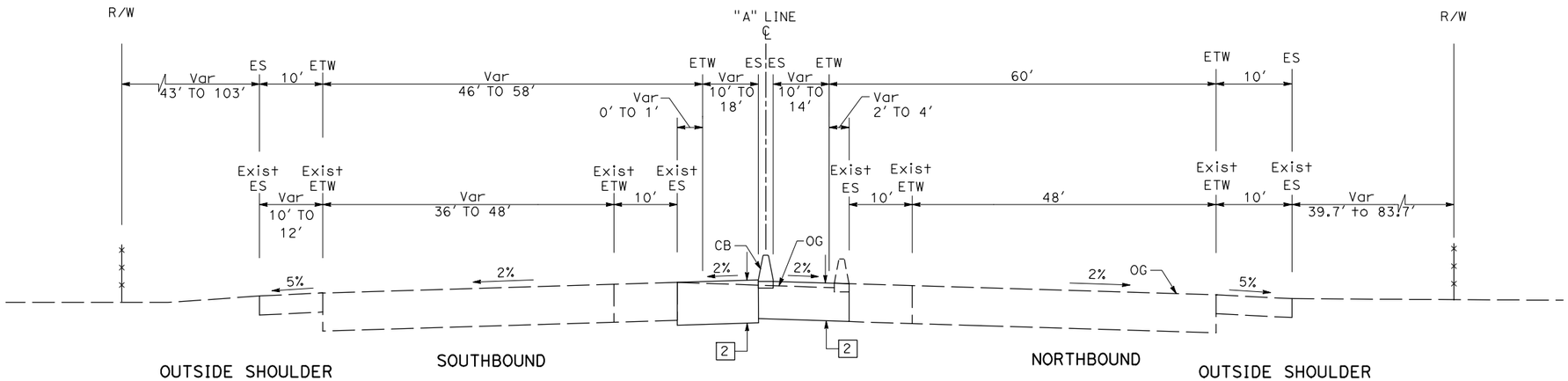

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"A" 195+00.00 TO "A" 272+52.07

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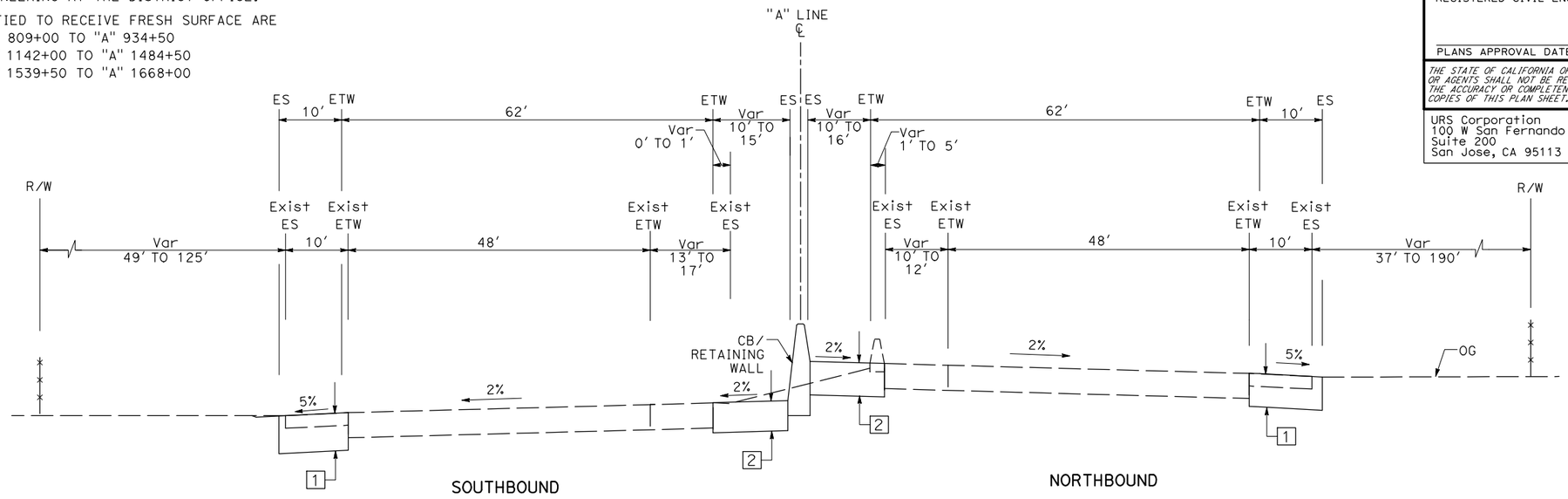

SOUTHBOUND

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MEDIAN
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NORTHBOUND

OUTSIDE SHOULDER
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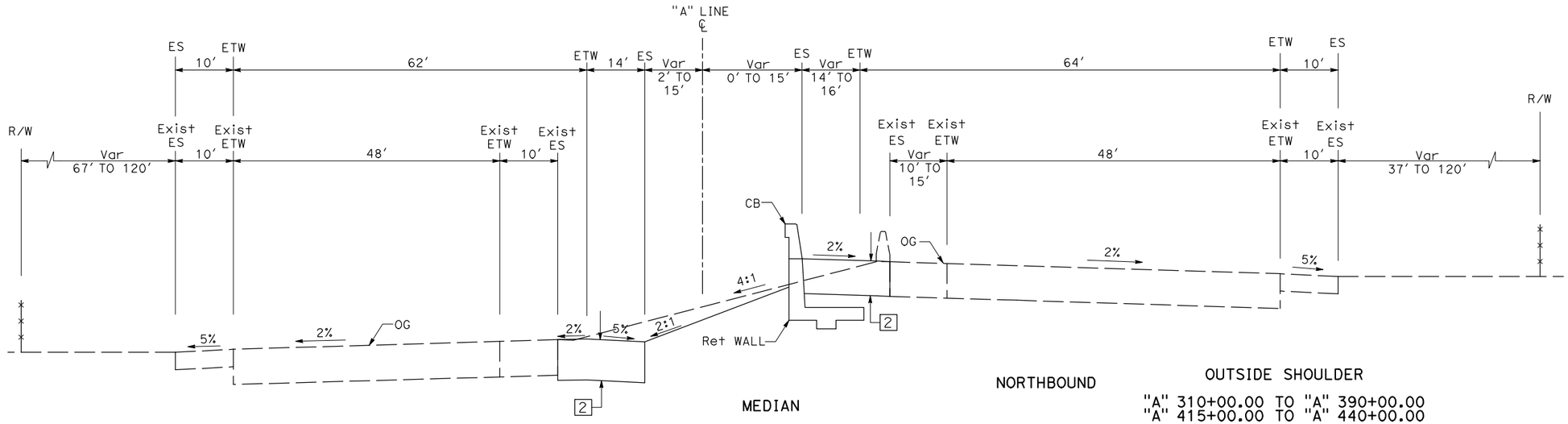

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OUTSIDE SHOULDER
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"A" 415+00.00 TO "A" 440+00.00

MEDIAN
"A" 310+00.00 TO "A" 390+00.00
"A" 415+00.00 TO "A" 440+00.00

NORTHBOUND

OUTSIDE SHOULDER
"A" 310+00.00 TO "A" 390+00.00
"A" 415+00.00 TO "A" 440+00.00

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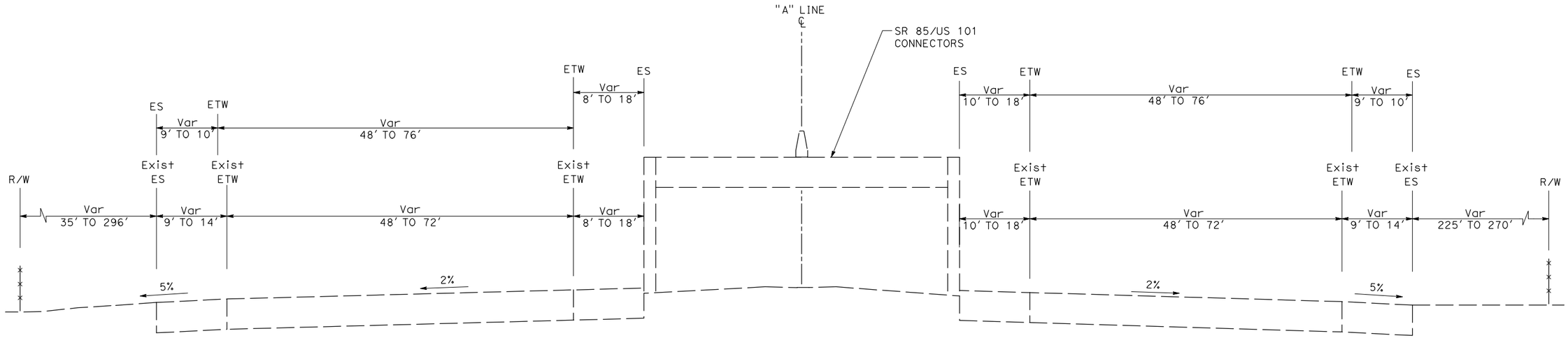
"A" 1142+00 TO "A" 1484+50
"A" 1539+50 TO "A" 1668+00



SOUTHBOUND

NORTHBOUND

OUTSIDE SHOULDER
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MEDIAN
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"A" 1768+39.87 TO "A" 1795+70.00

OUTSIDE SHOULDER
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"A" 1768+39.87 TO "A" 1795+70.00

ROUTE 101

FOR NOTES AND LEGEND
SEE SHEET PD-1

TYPICAL CROSS SECTIONS

NO SCALE

X-4

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CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: Ramesh Sathiamurthy

REVISED BY: XX
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4	SCI	101 85	16.00/52.55 23.0/24.1		

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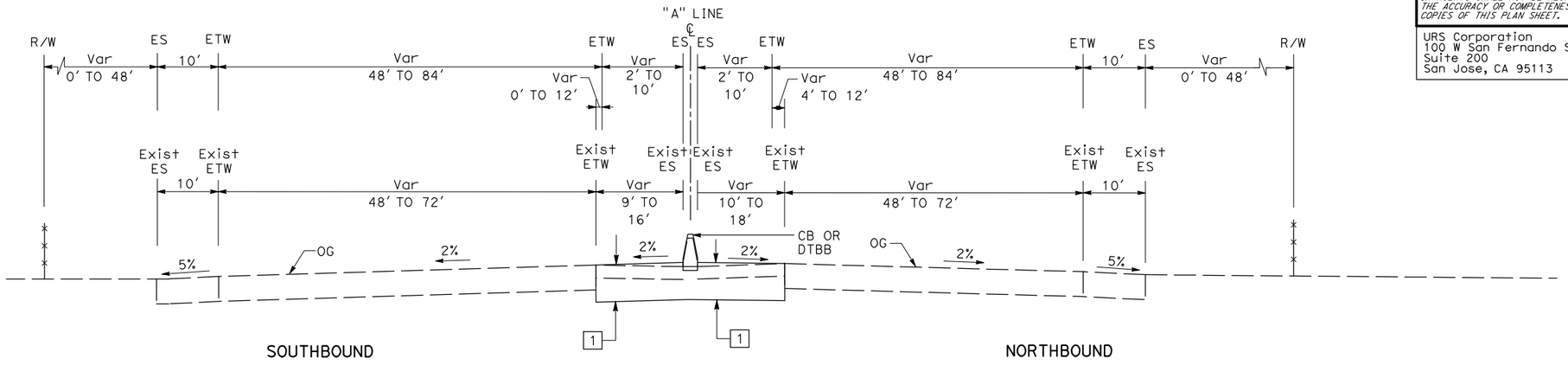

OUTSIDE SHOULDER

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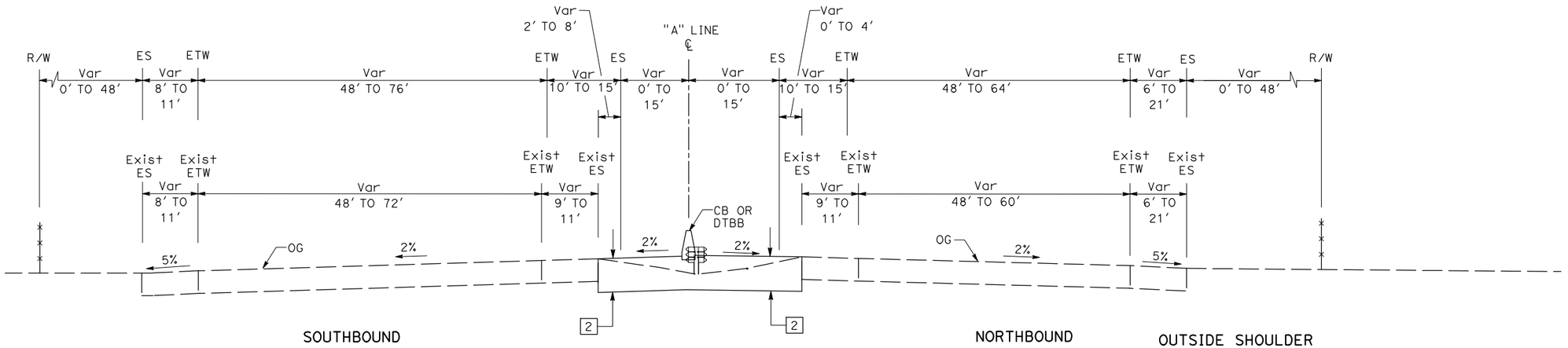
"A" 858+64.85 TO "A" 873+02.17
"A" 1147+08.69 TO "A" 1158+37.07
"A" 1298+24.83 TO "A" 1335+25.14

MEDIAN

"A" 799+00.00 TO "A" 1082+19.96
"A" 1262+00.00 TO "A" 1378+61.92

OUTSIDE SHOULDER

"A" 808+68.11 TO "A" 823+42.79
"A" 881+23.40 TO "A" 924+89.83
"A" 1246+73.39 TO "A" 1268+51.89
"A" 1298+55.21 TO "A" 1325+11.37



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"A" 1639+13.39 TO "A" 1758+28.86
"A" 1761+59.14 TO "A" 1768+39.87

MEDIAN

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OUTSIDE SHOULDER

"A" 633+41.19 TO "A" 753+73.95
"A" 1148+48.54 TO "A" 1158+72.58
"A" 1637+75.34 TO "A" 1678+20.98
"A" 1687+39.20 TO "A" 1768+39.87

FOR NOTES AND LEGEND
SEE SHEET PD-1

ROUTE 101

TYPICAL CROSS SECTIONS

NO SCALE

X-5

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REVISED BY	DATE REVISED
XX	XX/XX/11

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: Ramesh Sathiamurthy

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 00-00-00
DATE PLOTTED => 7/6/2015
TIME PLOTTED => 10:18:55 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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Santa Clara Valley
Transportation Authority
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San Jose, CA 95134

NOTE:

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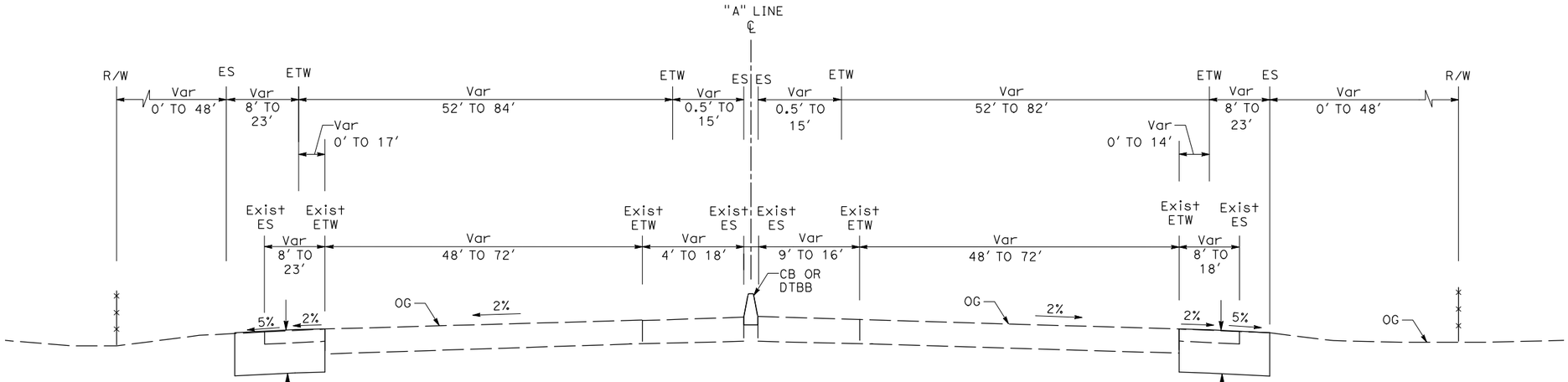
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

THE LIMITS IDENTIFIED TO RECEIVE FRESH SURFACE ARE
FROM STATIONS: "A" 809+00 TO "A" 934+50
"A" 1142+00 TO "A" 1484+50
"A" 1539+50 TO "A" 1668+00



SOUTHBOUND

ROUTE 101

NORTHBOUND

OUTSIDE SHOULDER

"A" 550+00.00 TO "A" 611+97.52 [2]
"A" 1106+70.00 TO "A" 1147+08.69
"A" 1235+75.00 TO "A" 1263+58.68

"A" 765+43.50 TO "A" 808+19.41 [1]
"A" 826+96.18 TO "A" 858+64.85
"A" 873+02.17 TO "A" 902+33.97
"A" 1041+74.17 TO "A" 1106+70.00
"A" 1158+37.07 TO "A" 1235+75.00
"A" 1281+74.84 TO "A" 1298+24.83
"A" 1335+25.14 TO "A" 1346+32.58
"A" 1358+79.18 TO "A" 1550+00.00

"A" 1550+00.00 TO "A" 1560+76.62 [3]
"A" 1595+93.45 TO "A" 1639+13.39
"A" 1758+28.86 TO "A" 1761+59.14

MEDIAN

"A" 753+50.15 TO "A" 799+00.00
"A" 1082+19.96 TO "A" 1103+10.10
"A" 1106+35.56 TO "A" 1262+00.00
"A" 1378+61.92 TO "A" 1381+96.81
"A" 1384+48.37 TO "A" 1516+00.00
"A" 1584+30.00 TO "A" 1768+39.87

OUTSIDE SHOULDER

[2] "A" 550+00.00 TO "A" 578+18.01
"A" 1003+03.84 TO "A" 1148+48.54
"A" 1235+75.00 TO "A" 1148+48.54

[1] "A" 753+73.95 TO "A" 808+68.11
"A" 823+42.79 TO "A" 881+23.40
"A" 924+89.83 TO "A" 976+47.71
"A" 1158+72.58 TO "A" 1192+87.07
"A" 1204+63.25 TO "A" 1216+28.34
"A" 1225+33.09 TO "A" 1235+75.00
"A" 1268+51.89 TO "A" 1298+55.21
"A" 1325+11.37 TO "A" 1351+06.65
"A" 1377+10.05 TO "A" 1384+51.00
"A" 1404+12.36 TO "A" 1554+14.95

[3] "A" 1577+35.63 TO "A" 1637+75.34
"A" 1678+20.98 TO "A" 1687+39.20

FOR NOTES AND LEGEND
SEE SHEET PD-1

TYPICAL CROSS SECTIONS

NO SCALE

X-6

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

REVISED BY	DATE REVISED
XX	XX/XX/11

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: Ramesh Sathiamurthy
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 00-00-00
DATE PLOTTED => 7/6/2015
TIME PLOTTED => 10:18:56 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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San Jose, CA 95134

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

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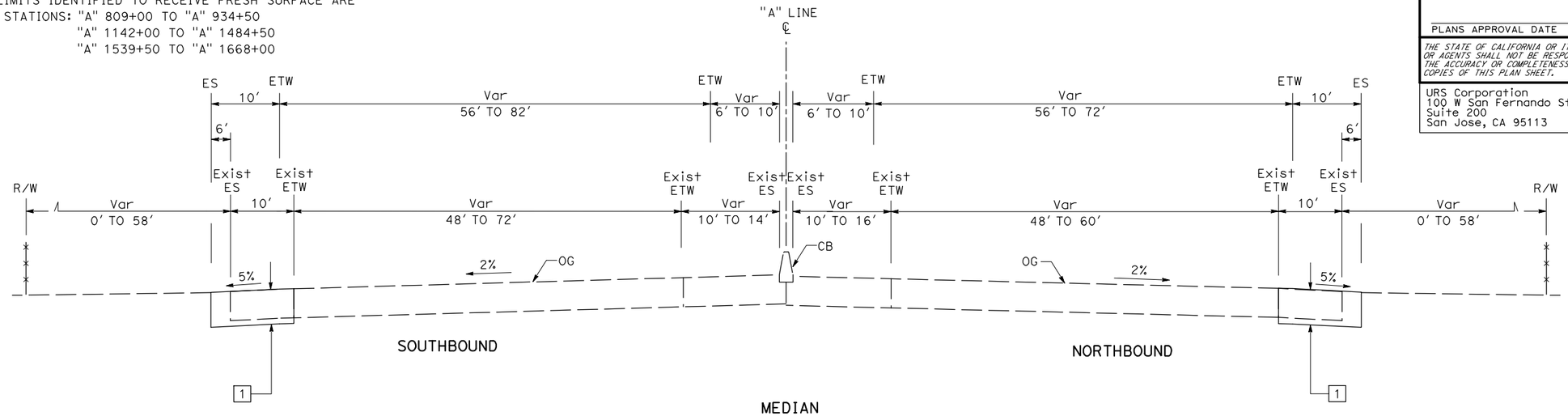
FROM STATIONS: "A" 809+00 TO "A" 934+50
"A" 1142+00 TO "A" 1484+50
"A" 1539+50 TO "A" 1668+00



OUTSIDE SHOULDER

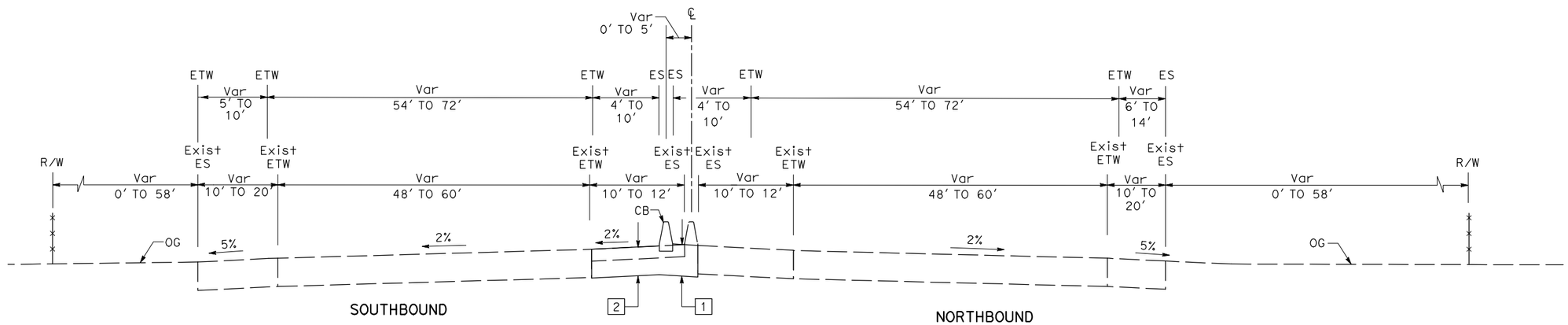
"A" 925+10.44 TO "A" 1034+97.75

MEDIAN

"A" 1103+10.10 TO "A" 1106+35.56
"A" 1381+96.81 TO "A" 1384+48.37
"A" LINE

OUTSIDE SHOULDER

"A" 976+47.71 TO "A" 1003+03.84



OUTSIDE SHOULDER

"A" 902+33.97 TO "A" 925+10.44
"A" 1034+97.75 TO "A" 1041+74.17
"A" 1263+58.68 TO "A" 1281+74.84
"A" 1346+32.58 TO "A" 1358+79.18
"A" 1560+76.62 TO "A" 1595+93.45

MEDIAN

"A" 1516+00.00 TO "A" 1584+30.00

OUTSIDE SHOULDER

"A" 1192+87.07 TO "A" 1204+63.25
"A" 1216+28.34 TO "A" 1225+33.09
"A" 1351+06.65 TO "A" 1377+10.05
"A" 1384+51.00 TO "A" 1404+12.36
"A" 1554+14.95 TO "A" 1577+35.63

FOR NOTES AND LEGEND
SEE SHEET PD-1

ROUTE 101

TYPICAL CROSS SECTIONS

NO SCALE

X-7

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

REVISED BY	DATE REVISED
XX	XX/XX/11

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: Ramesh Sathiamurthy

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 00-00-00
DATE PLOTTED => 7/6/2015
TIME PLOTTED => 10:18:57 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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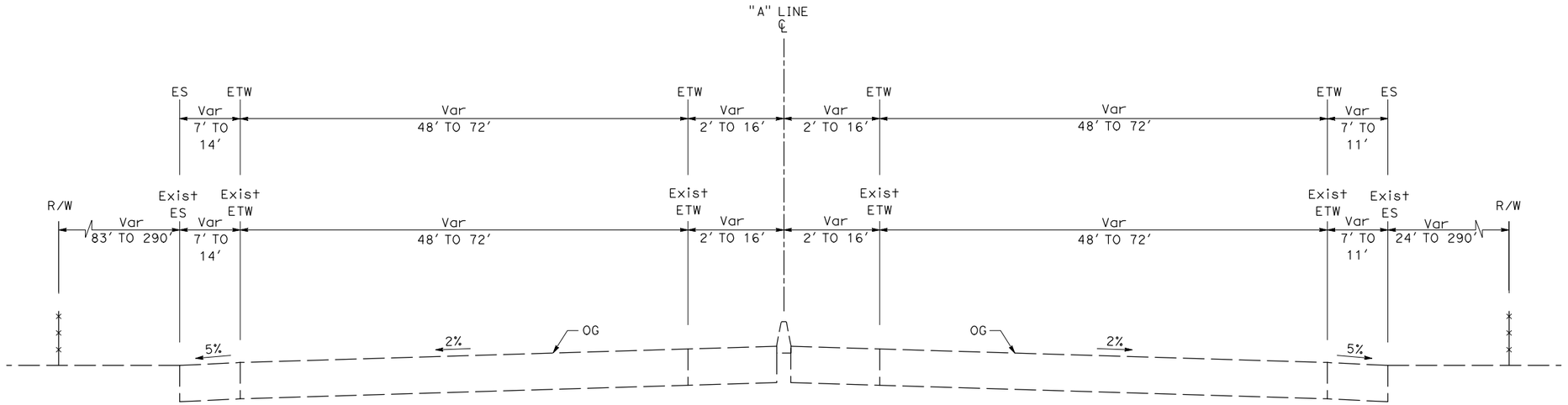
FROM STATIONS: "A" 809+00 TO "A" 934+50
"A" 1142+00 TO "A" 1484+50
"A" 1539+50 TO "A" 1668+00



SOUTHBOUND NORTHBOUND

"A" 1795+70.00 TO "A" 1949+00.00

ROUTE 101

FOR NOTES AND LEGEND
SEE SHEET PD-1

TYPICAL CROSS SECTIONS

NO SCALE

X-8

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: Ramesh Sathiamurthy

REVISED BY: XX
DATE REVISED: XX/XX/11

LAST REVISION: 00-00-00
DATE PLOTTED => 7/6/2015
TIME PLOTTED => 10:18:58 AM

BORDER LAST REVISED 7/2/2010

USERNAME => shabnam_yari
DGN FILE => X8.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCL	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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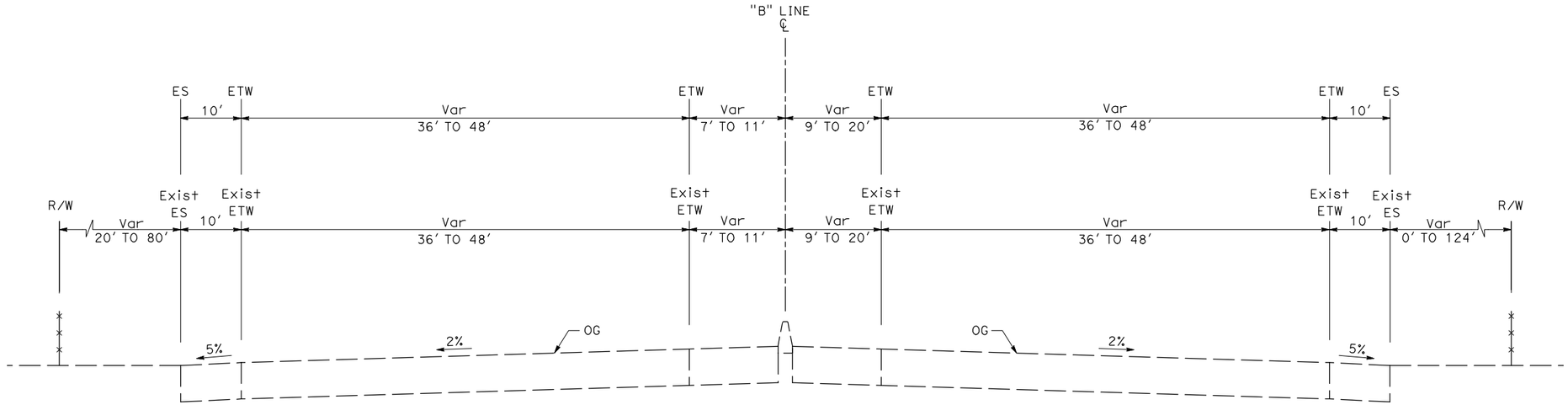
FROM STATIONS: "A" 809+00 TO "A" 934+50
"A" 1142+00 TO "A" 1484+50
"A" 1539+50 TO "A" 1668+00



SOUTHBOUND NORTHBOUND

"B" 1853+58.00 TO "B" 1888+94.00

STATE ROUTE 85

FOR NOTES AND LEGEND
SEE SHEET PD-1

TYPICAL CROSS SECTIONS

NO SCALE

X-9

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: Ramesh Sathiamurthy

REVISED BY	DATE REVISED
XX	XX/XX/11

LAST REVISION 00-00-00
DATE PLOTTED => 7/6/2015
TIME PLOTTED => 10:18:59 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => shabnam_yari | DGN FILE => X9.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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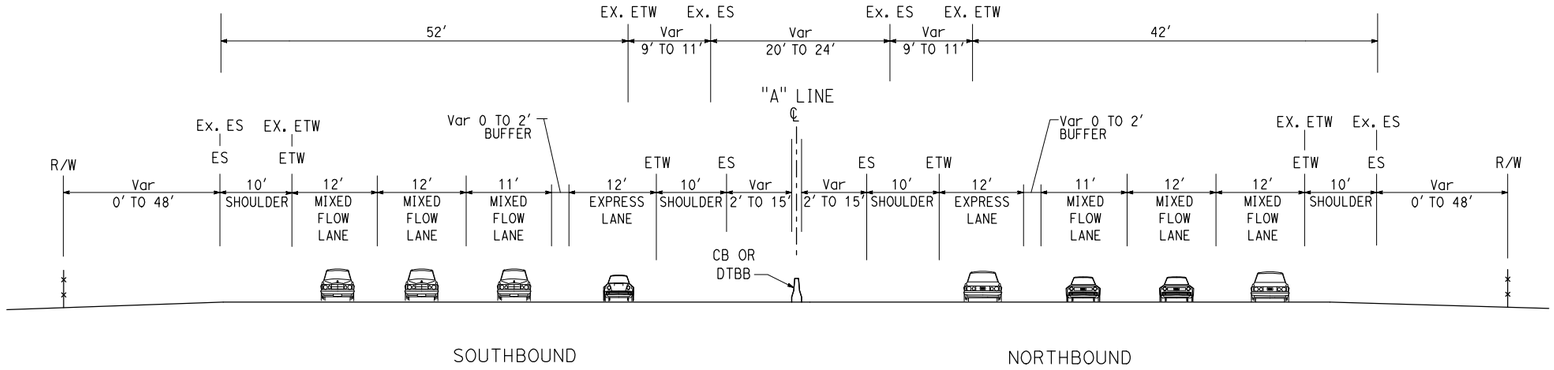
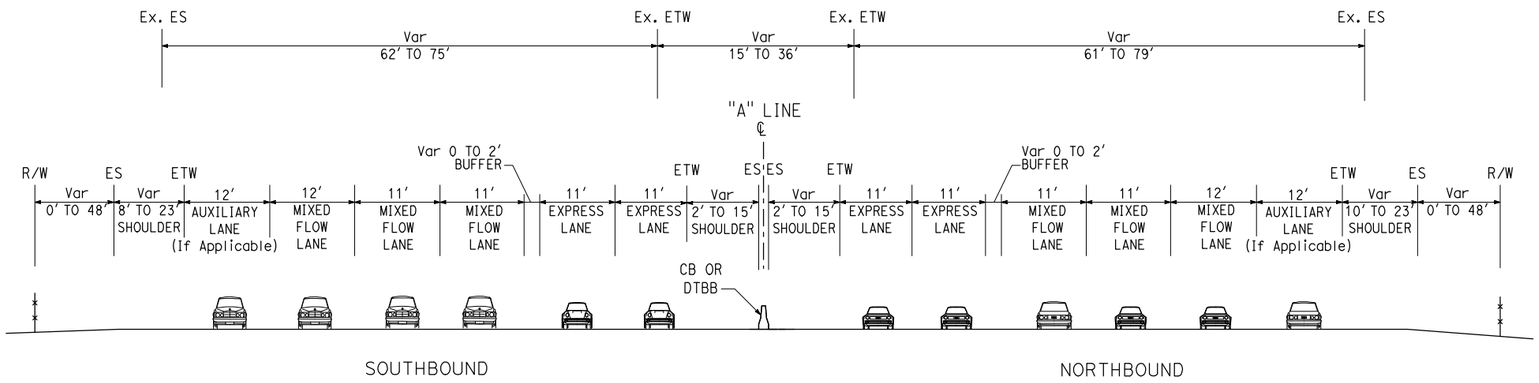


SINGLE EXPRESS LANE TYPICAL SECTION



DOUBLE EXPRESS LANE TYPICAL SECTION

FOR NOTES AND LEGEND
SEE SHEET PD-1

TYPICAL CROSS SECTIONS

NO SCALE

X-10

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO — Ramesh Sathiamurthy

CHECKED BY

REVISED BY: XX — DATE REVISED: XX/XX/11

LAST REVISION: 00-00-00 — DATE PLOTTED => 7/6/2015 — TIME PLOTTED => 10:18:59 AM

BORDER LAST REVISED 7/2/2010 | USERNAME => shabnam_yari | DGN FILE => Y10.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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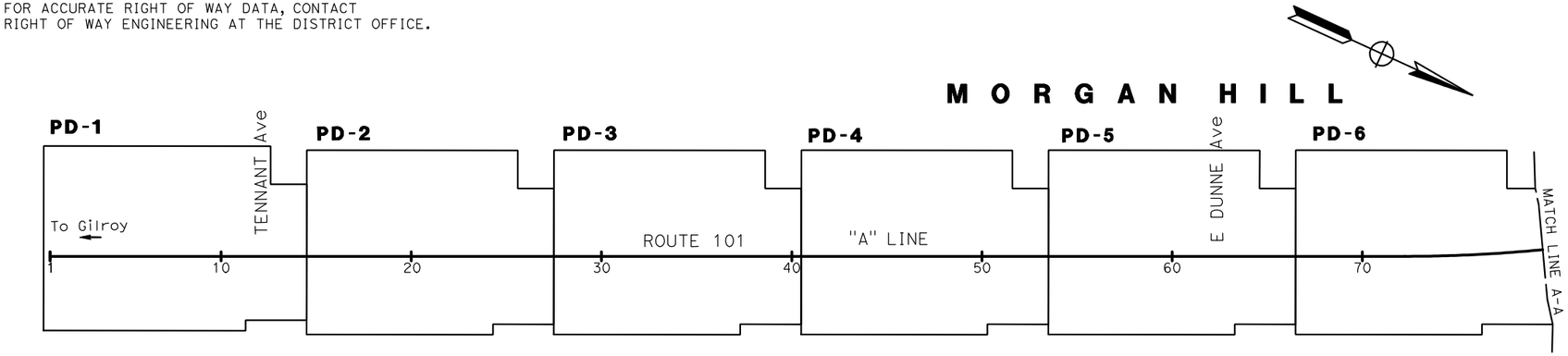

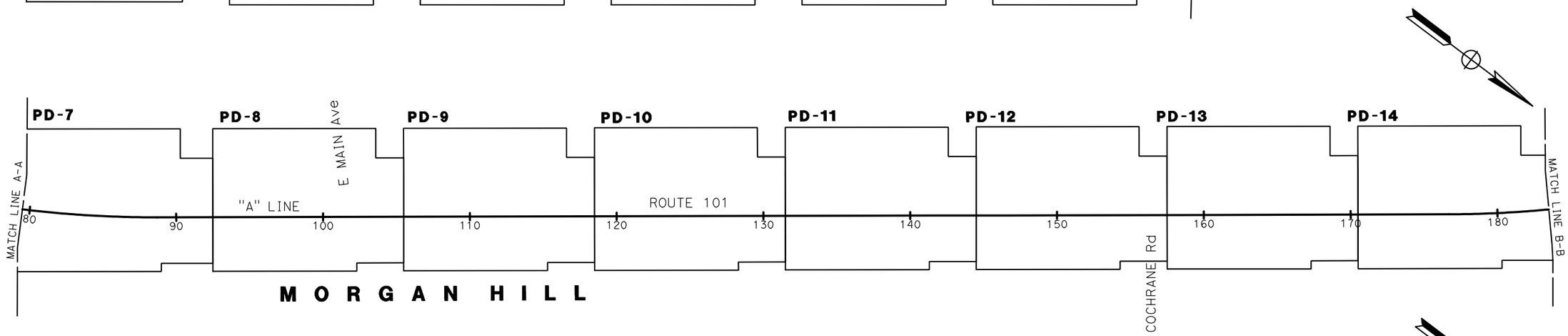

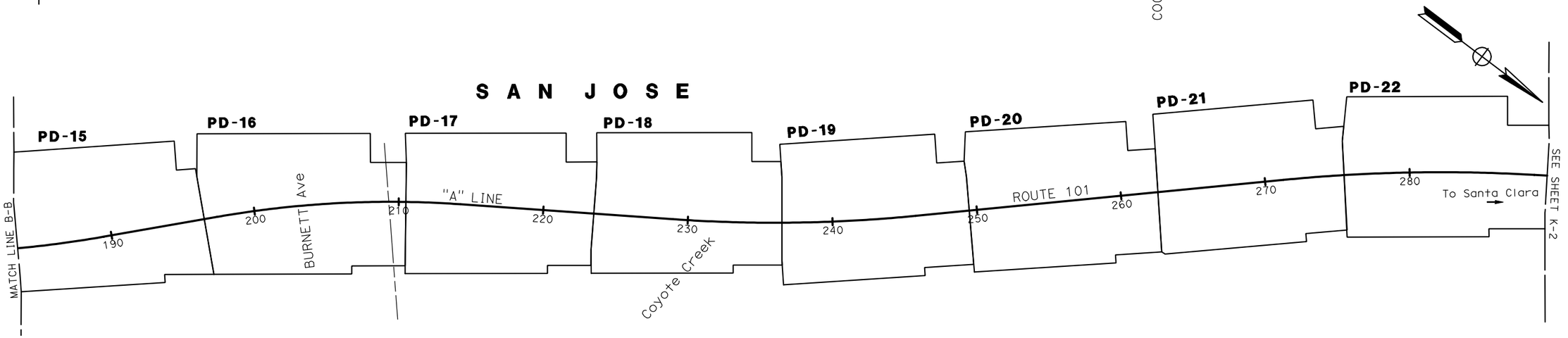

KEYMAP AND LINE INDEX

NO SCALE

K-1

REVISED BY					
DATE REVISED					
CALCULATED-DESIGNED BY	ERNIE GARNICA				
CHECKED BY	SHABNAM YARI				
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN				
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans				

LAST REVISION 11-12-13 | DATE PLOTTED => 3/16/2015 | TIME PLOTTED => 10:05:47 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => shabnam_yari | DGN FILE => 0400026710da001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE EA-2G7100

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.0/52.55 23.0/24.1		

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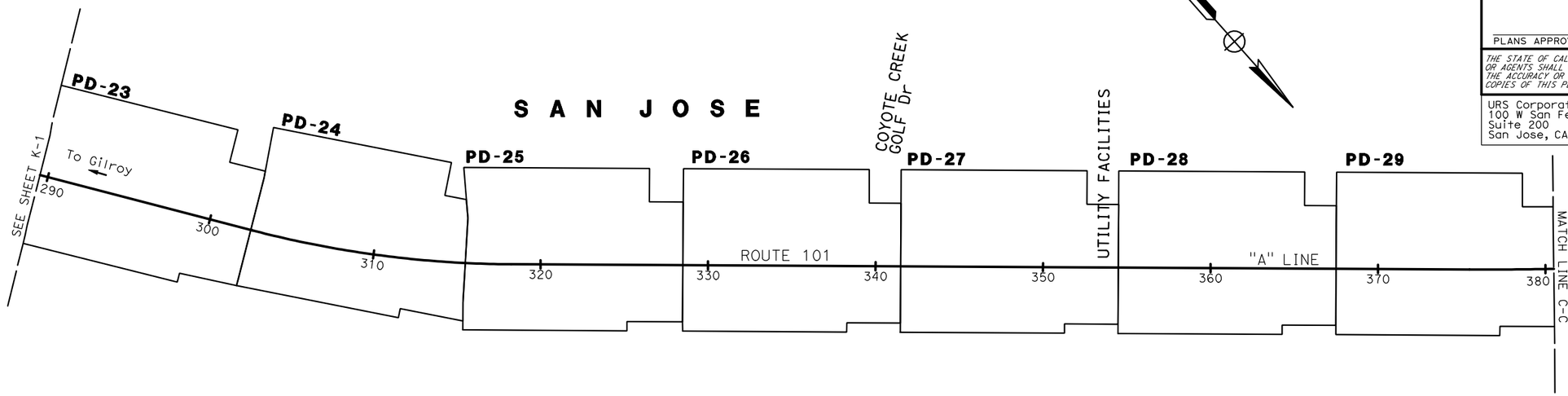

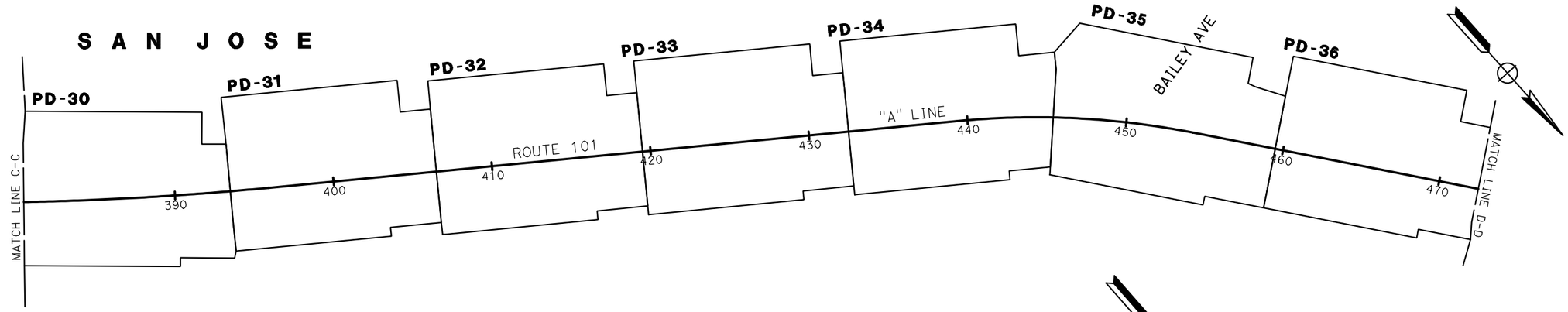

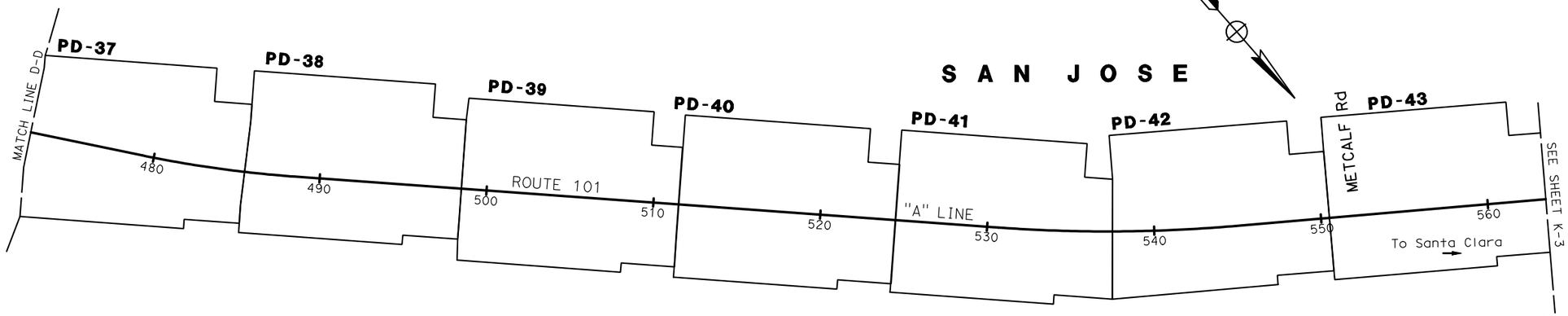

KEYMAP AND LINE INDEX

NO SCALE

K-2

REVISED BY	ERNIE GARNICA	CALCULATED-DESIGNED BY	
DATE REVISED	SHABNAM YARI	CHECKED BY	

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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LAST REVISION 11-12-13
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 10:05:48 AM

BORDER LAST REVISED 3/16/2015

USERNAME => shabnam_yari
DGN FILE => 0400026710da002.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE EA-2G7100

NOTE:

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.0/52.55 23.0/24.1		

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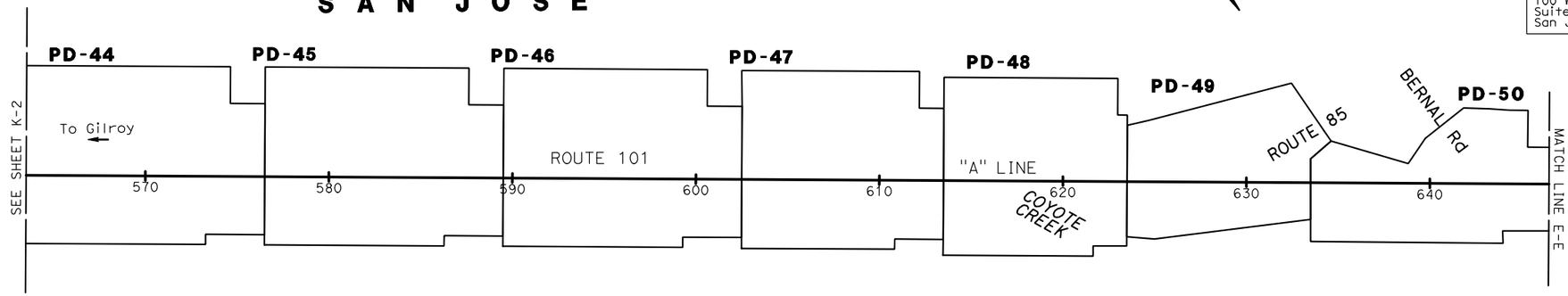
SAN JOSE



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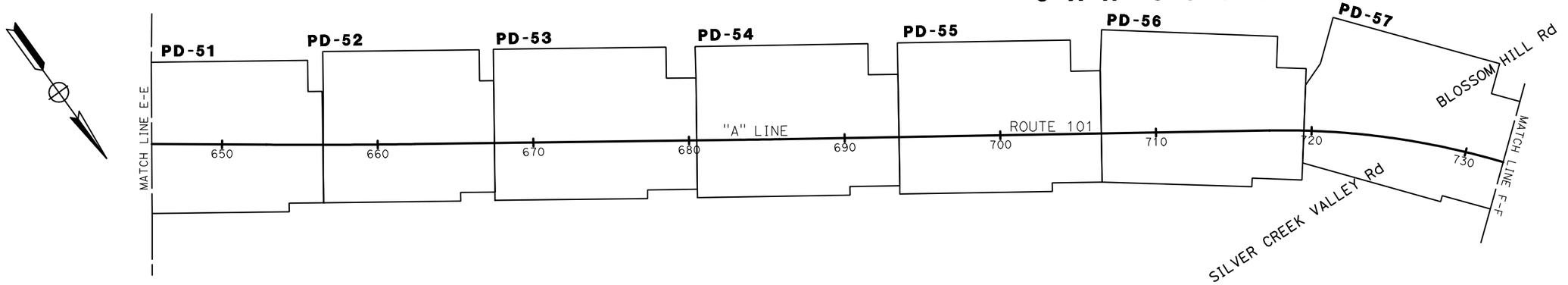
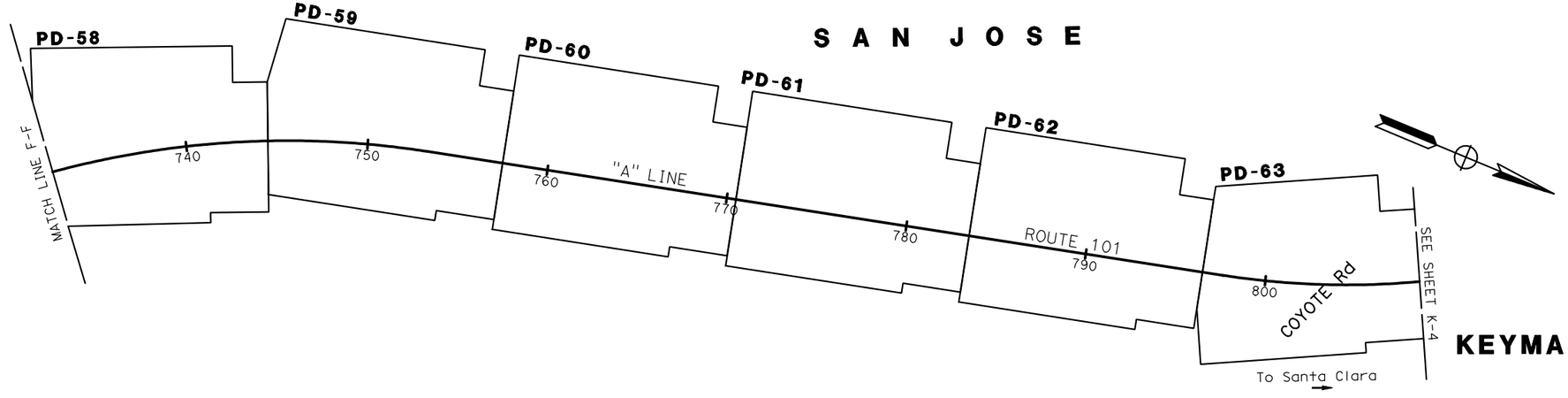


SAN JOSE



KEYMAP AND LINE INDEX

NO SCALE

K-3

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: ERNIE GARNICA
CHECKED BY: SHABNAM YARI

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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LAST REVISION 11-12-13
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 10:05:49 AM

BORDER LAST REVISED 3/16/2015

USERNAME => shabnam_yari
DGN FILE => 0400026710da003.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE EA-2G7100

NOTE:

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4	SCl	101 85	16.0/52.55 23.0/24.1		

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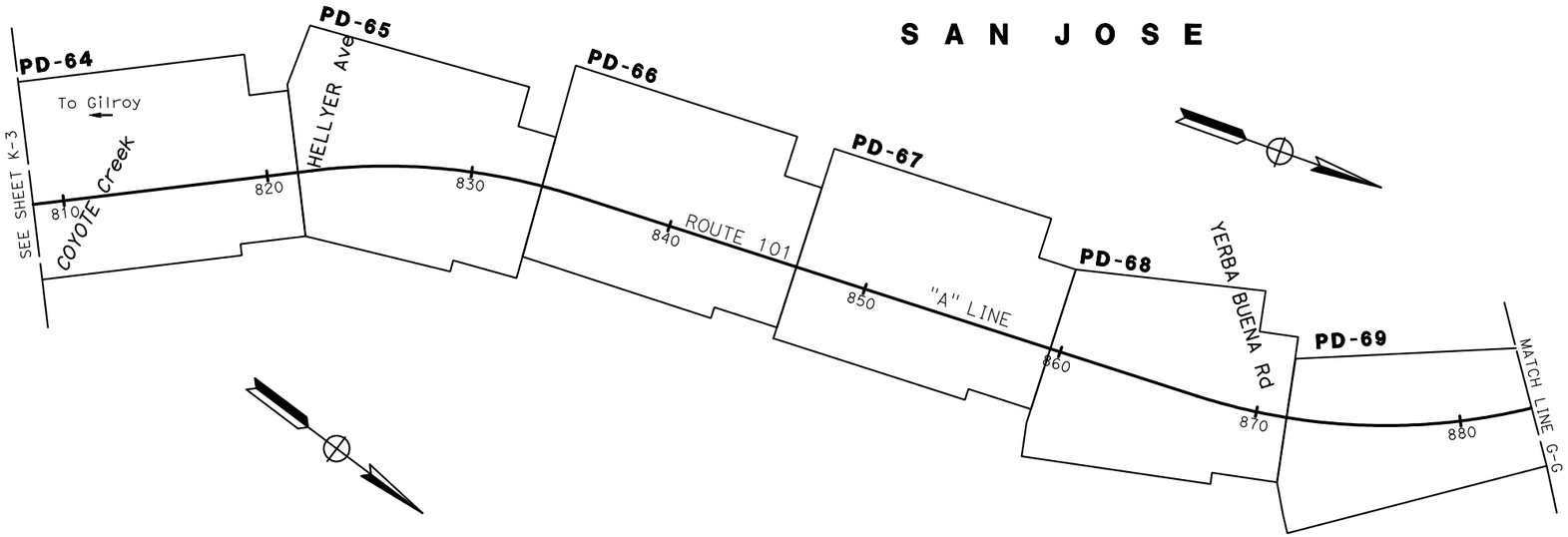

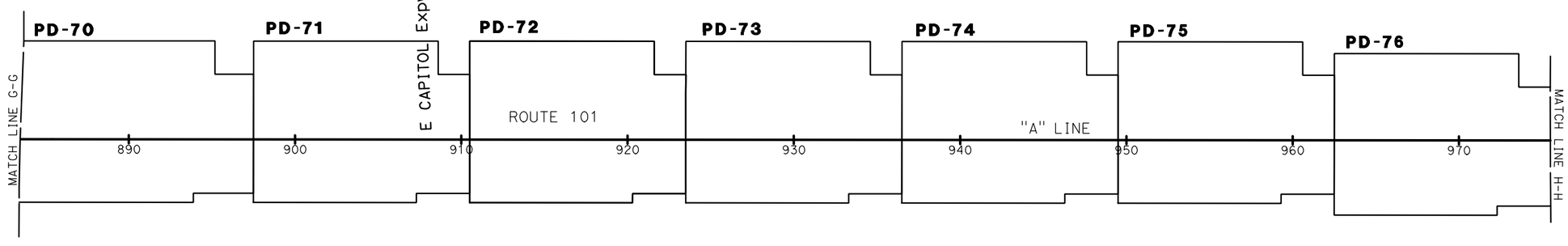

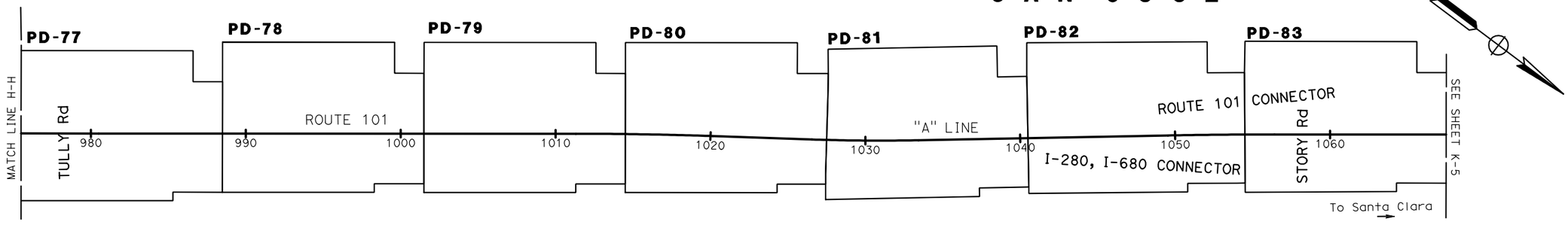

KEYMAP AND LINE INDEX

NO SCALE

K-4

LAST REVISION 11-12-13
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 10:05:51 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
CALCULATED-DESIGNED BY
CHECKED BY
REVISED BY: ERNIE GARNICA
DATE REVISED: SHABNAM YARI

BORDER LAST REVISED 3/16/2015
USERNAME => shabnam_yari
DGN FILE => 0400026710da004.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT xxxx
PROJECT NUMBER & PHASE EA-2G7100

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.0/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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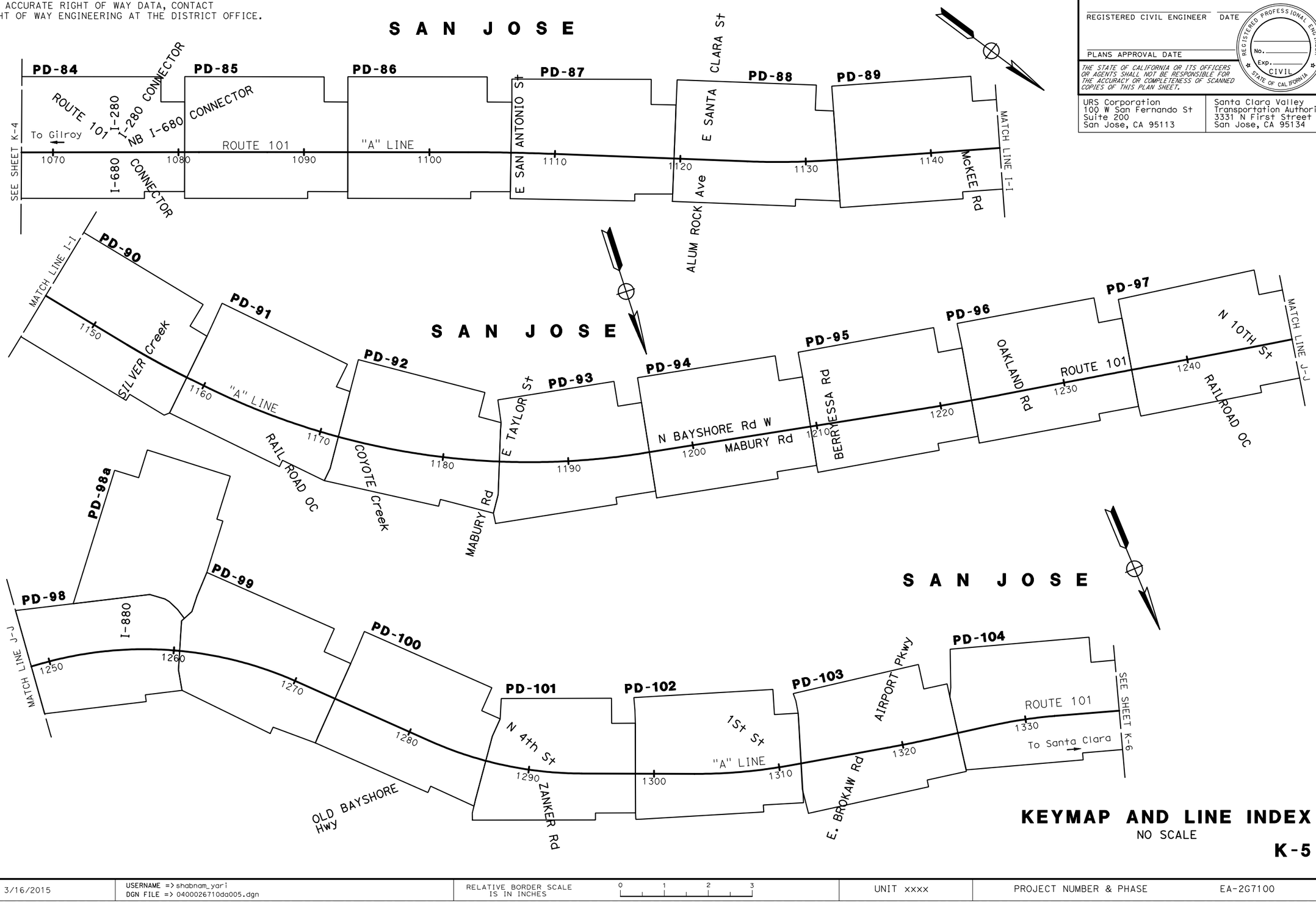
Santa Clara Valley
Transportation Authority
3331 N First Street
San Jose, CA 95134



KEYMAP AND LINE INDEX

NO SCALE

K-5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CALCULATED-DESIGNED BY	ERNIE GARNICA	REVISED BY		LAST REVISION	DATE PLOTTED => 3/16/2015
CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	SHABNAM YARI	DATE REVISED		11-12-13	TIME PLOTTED => 10:05:52 AM
RAMSEY HISSEN						

BORDER LAST REVISED 3/16/2015 | USERNAME => shabnam_yari | DGN FILE => 0400026710da005.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE EA-2G7100

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.0/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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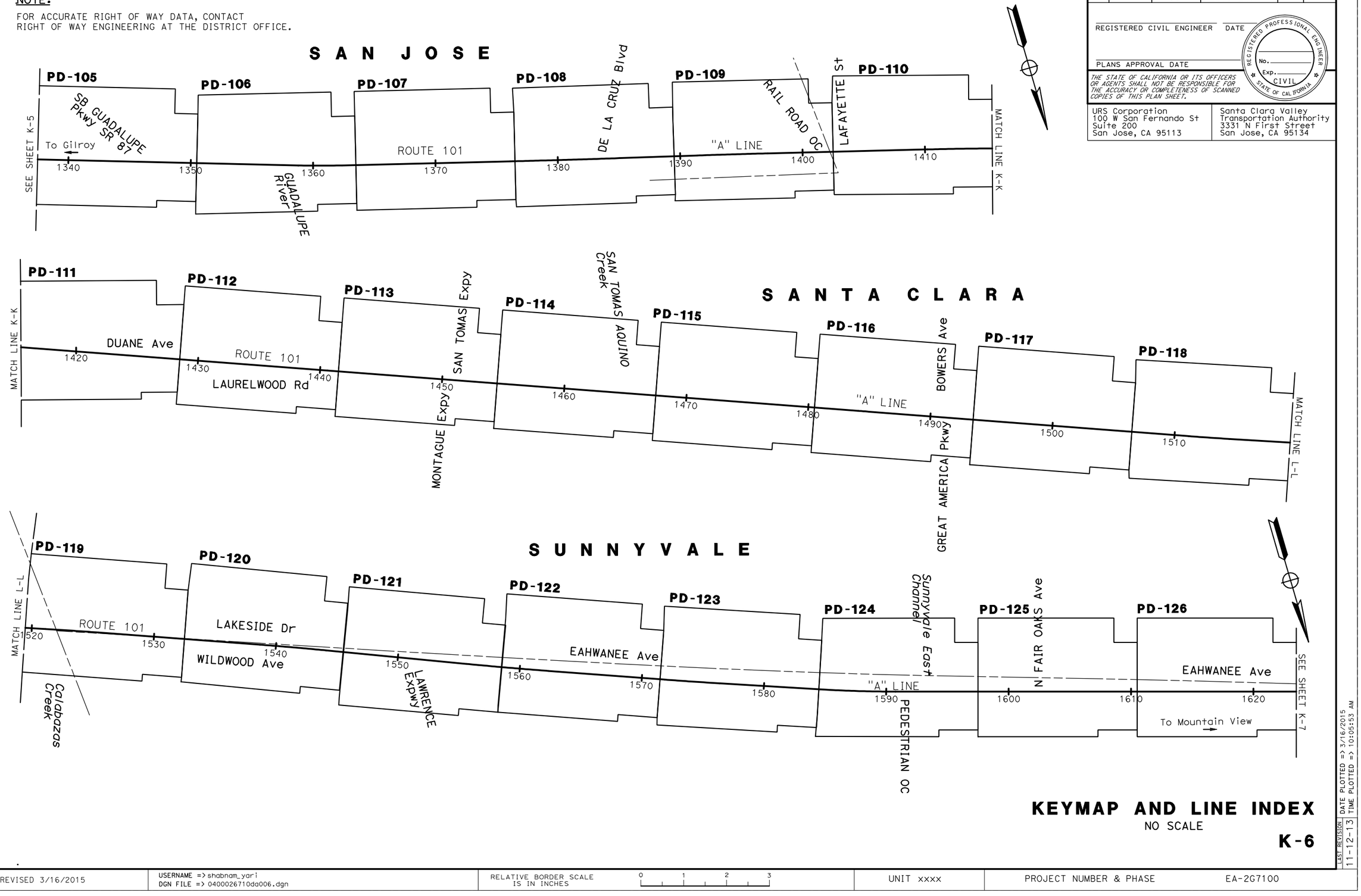

KEYMAP AND LINE INDEX

NO SCALE

K-6

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: ERNIE GARNICA

CHECKED BY: SHABNAM YARI

REVISED BY	DATE REVISED

LAST REVISION: 11-12-13

DATE PLOTTED => 3/16/2015
TIME PLOTTED => 10:05:53 AM

BORDER LAST REVISED 3/16/2015

USERNAME => shabnam_yari
DGN FILE => 0400026710da006.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE EA-2G7100

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.0/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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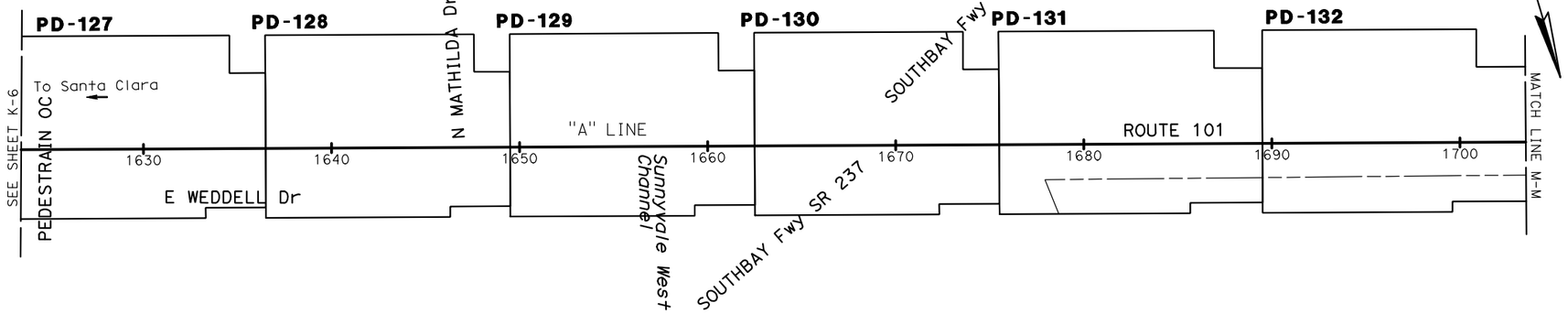
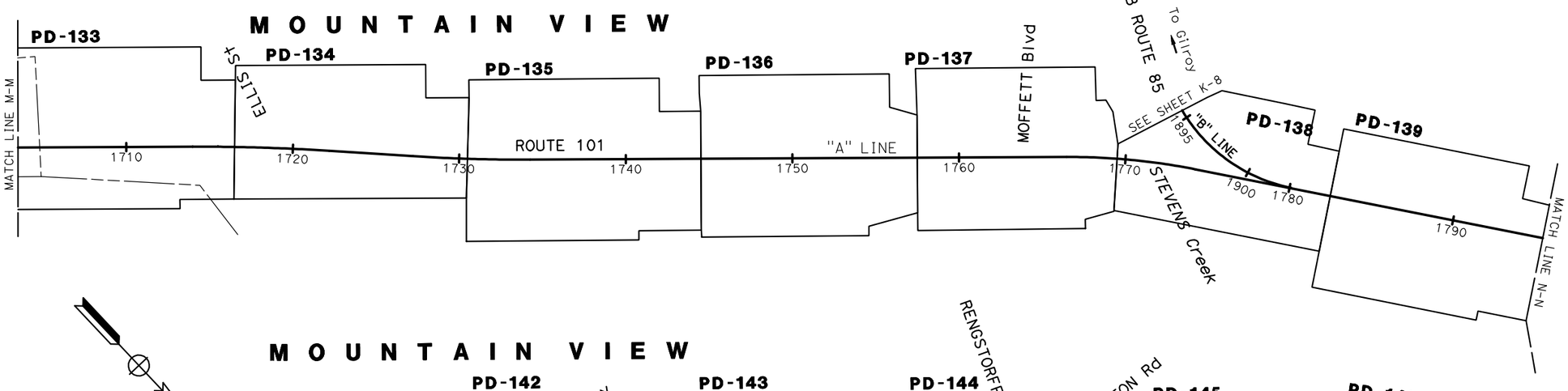
SUNNYVALE



MOUNTAIN VIEW



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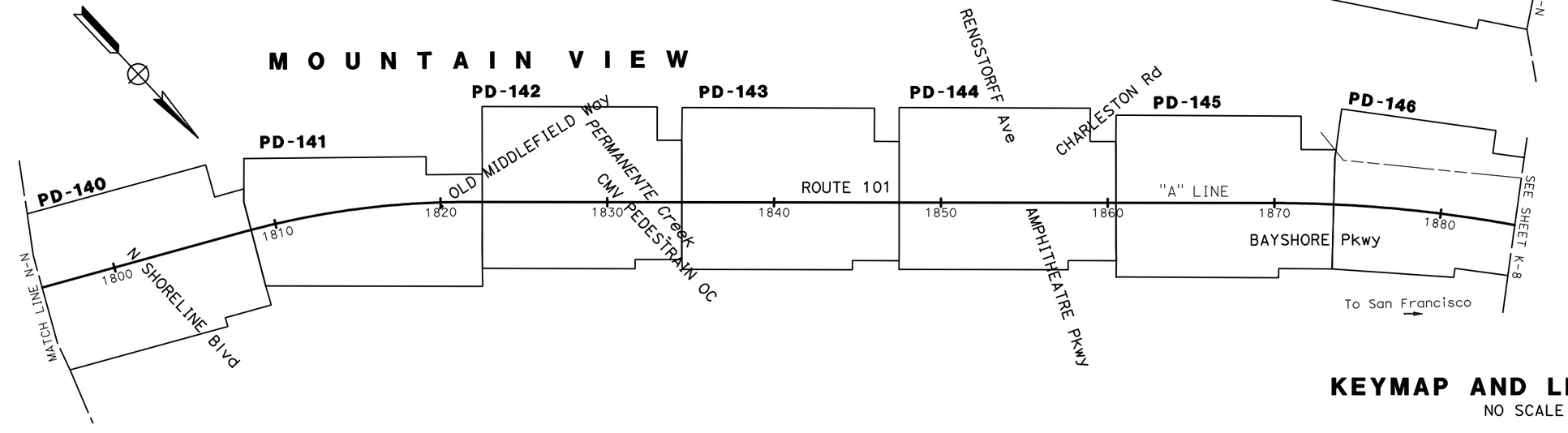

KEYMAP AND LINE INDEX

NO SCALE

K-7

CALCULATED-DESIGNED BY	ERNIE GARNICA
CHECKED BY	SHABNAM YARI
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN
REVISED BY	
DATE REVISED	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

DATE PLOTTED => 3/16/2015
TIME PLOTTED => 10:05:54 AM

LAST REVISION 11-12-13

BORDER LAST REVISED 3/16/2015 | USERNAME => shabnam_yari | DGN FILE => 0400026710da007.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE EA-2G7100

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
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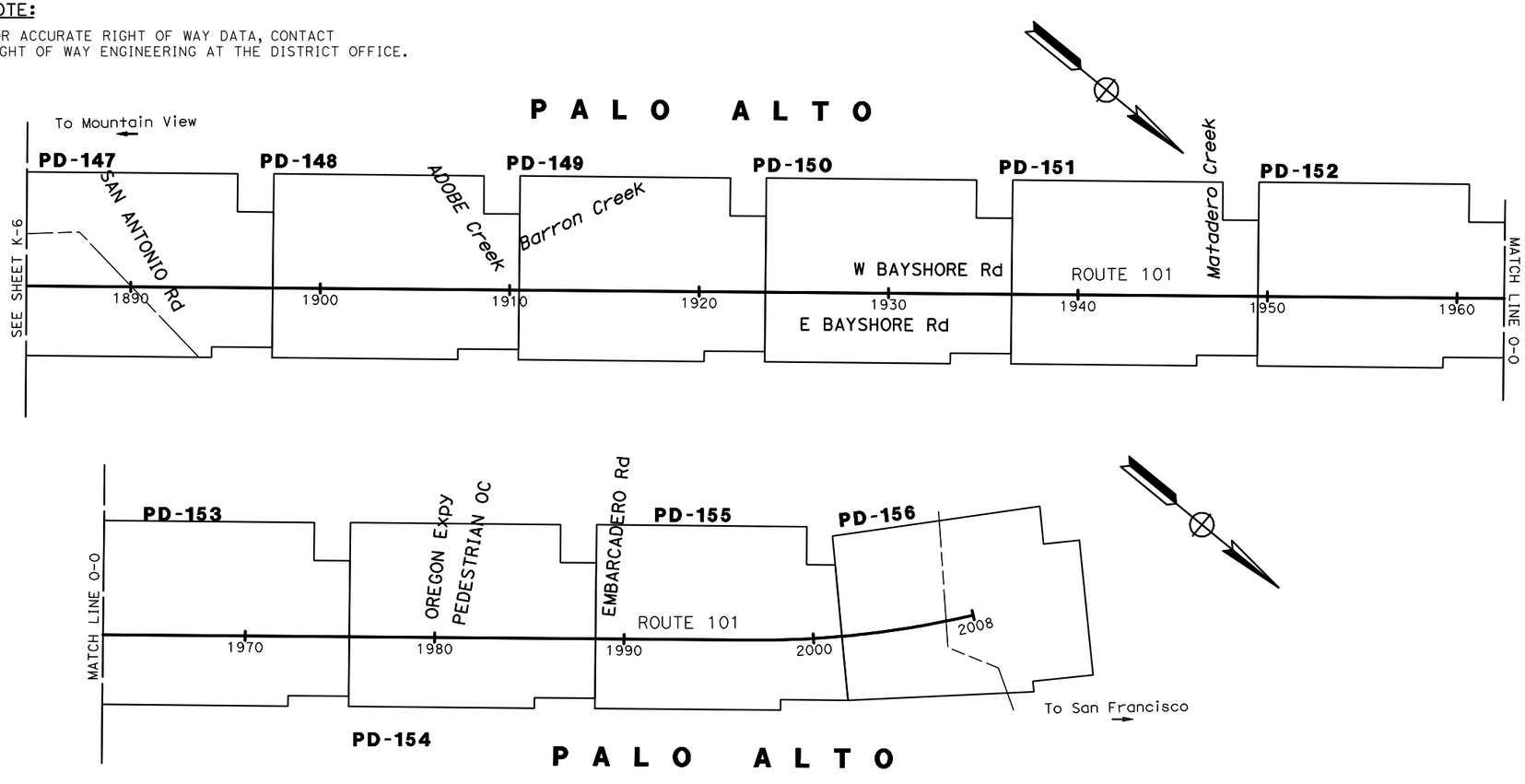

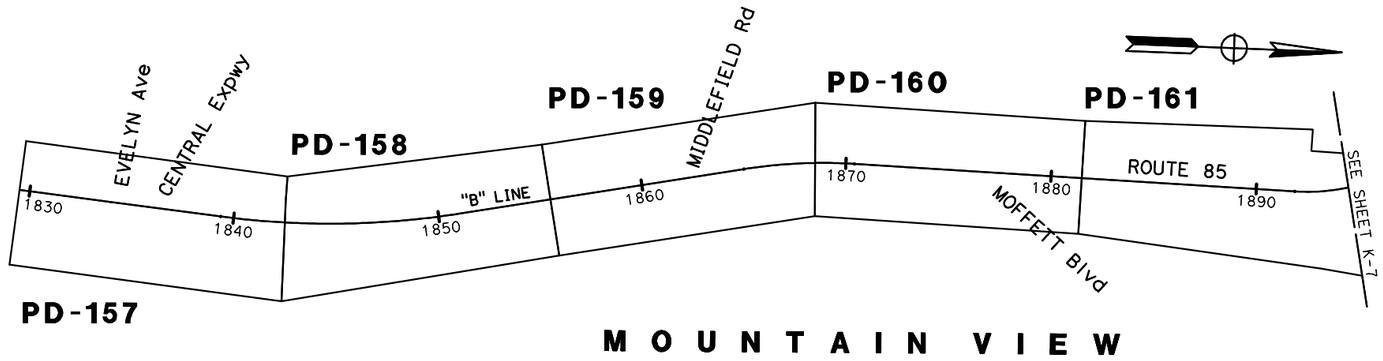

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.0/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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KEYMAP AND LINE INDEX

NO SCALE

K-8

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: ERNIE GARNICA
CHECKED BY: SHABNAM YARI

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-12-13
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 10:05:55 AM

BORDER LAST REVISED 3/16/2015
USERNAME => shabnam_yari
DGN FILE => 0400026710da008.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT xxxx
PROJECT NUMBER & PHASE EA-2G7100

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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No.
Exp.
CIVIL
STATE OF CALIFORNIA

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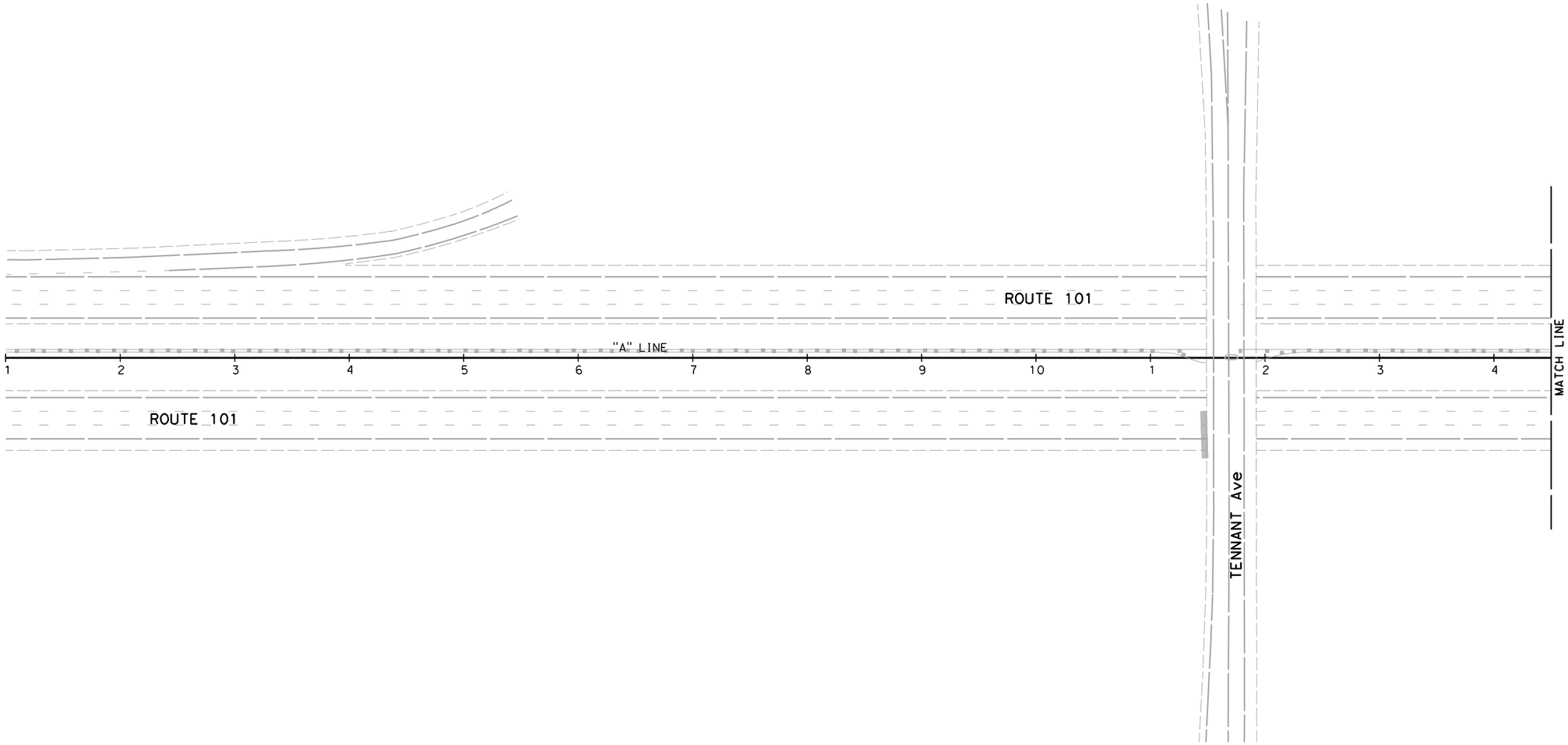
LEGEND:

- PROPOSED OVERHEAD SIGN
- EXISTING OVERHEAD SIGN
- TOLLING GANTRY
- CHP ENFORCEMENT AREA

M O R G A N H I L L



PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

REVISED BY	-		
DATE REVISED	-		
LAN HO	RAMESH SATHIAMURTHY		
CALCULATED-DESIGNED BY			
CHECKED BY			
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans		

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:18:23 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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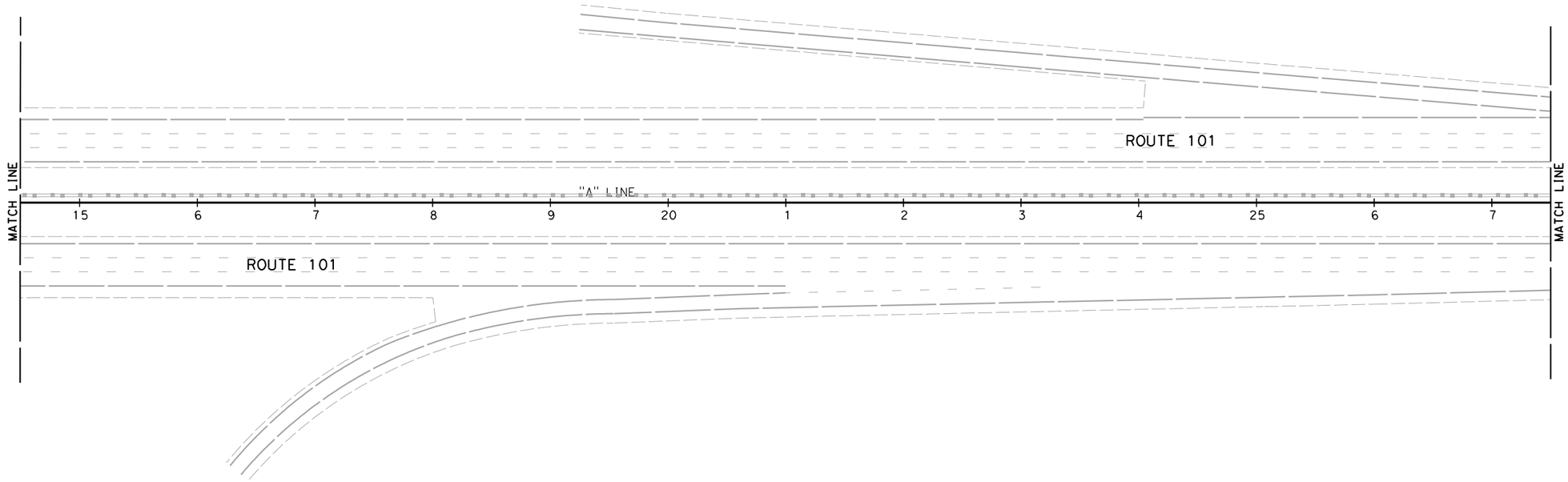
MORGAN HILL



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-2

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:18:31 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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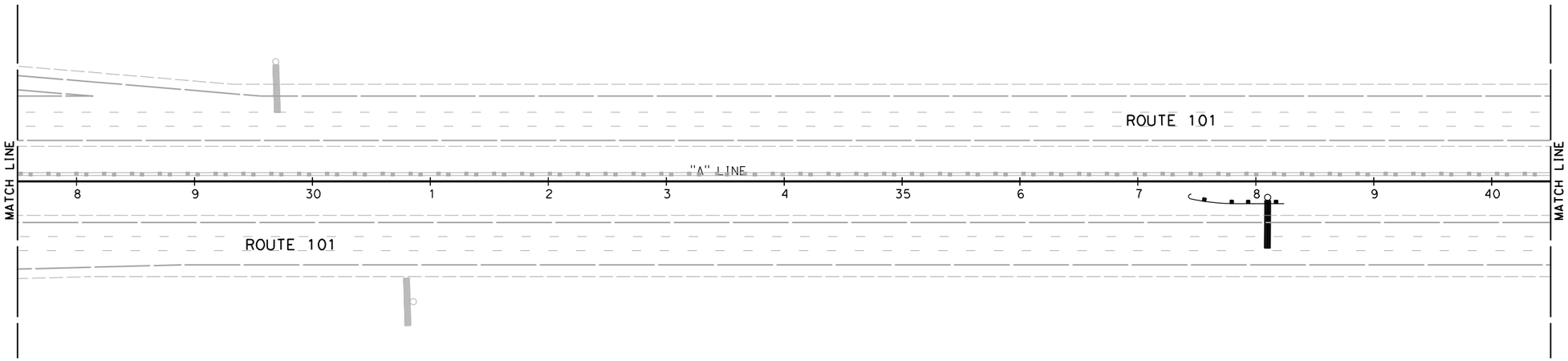
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

MORGAN HILL



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-3

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

LAN HO	-	-
RAMESH SATHIAMURTHY	REVISED BY	DATE REVISED
CALCULATED-DESIGNED BY		
CHECKED BY		
CONSULTANT FUNCTIONAL SUPERVISOR		
RAMSEY HISSEN		

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:18:36 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na003.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

MORGAN HILL

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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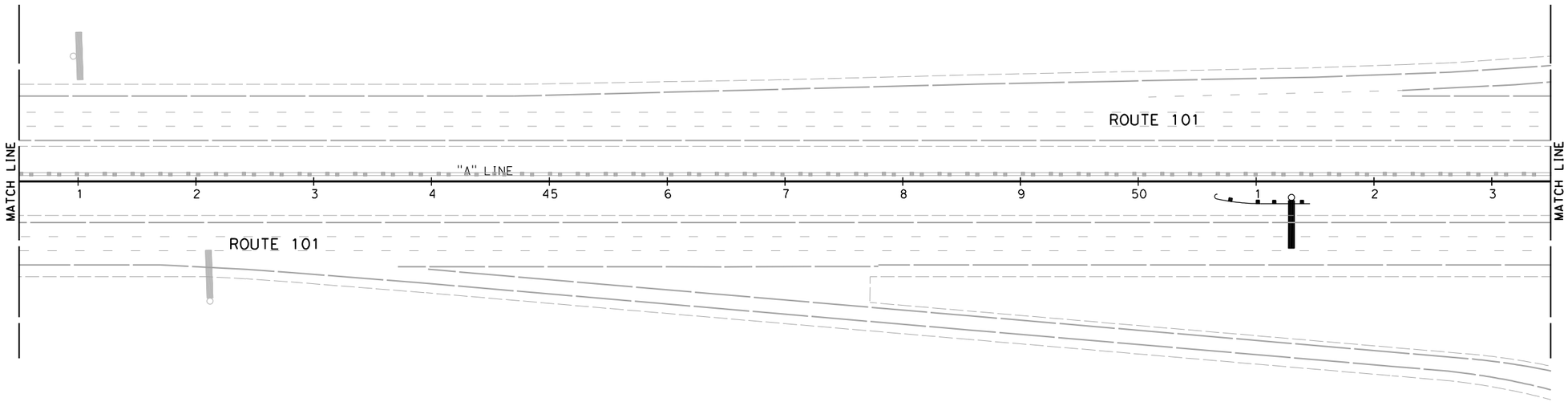

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-4

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO	
CHECKED BY	RAMESH SATHIAMURTHY	
REVISED BY	-	
DATE REVISED	-	

CONSULTANT FUNCTIONAL SUPERVISOR
RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:18:41 AM

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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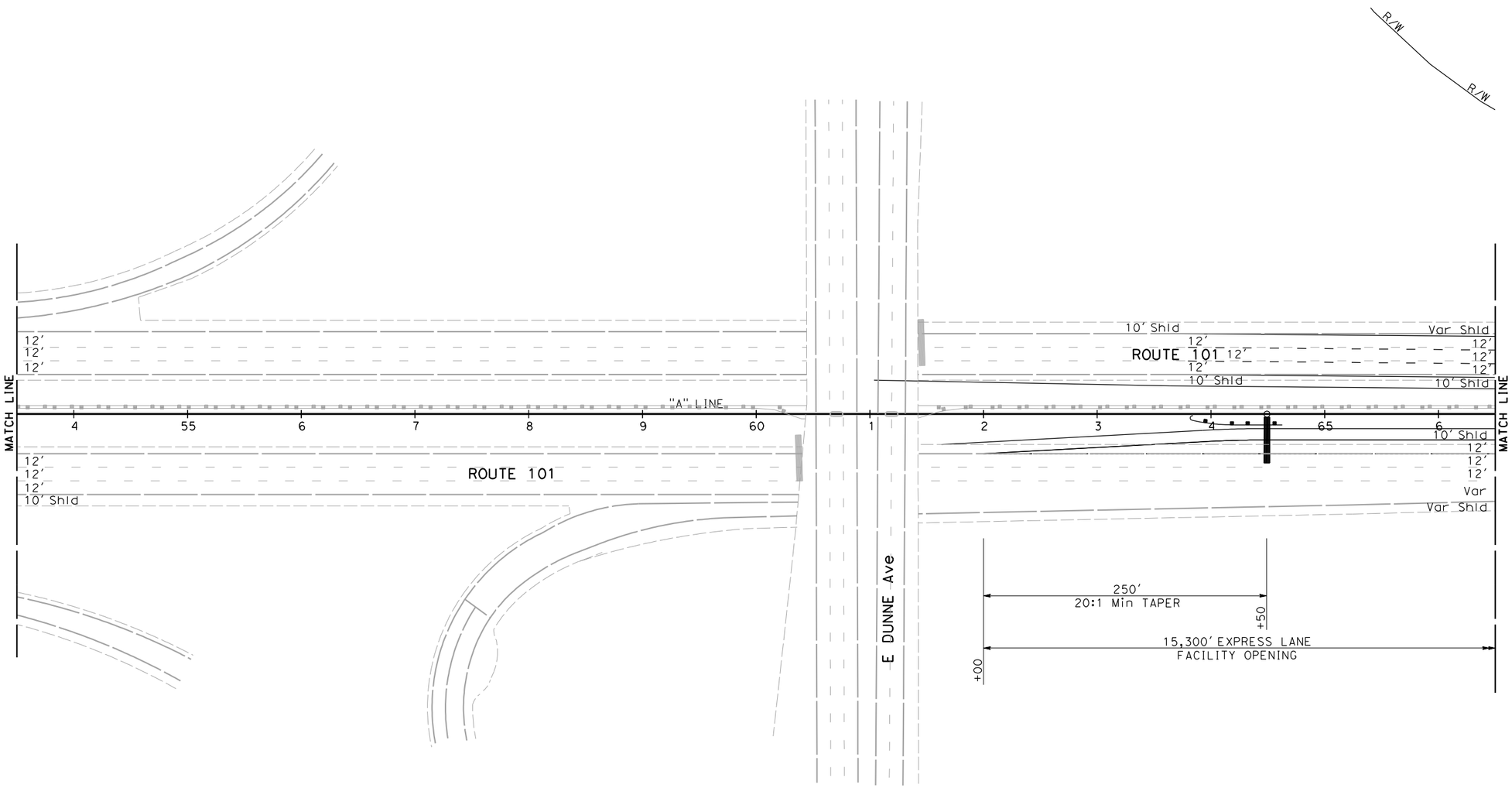
MORGAN HILL



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-5

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO	-	-
CHECKED BY	RAMESH SATHIAMURTHY	REVISED BY	DATE REVISED
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans		

LAST REVISION 8-14-14 | DATE PLOTTED => 3/16/2015 | TIME PLOTTED => 11:18:46 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na005.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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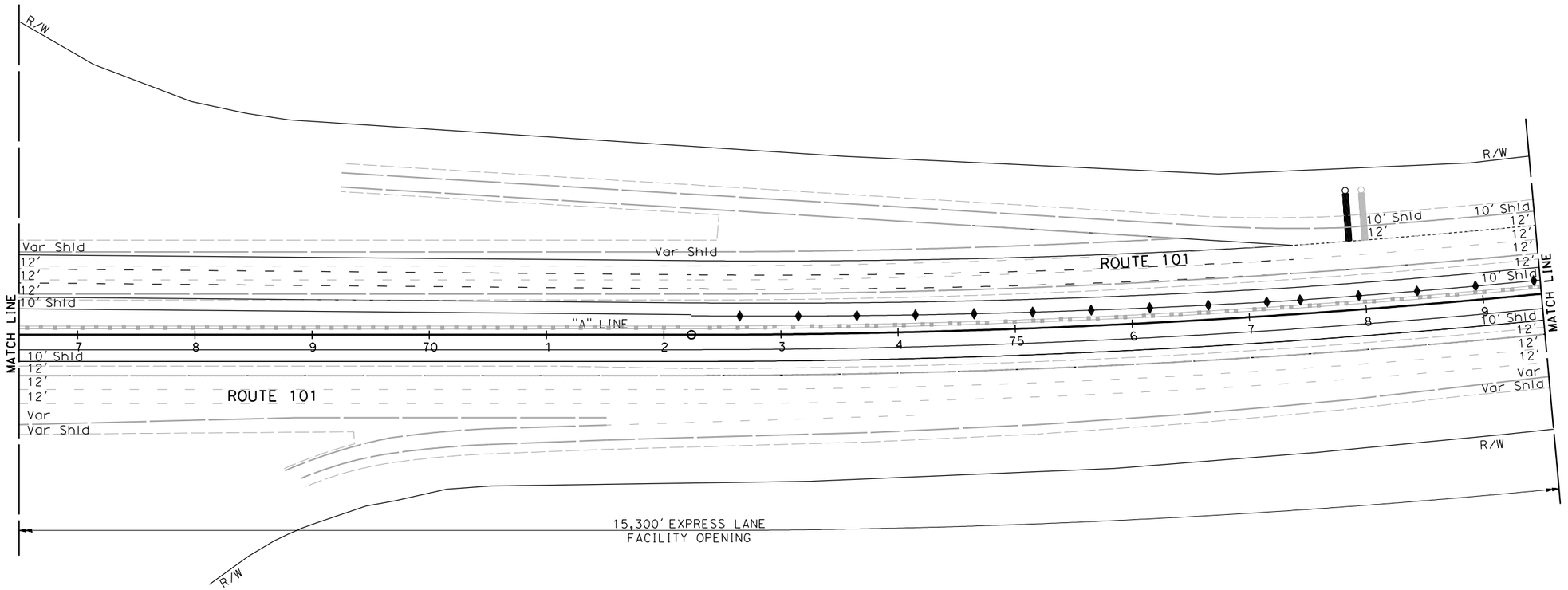
WALNUT GROVE Dr



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-6

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO	-	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION Caltrans			

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:18:51 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na006.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER _____ DATE _____

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

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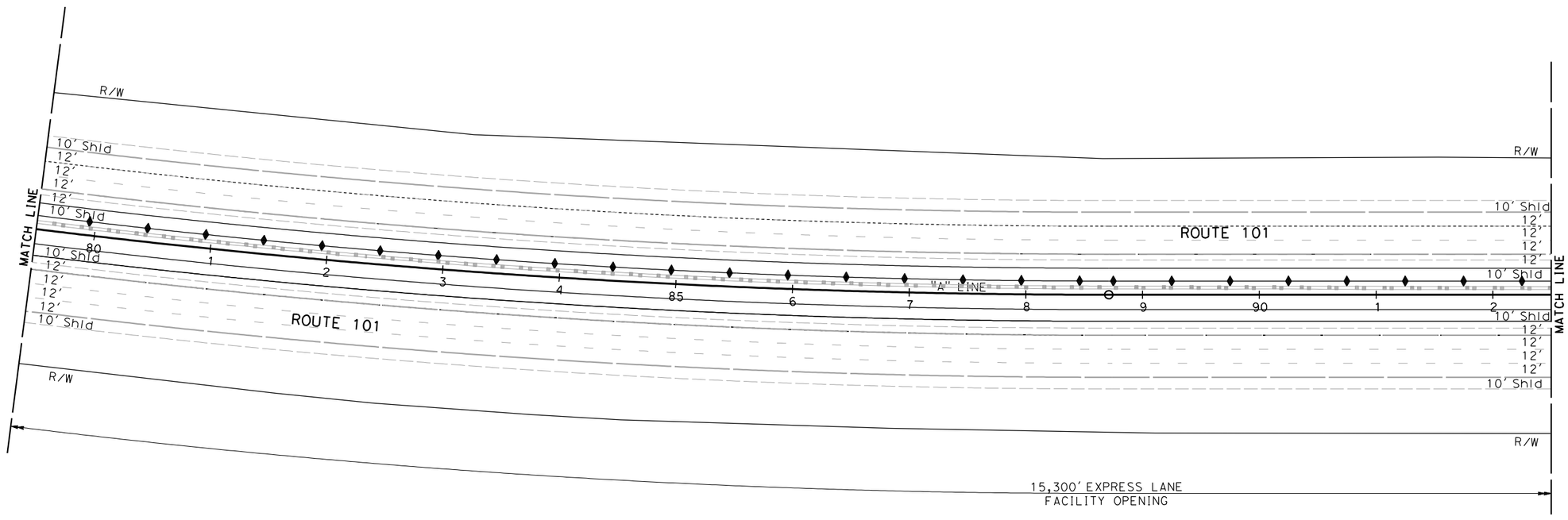

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-7

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO	-	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans		

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:18:56 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na007.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

MORGAN HILL

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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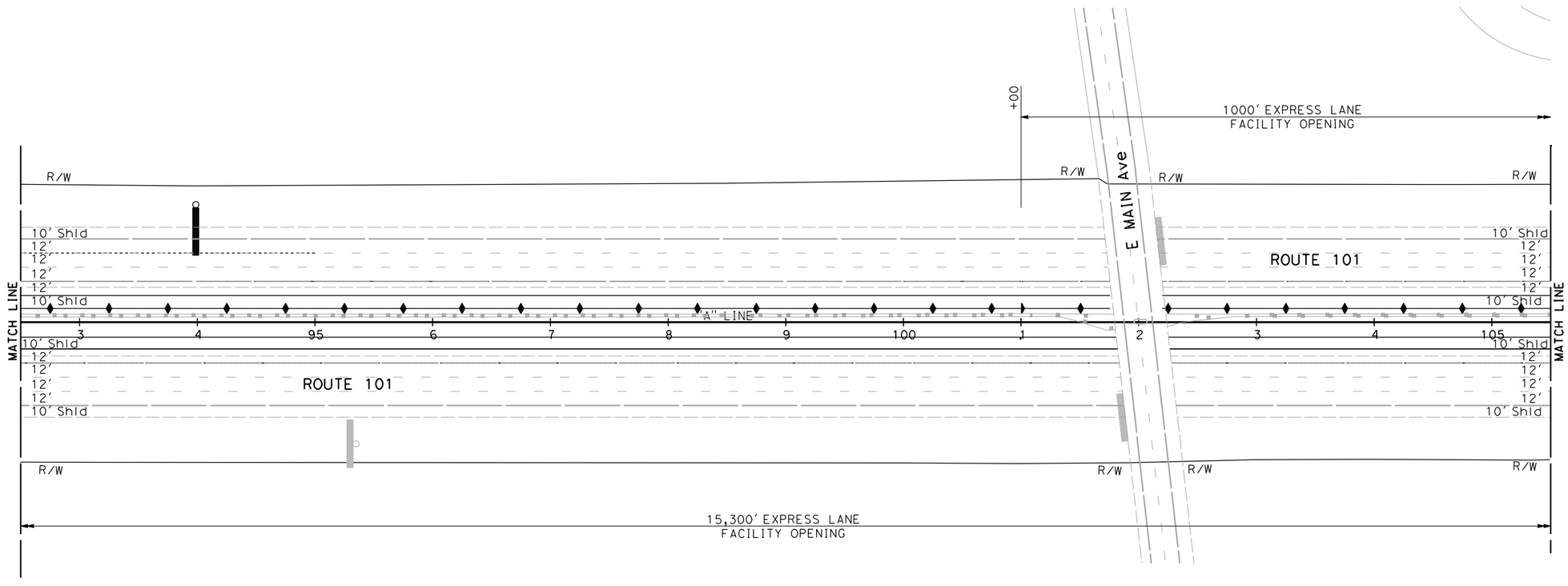

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-8

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO	-	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans®		

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:19:02 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na008.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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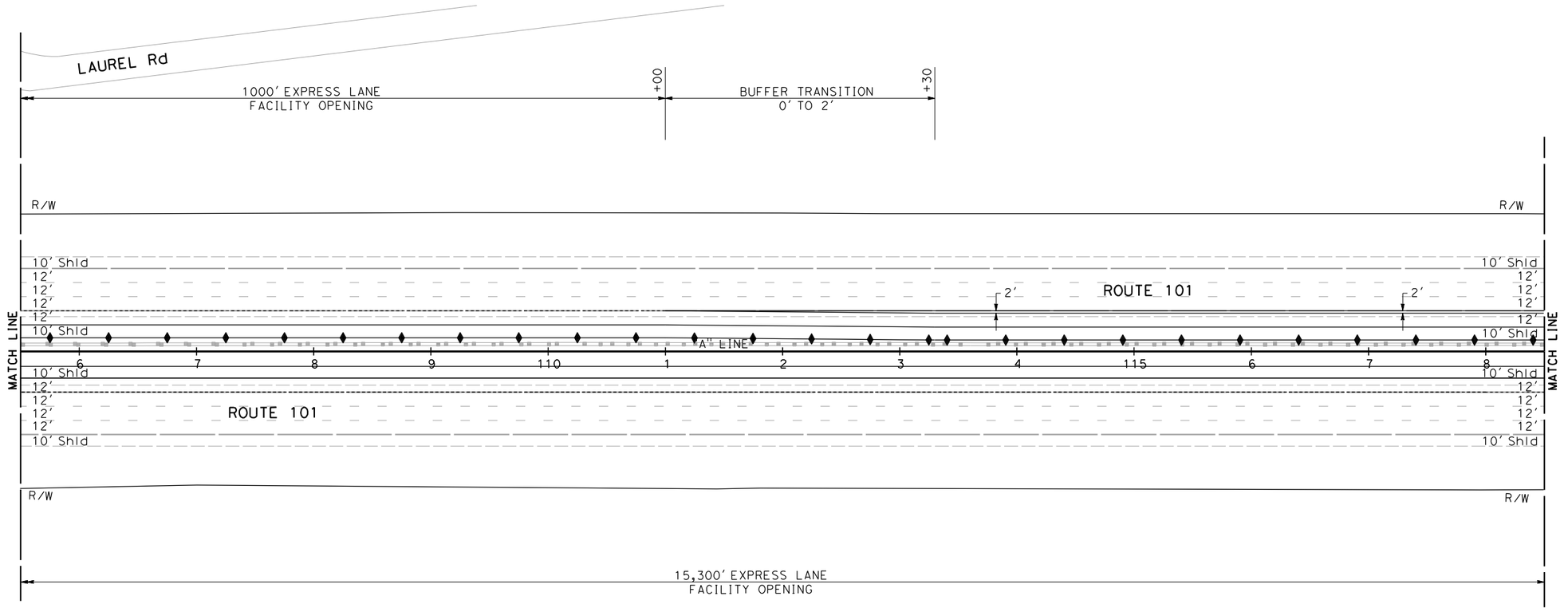

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-9

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

REVISED BY	DATE REVISED
-	-
LAN HO	RAMESH SATHIAMURTHY

CALCULATED-DESIGNED BY
CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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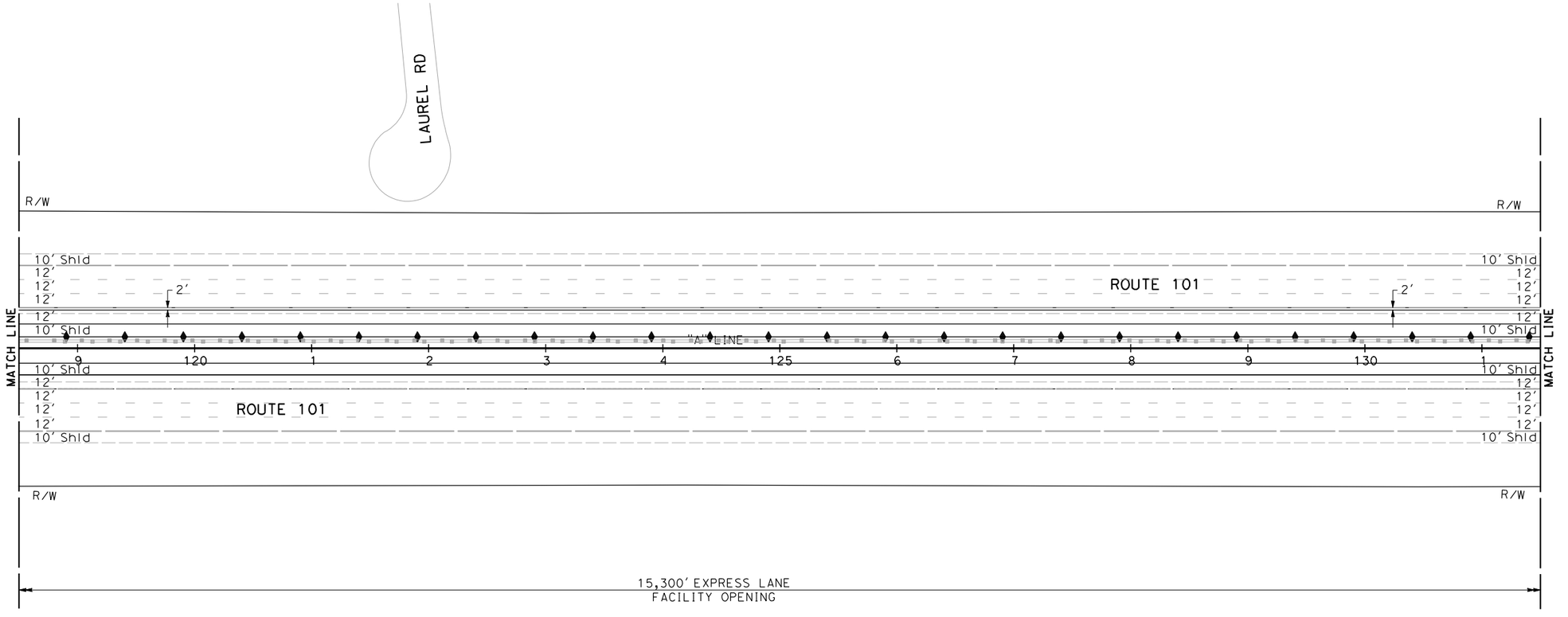

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-10

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CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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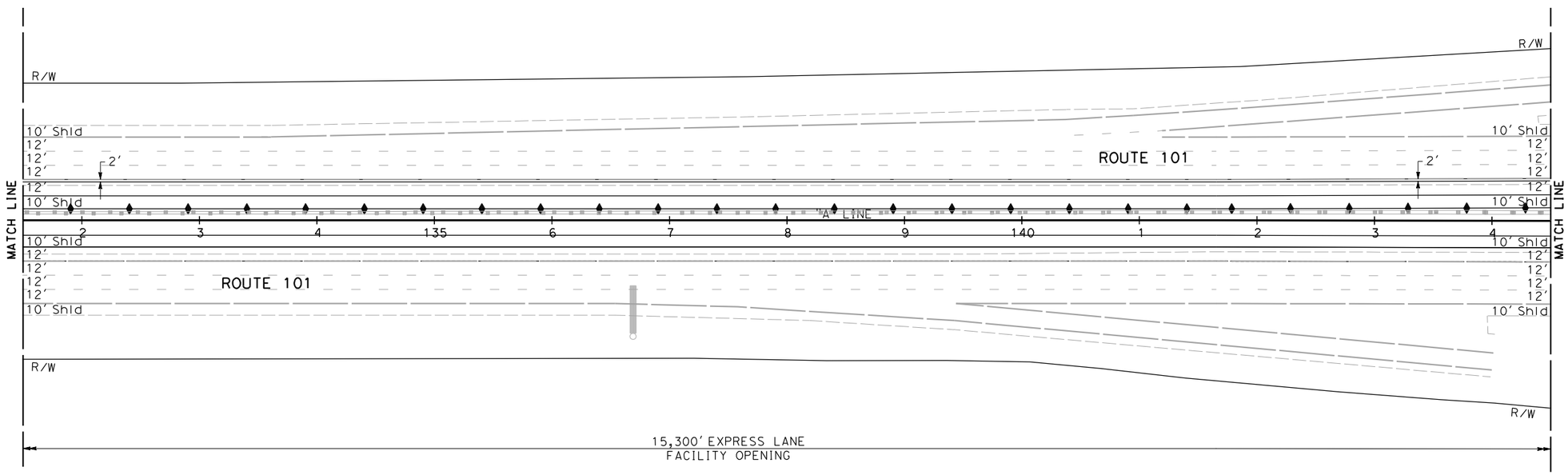

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-11

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CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

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DGN FILE => ...\0400026710na011.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE 04000026710

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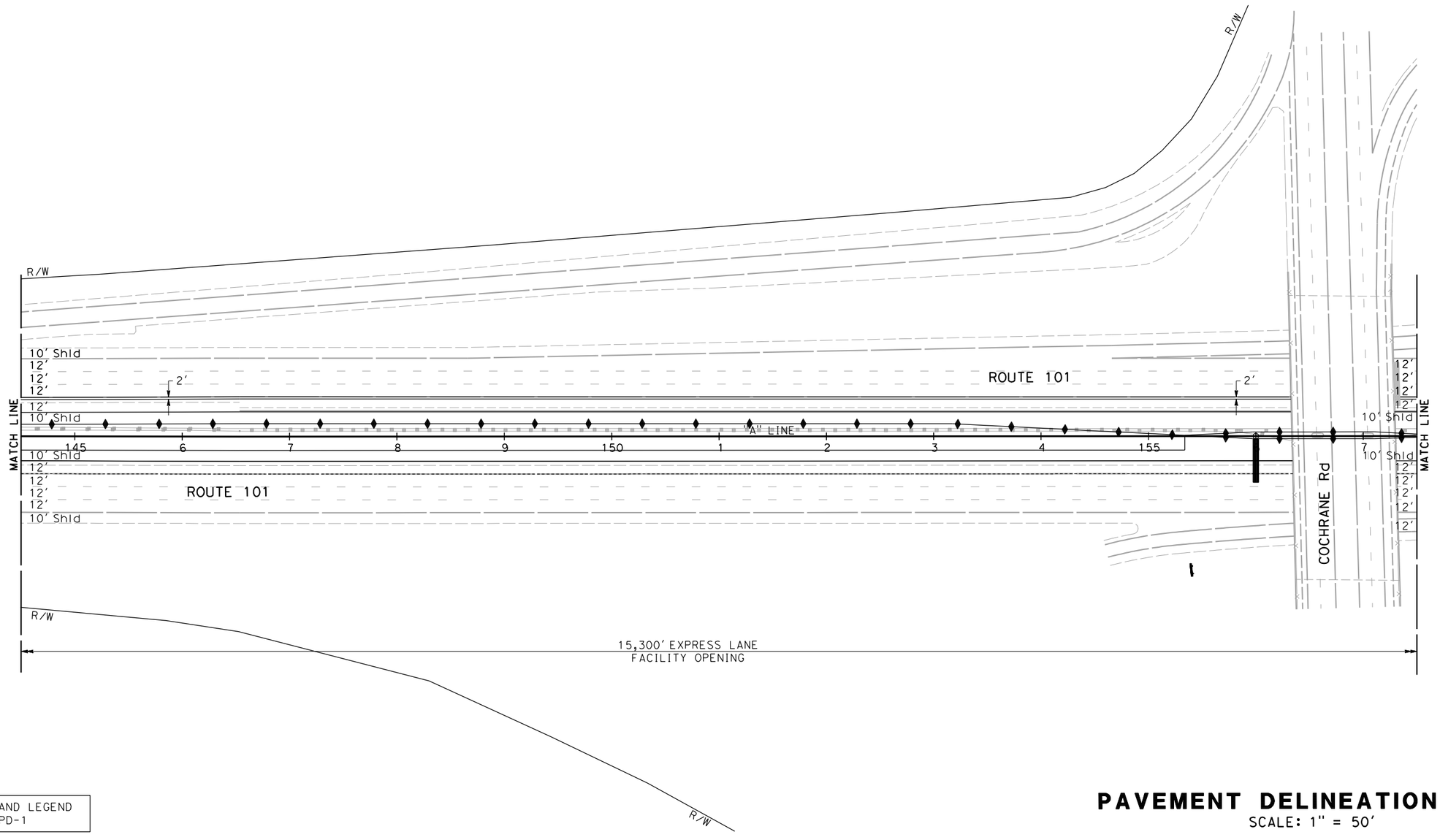

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-12

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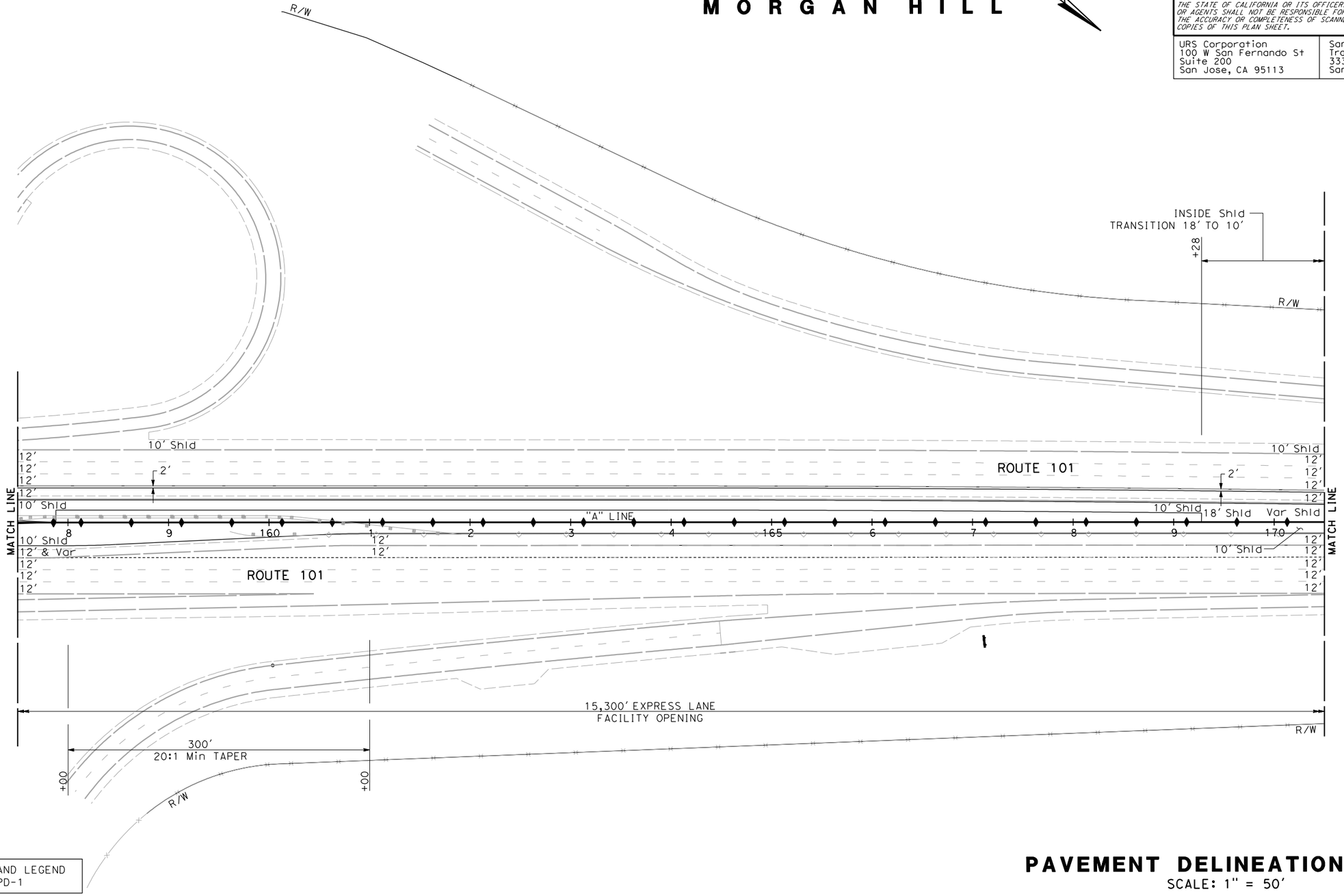

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SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-13

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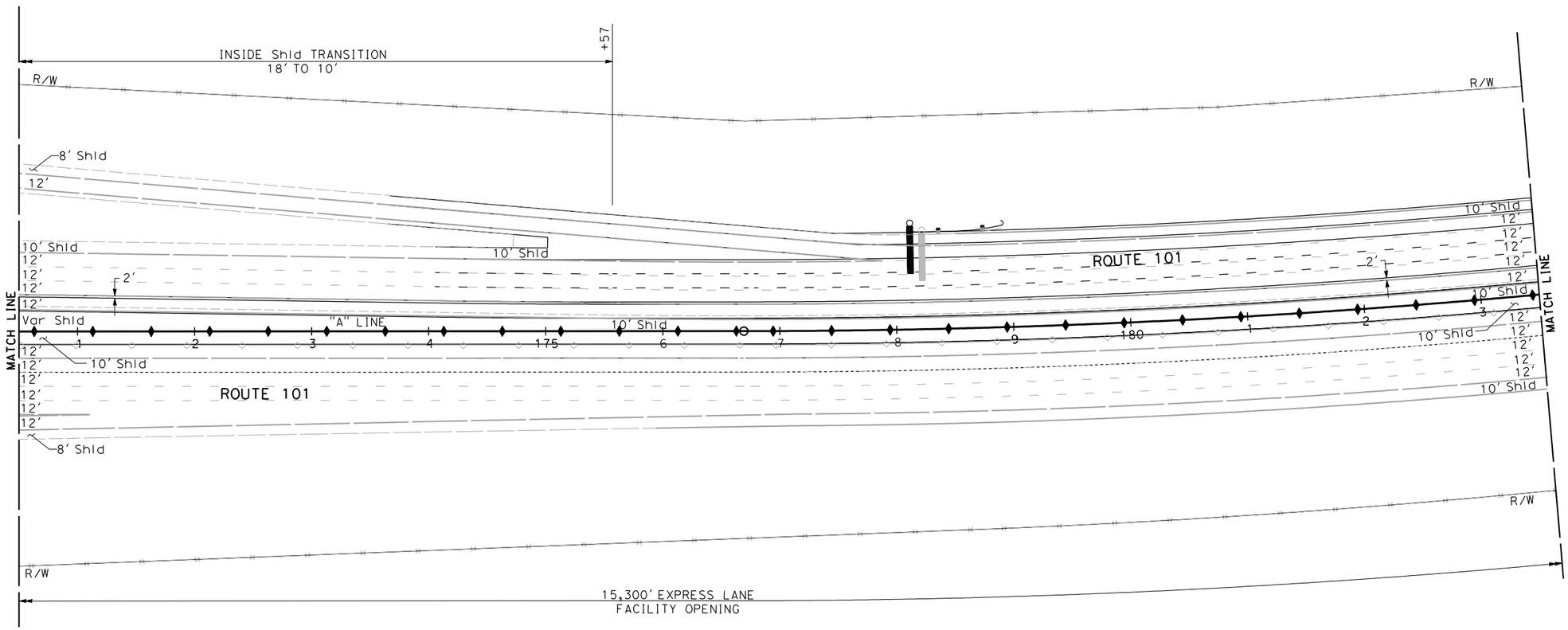

FOR NOTES AND LEGEND
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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-14

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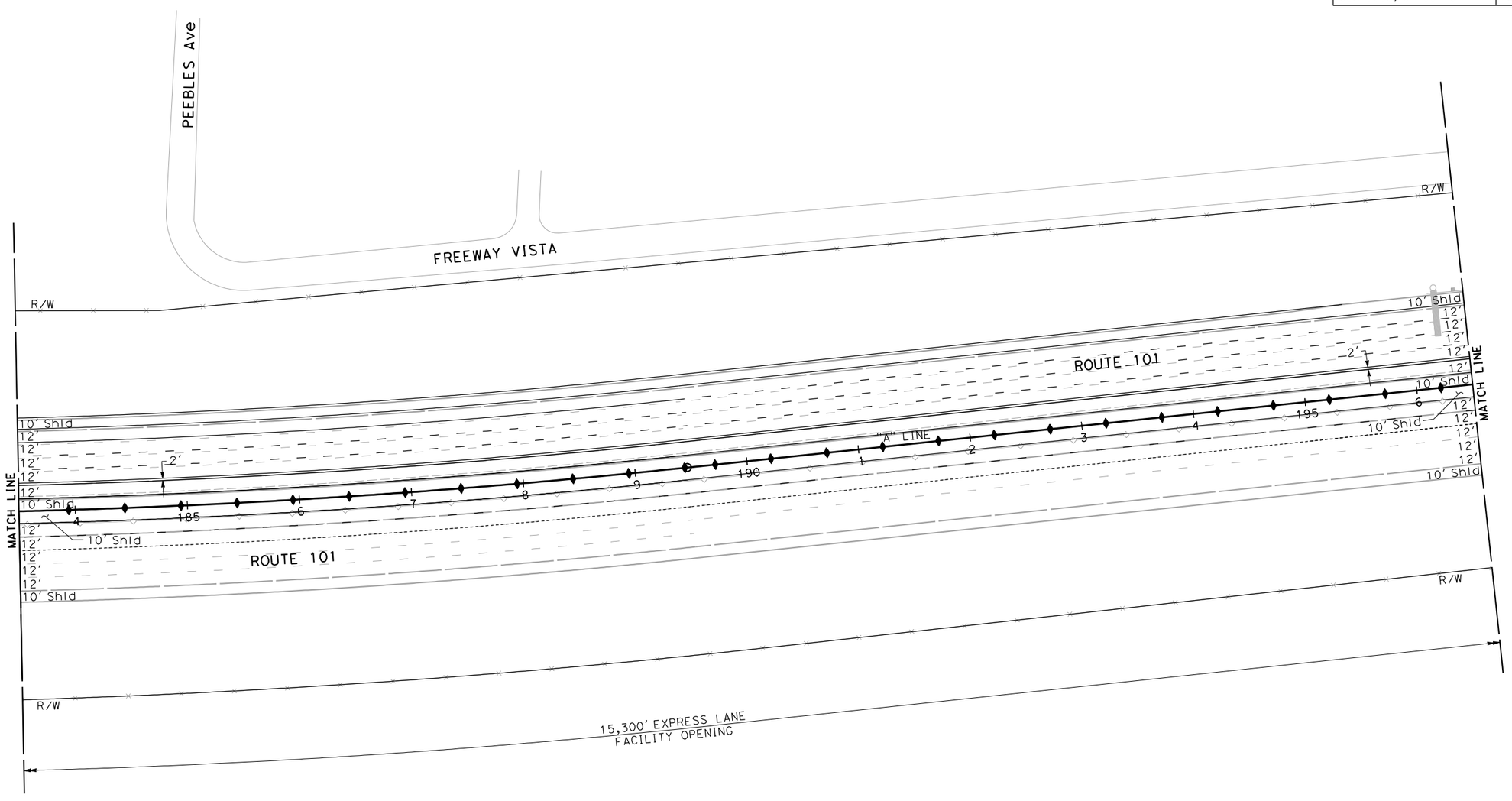

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SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-15

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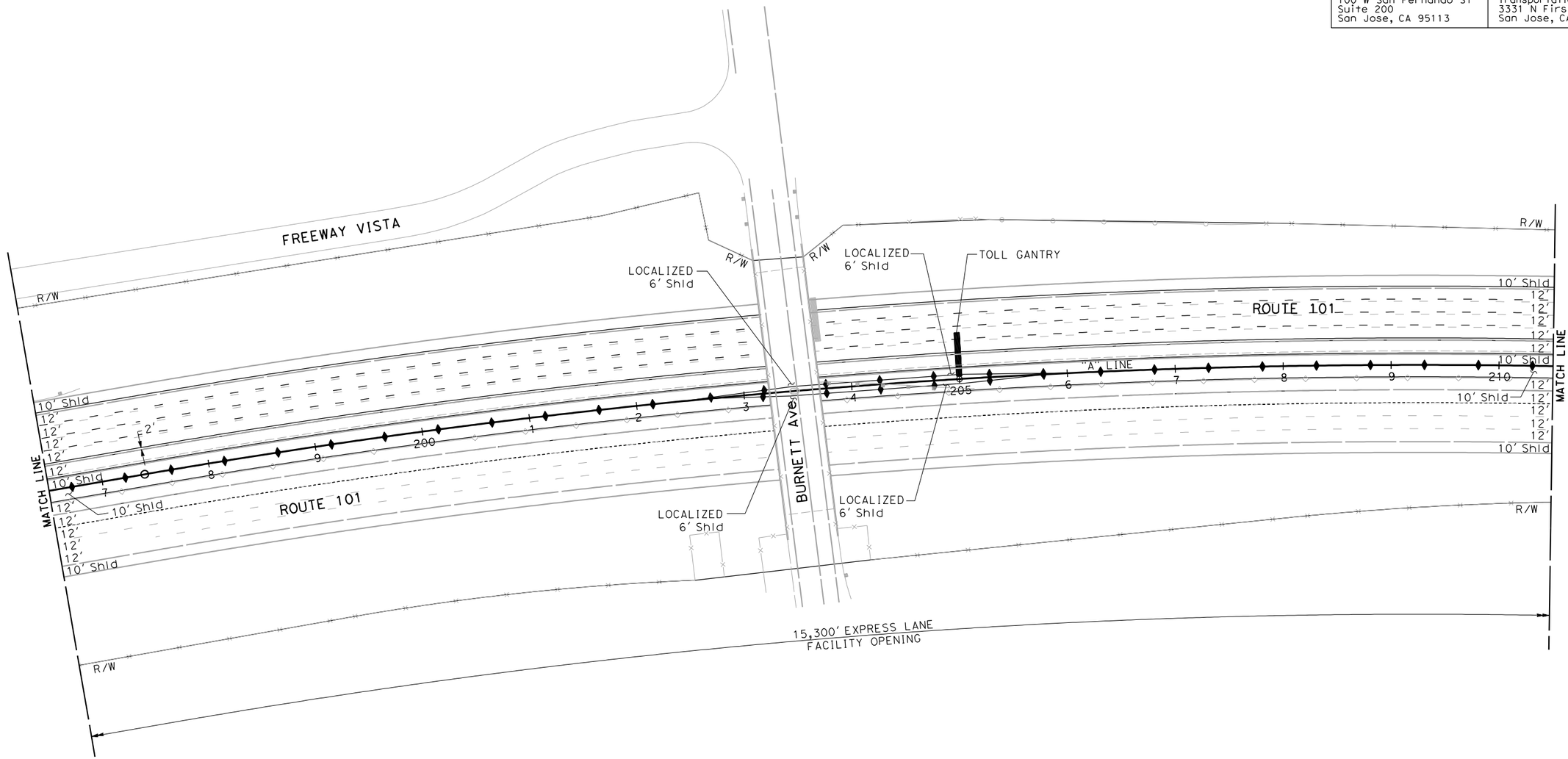

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-16

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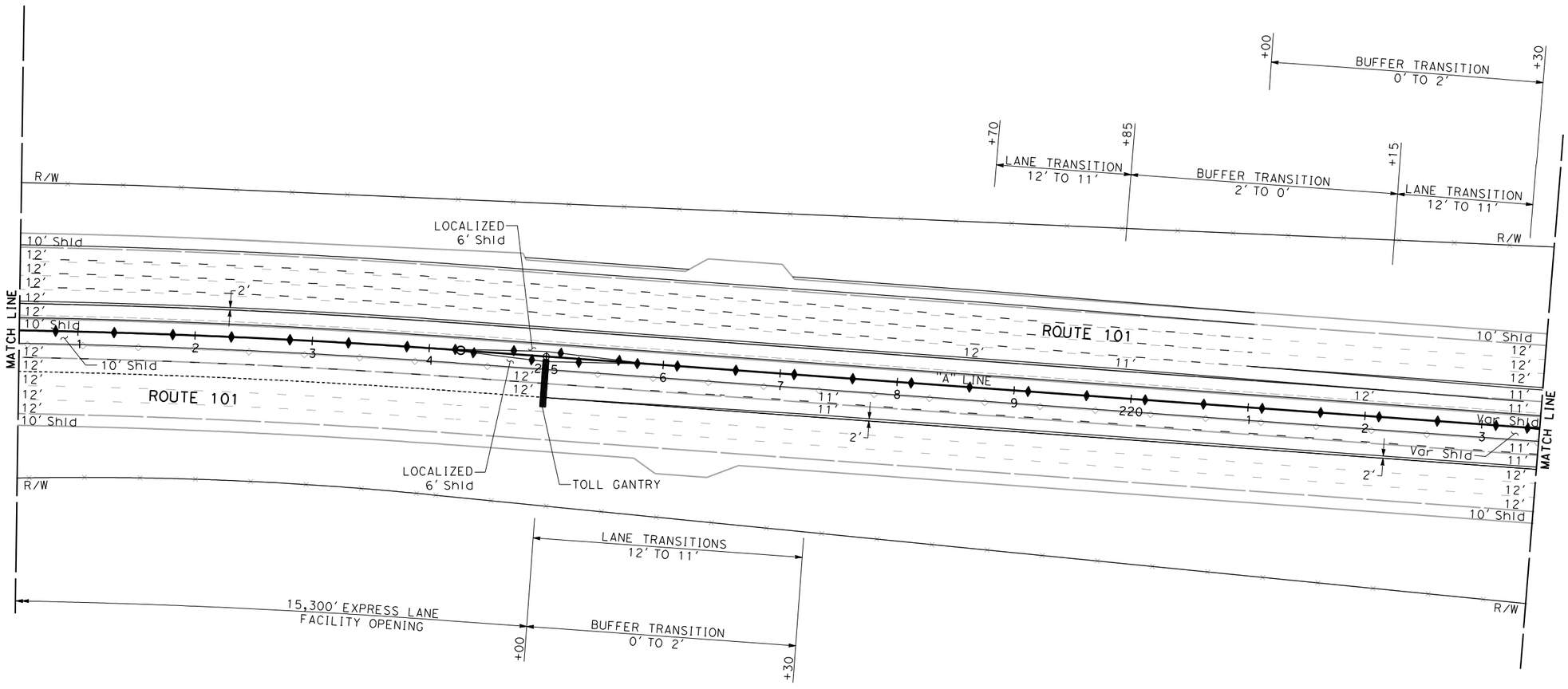

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-17

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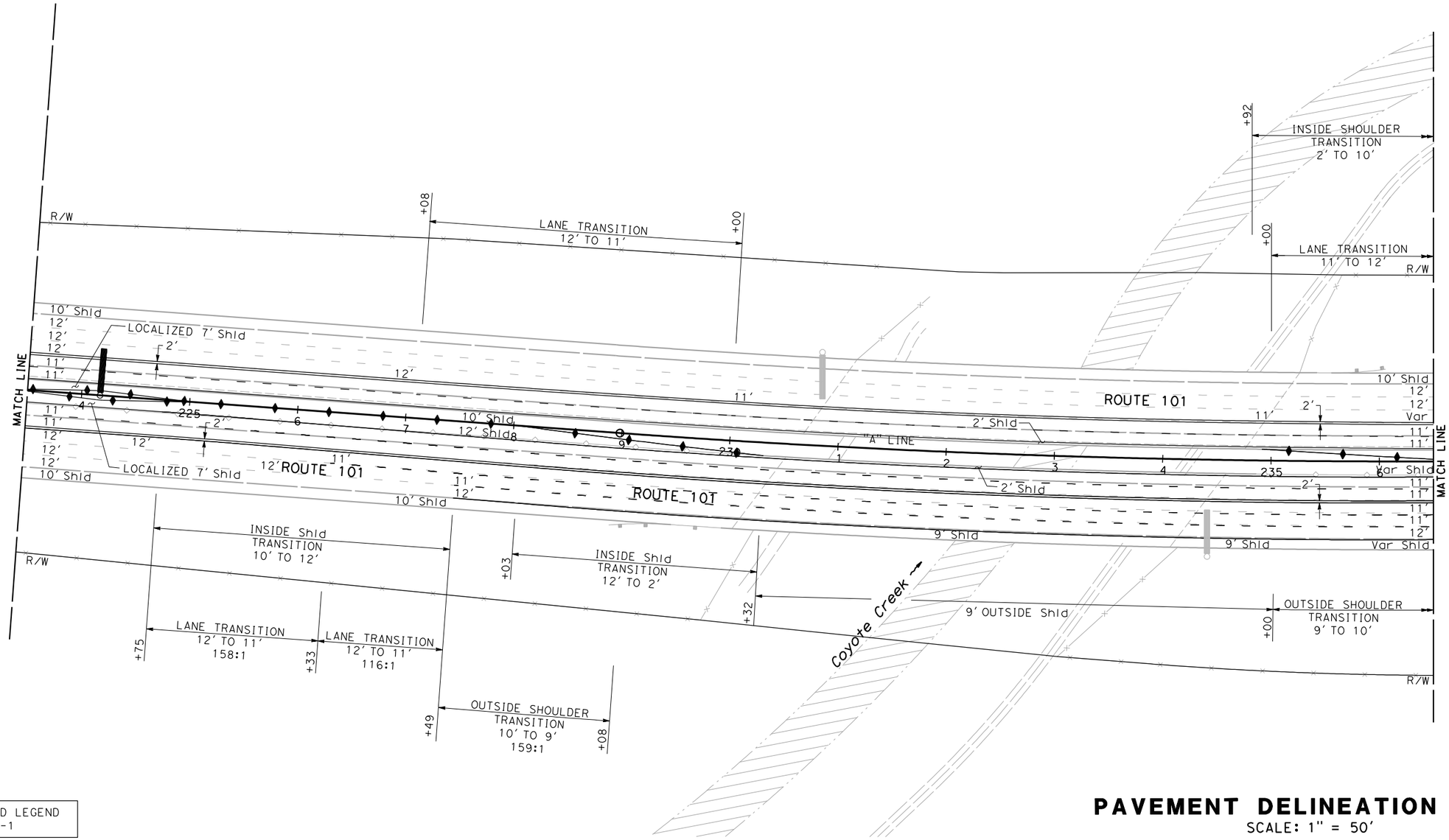

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-18

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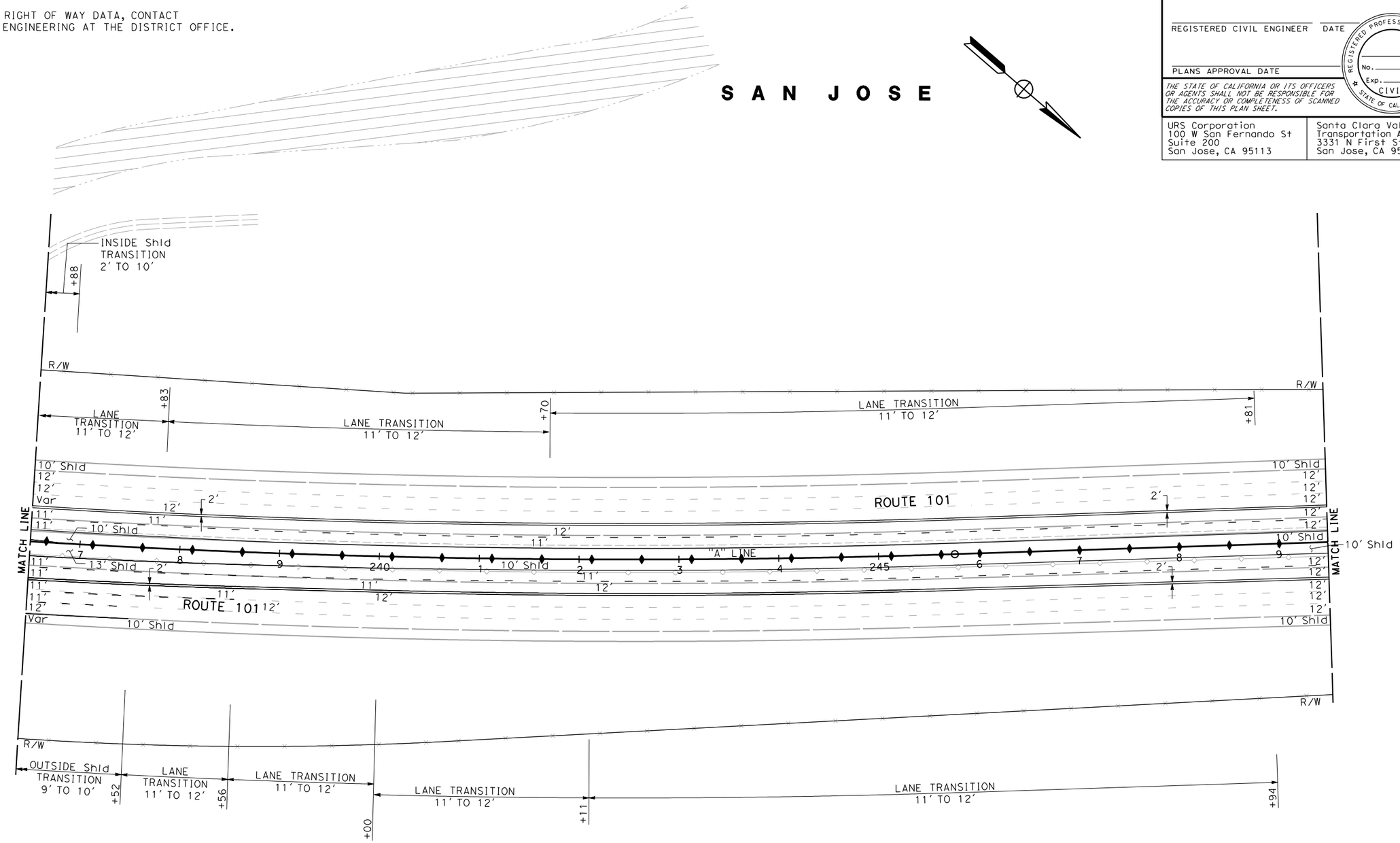

FOR NOTES AND LEGEND
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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-19

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CHECKED BY: RAMESH SATHIAMURTHY
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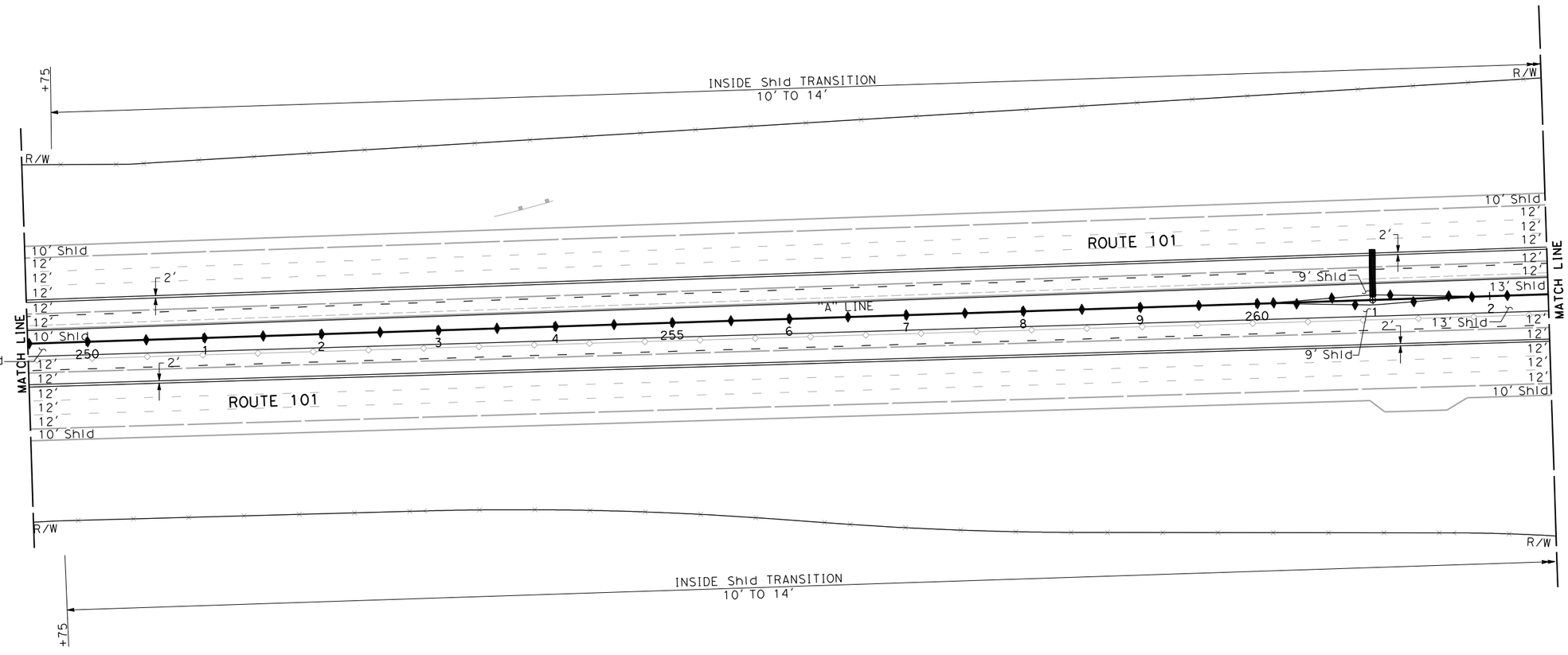

FOR NOTES AND LEGEND
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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-20

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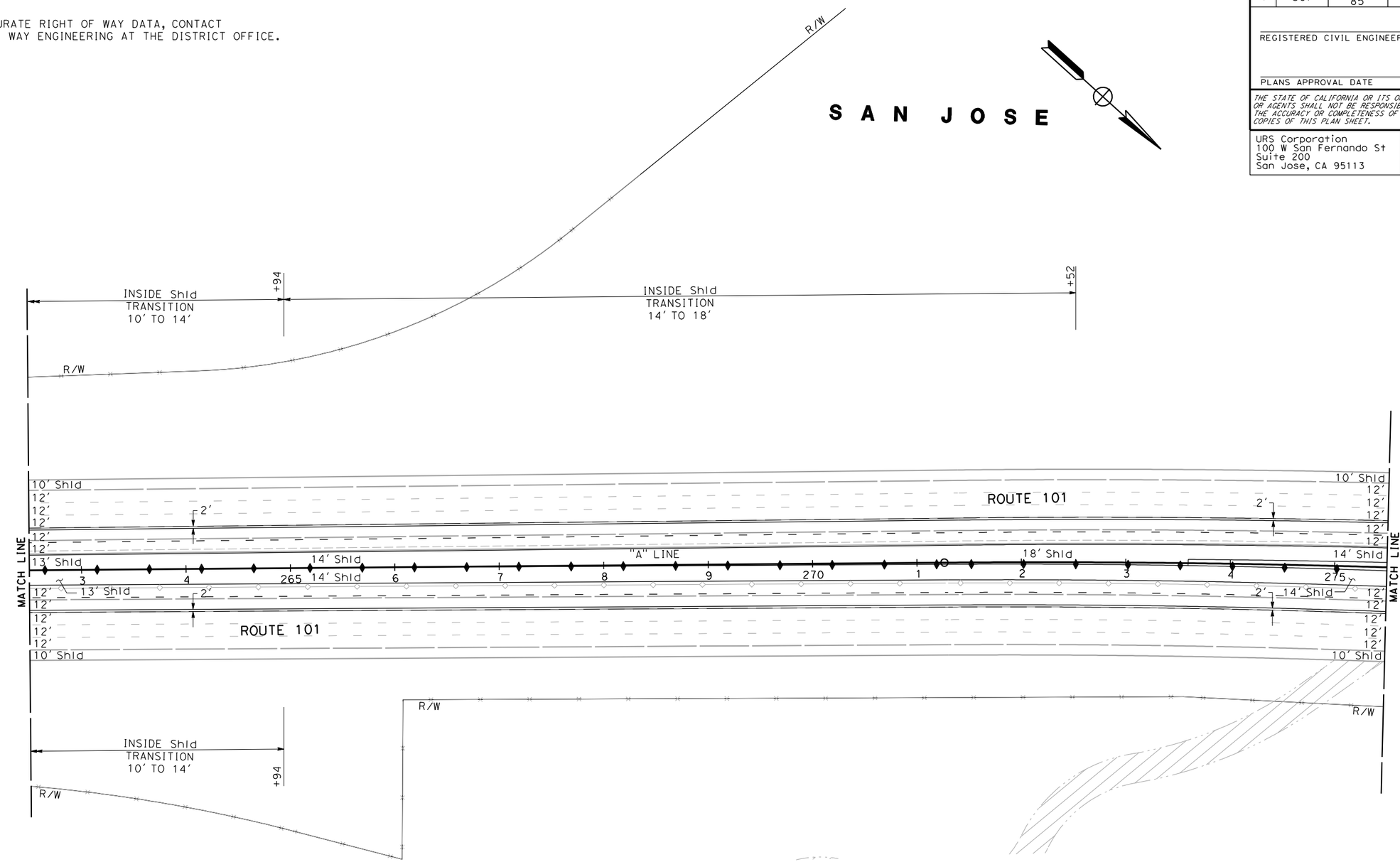

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-21

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CHECKED BY: NELSON HOM

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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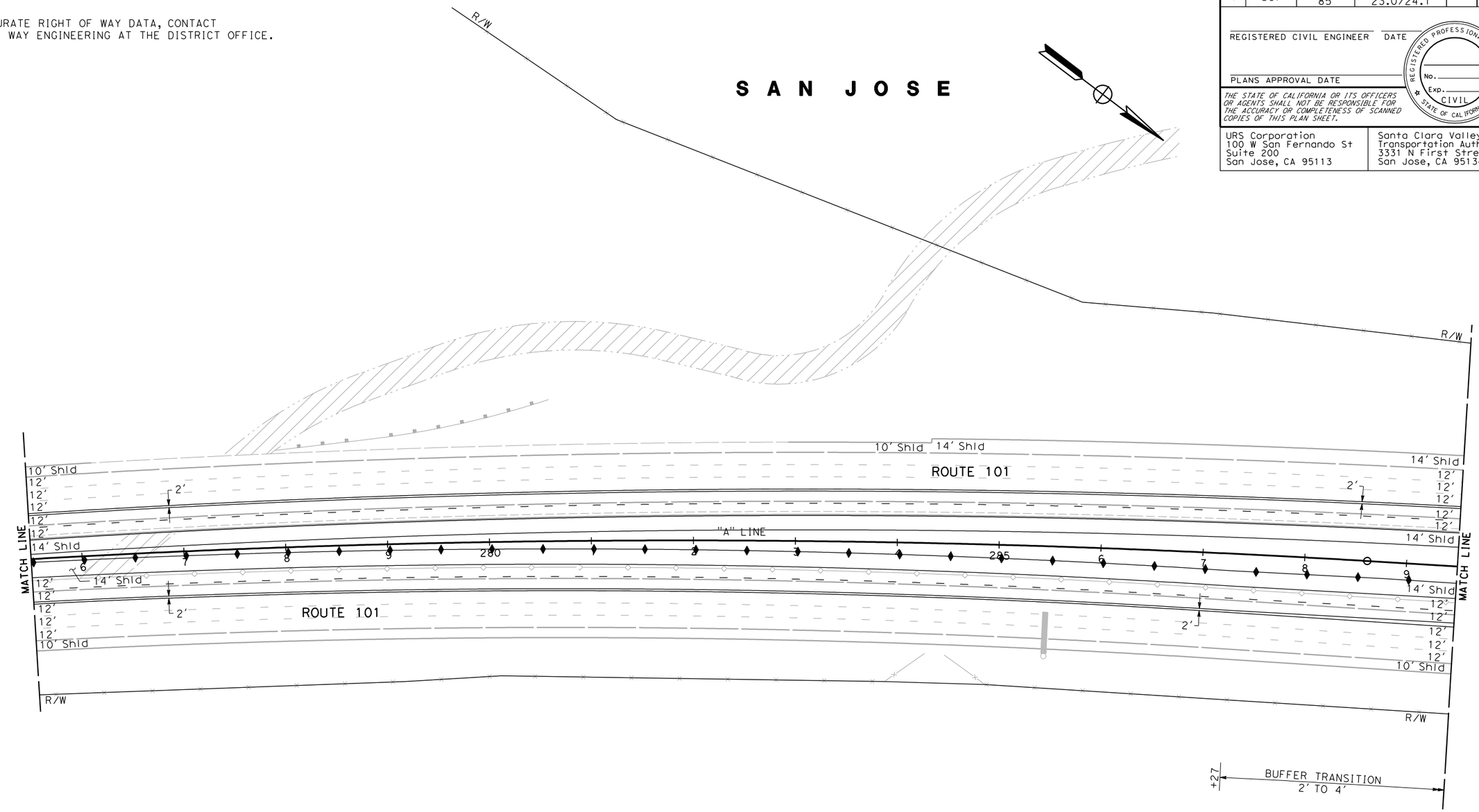

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-22

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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4	SCl	101 85	16.00/52.55 23.0/24.1		

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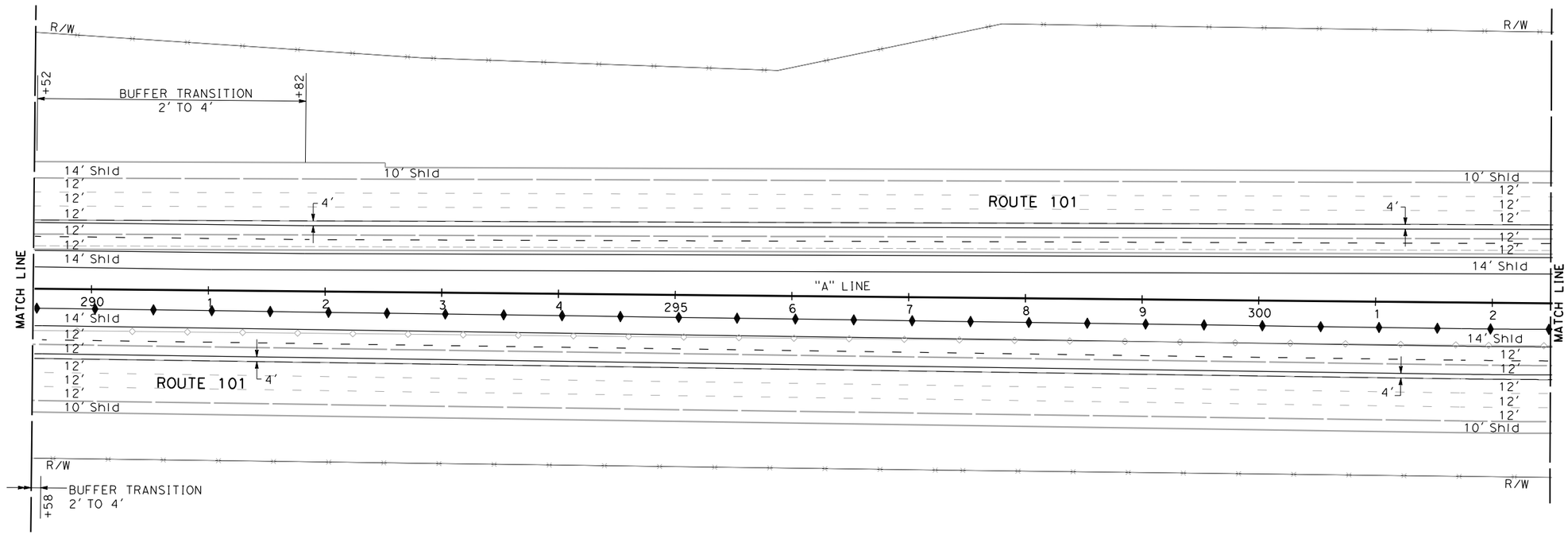

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-23

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CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:20:22 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na023.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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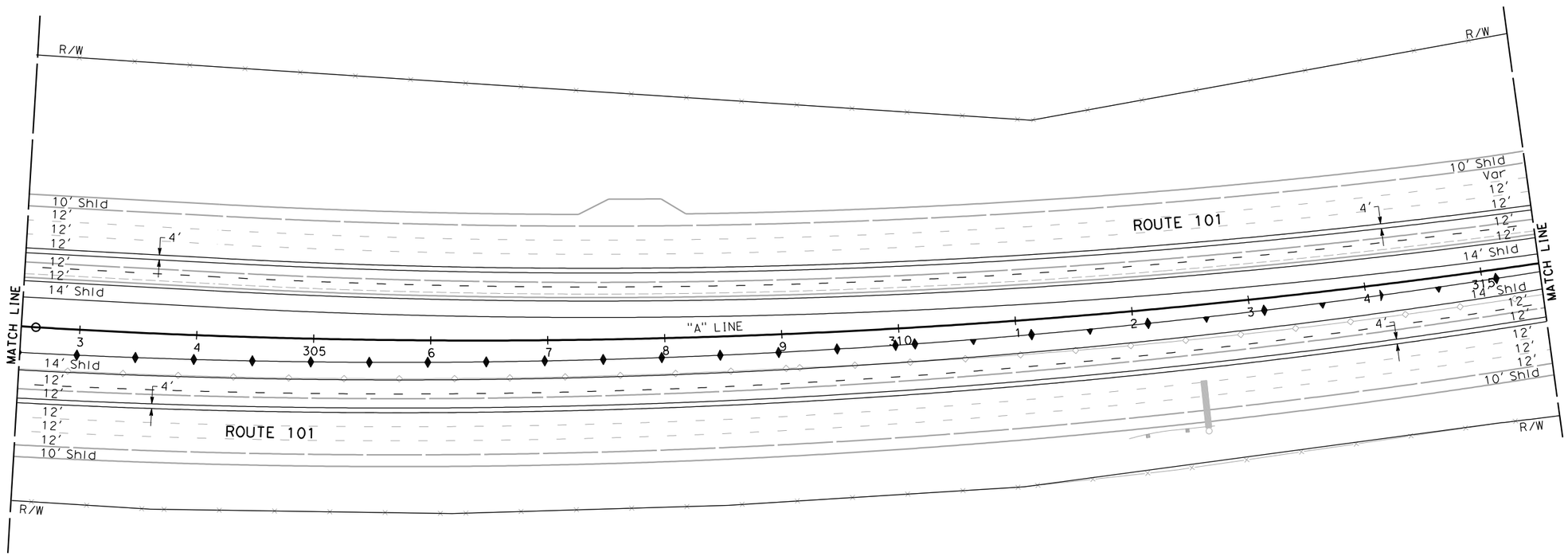

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-24

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CALCULATED-DESIGNED BY: LAN HO

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LAST REVISION: DATE PLOTTED => 3/16/2015
8-14-14 TIME PLOTTED => 11:20:27 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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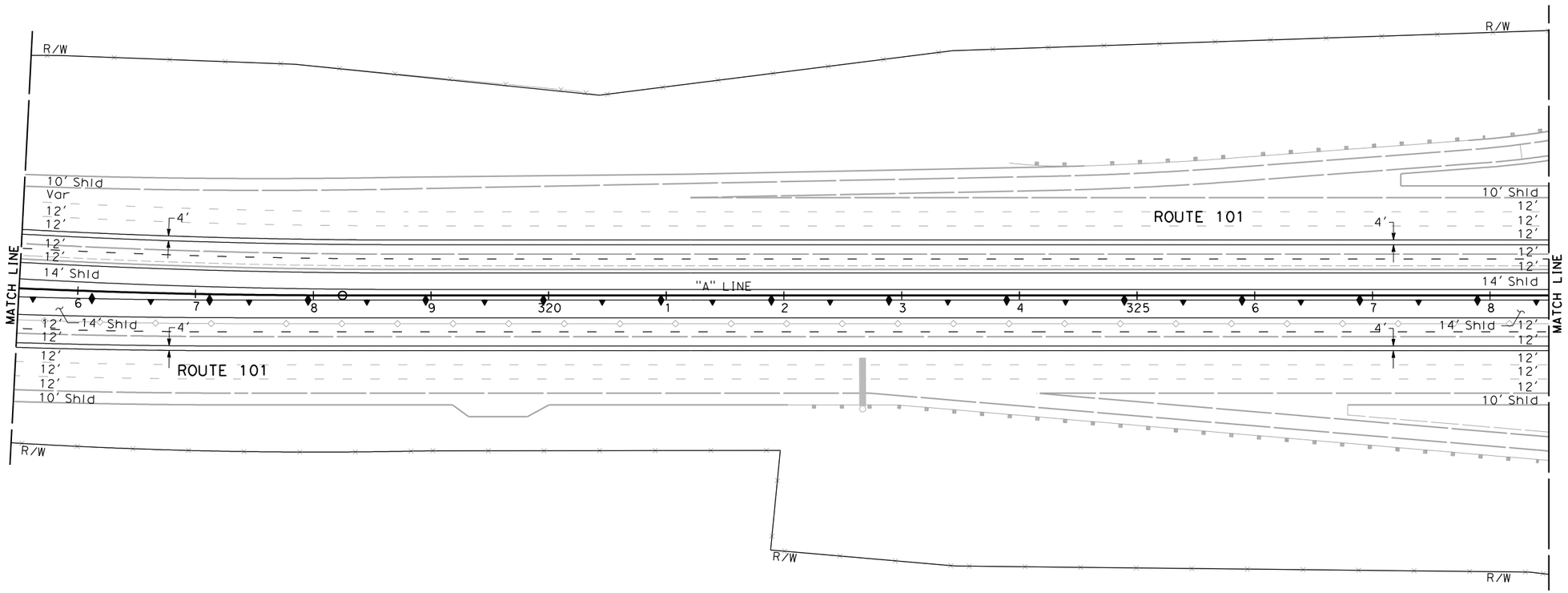

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-25

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:20:32 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na025.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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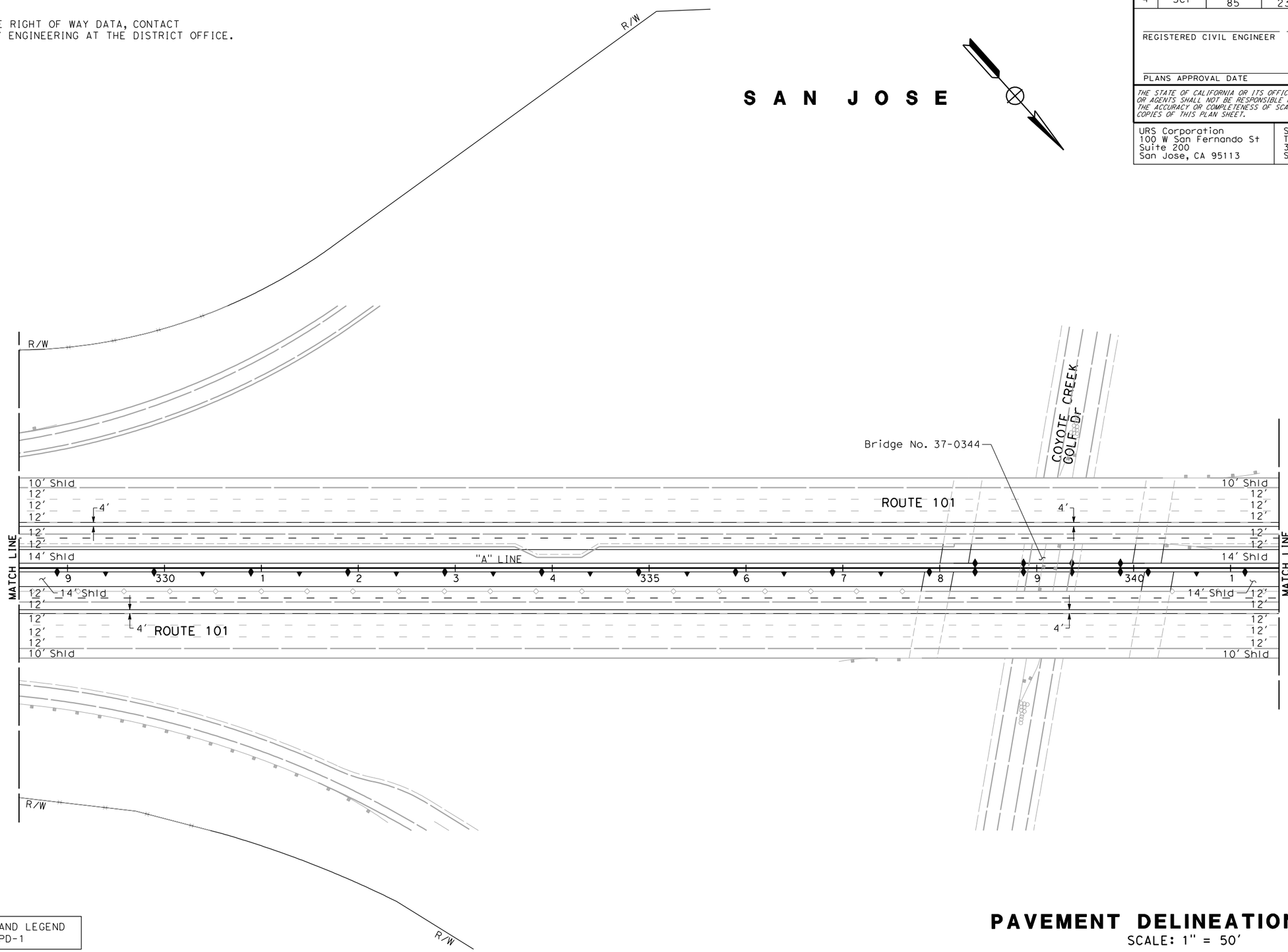

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-26

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CALCULATED-DESIGNED BY	LAN HO	REVISED BY	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	-

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TIME PLOTTED => 11:20:38 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.00/52.55 23.0/24.1		

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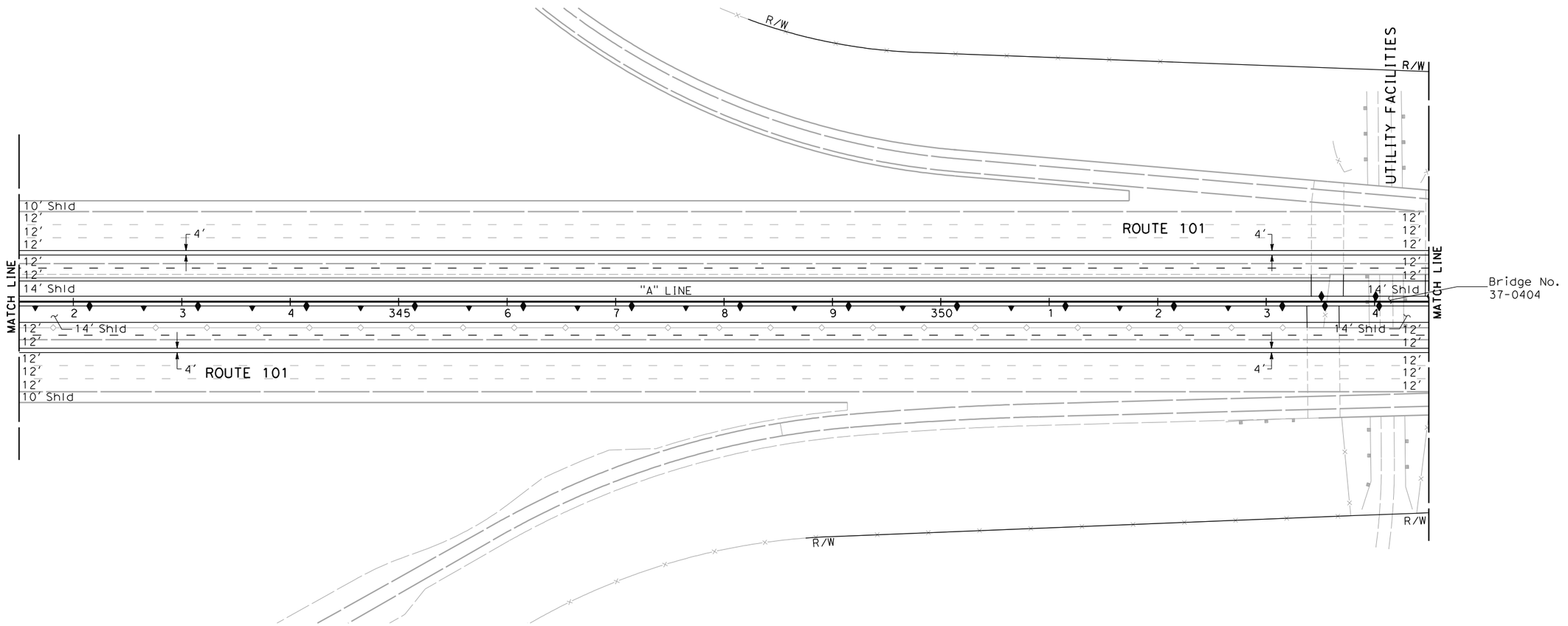

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-27

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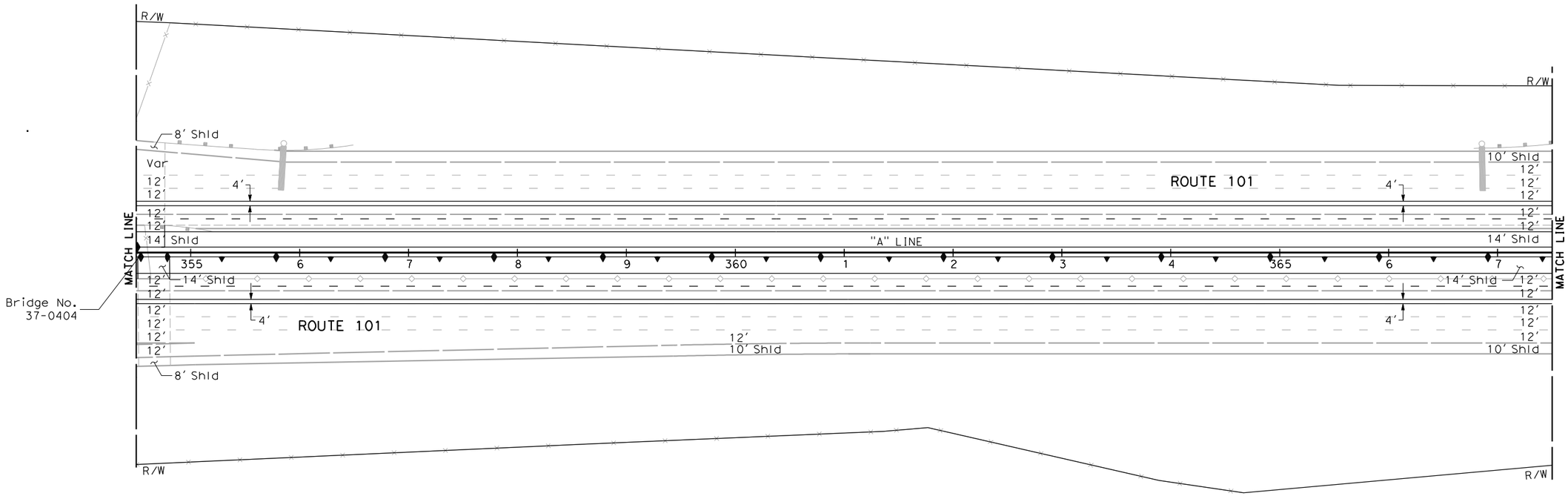

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-28

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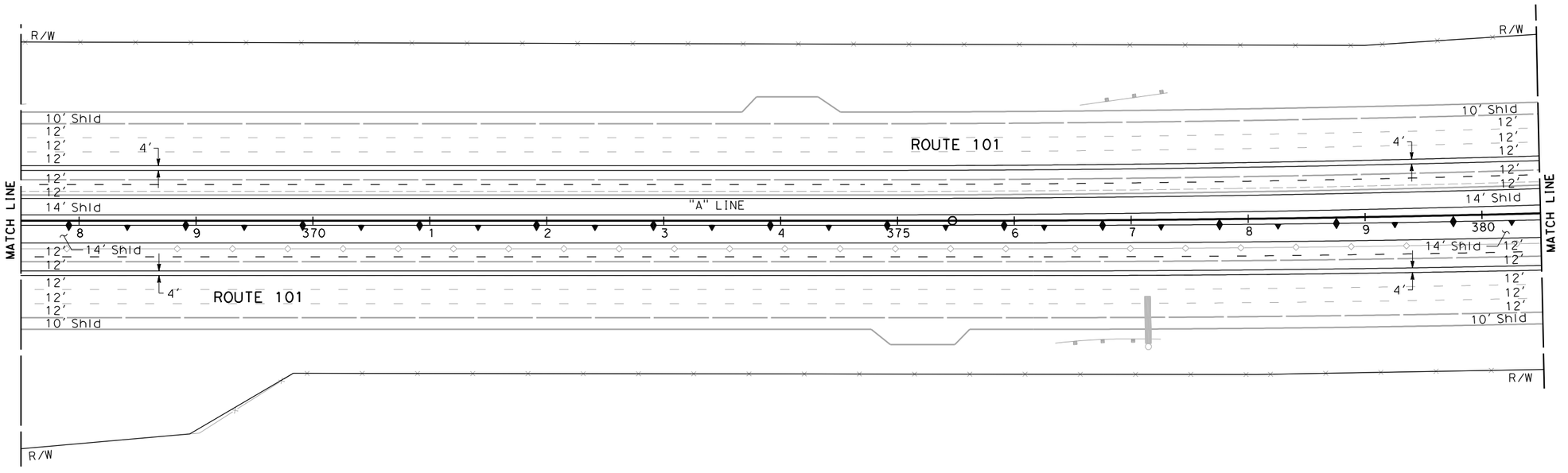

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-29

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TIME PLOTTED => 11:20:53 AM

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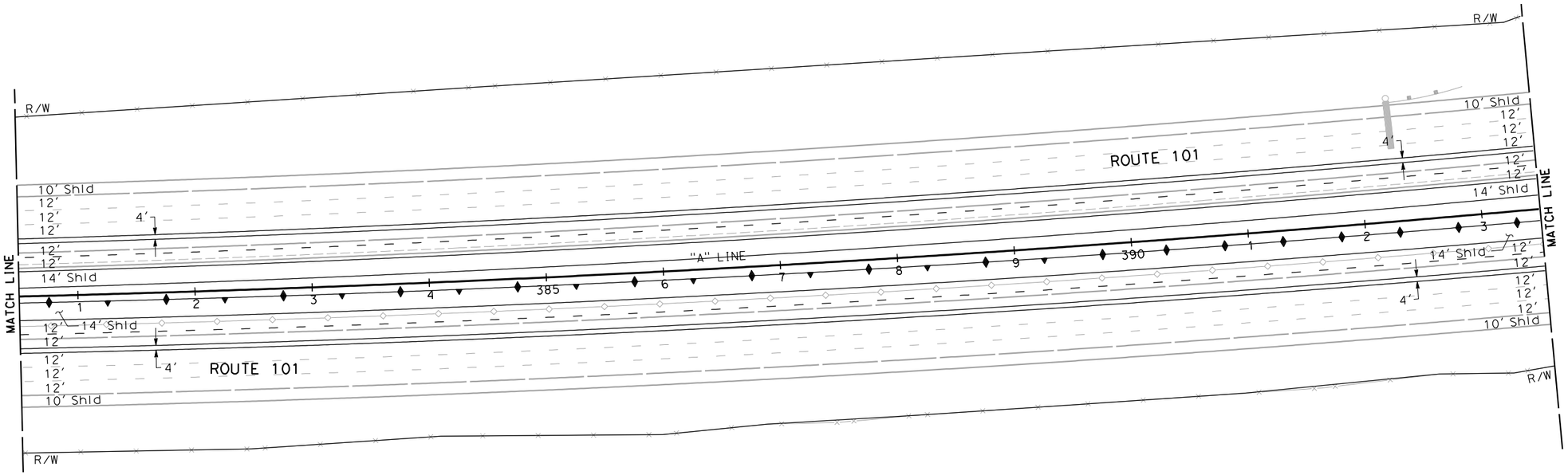

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-30

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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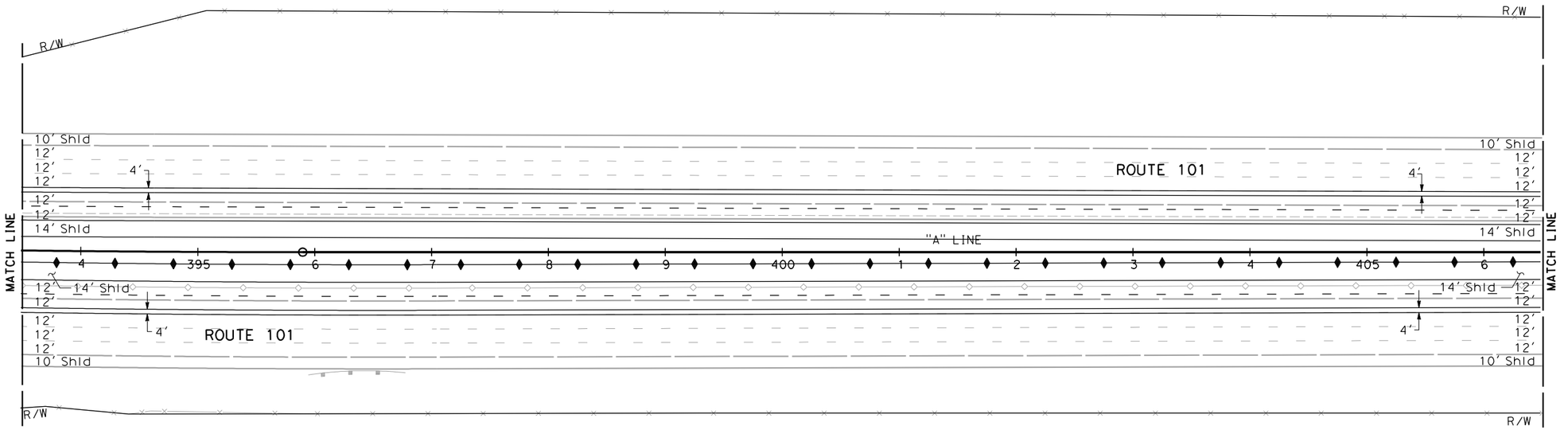

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-31

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DATE REVISED	-		
LAN HO			
CALCULATED-DESIGNED BY	RAMESH SATHIAMURTHY		
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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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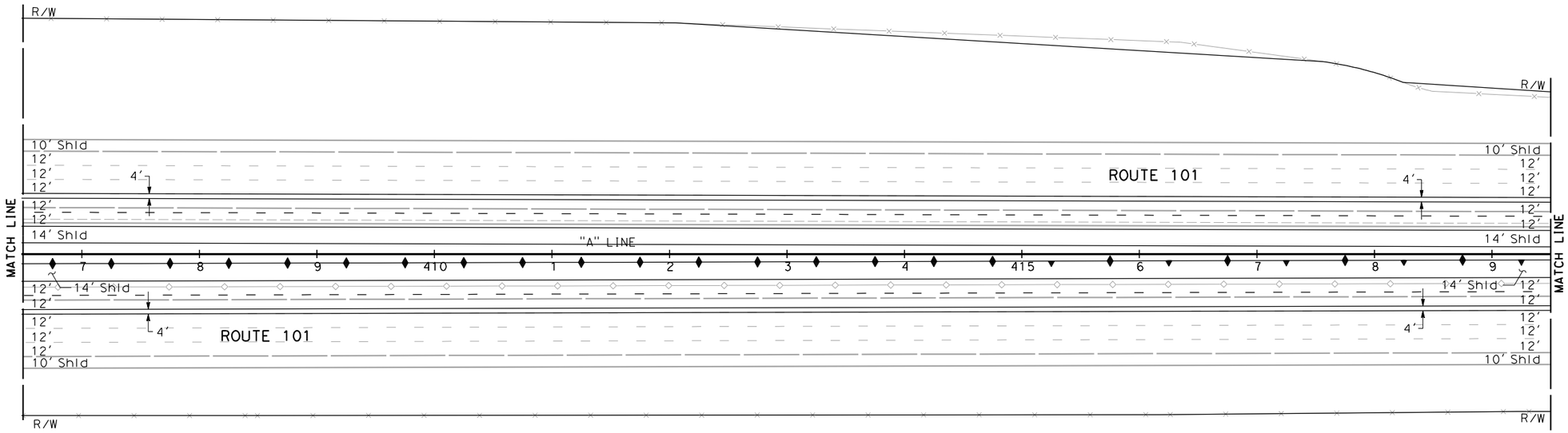

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-32

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na032.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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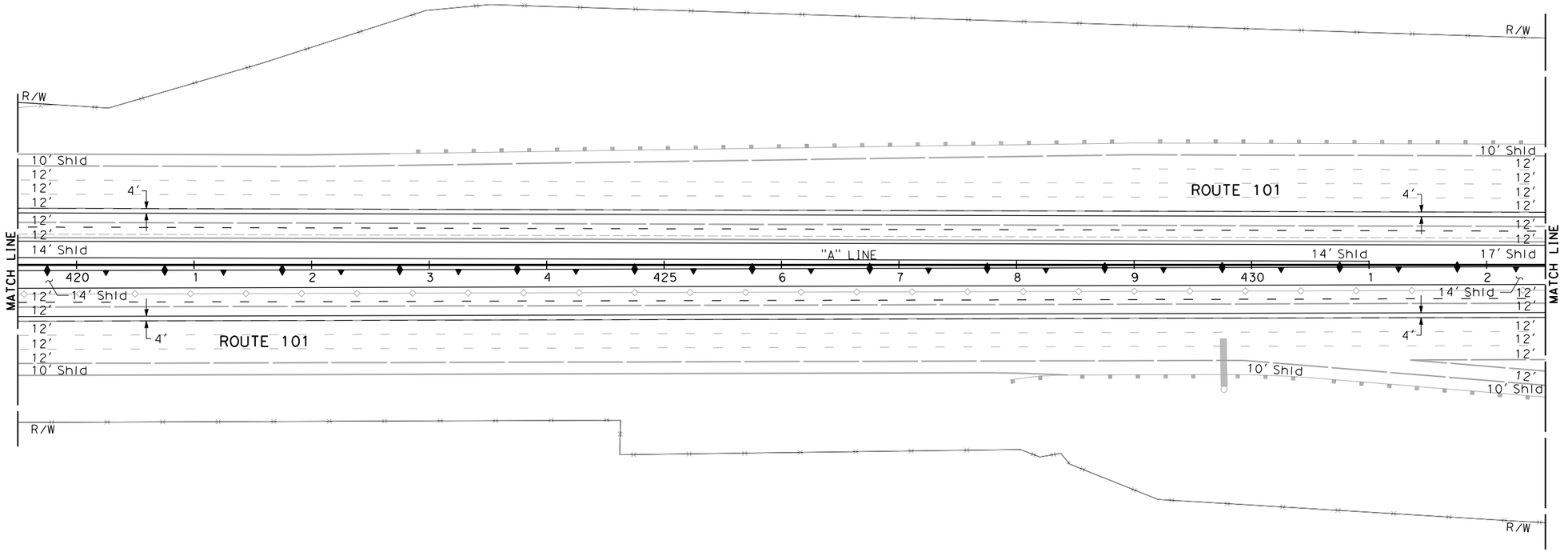

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-33

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CHECKED BY	DATE REVISED	-

LAN HO

RAMESH SATHIAMURTHY

CONSULTANT FUNCTIONAL SUPERVISOR

RAMSEY HISSEN

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USERNAME => ernie_garnica
DGN FILE => ...\04000026710na033.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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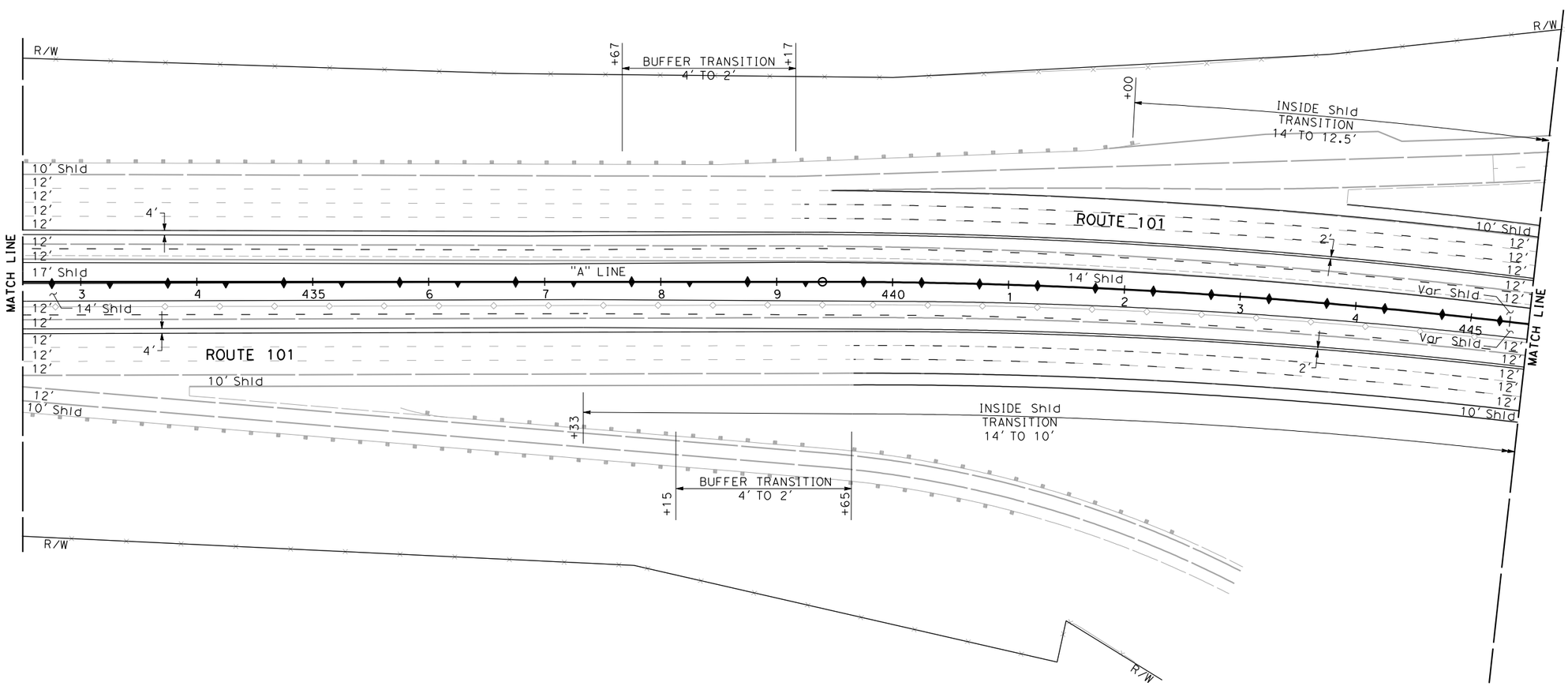

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-34

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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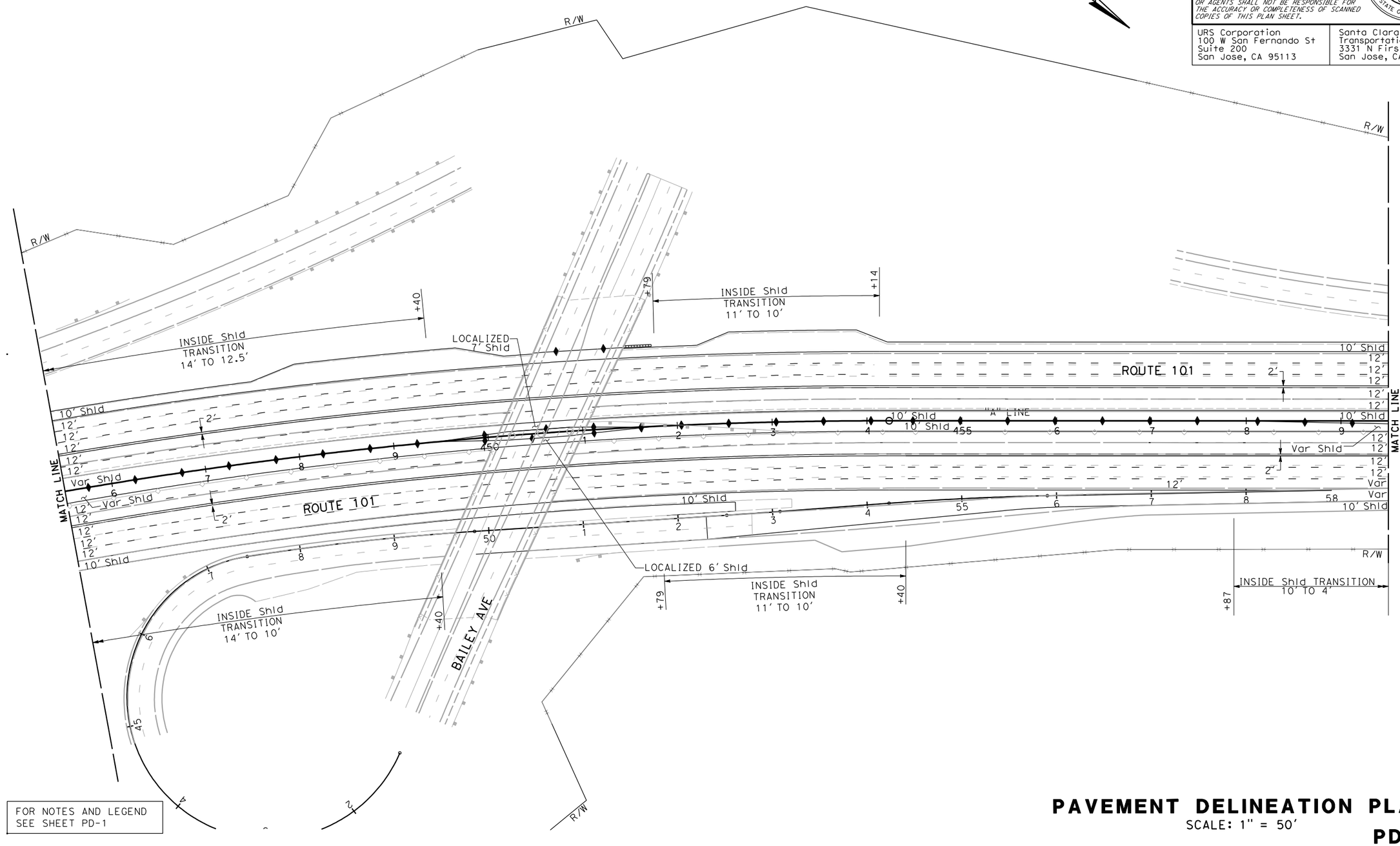

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-35

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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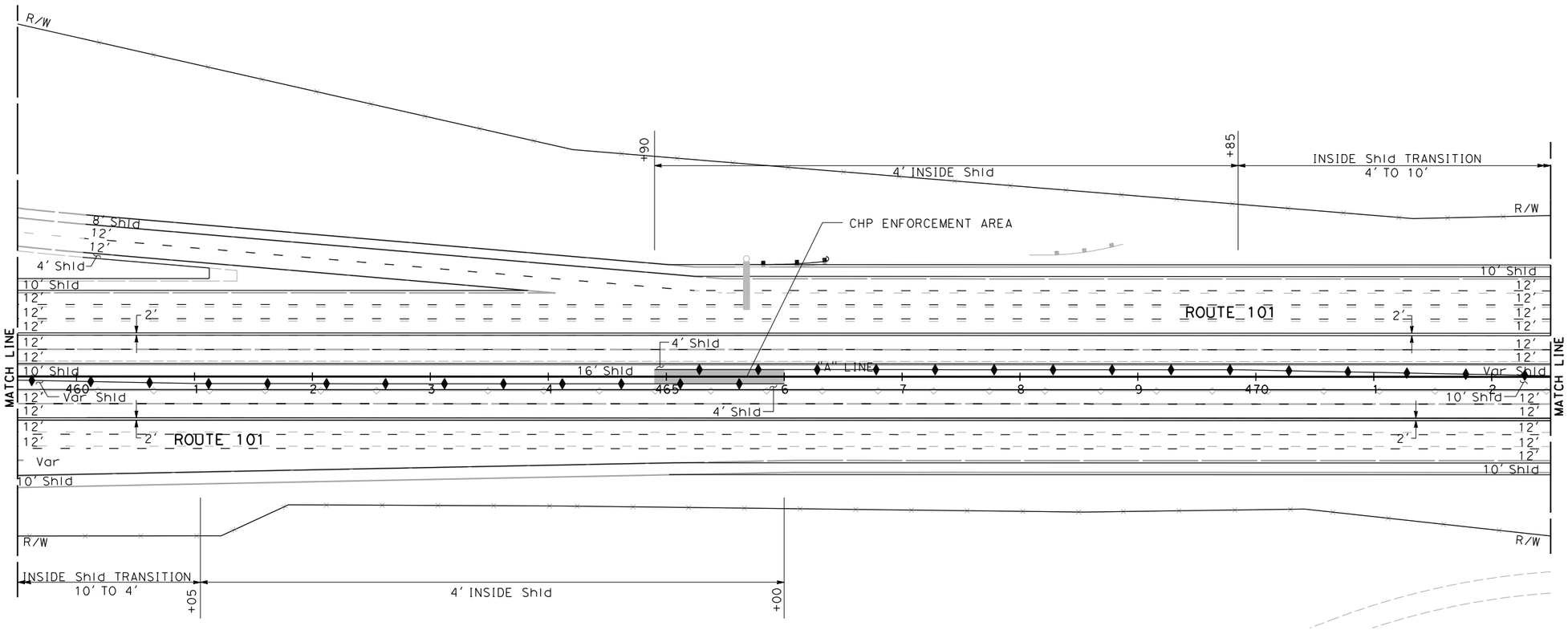

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-36

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO		
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	-
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	REVISED BY	-

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:21:31 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na036.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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San Jose, CA 95134

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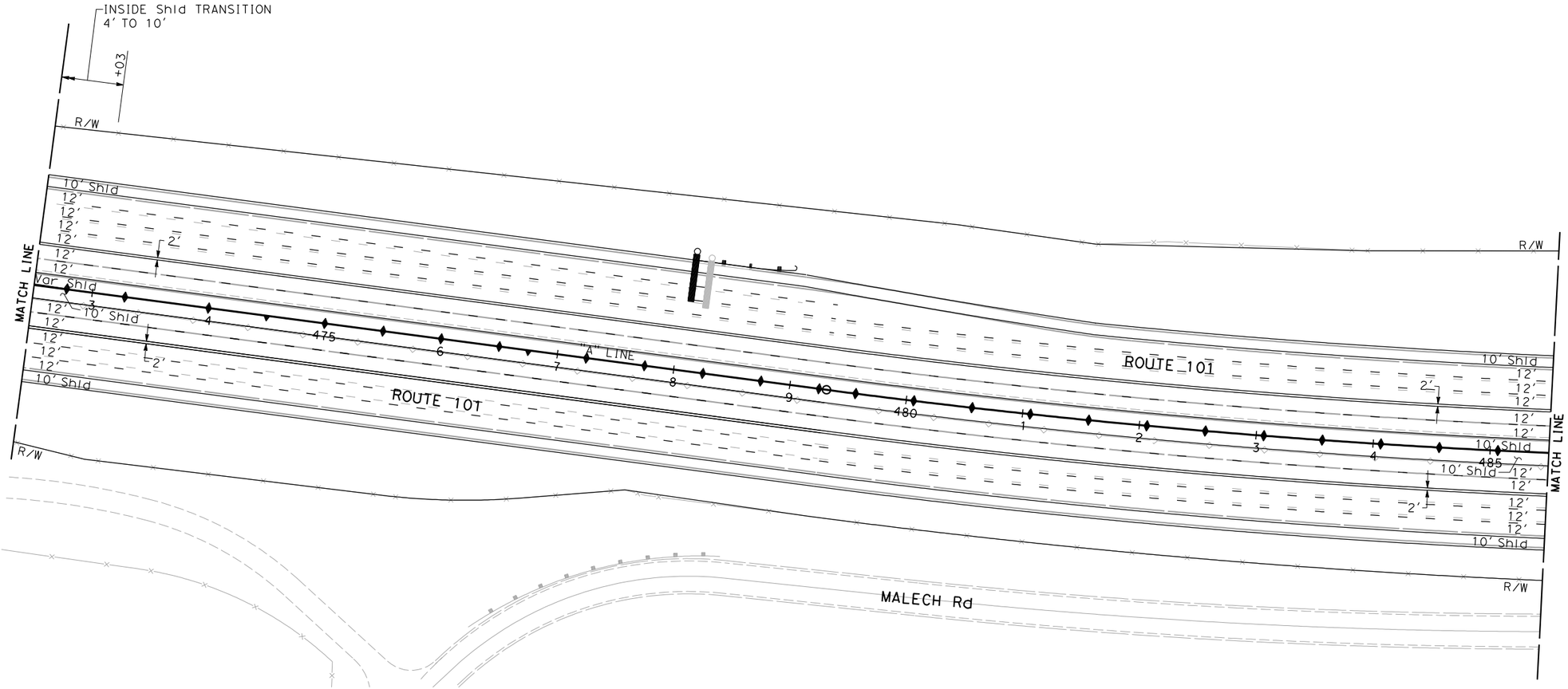

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-37

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:21:36 AM
8-14-14

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na037.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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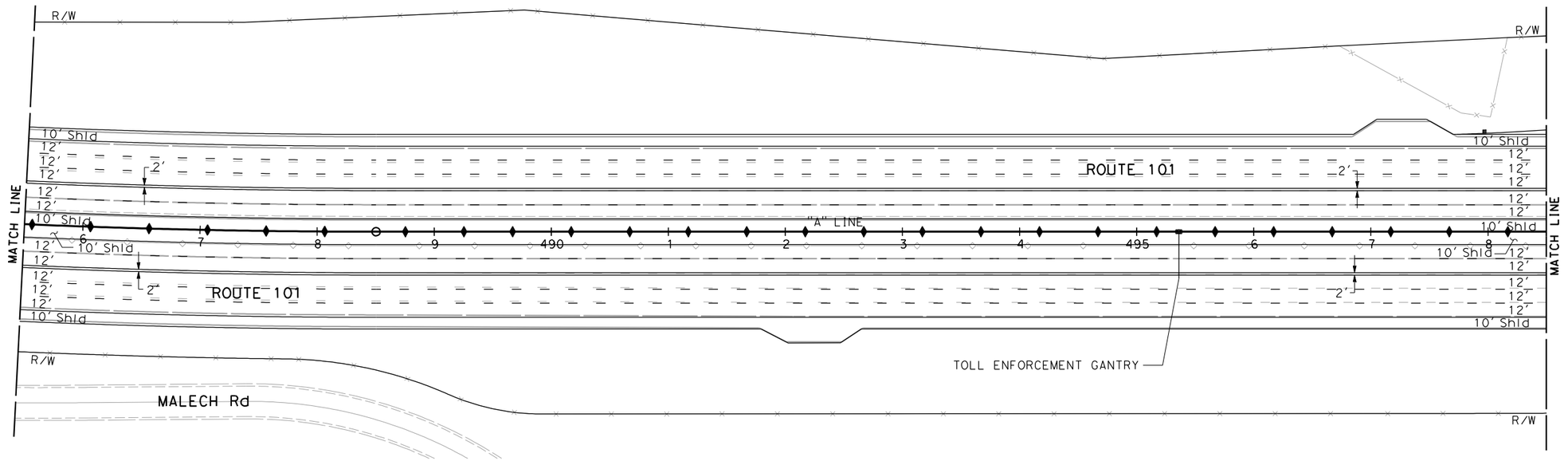

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-38

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY			
CHECKED BY			
LAN HO			
RAMESH SATHIAMURTHY			
REVISED BY	-		
DATE REVISED	-		

CONSULTANT FUNCTIONAL SUPERVISOR
RAMSEY HISSEN

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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:21:42 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na038.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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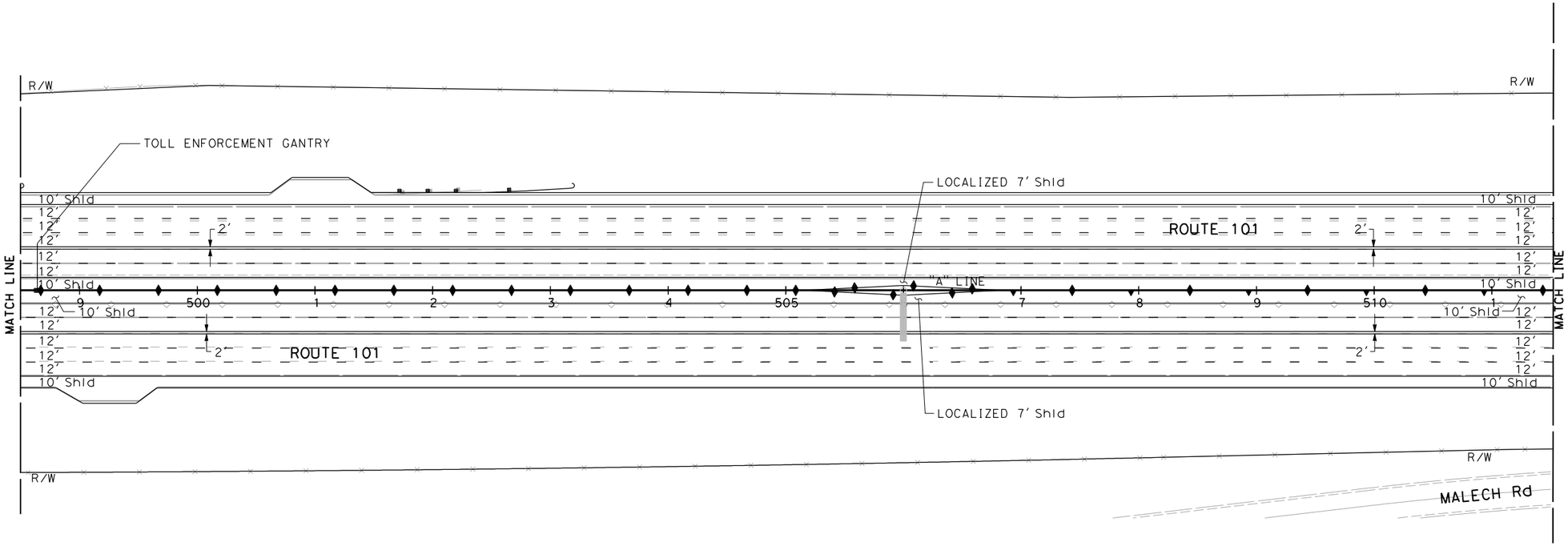

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-39

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REVISED BY	-	-
DATE REVISED	-	-
CALCULATED-DESIGNED BY	LAN HO	
CHECKED BY	RAMESH SATHIAMURTHY	
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:21:47 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na039.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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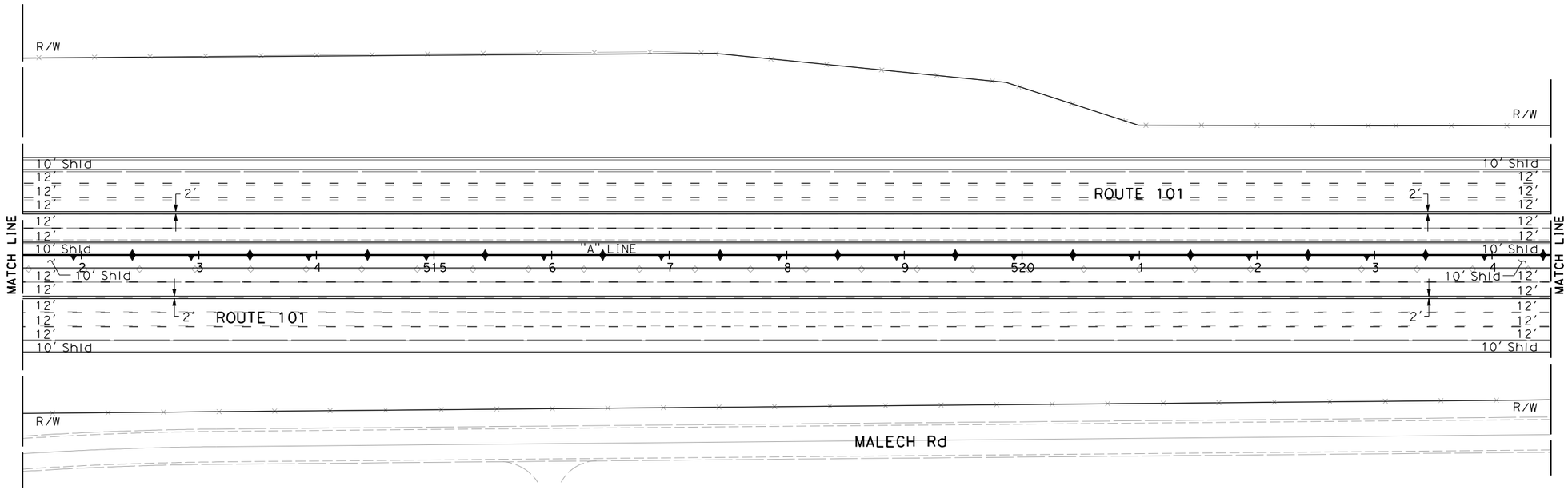

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-40

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CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
LAN HO	RAMESH SATHIAMURTHY	-	-

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:21:52 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na040.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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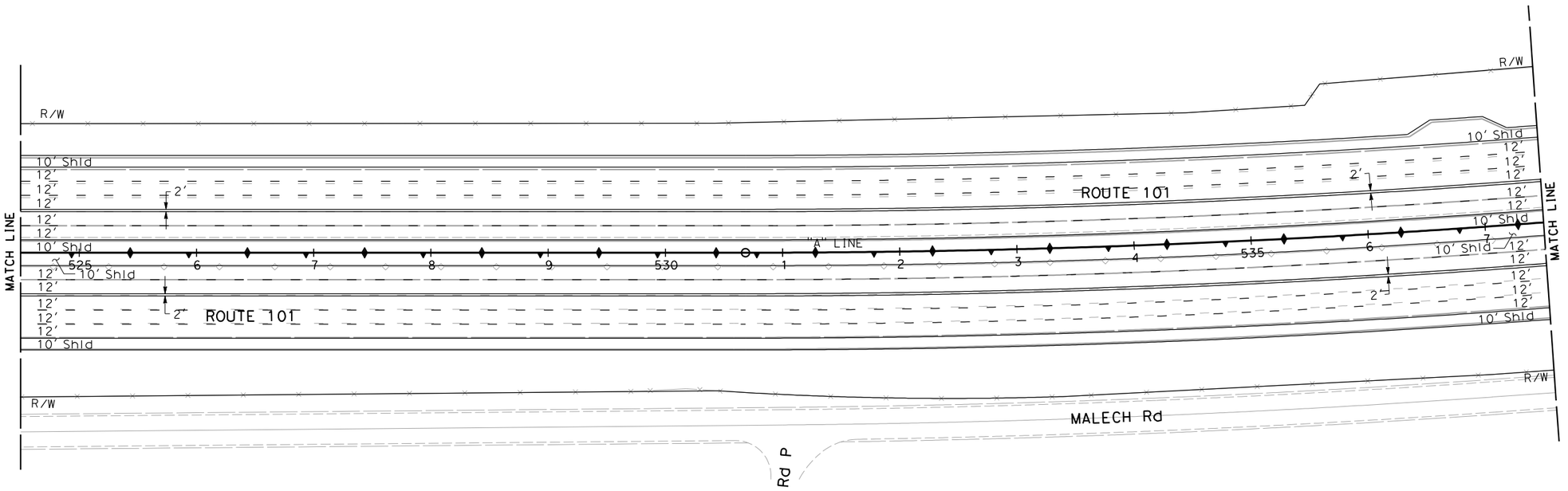

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-41

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION: 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:21:57 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na041.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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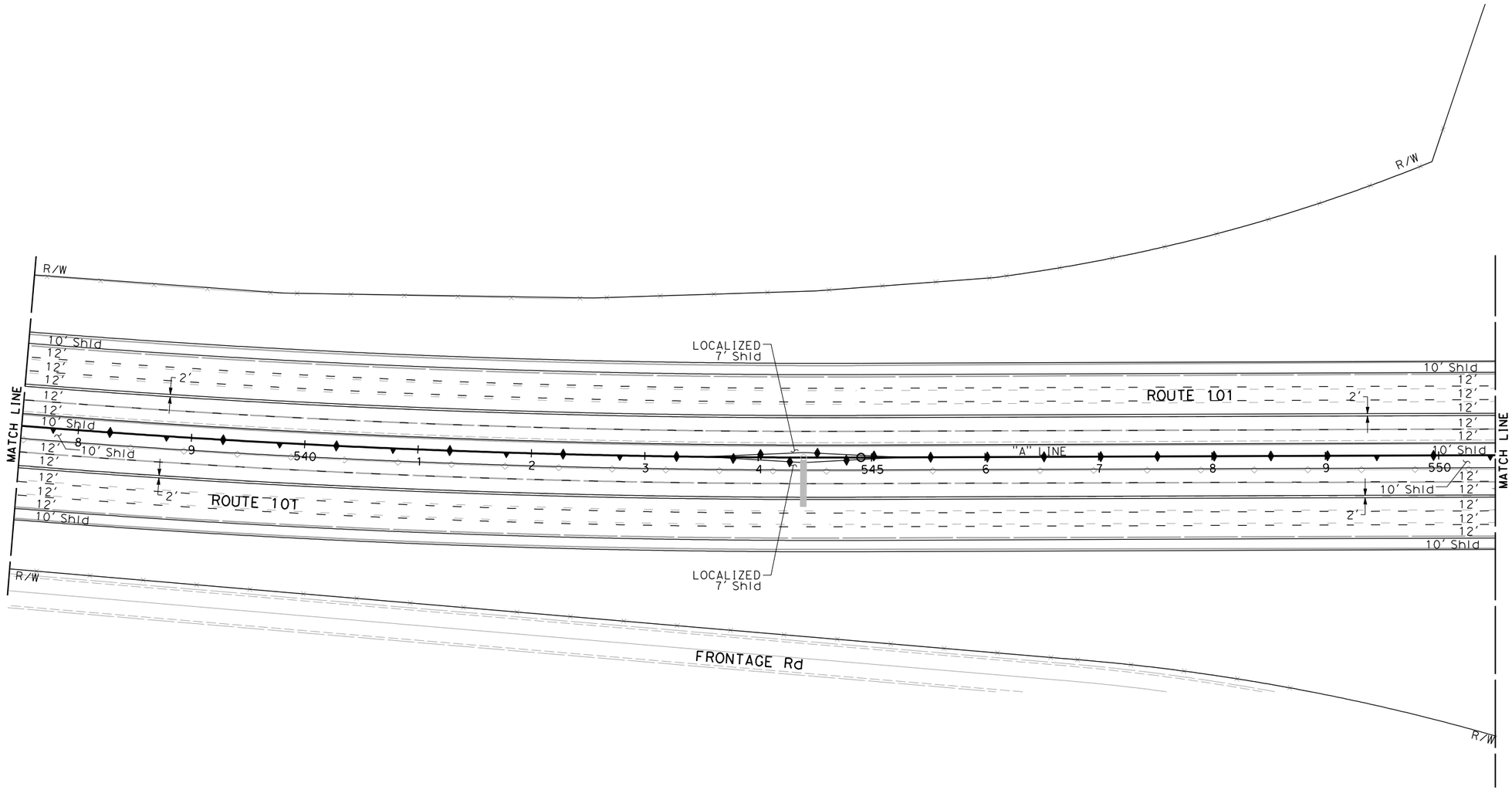

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-42

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	-	-

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CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:22:03 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

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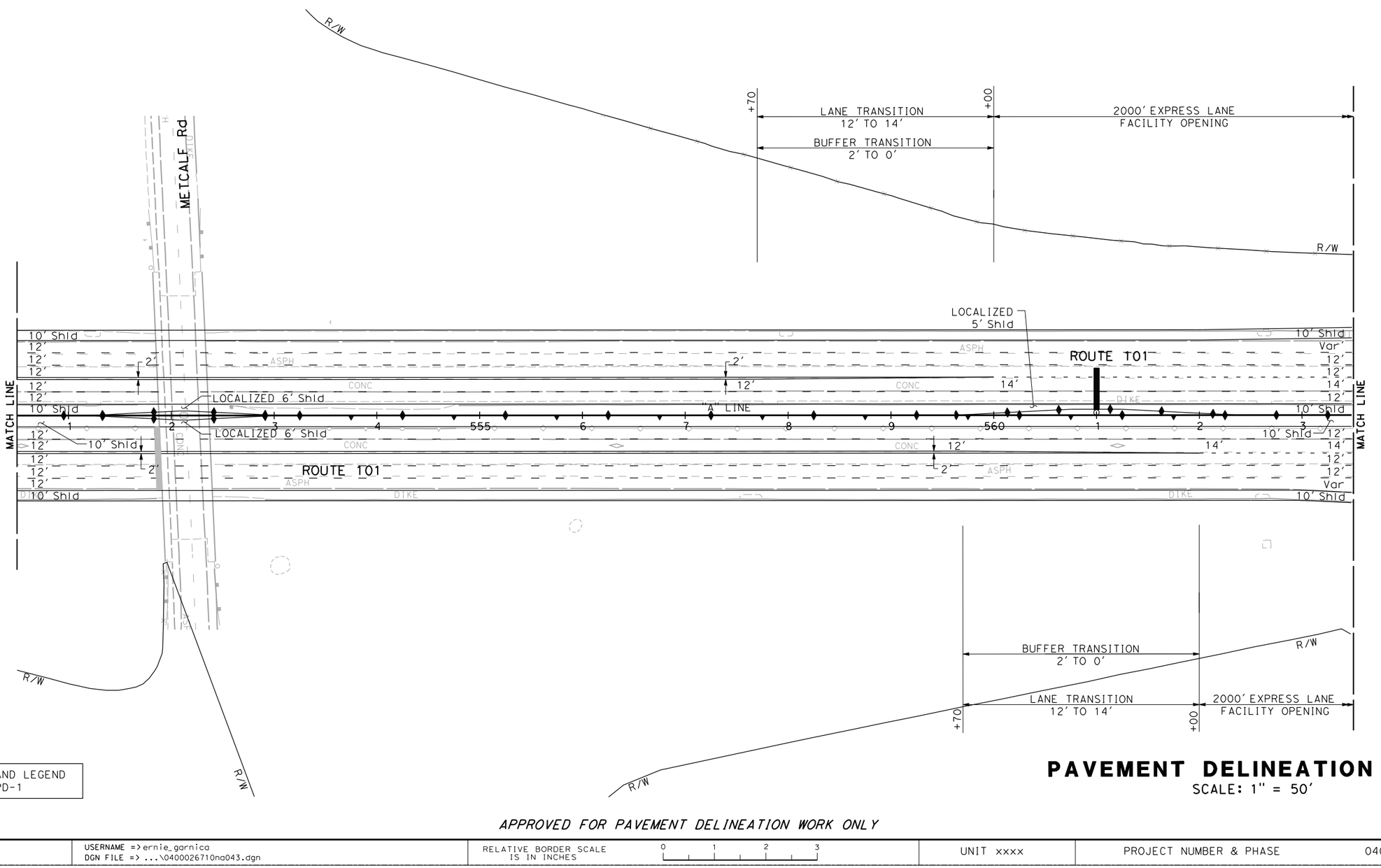
SAN JOSE



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-43

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Gates & Gattaris

LAST REVISION: DATE PLOTTED => 3/16/2015
8-14-14 TIME PLOTTED => 11:22:08 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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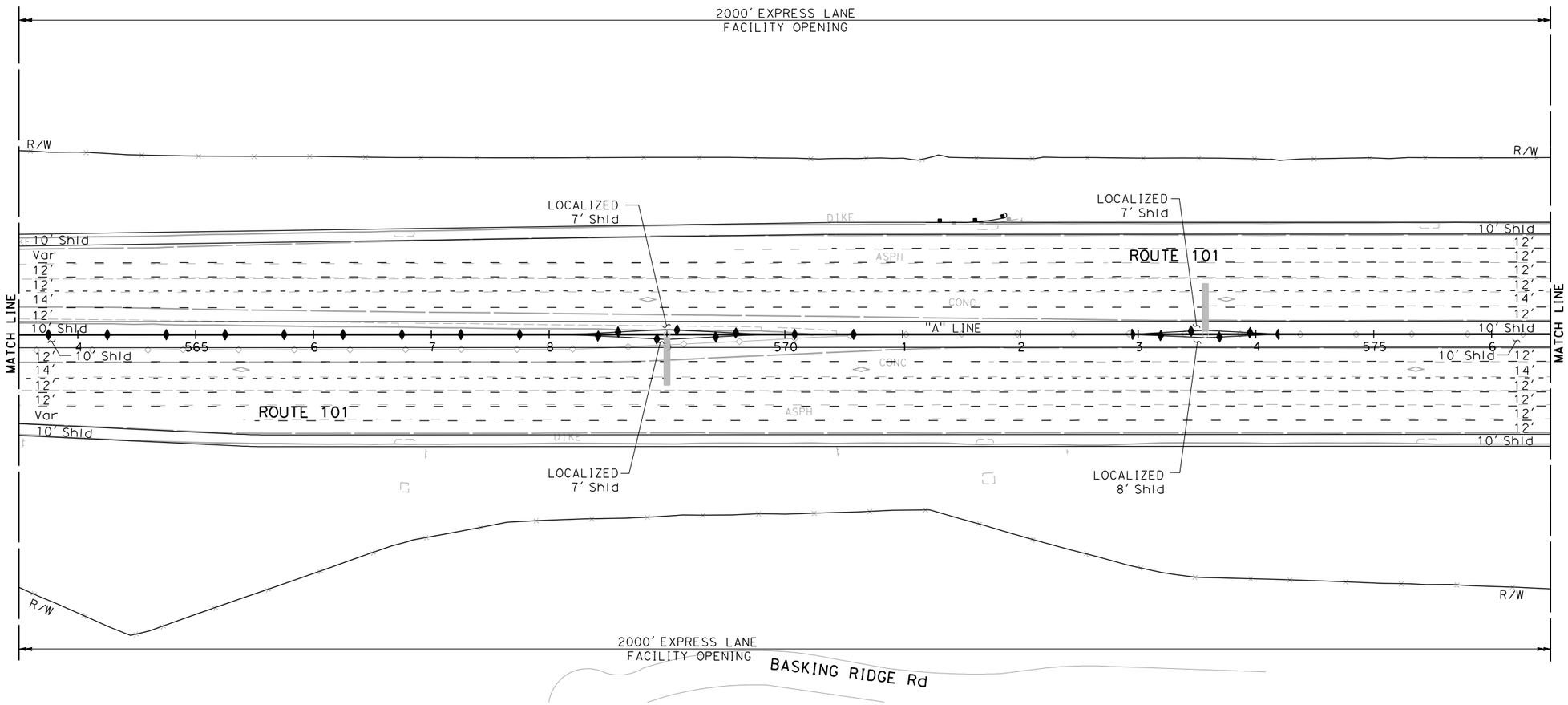

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-44

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	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:22:14 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na044.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER _____ DATE _____

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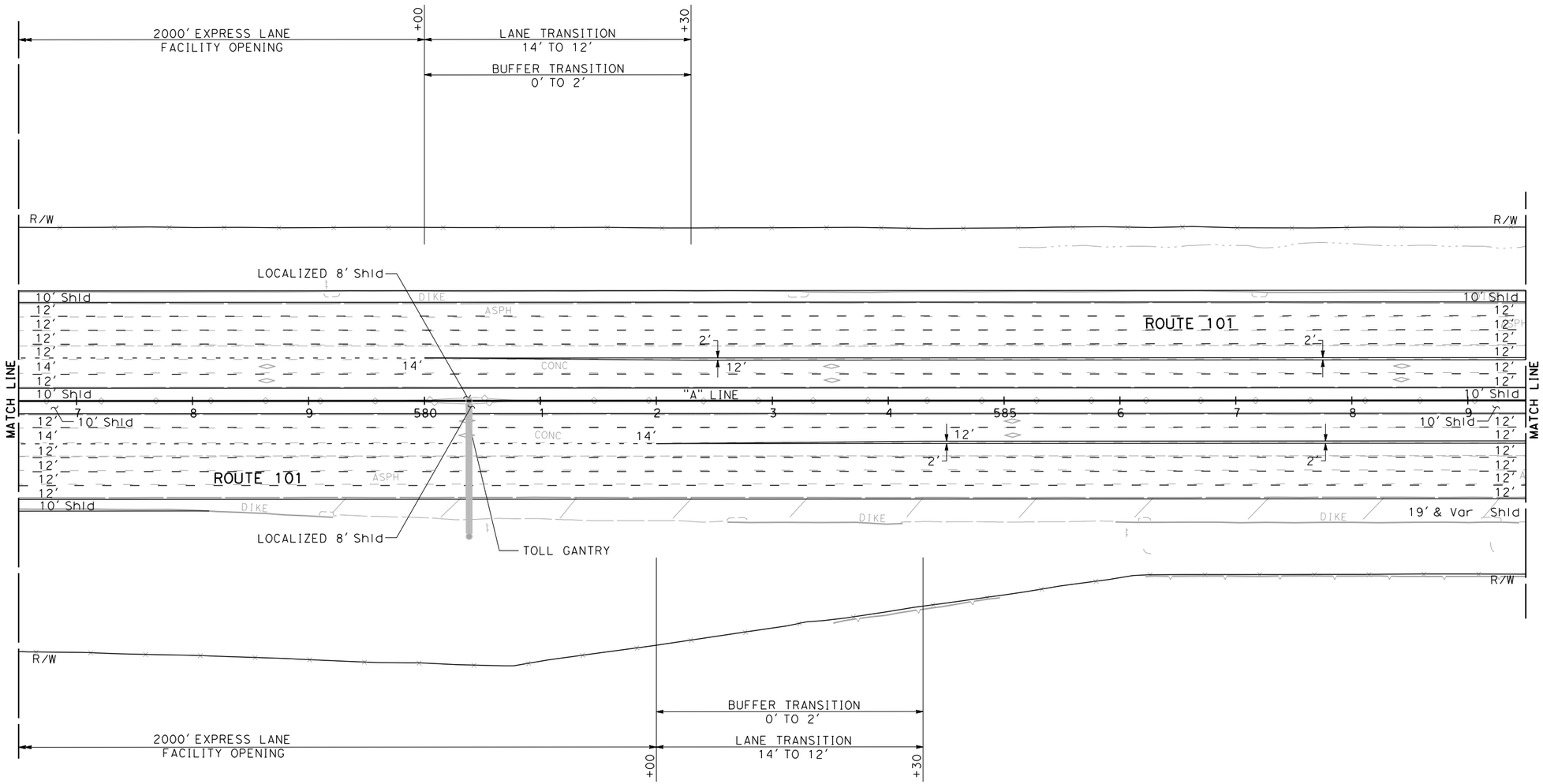

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-45

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

REVISED BY	-
DATE REVISED	-
LAN HO	
RAMESH SATHIAMURTHY	
CALCULATED-DESIGNED BY	
CHECKED BY	
CONSULTANT FUNCTIONAL SUPERVISOR	
RAMSEY HISSEN	
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	
Caltrans	

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:22:19 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na045.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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S A N J O S E

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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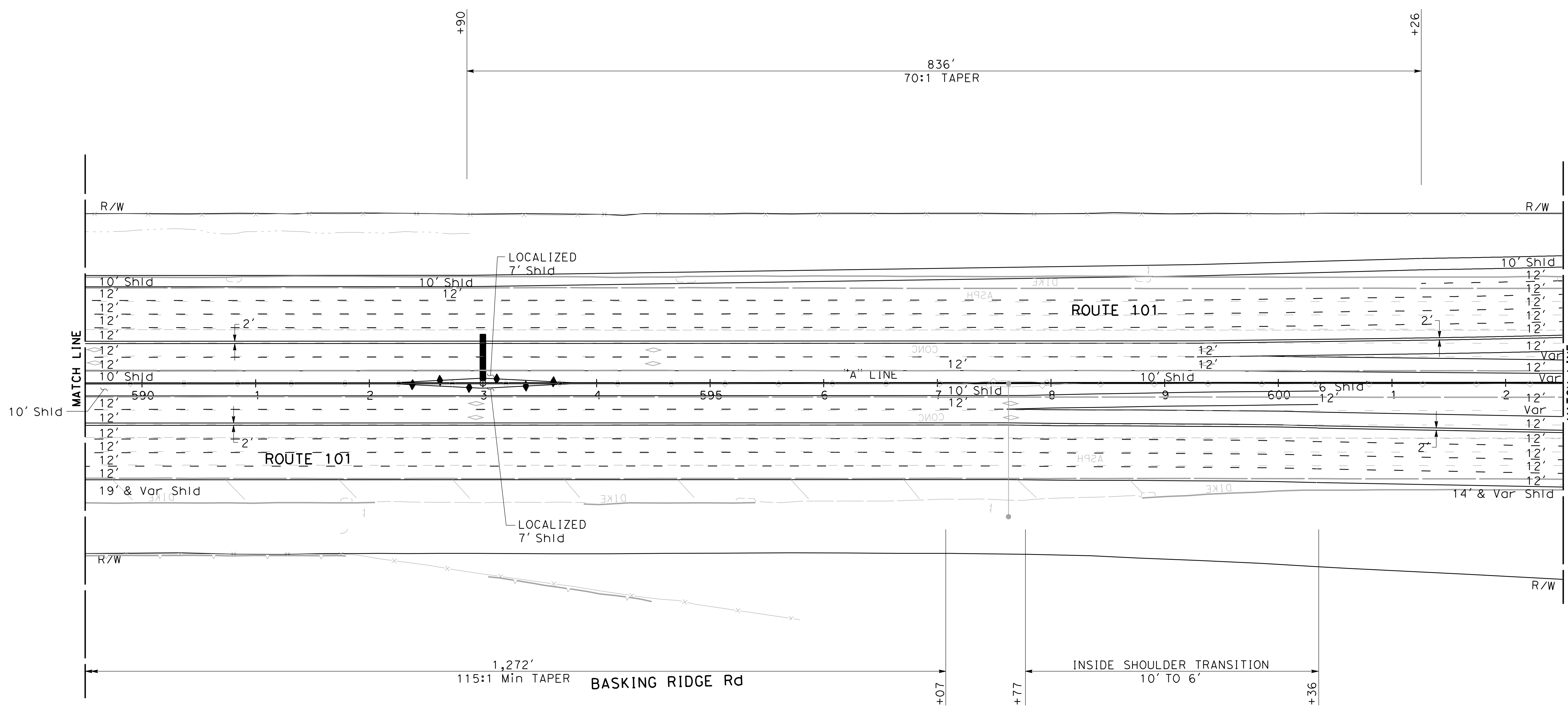

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-46

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
REVISED BY: -
DATE REVISED: -

BORDER LAST REVISED 3/16/2015

USERNAME => ernie_garnica
DGN FILE => ...\0400026710na046.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE 04000026710

LAST REVISION 8-14-14

DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:22:24 AM

NOTE:

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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PLANS APPROVAL DATE

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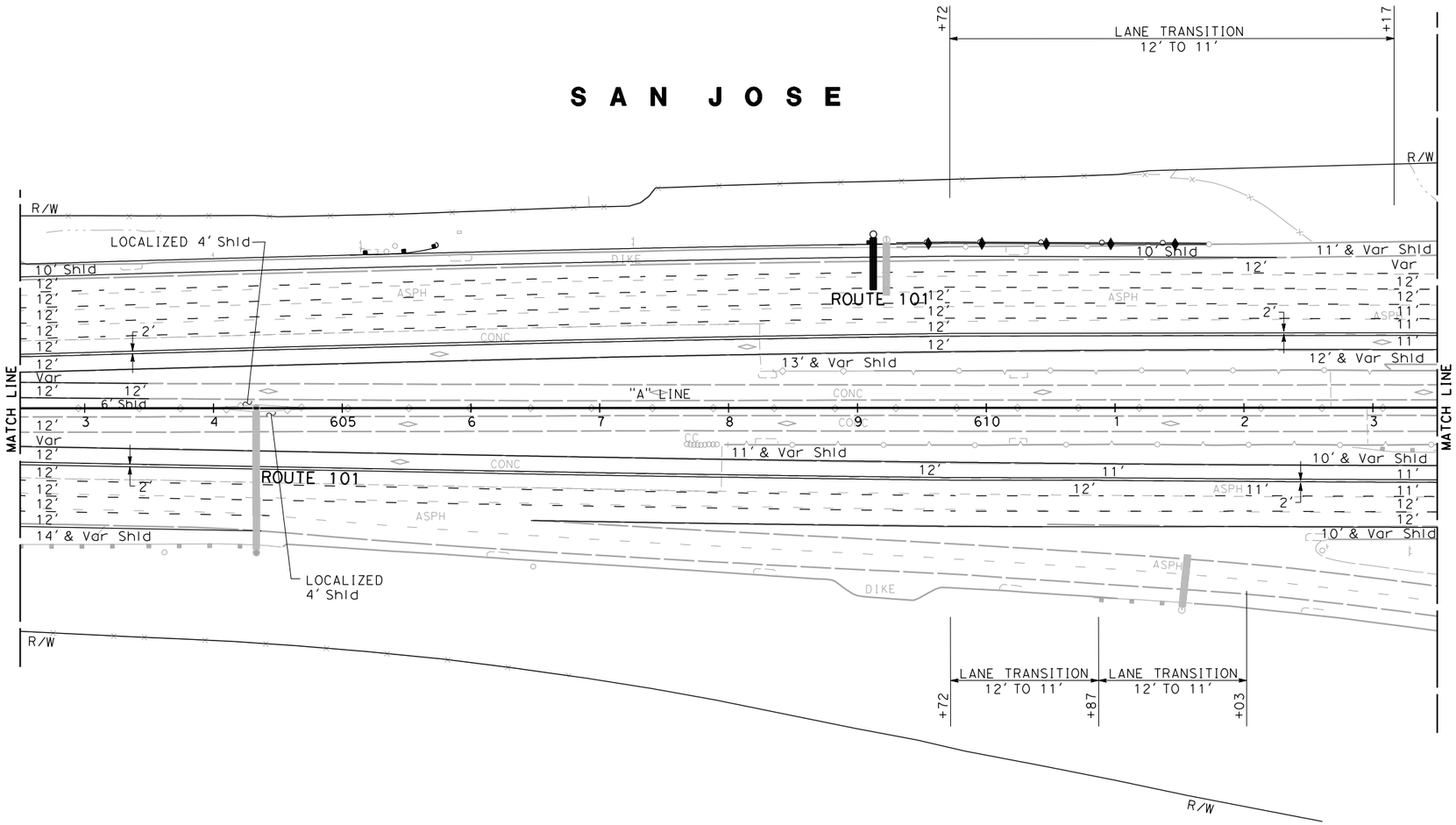

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-47

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:22:29 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na047.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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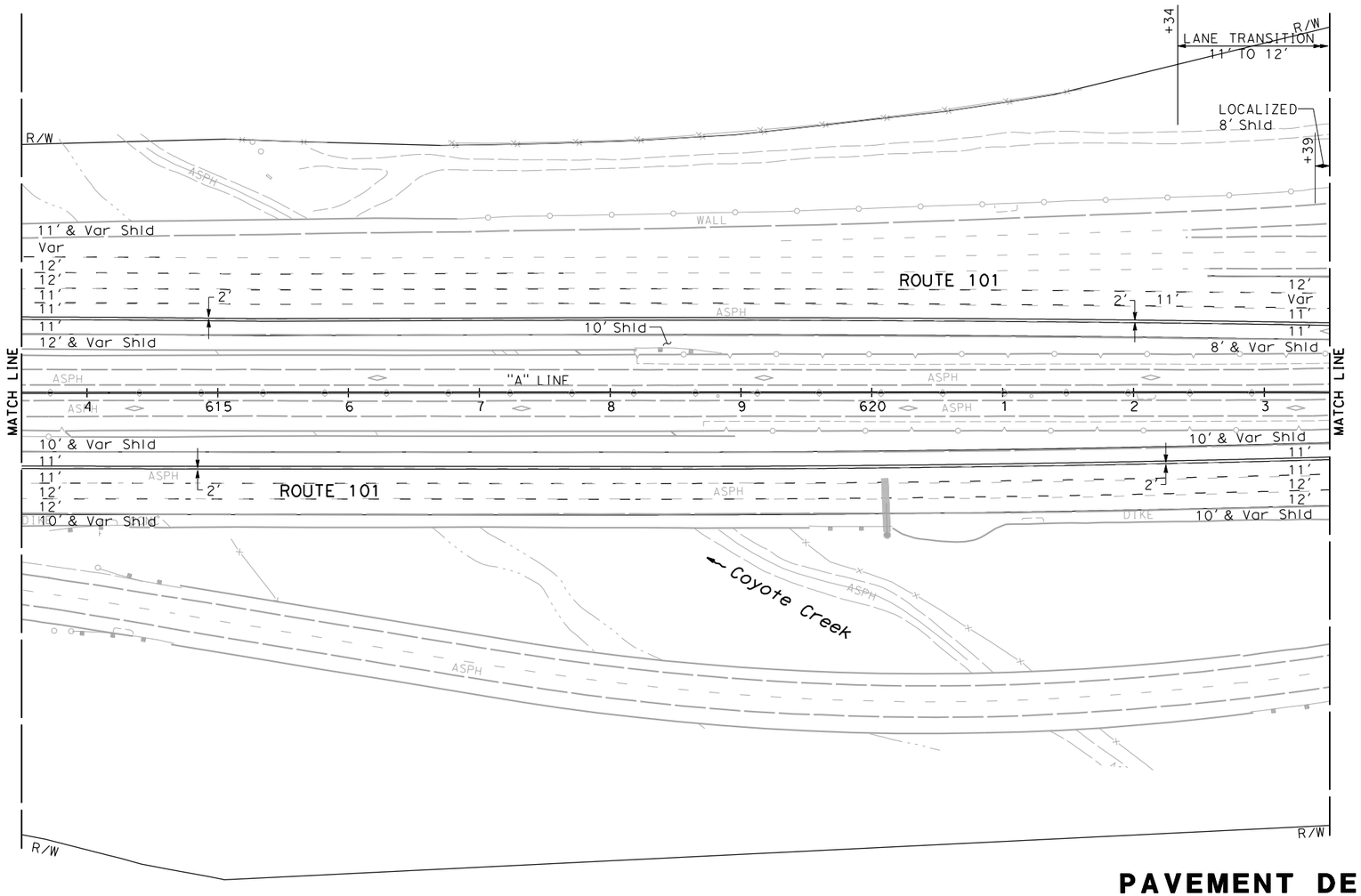

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-48

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CALCULATED-DESIGNED BY	LAN HO	REVISED BY	-
CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	-
RAMSEY HISSEN				

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:22:35 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na048.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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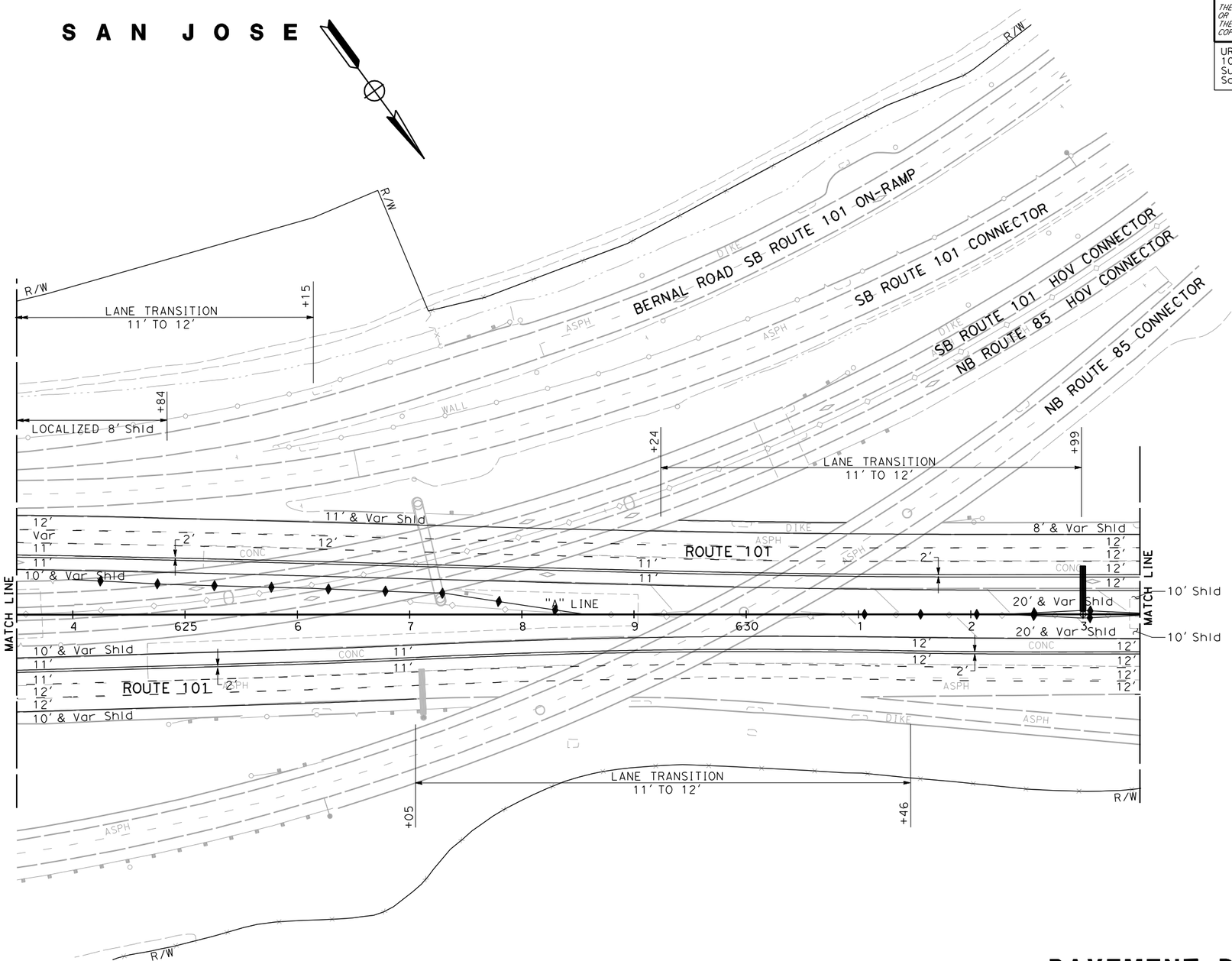

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-49

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CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

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LAST REVISION: 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:22:40 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na049.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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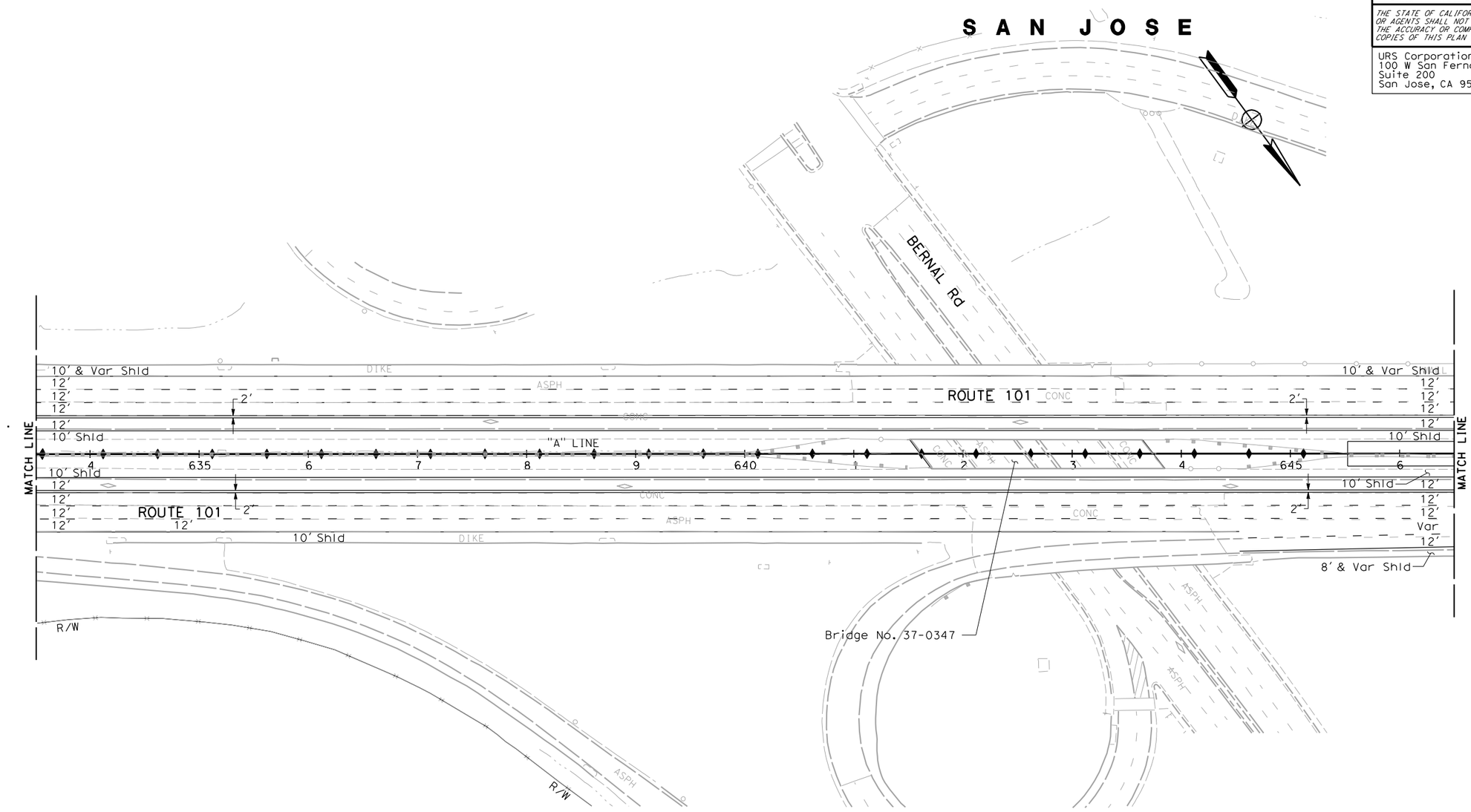

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-50

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CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
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TIME PLOTTED => 11:22:46 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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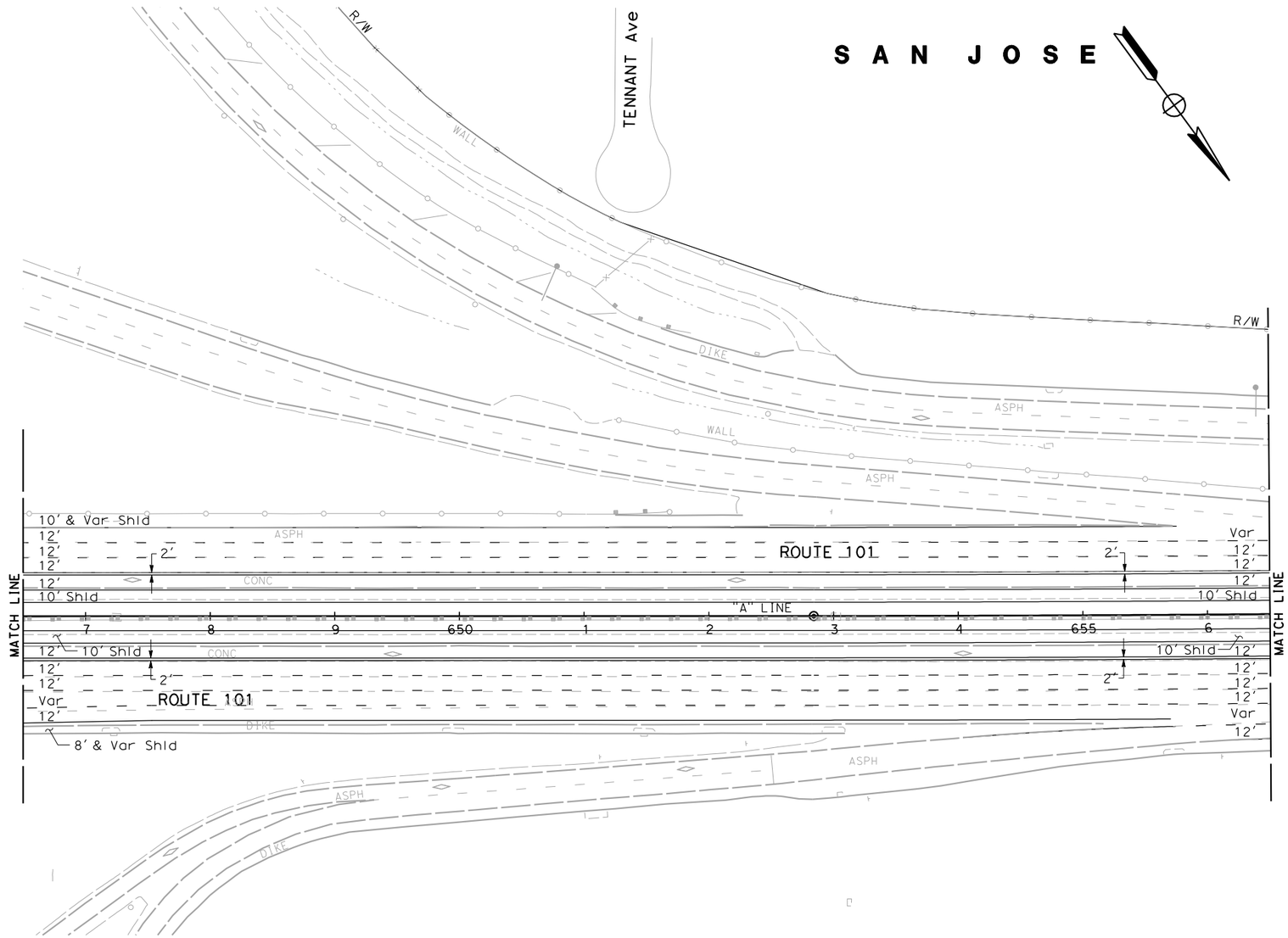

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-51

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LAN HO	RAMESH SATHIAMURTHY	-	-

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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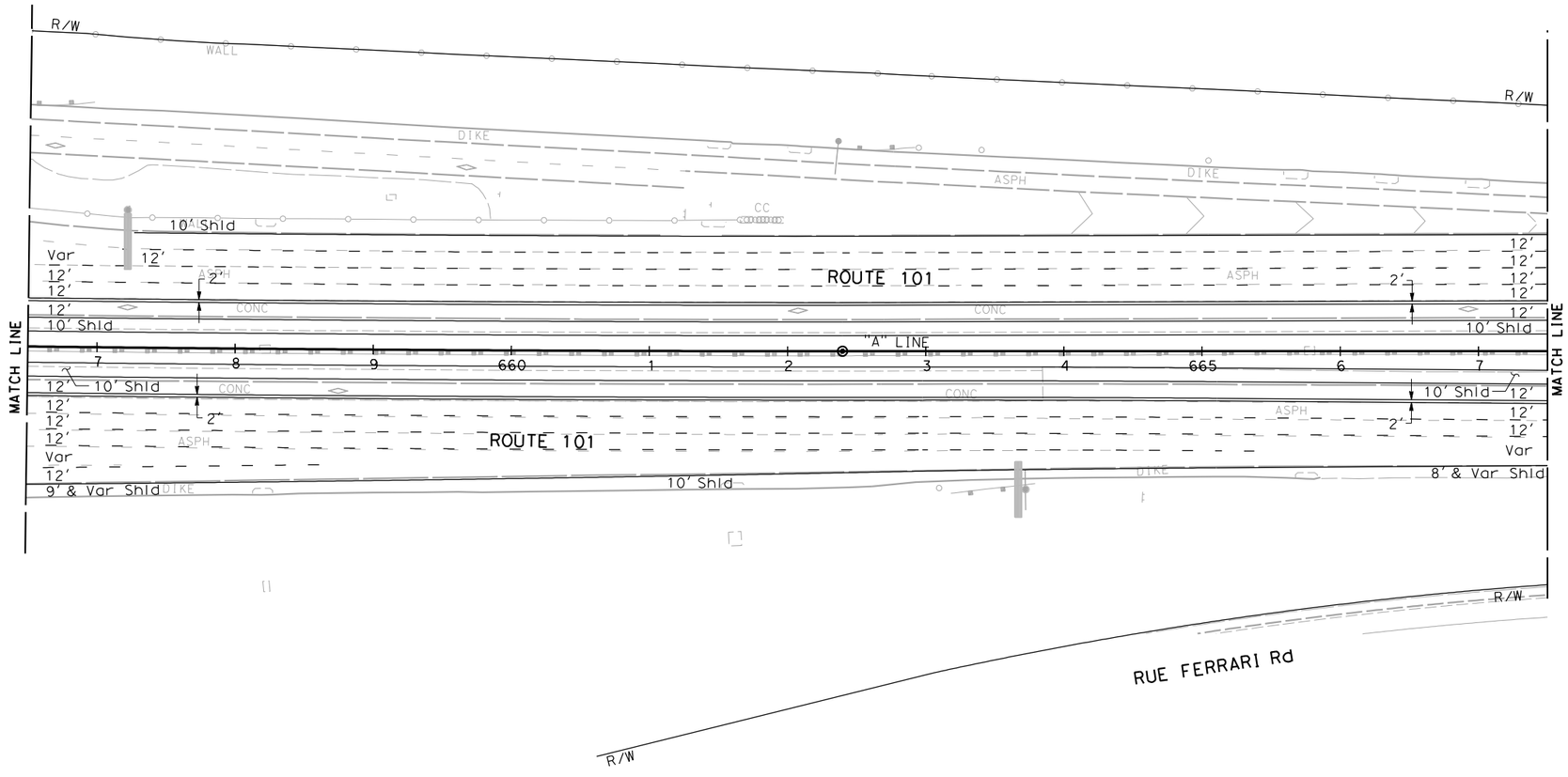

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-52

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8-14-14 TIME PLOTTED => 11:22:57 AM

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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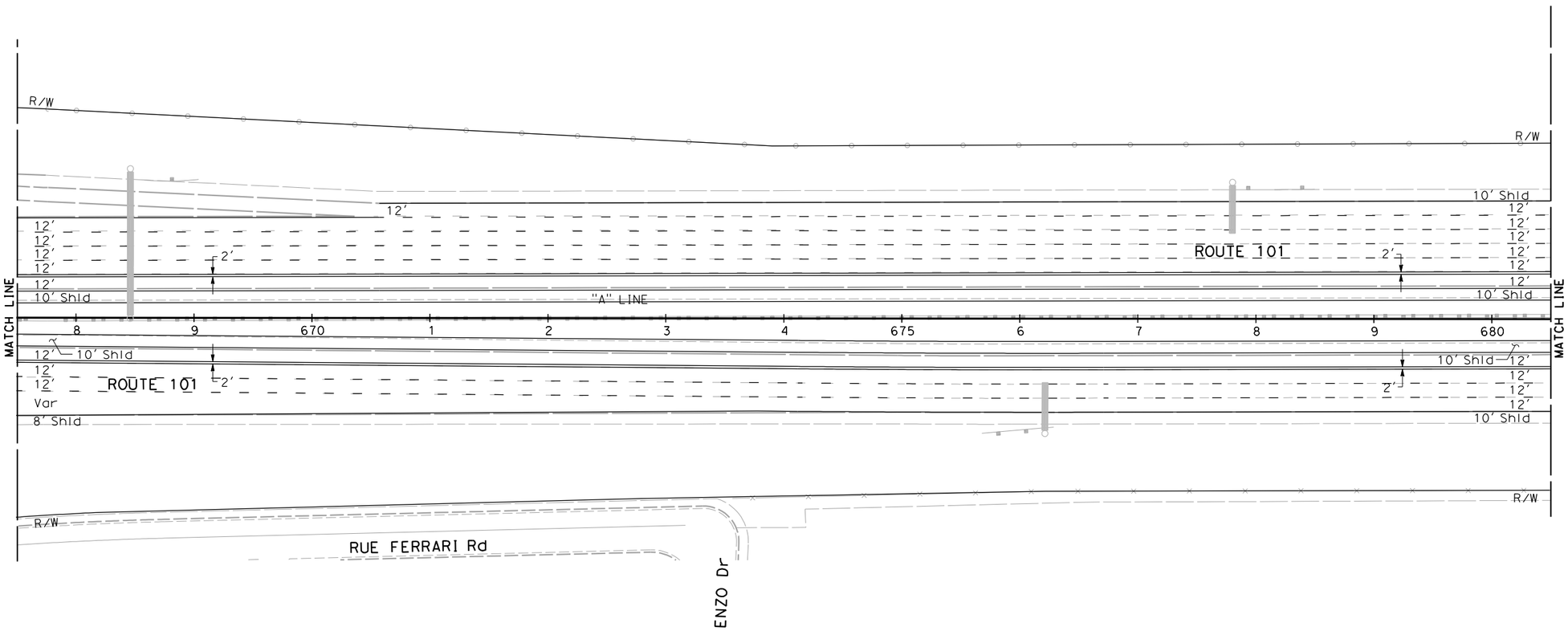

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-53

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TIME PLOTTED => 11:23:02 AM

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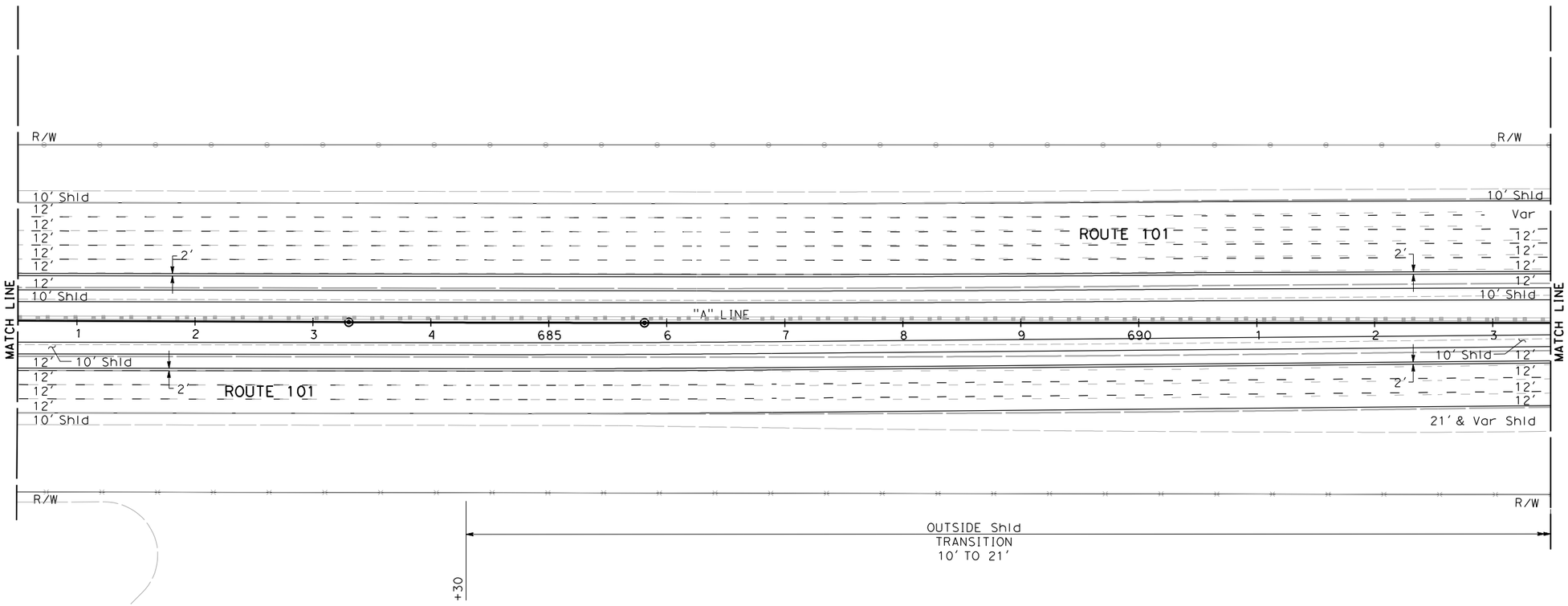

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-54

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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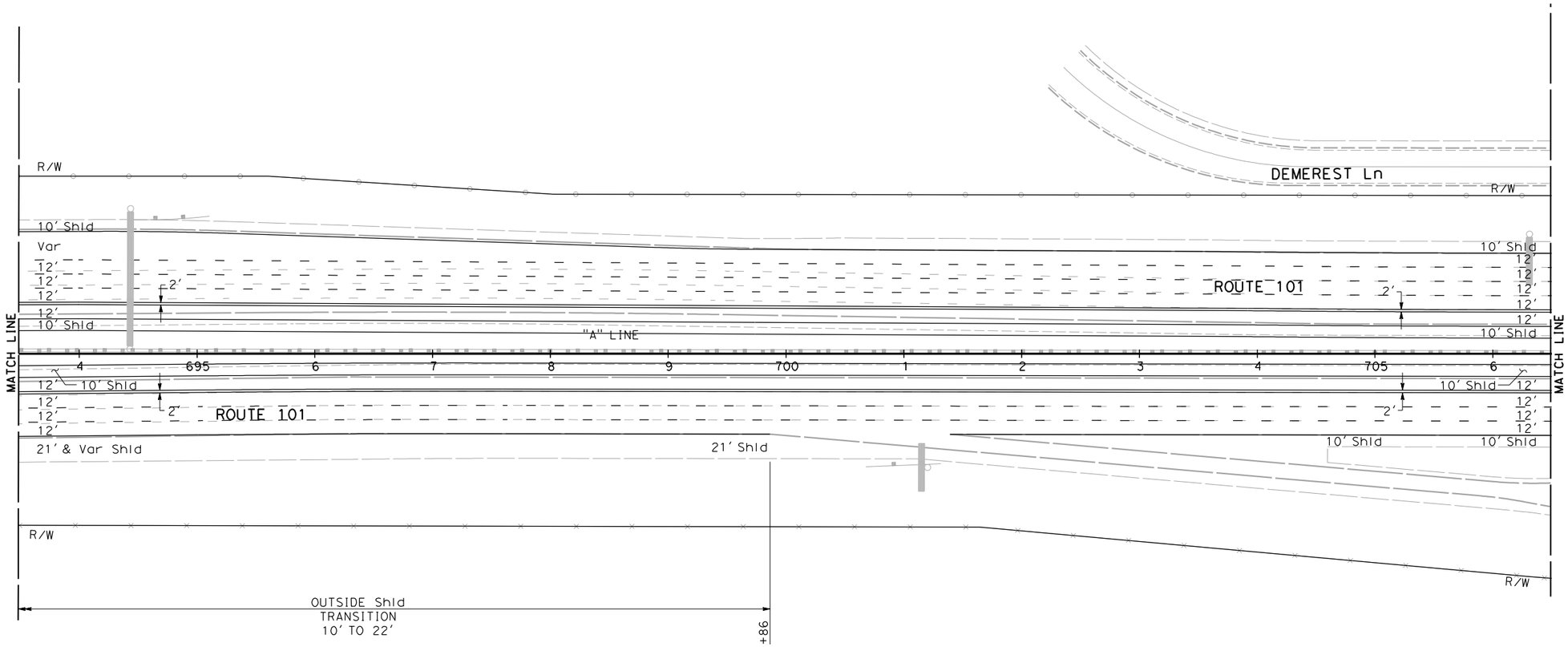

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-55

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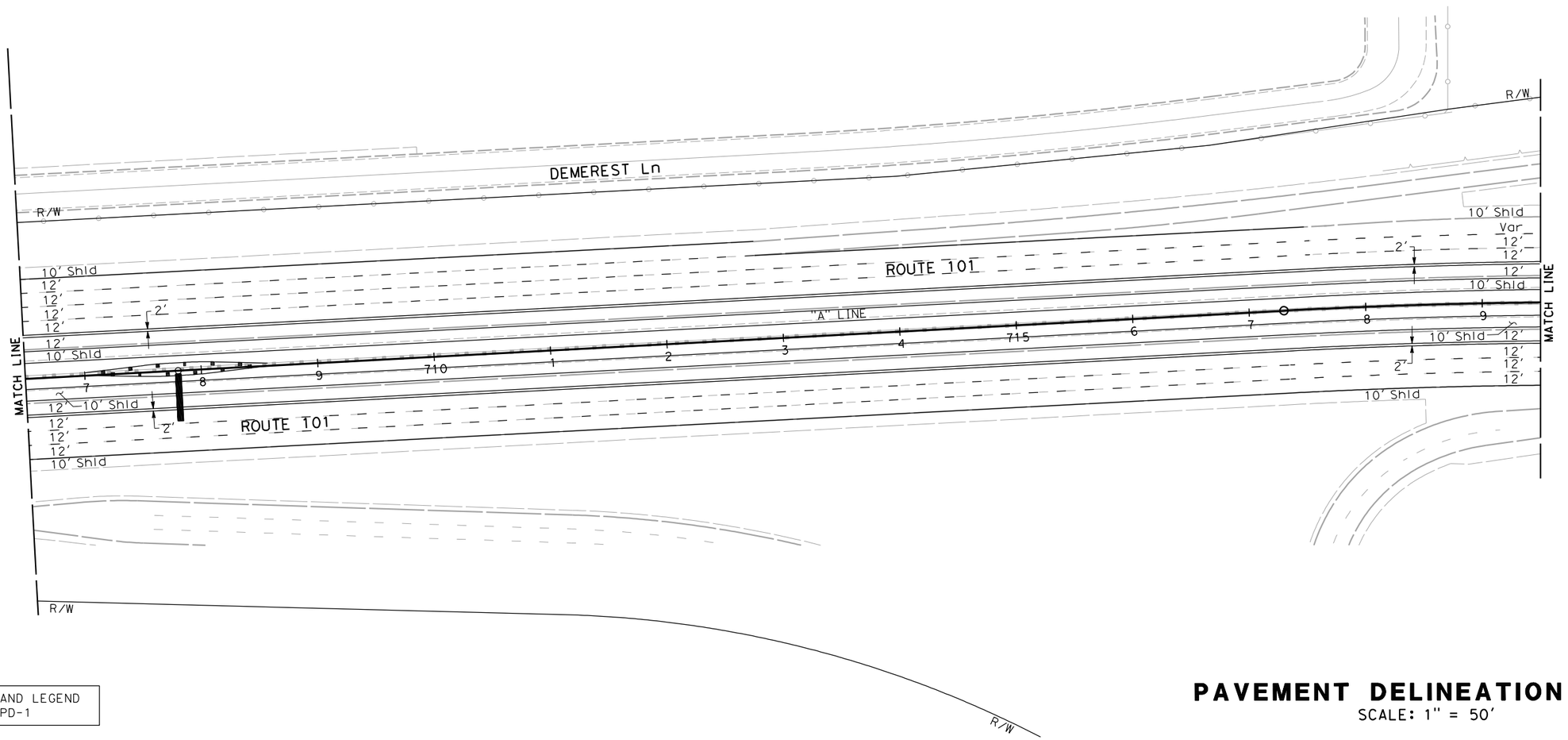

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-56

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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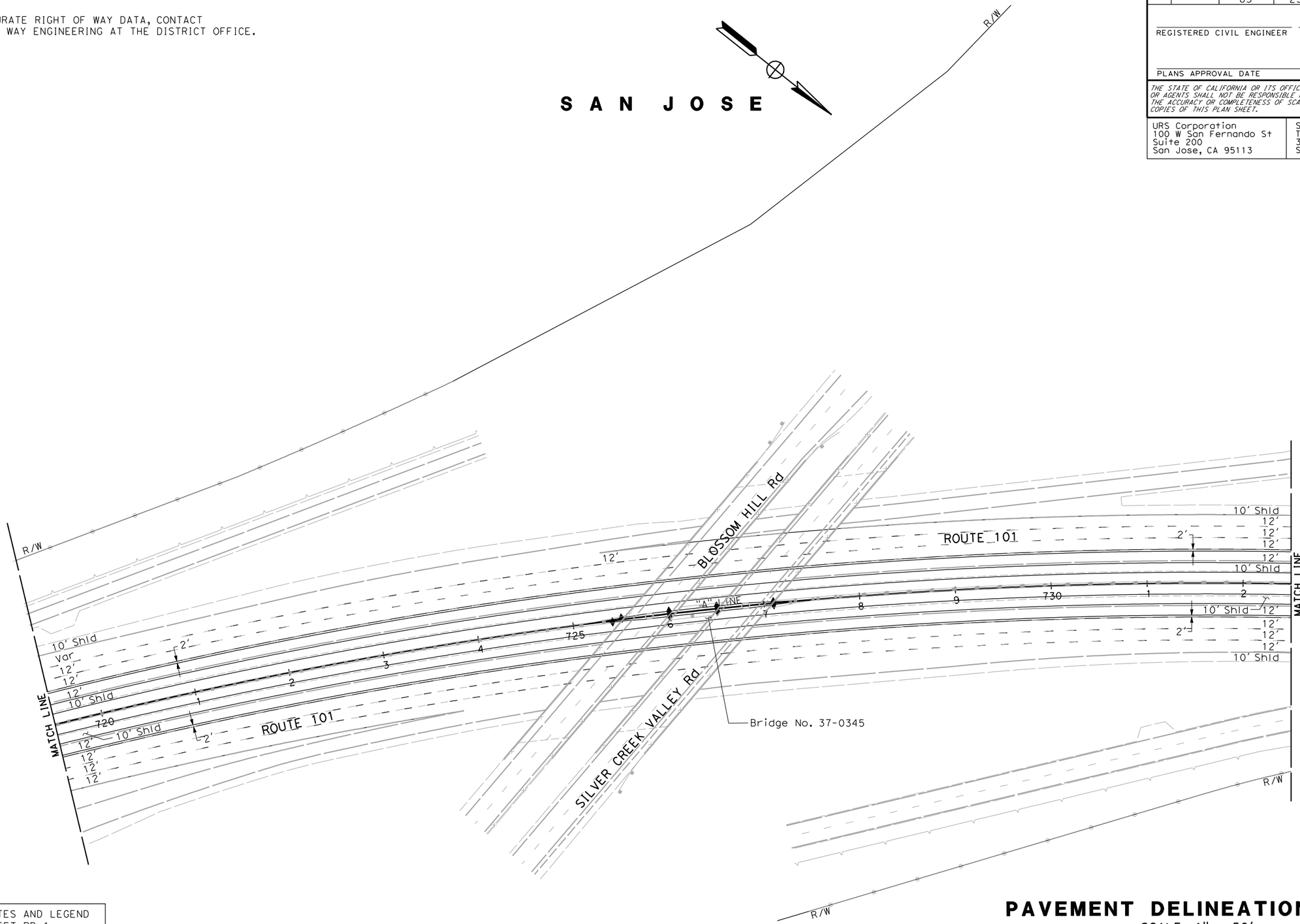

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-57

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.00/52.55 23.0/24.1		

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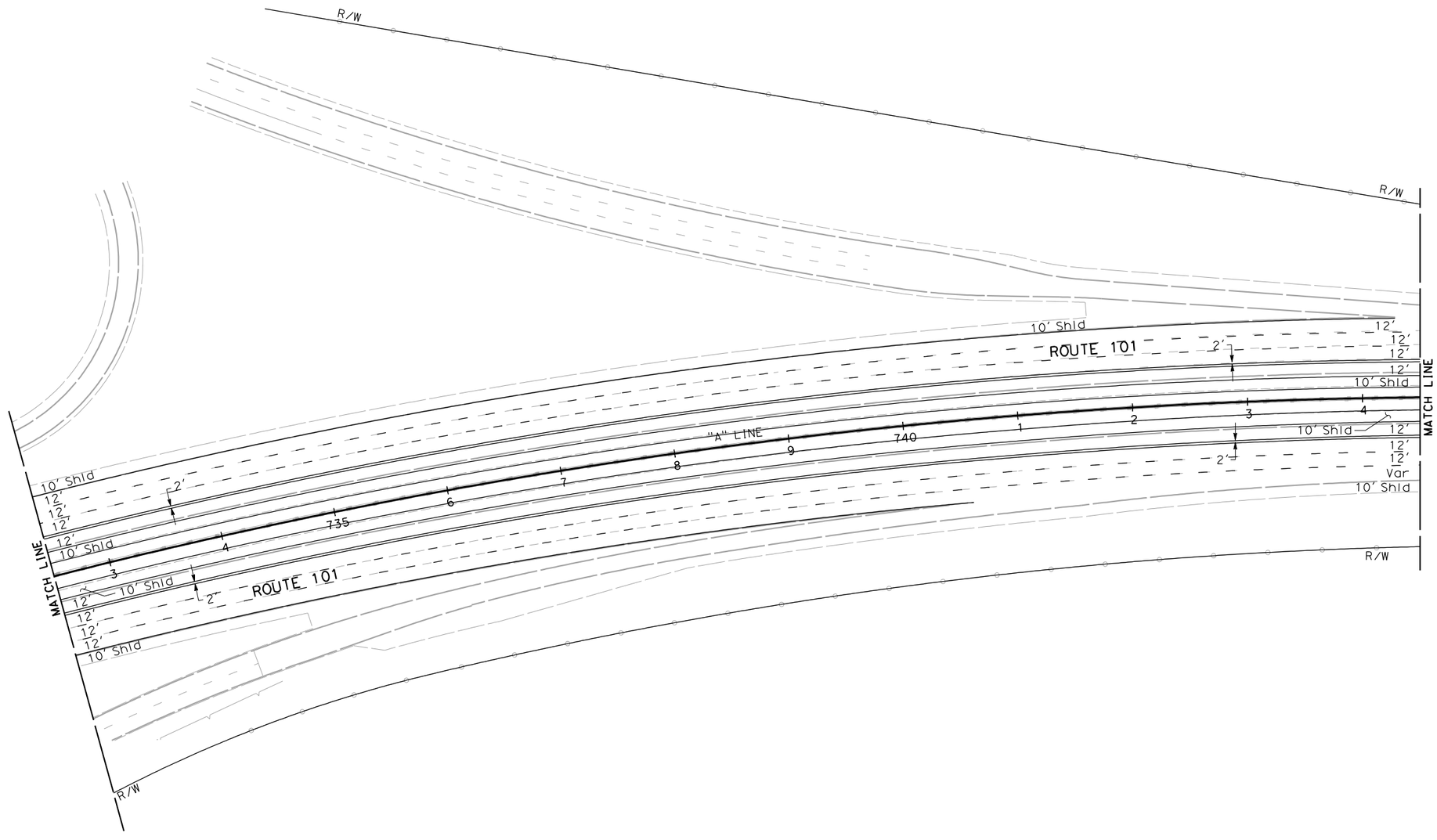

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-58

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
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4	SCl	101 85	16.00/52.55 23.0/24.1		

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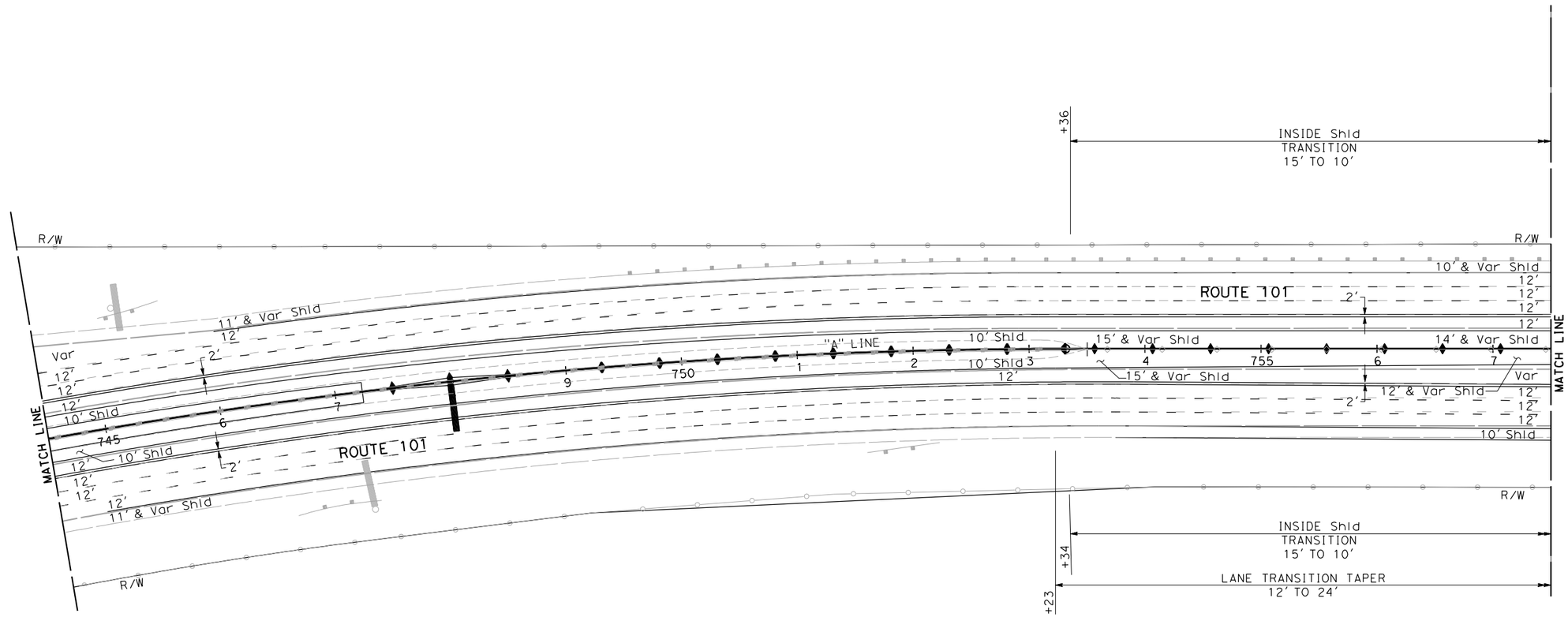

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-59

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:23:34 AM

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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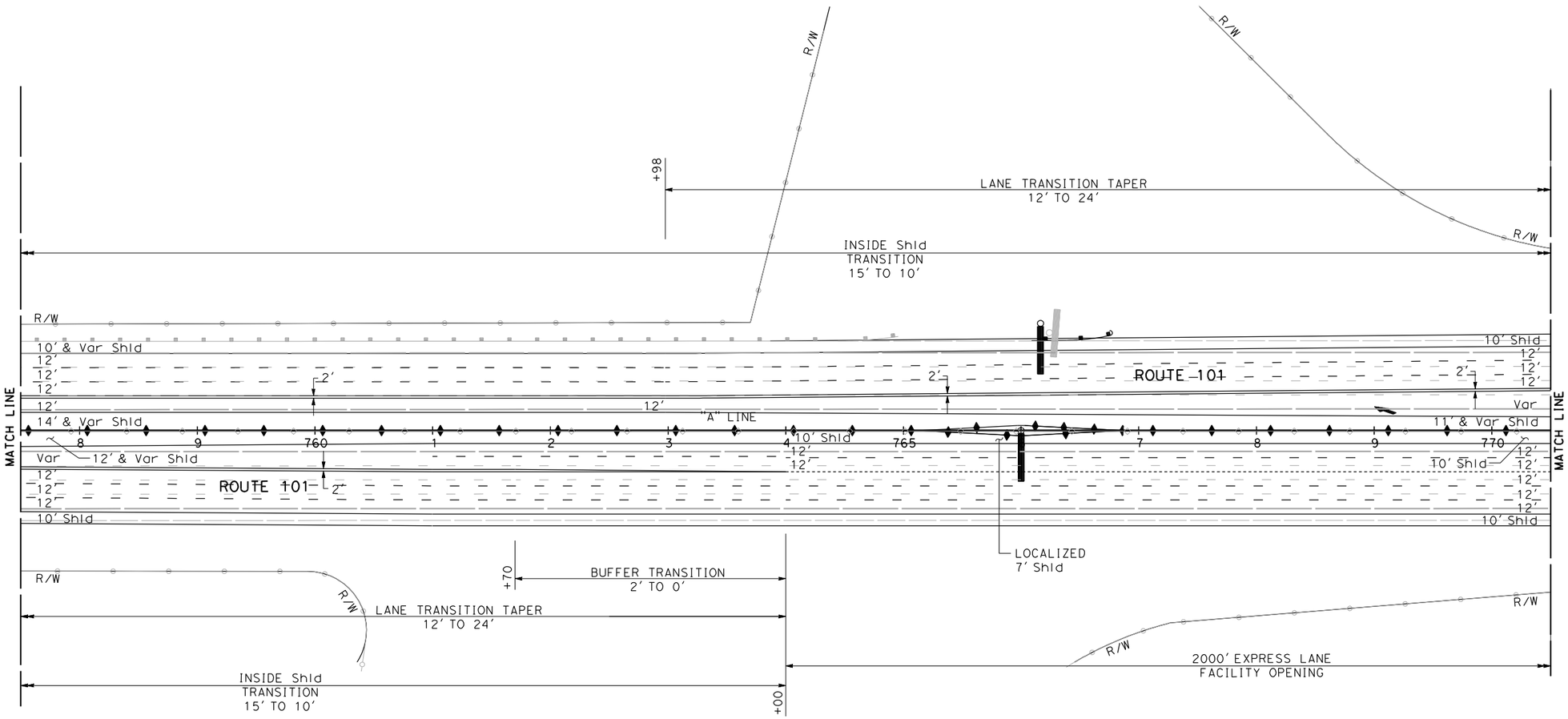

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-60

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CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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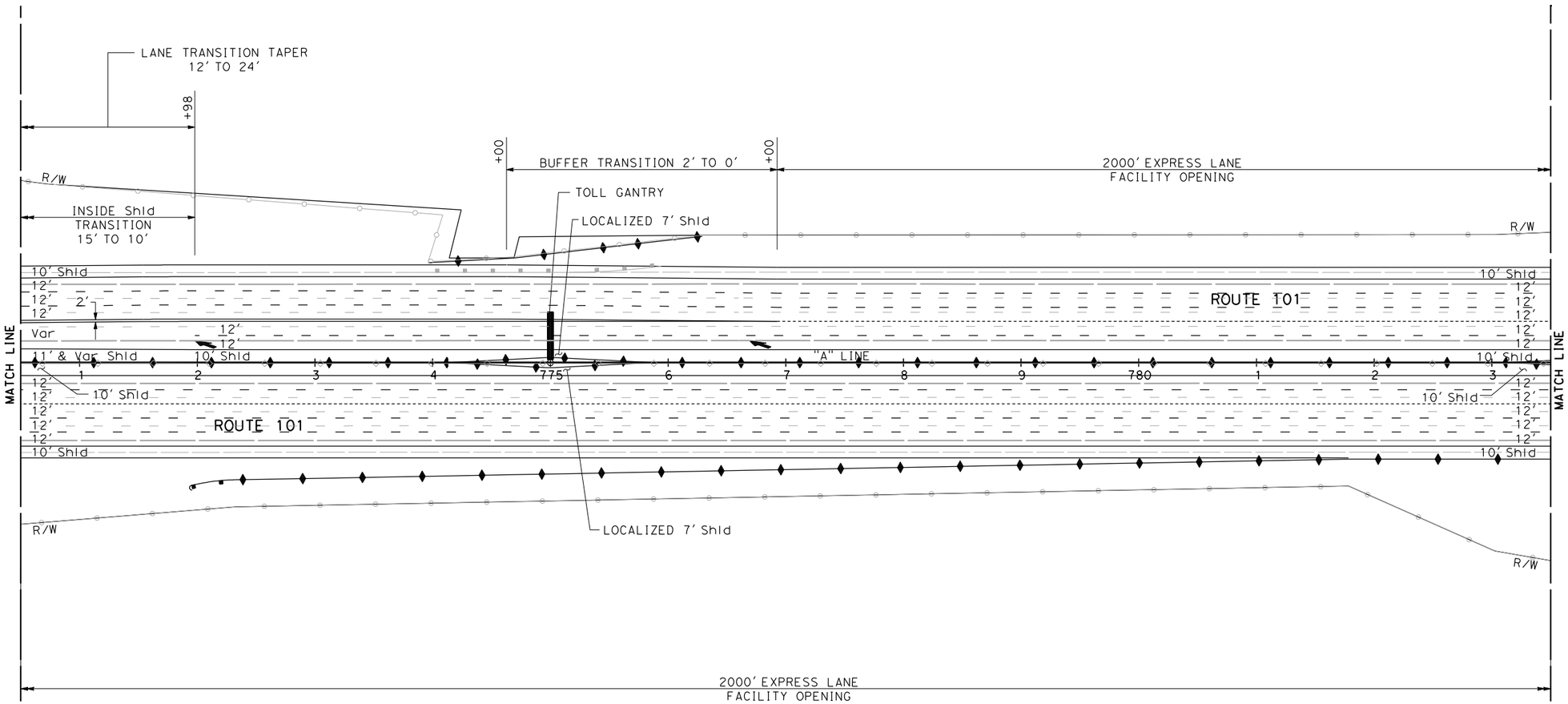

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-61

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CALCULATED-DESIGNED BY: LAN HO

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8-14-14

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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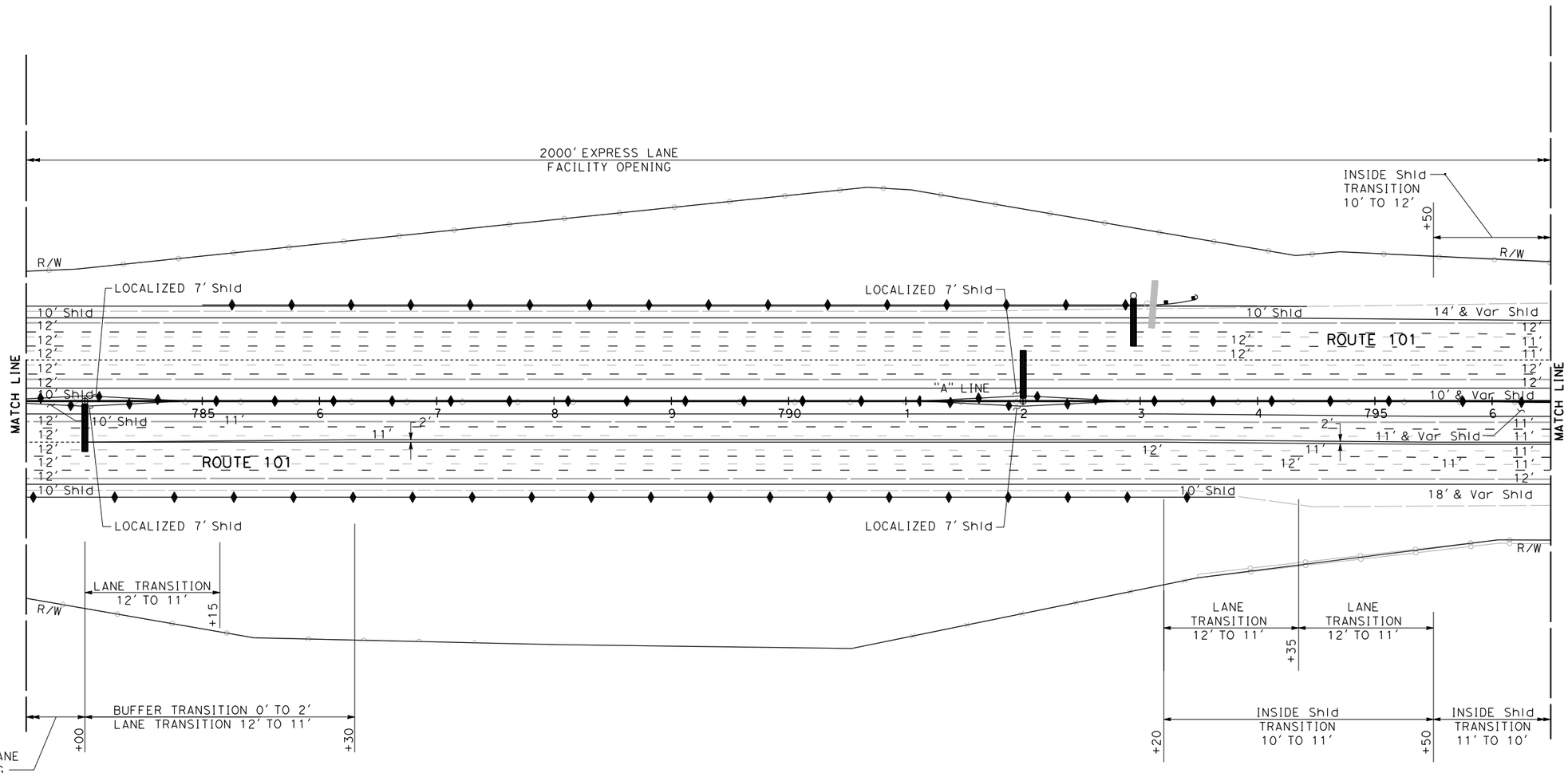

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-62

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:23:50 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na062.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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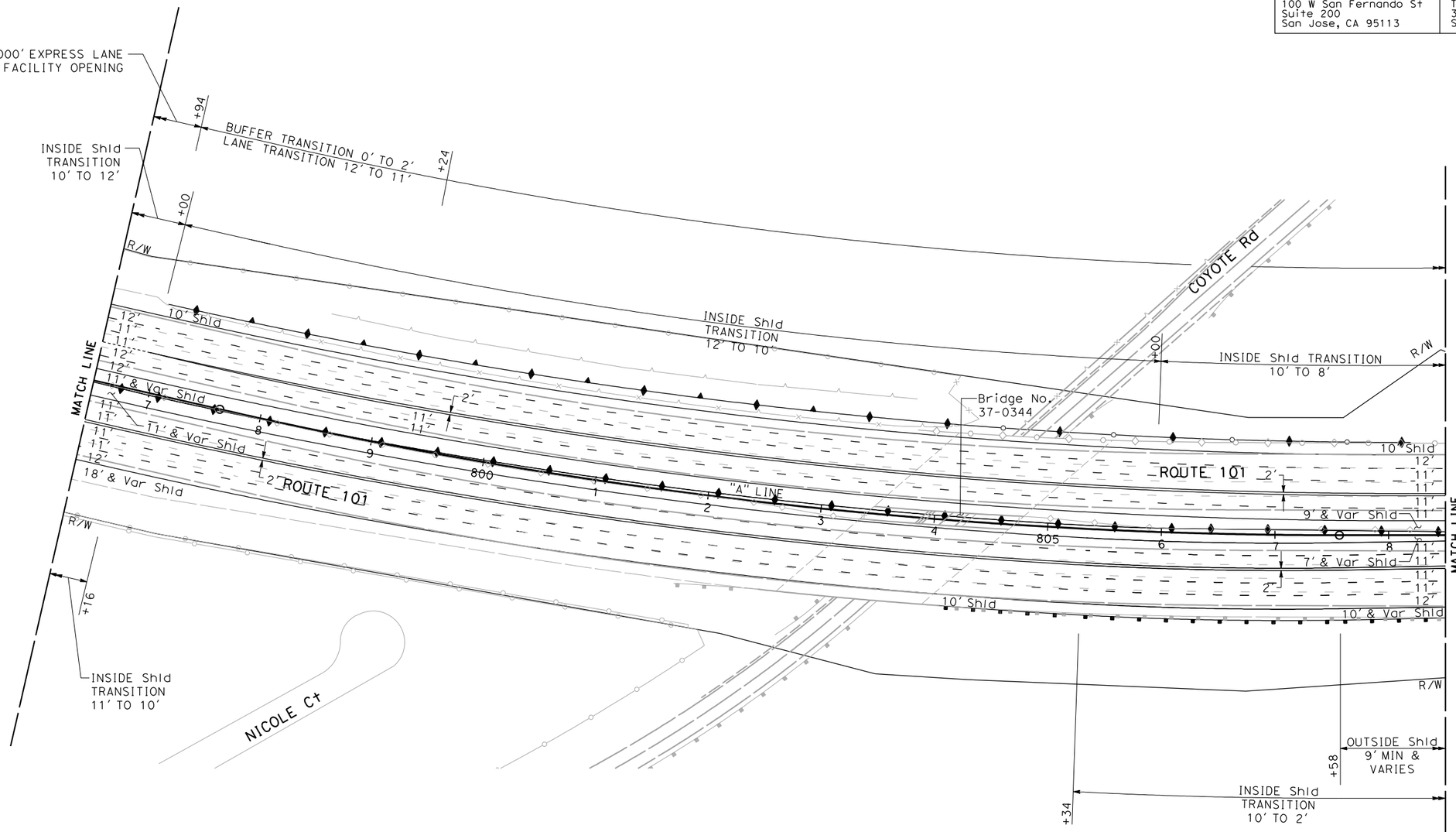

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-63

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CALCULATED-DESIGNED BY	LAN HO	
CHECKED BY	RAMESH SATHIAMURTHY	
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:23:55 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na063.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

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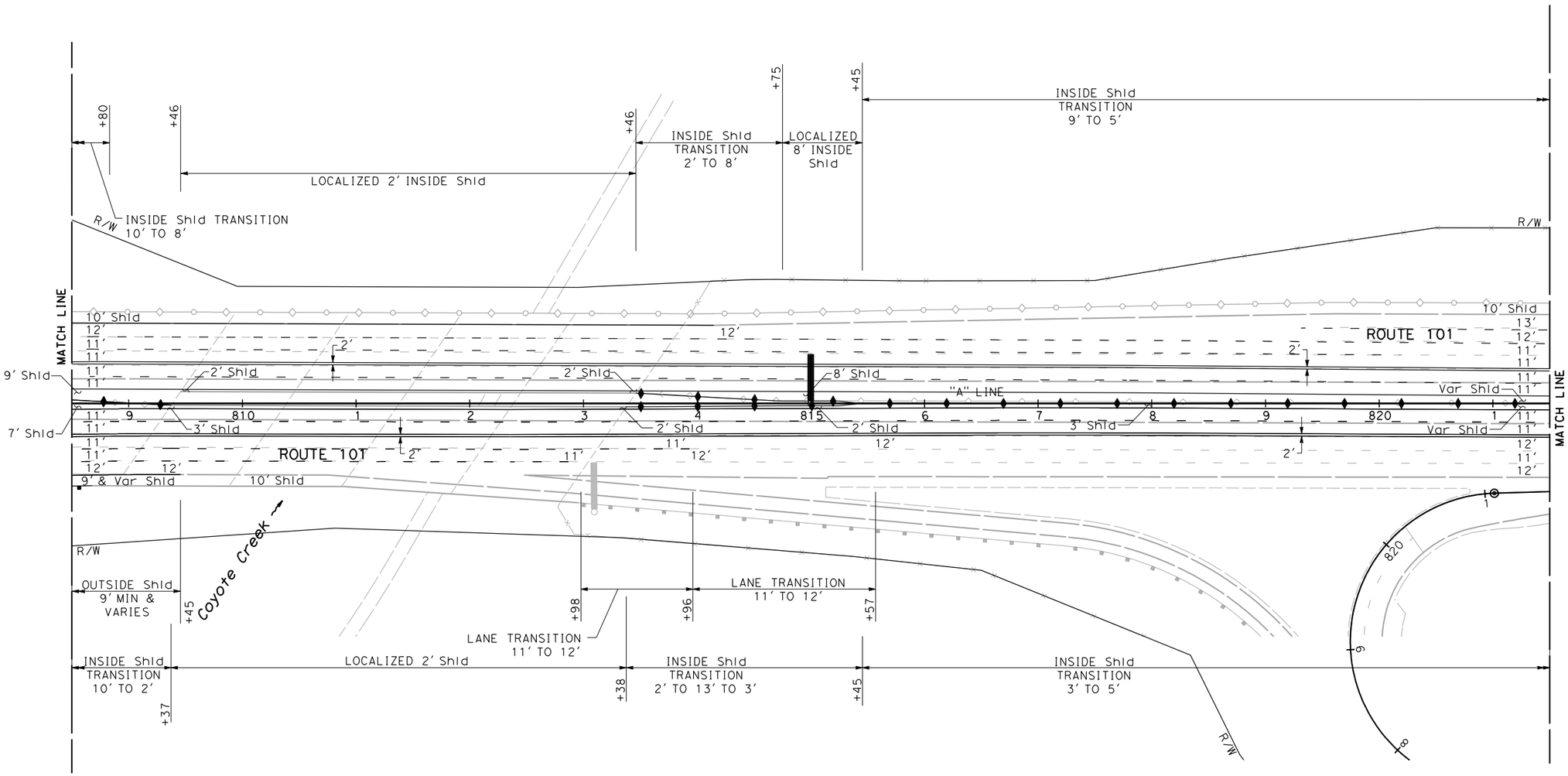

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-64

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LAST REVISION 8-14-14	DATE PLOTTED => 3/16/2015 TIME PLOTTED => 11:24:01 AM		
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Caltrans		CHECKED BY: RAMESH SATHIAMURTHY	DATE REVISED: -

BORDER LAST REVISED 3/16/2015	USERNAME => ernie_garnica DGN FILE => ...\0400026710na064.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT xxxx	PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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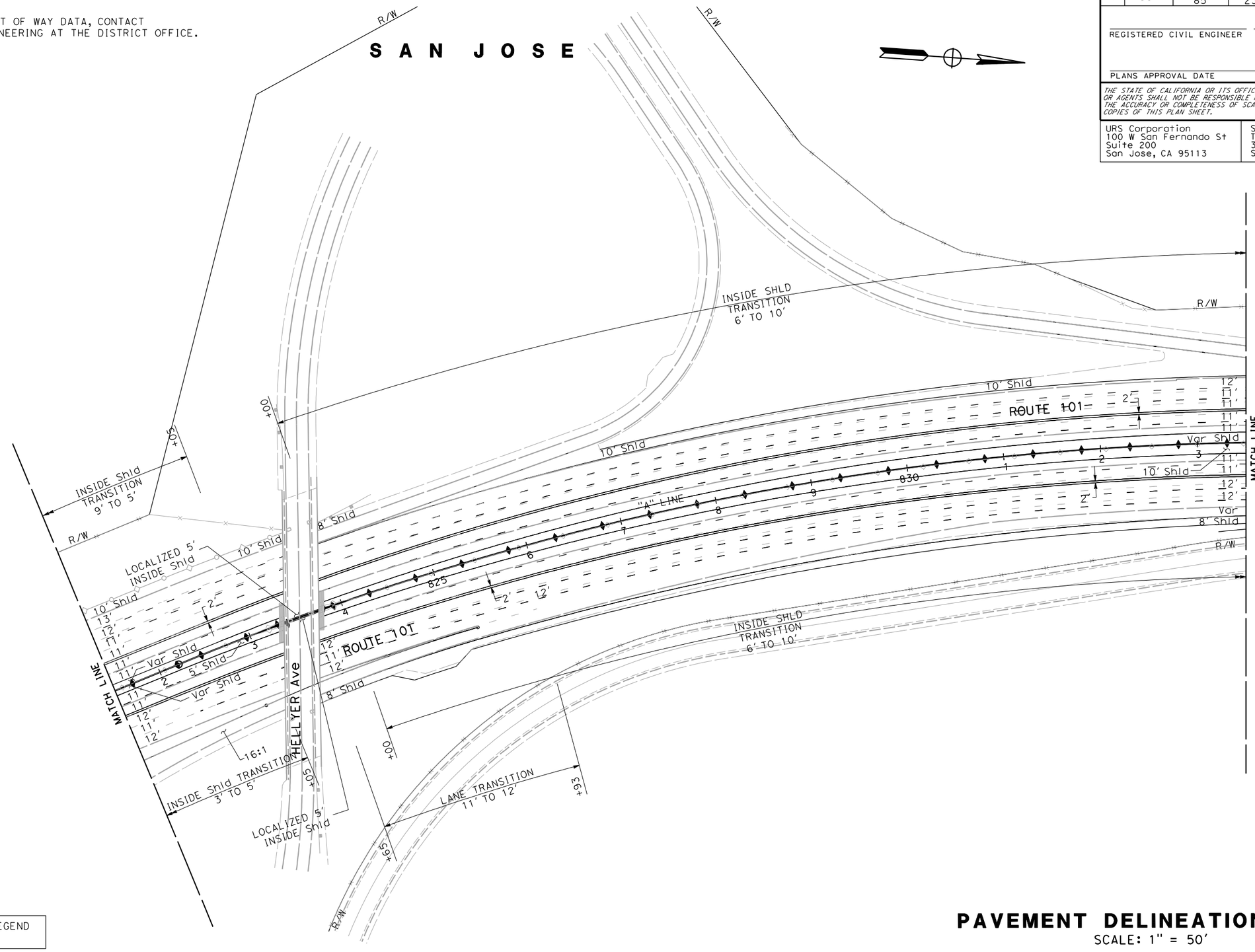

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-65

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CALCULATED-DESIGNED BY	LAN HO	-	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans®		

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:24:06 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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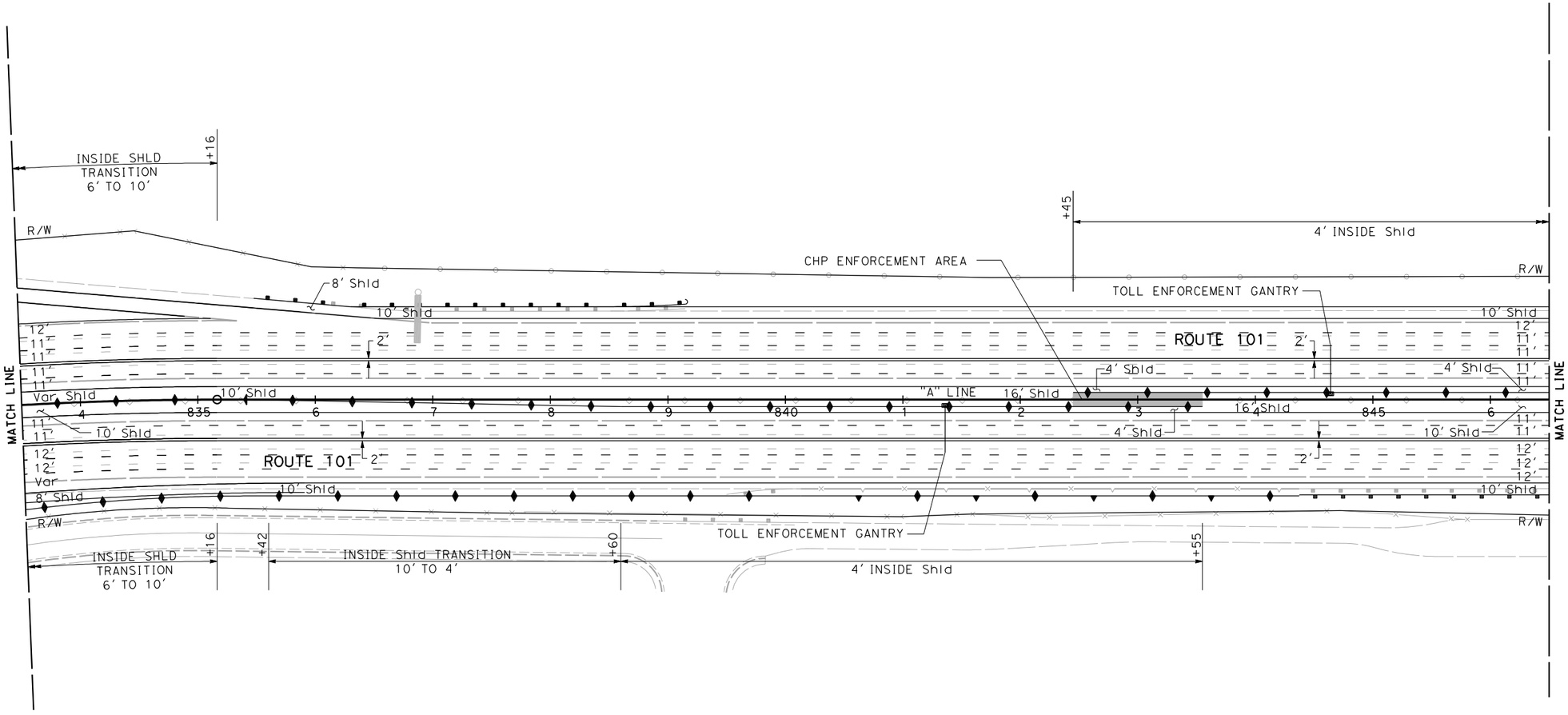

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-66

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	DATE REVISED	-
CALCULATED-DESIGNED BY	LAN HO	
CHECKED BY	RAMESH SATHIAMURTHY	
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Gb Gallars

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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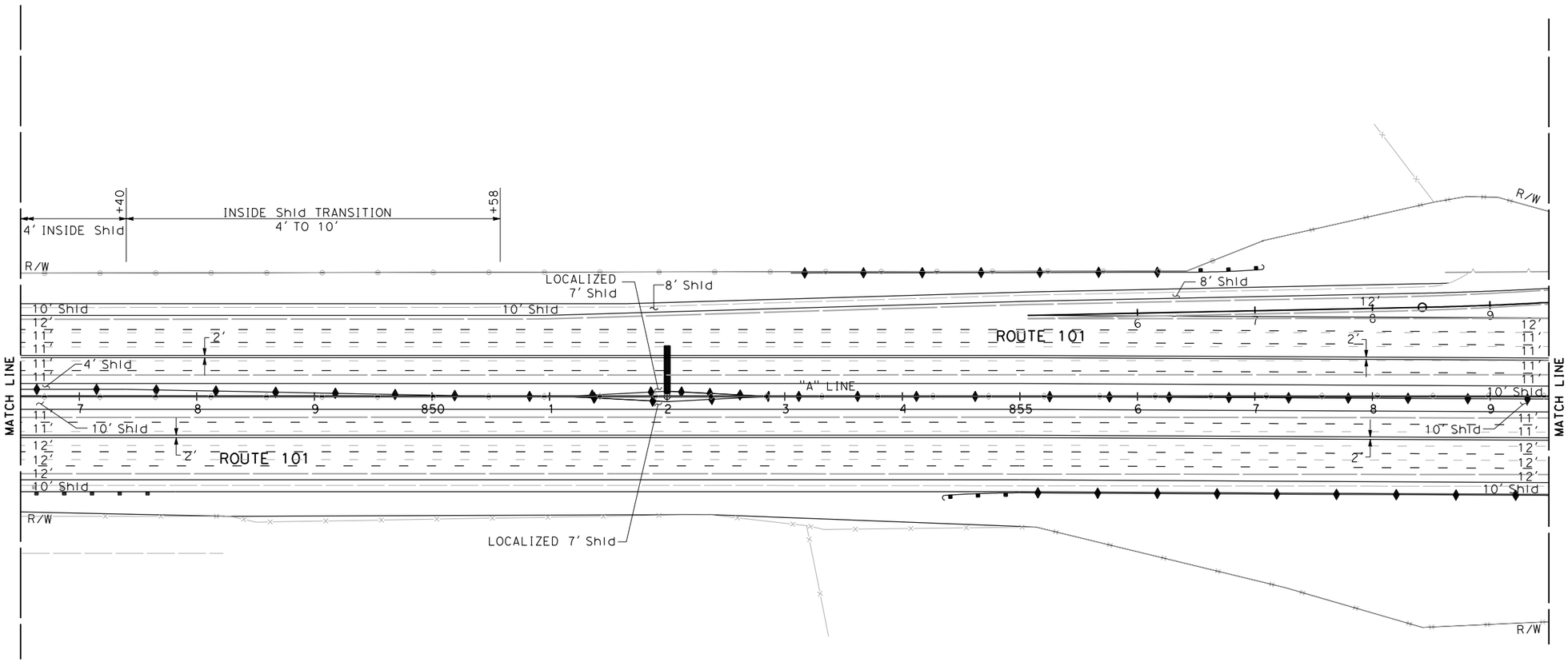

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-67

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-	-

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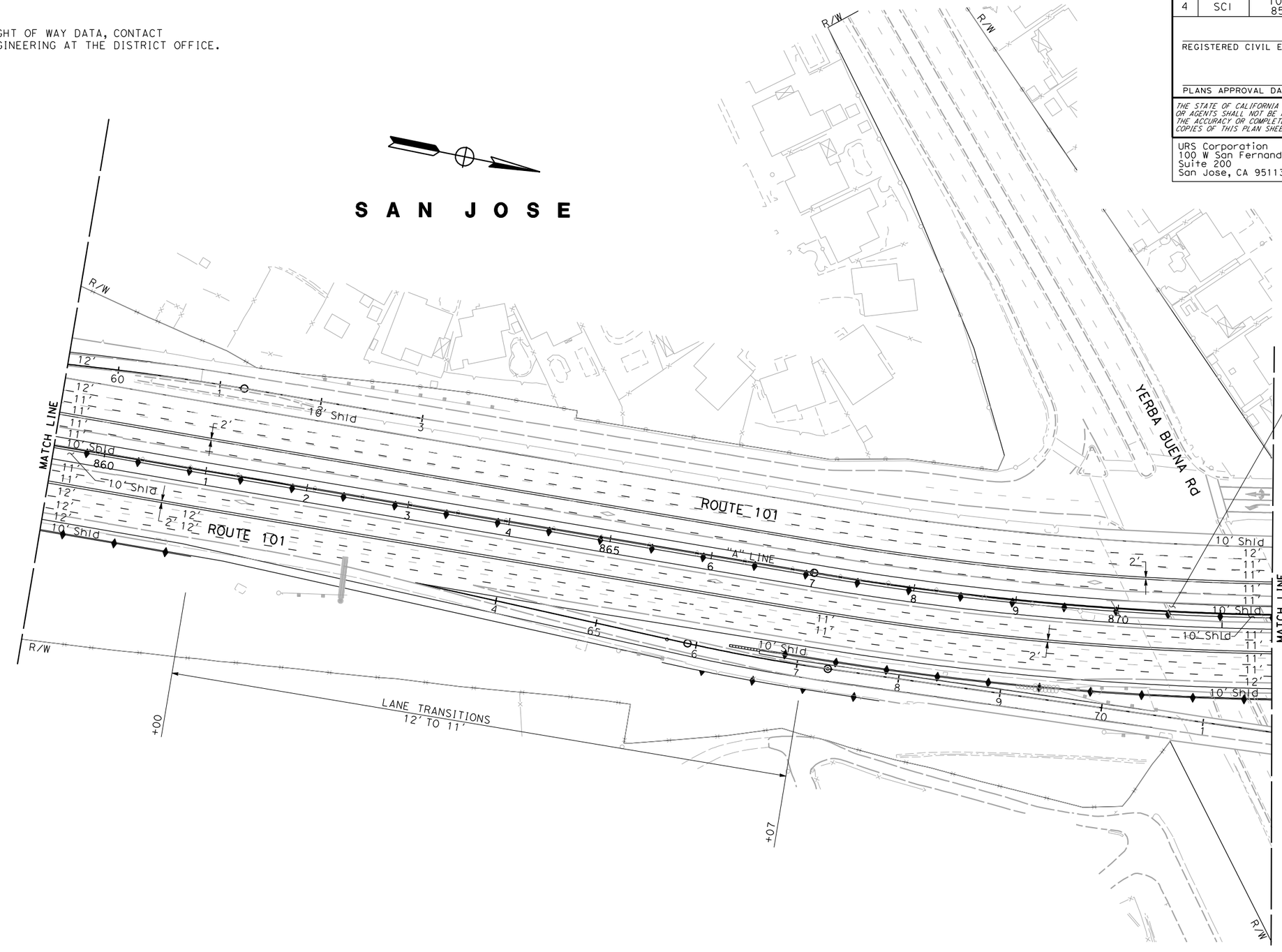

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-68

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CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
LAN HO	RAMESH SATHIAMURTHY	-	-

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na068.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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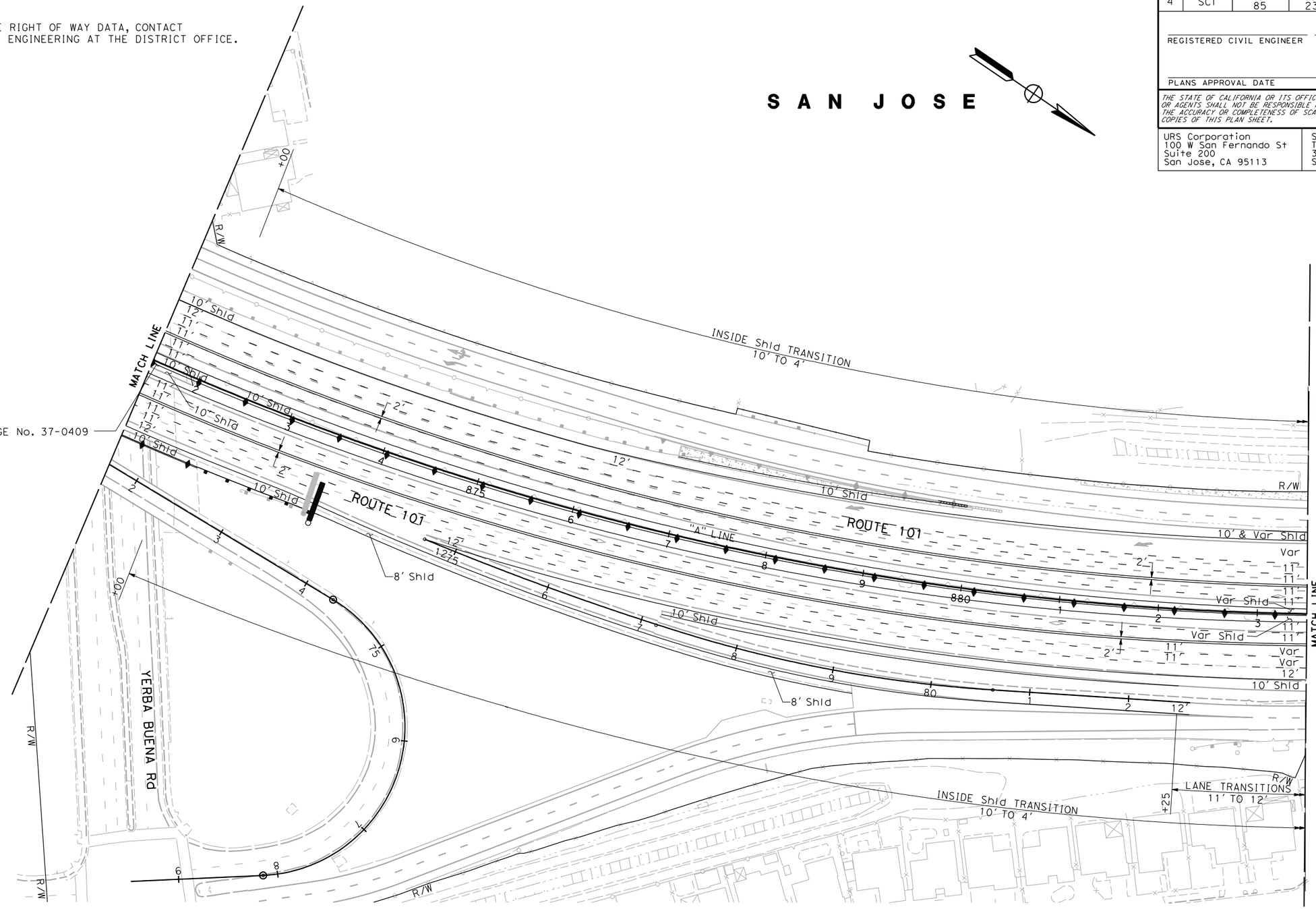

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-69

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

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-	-

LAST REVISION: DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:24:29 AM
8-14-14

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na069.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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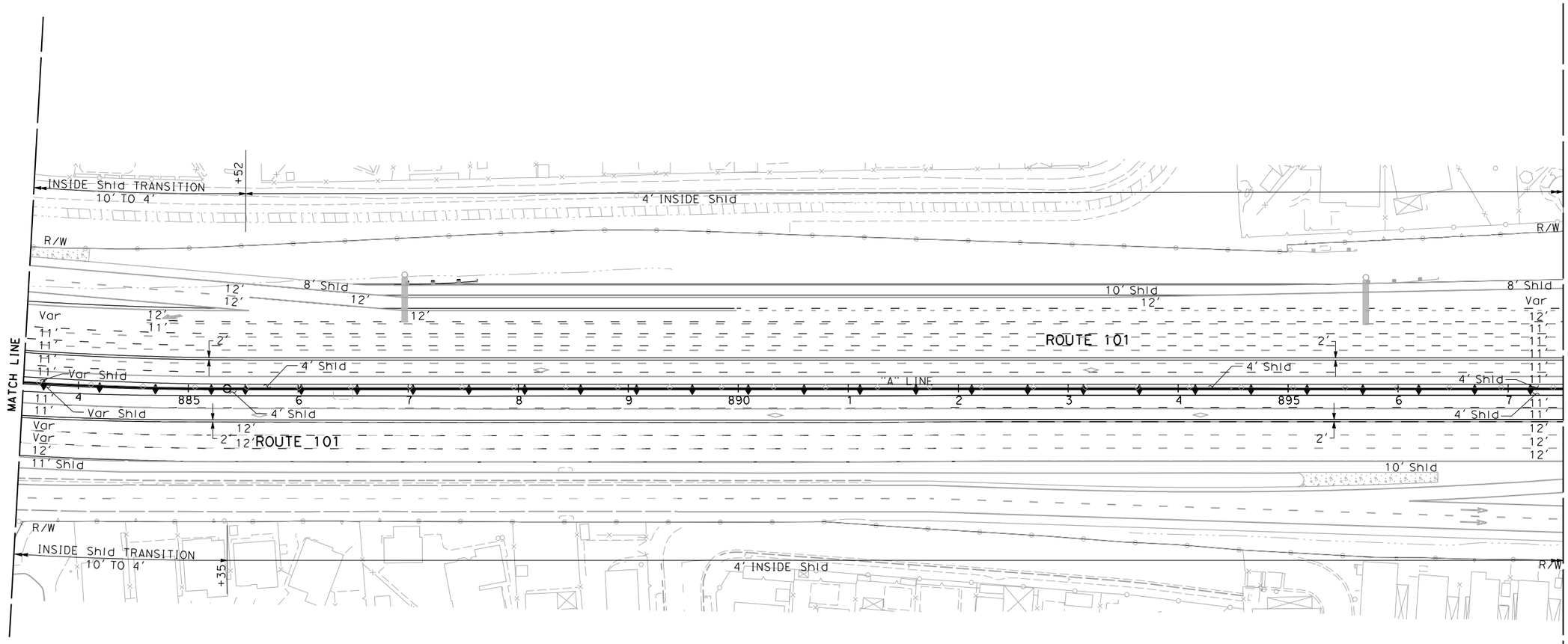

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-70

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

REVISED BY: -
DATE REVISED: -

LAST REVISION
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:24:34 AM
8-14-14

BORDER LAST REVISED 3/16/2015

USERNAME => ernie_garnica
DGN FILE => ...\04000026710na070.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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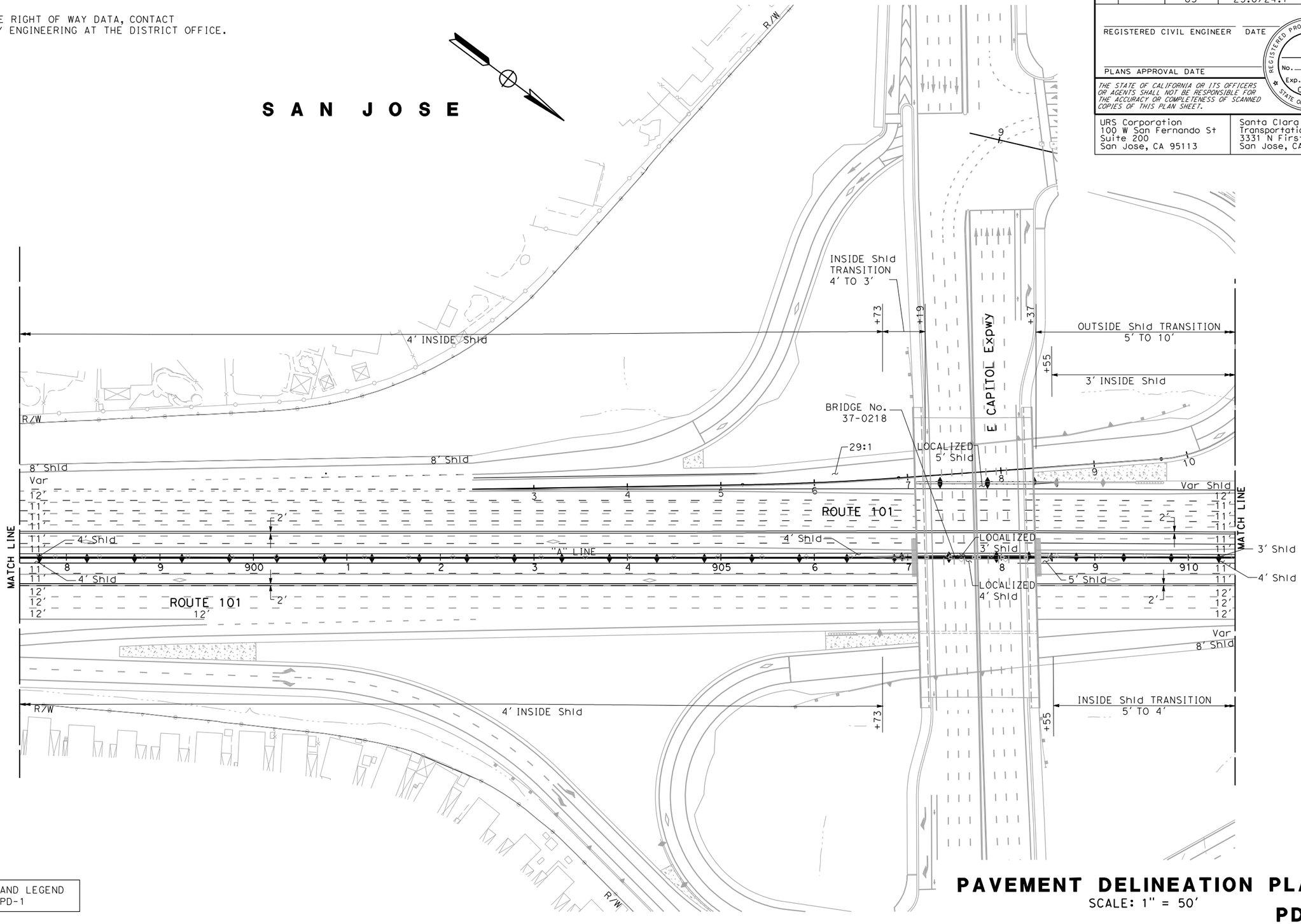

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-71

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CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION: 8-14-14
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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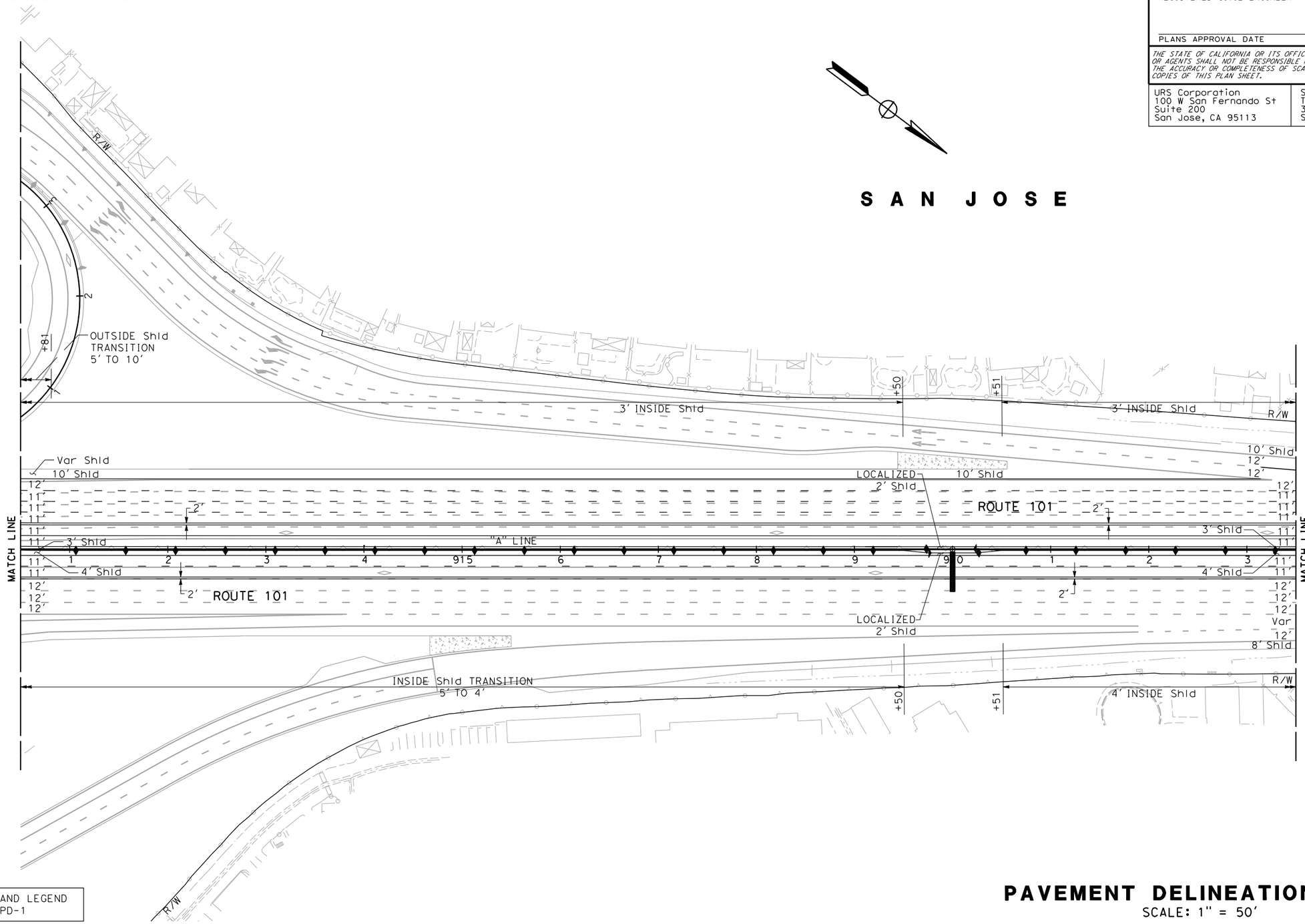

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-72

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	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:24:47 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na072.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

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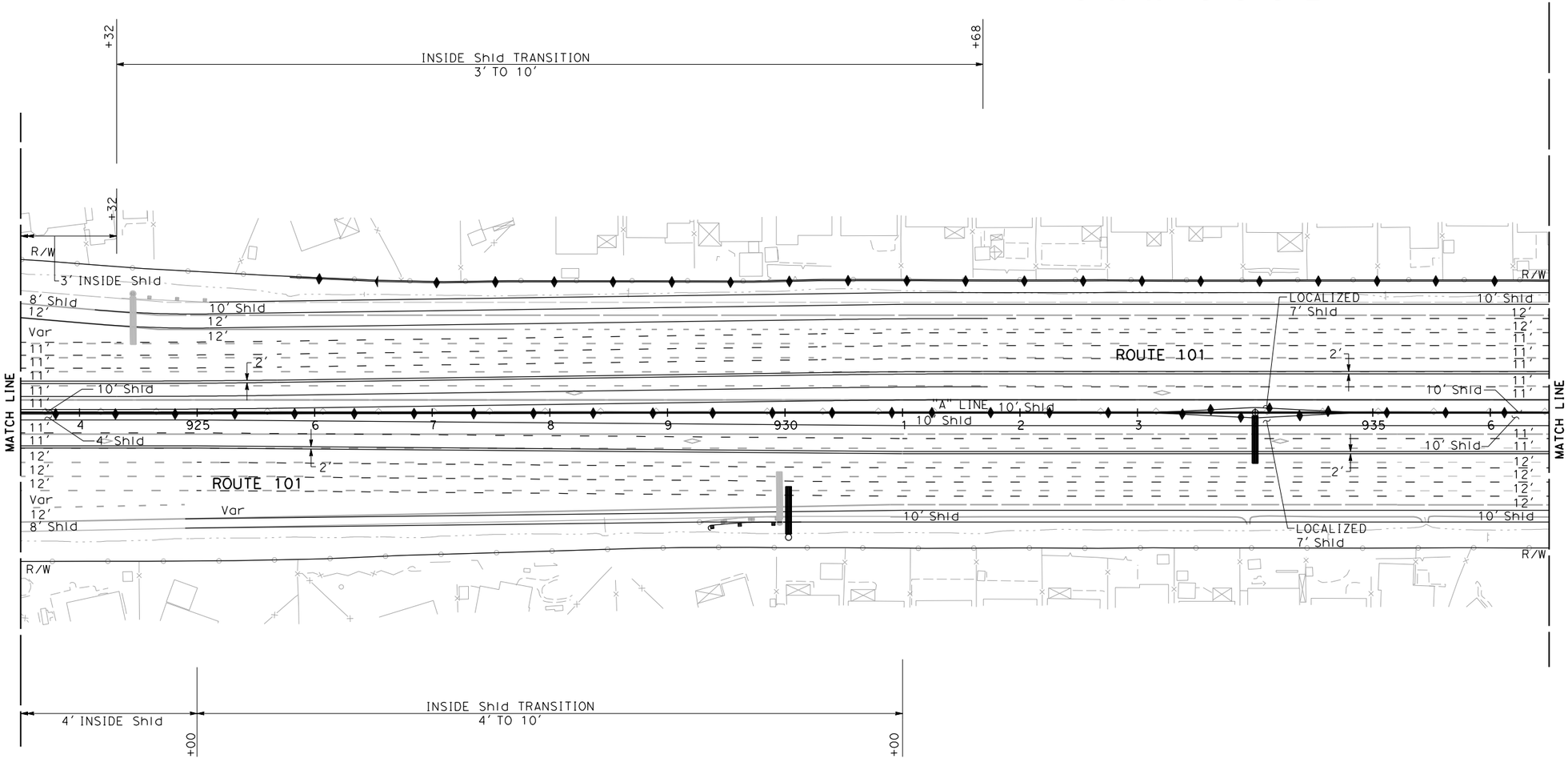

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-73

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION: 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:24:52 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na073.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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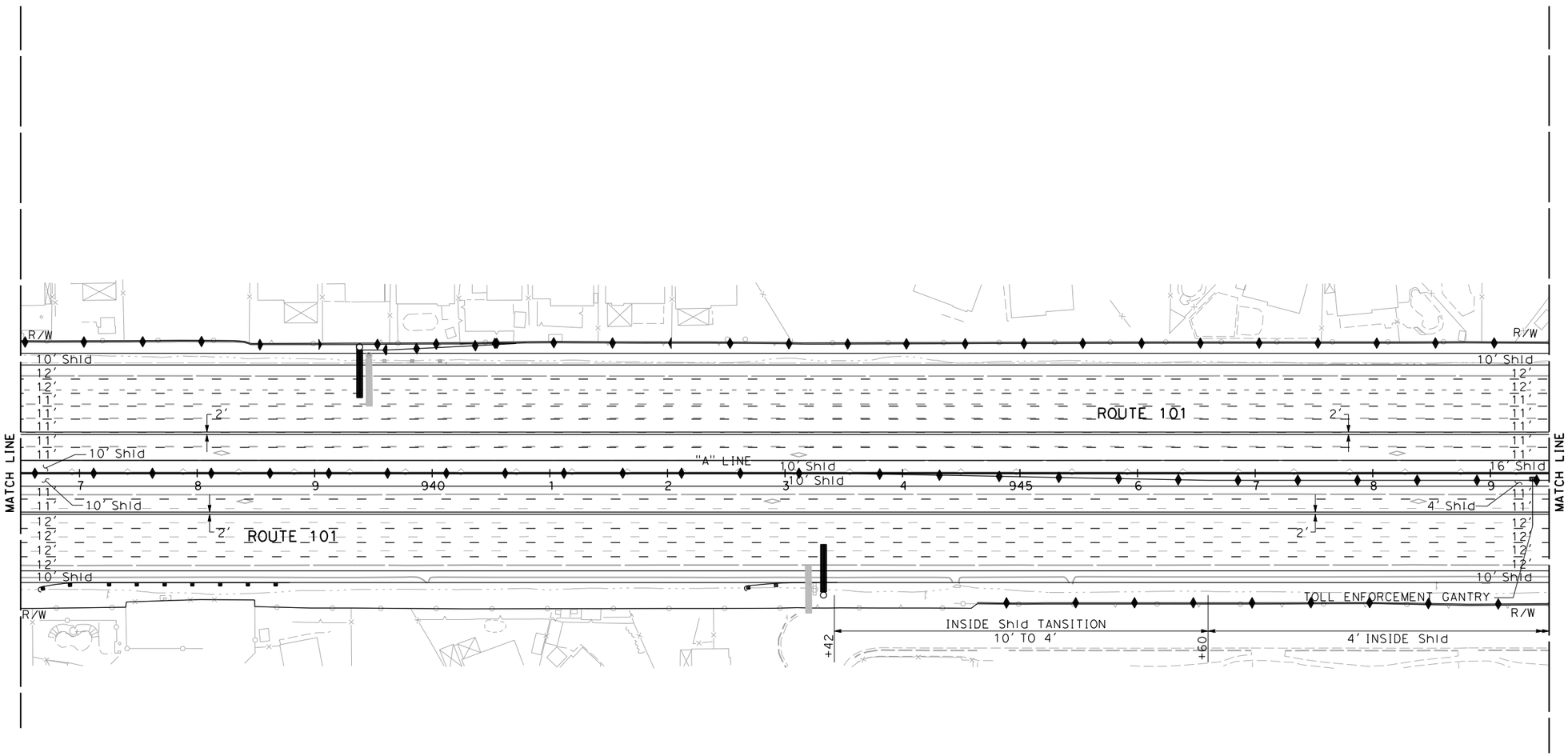

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-74

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DATE REVISED	-		
CALCULATED-DESIGNED BY	LAN HO		
CHECKED BY	RAMESH SATHIAMURTHY		
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans		

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:24:58 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

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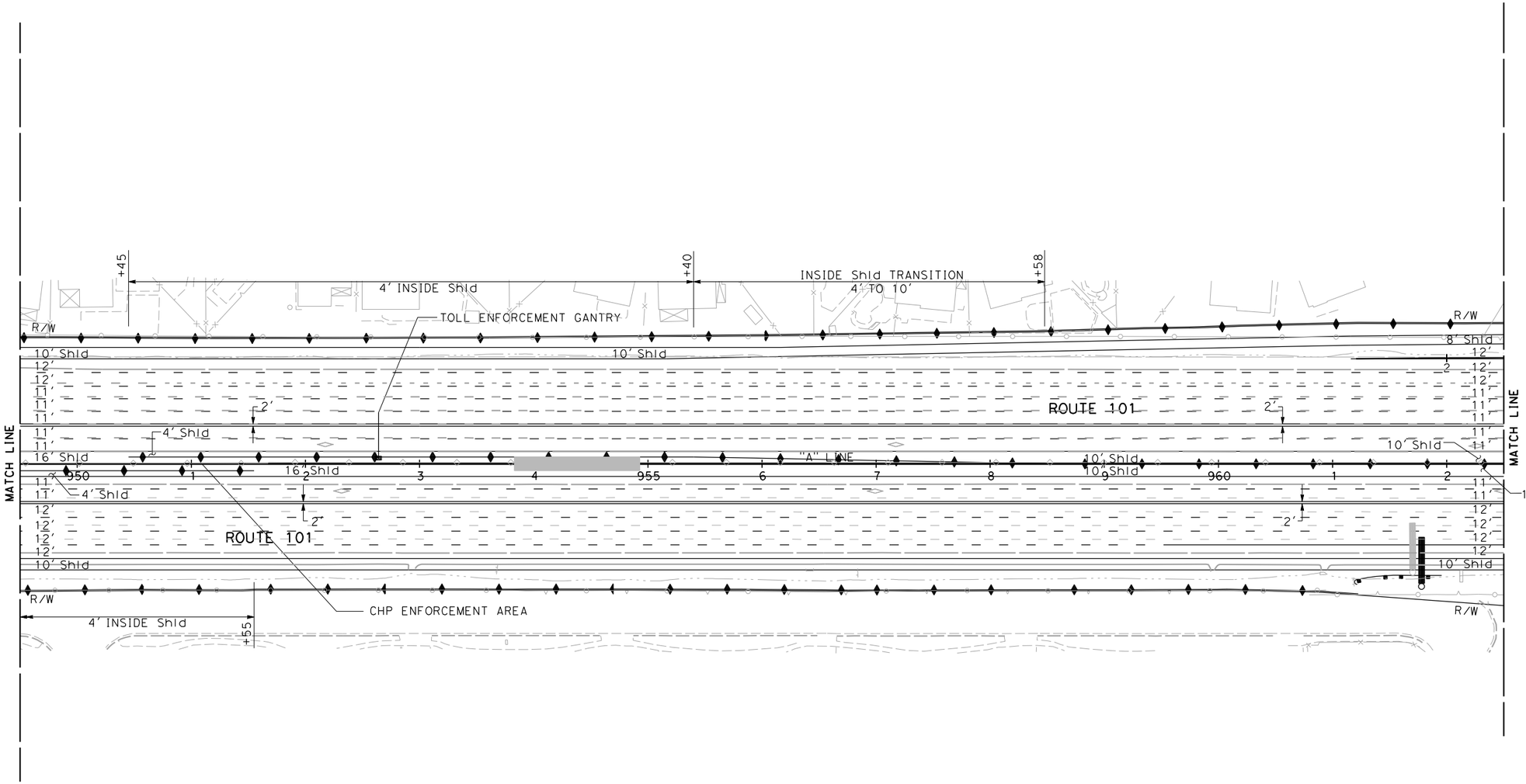

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-75

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
CALCULATED-DESIGNED BY	LAN HO	
CHECKED BY	RAMESH SATHIAMURTHY	
REVISED BY	-	
DATE REVISED	-	

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:03 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na075.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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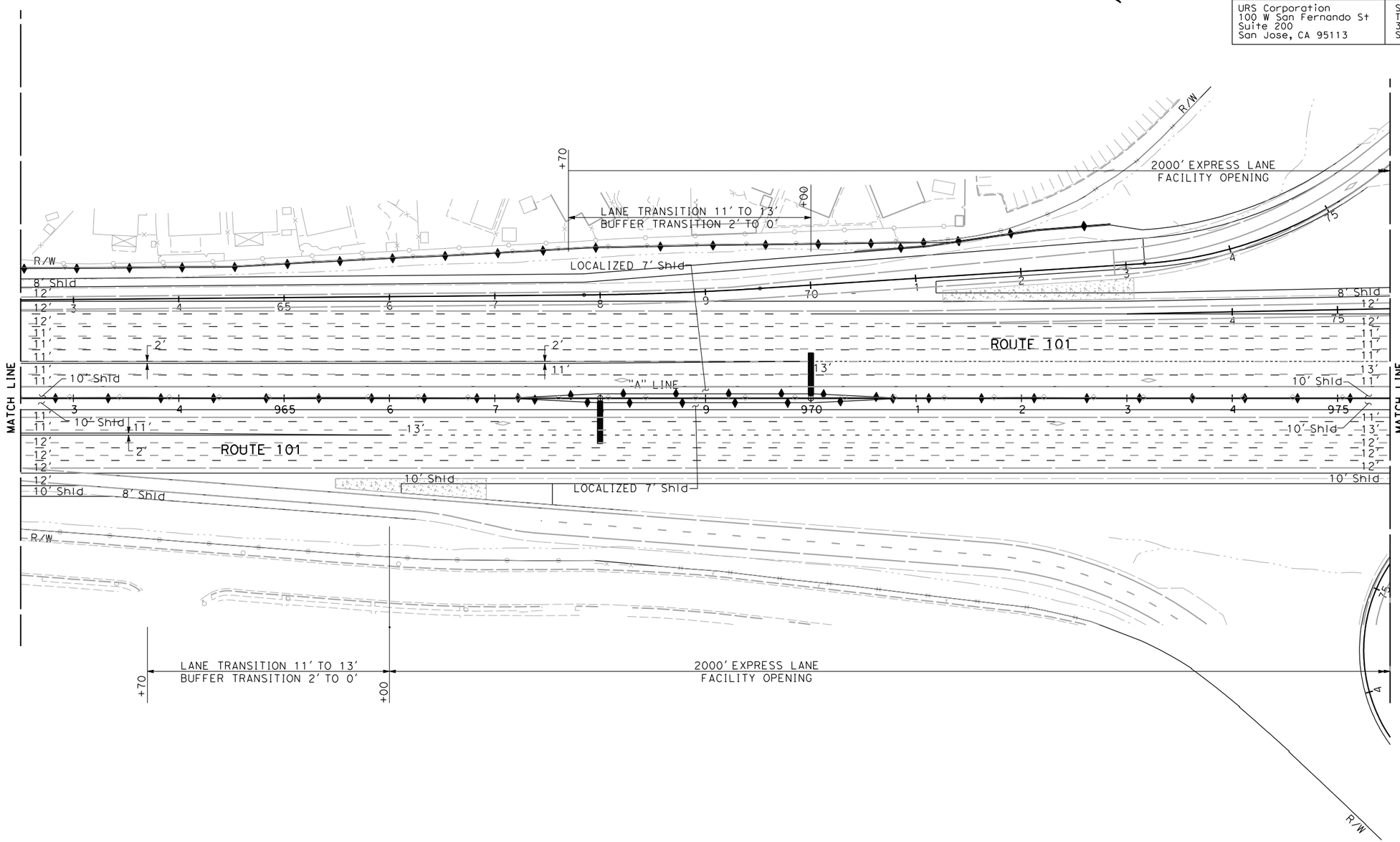
Santa Clara Valley
Transportation Authority
3331 N First Street
San Jose, CA 95134

S A N J O S E



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-76

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:09 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na076.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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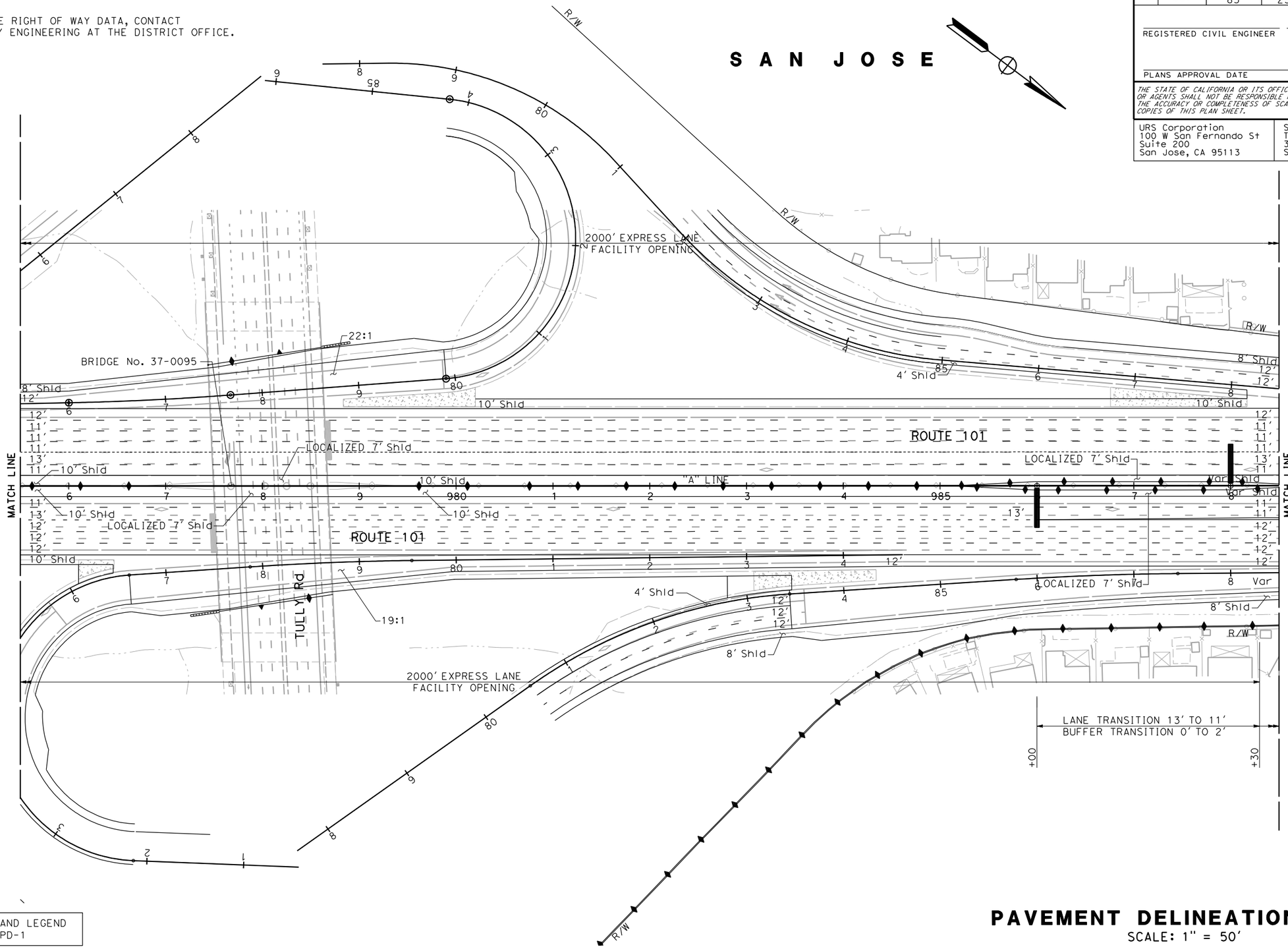

FOR NOTES AND LEGEND
SEE SHEET PD-1

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-77

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
LAN HO	RAMESH SATHIAMURTHY	-	-

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:15 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na077.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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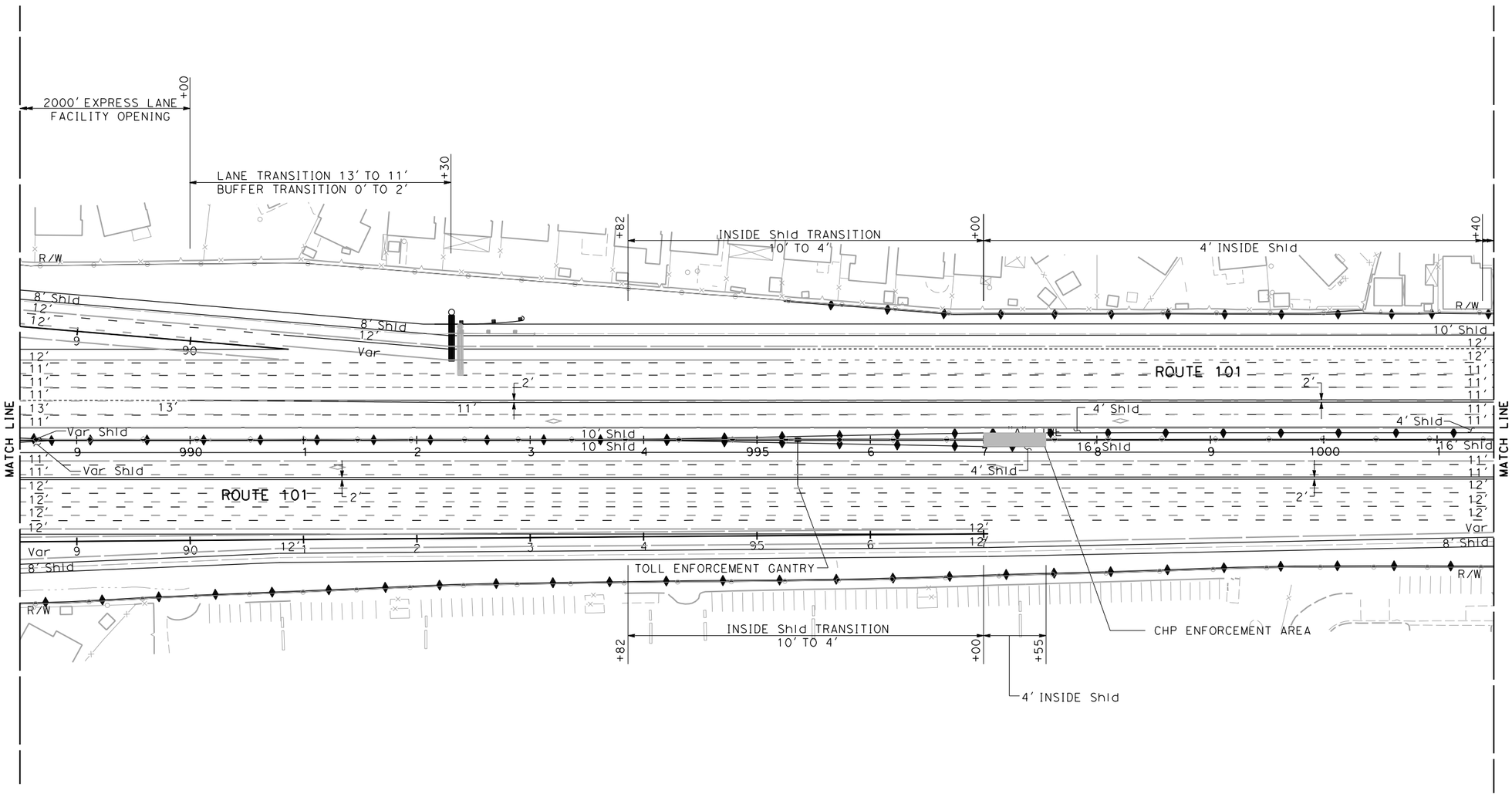

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-78

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION: 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:20 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na078.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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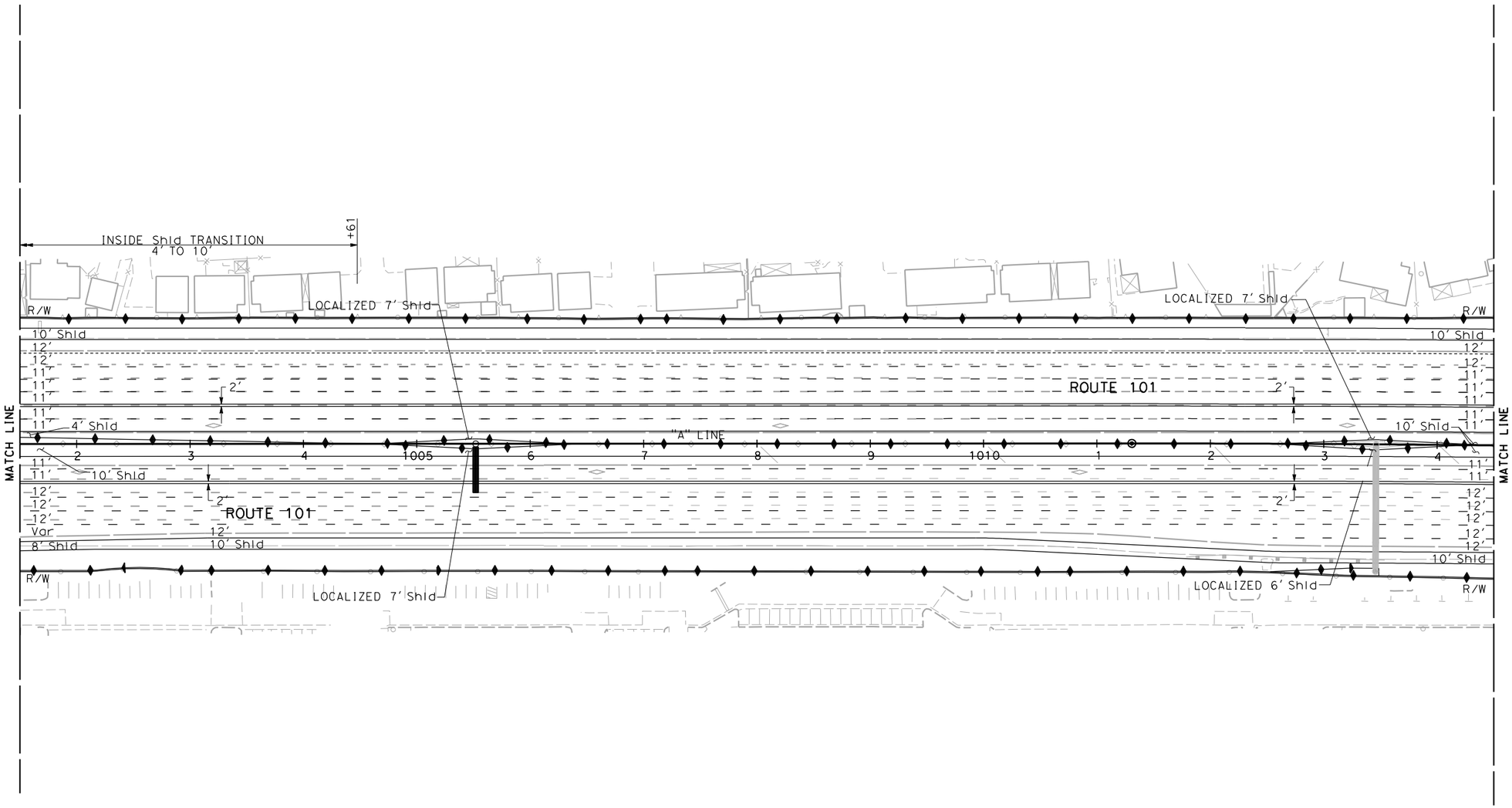

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-79

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CALCULATED-DESIGNED BY	LAN HO	-	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans		

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:26 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na079.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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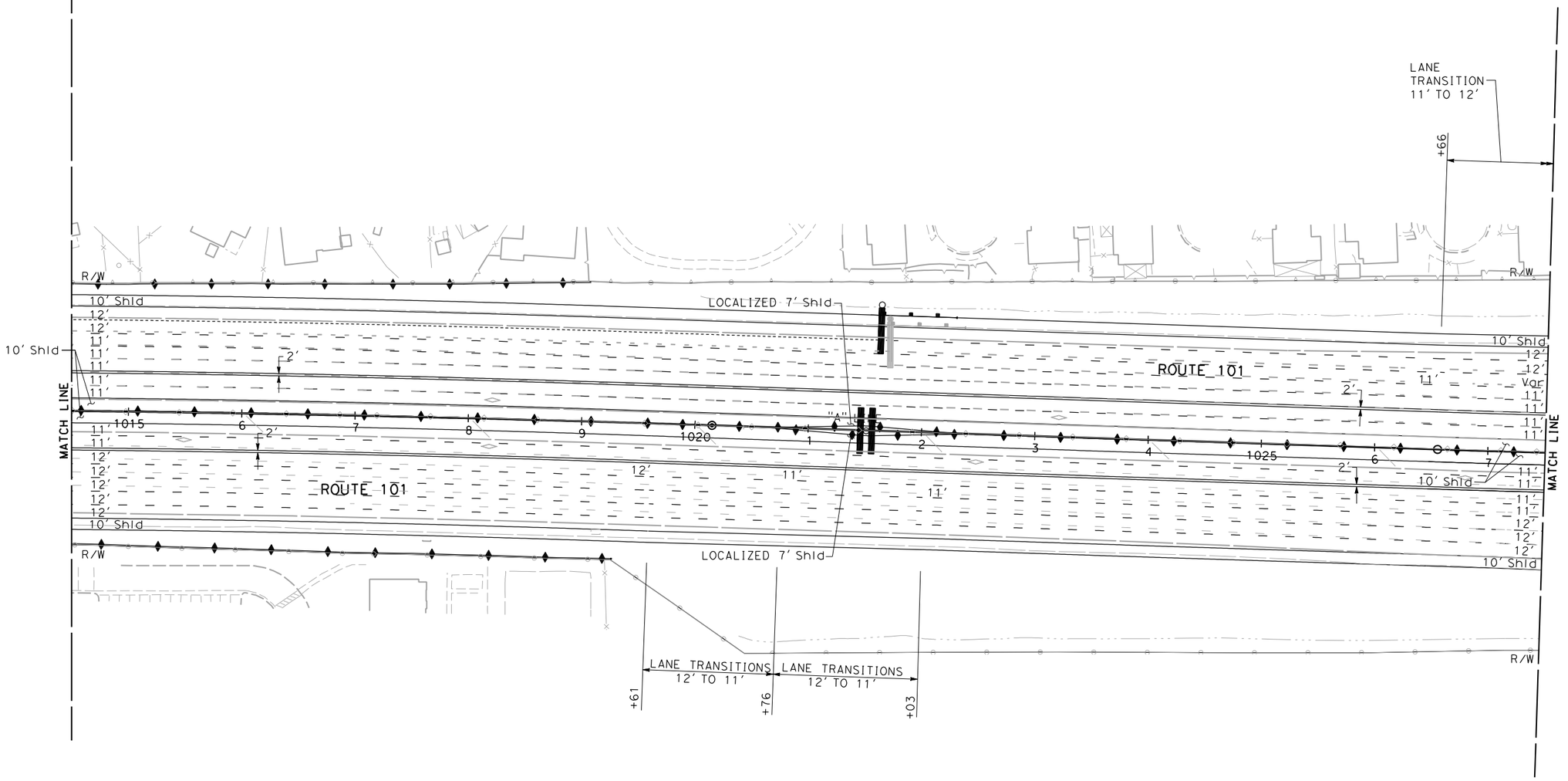

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50′

PD-80

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CHECKED BY	RAMESH SATHIAMURTHY	
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
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-	-

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:32 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na080.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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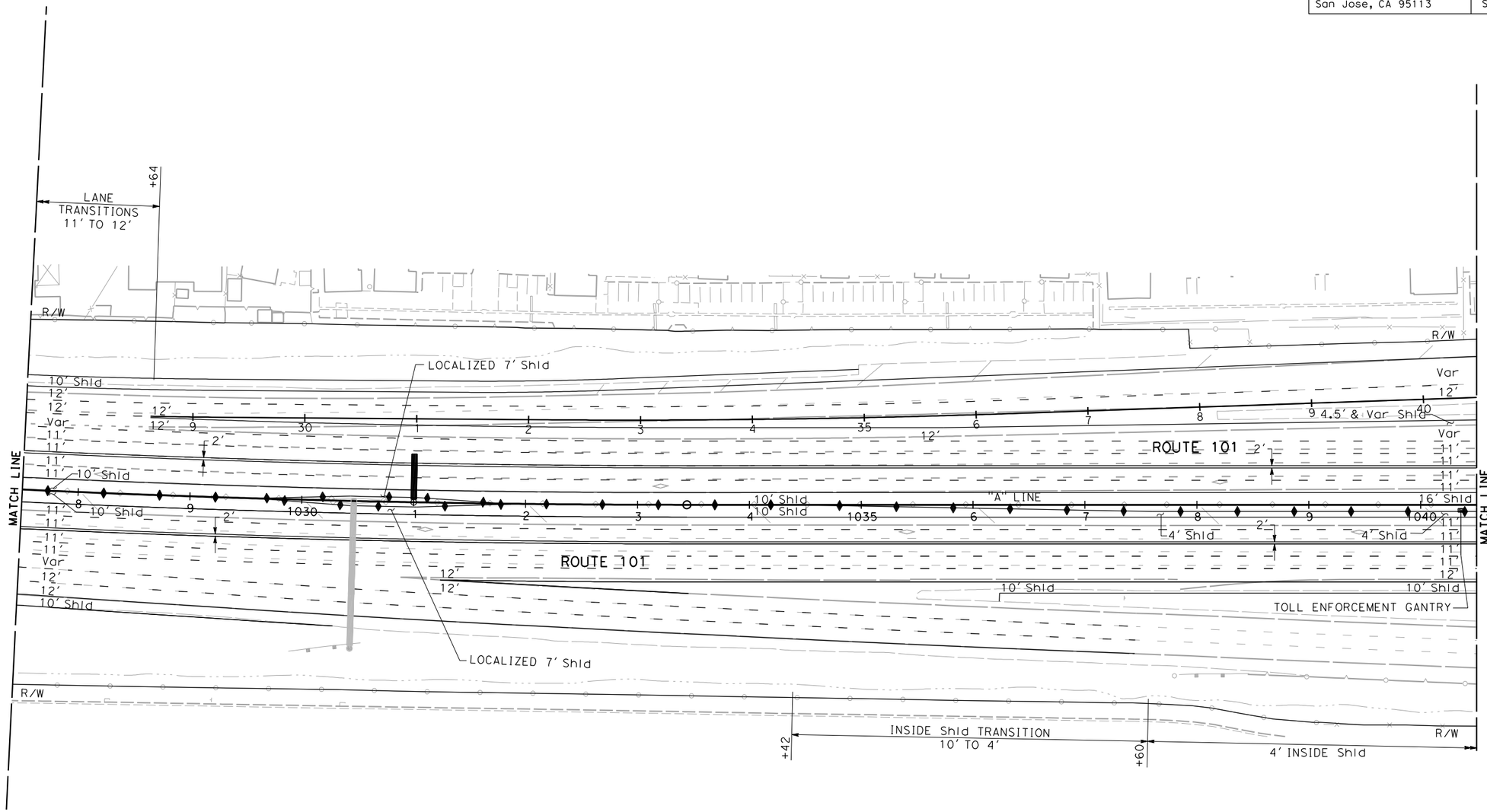

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-81

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
REVISED BY: -
DATE REVISED: -

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:37 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na081.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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PLANS APPROVAL DATE _____

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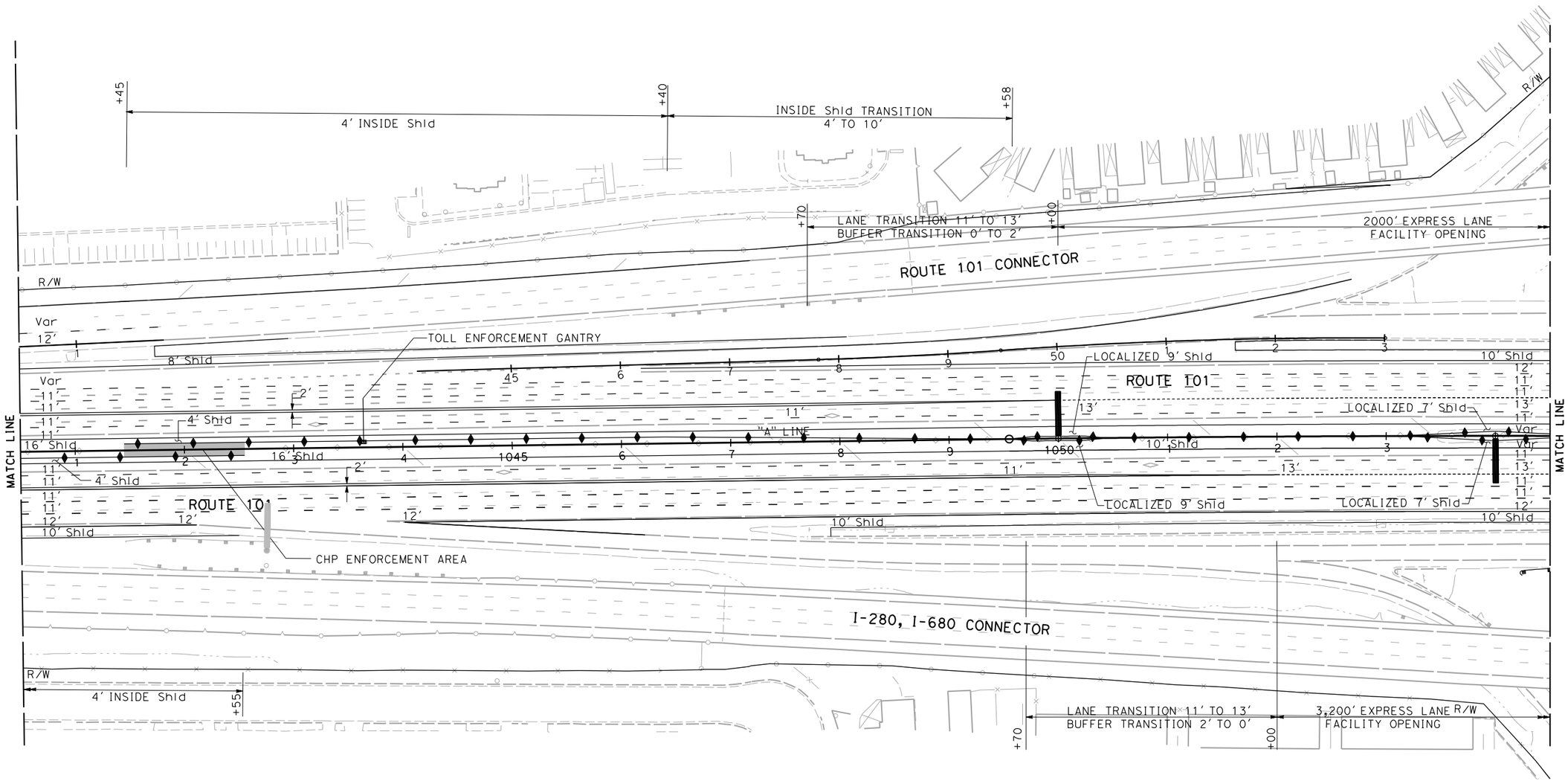

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-82

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CALCULATED-DESIGNED BY
CHECKED BY
LAN HO
RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR
RAMSEY HISSEN

REVISED BY	DATE REVISED
-	-

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:43 AM

BORDER LAST REVISED 3/16/2015
USERNAME => ernie_garnica
DGN FILE => ...\0400026710na082.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT xxxx
PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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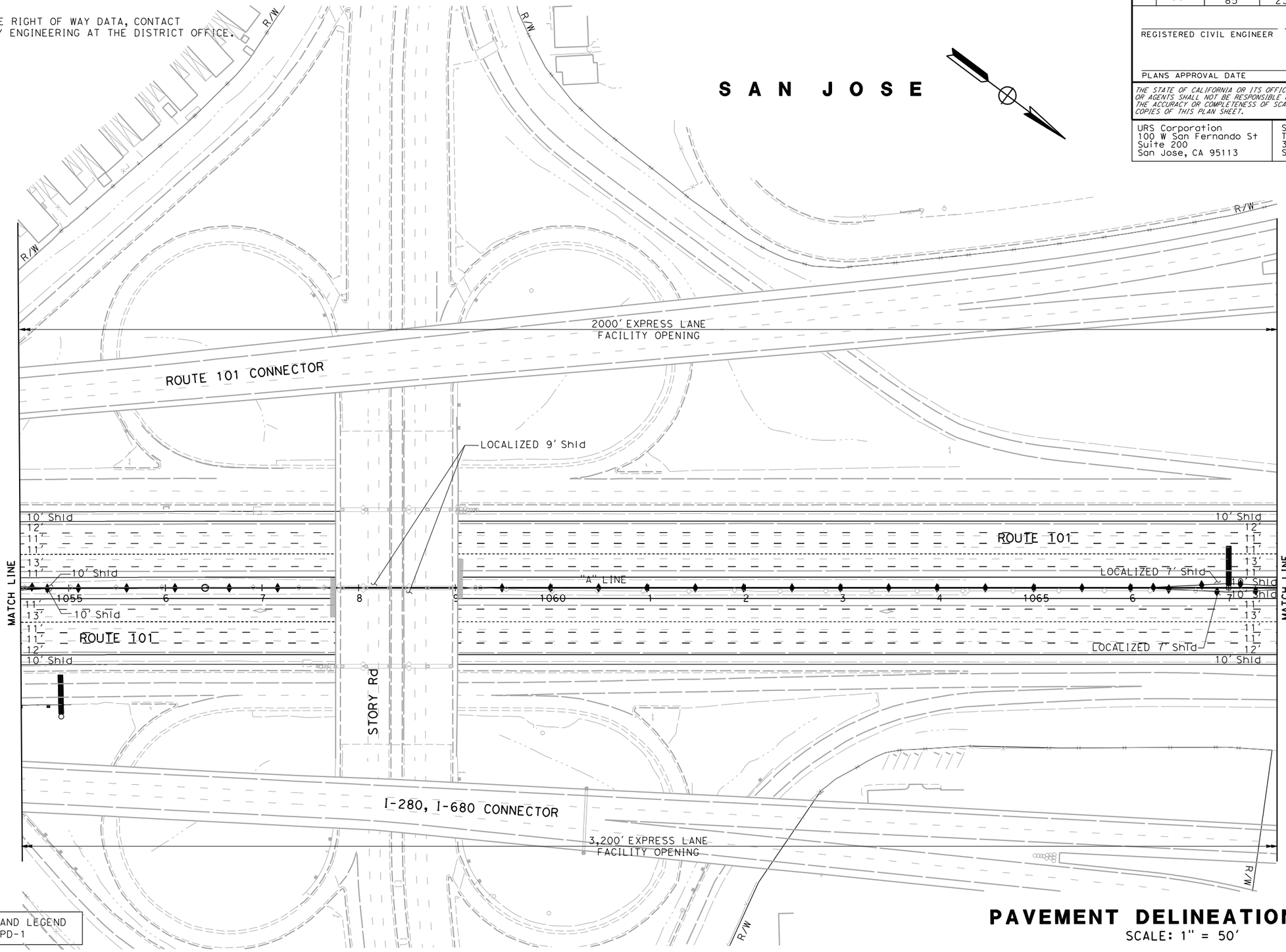

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-83

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
CALCULATED-DESIGNED BY	LAN HO	REVISED BY	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	-

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:49 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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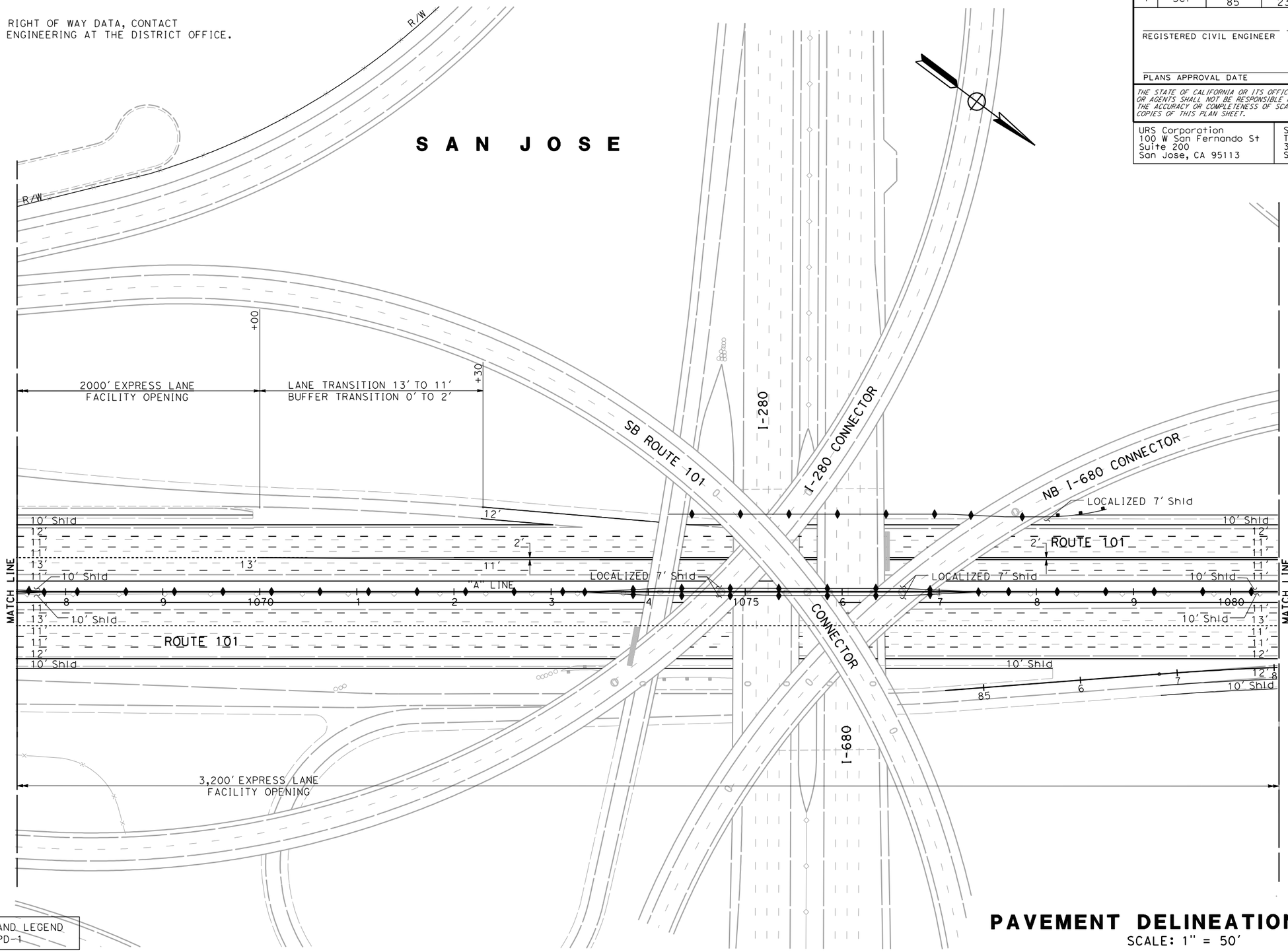
SAN JOSE



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-84

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		DATE REVISED	-
CALCULATED-DESIGNED BY	LAN HO		
CHECKED BY	RAMESH SATHIAMURTHY		
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans		

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:25:54 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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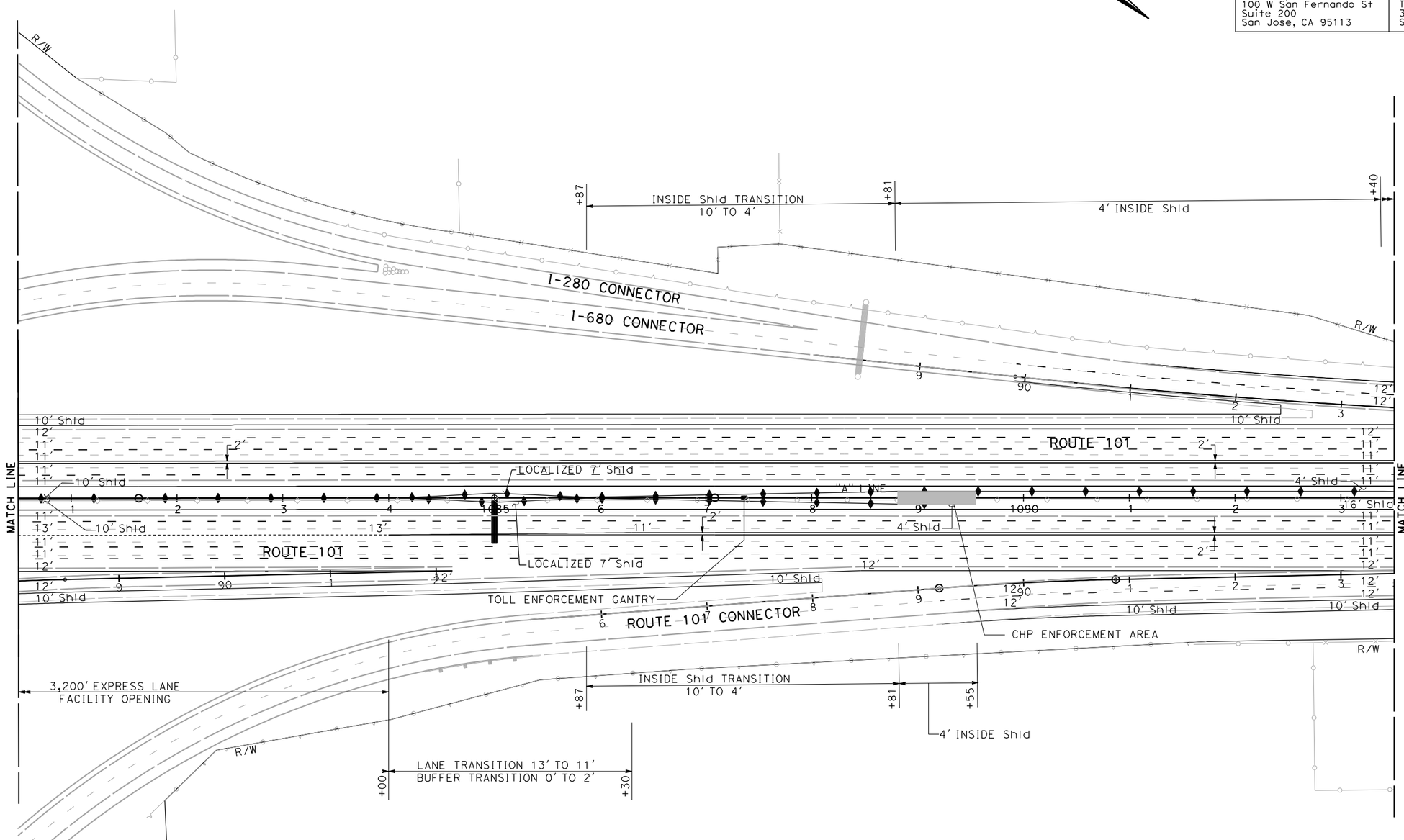

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-85

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO	
CHECKED BY	RAMESH SATHIAMURTHY	
REVISED BY	-	
DATE REVISED	-	
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans	

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:26:00 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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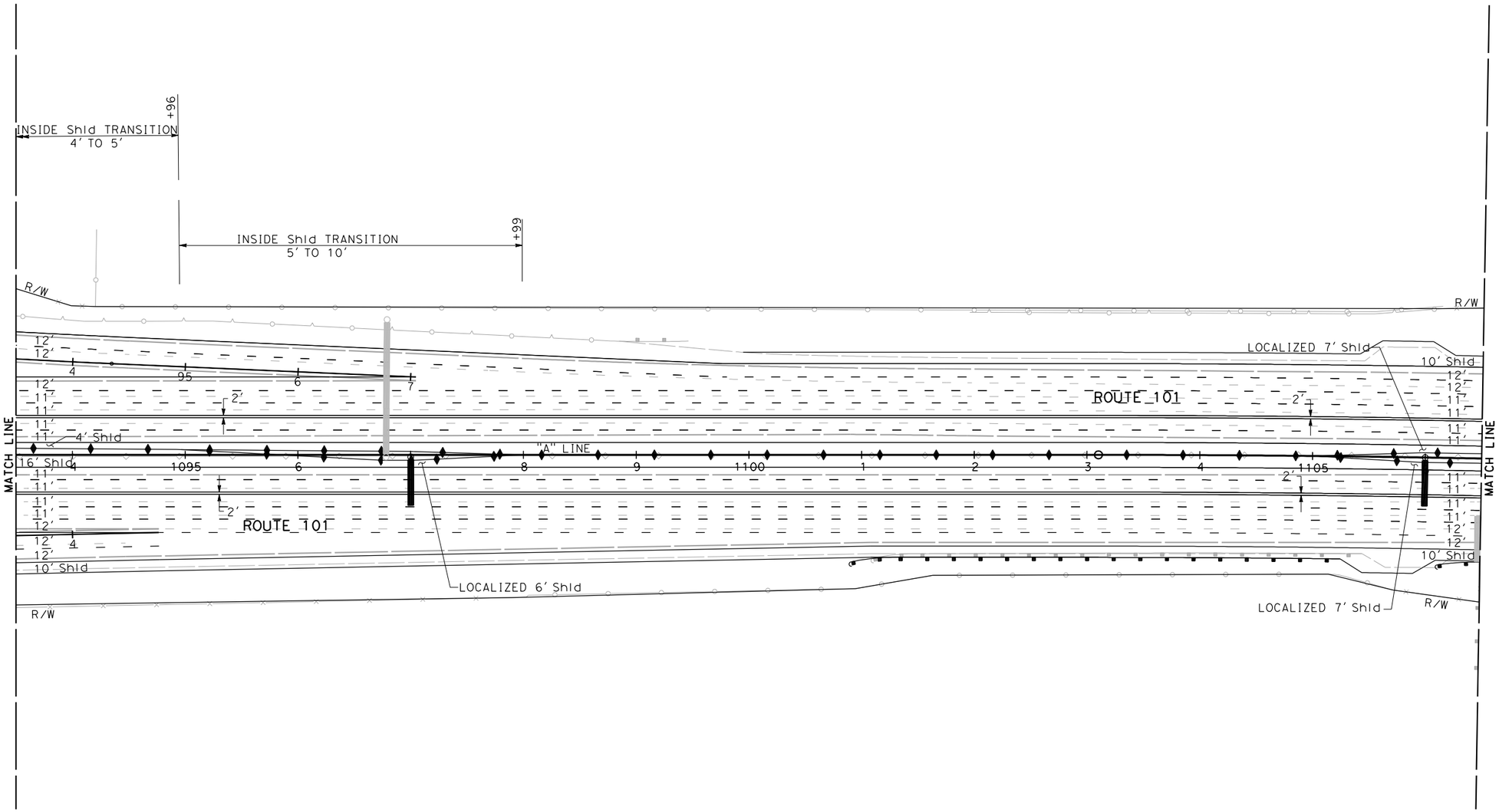

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-86

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:26:06 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na086.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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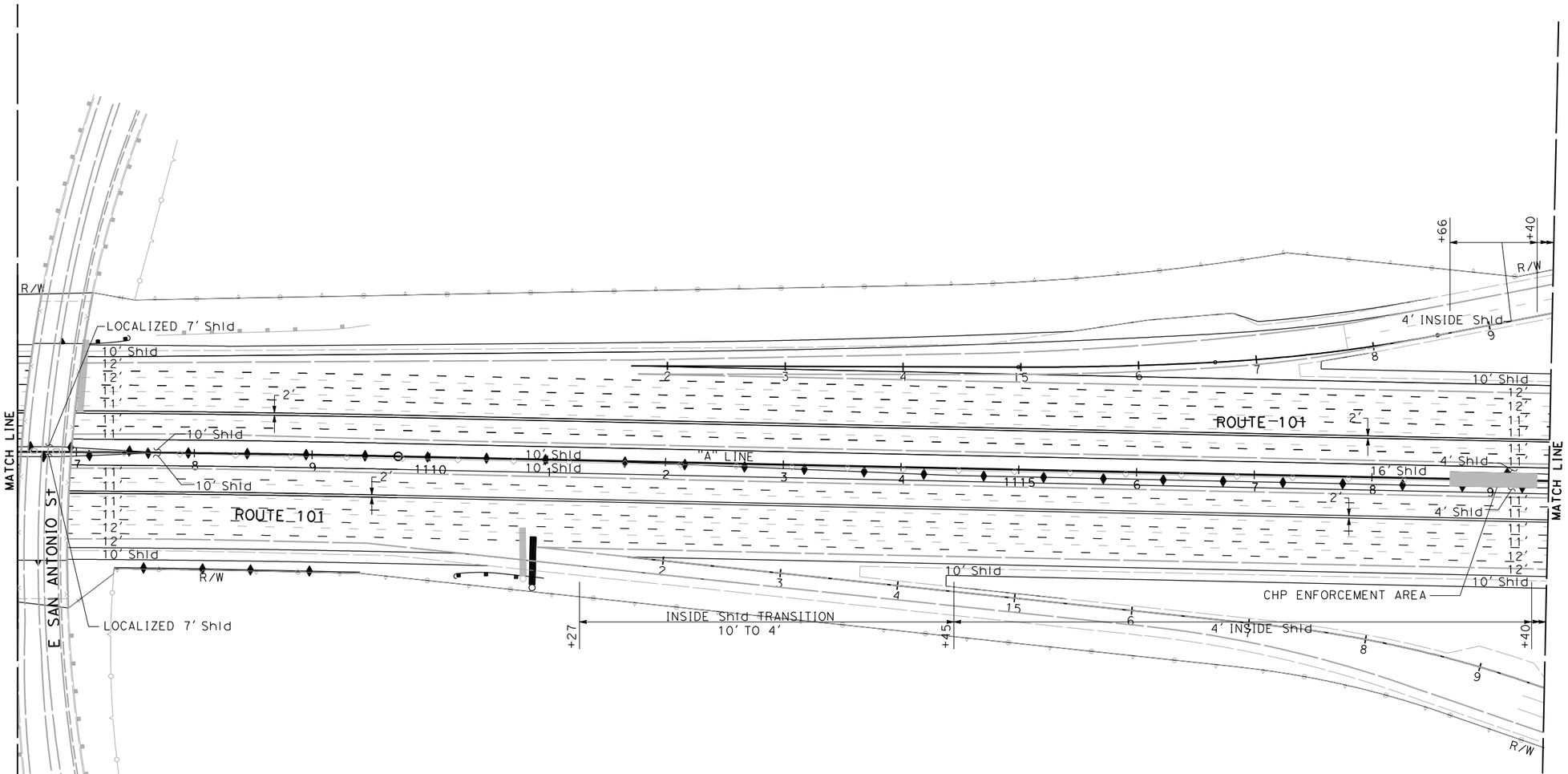

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-87

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:26:11 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na087.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

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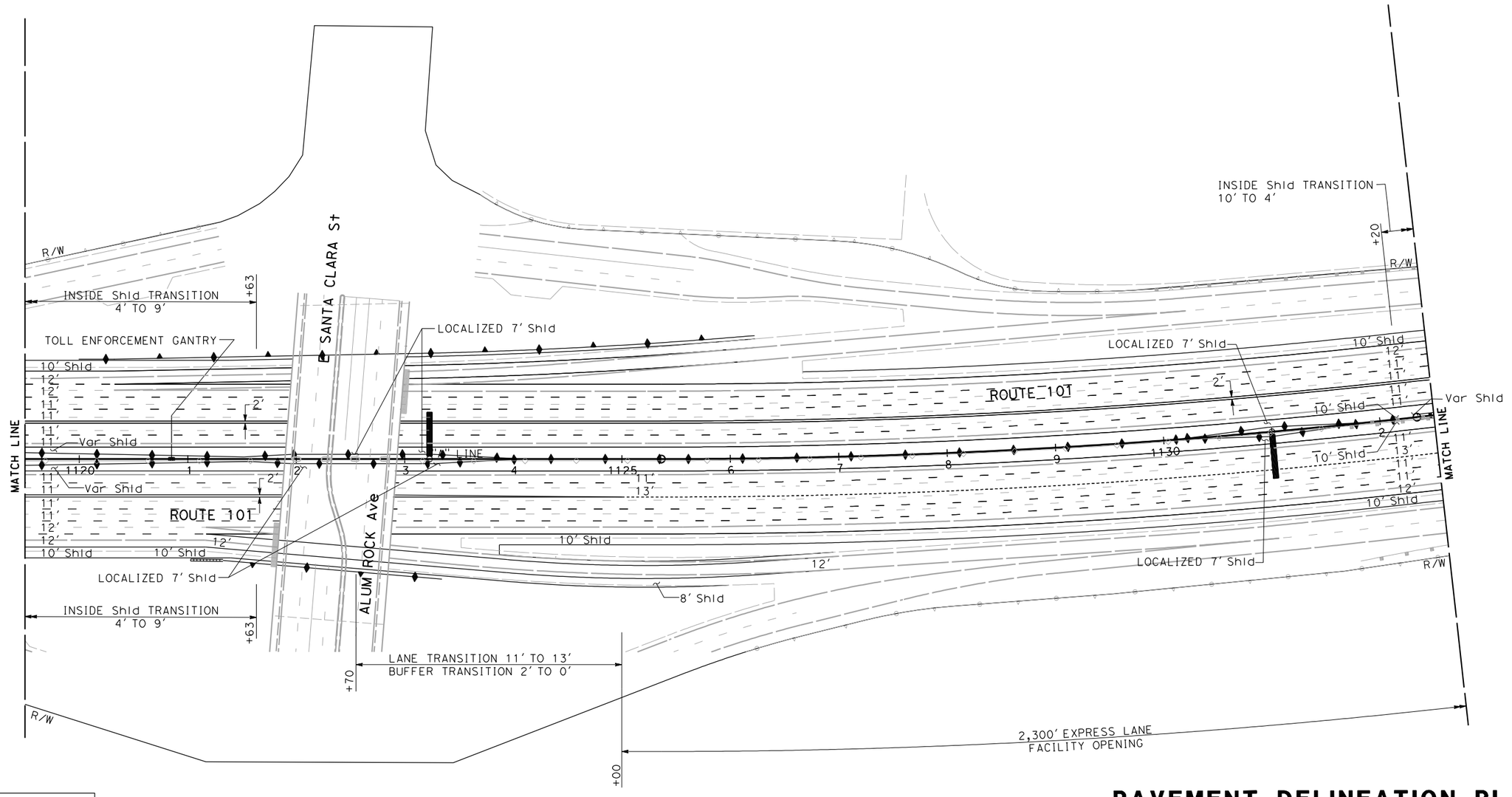

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-88

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:26:16 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na088.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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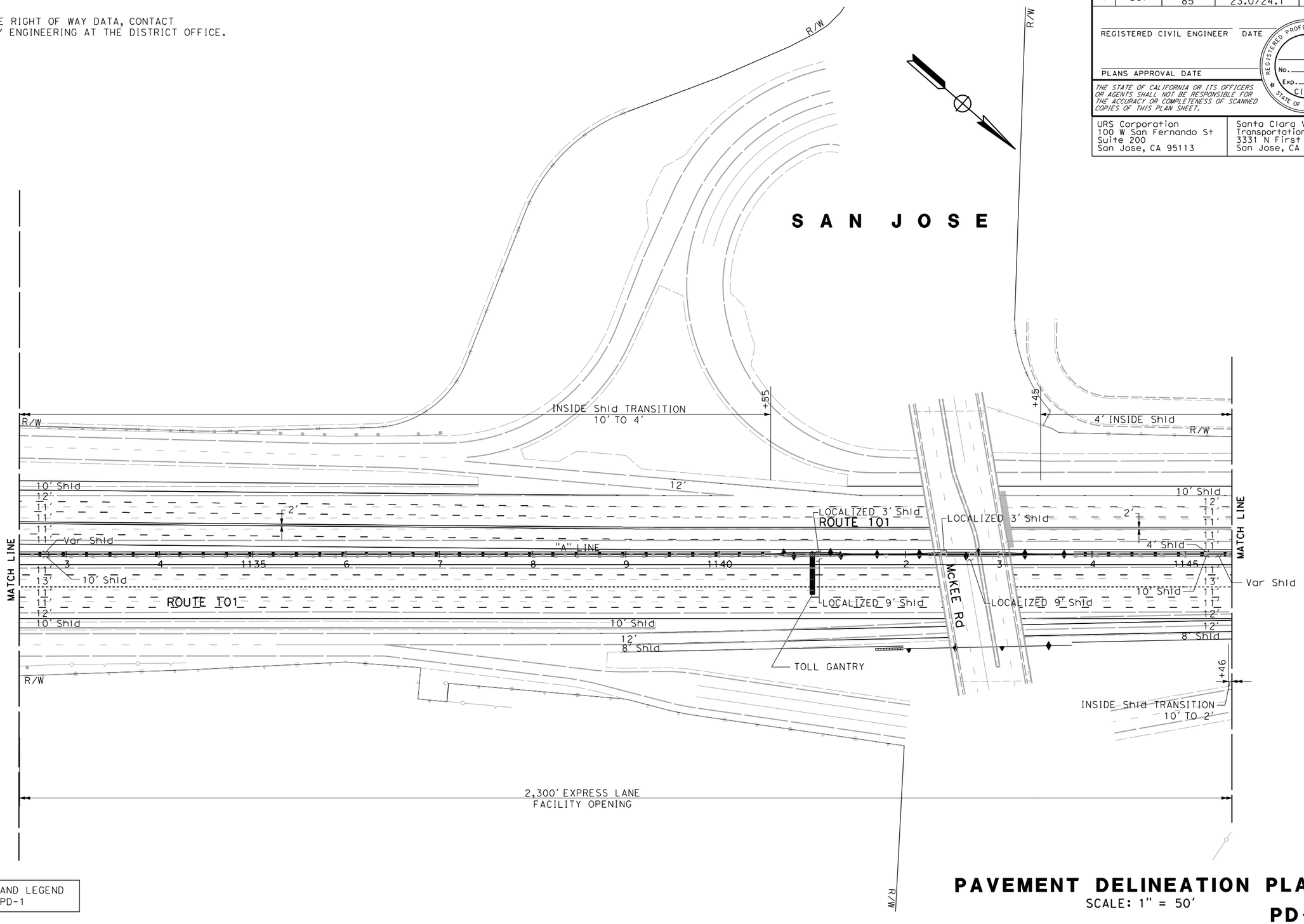

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-89

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CHECKED BY: RAMESH SATHIAMURTHY
DRAWN BY:
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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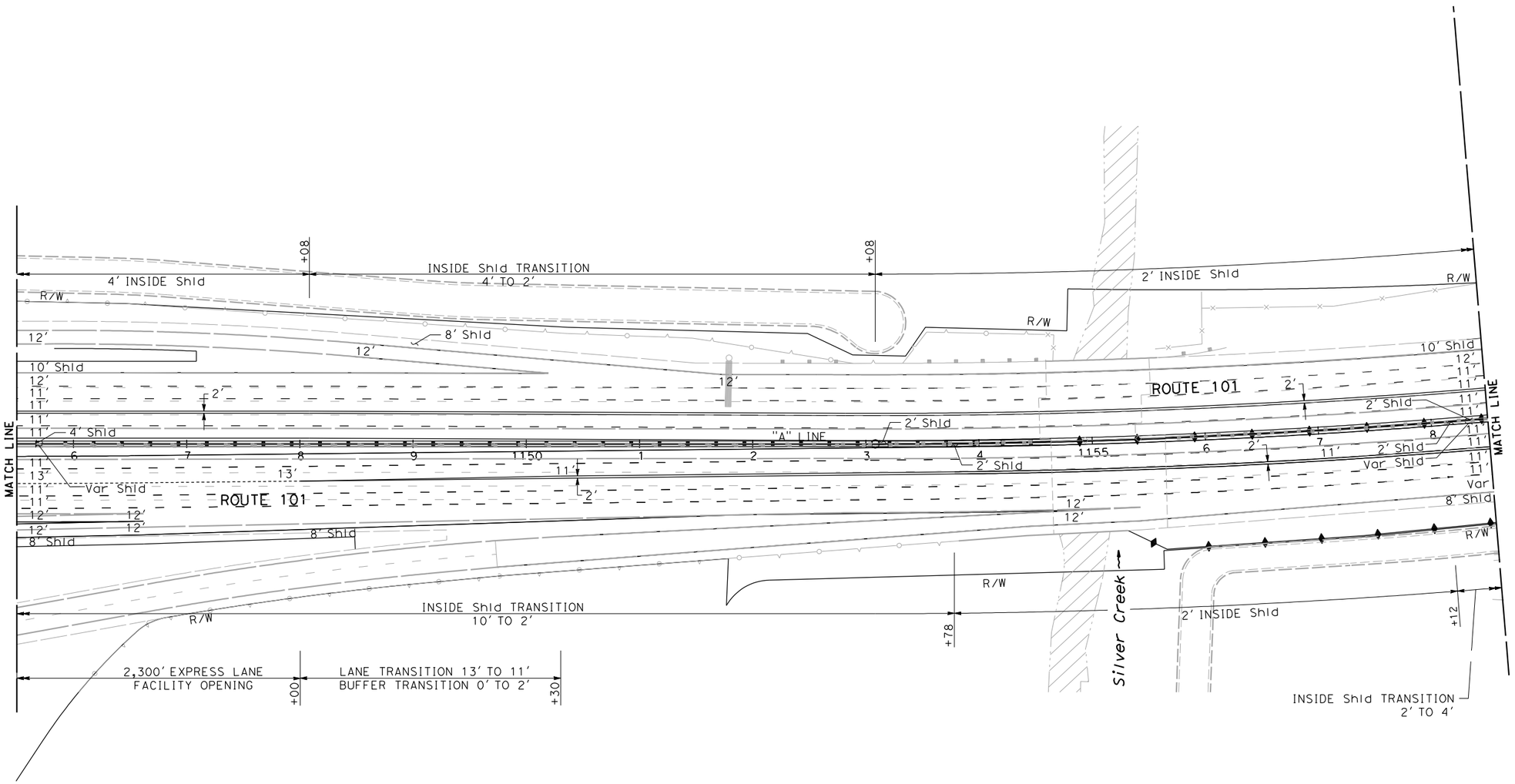

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-90

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
CALCULATED-DESIGNED BY	LAN HO	REVISED BY	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	-

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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:26:28 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na090.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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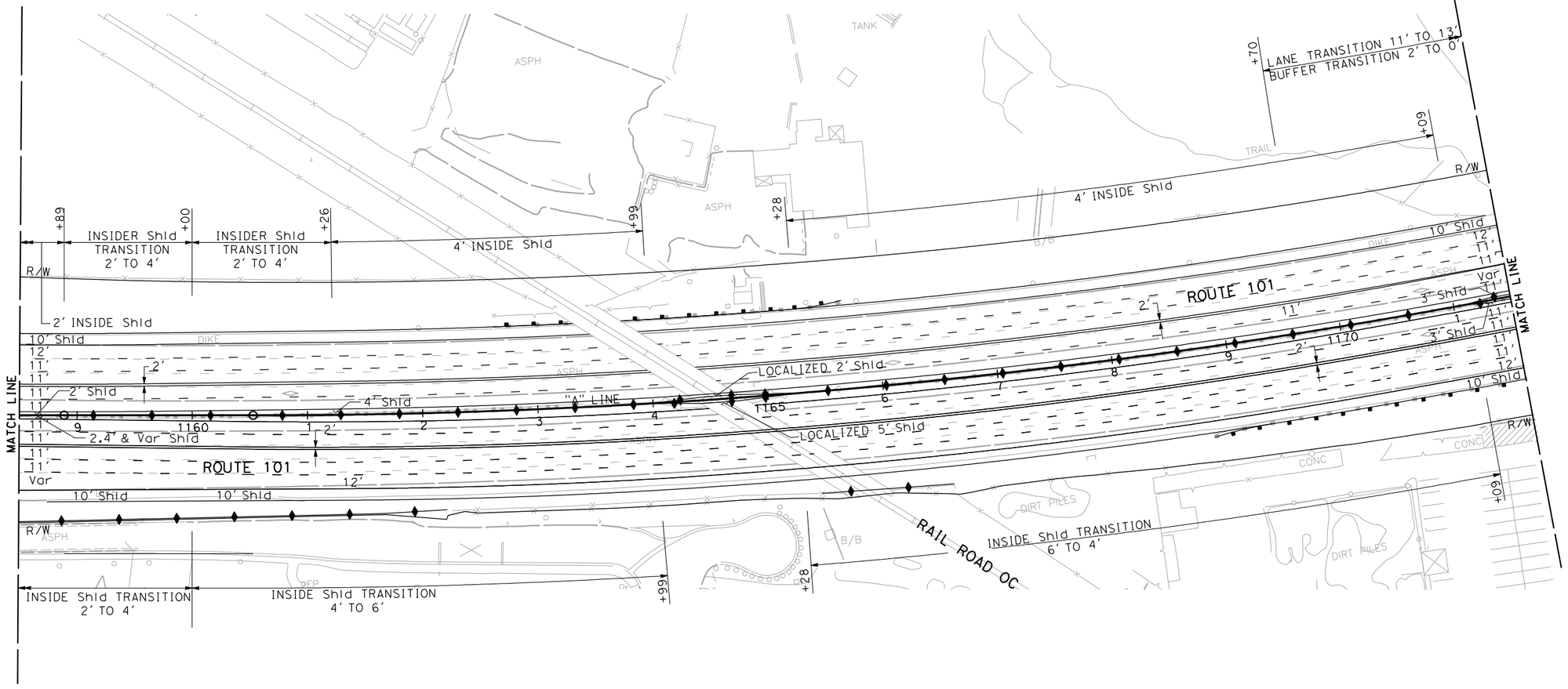

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-91

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CALCULATED-DESIGNED BY: LAN HO
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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION: 8-14-14
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TIME PLOTTED => 11:26:36 AM

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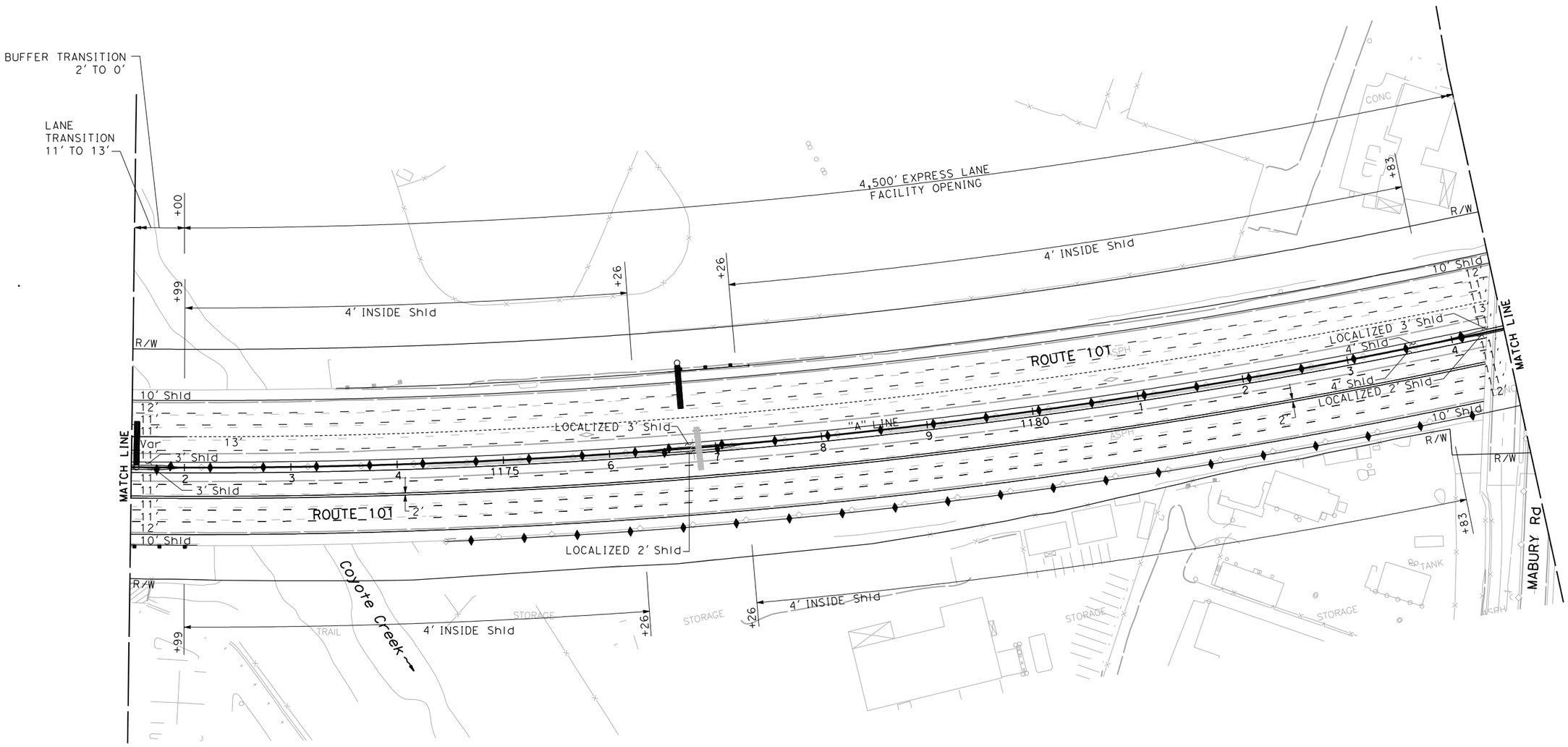

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-92

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
REVISED BY: -
DATE REVISED: -

LAST REVISION — DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:26:45 AM
8-14-14

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na092.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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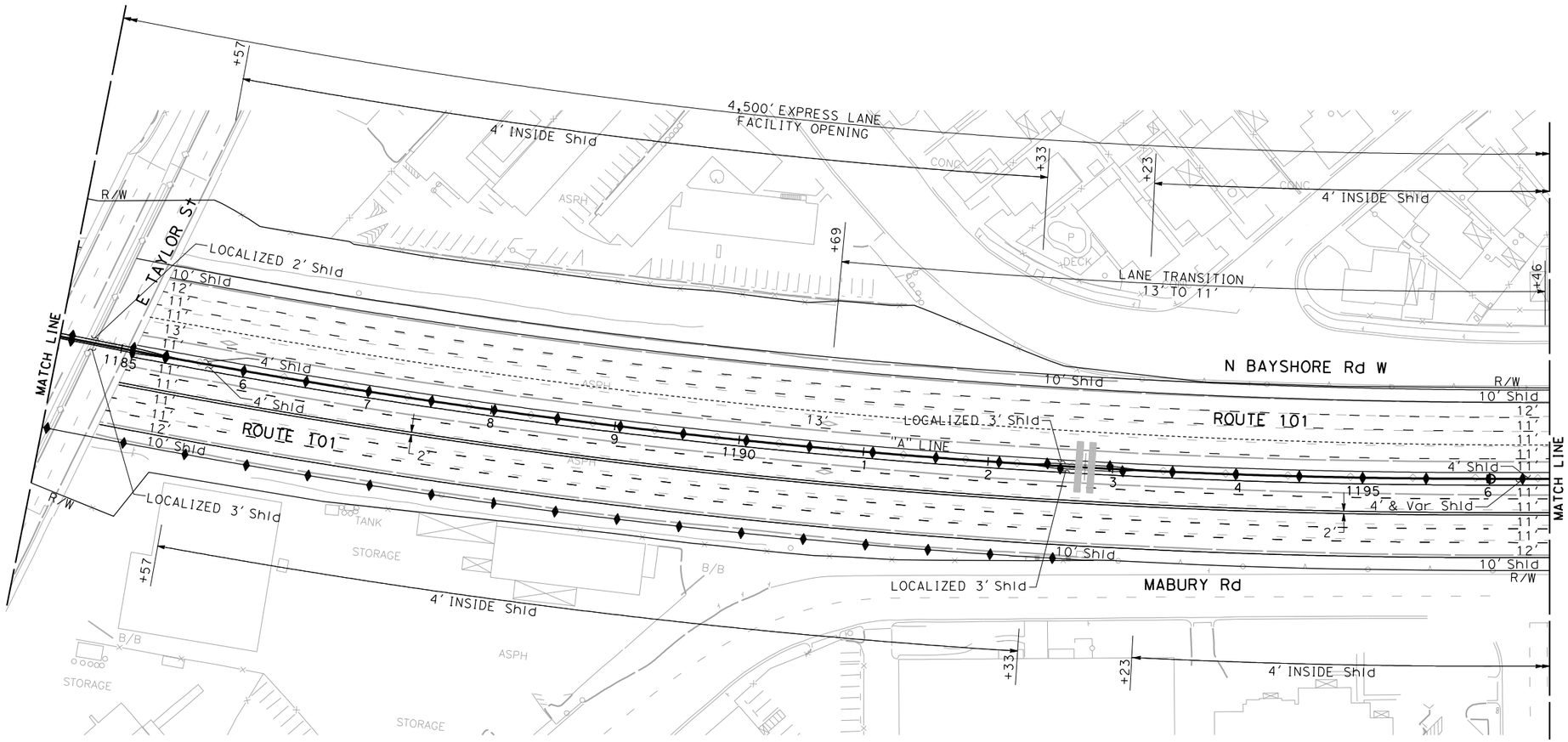

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SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-93

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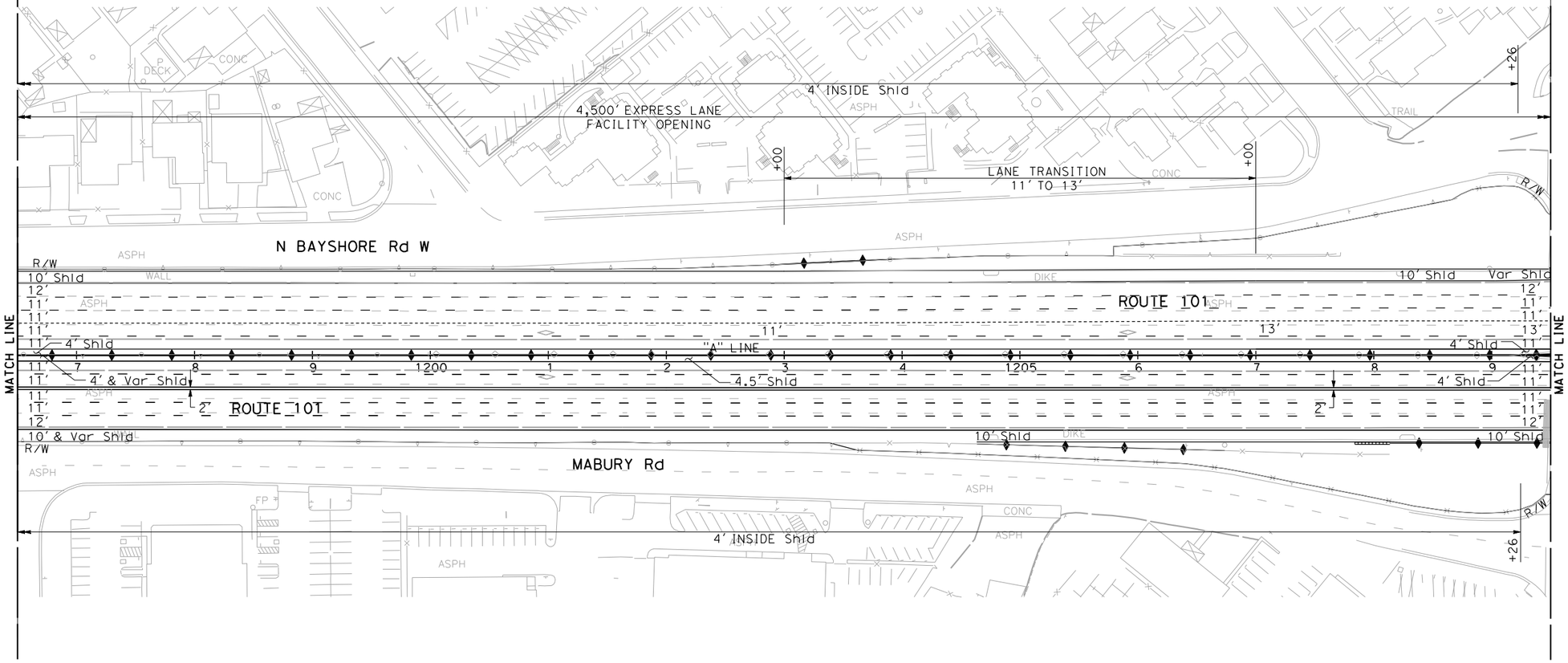

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-94

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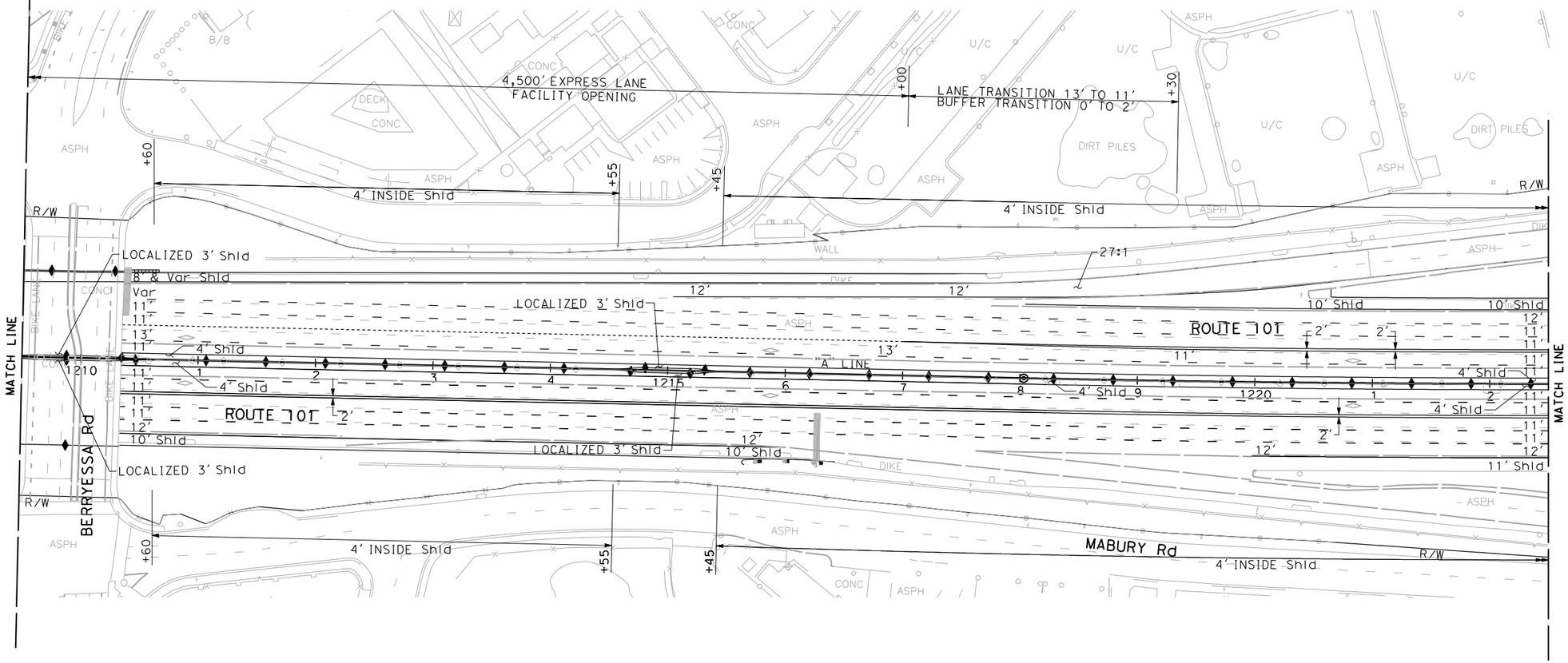

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-95

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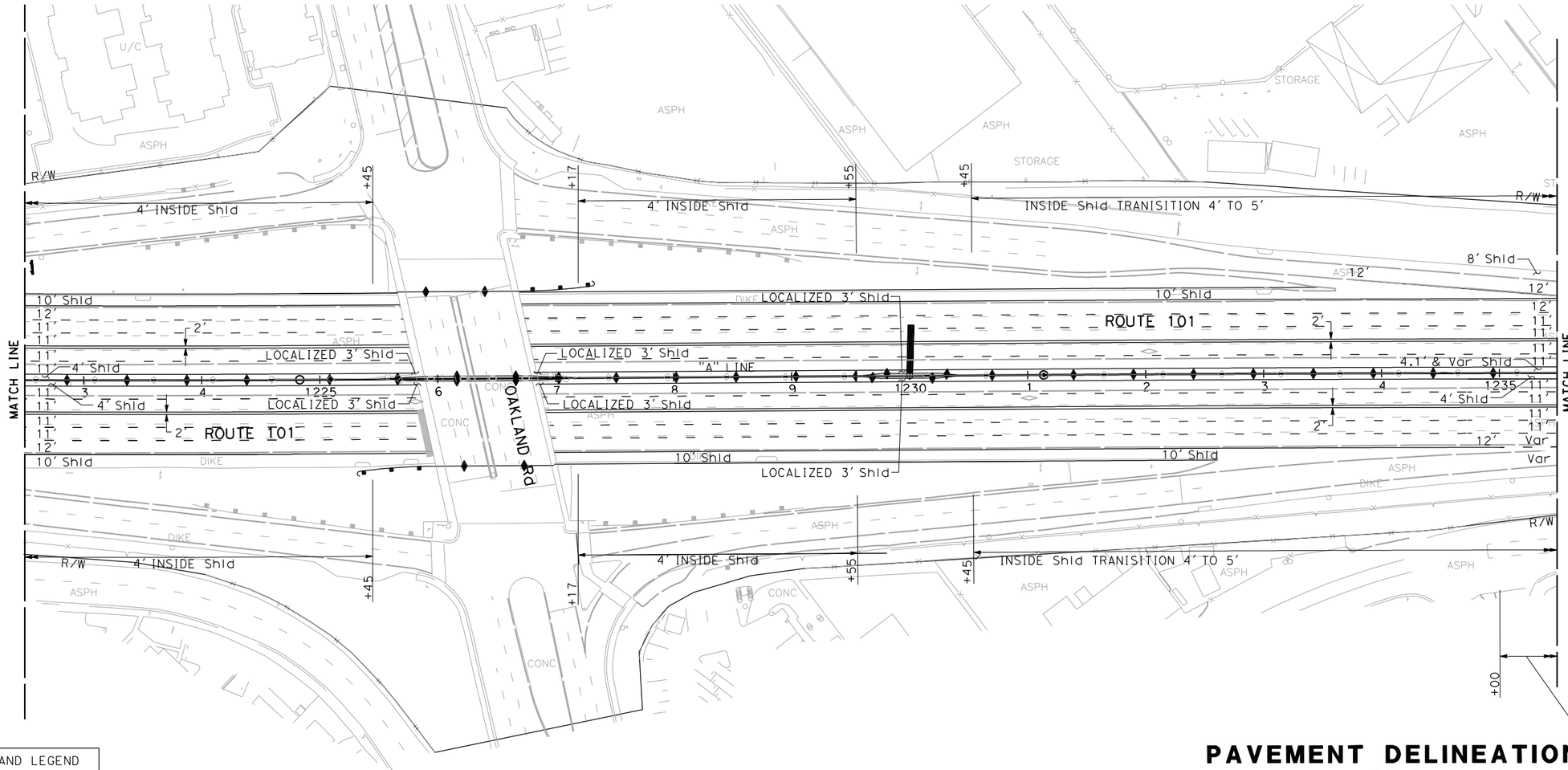

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-96

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CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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4	SCl	101 85	16.00/52.55 23.0/24.1		

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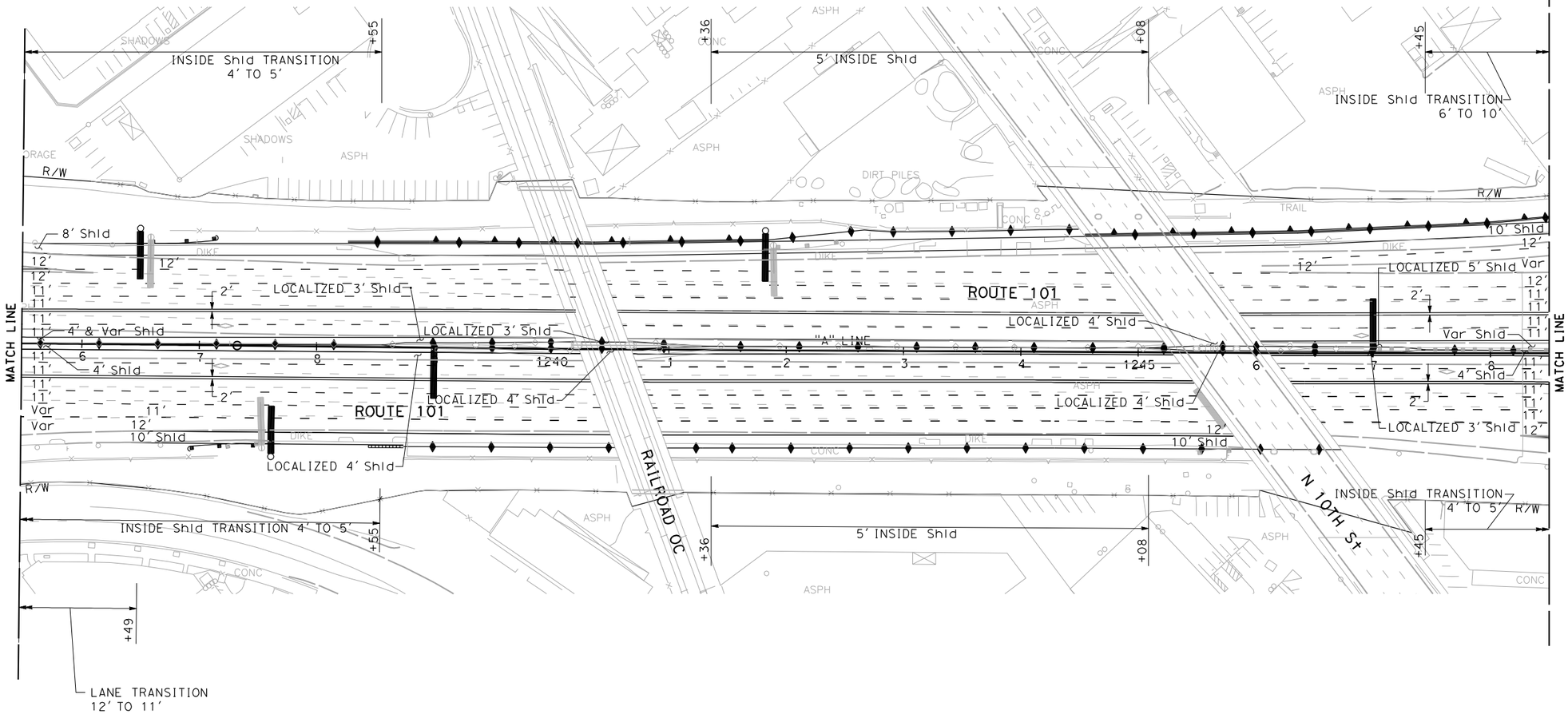

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-97

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CHECKED BY	
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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN
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4	SCl	101 85	16.00/52.55 23.0/24.1		

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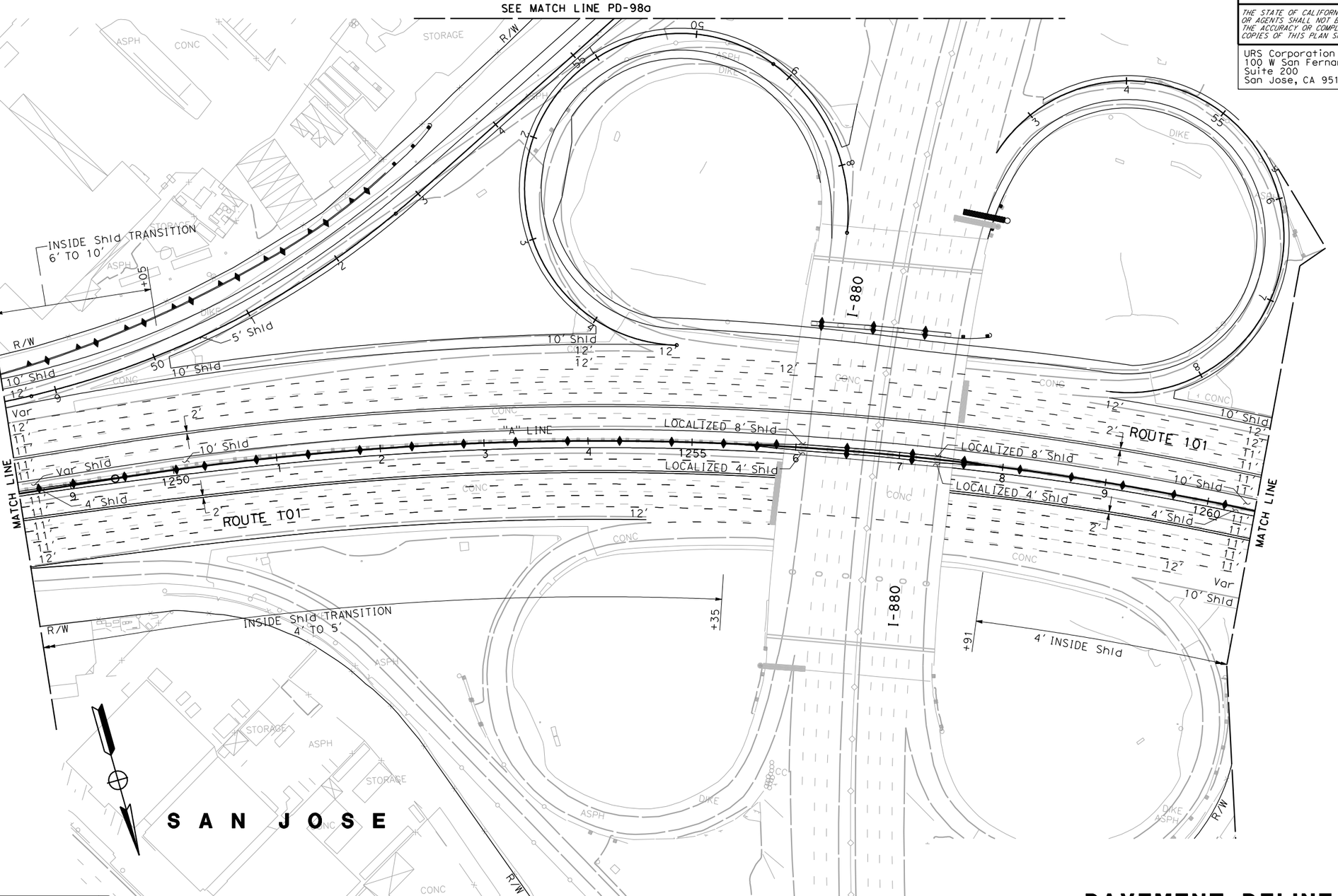

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-98

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN

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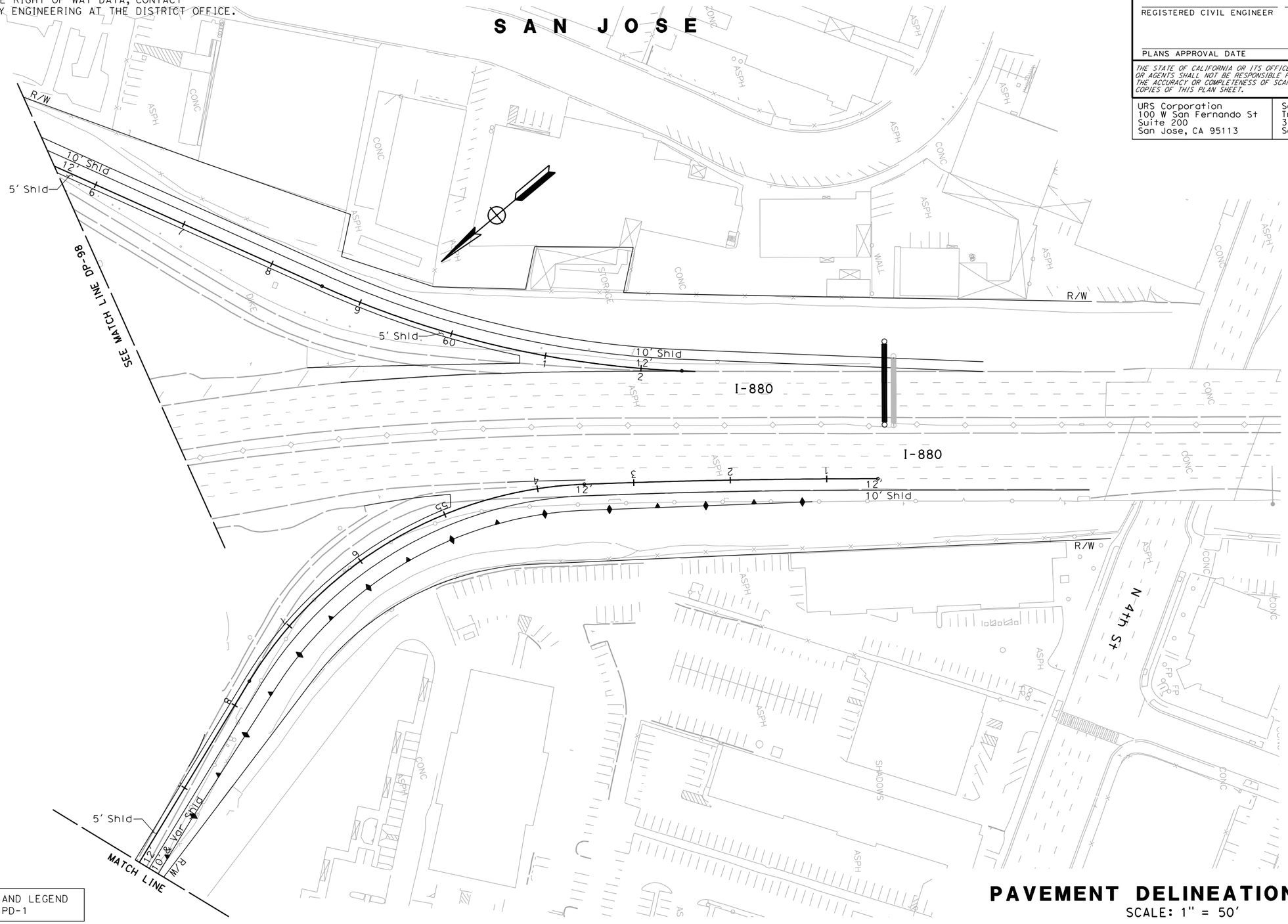

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-98a

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

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LAST REVISION: 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:27:54 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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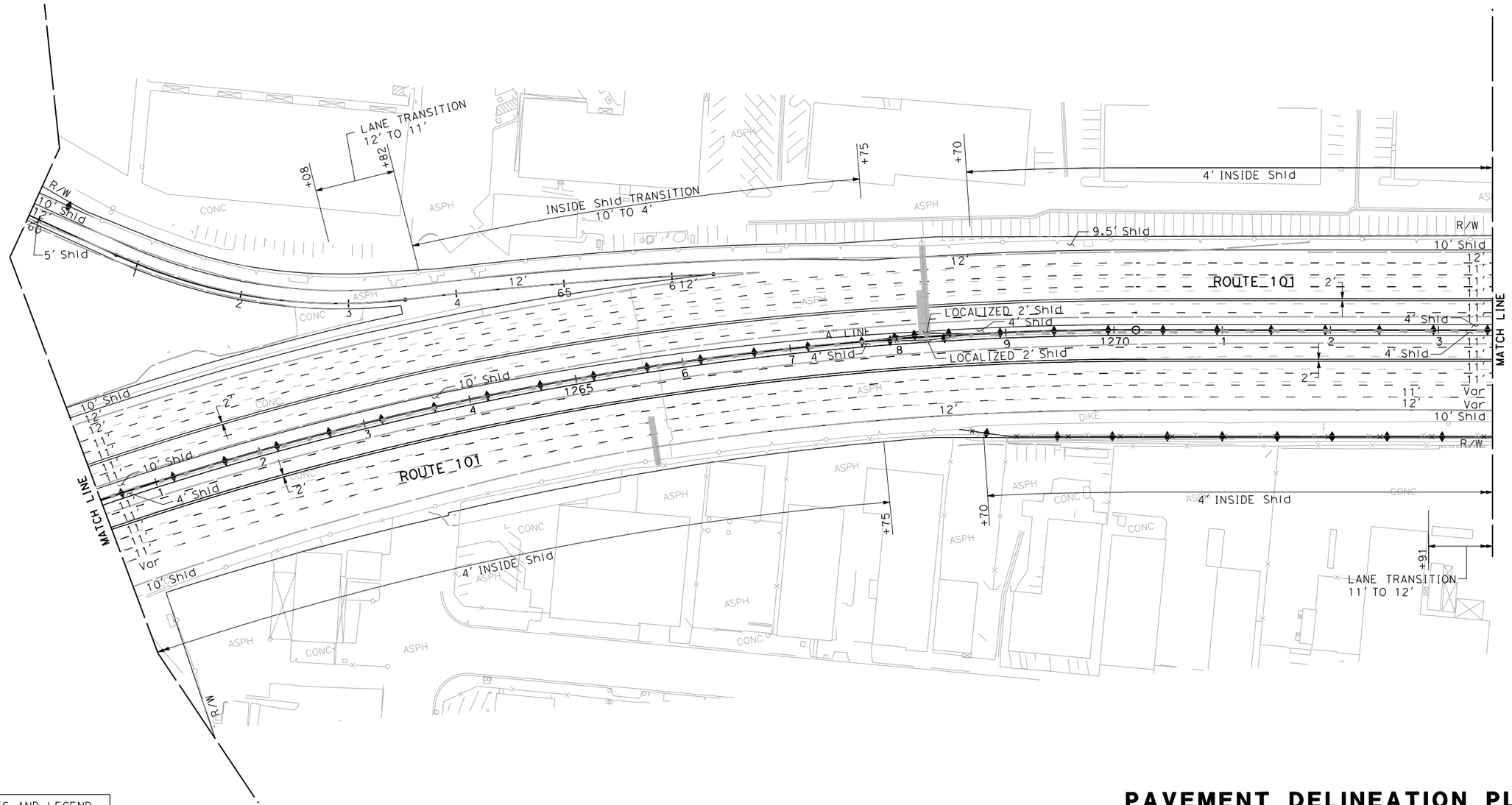

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-99

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	LAN HO	-	-
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN	CALCULATED-DESIGNED BY: RAMESH SATHIAMURTHY	REVISED BY	DATE REVISED
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LAST REVISION 8-14-14 | DATE PLOTTED => 3/16/2015 | TIME PLOTTED => 11:28:00 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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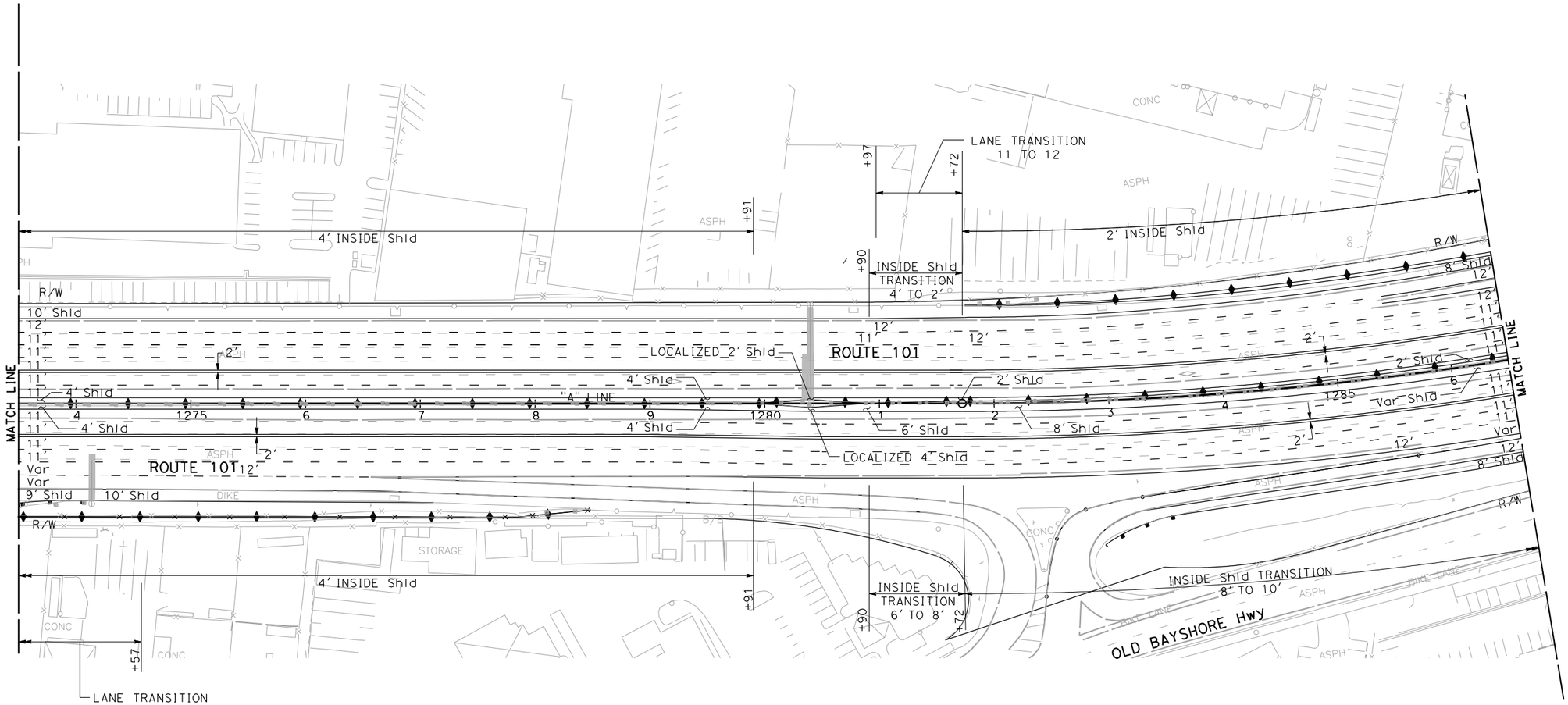

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-100

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LAN HO	RAMESH SATHIAMURTHY	-	-

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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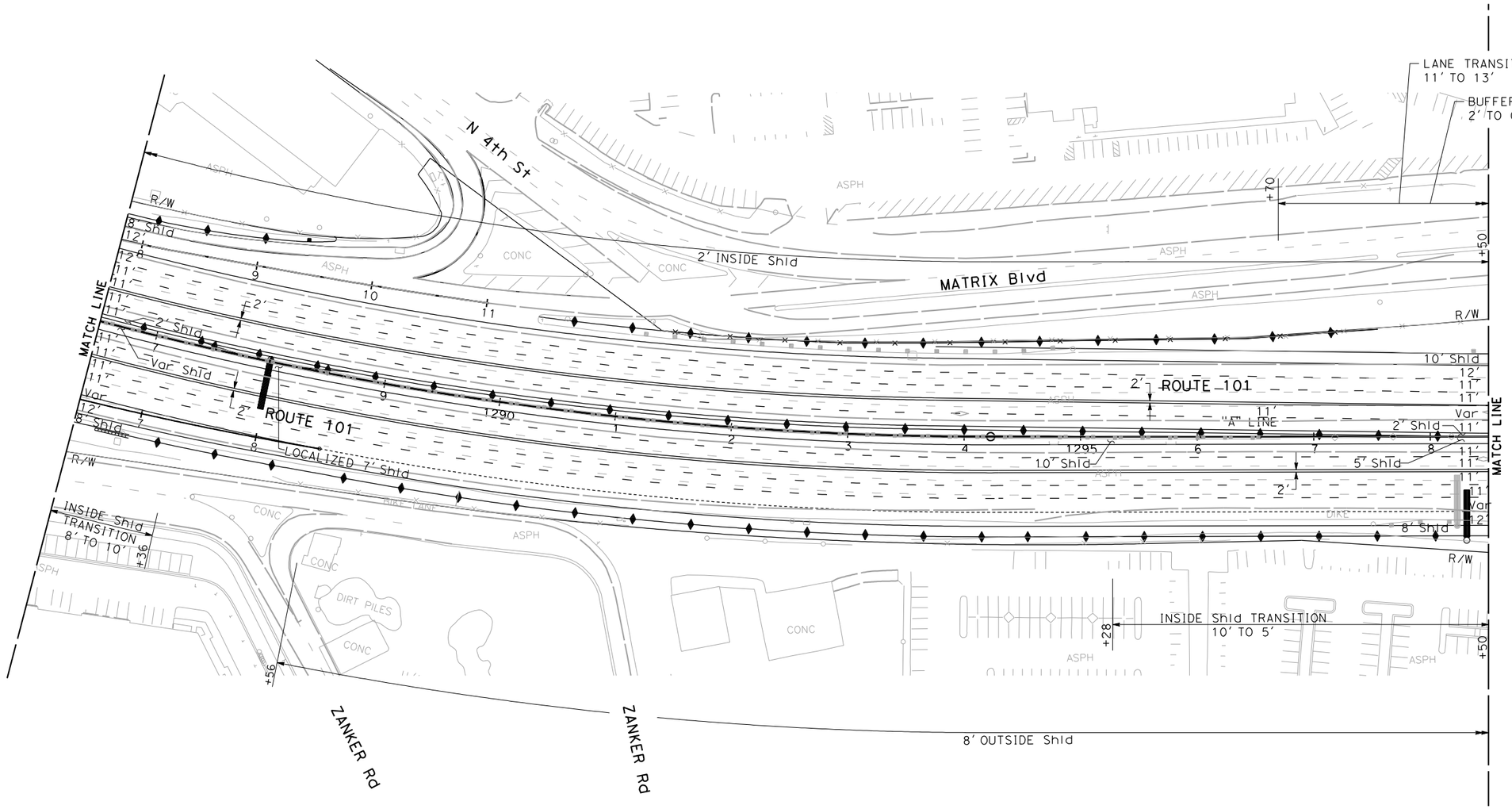

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-101

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CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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PLANS APPROVAL DATE

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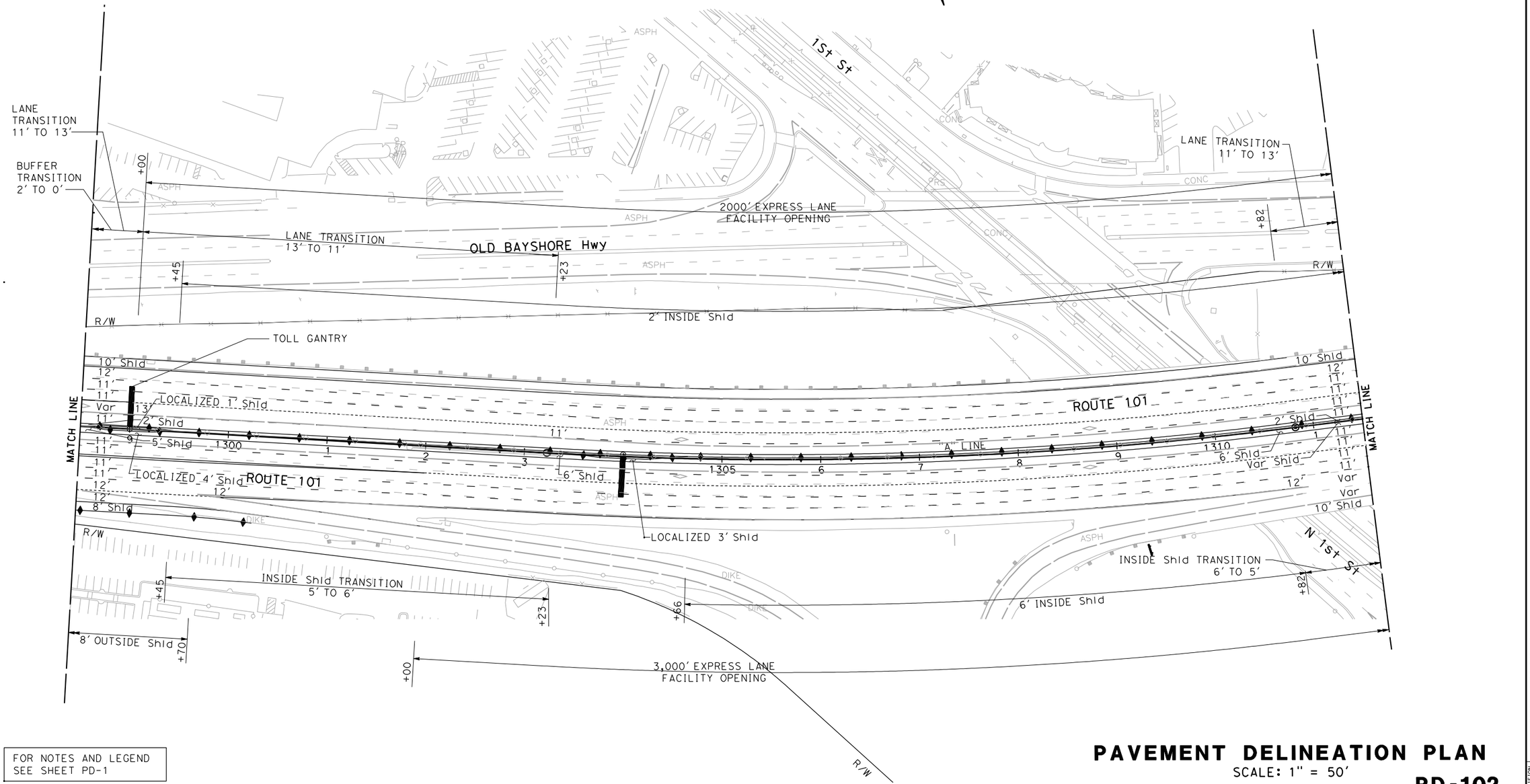

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SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-102

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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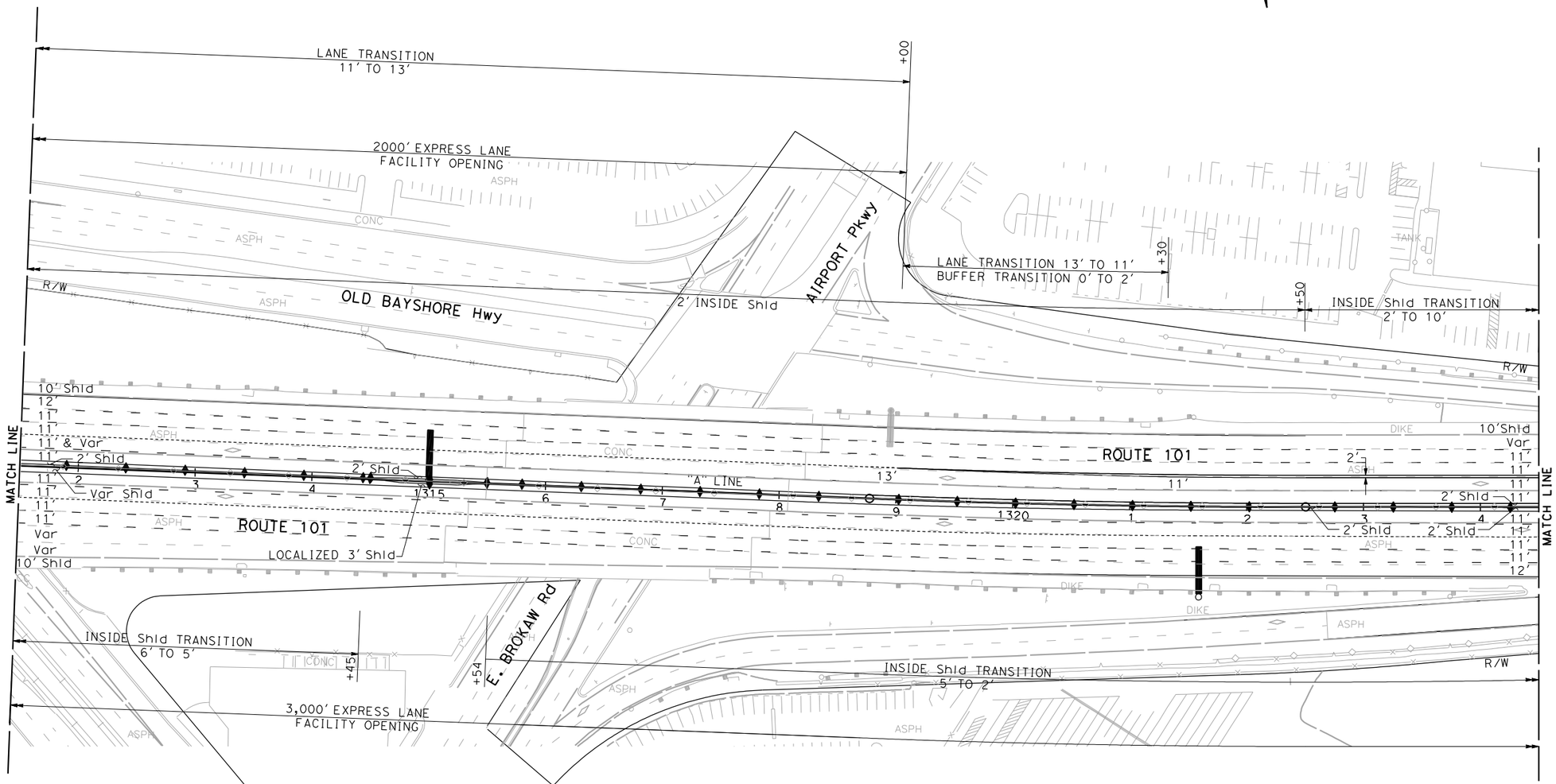

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-103

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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PLANS APPROVAL DATE

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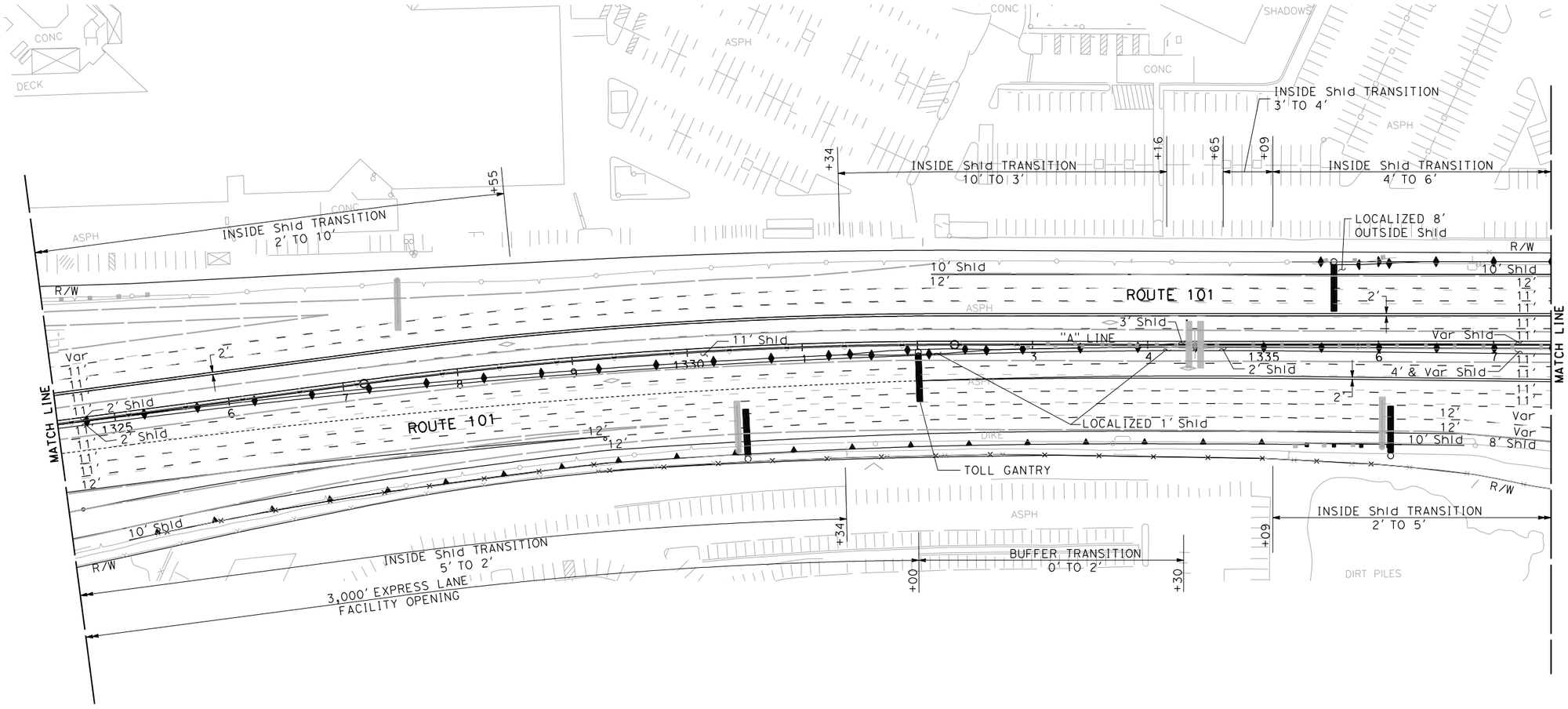

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-104

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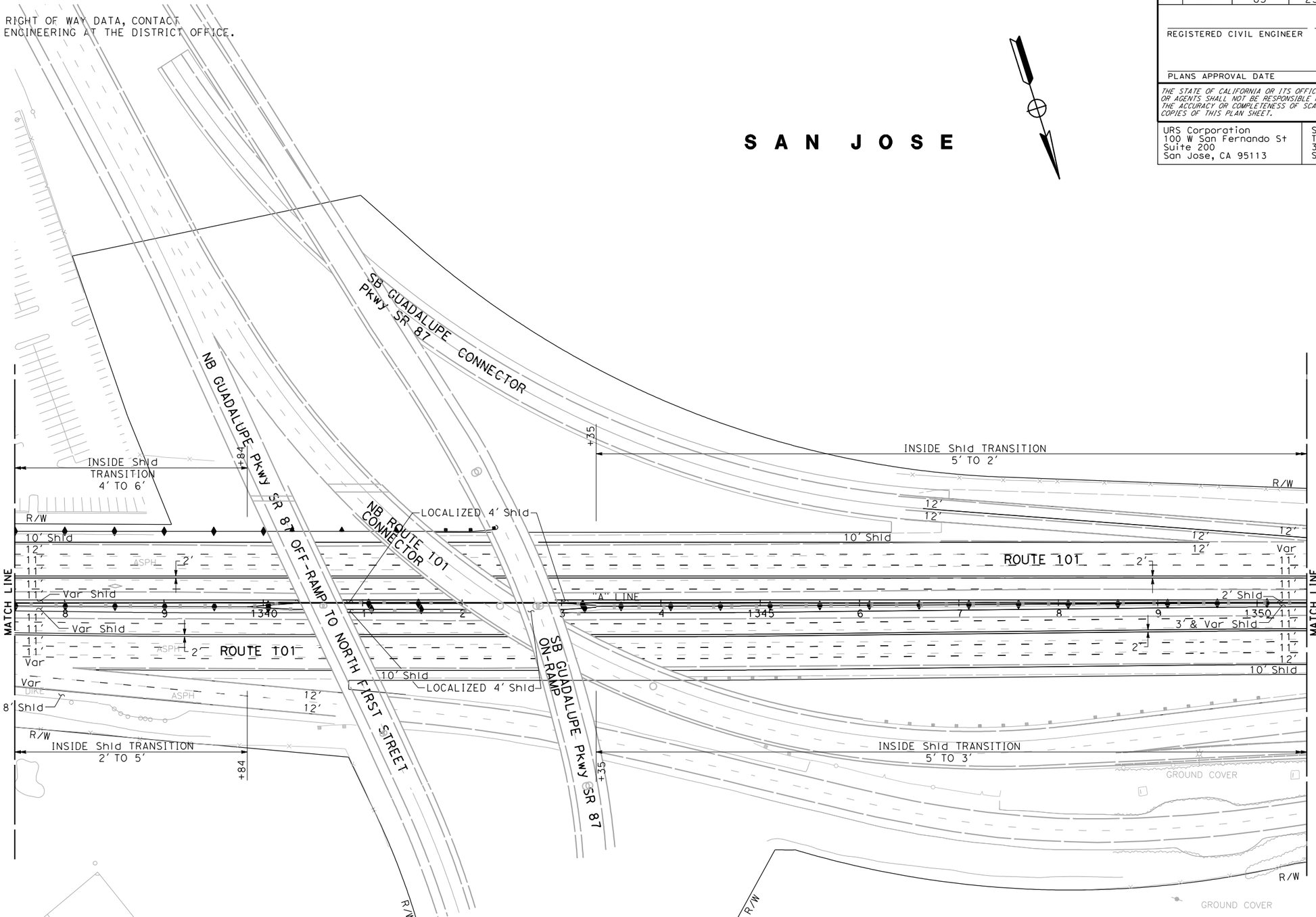

FOR NOTES AND LEGEND SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-105

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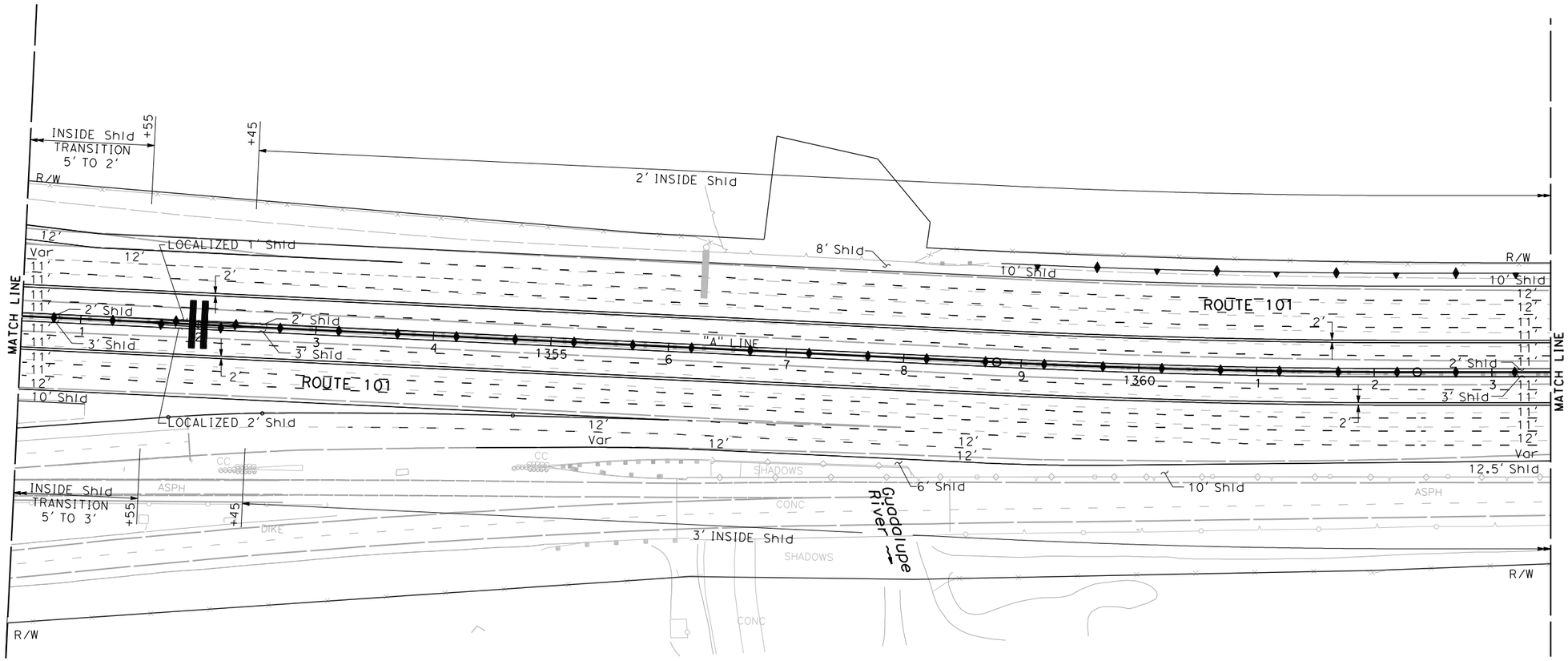

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-106

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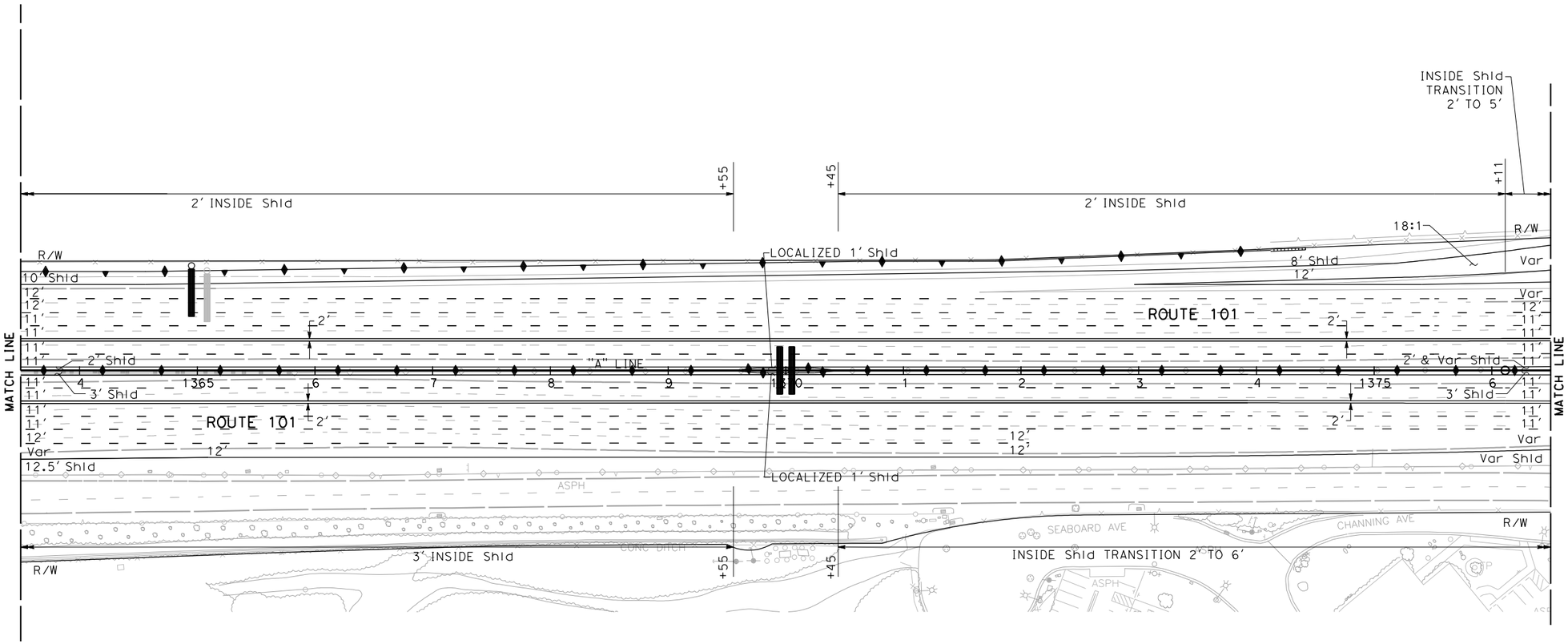

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-107

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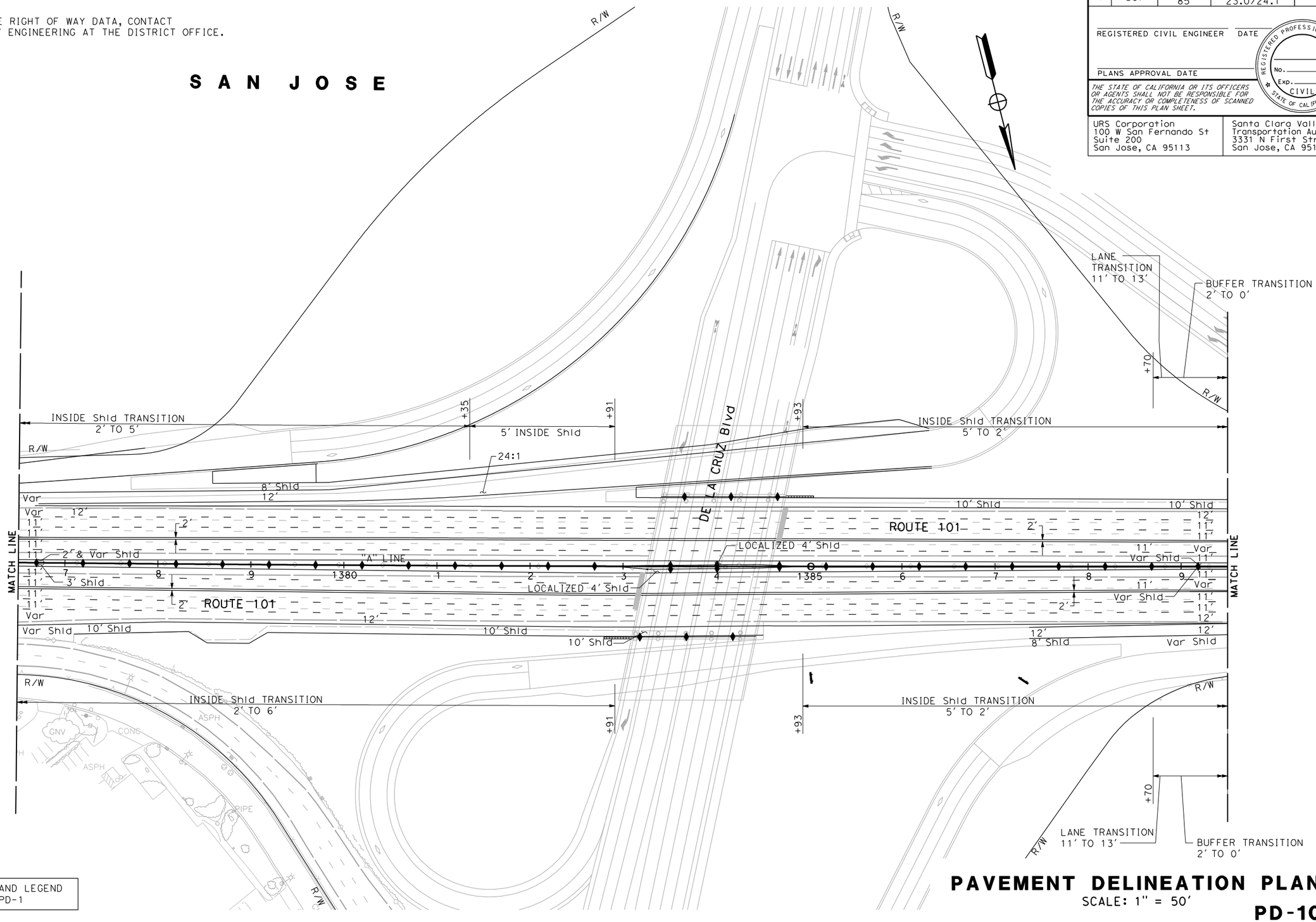

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-108

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101 85	16.00/52.55 23.0/24.1		

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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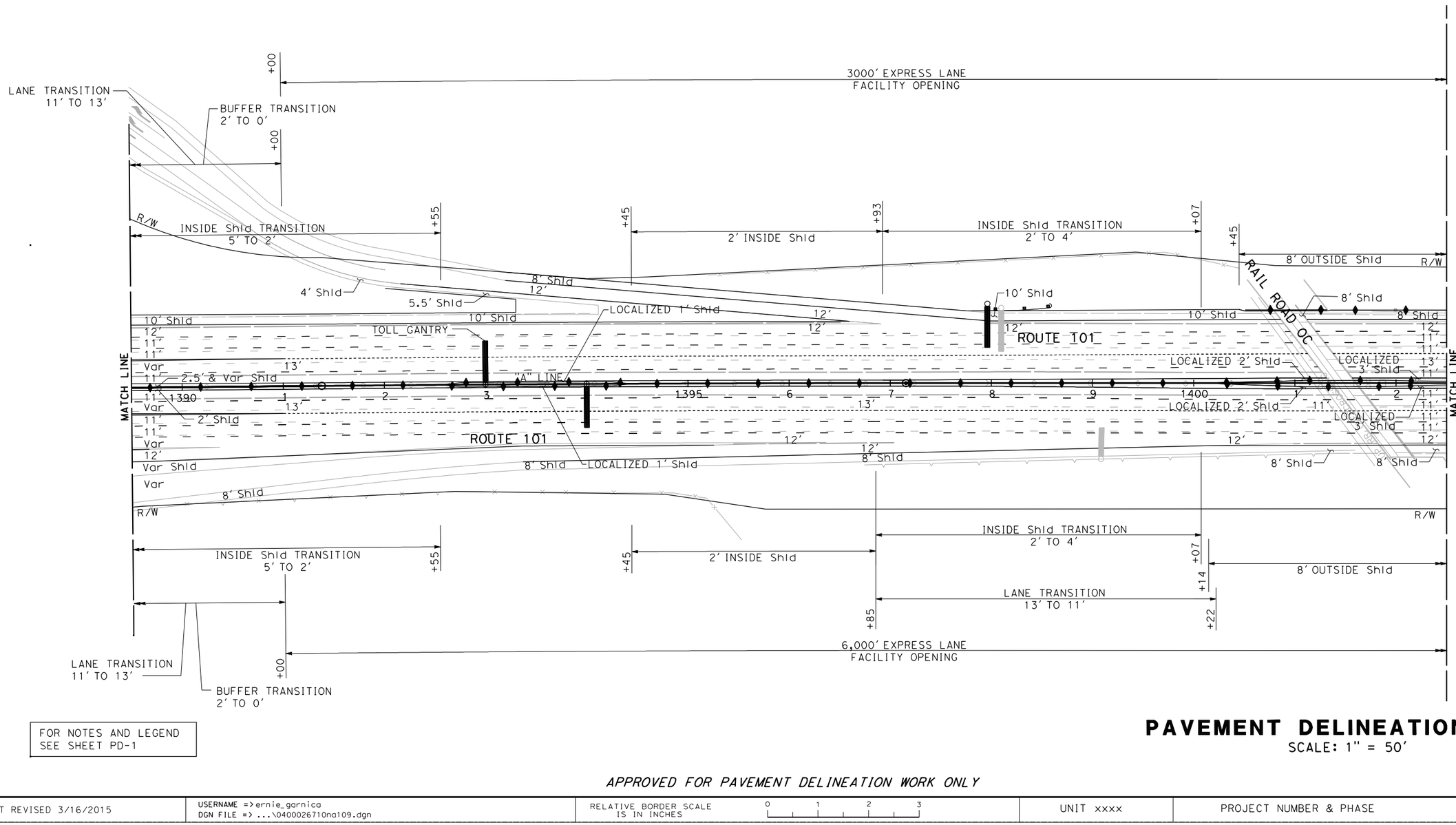

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-109

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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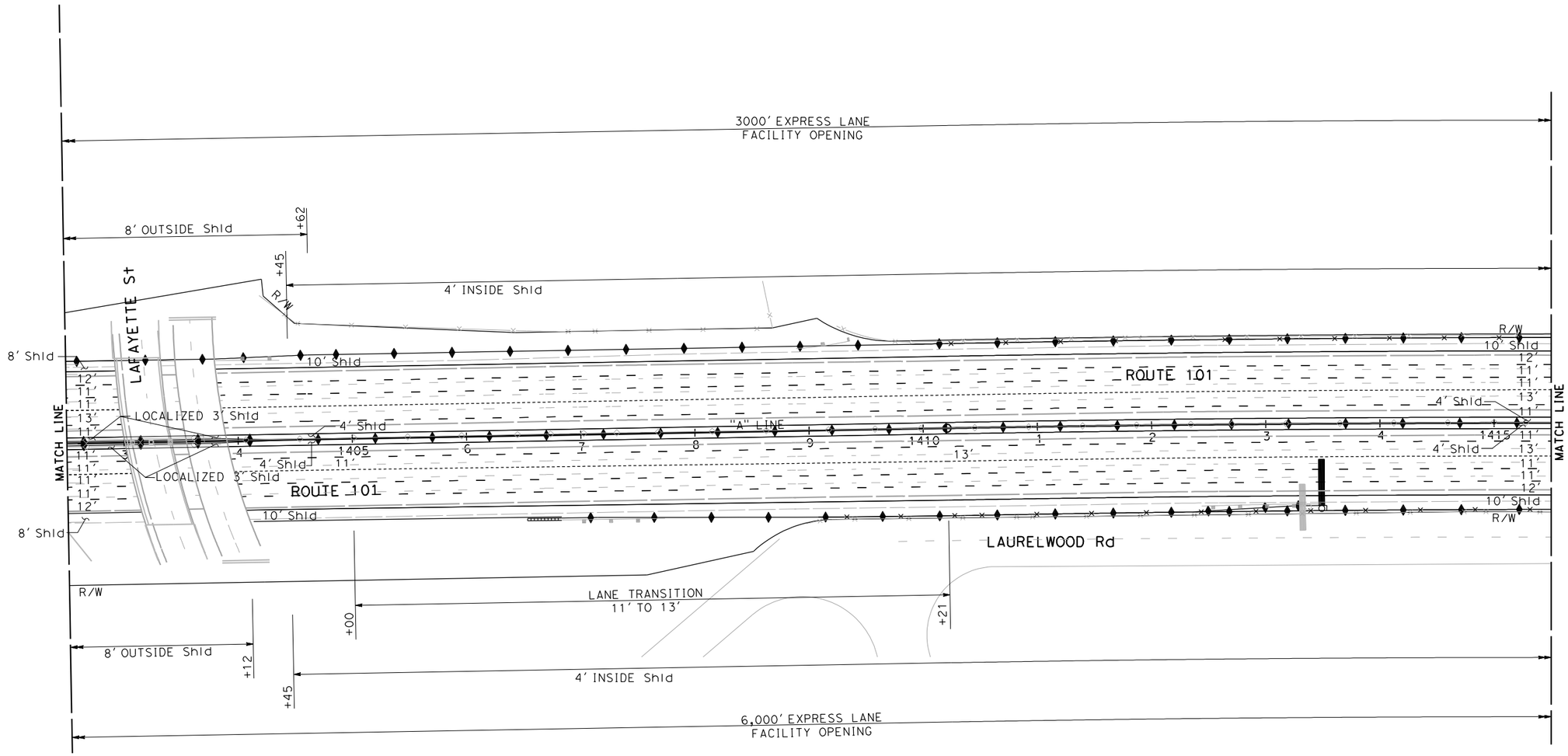

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-110

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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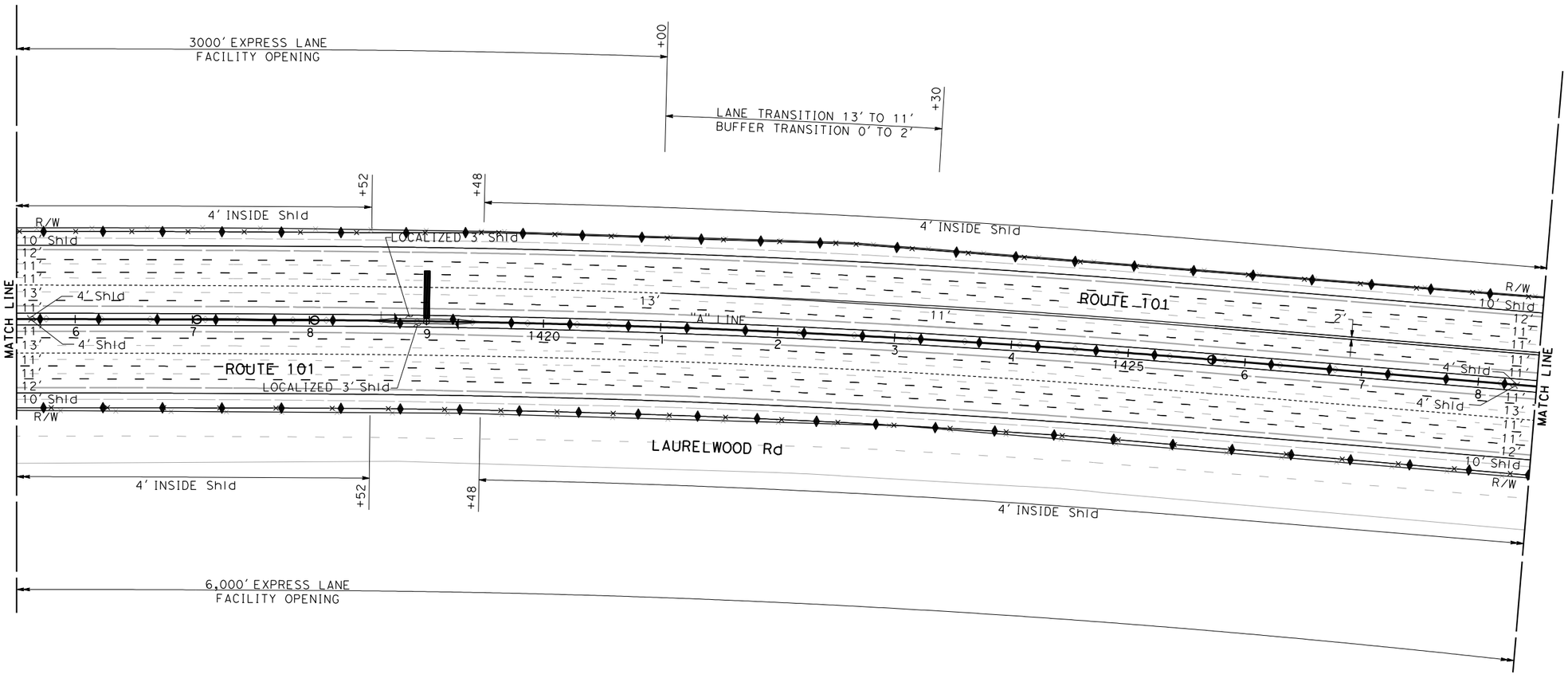

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-111

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CALCULATED-DESIGNED BY: LAN HO
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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:29:33 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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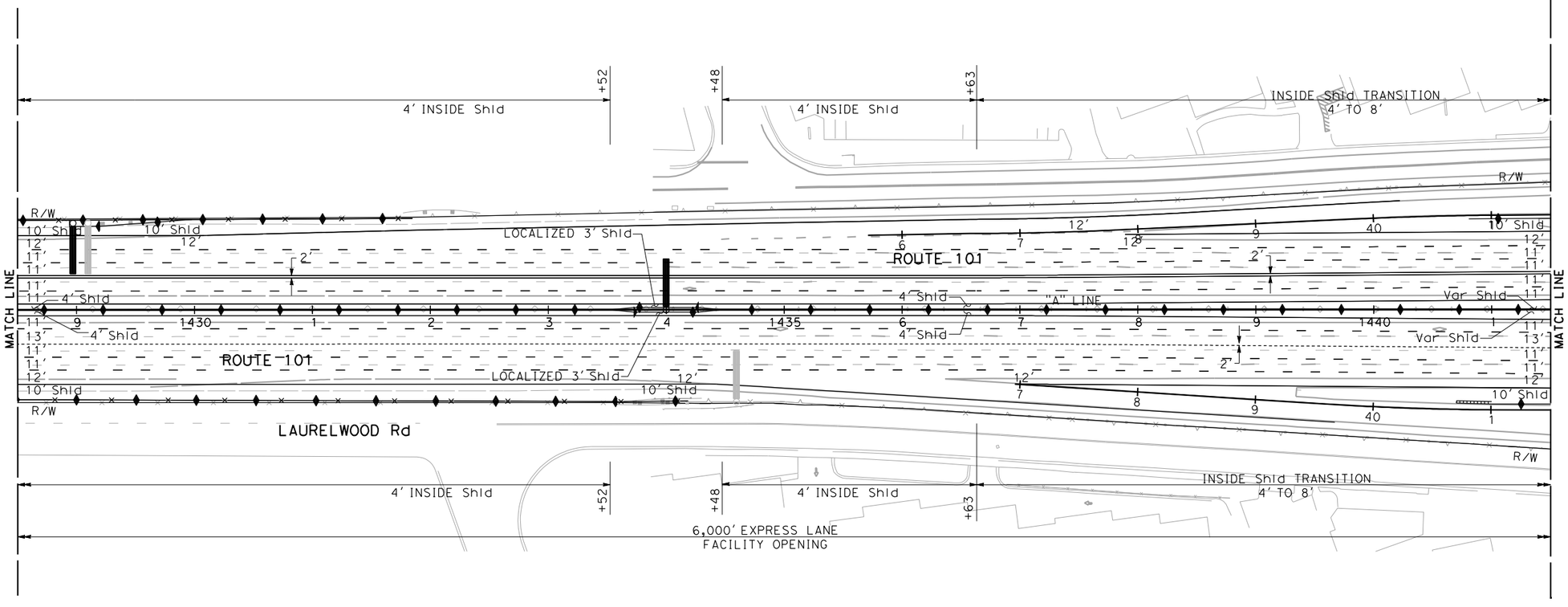

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-112

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LAN HO	RAMESH SATHIAMURTHY	-	-

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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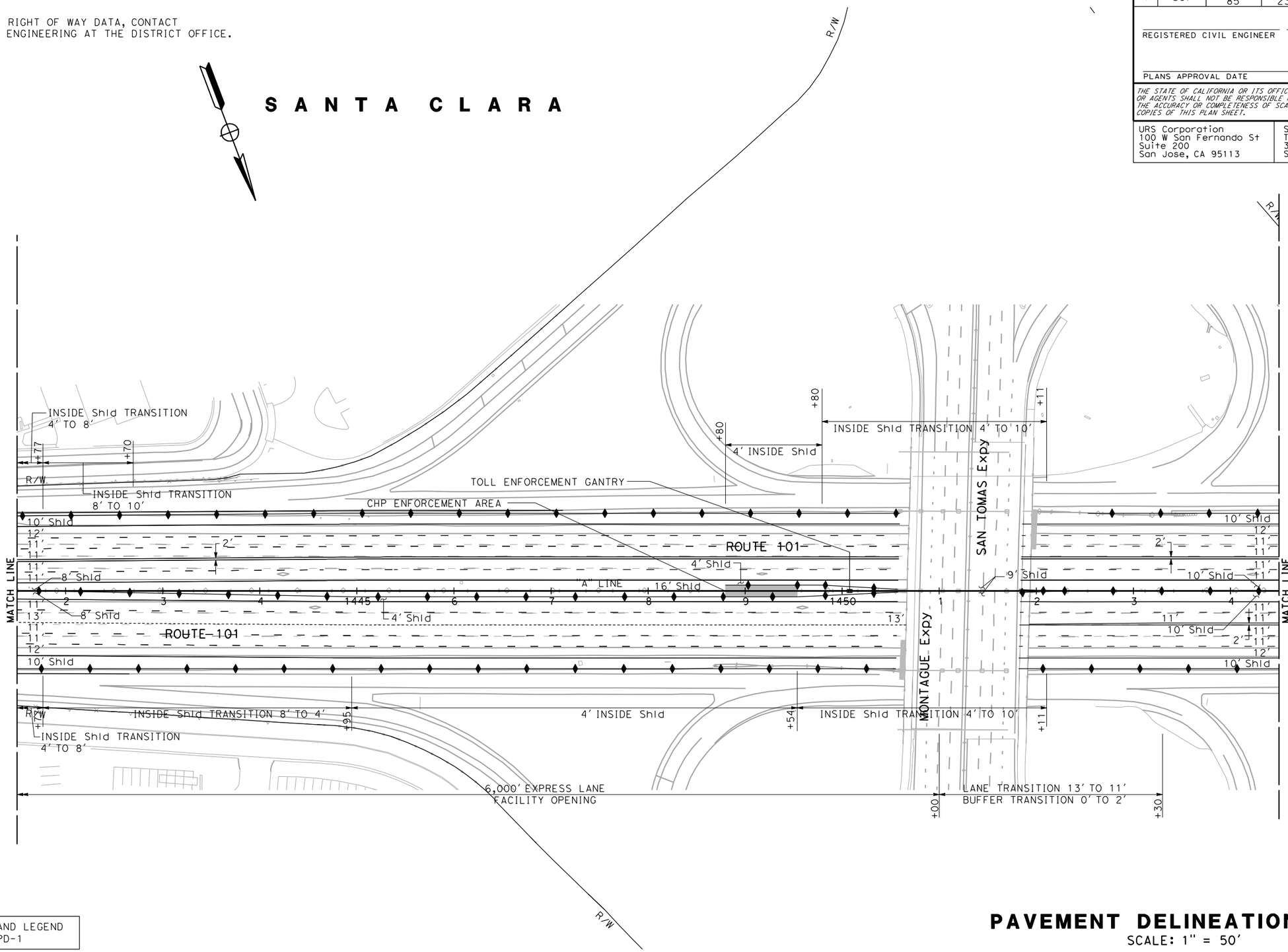

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-113

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CALCULATED-DESIGNED BY: LAN HO
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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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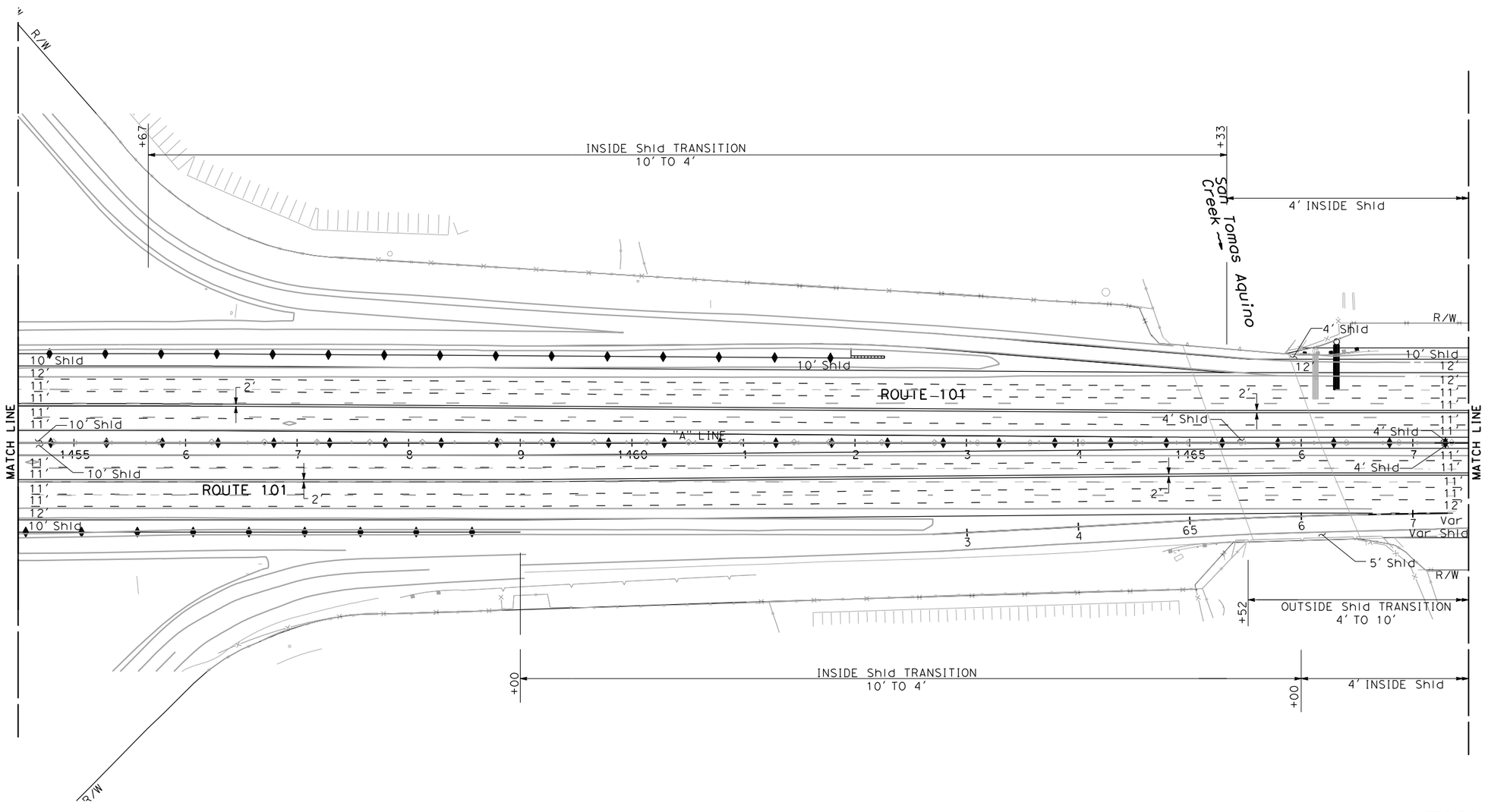

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-114

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CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:29:51 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na114.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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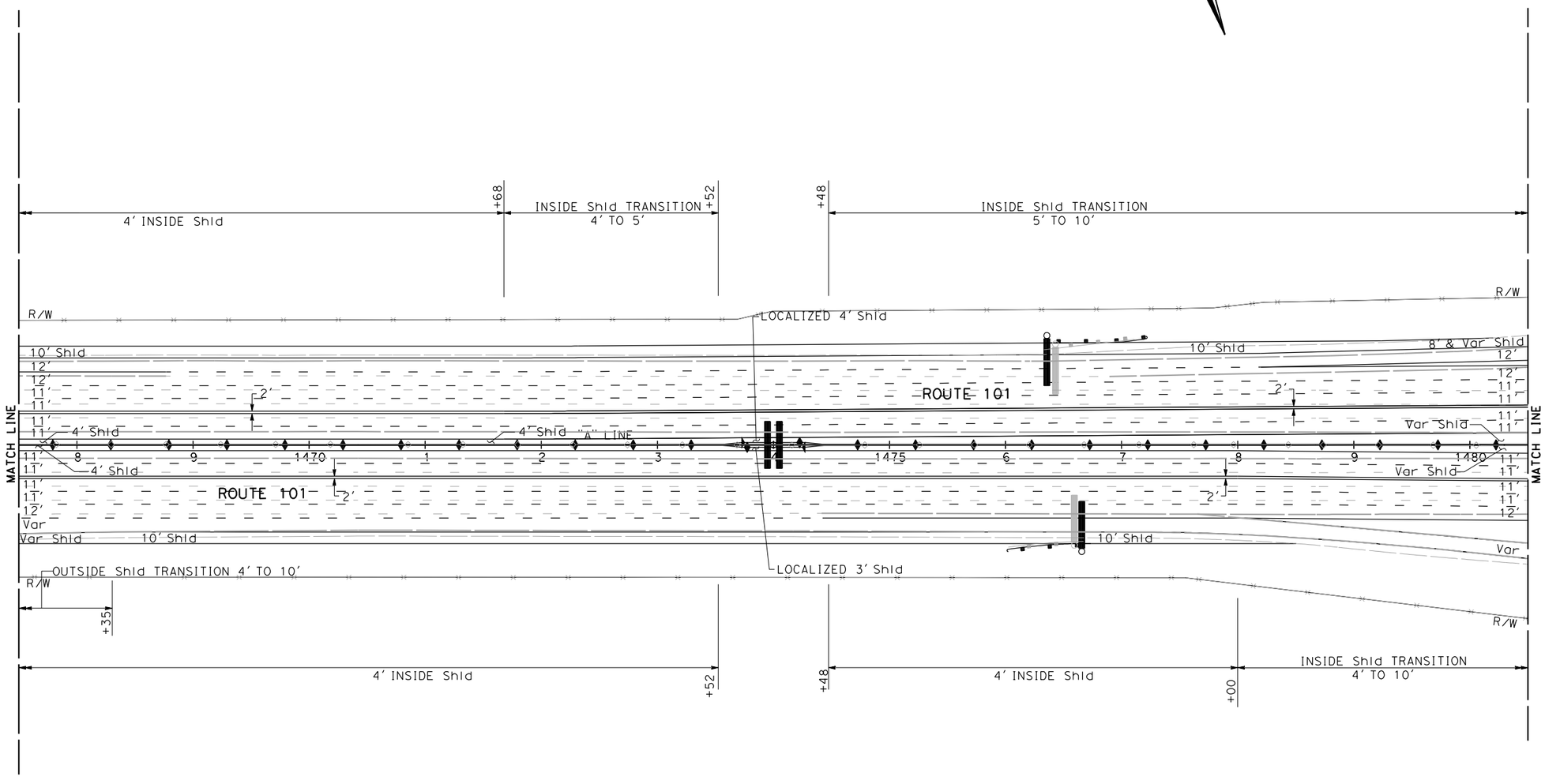

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-115

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:29:56 AM

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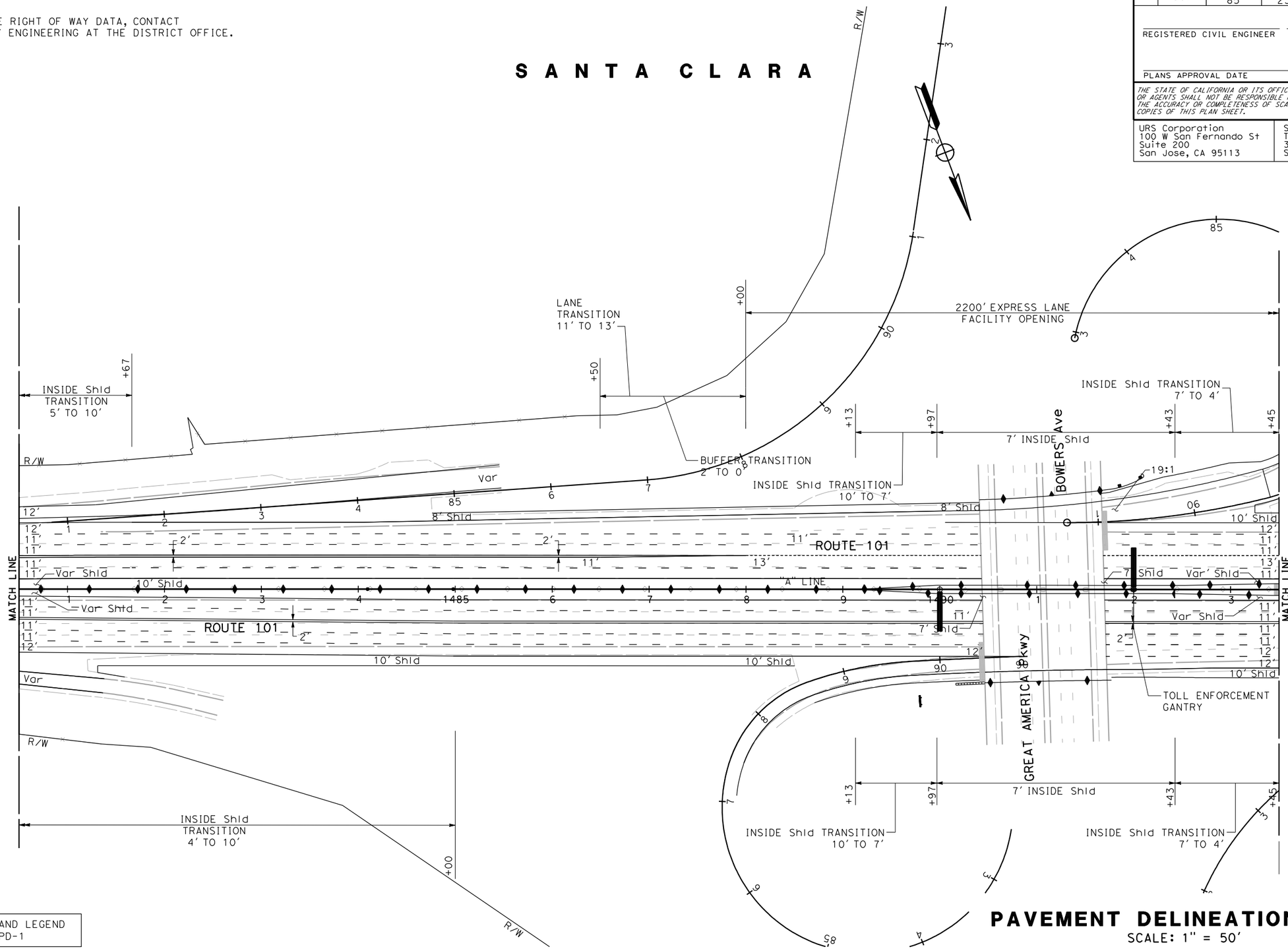

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-116

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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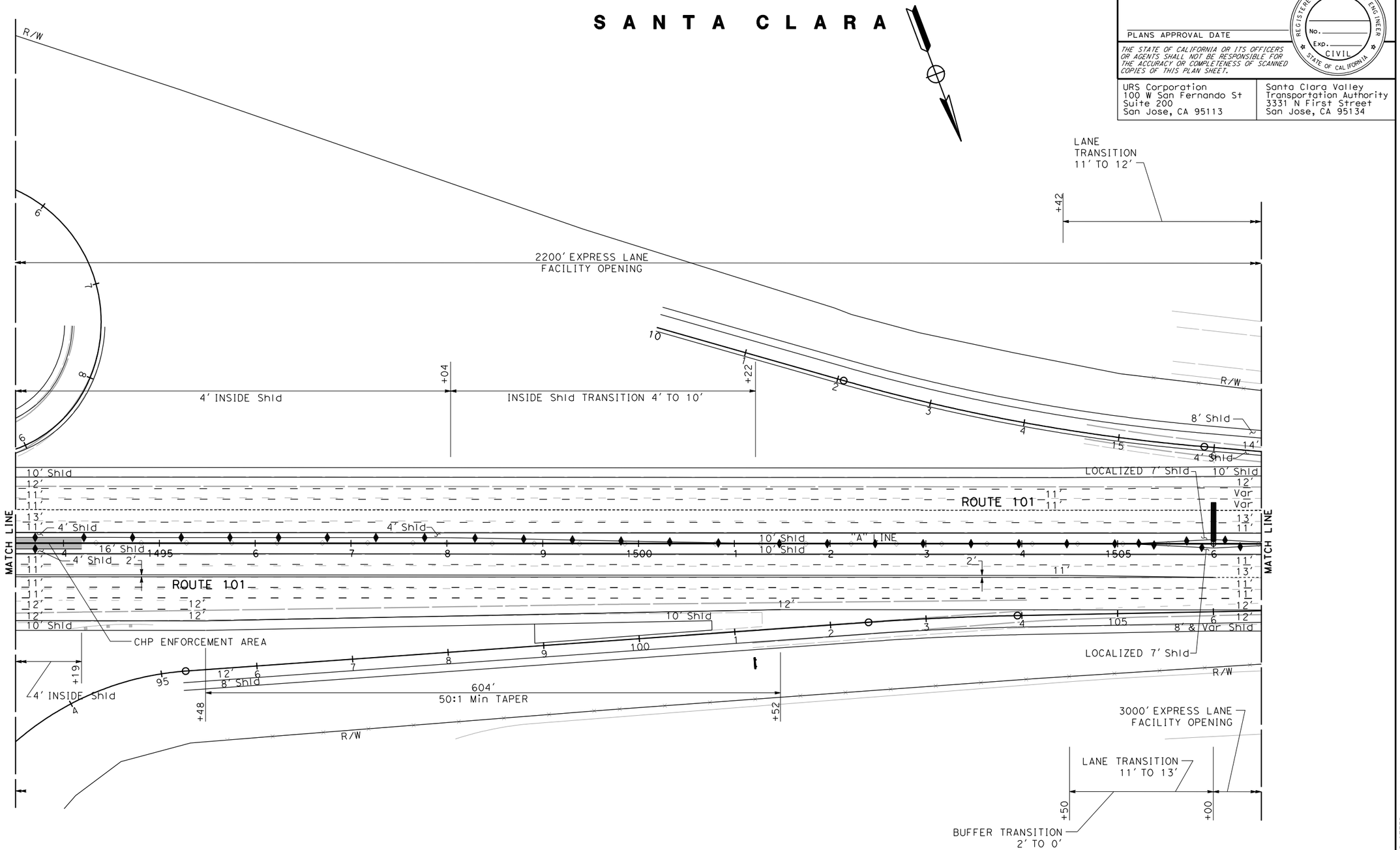

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-117

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CALCULATED-DESIGNED BY	LAN HO	
CHECKED BY	RAMESH SATHIAMURTHY	
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	

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TIME PLOTTED => 11:30:07 AM

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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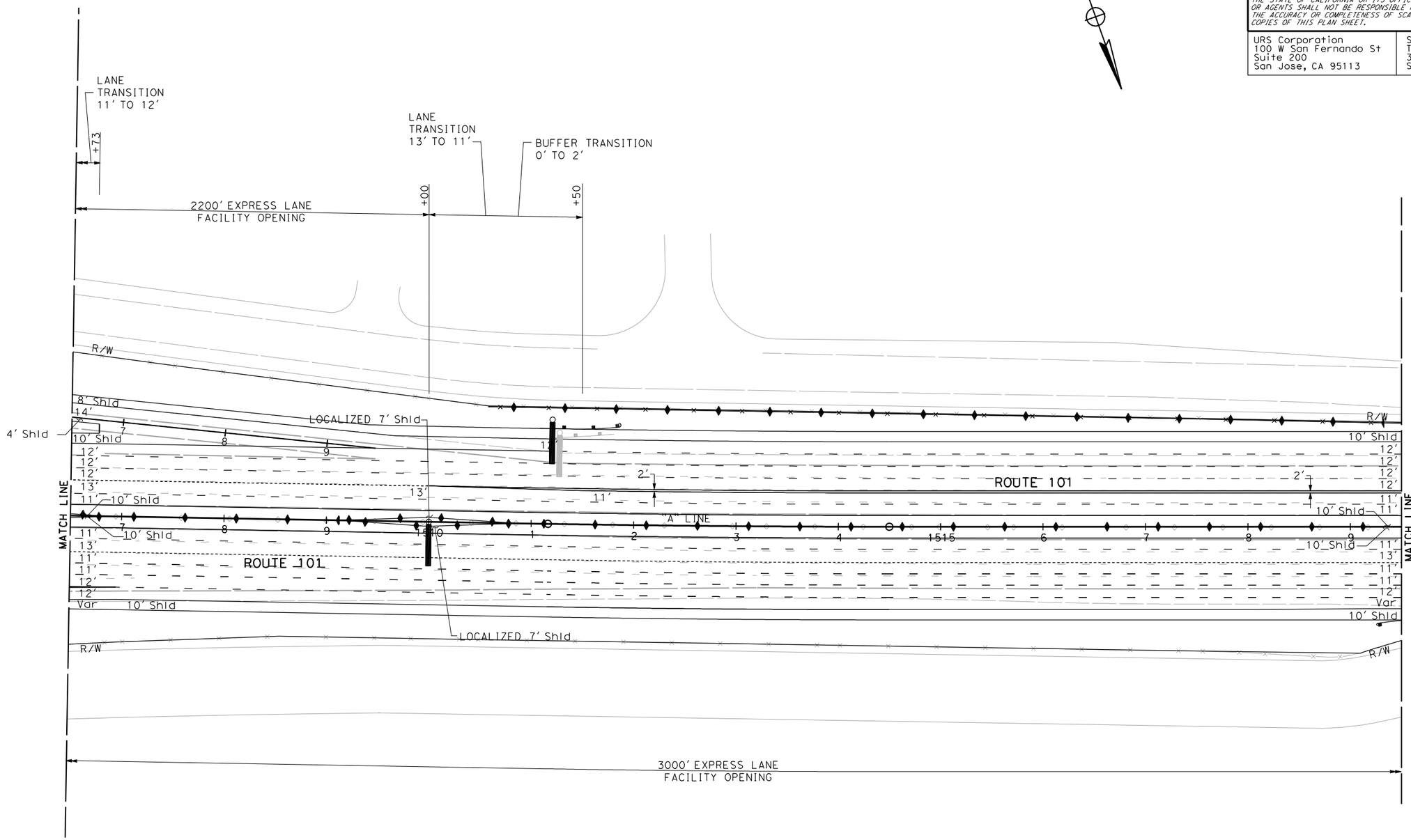

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50′

PD-118

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:30:13 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na118.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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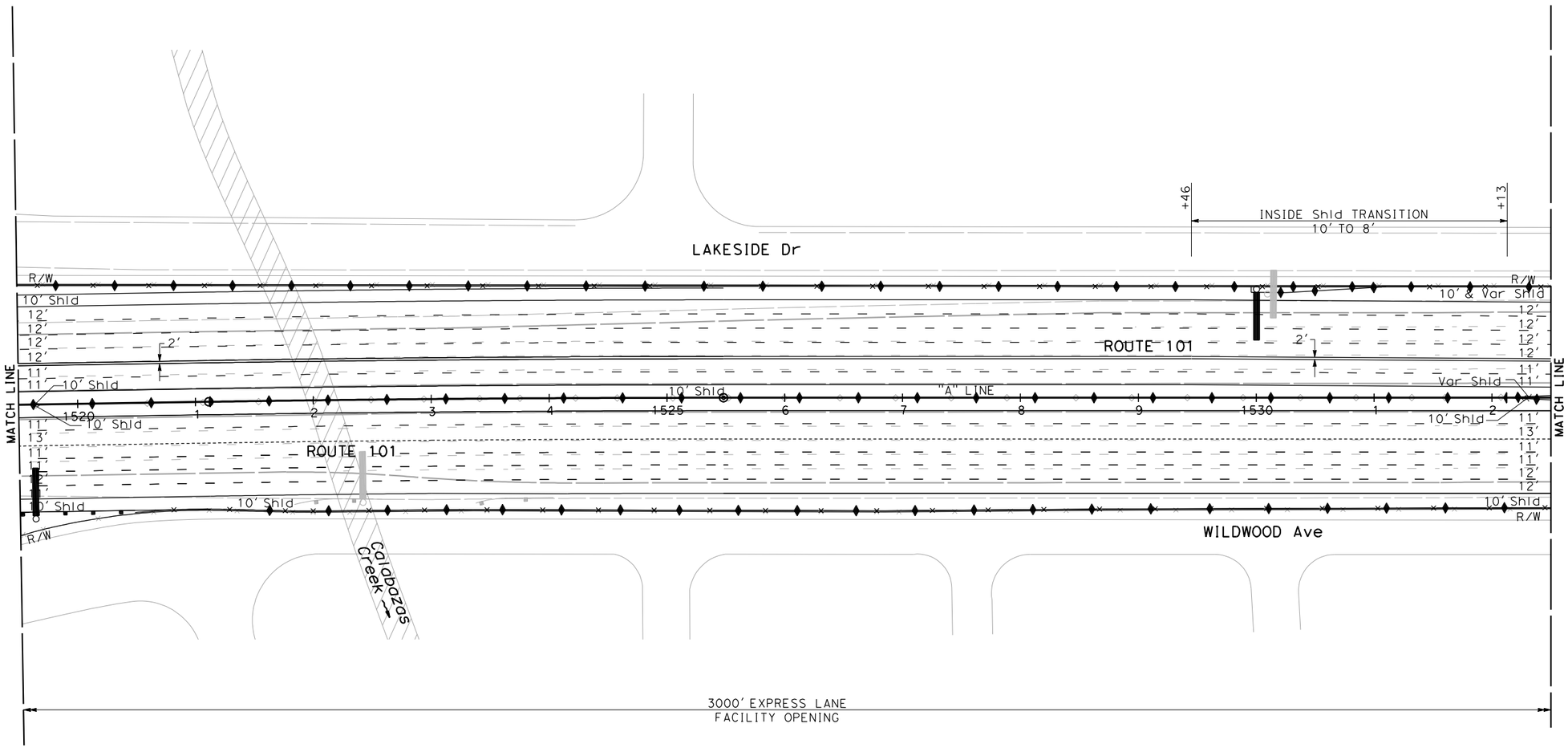

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-119

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	-	-

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CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:30:18 AM

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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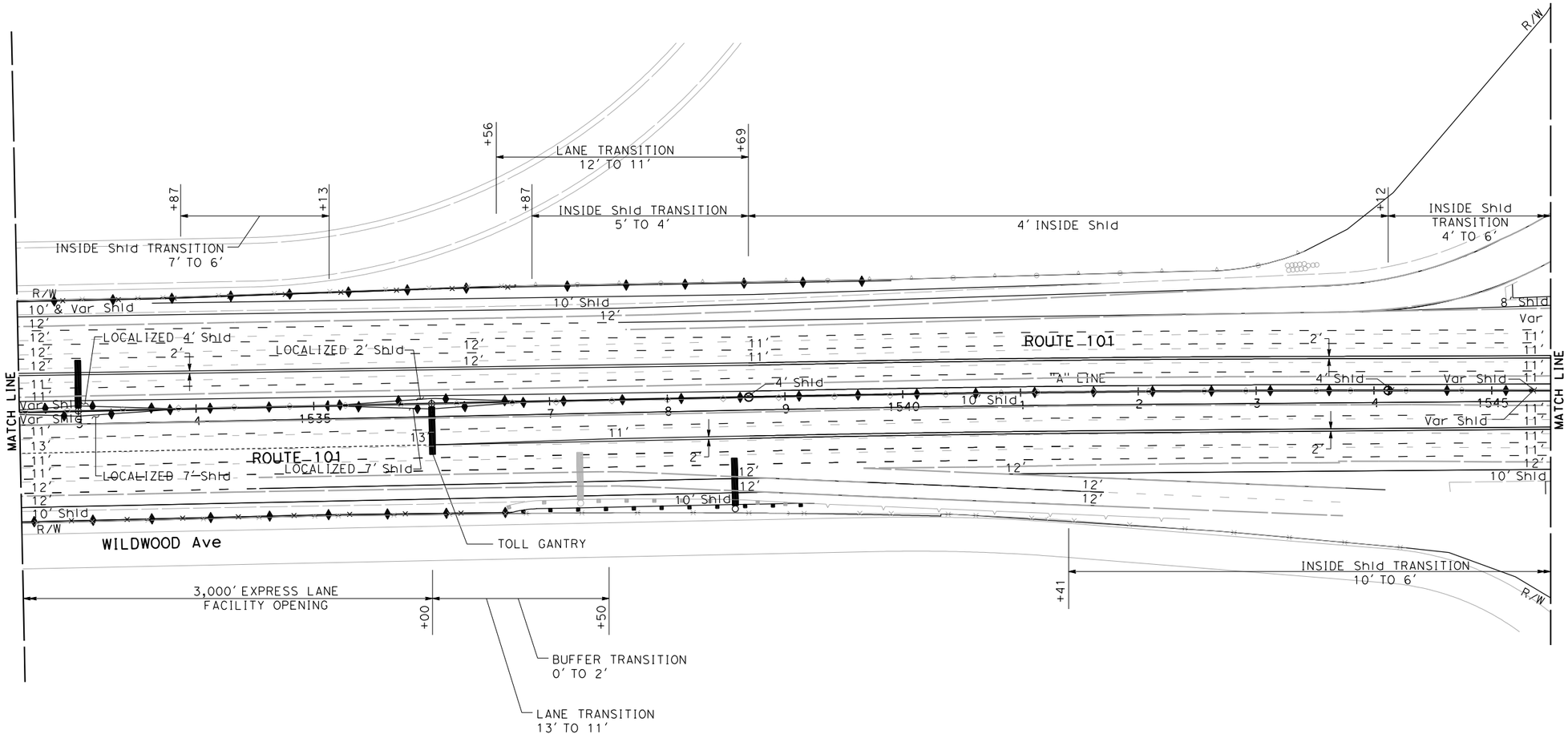

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-120

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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:30:23 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na120.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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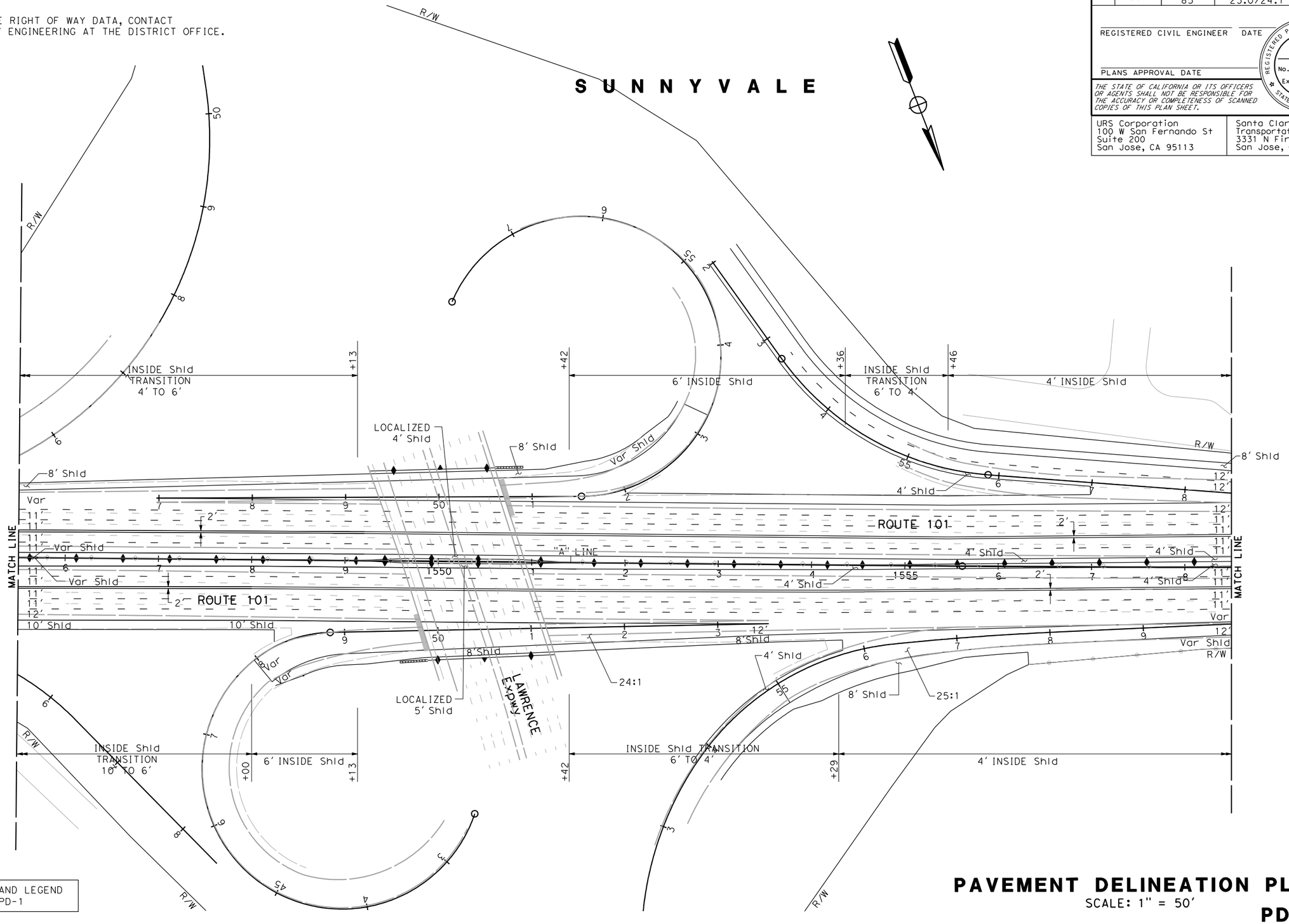

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-121

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CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION: DATE PLOTTED => 3/16/2015
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BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na121.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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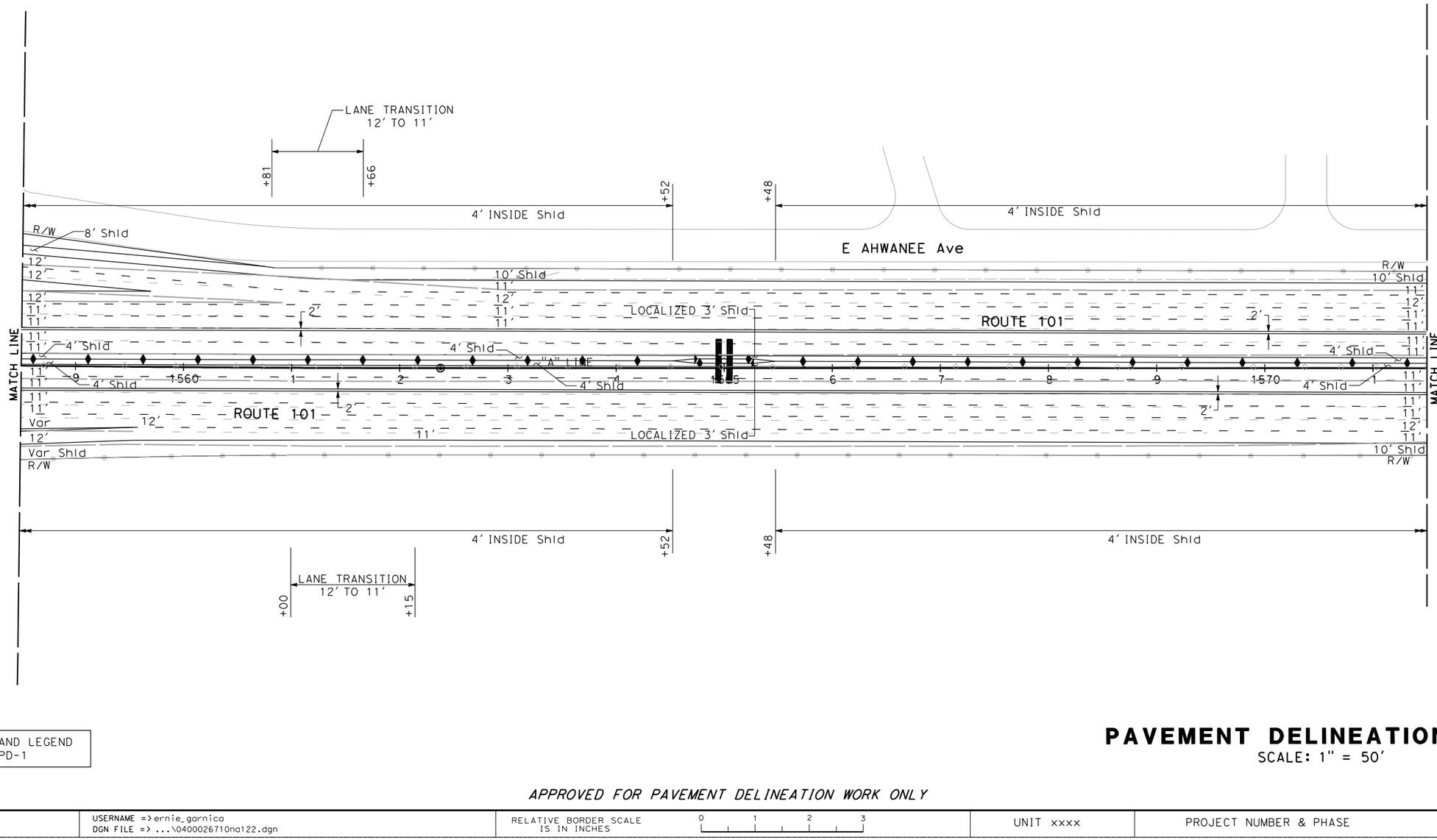

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-122

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DATE REVISED	-	CHECKED BY	RAMESH SATHIAMURTHY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:30:34 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na122.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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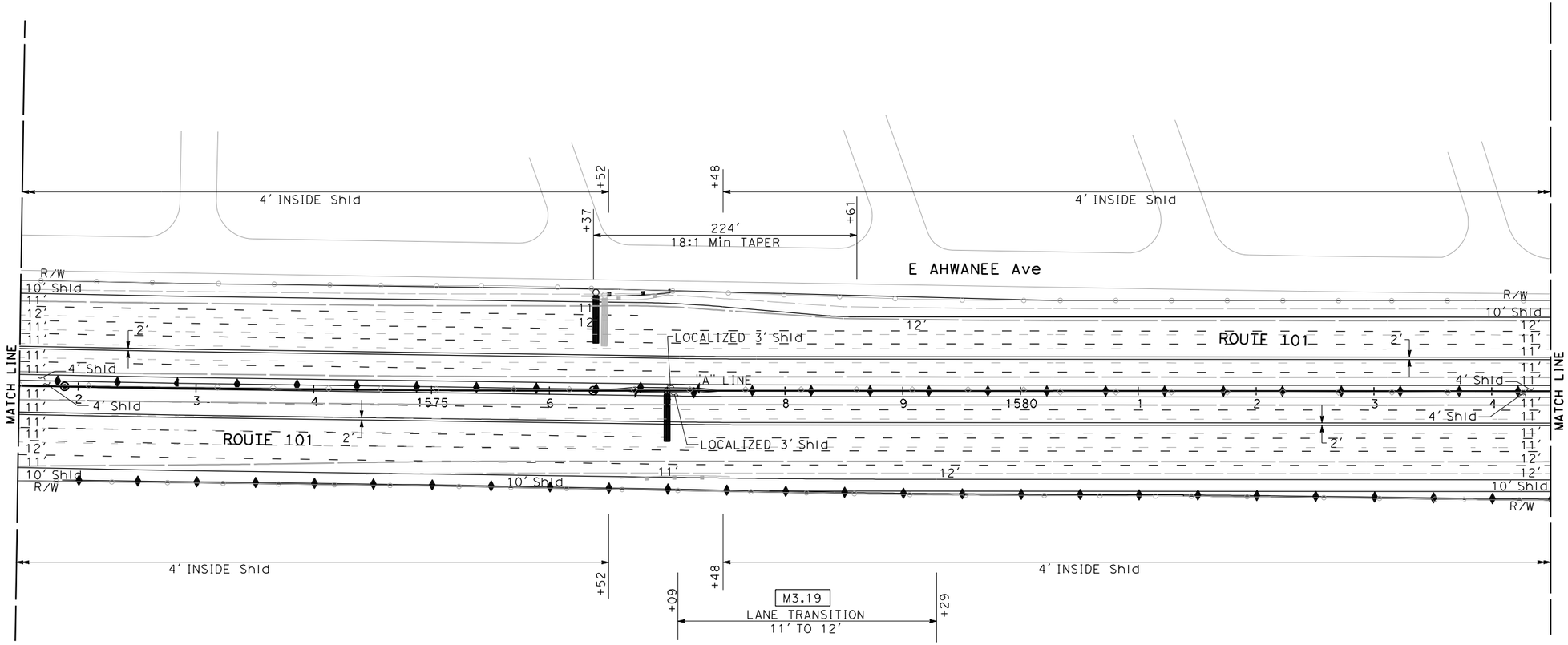

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-123

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CHECKED BY	RAMESH SATHIAMURTHY		
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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DATE PLOTTED => 3/16/2015
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BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na123.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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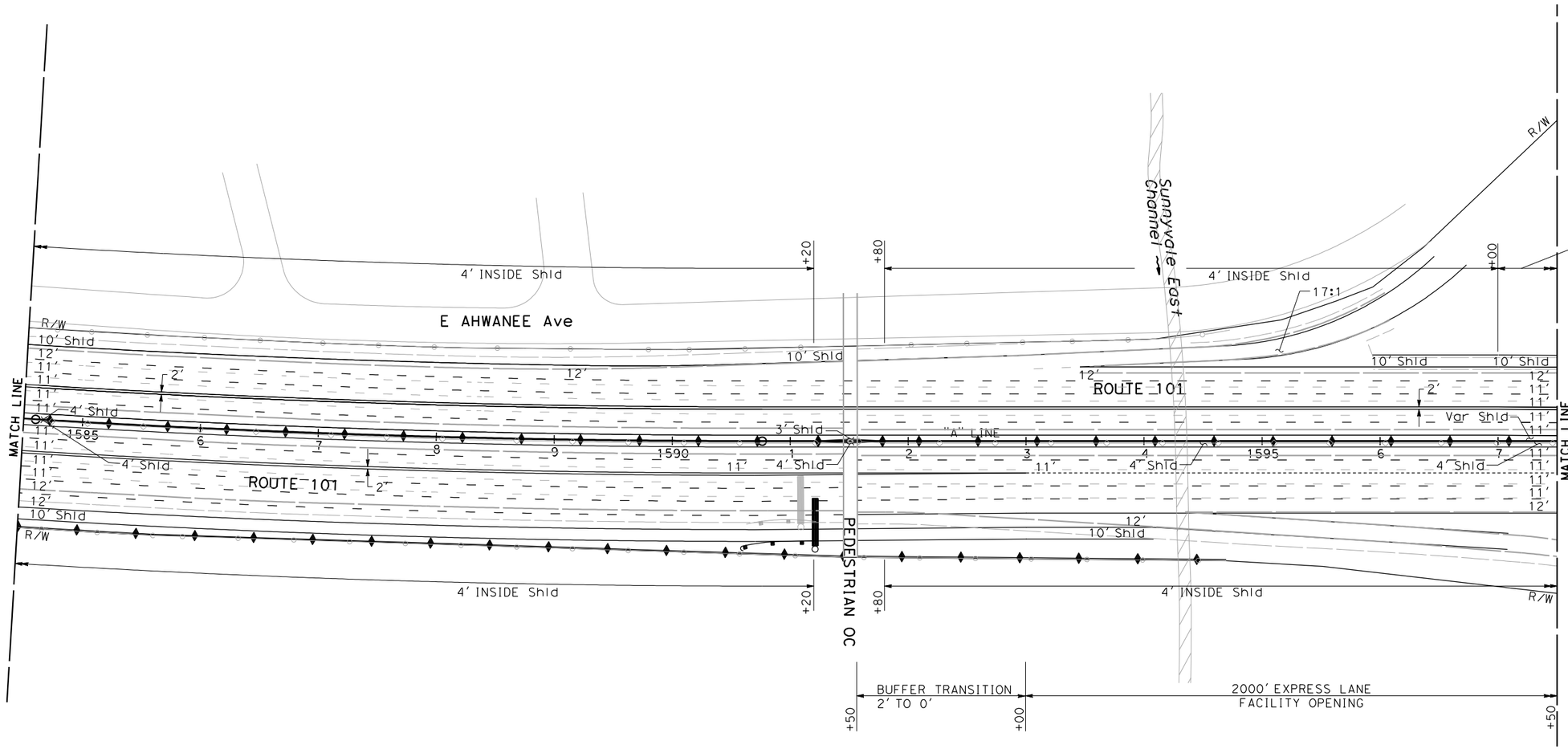

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-124

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	DATE REVISED	-	-
CALCULATED-DESIGNED BY	LAN HO		
CHECKED BY	RAMESH SATHIAMURTHY		
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:30:45 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na124.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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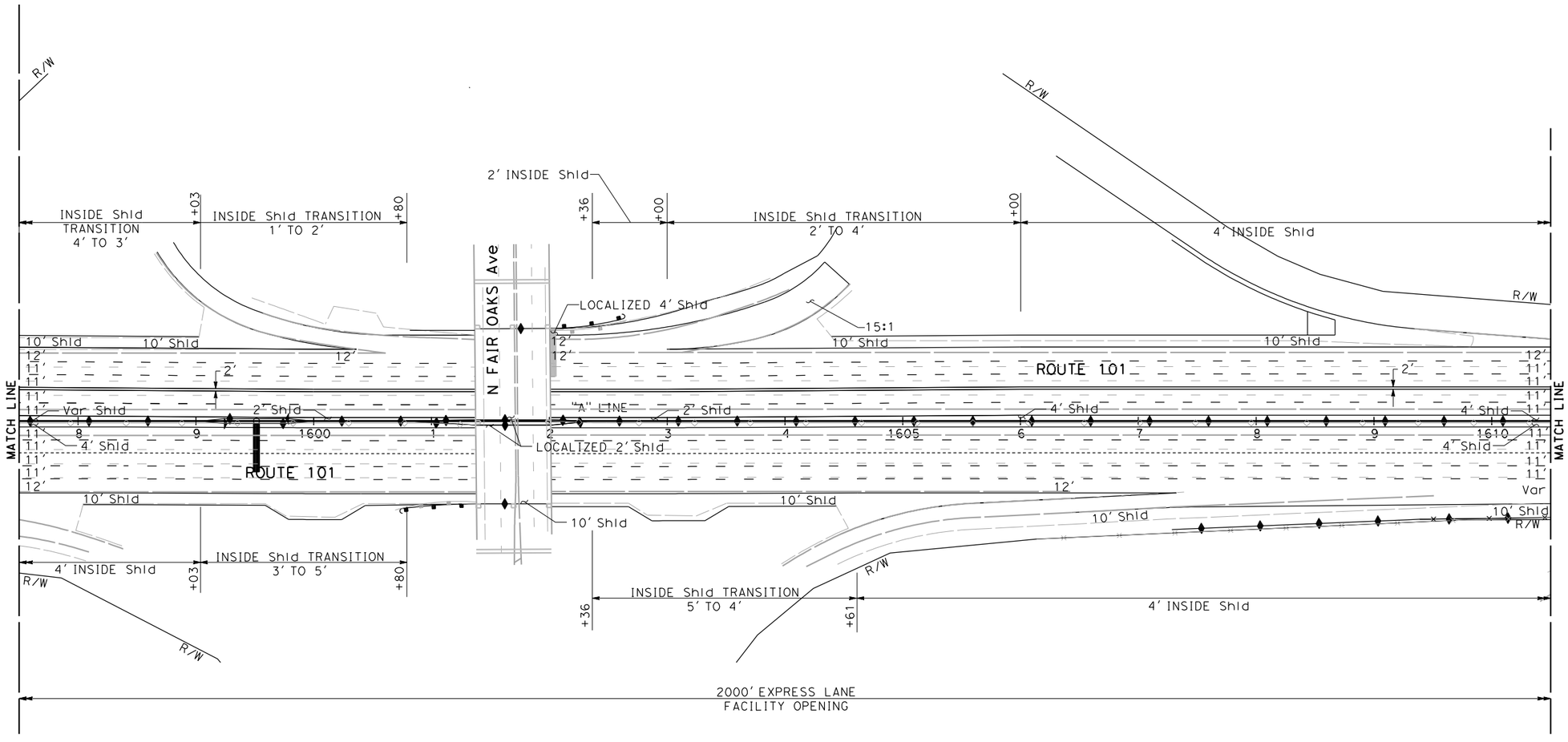

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-125

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CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
LAN HO	RAMESH SATHIAMURTHY	-	-

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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8-14-14

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na125.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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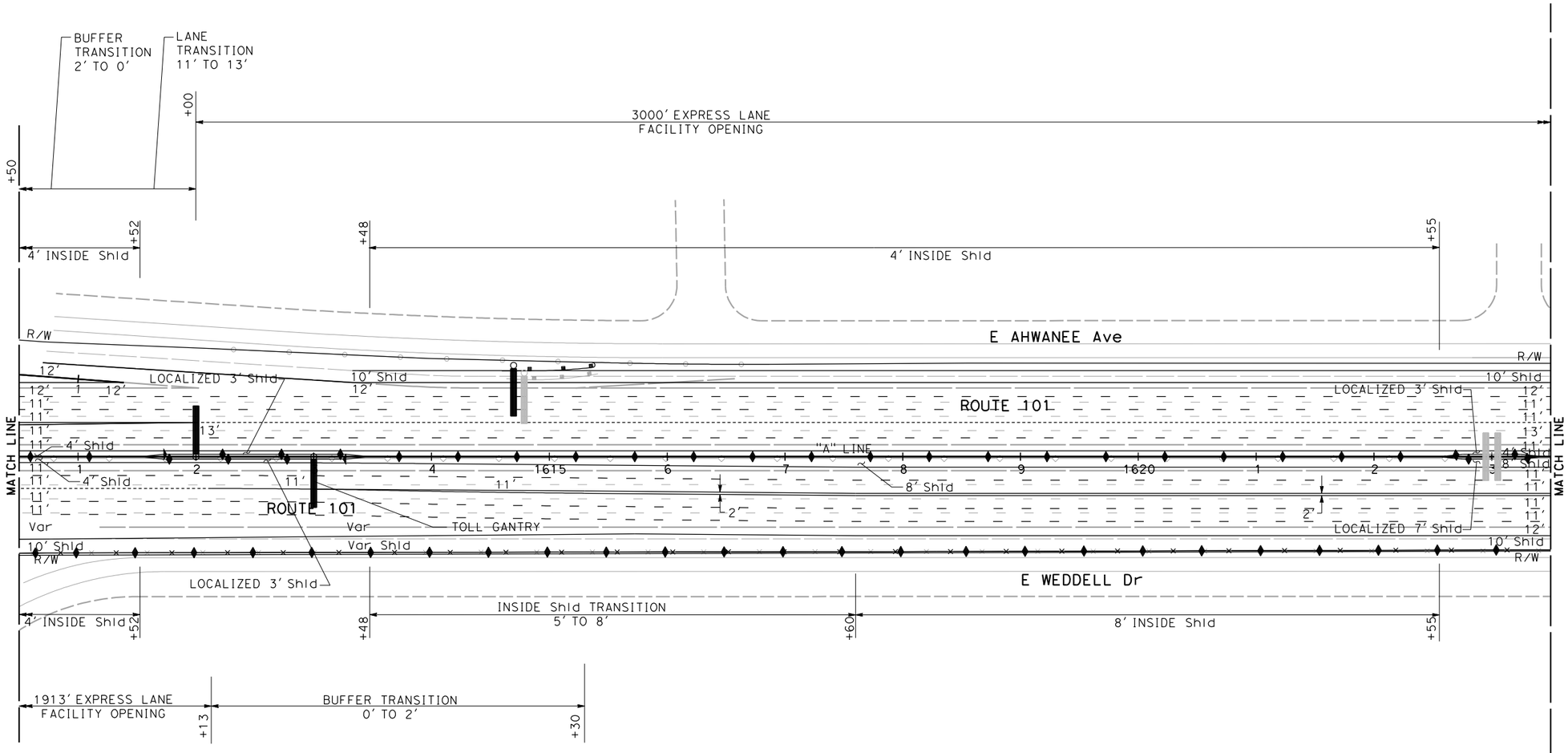

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-126

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CALCULATED-DESIGNED BY: LAN HO
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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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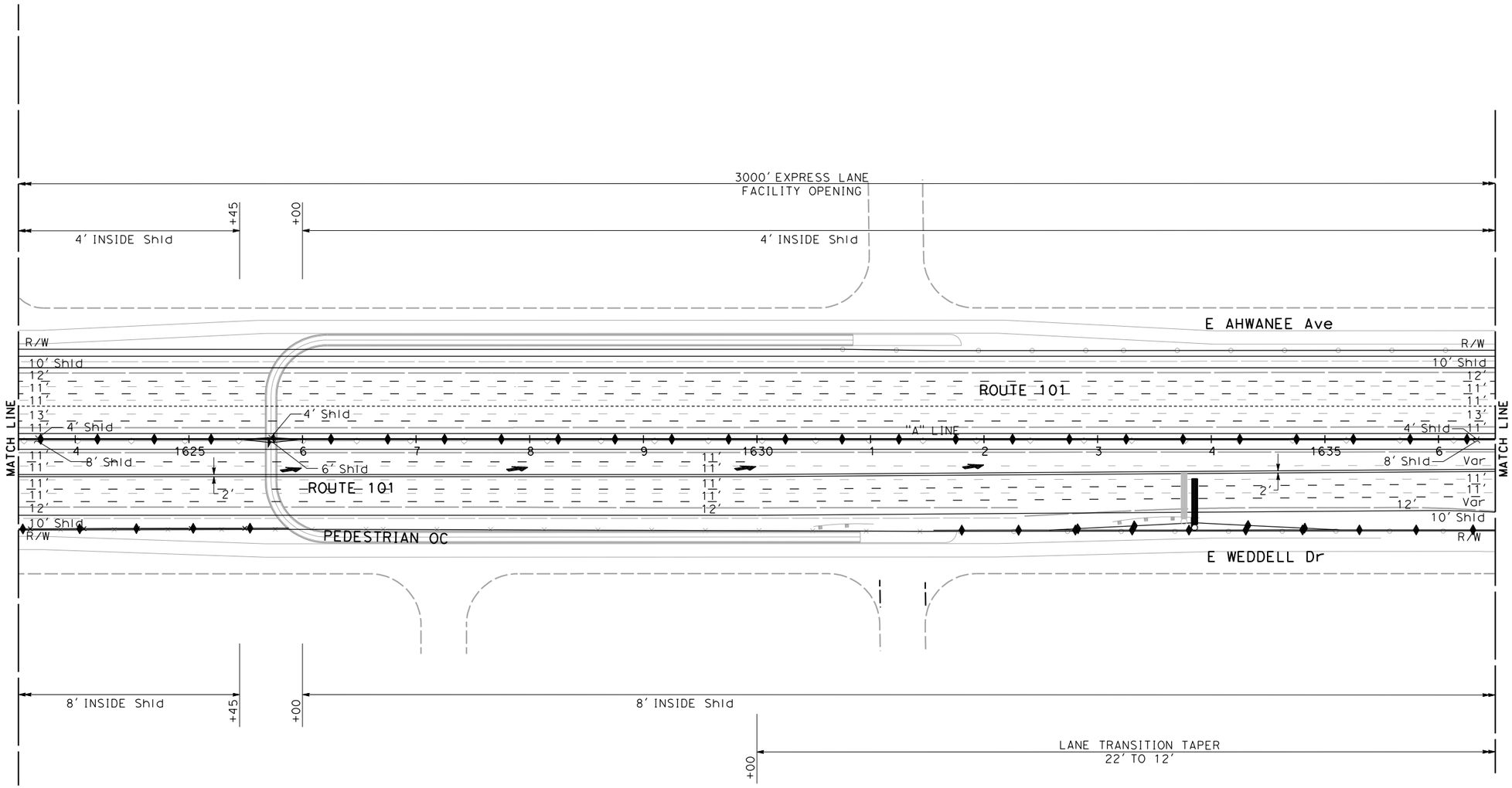

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-127

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DATE REVISED	-		
LAN HO	RAMESH SATHIAMURTHY		
CALCULATED-DESIGNED BY			
CHECKED BY			
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:31:01 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica
DGN FILE => ...\04000026710na127.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

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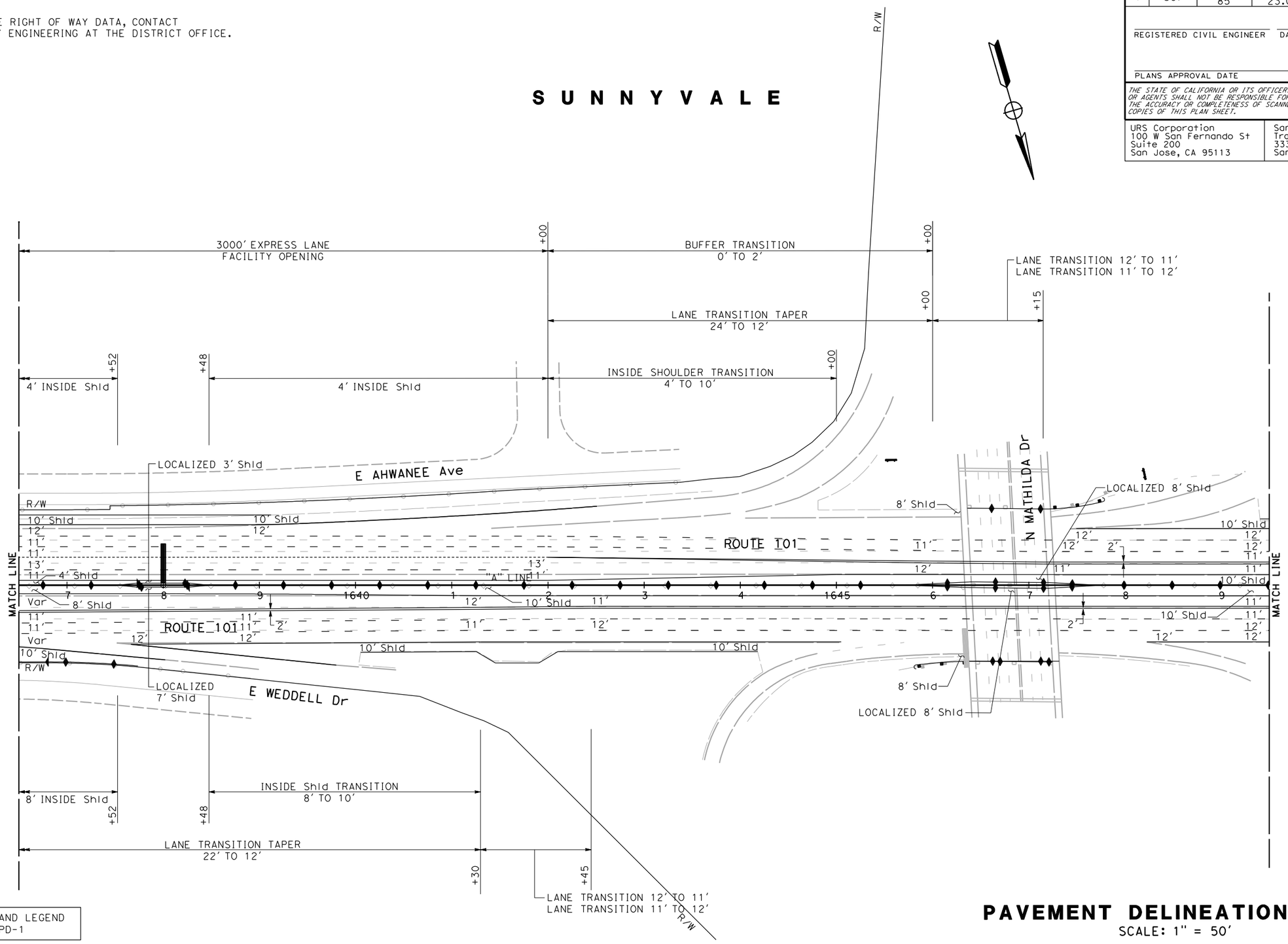

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-128

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
LAN HO	RAMESH SATHIAMURTHY	-	-

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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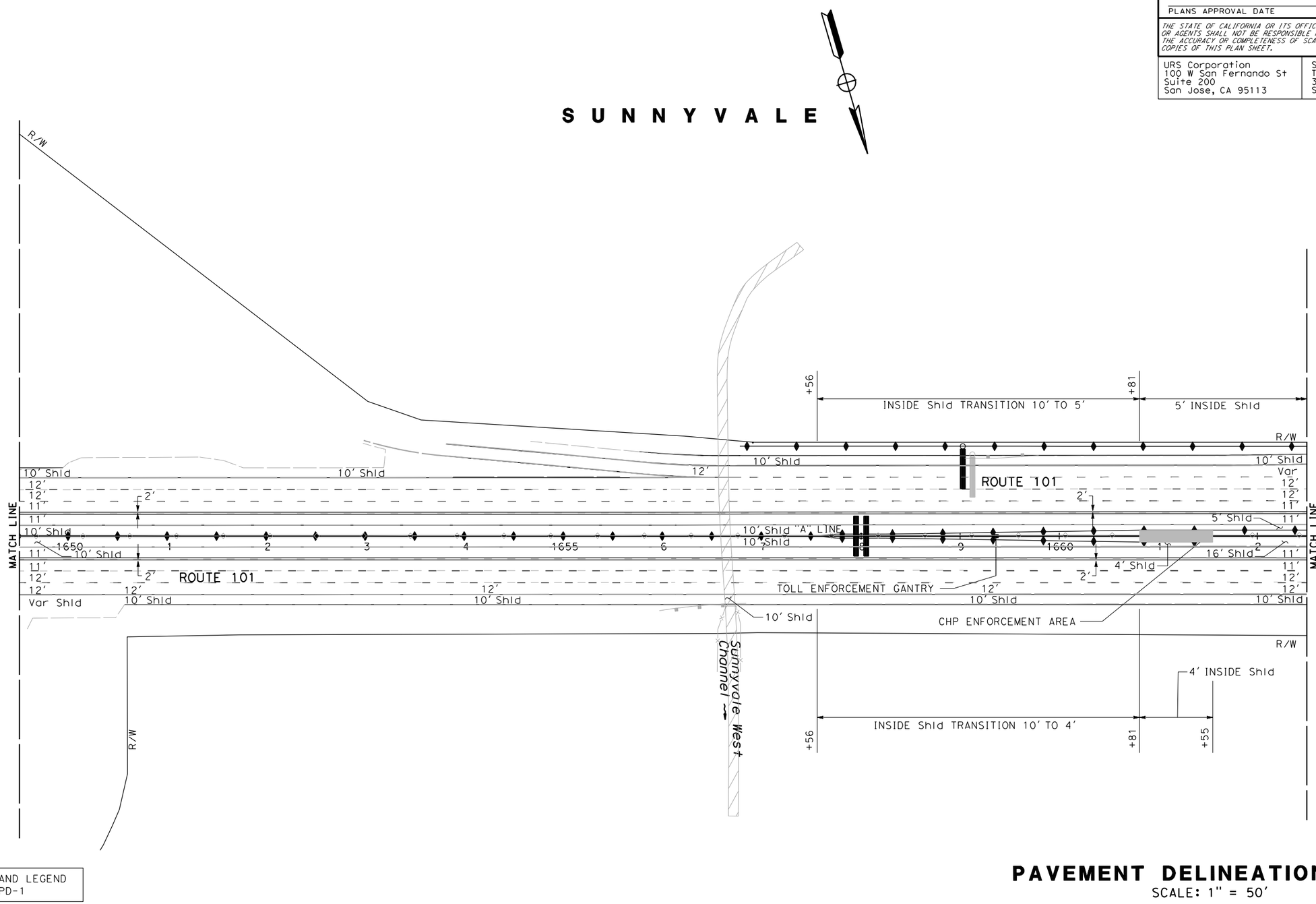

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SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-129

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:31:12 AM

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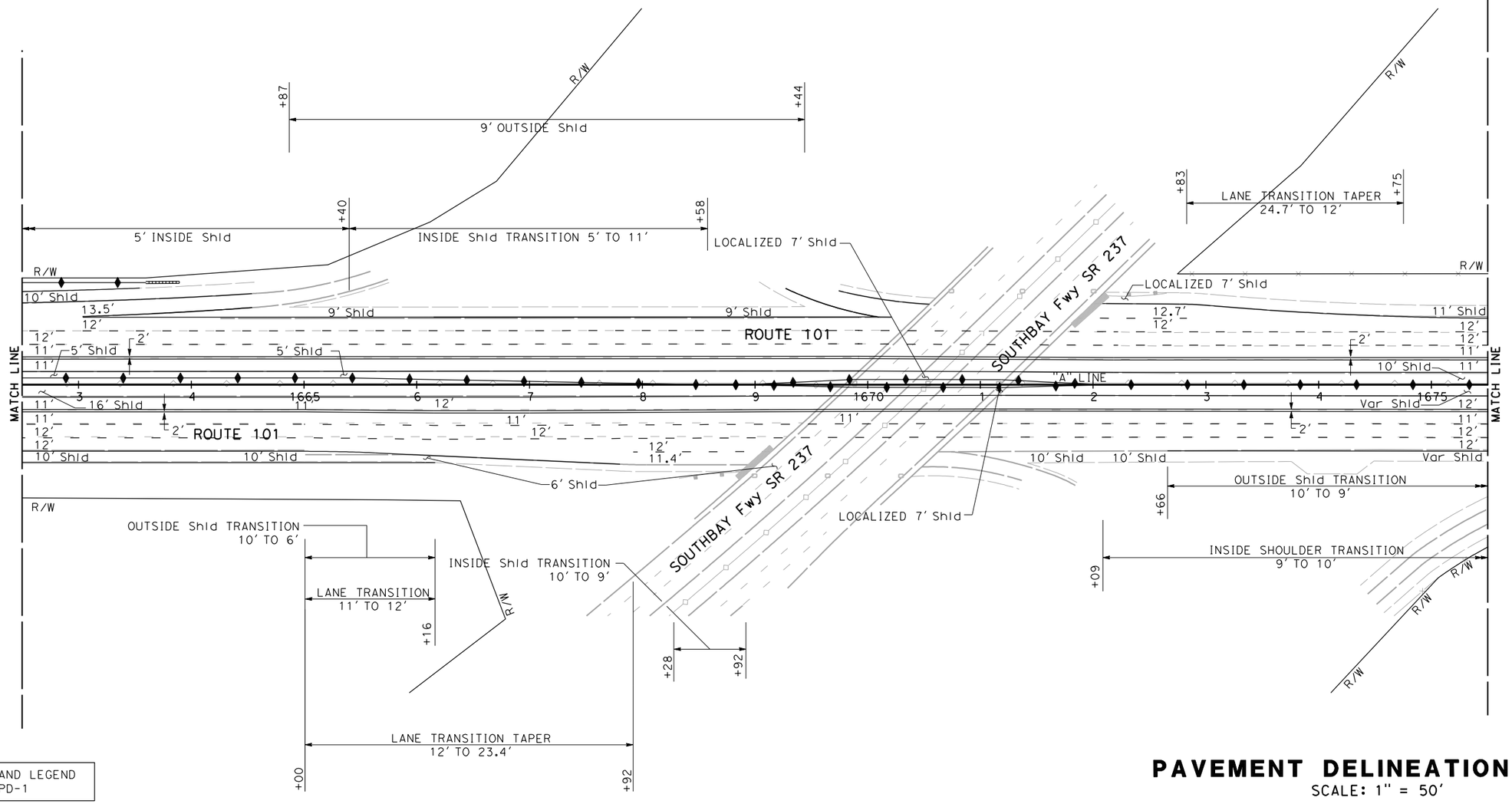

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-130

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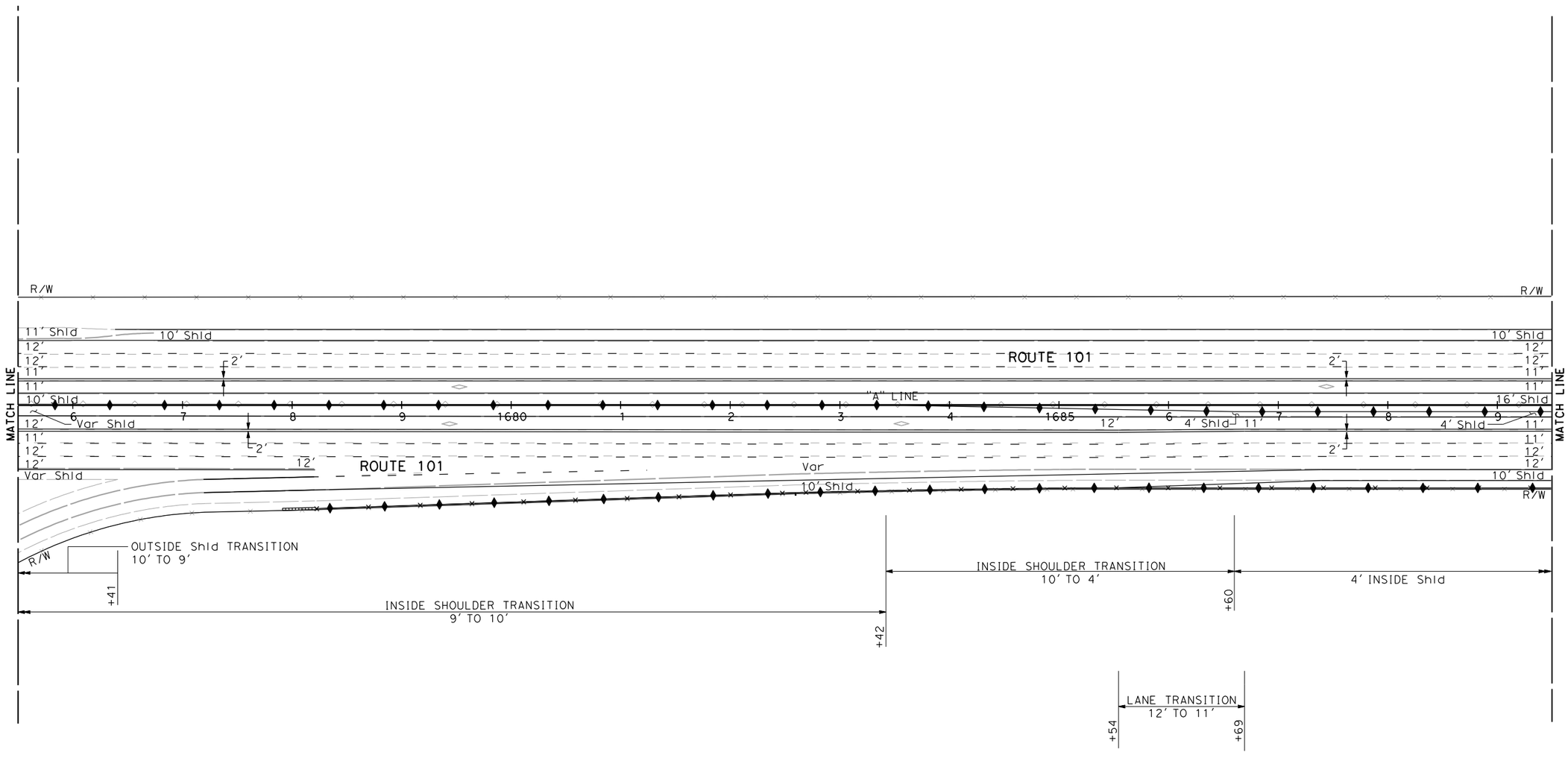

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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-131

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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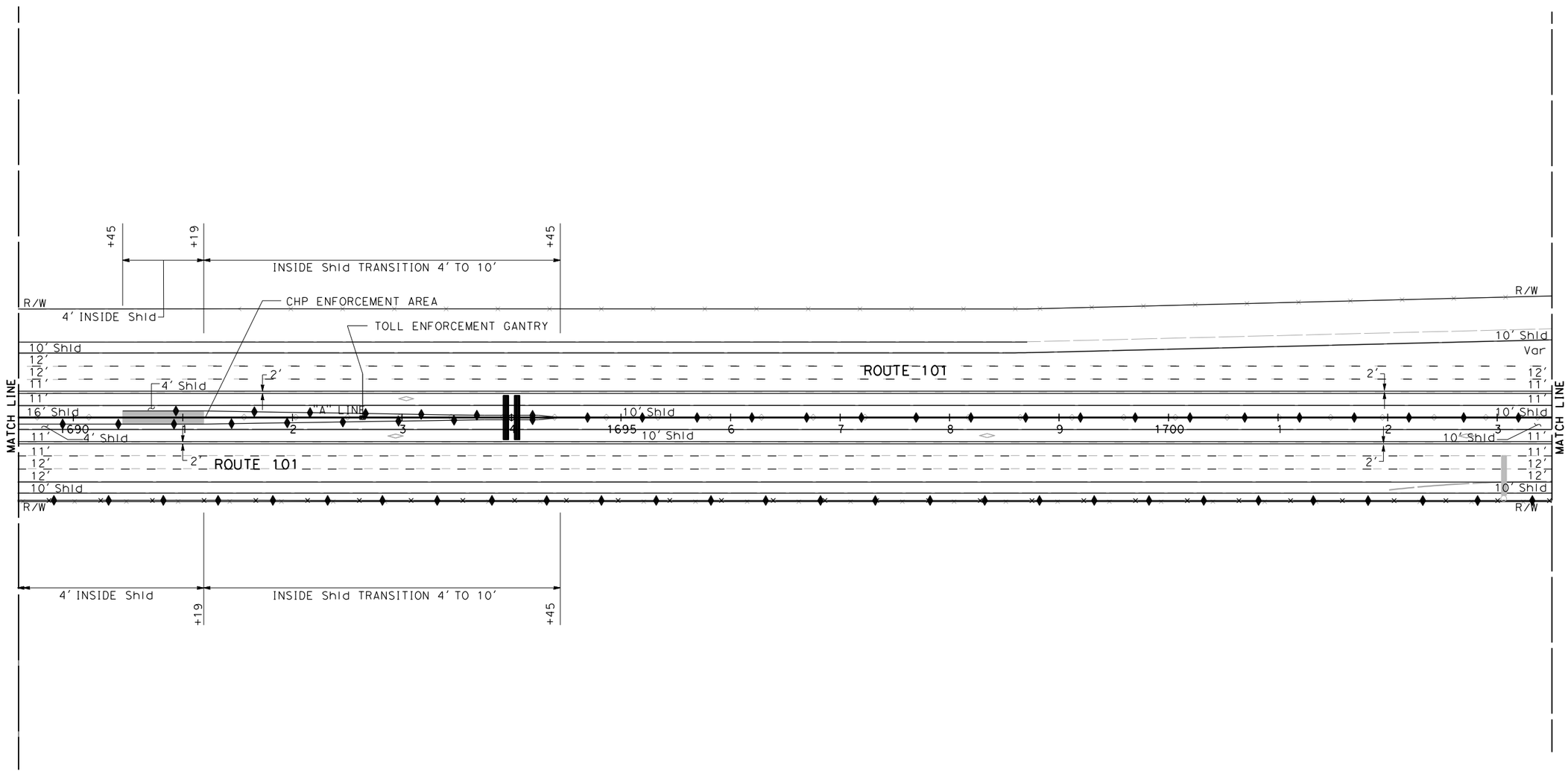

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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-132

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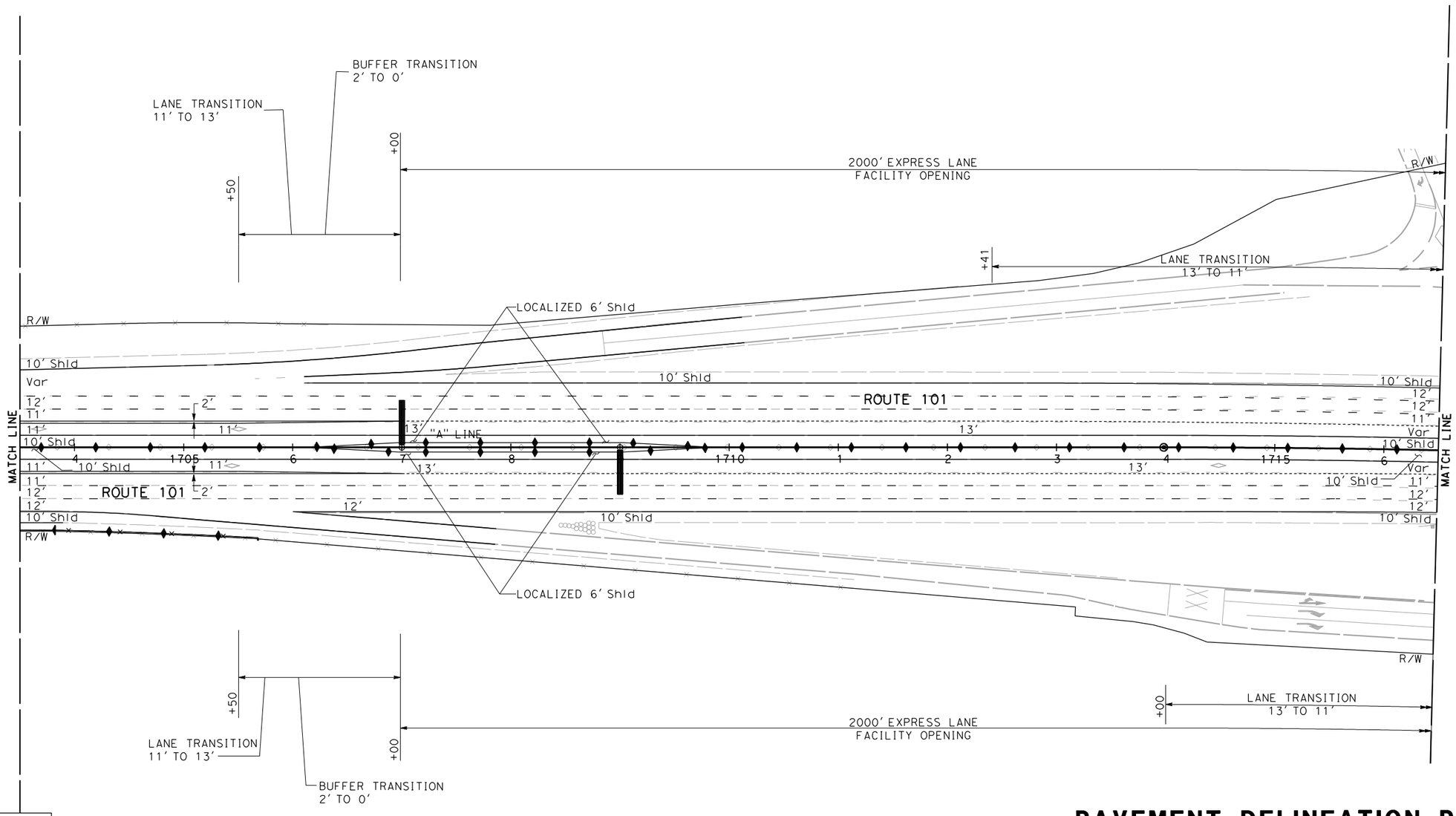
MOUNTAIN VIEW



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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-133

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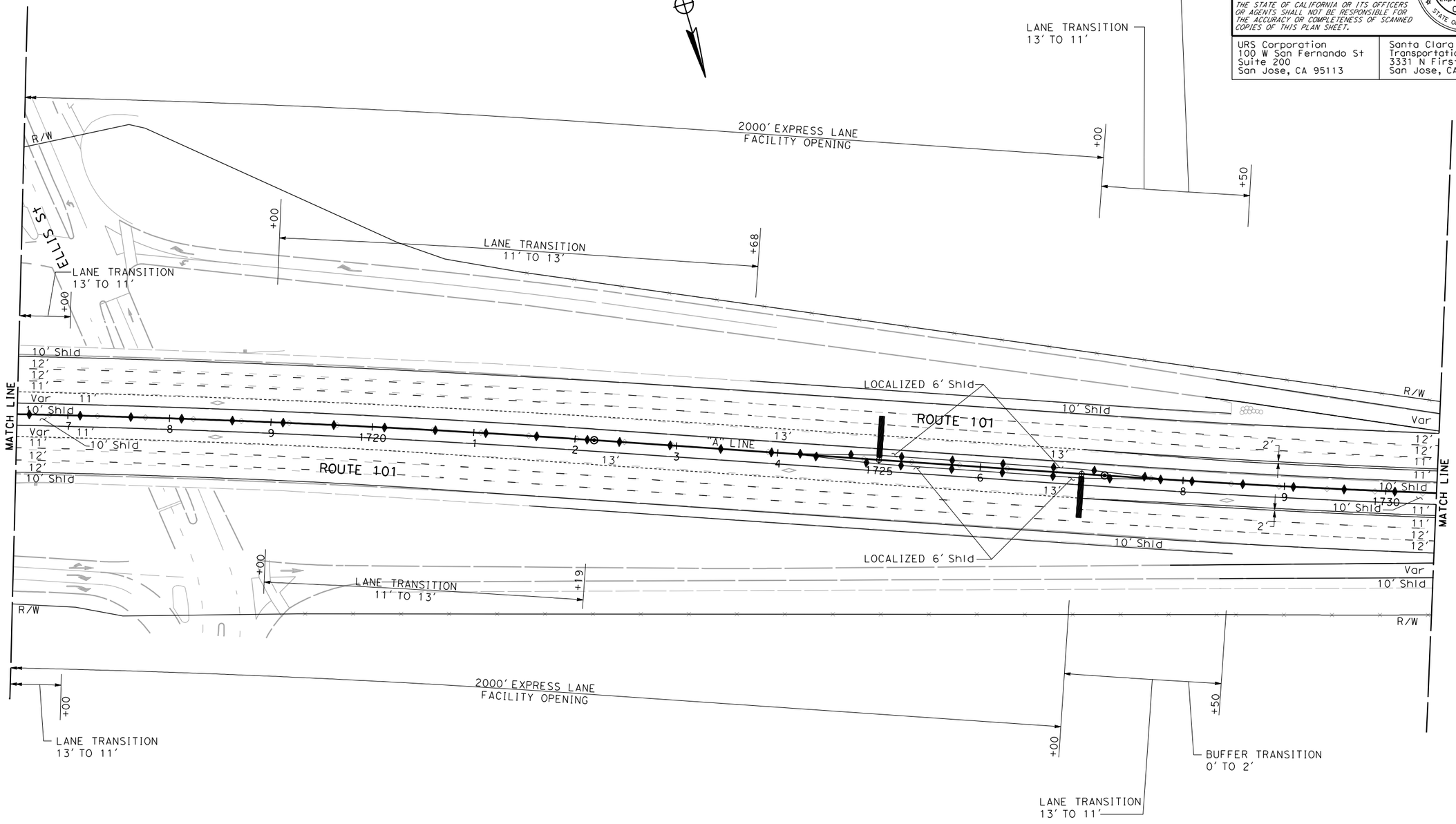

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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-134

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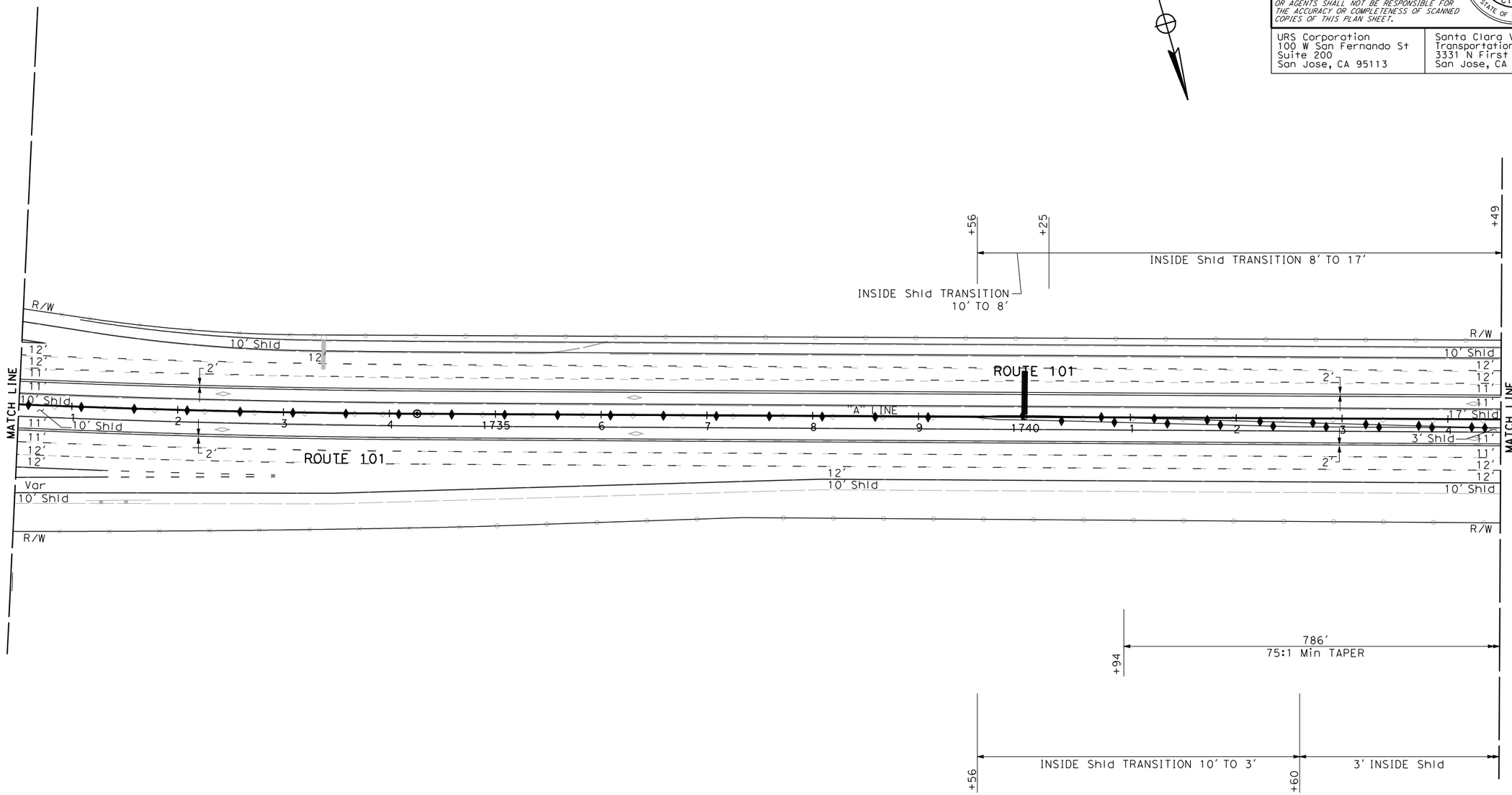

FOR NOTES AND LEGEND
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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-135

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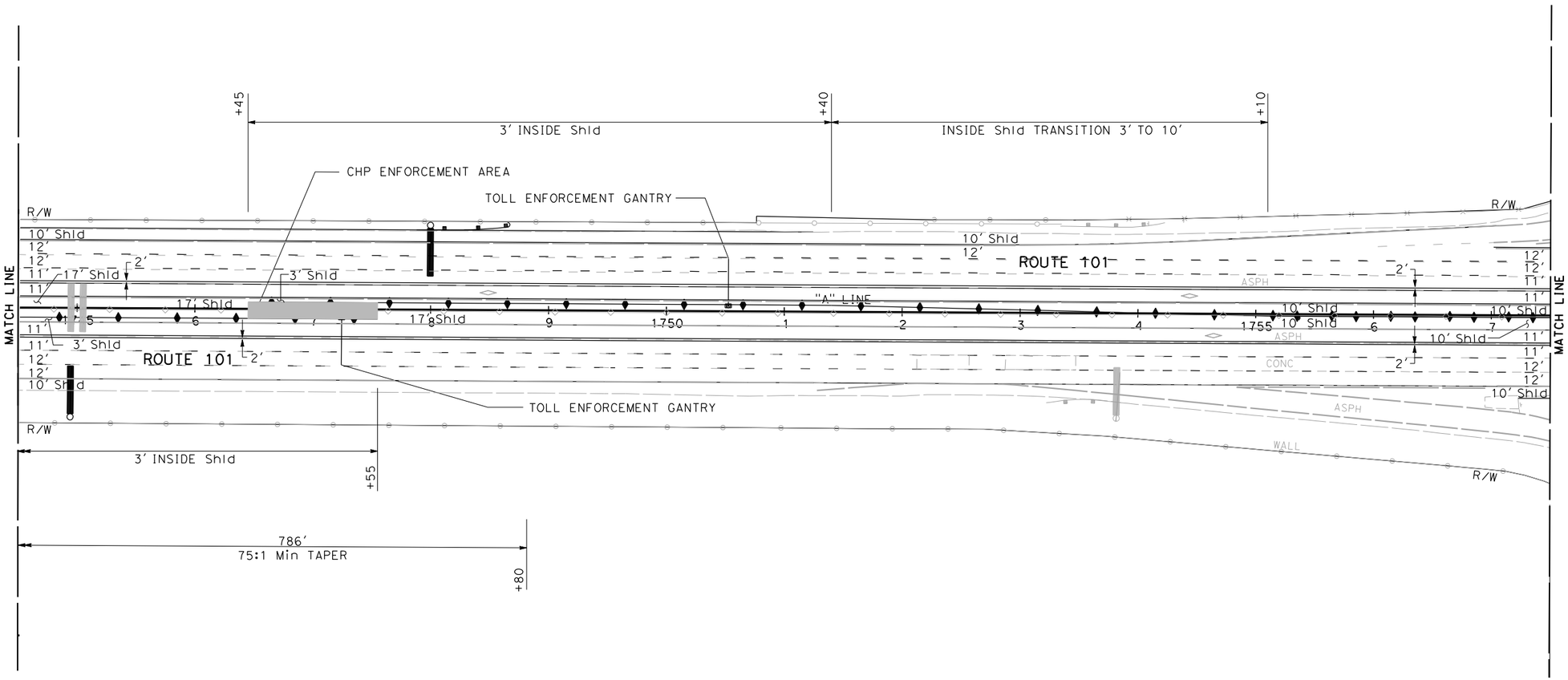

FOR NOTES AND LEGEND
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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-136

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CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
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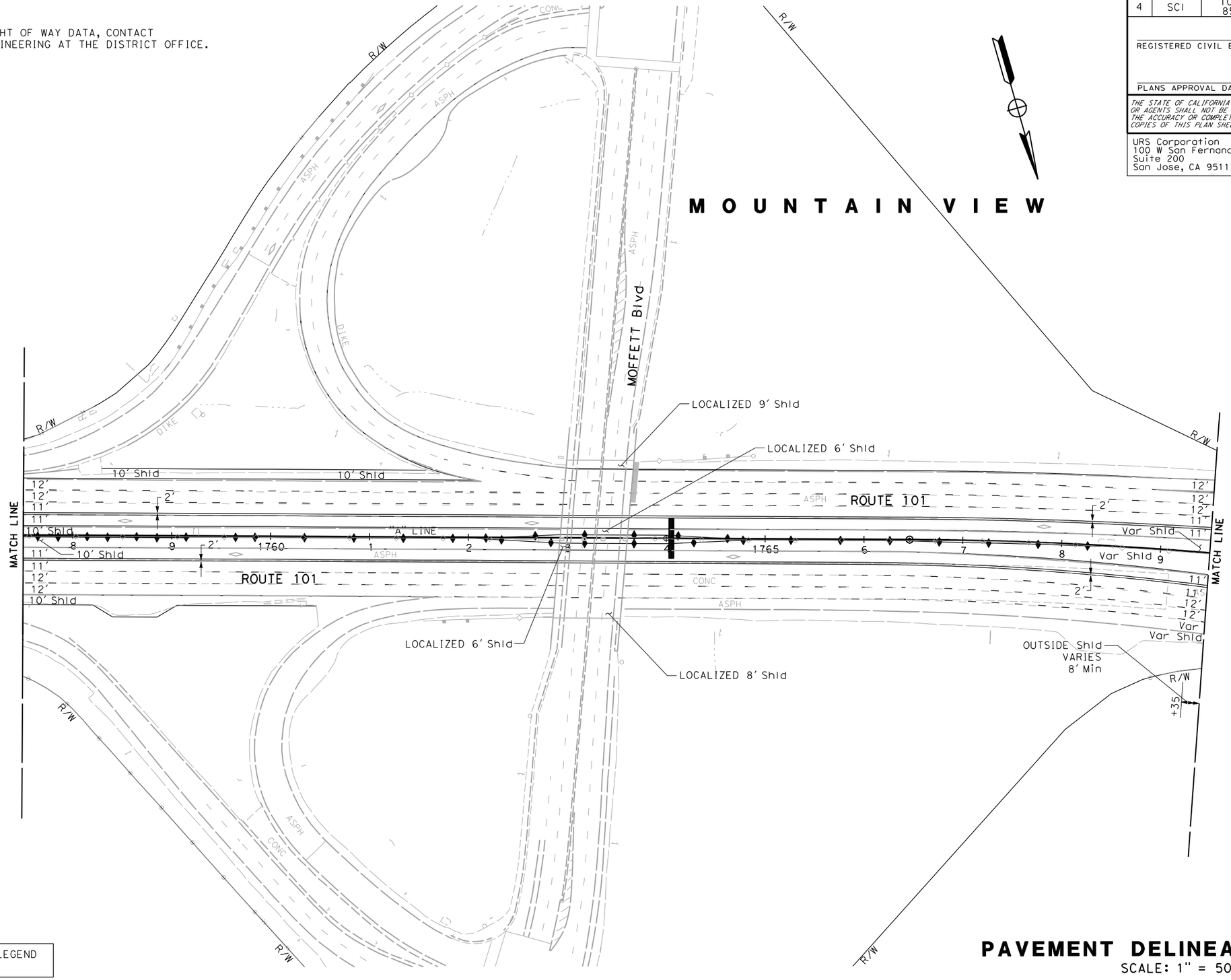

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-137

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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4	SCl	101 85	16.00/52.55 23.0/24.1		

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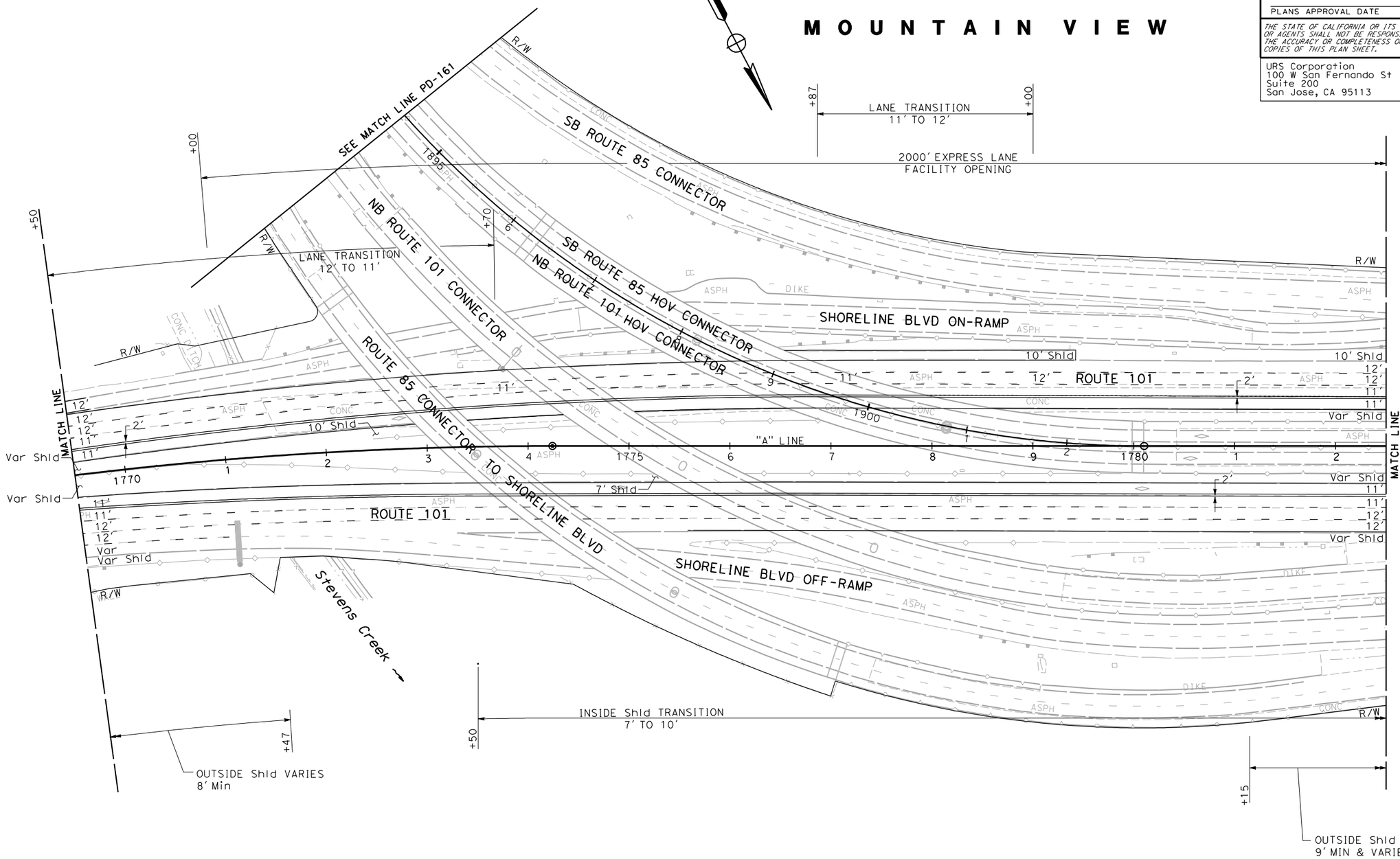

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-138

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LAN HO	RAMESH SATHIAMURTHY		
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CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
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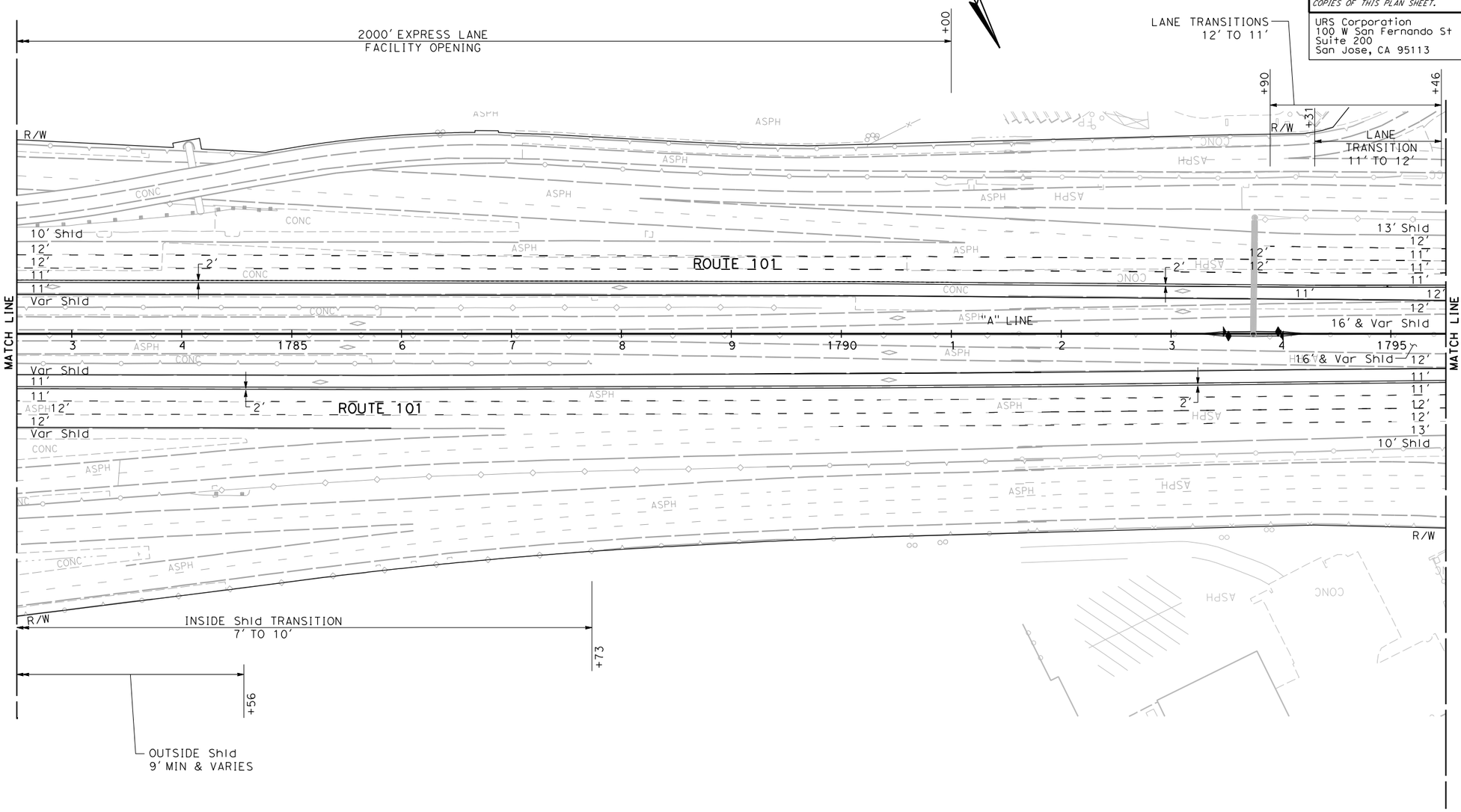

FOR NOTES AND LEGEND
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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-139

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CALCULATED-DESIGNED BY: LAN HO
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USERNAME => ernie_garnica
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UNIT xxxx

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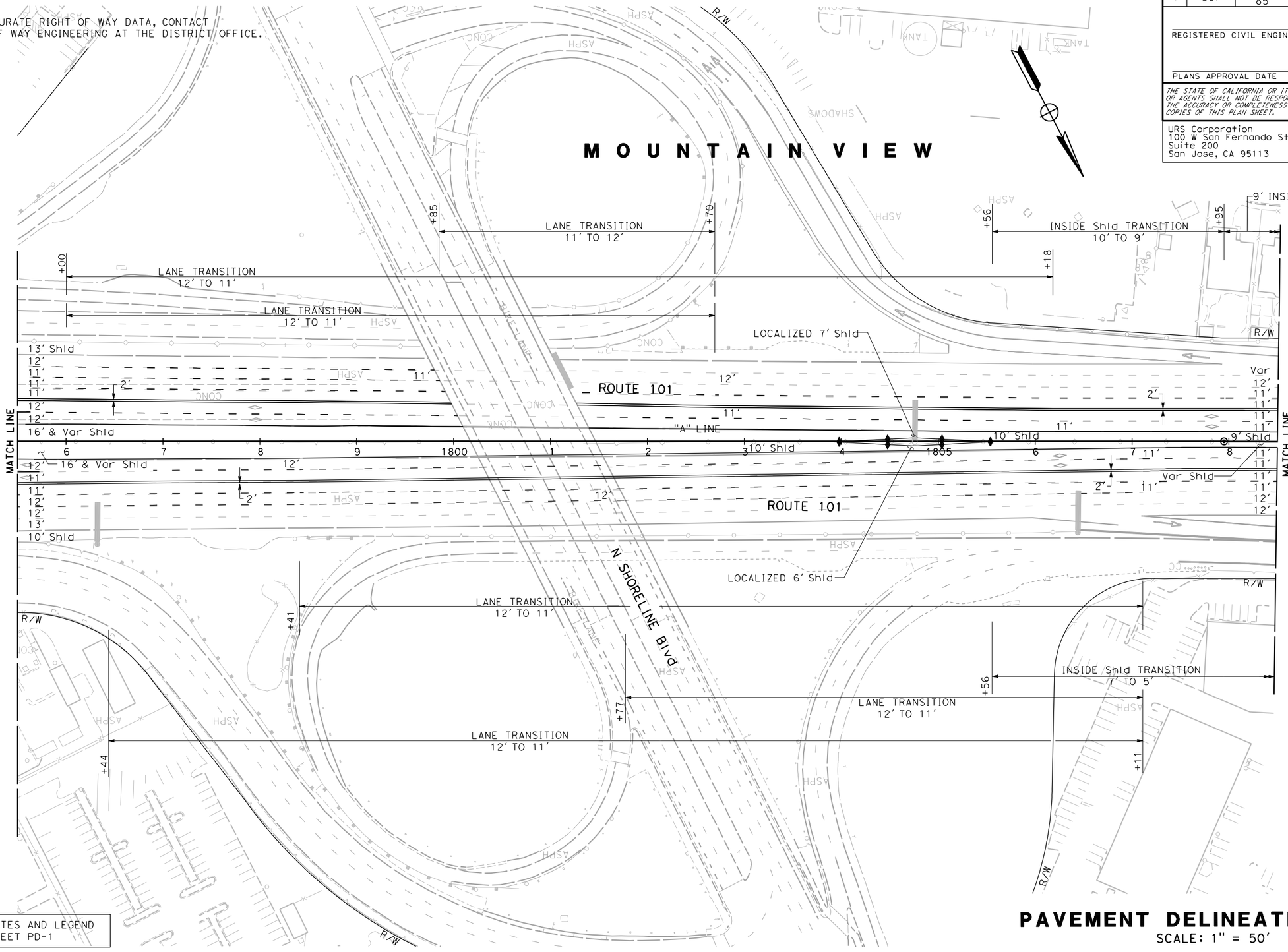

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-140

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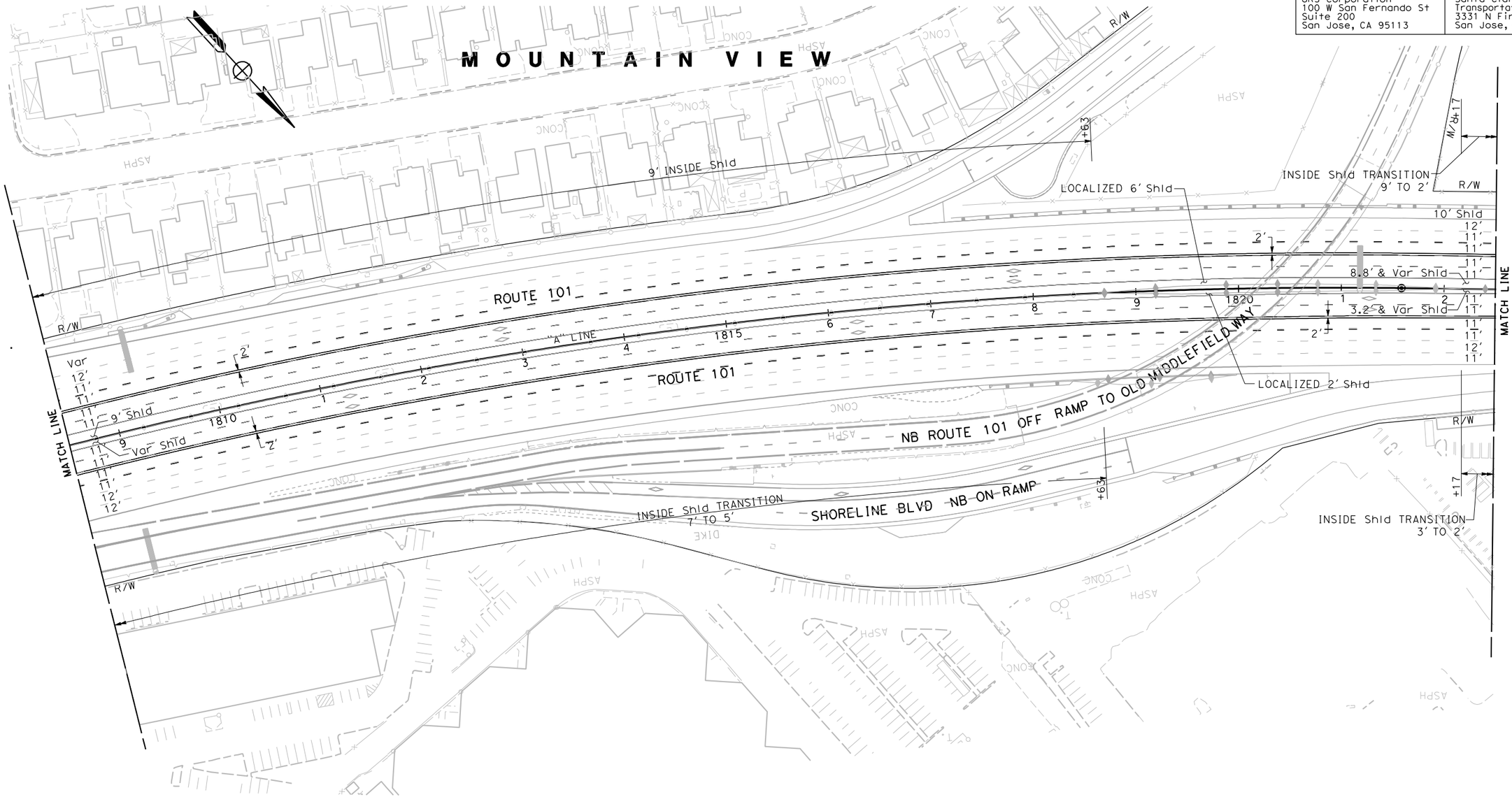

FOR NOTES AND LEGEND
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PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-141

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TIME PLOTTED => 11:32:18 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na141.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

NOTE:

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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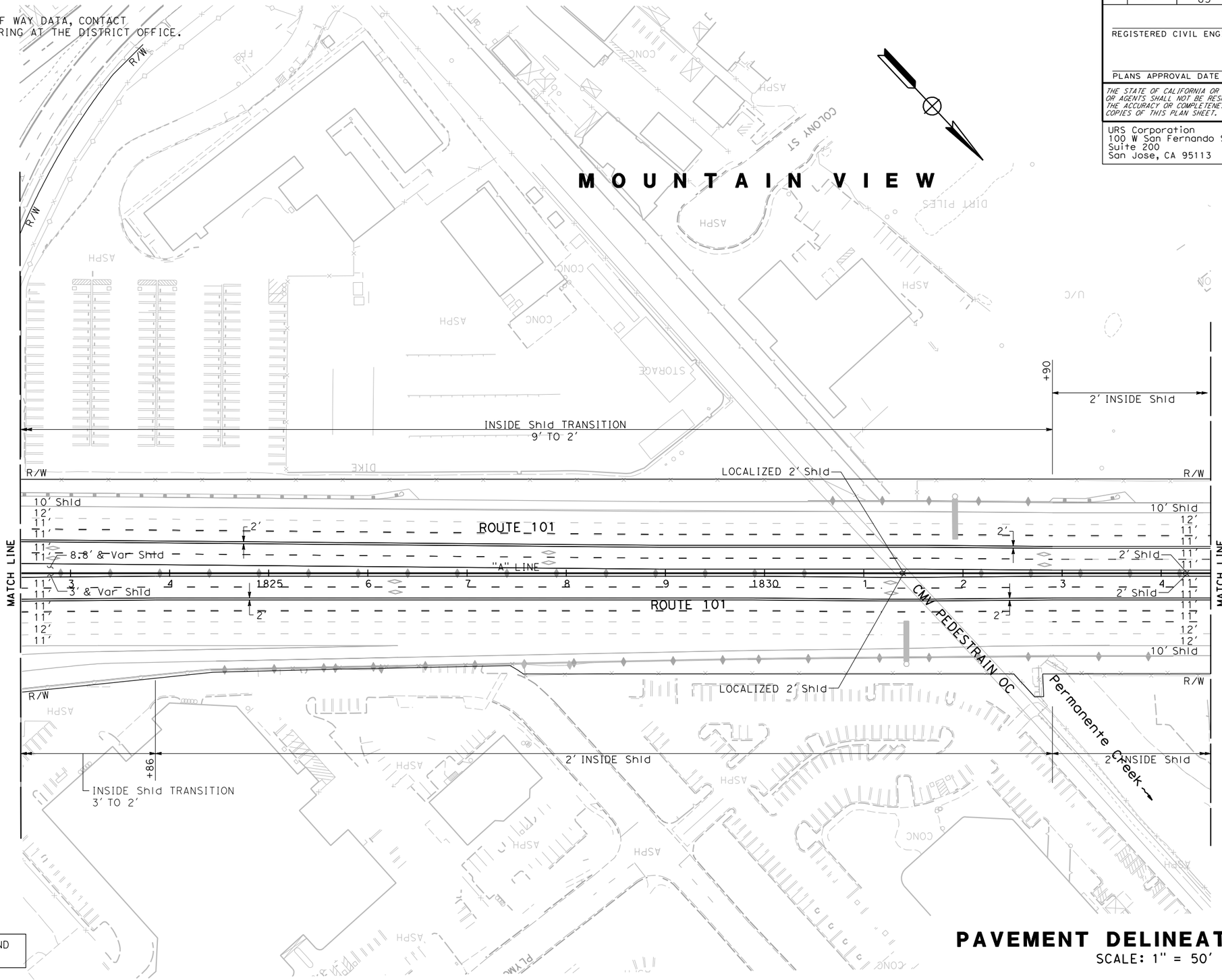

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-142

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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		-	-
CALCULATED-DESIGNED BY	LAN HO		
CHECKED BY	RAMESH SATHIAMURTHY		
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:32:28 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na142.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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Exp.
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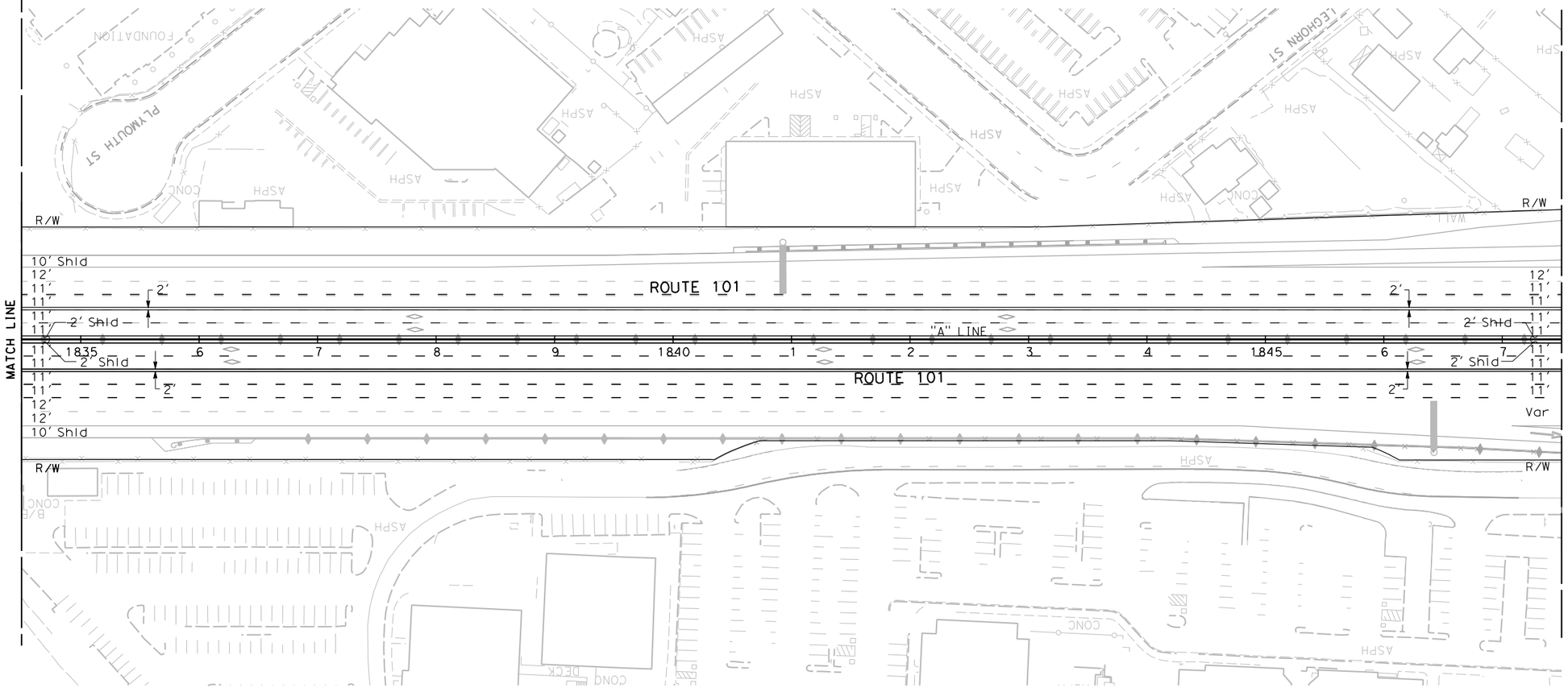
MOUNTAIN VIEW



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-143

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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CHECKED BY	RAMESH SATHIAMURTHY	-
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans	

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:32:34 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na143.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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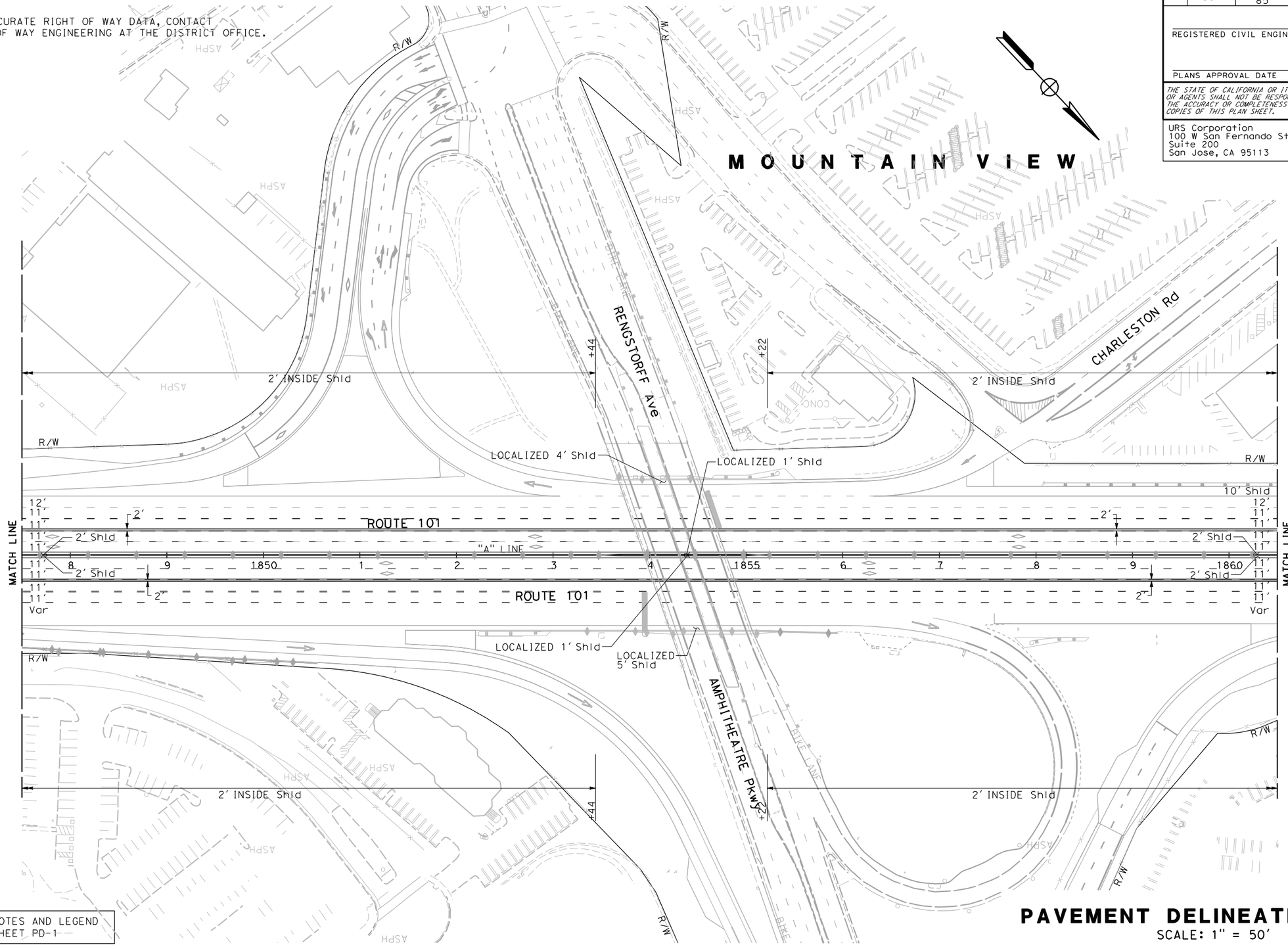

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-144

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO

CHECKED BY: RAMESH SATHIAMURTHY

REVISED BY: -

DATE REVISED: -

LAST REVISION: 8-14-14

DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:32:39 AM

BORDER LAST REVISED 3/16/2015

USERNAME => ernie_garnica
DGN FILE => ...\0400026710na144.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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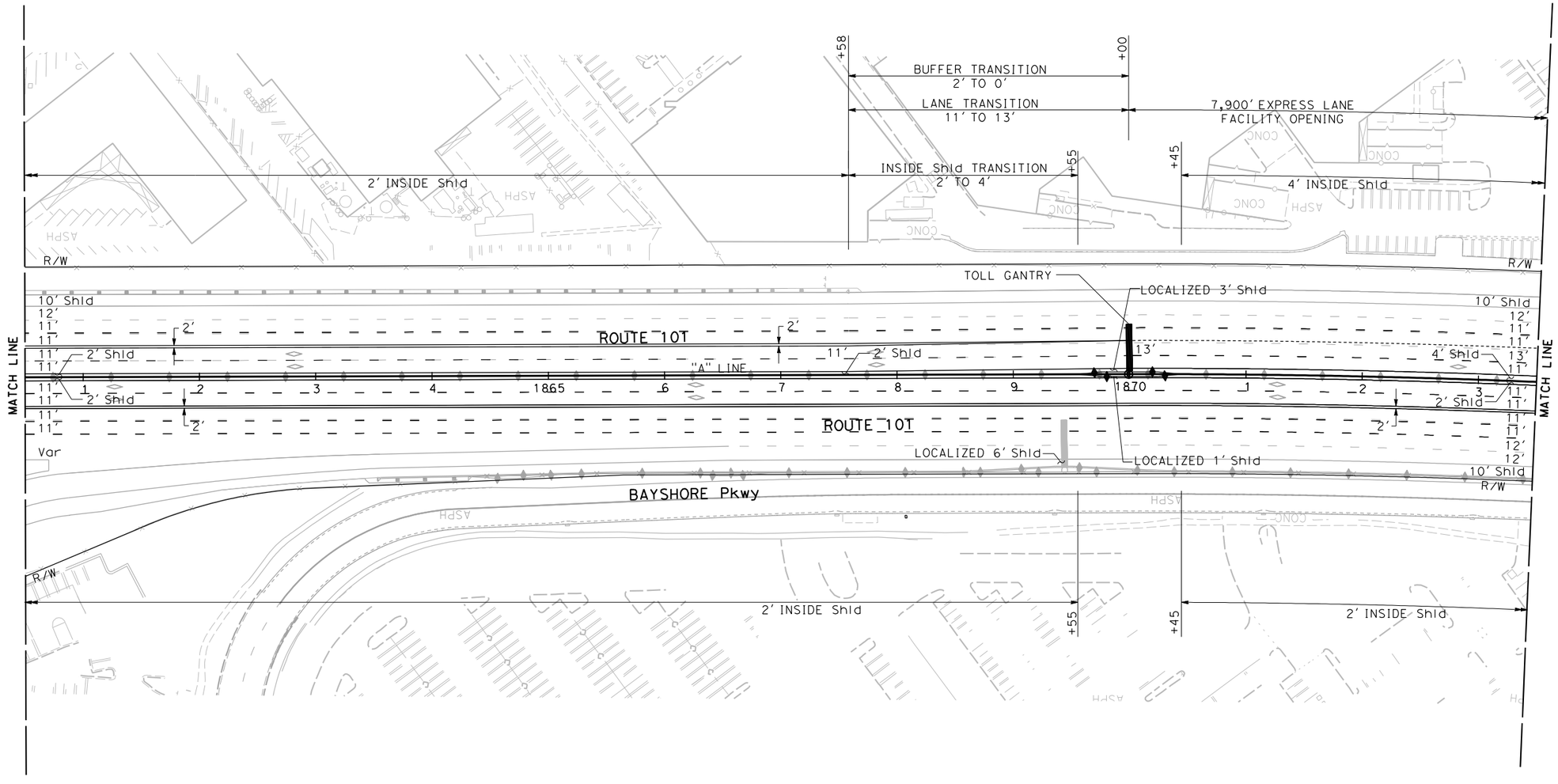
MOUNTAIN VIEW



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-145

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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CHECKED BY	RAMESH SATHIAMURTHY	-
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN	
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans	
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LAST REVISION — DATE PLOTTED => 3/16/2015
8-14-14 — TIME PLOTTED => 11:32:47 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

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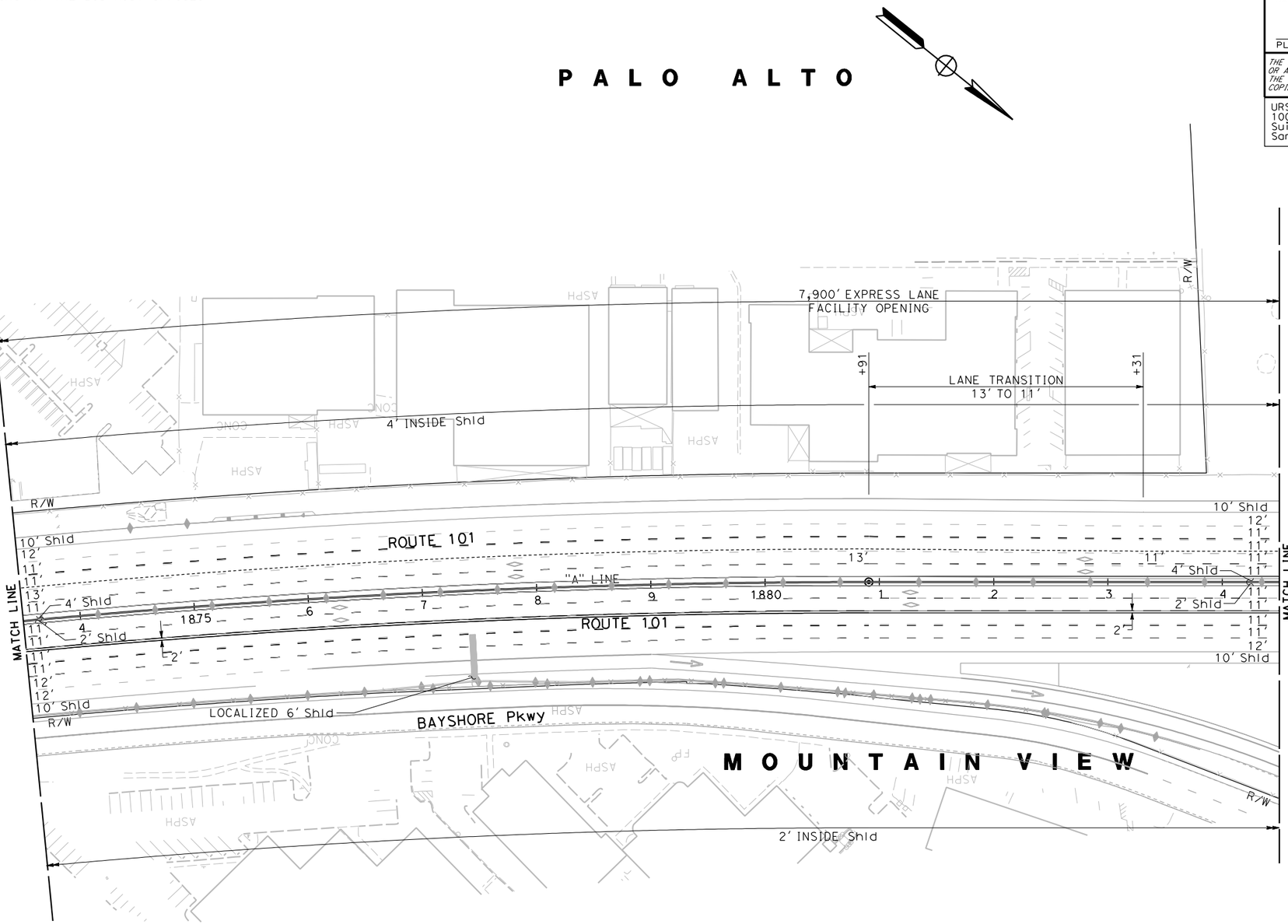

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-146

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:32:52 AM

BORDER LAST REVISED 3/16/2015
USERNAME => ernie_garnica
DGN FILE => ...\0400026710na146.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT xxxx
PROJECT NUMBER & PHASE 04000026710

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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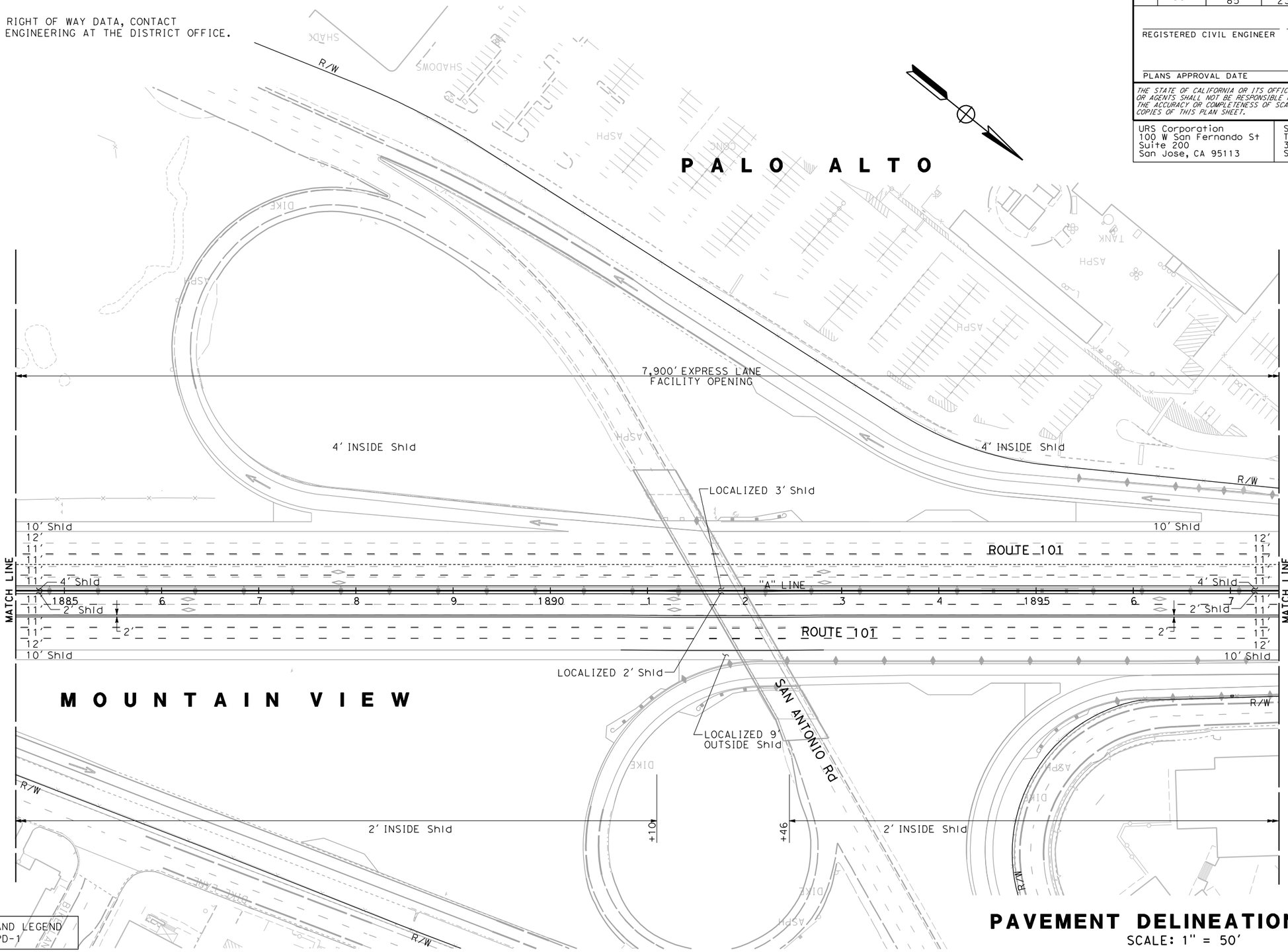

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-147

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO	REVISED BY	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	-

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:32:59 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na147.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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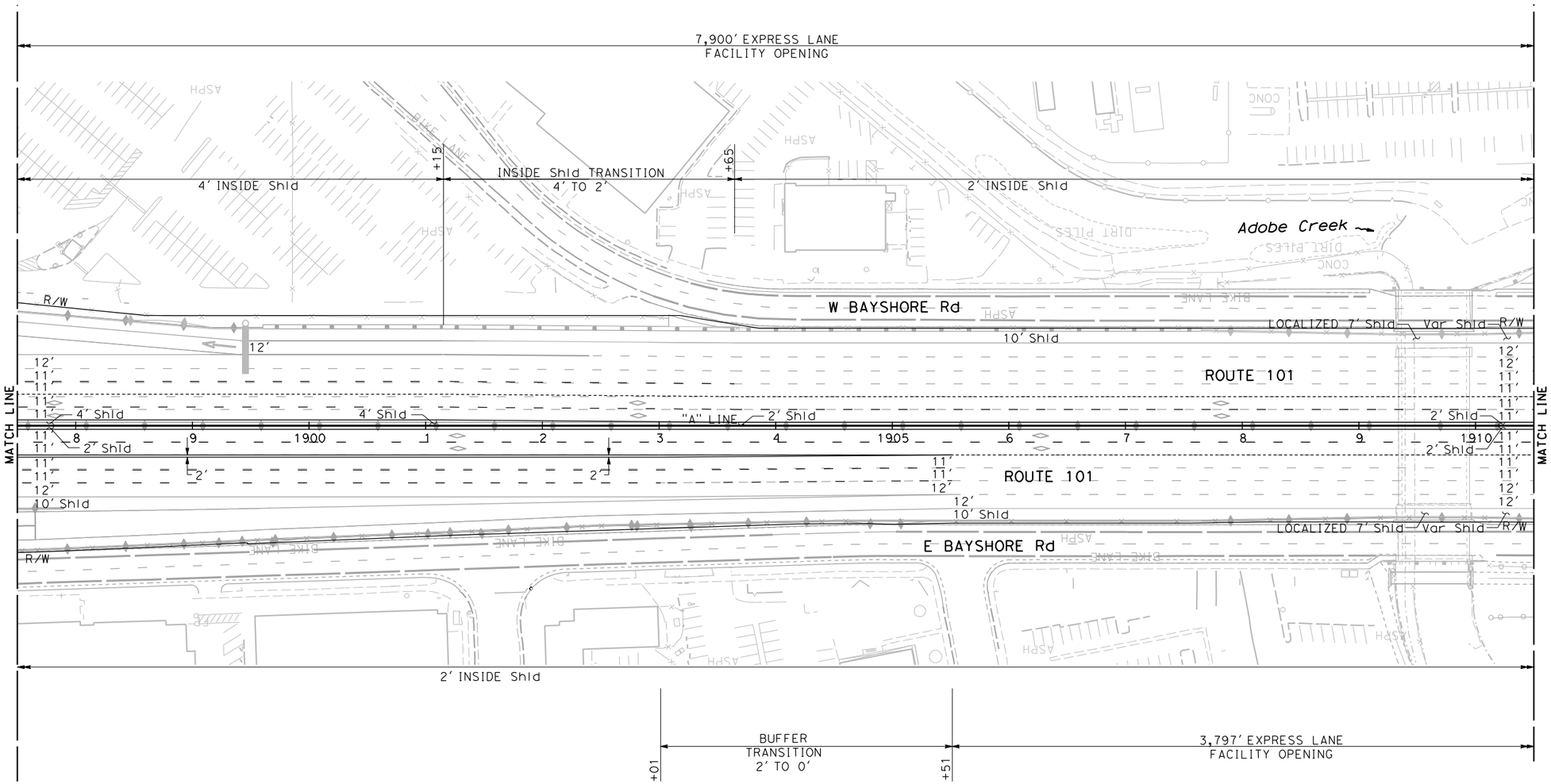

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-148

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION: 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:33:05 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na148.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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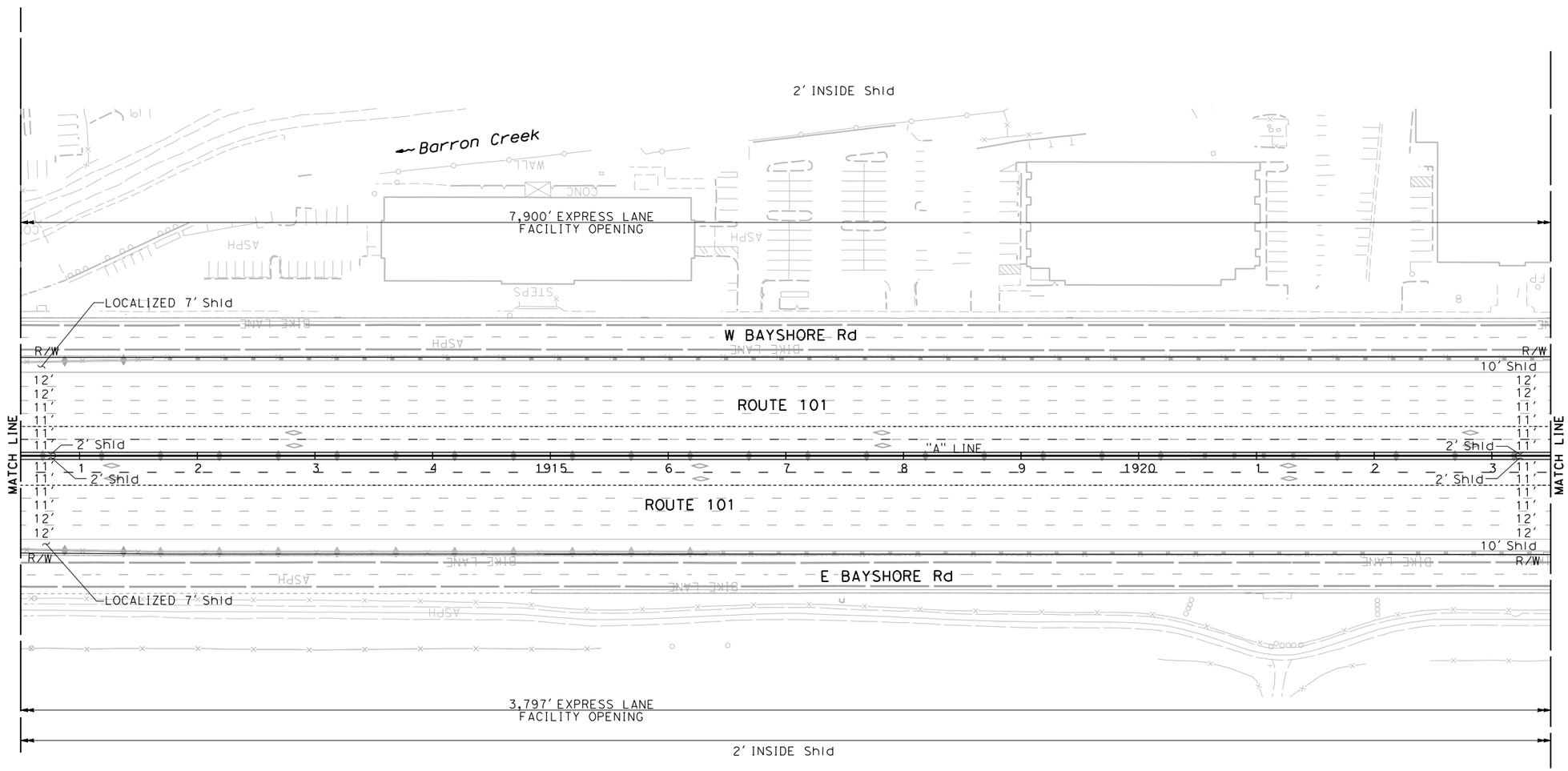

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-149

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CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:33:11 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na149.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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4	SCl	101 85	16.00/52.55 23.0/24.1		

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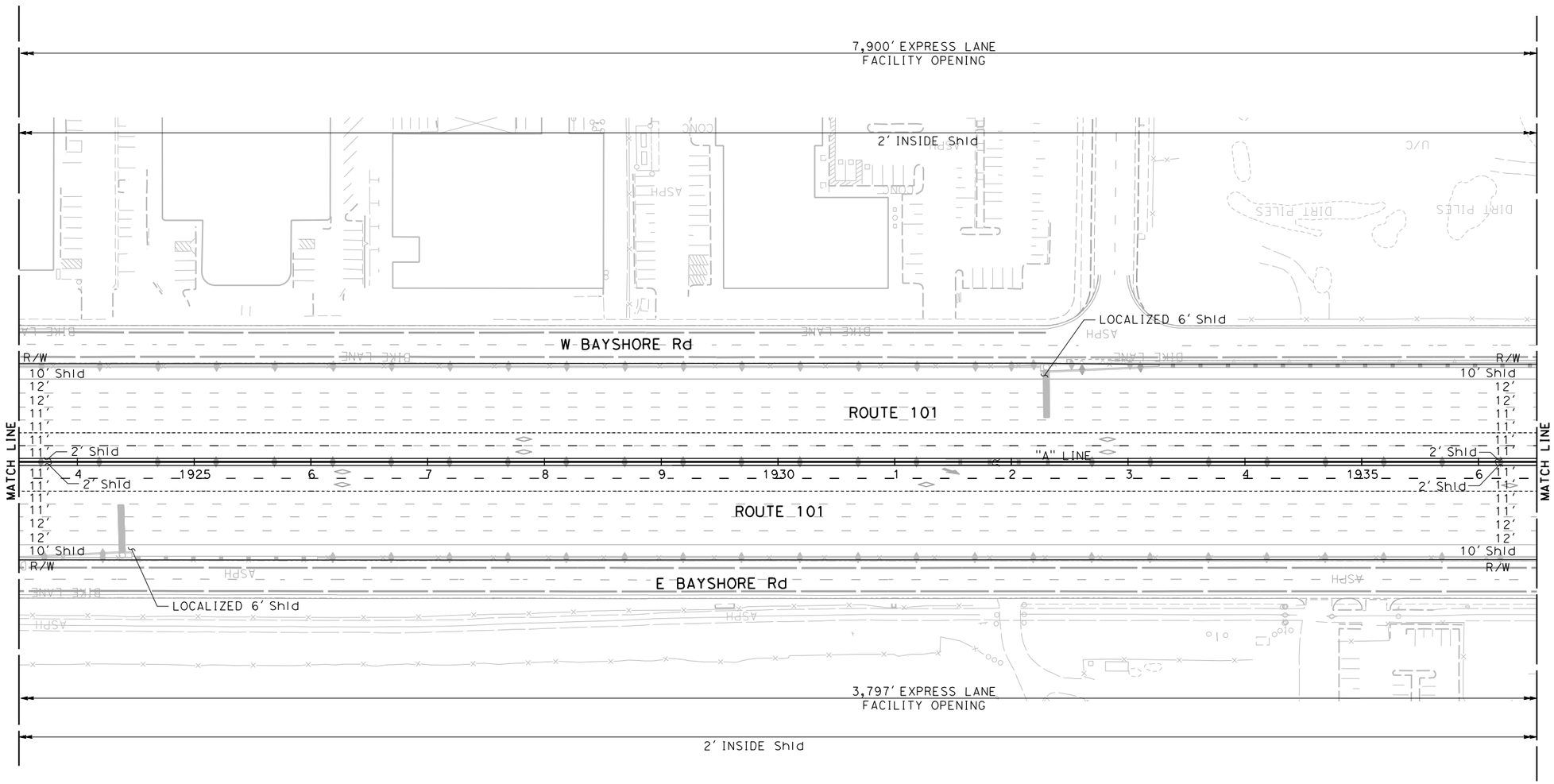

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-150

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CHECKED BY: RAMESH SATHIAMURTHY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:33:16 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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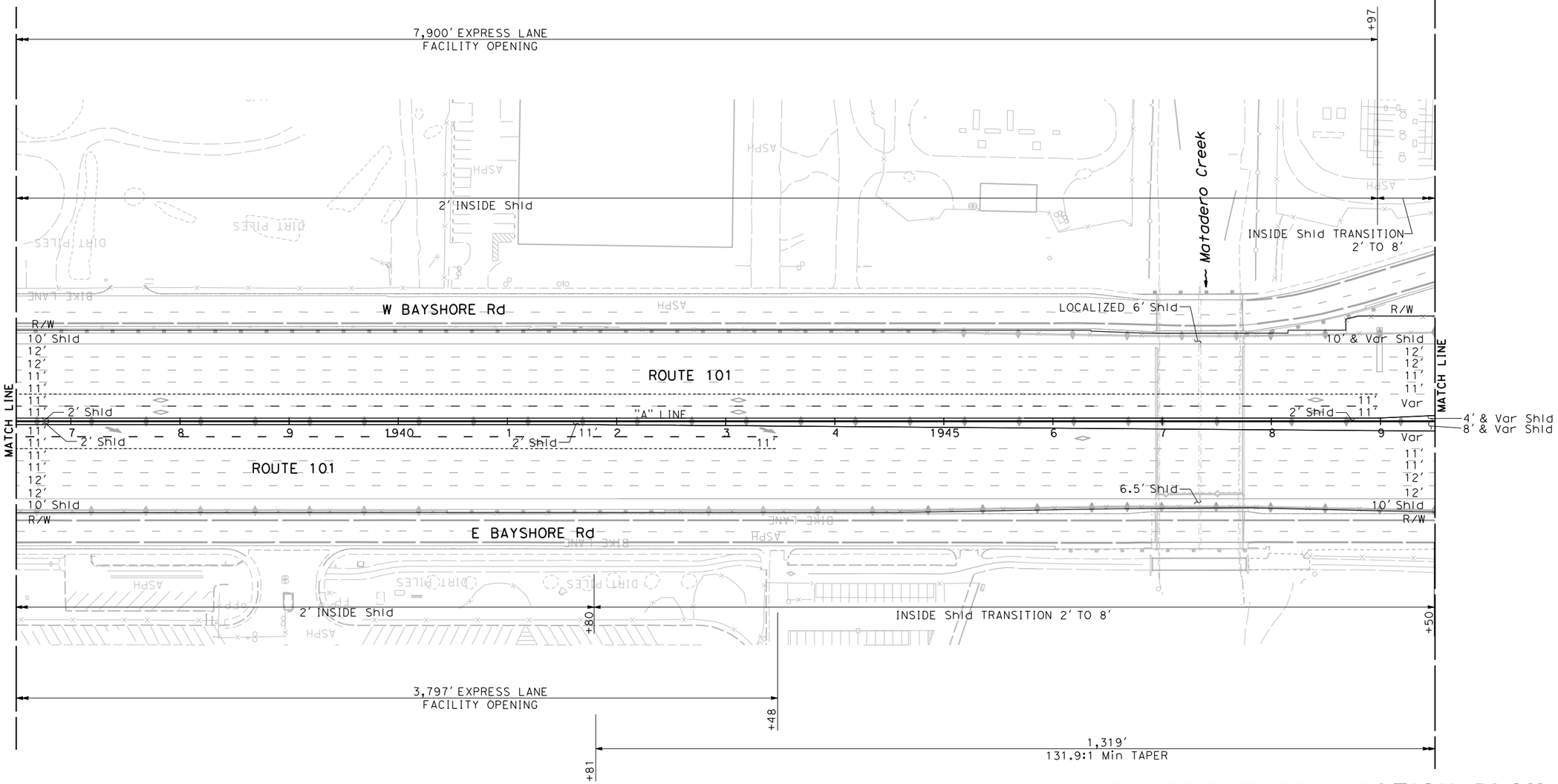

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-151

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

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	-	-

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CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:33:22 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\04000026710na151.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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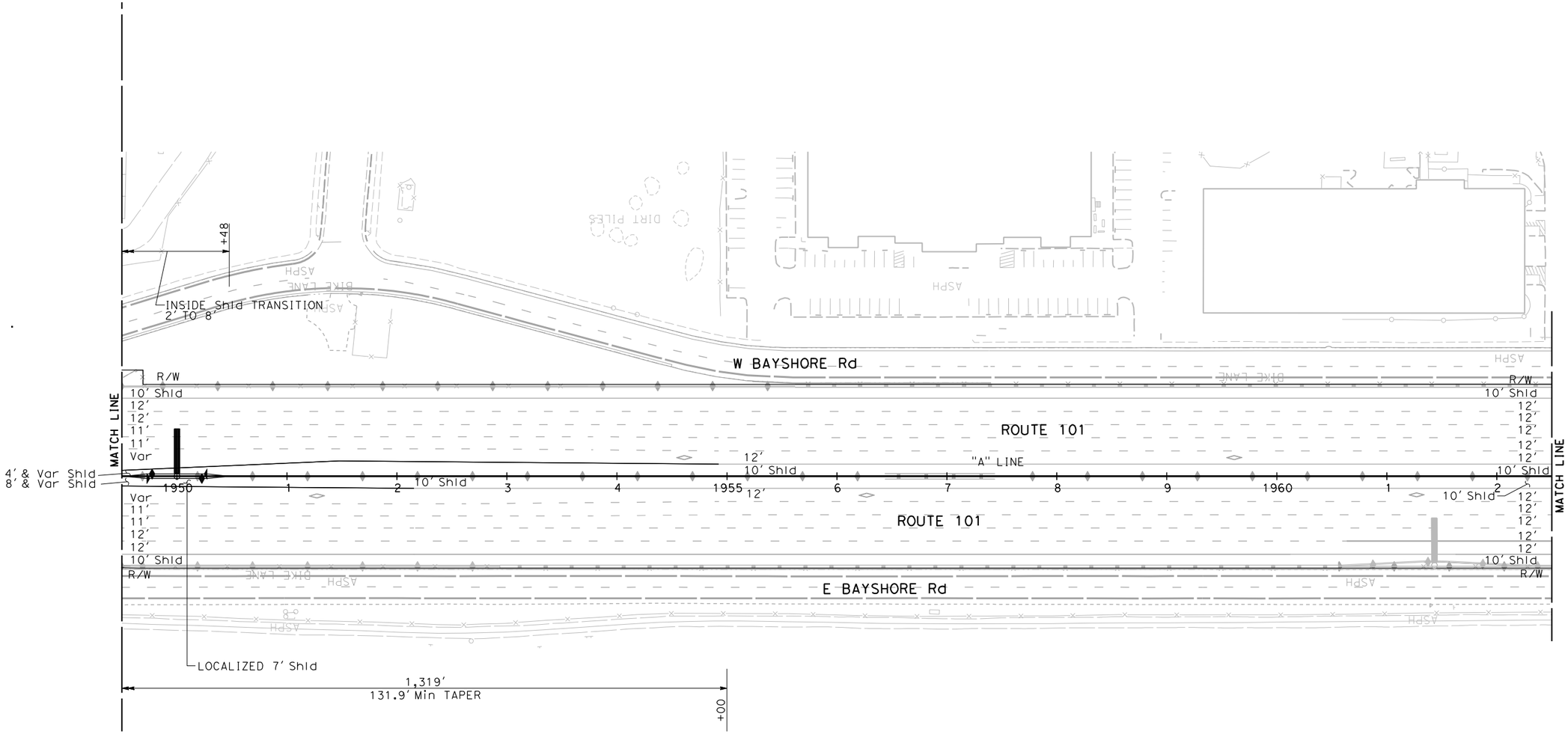

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-152

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Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

REVISED BY	DATE REVISED
-	-

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:33:28 AM

BORDER LAST REVISED 3/16/2015
USERNAME => ernie_garnica
DGN FILE => ...\0400026710na152.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT xxxx
PROJECT NUMBER & PHASE 04000026710

NOTE:

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

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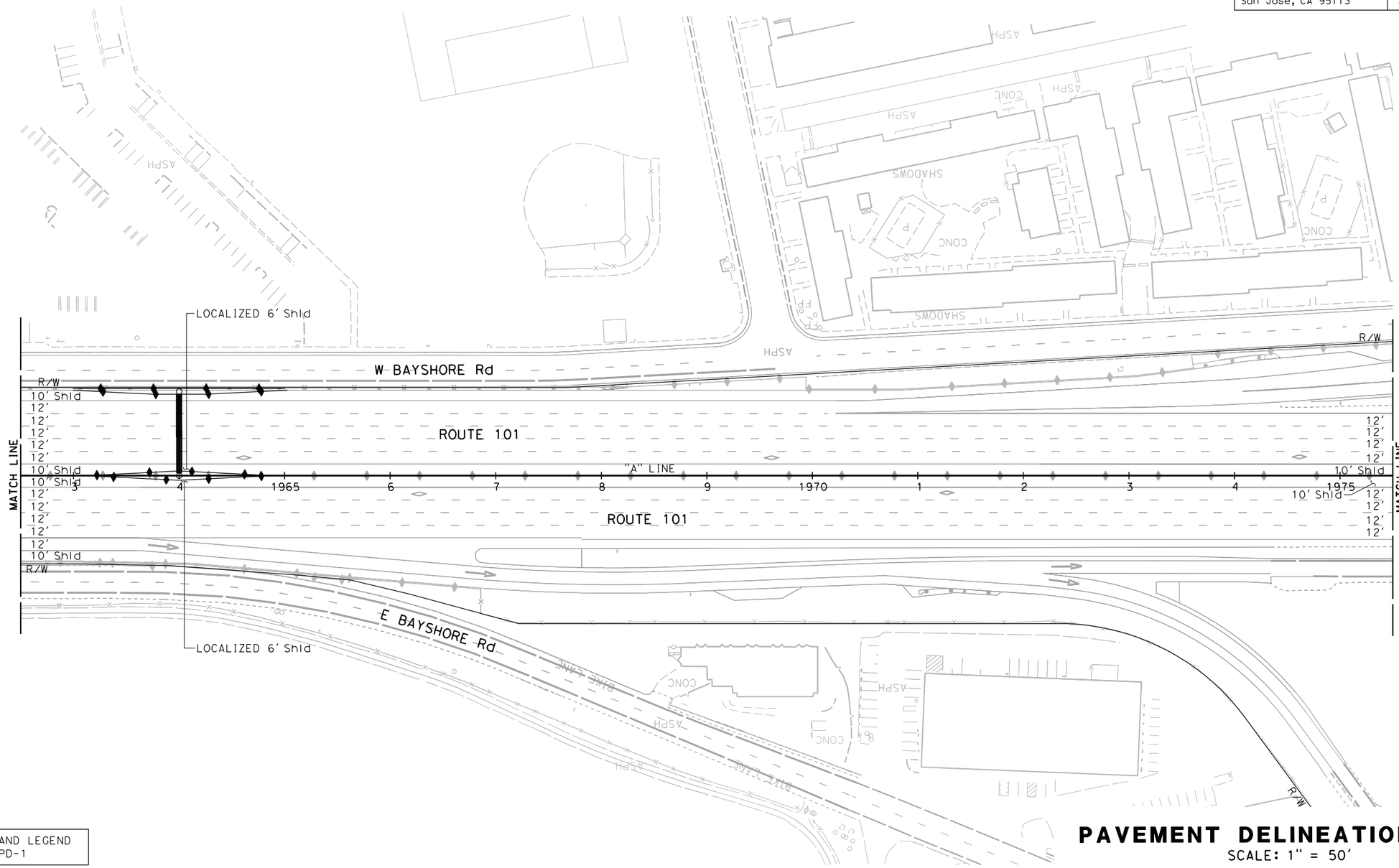
P A L O A L T O



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-153

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

CALCULATED-DESIGNED BY	LAN HO	-	-
CHECKED BY	RAMESH SATHIAMURTHY	DATE REVISED	REVISED BY
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans		

LAST REVISION 8-14-14 | DATE PLOTTED => 3/16/2015 TIME PLOTTED => 11:33:36 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica DGN FILE => ...\0400026710na153.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER _____ DATE _____

PLANS APPROVAL DATE _____

REGISTERED PROFESSIONAL ENGINEER
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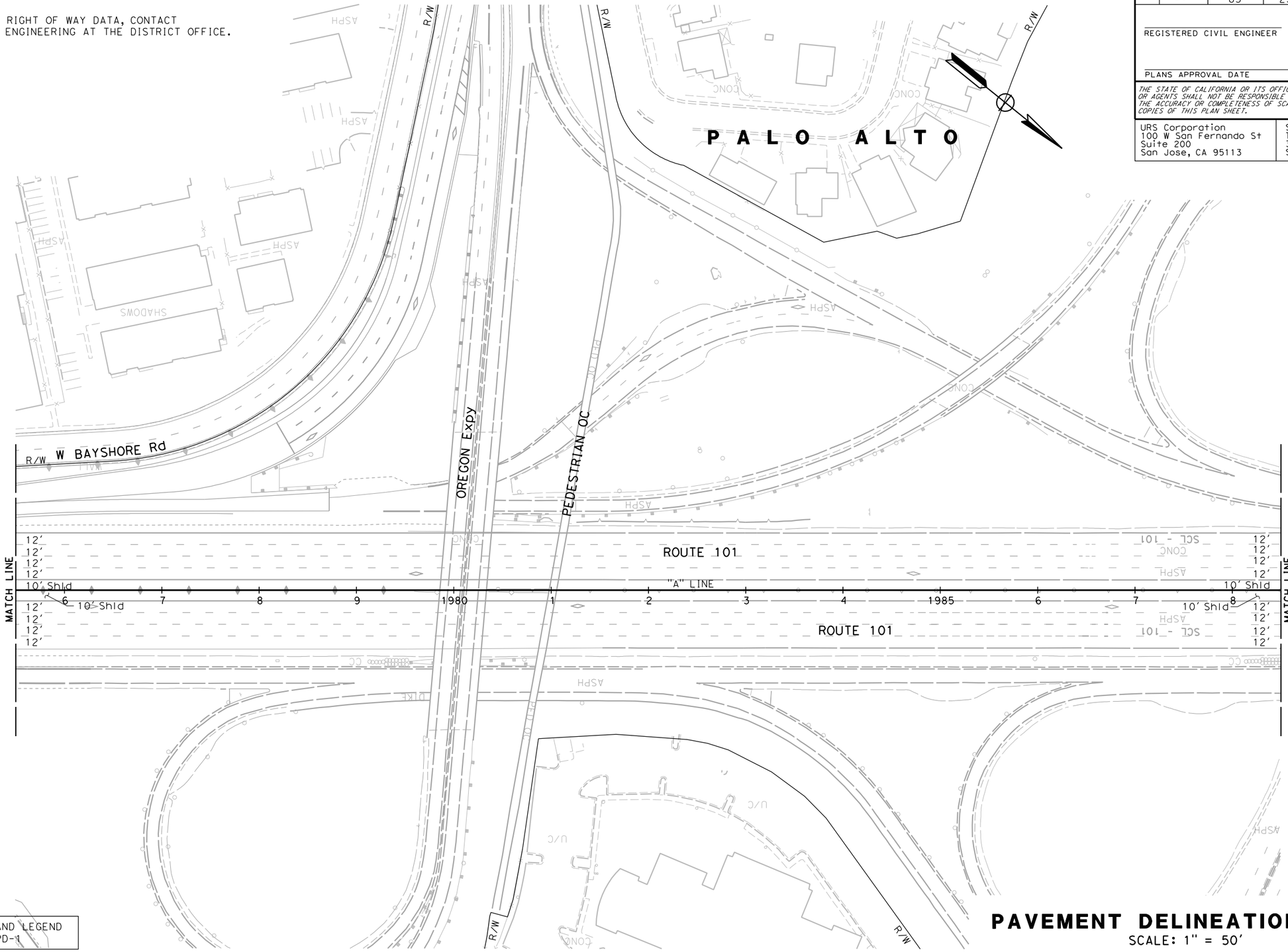

FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-154

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION: 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:33:43 AM

BORDER LAST REVISED 3/16/2015 | USERNAME => ernie_garnica | DGN FILE => ...\0400026710na154.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT xxxx | PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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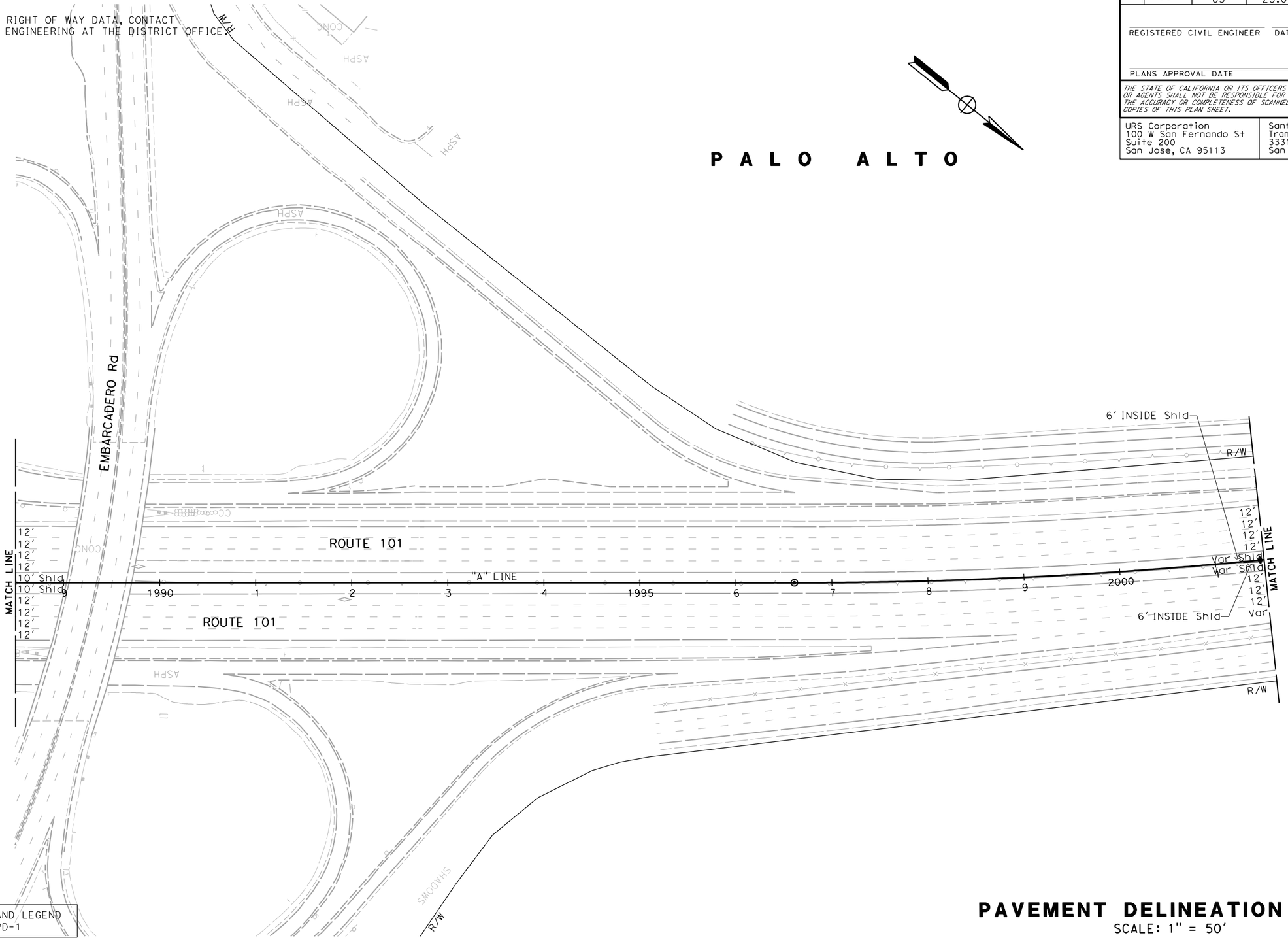
Transportation Authority
3331 N First Street
San Jose, CA 95134

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



FOR NOTES AND LEGEND SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-155

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO

CHECKED BY: RAMESH SATHIAMURTHY

REVISED BY	DATE REVISED
-	-

LAST REVISION: 8-14-14

DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:33:48 AM

BORDER LAST REVISED 3/16/2015

USERNAME => ernie_garnica
DGN FILE => ...\04000026710na155.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE 04000026710

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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NOTE:

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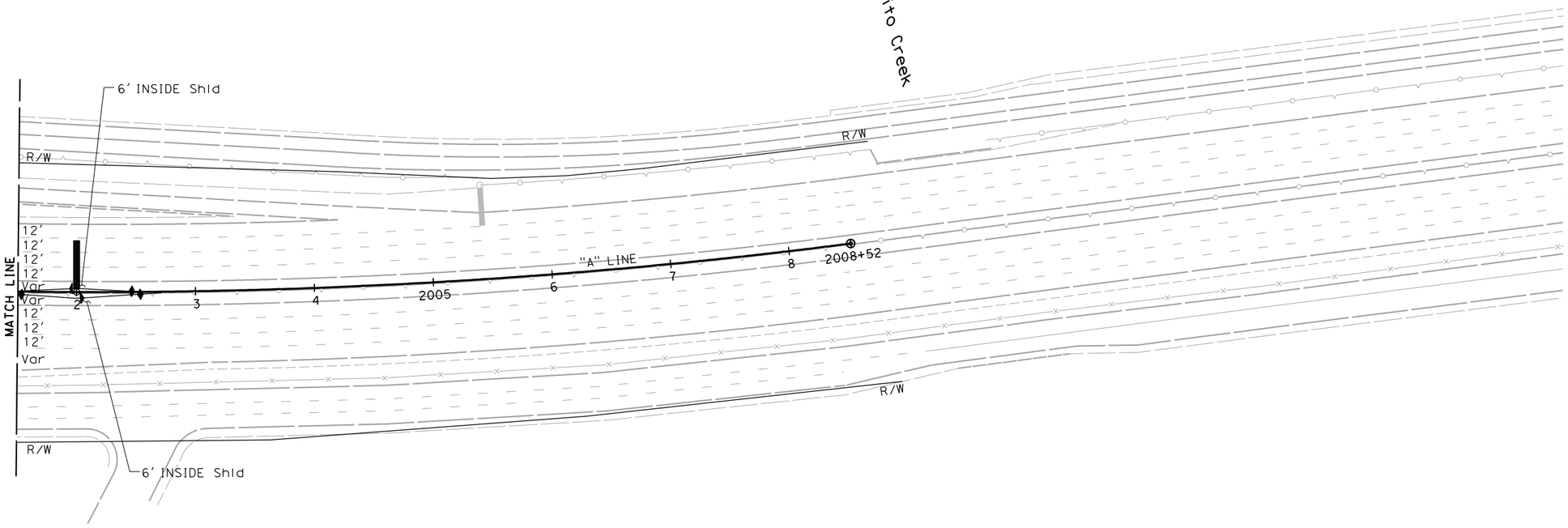
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

P A L O A L T O



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-156

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION: 8-14-14
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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NOTE:

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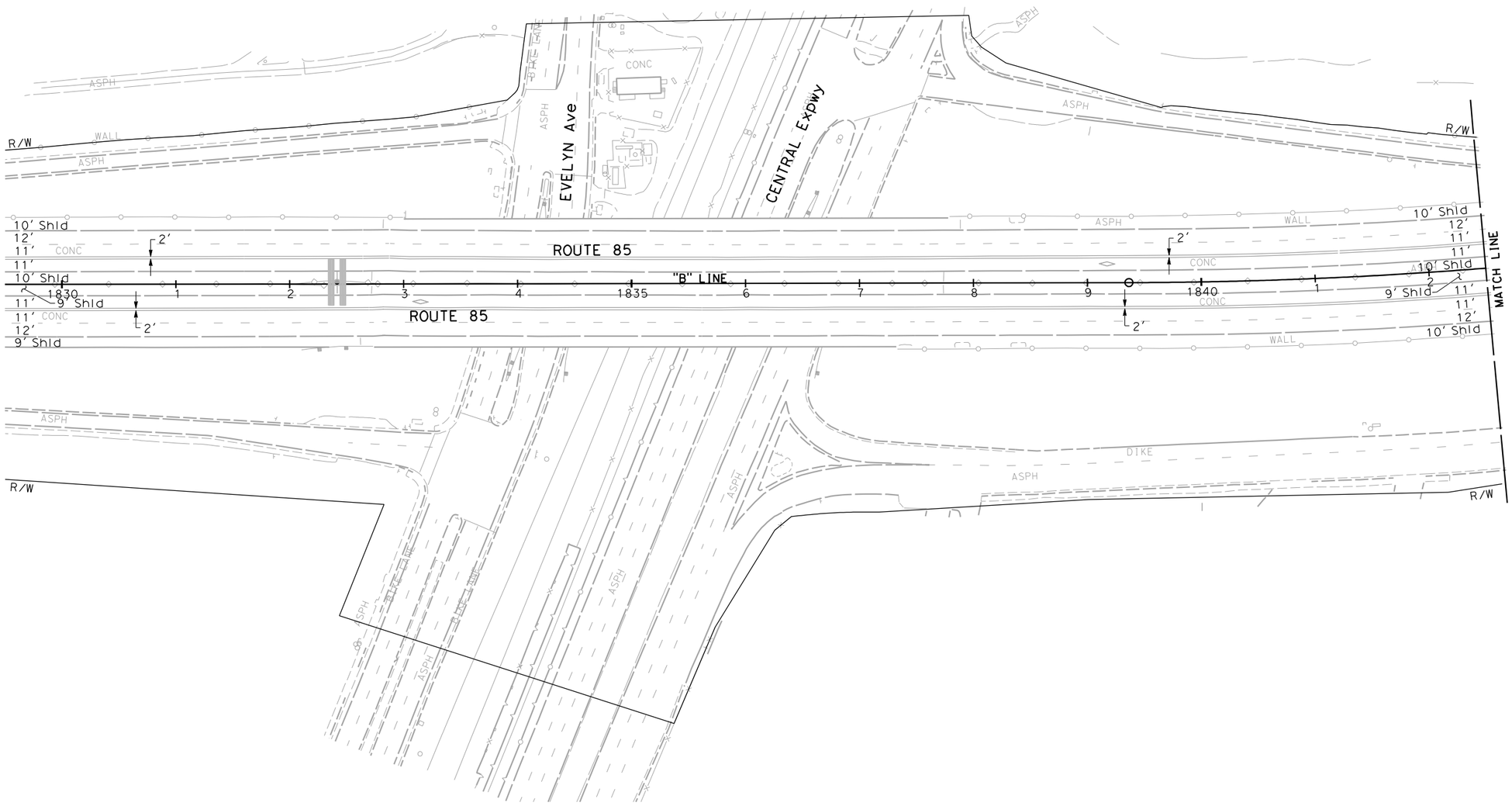
MOUNTAIN VIEW



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-157

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

REVISED BY	-		
DATE REVISED	-		
CALCULATED-DESIGNED BY	LAN HO		
CHECKED BY	RAMESH SATHIAMURTHY		
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans		

LAST REVISION 8-14-14
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NOTE:

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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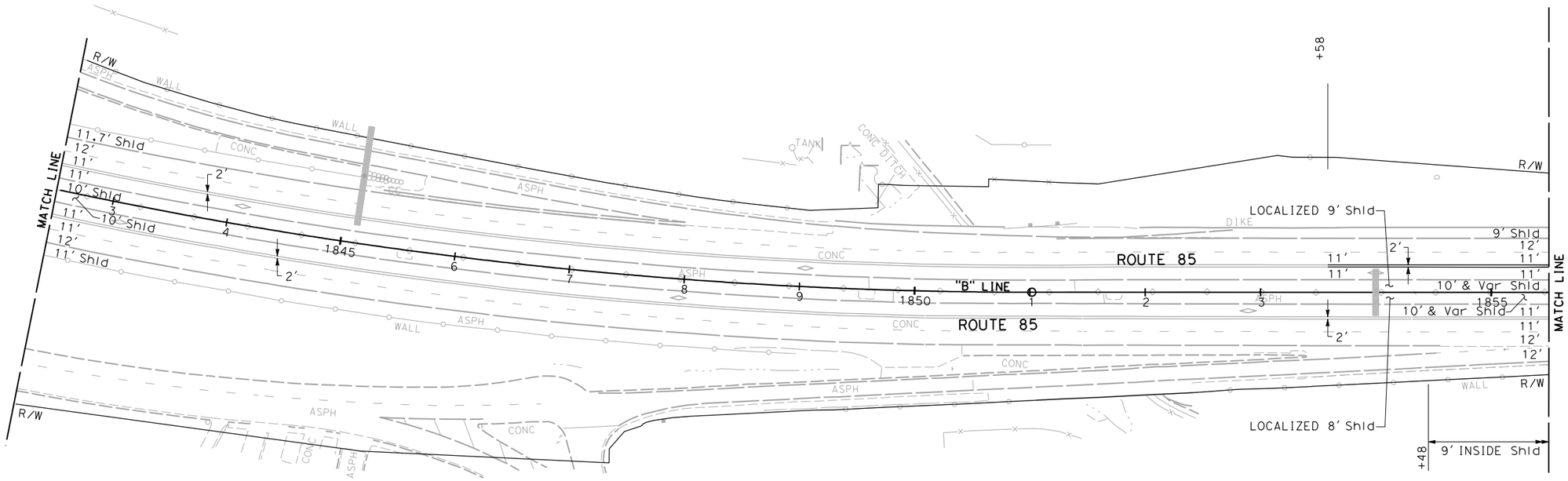
M O U N T A I N V I E W



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-158

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY

REVISED BY | DATE REVISED
- | -

LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:34:04 AM

BORDER LAST REVISED 3/16/2015
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DGN FILE => ...\0400026710na158.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT xxxx
PROJECT NUMBER & PHASE 04000026710

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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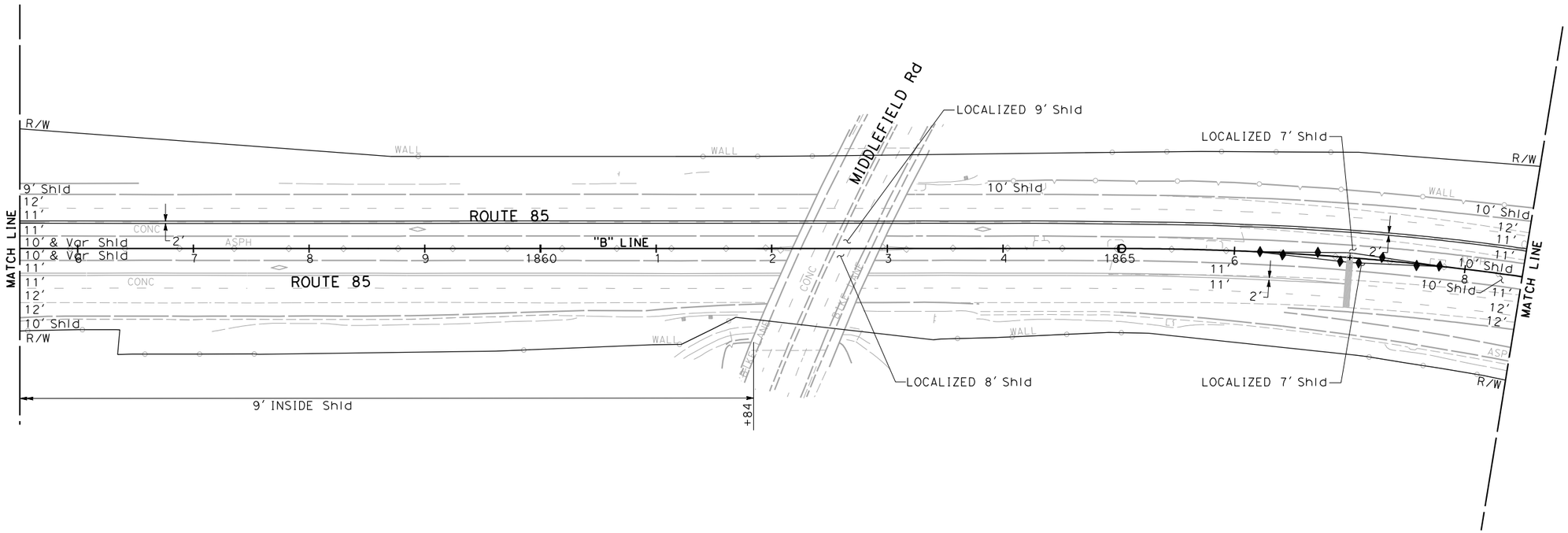
MOUNTAIN VIEW



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-159

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
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DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:34:09 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

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PLANS APPROVAL DATE

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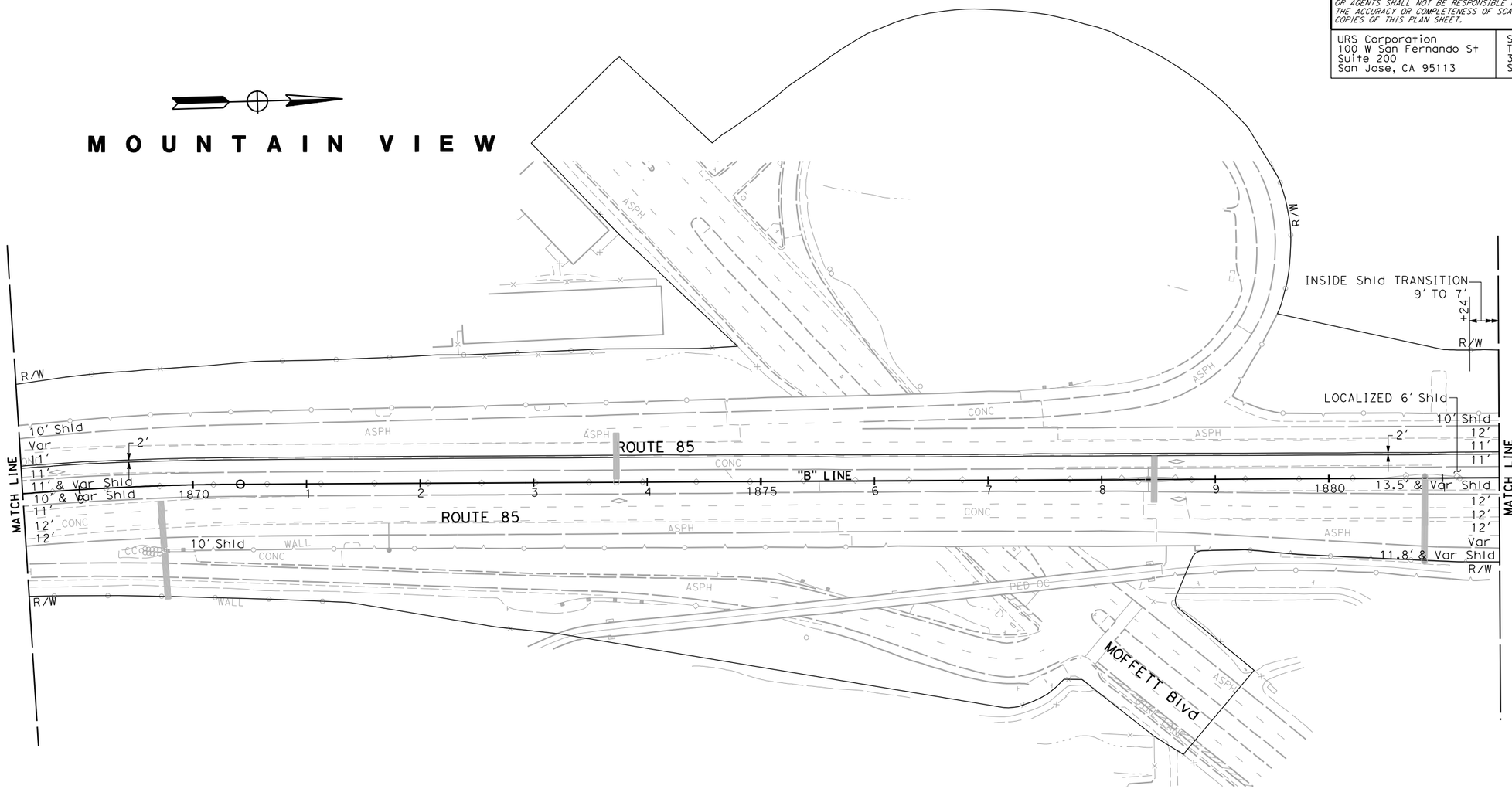
MOUNTAIN VIEW



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-160

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:34:14 AM

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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San Jose, CA 95134

NOTE:

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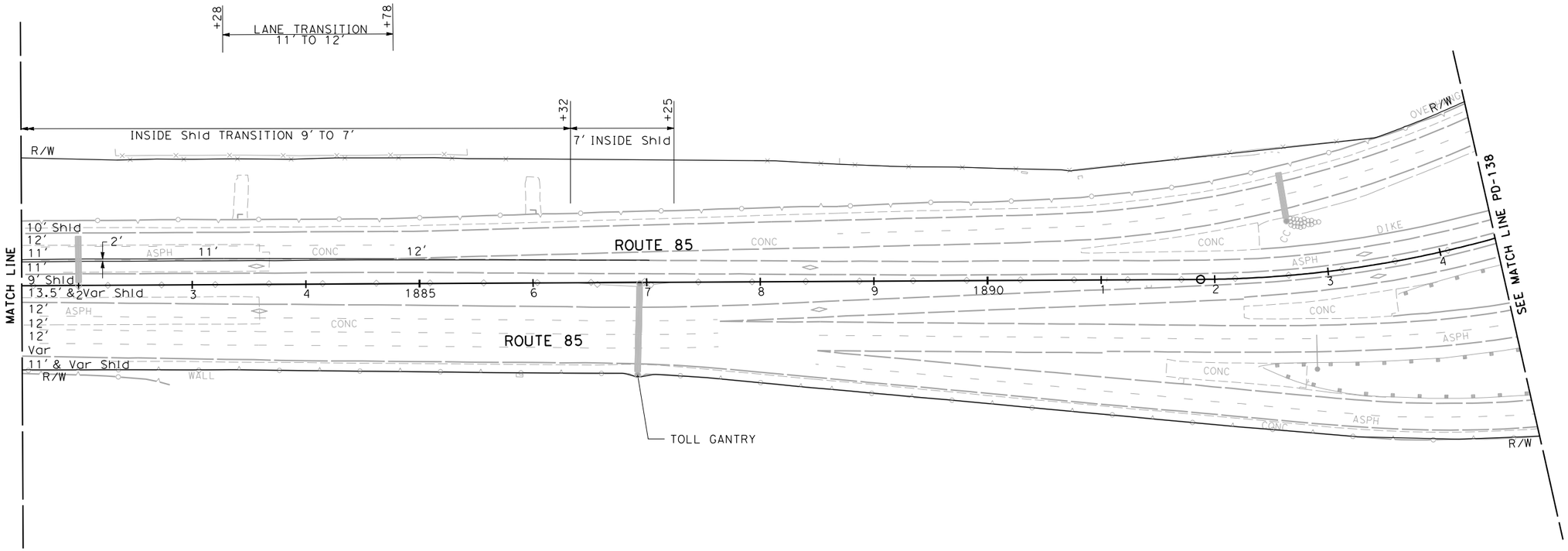
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

M O U N T A I N V I E W



FOR NOTES AND LEGEND
SEE SHEET PD-1

PAVEMENT DELINEATION PLAN

SCALE: 1" = 50'

PD-161

APPROVED FOR PAVEMENT DELINEATION WORK ONLY

	REVISED BY	DATE REVISED
	-	-

CALCULATED-DESIGNED BY: LAN HO
CHECKED BY: RAMESH SATHIAMURTHY
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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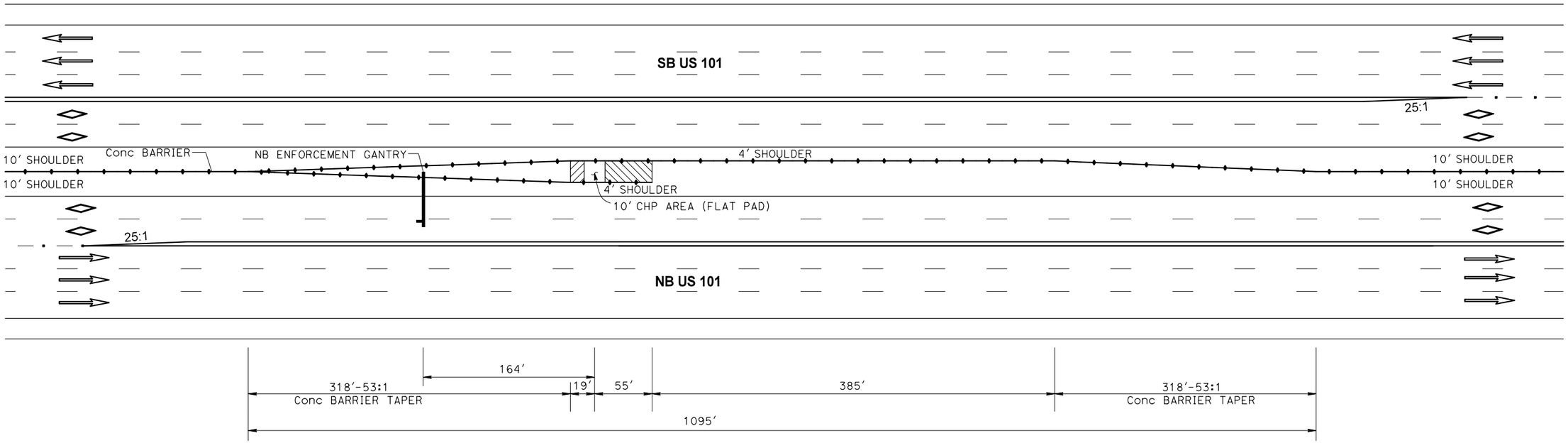
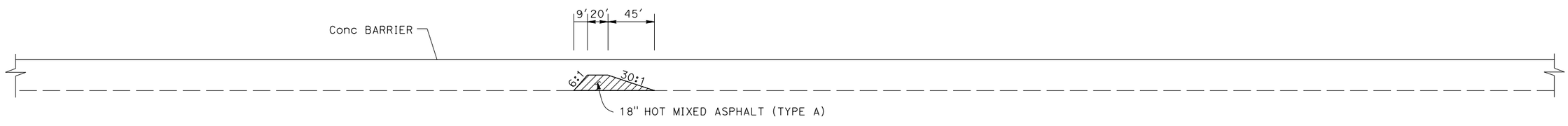
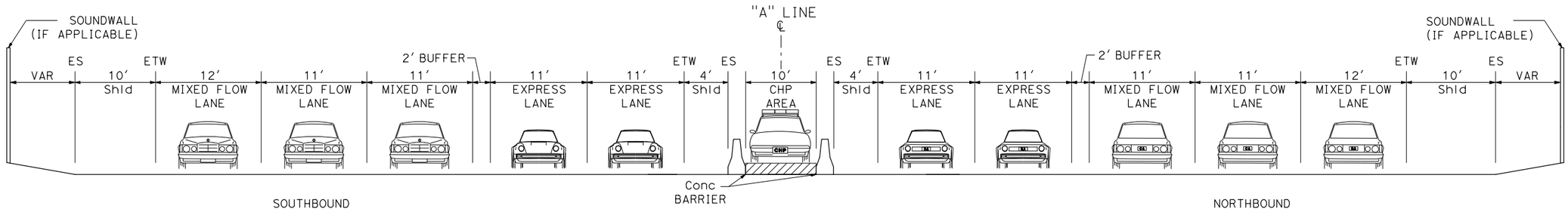
LAST REVISION 8-14-14
DATE PLOTTED => 3/16/2015
TIME PLOTTED => 11:34:19 AM



PLAN VIEW CHP MEDIAN OBSERVATION POINT



PROFILE VIEW CHP MEDIAN OBSERVATION POINT

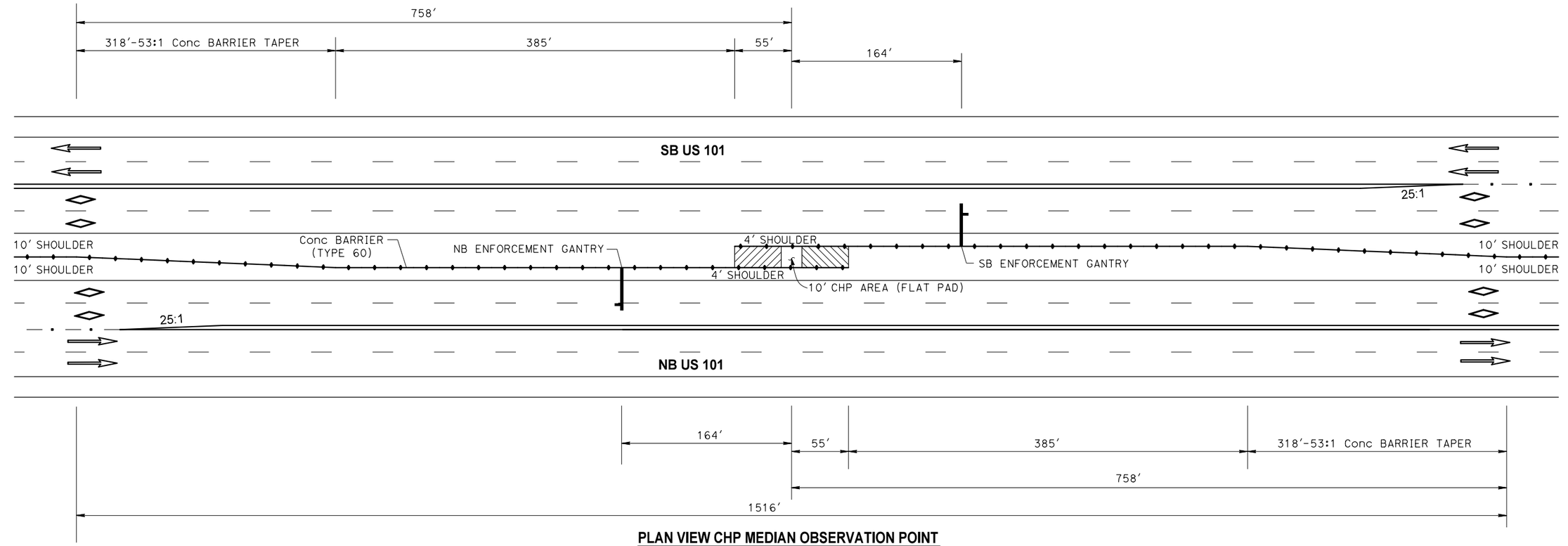


TYPICAL SECTION CHP MEDIAN ENFORCEMENT AREA

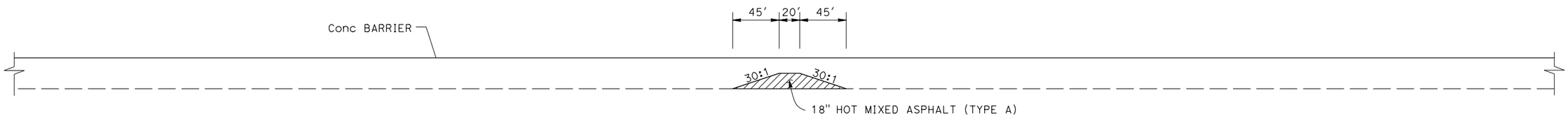
NOTE: FOR CHP ENFORCEMENT AREA LOCATIONS,
SEE PAVEMENT DELINEATION PLANS

VTA Santa Clara Valley Transportation Authority	URS	NOT TO SCALE DIMENSIONS IN FEET	PRELIMINARY STUDY FOR DISCUSSION ONLY	*US 101 Express Lanes Project*	**Directional CHP Median Enforcement Area**	Figure **C-1** MAY 2015

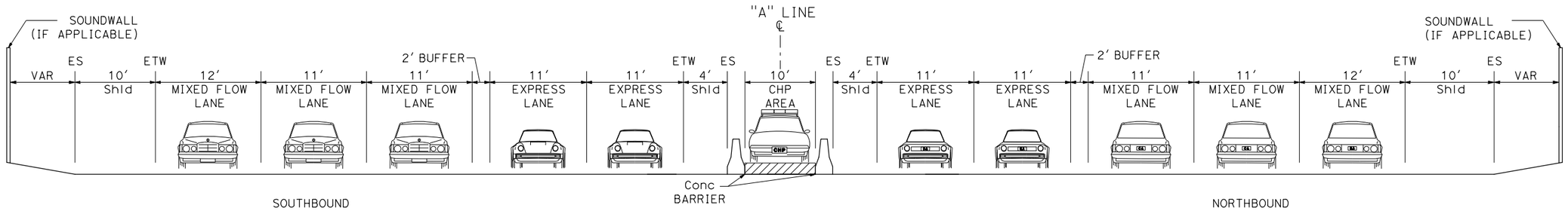
$FREQUEST$



PLAN VIEW CHP MEDIAN OBSERVATION POINT



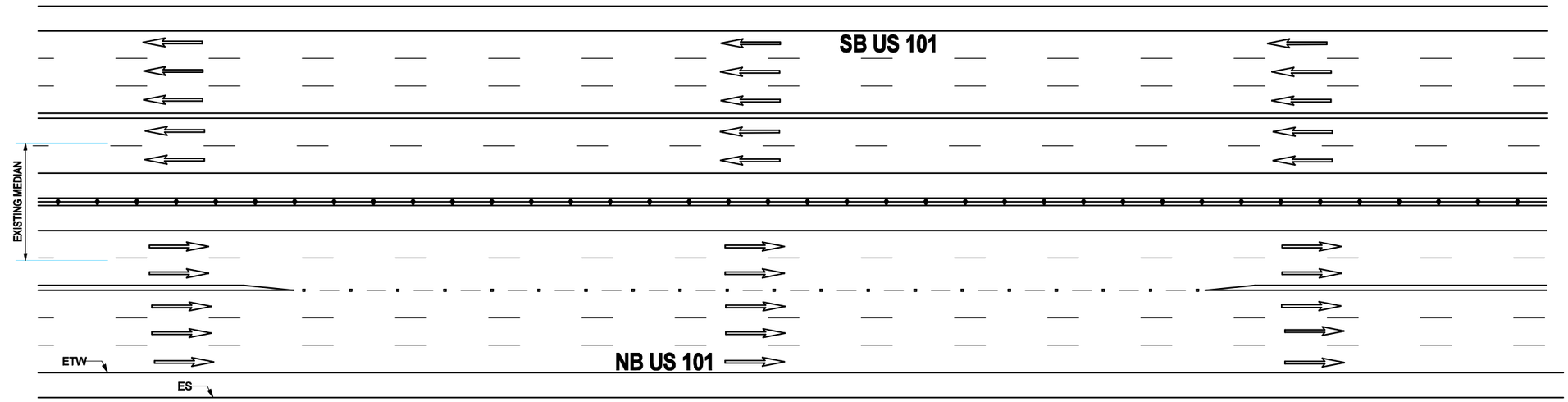
PROFILE VIEW CHP MEDIAN OBSERVATION POINT



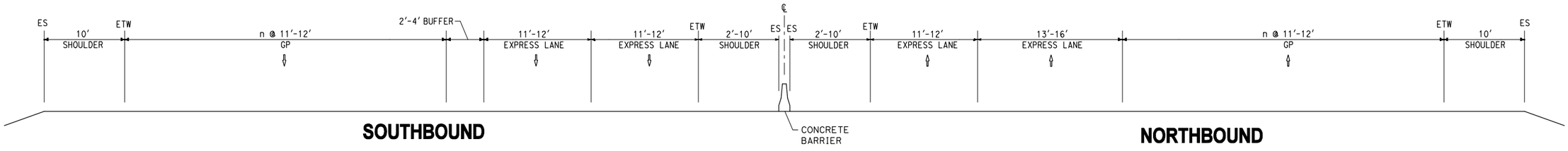
TYPICAL SECTION CHP MEDIAN ENFORCEMENT AREA

NOTE: FOR CHP ENFORCEMENT AREA LOCATIONS,
SEE PAVEMENT DELINEATION PLANS

VTA Santa Clara Valley Transportation Authority	URS	NOT TO SCALE DIMENSIONS IN FEET	PRELIMINARY STUDY FOR DISCUSSION ONLY	*US 101 Express Lanes Project*	**Bidirectional CHP Median Enforcement Area**	Figure **C-2** MAY 2015



TYPICAL M-4 ACCESS - WEAVE



STANDARD M-4 ACCESS TYPICAL SECTION

ABBREVIATIONS

GP - GENERAL PURPOSE LANES
n - NUMBER OF GENERAL PURPOSE LANES

SANTA CLARA Valley Transportation Authority	URS	NOT TO SCALE DIMENSIONS IN FEET	**PRELIMINARY STUDY** FOR DISCUSSION ONLY	**US-101 Express Lanes Project**	**ATTACHMENT C** **TYPICAL ACCESS STRIPING DETAIL**	Figure **1** June 2014

$FREQUEST$

04 - SCl - 101 - PM 16.00/52.55
04 - SCl - 85 - PM 23.0/24.1
EA #04-2G7100, RU: 245
Program ID: 0412000459

Attachment D

Cost Estimate

US 101 EXPRESS LANES PRELIMINARY PROJECT COST ESTIMATE

	04-SCl-101
District-County_Route:	04-SCl-85
Type of Estimate:	Draft PA-ED
	101: 16.00/52.55
PM:	85: R 23.0/24.1
EA:	04-2G7100
Program Code:	HB-5

Project Description:

Limits: On US 101, in Santa Clara County between the Dunne Avenue Interchange in Morgan Hill and Santa Clara/San Mateo County Line in Palo Alto.
On SR 85, in Santa Clara County between Central Expressway and US 101/SR 85 Interchange in Mountain View

Proposed Improvement (Scope):

The project proposes a two-lane express lane facility with weave access (M4 design) between Dunne Avenue and San Antonio Road Interchange in Palo Alto. The double express lanes taper back to single express lane between San Antonio and Oregon Expressway
The project also converts the 85/101 HOV direct connectors to express lane connectors in Mountain view

Alternative:

Build Alternative As Described Above

SUMMARY OF PROJECT COST ESTIMATE

		Costs	
TOTAL ROADWAY ITEMS	$	329,000,000	(1)
TOTAL STRUCTURE ITEMS	$	6,200,000	
SUBTOTAL CONSTRUCTION COSTS	**$**	**335,200,000**	
ESCALATION	$	20,500,000	(2)
TOTAL CONSTRUCTION COSTS	**$**	**355,700,000**	
TOTAL RIGHT OF WAY & UTILITY ITEMS (Escalated Value 2016)	$	5,900,000	
TOTAL PROJECT CAPITAL OUTLAY COST	**$**	**361,600,000**	
Project Report and Enviro Doc	$	7,500,000	(3)
Design Phase (PS&E)	$	33,500,000	(4)
Construction Administration	$	28,400,000	(5)
TOTAL SUPPORT COST	**$**	**69,400,000**	
TOTAL PROJECT COST	**$**	**431,000,000**	

Note 1: Includes Electronic Toll Collection System Design, Oversight, and Installation Costs
Note 2: Based on escalation rate of 2.00% per year for three years
Note 3: Already in progress
Note 4: 10.00% of Total Construction Cost. (non-escalated)
Note 5: 8.00% of Total Construction Cost.

Reviewed by: _____ (Signature)

Approved by Project Manager: _____ (Signature)

Date: May 11, 2015

Phone No.: 408-297-9585

US 101 EXPRESS LANES PRELIMINARY PROJECT COST ESTIMATE

	04-SCl-101
District-County_Route:	04-SCl-85
Type of Estimate:	Draft PA-ED
	101: 16.00/52.55
PM:	85: R 23.0/24.1
EA:	04-2G7100

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Unit Cost	Section Cost
Roadway Excavation	541,090	CY	$ 15.00	$ 8,116,350	
Clearing & Grubbing	1	LS	$ 200,000.00	$ 200,000	
Develop Water Supply	1	LS	$ 200,000.00	$ 200,000	
				Subtotal Earthwork	$ 8,516,350
Section 2 Pavement Structural Section					
Rubberized Hot Mix Asphalt (Type G)	31,100	TON	$ 100.00	$ 3,110,000	
Lime Stabilization	22,860	SQYD	$ 12.00	$ 274,320	
Hot Mixed Asphalt (Type A)	166,650	TON	$ 85.00	$ 14,165,250	
Continuously Reinforced Concrete Pavement	69,300	CY	$ 240.00	$ 16,632,000	
Lean Concrete Base	71,690	CY	$ 105.00	$ 7,527,450	
Class 4 Aggregate Subbase	155,990	CY	$ 20.00	$ 3,119,800	
Class 3 Aggregate Base	1,750	CY	$ 60.00	$ 105,000	
Subgrade Enhancement Geotextile (Class B1)	307,220	SQYD	$ 2.70	$ 829,500	
Asphalt Treated Permeable Base	19,350	CY	$ 130.00	$ 2,515,500	
Class 3 Perm	77,410	CY	$ 40.00	$ 3,096,400	
Open Graded Friction Course	660	TON	$ 120.00	$ 79,200	
				Subtotal Pavement Structural Section	$ 51,454,420
Section 3 Drainage					
Relocate and Modify Drainage Facilities	620	EA	$ 4,000.00	$ 2,480,000	
Modify Headwall Outfall	30	EA	$ 3,000.00	$ 90,000	
Modify Drainage System	59,980	LF	$ 125.00	$ 7,497,500	
				Subtotal Drainage	$ 10,067,500

US 101 EXPRESS LANES PRELIMINARY PROJECT COST ESTIMATE

	04-SCl-101
District-County_Route:	04-SCl-85
Type of Estimate:	Draft PA-ED
	101: 16.00/52.55
PM:	85: R 23.0/24.1
EA:	04-2G7100

Section 4 Specialty Items	Quantity	Unit	Unit Price	Unit Cost	Section Cost
Erosion Control (1%)	1	LS	$ 3,350,000.00	$ 3,350,000	
Water Pollution Control (2.5%)	1	LS	$ 8,375,000.00	$ 8,375,000	
Storm Water BMP (4.25%)	1	LS	$ 14,563,000.00	$ 14,563,000	
Remove Misc (AC Dike, Conc Curb…)	251,570	LF	$ 14.00	$ 3,521,980	
Environmental Mitigation	1	LS	$ 2,883,021.00	$ 2,883,100	
Highway Planting	12.7	Mile	$ 150,000.00	$ 1,905,000	
Crash Cushion	22	EA	$ 20,000.00	$ 440,000	
Remove Crash Cushion	2	EA	$ 2,000.00	$ 4,000	
Concrete Barrier (Type 60)	46,370	LF	$ 75.00	$ 3,477,750	
Concrete Barrier (Type 60A)	340	LF	$ 60.00	$ 20,400	
Concrete Barrier (Type 60C)	115,570	LF	$ 80.00	$ 9,245,600	
Concrete Barrier (Type 60D)	24,360	LF	$ 70.00	$ 1,705,200	
Concrete Barrier (Type 60F)	18,110	LF	$ 200.00	$ 3,622,000	
Concrete Barrier (Type 60R MOD)	2,130	LF	$ 200.00	$ 426,000	
Concrete Barrier (Type 736)	680	LF	$ 80.00	$ 54,400	
Remove Conc Barrier	138,110	LF	$ 15.00	$ 2,071,650	
Double Thrie Beam Barrier	1,900	LF	$ 55.00	$ 104,500	
Single Thrie Beam Barrier	320	LF	$ 45.00	$ 14,400	
Metal Beam Guardrail	4,790	LF	$ 40.00	$ 191,600	
Terminal End System	68	EA	$ 3,000.00	$ 204,000	
Transition Railing (Type WB)	37	EA	$ 4,000.00	$ 148,000	
Remove MBGR	10,220	LF	$ 10.00	$ 102,200	
Remove STBB	960	LF	$ 10.00	$ 9,600	
Remove DTBB	19,660	LF	$ 10.00	$ 196,600	
Modify Abutment	12,290	SF	$ 150.00	$ 1,843,500	
Tie-back Walls	27,400	SF	$ 150.00	$ 4,110,000	
Retaining Walls	140,400	SF	$ 100.00	$ 14,040,000	
Architectural Treatment	180,090	SF	$ 8.00	$ 1,440,720	
				Subtotal Specialty Items	$ 78,070,200

US 101 EXPRESS LANES PRELIMINARY PROJECT COST ESTIMATE

	04-SCl-101
District-County_Route:	04-SCl-85
Type of Estimate:	Draft PA-ED
	101: 16.00/52.55
PM:	85: R 23.0/24.1
EA:	04-2G7100

Section 5 Traffic Items

Traffic Delineation Items	2,336,700	LF	$	1.00	$	2,336,700
Overhead Sign Structures	137	EA	$	200,000.00	$	27,400,000
Remove Overhead Sign Structure	47	EA	$	10,000.00	$	470,000
Overhead Sign Panel Replacement	14	EA	$	5,000.00	$	70,000
Roadside and Barrier Mounted Signs	779	EA	$	400.00	$	311,600
Traffic Control System	1	LS	$	5,925,000.00	$	5,925,000
Traffic Management Plan	1	LS	$	2,751,000.00	$	2,751,000
ETS Design & Install	1	LS	$	18,454,000.00	$	18,454,000
Tolling Infastructure Cost	1	LS	$	4,091,900.00	$	4,091,900
Highway Lighting (Double-Sided)	488	EA	$	16,000.00	$	7,808,000
Highway Lighting (Single-Sided)	76	EA	$	15,000.00	$	1,140,000
Ramp Metering System	4	EA	$	330,000.00	$	1,320,000
Modify Ramp Metering System	12	EA	$	100,000.00	$	1,200,000
Pavement Resurfacing	1	LS	$	4,800,000.00	$	4,800,000

Subtotal Traffic Items	$	78,078,200
TOTAL SECTIONS 1-5	**$**	**226,186,670**

US 101 EXPRESS LANES PRELIMINARY PROJECT COST ESTIMATE

	04-SCl-101
District-County_Route:	04-SCl-85
Type of Estimate:	Draft PA-ED
	101: 16.00/52.55
PM:	85: R 23.0/24.1
EA:	04-2G7100

Section 6 Minor Items

Subtotal Sections 1 - 5	$ 226,186,670	x	5%	$ 11,309,334	
			Total Minor Items		$ 11,310,000

Section 7 Roadway Mobilization

Subtotal Sections 1 - 5	$ 226,186,670				
Minor Items	$ 11,310,000				
Subtotal Sections 1 - 6	$ 237,496,670	x	10%	$ 23,749,667	
			Total Roadway Mobilization		$ 24,000,000

Section 8 Roadway Additions

Supplemental Work	$ 237,496,670	x	10%	$ 23,749,667	
Contingencies*	$ 285,246,337	x	15%	$ 42,786,951	
			Total Roadway Additions		$ 66,537,000
			Total Roadway Items (Total of Sections 1-8)		$ 329,000,000

Estimate Prepared by: Shabnam Yari Phone: 408-297-9585 Date: May 11, 2015

Estimate Checked by: Lan Ho Phone: 408-297-9585 Date: May 11, 2015

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*Items under contingencies are shown below:

-Install temporary ramp metering during construction
-Replace inductive loop traffic monitoring station where outside widening or other construction activities will displace the access point/pole of existing TMS (WMVDS)
-Install dual sensors/inductive loops for additional lanes and replace sensors/loops for any lane this is realigned by more than 1 foot
-Require replacement of TMS/conduits/pull boxes/lateral cross-overs and replace/relocate microwave traffic monitoring stations where outside lane/shoulder modification occur
-Expected/unexpected replacement/update and future maintenance/repair of TOS/RM equipment
-Install off-ramp inductive loop detection where off-ramp modifications occur
-Recommendations in the collision analysis section of the project report

US 101 EXPRESS LANES PRELIMINARY PROJECT COST ESTIMATE

	04-SCl-101
District-County_Route:	04-SCl-85
Type of Estimate:	Draft PA-ED
	101: 16.00/52.55
PM:	85: R 23.0/24.1
EA:	04-2G7100

II. STRUCTURES ITEMS

	Coyote Creek Golf Dr.	Utility Facility	Bernal Road	
Bridge Number:	37-344	37-404	37-347	
Structure Type:	605	605	605	
Width (out to out) - (ft)	21	21	25	
Span Lengths - (ft)	376	159	214	
Total Area - (ft^2)	7,710	3,260	5,350	
Footing Type (pile/spread)				
Cost Per ft^2	$ 263	$ 280	$ 264	
(incl. 10% mobilization				
and 25% contingency)				
Total Cost for Structure	$ 2,031,000	$ 914,000	$ 1,411,000	
			Subtotal Structures Items	$ 4,356,000
			(Sum of Total Cost for Structures)	
Railroad Related Costs:				$ -
			Subtotal Railroad Items	$ -
			Total Structures Items	$ 4,356,000
			(Sum of Structures Items plus Railroad Items)	

Comments:

Estimate Prepared by: David Anderson Phone: 408-297-9585 Date: May 11, 2015

US 101 EXPRESS LANES PRELIMINARY PROJECT COST ESTIMATE

	04-SCl-101
District-County_Route:	04-SCl-85
Type of Estimate:	Draft PA-ED
	101: 16.00/52.55
PM:	85: R 23.0/24.1
EA:	04-2G7100

II. STRUCTURES ITEMS

	Coyote Road	Yerba Buena Road		
Bridge Number:	37-108	37-409		
Structure Type:	402	505		
Width (out to out) - (ft)	19	23		
Span Lengths - (ft)	132	157		
Total Area - (ft^2)	2,510	3,540		
Footing Type (pile/spread)				
Cost Per ft^2	$ 332	$ 276		
(incl. 10% mobilization and 25% contingency)				
Total Cost for Structure	$ 833,000	$ 974,000		
			Subtotal Structures Items (Sum of Total Cost for Structures)	$ 1,807,000
Railroad Related Costs:				$ -
			Subtotal Railroad Items	$ -
			Total Structures Items (Sum of Structures Items plus Railroad Items)	$ 1,807,000

Comments:

Estimate Prepared by: David Anderson Phone: 408-297-9585 Date: May 11, 2015

US 101 EXPRESS LANES PRELIMINARY PROJECT COST ESTIMATE

	04-SCl-101
District-County_Route:	04-SCl-85
Type of Estimate:	Draft PA-ED
	101: 16.00/52.55
PM:	85: R 23.0/24.1
EA:	04-2G7100

II. RIGHT OF WAY ITEMS

		Current Value 2014	Escalation Rate Per Year	Escalated Value 2016
A.	Acquisition, including excess lands,	$ 3,399,000	2.00%	$ 3,536,320
	damages to remainder(s) and Goodwill	$ -	2.00%	$ -
B.	Utility Relocation	$ 990,000	2.00%	$ 1,030,000
C.	Relocation Assistance	$ -	2.00%	$ -
D.	TCE/Permit to Enter	$ -	2.00%	$ -
E.	R/W Support	$ 717,000	2.00%	$ 745,970
F.	Cost (Eng. Appraisals, etc.)	$ 528,500	2.00%	$ 549,860
	Total Right of Way & Utilities (Current Value)	$ 5,634,500	**Total Esc. Value**	$ 5,862,150
			Rounded	$ 5,863,000

Anticipated Date of Right of Way Certification (Date to which Values are Escalated) _____

F. Construction Contract Work

Brief Description of Work

_____

_____

_____

_____

Right of Way Branch Cost Estimate for Work $ -

Comments:

Estimate Prepared by: Shabnam Yari Phone: 408-297-9585 Date: May 11, 2015

Attachment E

Right-of-Way Data Sheet /

ROW Requirement Map

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCY PROJECTS

EXHIBIT
17-EX-21 (Rev 12/2014)

To: District Office Chief
R/W Local Programs

Date: 05/1/2015

Co. Santa Clara Rte. 101 PM. 16.00/ 52.55
Rte. 85 PM. 23.00/ 24.10

Attention: District Branch Chief
Local Programs

Expense Authorization: 04-2G7100
Project ID: 0412000459

Subject: **RIGHT OF WAY DATA SHEET- LOCAL PROGRAMS**

Project Description: US 101 Express Lanes Project in Santa Clara County, between Dunne Avenue in Morgan Hill and Santa Clara/San Mateo County in Palo Alto

Right of way necessary for the subject project will be the responsibility of Santa Clara Valley Transportation Authority (VTA).

The information in this data sheet was developed by URS Corporation as primary consultant for the VTA, lead agency for the project.

I. *Right of Way Engineering*

What level of right of way engineering is required for this project?

___ Minimal (Requires Right of Way Retracement Narrative)
- No fee or easement acquisitions are required for the project; AND
- No excess lands will be created by the project; AND
- No Temporary Construction Easements (TCEs) are required for the project; AND
- No retaining walls, sound walls, footings, signs, traffic signals, or similar improvements will be constructed within ten feet of the existing right of way line.

_✓ Minor (Requires Land Net, and PS&E Project Control sheets)
- No fee or easement acquisitions are required for the project; AND
- No excess lands will be created by the project; AND one or both of the following:
- Temporary Construction Easements (TCEs) are required for the project;
- Improvements will be constructed within ten feet of the existing right of way line.

___ Moderate (Requires Land Net, PS&E Project Control sheets, Base Map, and Appraisal Map)
- At least one fee and/or easement (except TCEs) acquisition is required for the project; AND
- No excess lands will be created by the project; AND
- No parcels will be transferred to the State.

___ Major (Requires full compliance with Right of Way Manual and Local Public Agency Coordination (LPAC) Guidelines including, but not limited to, pre-design Record of Survey, Base Map, Appraisal Map, legal descriptions and deeds, property transfer documents, JUAs/CCUAs, Record Map, monuments, and one or more Record of Surveys)
- One or more fee and/or easement parcels will be transferred to the State; AND/OR
- Excess lands will be created by the project.

II. *Engineering Surveys*

Is any surveying or photogrammetric mapping required?

___ No (Provide explanation)

_✓_ Yes (Complete the following)

Datum Requirements

1. The units for this project are

_✓_ U. S. Survey Feet;

___ Metric (provide explanation).

2. The horizontal datum for this project is

___ California Coordinate System of 1983 (NAD 83 (1992), Epoch _____);

_✓ California Coordinate System of 1983 (NAD 83 (CA-HPGN), Epoch 1991.35) (Provide Datum Tag and Epoch);

___ Other (Provide explanation).

3. The vertical datum for this project is

_✓ North American Vertical Datum of 1988 (NAVD 88);

___ National Geodetic Vertical Datum of 1927 (NGVD 27) (Provide explanation).

___ Other (Provide explanation).

III. ***Parcel Information (Land and Improvements)***

Are there any property rights required within the proposed project limits?

No _____ Yes _✓_ (Complete the following)

Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.)

Twenty one (21) Temporary Construction Easements (TCEs) along properties abutting the proposed improvements on Highway 101 are required.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCIES

EXHIBIT
17-EX-21 (Rev 12/2014)

Right of Way Cost Estimate:

		Current Value	Escalation Rate		Escalated Value
A.	Acquisition, including Excess Lands, Damages, and Goodwill	$ 3,399,000	2.00	%	$ 3,536,320
	Environmental Mitigation			%	
	Grantor's Appraisal Cost			%	
B.	Utility Relocation - Project Liability (from Section VII)	$ 990,000	2.00	%	$ 1,030,000
C.	Relocation Assistance				
D.	Clearance Demolition			%	
E.	Title and Escrow Fees			%	
F.	**TOTAL ESCALATED VALUE**				**$ 4,566,320**
G.	Railroad Construction Costs (flagger, track work etc)		(These are construction costs to be included in PS&E)		
H.	Construction Contract Work		(These are construction costs to be included in PS&E)		
I.	**TOTAL PARCEL COUNT**	**21**			

IV. ***Dedications***

Are there any property rights that have been acquired, or anticipate will be acquired, through the "dedication" process for the Project?

No ✓ Yes _____ (Complete the following)

Number of dedicated parcels: _____

Have the dedication parcel(s) been accepted by the municipality involved? No _____ Yes ____

V. ***Excess Lands / Relinquishments***

Are there Caltrans property rights which may become excess lands or potential relinquishment areas?

No ✓ Yes _____ (Provide an explanation in Remarks Section XIII.)

VI. ***Relocation Information***

Are there relocations anticipated? YES _____ NO ✓

(If yes, provide the following information)

No. of personal property relocations _____

No. of single family _____ No. of business/non profit _____

No. of multi-family _____ No. of farms _____

Based on Draft / Final Relocation Impact Statement / Study (circle one) – Dated
Dated _____, it is anticipated that sufficient replacement housing
will / will not be available without Last Resort Housing.

VII. ***Utility Relocation Information***

Anticipate any utility facilities or utility rights of way to be affected?

No _____ Yes ✓ (Complete the following)

Estimated Relocation Expense

Facility	Owner	State Obligation*	Local Obligation	Utility Owner Obligation
A. 6" distribution gas in 8" casing (extend casing), station "A" 1410+50	PG&E	$ 0	$ 30,000	$ 30,000
B. 20" water in 36" casing (extend casing), station "A" 1465+30	City of Santa Clara	$ 0	$ 80,000	$ 0
C. U/G electric in 48" casing (extend casing), station "A" 1494+70	City of Santa Clara	$ 0	$ 330,000	$ 0
D. 12" water in casing (extend casing), station "A" 1510+70	City of Santa Clara	$ 0	$ 80,000	$ 0
E. 12" Recycled water in 24" casing (extend casing), station "A" 1512+20	City of Santa Clara	$ 0	$ 80,000	$ 0
F. 33" VCP sanitary sewer in 48" casing (extend casing), station "A" 1548+50	City of Sunnyvale	$ 0	$ 120,000	$ 0

G. 20” transmission gas in 30” casing (extend casing), station “A” 1551+70	PG&E	$ 0	$ 90,000	$ 0
H. 10” transmission gas in 16” casing (extend casing), station “A” 1551+90	PG&E	$ 0	$ 70,000	$ 0
I. 18” water in 30” casing (extend casing), station “A” 1551+30	City of Sunnyvale	$ 0	$ 80,000	$ 0
J. 4" distribution gas in 8" casing (extend casing), station “A” 1638+70	PG&E	$ 0	$ 30,000	$ 30,000
Totals				
Number of facilities 10		$ 0	$ 990,000	$ 60,000

*This amount reflects the estimated total financial obligation by the State.
The following checked items may seriously impact lead time for utility relocation:

✓ Longitudinal policy conflict(s)
____Environmental concerns impacting acquisition of potential easements
____Power lines operating in excess of 50 KV and substations

VIII. ***Rail Information***

Are railroad facilities or railroad rights of way affected?

No _____ Yes ✓ (Complete the following)

Describe railroad facilities or railroad rights of way affected.

Owner's Name	Transverse Crossing	Longitudinal Encroachment
A. VTA	The Alum Rock – Santa Teresa Line crosses US 101 at N. First Street between The Karina and Metro/Airport stations	The Mountain View – Winchester Line runs parallel to US 101 between the SR 237 and Ellis Street interchanges then crosses US 101 at Ellis Street interchange at Bayshore/NASA Station
B.		

Discuss types of agreements and rights required from the railroads. Are grade crossings requiring services contracts, or grade separations requiring construction and maintenance agreements involved?

A short clause will be added to the Special Provisions. Flagger may be needed.

IX. ***Clearance Information***

Are there improvements that require clearance?

No ✓ Yes ____ (Complete the following)

A. Number of Structures to be demolished _____
B. Estimated Cost of Demolition $_____
C. If there is demolition and clearance, will it be done prior to construction or as part of the construction contract?

_____

_____

_____

X. ***Hazardous Materials/Waste***

Are there any sites and/or improvements in the Project Limits that are known to contain hazardous waste/materials?

None ____ Yes ✓ (Explain in the Remarks Section XIII)

Are there any sites and/or improvements in the Project Limits that are suspected to contain hazardous waste/materials?

None ____ Yes ✓ (Explain in the Remarks Section XIII)

XI. ***Project Scheduling*** ***Completion Dates***

Proposed completion of Appraisal maps and legal descriptions, if needed	June 2016
Proposed Environmental Clearance	July 2015
Proposed R/W Certification	October 2016
Proposed Ready to List (RTL)	December 2016
Proposed Construction Award	June 2020

XII. ***Proposed Funding***

	Local	State	Federal	Other
Acquisition	$ 3,536,320	$	$	$
Utilities	$ 1,030,000	$	$	$ 60,000
Relocation Assistance Program	$	$	$	$
R/W Support Costs	$ 1,295,830	$	$	$

XIII. ***Remarks***

Based on initial site investigation, hazardous materials have been historically found within the corridor and adjacent to the corridor. Soil and groundwater sampling will be conducted during the PS&E phase. Most TCEs affect adjacent industrial properties landscaped and storage areas. It is assumed the land rent paid will be more than enough to compensate for temporary loss of storage and impacts to landscaped areas.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

RIGHT OF WAY DATA SHEET FOR LOCAL PUBLIC AGENCIES

EXHIBIT
17-EX-21 (Rev 12/2014)

Expenditure Authorization: 04-2G7100
Project ID: 0412000459

Project Sponsor Consultant

Prepared by:

Ramesh Sathiamurthy, PE

URS Corporation

Deputy Project Manager

5/1/2015
Date

Project Sponsor

Reviewed and Approved by:

John Ristow

Director, Planning &
Program Development
Santa Clara Valley Transportation
Authority

5·18·15
Date

R/W Professional (ie: qualified consultant or agency)
Reviewed and Approved by:

Bijal Patel

Deputy Director, Property
Development & Management
Santa Clara Valley Transportation
Authority

5/17/15
Date

R/W Professional (ie: qualified consultant or agency)
Reviewed and Approved by:

Ethan Feron

Utilities Coordination Manager
Santa Clara Valley Transportation
Authority

5/14/15
Date

Caltrans
Reviewed and approved based on information provided to date:

Kristin L. Schober

Caltrans District Branch Chief
Local Programs
Division of Right of Way

5/21/15
Date

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCl	101 85	16.00/52.55 23.0/24.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

URS Corporation
100 W San Fernando St
Suite 200
San Jose, CA 95113

Santa Clara Valley
Transportation Authority
3331 N First Street
San Jose, CA 95134

LEGEND:

TEMPORARY CONSTRUCTION EASEMENT (TCE)

(X) TCE NO.

RIGHT OF WAY REQUIREMENT MAP

NTS

ROW-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: SHABNAM YARI

CHECKED BY: RAMESH SATHIAMURTHY

REVISED BY	DATE REVISED
-	-

LAST REVISION 08-04-15

DATE PLOTTED => 8/6/2015
TIME PLOTTED => 9:49:39 AM

BORDER LAST REVISED 8/4/2015

USERNAME => shabnam_yari
DGN FILE => ROW Req Map.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT xxxx

PROJECT NUMBER & PHASE 04000026710

Attachment F

Transportation Management Plan Data Sheet

TRANSPORTATION MANAGEMENT PLAN DATA SHEET
(Preliminary TMP Elements and Costs)
To be included as an attachment in the PSSR/PSR/PR

Co/Rte/PM: SCl-101-PM 16.0/52.55; SCl-85-PM 23.0/R24.1 EA 04-2G7100 Project Manager: Chadi Chazbek(URS) Dina El-Tawansy(CT)

Project Limit: US 101 from Dunne Avenue in Morgan Hill to the Santa Clara/San Mateo County Line in Palo Alto in Santa Clara County

Project Description: The project will convert 36.55 miles of existing HOV lanes along US 101 to express lanes and add a second express lane for the majority of the corridor. The project would also convert the US 101/State Route (SR) 85 HOV direct connectors in Mountain View to express lane connectors and continue the express lanes for 1.1 mile on SR 85 to complete the US 101 and SR 85 express lanes system.

1) Public Information

☐	a. Brochures and Mailers	$
☒	b. Press Release	$ 15,000
☐	c. Paid Advertising	$
☐	d. Public Information Center/Kiosk	$
☒	e. Public Meeting/Speakers Bureau	$ 5,000
☒	f. Telephone Hotline	$ 2,500
☒	g. Internet, E-mail	$ 2,500
☒	h. Notification to impacted groups (i.e. bicycle users, pedestrians with disabilities, others…)	$ 10,000
☒	i. Others	$ 90,000
	TOTAL	**$125,000**

2) Motorist Information Strategies

☐	a. Changeable Message Signs (Fixed)	$
☒	b. Changeable Message Signs (Portable)	$380,000
☒	c. Ground Mounted Signs	$ 80,000
☒	d. Highway Advisory Radio	$ 2,000
☒	e. Caltrans Highway Information Network (CHIN)	$ 4,000
☐	f. Detour maps (i.e. bicycle, vehicle, pedestrian...etc)	
☐	g. Revised Transit Schedules/maps	
☐	h. Bicycle community information	
☐	i. Others	
	TOTAL	**$466,000**

3) Incident Management

☒	a. Construction Zone Enhanced Enforcement Program (COZEEP)	$800,000
☒	b. Freeway Service Patrol	$210,000
☒	c. Traffic Management Team	$ 100,000
☐	d. Helicopter Surveillance	$

☐ e. Traffic Surveillance Stations (Loop Detector and CCTV)		$
☐ f. Others	**TOTAL**	**$1,110,000**

4) Construction Strategies

☒ a. Lane Closure Chart		$20,000
☐ b. Reversible Lanes		
☐ c. Total Facility Closure		
☐ d. Contra Flow		
☐ e. Truck Traffic Restrictions		$
☐ f. Reduced Speed Zone		$
☒ g. Connector and Ramp Closures		$ 30,000
☐ h. Incentive and Disincentive		$
☐ i. Moveable Barrier		$
☒ j. Others	Construction Area Signs	$500,000
☐	**TOTAL**	**$550,000**

5) Demand Management

☐ a. HOV Lanes/Ramps (New or Convert)		$
☐ b. Park and Ride Lots		$
☐ c. Rideshare Incentives		$
☐ d. Variable Work Hours		
☐ e. Telecommute		
☐ f. Ramp Metering (Temporary Installation)		$
☒ g. Ramp Metering (Modify Existing)		$500,000
☐ h. Others		$
	TOTAL	**$500,000**

☐ a. Add Capacity to Freeway Connector	$
☐ b. Street Improvement (widening, traffic signal... etc)	
☐ c. Traffic Control Officers	$
☐ d. Parking Restrictions	
☐ e. Others	

7) Other Strategies

☐ a. Application of New Technology	$
☐ e. Others	$

TOTAL ESTIMATED COST OF TMP ELEMENTS = $2,751,000

.

PREPARED BY	Maria Sedghi (URS) Hassan Nikzad (CT)	DATE	01-21-2013
APPROVAL RECOMMENDED BY	Dina El-Tawansy	DATE	01-21-2013
APPROVED BY	Ron Ho Harendra Parekh	DATE	01-21-2013

04 - SCl - 101 - PM 16.00/52.55
04 - SCl - 85 - PM 23.0/24.1
EA #04-2G7100, RU: 245
Program ID: 0412000459

Attachment G

Risk Management Plan & Risk Register

Risk Management Plan

Purpose

This document describes how Risk Management will be structured and performed on this project. The risk management plan includes methodology, roles and responsibilities, budgeting, timing, risk categories, definitions of risk probability and impact, probability and impact matrix, stakeholder tolerances, reporting formats, and tracking. The Caltrans' Project Risk Management Handbook: A Scalable Approach Handbook will be utilized as primary reference and guideline.

Project Name:	US 101 Express Lanes Project
Agency:	Santa Clara Valley Transportation Authority (VTA)
Project ID/EA:	2G7100
District:	04
County/Route/Post Mile:	SCL - 101 - PM 16.00/52.55 SCL - 85 - PM 23.0/24.1
Project Sponsor:	VTA
Project Manager:	Lam Trinh (VTA); Ramsey Hissen (URS)/Sarah Christensen (URS)
Date:	April, 2014
Version:	1.6

Risk Management Plan Approval

The undersigned acknowledge they have reviewed the Risk Management Plan for the above-mentioned project. Changes to this Risk Management Plan will be coordinated with and approved by the undersigned or their designated representatives.

Signature:		Date:	6/12/14
Print Name:	Lam Trinh		
Title:	VTA Project Manager		
Role:	Project Sponsor		
Signature:	Dina El-Tawansy	Date:	6/13/14
Print Name:	Dina El-Tawansy		
Title:	Caltrans Project Manager		
Role:	Oversight		
Signature:	for	Date:	6/13/14
Print Name:	Raoul Maltez		
Title:	Caltrans Risk Manager		
Role:	Oversight		

Version History

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason for Revision
1.0	Sarah Christensen	02/24/12	Lam Trinh	02/27/12	Initial Risk Management Plan draft
1.1	Sarah Christensen	03/07/12	Nick Saleh	04/20/12	Update Risk Identification and Risk Response (PID Phase)
1.2	Sarah Christensen	08/22/13	Lam Trinh	08/22/13	Update Risk Identification and Risk Response (PA/ED Phase)
1.3	Sarah Christensen	08/25/13	Lam Trinh	08/25/13	Update Risk Identification and Risk Response
1.4	Sarah Christensen	09/09/13	Dina El-Tawansy	12/11/13	Update Risk Identification and Risk Response
1.5	Sarah Christensen	12/16/13	Lam Trinh	12/17/13	Update Risk Identification
1.6	Sarah Christensen	04/10/14	Lam Trinh	04/25/14	Update Risk Identification and Risk Plan

Methodology

This section defines how risk management will be performed for this particular project. This Risk Management Plan does not contain any identified risks or their related risk response strategies. It simply describes how to approach, plan, and execute all activities related to managing risks for a particular project. Risk management process has 3 important parts: identification, analysis, and action. The risk management process shown below is referred from section 1-3 of the Project Risk Management Handbook: A Scalable Approach.

The US 101 Express Lanes Project risk management includes these processes:

1. Risk Management Planning – Deciding how to approach, plan, and execute the risk management activities for a project.

2. Risk Identification – Determining which risks might affect the project and documenting their characteristics.

3. Qualitative Risk Analysis – Prioritizing risks for subsequent further analysis or action by assessing and combining their probability of occurrence and impact.

4. Quantitative Risk Analysis – Analyzing probabilistically the effect of identified risks on overall project objectives.

5. Risk Response – Developing options and actions to enhance opportunities and to reduce threats to project objectives.

6. Risk Monitoring – Tracking identified risks, monitoring residual risks, identifying new risks, executing risk response plans, and evaluating their effectiveness throughout the project life cycle.

The US 101 Express Lanes Team holds monthly Project Development Team (PDT) meetings to discuss the overall status of the project as well as the risk management activities. During the Project Initiation, VTA and Caltrans identified the risks that might affect the project and documented their characteristics in the risk register. The risk register provides a cost and time impact that analyzes the effect of the identified risks on the overall project. The team reviews the risk register monthly during PDT meetings and shares lessons learned from other projects to reduce threats to project objectives, and updates the risk registry as necessary. A copy of the risk register is saved for the project files before every update to monitor the risks.

A Risk Management Workshop was held on December 11, 2013 where the risk management process was reviewed. The risks were reviewed by the Caltrans Risk Manager and comments were incorporated into the risk register. The project will require certification of the Risk Management Plan from the district at the end of the PA&ED phase.

Roles and Responsibilities

The table shown below provides the project risk management roles and responsibilities, referred from section 1-6 of the Project Risk Management Handbook: A Scalable Approach.

Role	Responsibilities
Project Managers	• With input from the Project Development Team (PDT), determine the project's risk register requirements based on project estimate and complexity, and the need for a written project Risk Management Plan. • Promote and direct risk management for the project.

	• Request project-specific changes to minimum risk management requirements. • Populate and maintain the project risk register with risks developed by functional units and the PRMT. • Ensure proactive response to all risks and opportunities that will impact the successful delivery of the project. • Produce risk management reports for sponsors. • Inform Department management about risks management results, major issues, and concerns. • Schedule and conduct project risk meetings. • Monitor and update risks. • Ensure quality of the risk data in the risk register. • Track and monitor the effectiveness of risk response actions. • Elevate issues to district management for resolution as necessary. • Take lead role in obtaining signoffs at accountability check points.
District Risk Management Coordinator	• Assist project managers with the implantation of PRM requirements. • Provide expertise, direction, and assistance. • Obtain expert services as needed. • Liaise with Headquarters risk management.
Project Delivery Team Member	• Identify and assess risks. • Develop responses to risks. • Document risk response actions and report to project manager for inclusion in risk management updates. • Communicate with project manager about newly-identified risks, risk assessments, and retirement of risks.
Project Risk Manager **(Generally the project manager for Level 1 and 2 projects)**	• Promote and direct risk management for the project. • Schedule and conduct project risk meetings. • Perform risk monitoring and updating. • Ensure quality of the risk data in the risk register. • Document risk response actions. • Track and monitor the effectiveness of risk response actions. • Report to the project manager on all matters related to risk management. • Compile the lessons learned in the area of risk management. • Produce risk management reports for the project manager. • Populate the project register with risks developed by functional areas.
Project Delivery Team Members and Task Managers	• Identify and assess risks and determine the risk owners. • Develop responses to risks. • Document risk response actions and report to project managers for inclusion in risk management updates. Communicate new risks to project managers. • Retire risks.

Budget

This section outlines the budget allocated to performing risk management by the entire project team. The following table outlines what roles should be considered for this budget determination.

PM	@	112	Hrs
PMSU	@	112	Hrs
District Risk Mgmt Coordinator	@	112	Hrs

Project Risk Manager	@	224	Hrs
Environmental	@	112	Hrs
Design	@	112	Hrs
R/W	@	112	Hrs
DES/Structure	@	112	Hrs
Construction	@	112	Hrs
Traffic Operations	@	112	Hrs
Maintenance	@	112	Hrs
_____	@	_____	Hrs
_____	@	_____	Hrs
Total:		1,344	Hrs

_1344_ Hrs × $ ___150_ /Hr = $201,600

A total of $ ____200,000_____ is allocated for Risk Management on this project.

Risk Management Schedule

Meetings for the purpose of discussing and making decisions on Project risk will be held:

Weekly _____ Bi-Weekly _____ Monthly _____X____ Other_____

The risk management identification, analysis and response planning process shall occur throughout the entire lifecycle of a project; from PID through Construction, including closeout.

Definitions of Probability and Impact

Qualitative risk analysis assesses the priority of identified risks using their probability of occurring and the corresponding impact on project objectives if the risks occur. The table shown below lists the Caltrans standard definition of risk probability and impact ratings, referred from section 5-1 of the Project Risk Management Handbook: A Scalable Approach.

Rating →	Very Low	Low	Moderate	High	Very High
Cost Impact of Threat (CO + COS)	Insignificant cost increase	<5% cost increase	5-10% cost increase	10-20% cost increase	>20% cost increase
Cost Impact of Opportunity (CO + COS)	Insignificant cost reduction	<1% cost decrease	1-3% cost decrease	3-5% cost decrease	>5% cost decrease
Schedule Impact of Threat	Insignificant slippage	<1 month slippage	1-3 months slippage	3-6 months slippage	>6 months slippage
Schedule Impact of Opportunity	Insignificant improvement	<1 month improvement	1-2 months improvements	2-3 months improvements	>3 months improvements
Probability	1-9%	10-19%	20-39%	40-59%	60-99%

Quantitative risk analysis is a way of numerically estimating the probability that a project will meet its cost and time objectives. The project risk manager leads the Project Risk Management Team (PRMT) in quantifying cost and schedule risks. The Risk Assessment column in the risk register is broken down into three categories: probability, cost impact, and time impact. The probability of the risk occurring is expressed by two values: "Low" and "High" that cover the range. The cost and time impacts used a three-point estimate, which consists of determining the "Low" (optimistic), "High" (pessimistic), and "Most Likely" values. The time impacts are expressed in days of potential delay due to the risk.

Stakeholder Tolerances for Risk

The risk tolerance for this project is moderate. The identified risks could have cost or scheduling implications as outlined in the risk register. Identified risks may be accepted by the project or mitigated by various measures such as early coordination, additional studies, or advancing investigations. Contingencies are included to address the risks in case mitigation is not possible.

Risk Reporting and Formats

The risk register is used to communicate project risks and helps team members understand the status for the risks as a project moves from inception toward completion. The risk register is discussed during the monthly PDT meetings and updated when new risks are identified. A copy of the risk register is attached to the Risk Management Plan.

Risk Tracking

Project Development Team meetings are held monthly to discuss and update the status of risks in the risk register, and add new risks. Periodic project risk reviews repeat the process of identification, analysis, and response planning. The PRMT review the project's risk register and risk response actions, and update project risk information. Before updating the register and recording changes, the project risk manager makes a copy of the risk register for the project files, noting its date. The set of risk registers document how risks have changed over the life of the project and provide an audit trail should it be required.

When a risk is dismissed, the PRMT review the history of the risk to record any lessons learned regarding the risk management processes used. The project risk manager conduct monthly PDT meetings to review the risk register with the project team members and share lessons learned from other projects to reduce threats to project objectives.

Appendix A: References

The following table summarizes the documents referenced in this document.

Document Name and Version	Description	Location
Project Risk Management Handbook: A Scalable Approach, Version 1	This document provides information to project managers and project teams that will help with their risk management efforts.	http://www.dot.ca.gov/hq/projmgmt/guidance_prmhb.htm

LEVEL 3 - RISK REGISTER	Project Name:	US 101 Express Lanes Project PA/ED Phase	DIST- EA	04-2G7100	Project Manager	Ramsey Hissen/Sarah Christensen (URS Corporation)	

						Risk Assessment													
Risk Identification						Probability		Cost Impact ($)				Time Impact (days)				Rationale	Risk Response				
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable		Strategy	Response Actions	Risk Owner	Updated	Risk Rating
Active	001	Environmental	Comply with Maximum Daily Load (TMDL) Standards change.	Anticipated requirements will be addressed with slope repairs or the need for additional treatment BMPs.		0	10	$ 20,000	$ 50,000	$ 250,000	$ 5,000	30	60	90	3		Mitigate	Include contingeny for the possible addition of treatment BMPs to the project.	Lam Trinh	7/31/2013	Low
Active	002	Design	Hazardous Material Encountered	The project will involve soil disturbance along the existing highway. Because of the age and history of the US 101 corridor, it is possible that initial testing will reveal hazardous materials beyond Aerially Depositted Lead (ADL) needing additional investigation causing project costs to increase. Findings of any hazardous materials may result in the schedule and/or cost of the project needing to be updated.		10	20	$ 50,000	$ 500,000	$ 5,000,000	$ 278,000						Mitigate	CT Initial Site Assessment checklist will be completed during the PS&E phase, and a memorandum prepared that summarizes the assessment steps and findings.	Lam Trinh	7/31/2013	Low
Active	003	PM	Timely reviews by Department	Assigned Caltrans/VTA staff may be reassigned to higher priority projects or transfer to other units, or be unavailable. This may result in schedule delays.	The PDT reviews the submittal register and identifies outstanding reviews early to avoid schedule delay.	60	100	$ -	$ 50,000	$ 100,000	$ 40,000	60	180	360	160		Mitigate	Ensure that team members are aware of deadlines and their importance. Distribute current schedule at monthly PDT meetings and draw attention to critical path items. Steering Committee to monitor using the list of deliverables.	Dina El-Tawansy, Lam Trinh	4/25/2014	Low
Active	004	PM	New stakeholder needs	New stakeholders and/or new stakeholder needs could be identified late in the project. As a result, the scope, cost, and/or schedule could be affected.		10	20	$ 100,000	$ 1,000,000	$ 5,000,000	$ 305,000	60	90	120	14		Mitigate	Obtain major stakeholder buy-in during PS&E phase including CT Maintenance, HQ Design Coordinators, Traffic Safey, etc. Hold public workshops to get input.	Lam Trinh, Dina El-Tawansy	7/31/2013	Low
Active	005	Construction	Unexpected environmental issues during construction	Unexpected environmental issues (archaeological, biological, etc.) could lead to schedule delays and increased mitigation costs.		10	20	$ 250,000	$ 1,000,000	$ 10,000,000	$ 563,000						Mitigate	All field studies are complete for PA&ED. Risks of unexpected discovery during construction can be reduced by isolating construction work at that location, per avoidance measures listed in FED.	Lam Trinh	12/15/2014	Low
Retired	006	Environmental	Additional Project Alternatives Identified	Addition or elimination of access points during the PA/ED phase requires additional forecast work and may delay completion of the operational analysis.	The project access point schematic has been finallized for PA/ED and the TOAR was approved.	10	20	$ 10,000	$ 50,000	$ 200,000	$ 13,000	30	60	120	11		Mitigate	Coordination with CT is necessary to discuss & analyze alternatives. Reviews will be conducted in order to minimize the additional forecasting work.	Lam Trinh, Dina El-Tawansy	8/19/2014	Low
Active	007	Construction	Man-made Buried objects	Construction crews may encounter buried man-made objects that are not shown on the plans. The contractor will need to be compensated for handling such items, resulting in increased costs.		10	20	$ 50,000	$ 150,000	$ 500,000	$ 35,000	10	30	120	8		Accept	Every effort should be made to discover these objects during the planning and design phases. Added cost for those that are not found should be covered by the 5% contingencies.	Lam Trinh	7/31/2013	Med
Active	008	PM	Migratory birds	If nesting birds are found, designated areas of the construction site could be off limits, which could cause construction delays.		10	20	$ 10,000	$ 50,000	$ 100,000	$ 8,000						Accept	Risk is minimized. The DED specifies that trees will be removed prior to nesting periods and preconstruction surveys performed prior to vegetation clearance to verify no nesting activity present. If nesting identified, it will be avoided until vacated.	Lam Trinh	12/15/2014	Low

LEVEL 3 - RISK REGISTER	Project Name:	US 101 Express Lanes Project PA/ED Phase	DIST- EA	04-2G7100	Project Manager	Ramsey Hissen/Sarah Christensen (URS Corporation)	

Risk Identification						Probability		Cost Impact ($)				Time Impact (days)				Rationale	Risk Response		Risk Owner	Updated	Risk Rating
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable		Strategy	Response Actions			
Active	009	Construction	Electrical facility designs do not reflect field conditions	Work will need to be done to connect vehicle sensors, highway lighting, & highway signs to electrical and communication services. As built may not reflect accurate field conditions of existing electrical and communication facilities, necessitating field changes that would increases project cost and schedule delays.		10	20	$ 100,000	$ 250,000	$ 500,000	$ 43,000	30	60	120	11		Accept	Early coordination with CT, PG&E, AT&T, and other utility owners for identification of existing utilities and connection availability in order to reposition any equipment is necessary to avoid delays and additional costs. Potholing will be conducted during the PS&E phase.	Lam Trinh	7/31/2013	Med
Retired	010	Design	Design Standards Exceptions	Exceptions from Design Standards will be required to keep the project within scope/schedule and budget. Some potential issues may be lane width, median width, interchange spacing, local access, and tolling/enforcement zones that may need to be supplemented and documented in PS&E Phase.	The design exceptions associated with the 3 creek bridges has been resolved.	20	40	$ 2,500,000	$ 5,000,000	$ 8,000,000	$ 1,550,000	20	40	60	12		Accept	Early coordination with Caltrans Design Reviewers, with regular follow-up and close out meetings.	Lam Trinh	8/19/2014	Low
Active	011	Design	Floodplain issues and median barrier treatment	Project vulnerability to flooding is not likely. If found, additional project costs and schedule delays can occur.	The project improvements do not introduce obstructions (solid barriers, walls, etc.) within the floodplain at this time.	0	10	$ -	$ -	$ 3,000,000	$ 50,000	10	30	60	2		Accept	Early assessment of alignment's vulnerability to flooding will be developed through LHS during PS&E phase.	Lam Trinh	7/31/2013	Low
Active	012	Design	Geotechnical site conditions reveal poor soil conditions	Geotechnical testing could encounter vulnerability to geologic hazards, soil-related hazards, unsuitable materials, &/or other impacts which would have an impact on the project cost and may delay schedule.		0	10	$ 250,000	$ 500,000	$ 5,000,000	$ 96,000		60	90			Accept	Preliminary Geotecnical Report (PGR) and Structural Preliminary Geotechnical Report (SPGR) was prepared during PA/ED to provide recommendations for design assessing any impacts. Additional investigations will be needed in PS&E Phase.	Lam Trinh	7/31/2013	Low
Active	013	PM	Express Lanes Concept	Elements of operations of the facility, such as hours of operations, signage, striping, and access locations, may cause driver confusion, decrease utilization, and/or opposition for initiation.	Public Outreach efforts are ongoing.	20	40	$ -	$ -	$ -	$ -						Mitigate	Develop signing plan that will allow for evolution of message provided to motorists & conduct focus group studies.	Lam Trinh	7/31/2013	Low
Active	014	PM	Coordination with other projects.	Other planned and proposed projects in the area could impact the scope, schedule and cost of the project. See Project Report for list of projects	Coordination with other agencies/projects is ongoing	20	40	$ 50,000	$ 100,000	$ 250,000	$ 40,000	30	60	90	18		Mitigate	Periodically review potential conflicting projects and confirm their direction through the Executive Steering Committee.	Lam Trinh	7/31/2013	Low
Active	015	PM	Competing construction projects.	Projects could be competing for bid services from contractors and material sources, potentially raising prices.		20	40	$ 2,500,000	$ 5,000,000	$ 10,000,000	$ 1,750,000						Mitigate	Track competing projects and try to schedule construction with them in mind.	Lam Trinh	7/31/2013	Low
Active	016	Environmental	Conceptual Environmental Mitigation Issues	Mitigation ratios may exceed typical projects.Working with resource agencies to agree on reasonable mitigation ratios during the environmental and construction phases.		10	20	$ -	$ 500,000	$ 2,000,000	$ 125,000	90	120	360	29		Accept	Early coordination with resource agencies. Continue VTA discussions on programmatic permitting (HCP) and mitigation banking.	Lam Trinh	8/19/2014	Low
Active	017	Design	Traffic Operations: Pull-out Locations are not ideally situated	A lack of maintenance vehicle and/or enforcement pull-outs may impede operations by causing more closures than planned & loss of citations. If MVPs required, there is a chance the ED would not be sufficient and costs would increase to redesign the facility and purchase R/W.	Project has expanded the environmental clearance limit to the Right of Way in order to cover areas where MVPs could be proposed.	20	40	$ 250,000	$ 1,000,000	$ 2,500,000	$ 375,000						Accept	Begin early communication with CT about feasibility and need for pull-outs. Pull-out areas will be identified in collaboration with the CHP and CT Maintenance during the early stages of design. Co-locate facilities with ramp metering facilities.	Lam Trinh	7/31/2013	Low

LEVEL 3 - RISK REGISTER	Project Name:	US 101 Express Lanes Project PA/ED Phase	DIST- EA	04-2G7100	Project Manager	Ramsey Hissen/Sarah Christensen (URS Corporation)	

Risk Identification						Risk Assessment										Risk Response				
						Probability		Cost Impact ($)				Time Impact (days)								
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable	Rationale	Strategy	Response Actions	Risk Owner	Updated	Risk Rating
Active	018	Construction	ETS Implementation & Testing Schedule	Contractor & Integrator must coordinate installation activities to successfully open the express lane. Lack of coordination will cause delays of roadway or ETS construction and/or installation, could result in claims from the roadway and ETS contractor, loss of revenue collection and additional project costs.	VTA to consider breaking into 3 separate risks: (1) Completion on the Civil Contract, (2) Completion of the ETS Contract, and (3) VTA's image (if express lanes open later than advertised to the public)	10	20	$ 100,000	$ 500,000	$ 1,000,000	$ 80,000						Monitor	Provide RFP & specification language to define interface. VTA to develop construction CPM schedule & incorporate windows in roadway contractor contract. Consider a reserve to pay for acceleration of integrator and/or contractor.	Lam Trinh	7/31/2013	Med
Active	019	Design	Ingress/Egress Geometrics not approved by CT	The exact configuration of the access point will need to be determined and agreed to by the various stakeholders. This can lead to delays in schedule.	Coordination with Caltrans Traffic Ops, Design, and Traffic Safety is ongoing.	10	20					15	30	120	8		Accept	Adopt a configuration for the ingress/egress consistent with CT input.	Lam Trinh	7/31/2013	Low
Retired	020	Design	Using existing sign structures & bridges to mount equipment	Because of the high number of sign structures & bridges along the corridor, equipment may be mounted on them which would require a lengthy review process.	Project has avoided this approach	10	20					60	90	120	14		Avoid	Will avoid using existing sign structures & bridges for mounting equipment.	Lam Trinh	7/31/2013	Low
Active	021	Design	ETS, VDS, & RTMS Equipment Locations too far from power and communication sources	ETS, VDS, & RTMS equipment locations may require costly power and communication runs if cannot be placed near existing sources.		20	40	$ 150,000	$ 300,000	$ 500,000	$ 95,000						Accept	Will position equipment in order to minimize costs. Will work closely with System Integrator and utility providers.	Lam Trinh	7/31/2013	Low
Active	022	Design	Unforeseen utility conflicts	Utility relocations could be needed due to conflict of policy (clear recovery) when no utility relocations are anticipated. Early identification and coordination with utility service providers may still be insufficient. Delay of R/W Certification & project delivery.		20	40	$ 250,000	$ 500,000	$ 1,000,000	$ 175,000	60	90	180	33		Accept	Early identification and coordination of utilities within the project limits. Adjust locations of facilities if conflicts arise. Potholing will be conducted during PS&E phase to minimize conflicts.	Lam Trinh	7/31/2013	Med
Retired	023	Design	Traffic Operation Analysis Report Approval	Traffic Ops Report not completed on schedule which would delay the PA/ED phase.	TOAR has been approved.	40	60					60	120	360	90		Mitigate	Work closely with CT Traffic to seek approval of TOAR.	Lam Trinh	7/31/2013	High
Active	024	Design	Positive locating of Utilities	The project proposes to defer the positive locating of the underground utility crossings to the PS&E phase. If potholing efforts reveal that utilities require relocation, it could increase the project cost and potentially delay the schedule.	A Utility Policy Variance Request (UPVR) was prepared to document the existing utilities which do not meet the Caltrans Policy.	10	20	$ 1,000,000	$ 2,000,000	$ 5,000,000	$ 400,000	60	90	360	26		Accept	Begin potholing efforts early during PS&E phase. Consider advance utility relocation contract prior to construction.	Sarah Christensen/ Lam Trinh	11/11/2013	Low
Retired	025	PM	Cultural Schedule, SHPO review	The SHPO review of the Treatment Plan, MOA, and FOE does not have a set time limit. SHPO concurrence is required for approval of the final environmental document. Lengthy review could delay PA/ED schedule several months.	Treatment Plan, MOA, and FOE are not required for this project.	40	60					90	120	360	95		Mitigate	Early coordination with SHPO could help mitigate a lengthy review.	Sarah Christensen	8/19/2014	High
Active	026	Design	Theft of Copper Wire	Theft of copper wire is common in the bay area. Theft of wire could impact operation of the express lane and require emergency repair to the system.		20	40	$ 50,000	$ 150,000	$ 500,000	$ 70,000						Mitigate	Consider alternative pullbox types and installations which prevents theft such as lockable pullboxes.	Sarah Christensen	8/12/2013	Med
Active	027	PM	New Caltrans Policy or change to existing policy	If there is a new policy introduced or an existing policy is revised, it could require the project to perform additional studies, delaying the PA/ED schedule.		10	20					30	60	90	9		Mitigate	Early communication with Caltrans functional units to minimize impacts of policy changes.	Sarah Christensen	8/12/2013	Low
Retired	028	Environmental	Complex EA	Caltrans may require a complex EA due to findings in cultural, biology, and non-resolution of the creek bridge issue. A complex EA would require additional reviews which would delay the PA/ED schedule.	This issue has been resolved.	20	40					60	90	120	27		Mitigate	Work closely with reviewers to resolve issues early. Separate widening of the creek bridges to a future project.	Sarah Christensen	8/12/2013	Med

LEVEL 3 - RISK REGISTER	Project Name:	US 101 Express Lanes Project PA/ED Phase	DIST- EA	04-2G7100	Project Manager	Ramsey Hissen/Sarah Christensen (URS Corporation)	

						Risk Assessment													
Risk Identification						Probability		Cost Impact ($)				Time Impact (days)				Rationale	Risk Response		
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable		Strategy	Response Actions	Risk Owner	Updated	Risk Rating
Retired	029	PM	Scope Creep, Auxiliary lanes not in TIP or RTIP	Project improvements requested for approval are included in TIP. It is too late to amend the existing TIP. Including additional improvements would expand the project footprint which would add cost and delay to the overall project schedule.	The project footprint has been finalized.	10	20					30	90	120	12		Mitigate	Continue working with MTC and Caltrans to ensure any added scope of work is included in TIP amendment.	Lam Trinh	8/19/2014	Low
Active	030	Design	Base mapping, survey reveals unexpected conditions.	The PA-ED preliminary engineering is based on the aerial mapping obtained from the Santa Clara Valley Water District. Topographic mapping is not available for all parts of the project. If the survey reveals unexpected conditions it could increase project cost.	The topographic survey will be performed during PS&E.	20	40	$ 300,000	$ 500,000	$ 1,000,000	$ 180,000						Accept	Performed extensive field visits during the PA-ED phase. Evaluate new basemapping early in the PS&E phase.	Lan Ho	8/9/2013	Med
Retired	031	Environmental	Comments on the TOAR requires revisions to the Forecast	Comments on the TOAR may require additional forecasts, such as a change to tolling rates or including HOV 3+.	TOAR has been approved.	10	20	$ 20,000	$ 50,000	$ 75,000	$ 7,000	30	60	90	9		Mitigate	Work closely with Traffic Ops reviewer, hold workshops to resolve comments.	Sarah Christensen	8/19/2014	Low
Active	032	Design	Retaining walls needed near I-880 require Right of Way acquisition	As-builts for the area surrounding the I-880 interchange are unclear and/or do not reflect field conditions. If the walls need to be replaced, it would require Temporary Construction Easements and/or Right of Way Acquisition, increasing the project cost and potentially delaing the schedule.	Field investigations are ongoing. Based on existing conditions the walls will remain in place.	20	40	$ 500,000	$ 1,000,000	$ 2,000,000	$ 350,000	30	60	90	18		Mitigate	Performed extensive field visits during the PA-ED phase. Further investigations will take place during the PS&E phase.	Sarah Christensen	8/12/2013	Med
Active	033	PM	Local agencies or private property owners request additional improvements during final design or construction	Local agencies may request additional improvements along frontage roads, such as architectural treatments, landscaping, etc. Affected private property owners may request the project to make improvements to their property. These additional improvements could introduce additional costs and delay right of way agreements and PS&E delivery.		20	40	$ 250,000	$ 500,000	$ 1,000,000	$ 175,000	30	90	120	24		Mitigate	Control scope creep. Early involvement of local cities and county at the PDT meeting could identify improvements early to mitigate delay.	Sarah Christensen	8/12/2013	Med
Active	034	Design	Cross slope correction	During PS&E the project may be required to correct the cross slope on US 101, resulting in increased construction cost and potential delay of PS&E delivery.	The project does not assume any cross slope correction at this time.	20	40	$ 2,500,000	$ 5,000,000	$ 10,000,000	$ 1,750,000	60	90	120	27		Accept	Evaluate need for cross slope correction early on during the PS&E phase.	Lan Ho	8/12/2013	Med
Active	035	Design	CHP requests a different detail requiring additional design exception approval	The California Highway Patrol (CHP) may request additional space in the median for enforcement, which would require additional design exceptions. Coordination between CHP and Caltrans HQ Design and obtaining design exceptions could delay the overall schedule.	Coordination with CHP is ongoing.	10	20					30	60	120	11		Mitigate	Work closely with CHP and Caltrans HQ Design to come to an agreement on enforcement details.	Sarah Christensen	8/12/2013	Low
Active	036	Design	Right of Way records require additional relinquishment "clean up"	During the design phase, the project may encounter areas along the corridor where the Right of Way is inaccurate, requiring right of way acquisition or relinquishment. Additional Right of Way could increase the project cost and delay the overall schedule.	The project has not yet encountered areas requiring "clean up" based on available Right of Way Records.	0	10	$ 150,000	$ 500,000	$ 1,000,000	$ 28,000	60	90	120	5		Mitigate	Obtained the majority of the Right of Way Records from Caltrans. Continue to evaluate any new R/W needs.	Sarah Christensen	8/12/2013	Low
Active	037	Environmental	Increased backlog for permitting agencies	An increased backlog at USFWS, SHPO could delay the environmental clearance		10	20					30	45	90	8.25		Mitigate	Work closely with permitting agencies to ensure approval in a timely manner	Sarah Christensen	11/11/2013	Low
Active	038	Design	Additional lighting	Caltrans may require additional lighting be provided in addition to what is required by TOP-D 11-02. Additional lighting would add cost to the project.	The project will environmentally clear additional lighting throughout the project limits. Locations of additional lighting will be determined during the PS&E phase.	40	60	$1,000,000	$ 5,000,000	$ 20,000,000	$ 4,333,000						Accept	Locations of additional lighting will be further evaluated during the PS&E phase.	Sarah Christensen	11/11/2013	Med

LEVEL 3 - RISK REGISTER	Project Name:	US 101 Express Lanes Project PA/ED Phase	DIST- EA	04-2G7100	Project Manager	Ramsey Hissen/Sarah Christensen (URS Corporation)	

							Risk Assessment												
Risk Identification							Probability		Cost Impact ($)				Time Impact (days)				Rationale	Risk Response	
Status	ID #	Category	Title	Risk Statement	Current status/assumptions		Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable		Strategy	Response Actions
Active	039	Design	Pavement Resurfacing	Caltrans Traffic Safety has requested that the project provide a smooth pavement surface in a 13 mile-long segment of US 101 to mitigate any pavement scarring that may occur due to temporary shifting of lanes during the construction. A cost has been included in the project cost estimate, however it may be found during PS&E that cross slope correction or pavement rehabilitation may be warranted within the 13 miles segment, which would increase the cost.	The project cost estimate includes $4.8M to provide a smooth surface for the 13 miles.		20	40	$4,800,000	$ 8,000,000	$ 21,000,000	$ 3,380,000	30	60	90	18		Accept	Caltrans to research any future pavement rehabilitation projects within the corridor and coordinate with VTA during the design phase to provide the optimum pavement strategy for the corridor.
Active	040	Environmental	Ozone	FHWA may request additional time to review or come back with more information before issuing concurrence. This concurrence may be slightly delayed due to litigation that US EPA is resolving.	Caltrans has submitted Air Quality Conformity to FHWA. EPA likely to resolve requirements within 30 days.		10	20	$0	$ 250,000	$ 500,000	$ 38,000	30	45	60	6.75		Mitigate	VTA/ Caltrans to monitor status with FHWA.

Risk Response				
Risk Owner	Updated	Risk Rating		
Sarah Christensen	8/19/2014	Med		
Lam Trinh	3/12/2015	Low		

04 - SCl - 101 - PM 16.00/52.55
04 - SCl - 85 - PM 23.0/24.1
EA #04-2G7100, RU: 245
Program ID: 0412000459

Attachment H

Final Environmental Document

(Title and Summary Pages)

United States Highway 101 Express Lanes Project

SANTA CLARA COUNTY, CALIFORNIA
DISTRICT 4 – SCL – 101 (PM 16.00/52.55)
4 – SCL – 85 (PM 23.0/R24.1)
EA 2G7100/0412000459

Initial Study with Mitigated Negative Declaration/Environmental Assessment with Finding of No Significant Impact

Prepared by the
State of California Department of Transportation
in Cooperation with the Santa Clara Valley Transportation Authority

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 USC 327.

Caltrans

July 2015

SCH: 2015012012
4-SCL-101-PM 16.00/52.55
4-SCL-85-PM 23.0/R24.1
2G7100/0412000459

Construct express lane facility on US 101 from East Dunne Avenue in Morgan Hill to the Santa Clara/San Mateo County line in Palo Alto (Post Miles 16.00 to 52.55) and restripe the northern 1.1 miles of SR 85 in Mountain View (Post Miles 23.0 to R24.1).

Initial Study with Mitigated Negative Declaration/Environmental Assessment

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C)

THE STATE OF CALIFORNIA
Department of Transportation

and

Santa Clara Valley Transportation Authority

July 21, 2015
Date of Approval

Bijan Sartipi
District Director
California Department of Transportation, District 4
NEPA and CEQA Lead Agency

The following person may be contacted for more information about this document:

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SCH: 2015012012

CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT

FOR THE

US 101 EXPRESS LANES PROJECT

The California Department of Transportation (Department) has determined that the Build Alternative will have no significant impact on the human environment. This FONSI is based on the attached EA and supporting technical reports, which have been independently evaluated by the Department and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an EIS is not required. The Department takes full responsibility for the accuracy, scope, and content of the attached EA.

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327.

July 21, 2015
Date

BIJAN SARTIPI
District Director,
California Department of Transportation,
District 4

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SCH: 2015012012

MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

Project Description

The State of California Department of Transportation (Department), in cooperation with the Santa Clara Valley Transportation Authority (VTA), proposes to create an express lane facility on United States Highway 101 (US 101) in both directions between East Dunne Avenue in Morgan Hill and approximately the Oregon Expressway/Embarcadero Road interchange in Palo Alto (Post Miles [PM] 16.00/52.55). The project would convert the existing northbound and southbound single high occupancy vehicle (HOV) lanes to high occupancy toll (HOT) lanes (express lanes) within these limits. A second express lane would be added in both directions from Cochrane Road in Morgan Hill to State Route (SR) 85 in San Jose (PM17.82/26.78), and from Blossom Hill Road in San Jose to North Fair Oaks Avenue in Sunnyvale (PM28.61/44.83) to create a dual express lane facility in these segments. The project would also convert the US 101/SR 85 HOV direct connectors in Mountain View to express lane connectors. Auxiliary lanes would be added in four segments of US 101. Express lane signs and lighting would be added within the right-of-way. The express lanes would allow HOVs to continue to use the lanes without paying a toll, and eligible single-occupant vehicles (SOVs) to pay a toll to use the lanes. The project length is 36.55 miles on US 101 and 1.1 miles on SR 85, for a total of 37.65 miles.

Determination

The Department has prepared an Initial Study (IS) for this project, and following public review, has determined from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on agricultural and forest resources, land use and planning, mineral resources, public services, and recreation. In addition, the proposed project would have less than significant effects to aesthetics, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, paleontology, population and housing, transportation/traffic, and utilities and service systems. With the following mitigation measure incorporated, the proposed project would have less than significant effects on riparian habitat and threatened and endangered species:

- Payment of fees to the Santa Clara Valley Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP).

Melanie Brent

Melanie Brent, Deputy District Director
Environmental Planning and Engineering
District 4
California Department of Transportation

July 16, 2015

Date

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Summary

The State of California Department of Transportation (Department), in cooperation with the Santa Clara Valley Transportation Authority (VTA), proposes to create an express lane facility on United States Highway 101 (US 101) in both directions between East Dunne Avenue in Morgan Hill and approximately the Oregon Expressway/Embarcadero Road interchange in Palo Alto (Post Miles [PM] 16.00/52.55). The project would convert the existing northbound and southbound single high occupancy vehicle (HOV) lanes to high occupancy toll (HOT) lanes (express lanes) within these limits. A second express lane would be added in both directions from Cochrane Road in Morgan Hill to State Route (SR) 85 in San Jose (PM17.82/26.78), and from Blossom Hill Road in San Jose to North Fair Oaks Avenue in Sunnyvale (PM 28.61/44.83) to create a dual express lane facility in these segments (shown in Appendix F).

The project would also convert the US 101/State Route (SR) 85 HOV direct connectors in Mountain View to express lane connectors, restripe the northern 1.1 miles of SR 85 to introduce a buffer separating the general purpose lanes from the express lane, and connect the SR 85 express lanes to the US 101 express lanes. Auxiliary lanes would be added in both directions on US 101 between Great America Parkway and Lawrence Expressway and in the northbound direction on US 101 between Old Bayshore Highway and North First Street. The project length is 36.55 miles on US 101 and 1.1 miles on SR 85, for a total of 37.65 miles.

Use of the HOV lanes is currently restricted to vehicles with two or more occupants, motorcycles, and certain alternative fuel vehicles. The project would allow single-occupant vehicles (SOVs) to pay a toll to use the lanes, while HOVs would use the lanes for free.

The Department is the lead California Environmental Quality Act (CEQA) agency for the project, and effective October 1, 2012 has been assigned environmental review and consultation responsibilities under the National Environmental Policy Act (NEPA) pursuant to 23 United States Code (USC) 327. The project is proposed by the Department in cooperation with VTA, which is responsible for providing regional funding.

The purpose of the project is to manage traffic in the congested HOV segments of US 101 between the SR 85 interchange in southern San Jose and the Oregon Expressway/Embarcadero Road interchange in Palo Alto, and maintain consistency with provisions defined in Assembly Bill 2032 (2004) and Assembly Bill 574 (2007) to implement express lanes in an HOV lane system in Santa Clara County and the US 101 South Corridor System Management Plan.

This Initial Study/Environmental Assessment (IS/EA) addresses the proposed project's potential to have adverse impacts on the environment. Potential impacts and avoidance, minimization, and mitigation measures are summarized in Table S-1.

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Environmental Justice	None.	The project would not cause disproportionately high and adverse effects on minority or low-income populations.	None required.	2.1.1.3
Utilities/ Emergency Services	None.	Utility relocations within the right-of-way are anticipated due to the outside widening. Emergency services access would be maintained throughout project construction.	The project's Transportation Management Plan (TMP) will address temporary lane closures during construction. No further measures are needed.	Section 2.1.2.3
Traffic and Transportation/ Pedestrian and Bicycle Facilities	For the AM northbound peak commute direction in 2015 and increasingly in 2035, primary bottlenecks including at De La Cruz and San Tomas/Montague, and Rengstorff and San Antonio, would cause significant congestion in the general purpose lanes. HOV lane congestion would occur around Moffett to Fair Oaks and 1st to Hellyer as a result of high HOV volumes and congestion in the general purpose lanes. For the PM southbound peak commute direction, congestion is expected at primary bottlenecks between the Rengstorff on-ramp and Middlefield on-ramp, De La Cruz on-ramp and SR-87 off-ramp, and Old Oakland on-ramp and McKee off-ramp in 2015. HOV lane speeds would drop below 50 MPH at a few locations due to congestion in the general purpose lanes. Congestion in the HOV and general purpose lanes is expected to be worse in 2035.	The project provides for additional capacity during critical peak periods. It would reduce (improve) corridor travel times and congestion delays, especially in the northbound peak AM commute period in 2015. It would continue to provide improved benefits through 2035 in comparison to the No Build Alternative, but there would be some highway segments that have reduced levels of service as a result of increased demand/traffic that uses the corridor.	None required.	Section 2.1.3.3

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Visual/ Aesthetics	None.	Inside and outside pavement widening for the second express lane would require removal of vegetation within approximately a lane width of the existing highway. Some additional vegetation would be removed where necessary to maintain current safety "clear zones" and where bridge abutment work is proposed. Up to seventy-seven acres of naturally occurring vegetation could be affected. Additionally there are landscaped trees and other plantings at interchanges, in front of sound walls, and along the highway that would be removed. The total trees removed could amount to as many as 757 trees. Areas of vegetation removal would be within some sections of the freeway that have landscape freeway status. The proposed changes would be visually compatible with the existing freeway setting and represent a low to moderate effect. The project would not have substantial adverse effects on a state scenic highway or scenic vista. Project lighting would not result in light or glare impacts. In accordance with Department policy, landscaping and irrigation that is damaged or removed during project construction would be replaced.	Highway planting, including landscaping, irrigation systems, and plant establishment will be funded and designed in conjunction with the roadway improvements. The planting will replace removed or damaged vegetation as a result of construction to the extent feasible. Re-planting will be completed within two years. Aesthetic treatment will be provided in the design of retaining walls. Lighting for night work will require downward cast and be confined to the immediate work area.	Section 2.1.4.4

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Cultural Resources	None.	The project's Area of Potential Effects contains 22 cultural resources, 3 of which have built environment components. With implementation of the proposed avoidance, minimization, and mitigation measures the project would not cause a substantial adverse change to a historical or archeological resource as defined by CEQA. The project would not affect or use a Section 4(f) historic resource.	All sites previously determined eligible and all unevaluated sites will be designated as Environmental Sensitive Areas (ESAs) and will be avoided during construction. If cultural materials are unearthed during construction, work will be halted in the area until a qualified archaeologist can assess the find. If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to CA PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the District Environmental Branch so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.	Section 2.1.5.4
Hydrology and Floodplain	None.	Parts of the project corridor are in the 100-year floodplain. The project would not cause longitudinal encroachments or substantially increase impervious surfaces or runoff quantity.	Measures proposed to avoid and minimize impacts to water quality and storm water runoff would also avoid and minimize hydrology and floodplain impacts.	Section 2.2.2.4

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Water Quality and Storm Water Runoff	As US 101 has no known existing treatment best management practices (BMPs), roadway runoff would affect water quality.	Project construction could have temporary impacts on water quality and storm water runoff from increased erosion and subsequent transport of sediment to nearby surface waters. Spills and fluid leaks from construction vehicles, equipment, or materials could also occur during construction. Groundwater could be encountered during installation of foundations. The project would have a disturbed soil area of approximately 220 acres and would increase impervious surface area by approximately 61 acres. The project area is susceptible to hydromodification.	Temporary and permanent erosion control BMPs will be included in the project to prevent an adverse change in downstream water quality. Potentially feasible treatment BMPs that will be considered during final design include biofiltration devices, infiltration devices, media filters, and detention devices. The required Storm Water Pollution Prevention Plan (SWPPP) will include storm water BMPs for temporary soil stabilization and sediment control. BMPs would treat approximately 145 acres of impervious area. The exact location of treatment BMPs will be determined during the final design phase.	Section 2.2.2.4
Geology/Soils/ Seismicity/ Topography	The No Build Alternative would be subject to the same geologic, soils, and seismic hazards as the Build Alternative.	The project area could be exposed to strong earthquake shaking. Liquefaction could affect untreated soil at foundations for overhead signs and widened US 101 bridge decks in areas of high susceptibility.	Project elements will be designed and constructed to meet the Department's seismic design requirements for ground shaking and ground motions. Additional geotechnical subsurface and design investigations will be performed during the final project design and engineering phase. The investigations will include site-specific evaluation of subsurface conditions at the location of proposed foundation features.	Section 2.2.3.4
Paleontology	None.	Road widening, grading and trenching may affect Pleistocene alluvial fan deposits and the Santa Clara Formation where those geologic units are exposed at or near the surface. Drilling for various project components may potentially affect Pleistocene alluvial fan deposits and the Santa Clara Formation where those units are overlain by more recent sediments of unknown depths.	The project would implement resource stewardship measures to allow for monitoring during active construction within surface exposures of Pleistocene alluvial fan deposits and Santa Clara Formation and discovery, collection, and curation of fossils, if found, in accordance with a Paleontological Mitigation Plan.	Section 2.2.4.4

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Hazardous Waste/Materials	None.	Sixteen potential hazardous materials sites are outside but within 1 mile of the project corridor. The risk of encountering contaminated groundwater from these sites during project construction is medium to high, depending on the depth of excavation or disturbance. Soils adjacent to the project corridor may contain naturally occurring asbestos or pesticides from previous agricultural land uses. Vehicle tire and brake wear, oil, grease, and exhaust from vehicular traffic on SR 85 and US 101 and other roads within the project area may have contaminated surface soils in the immediate vicinity with aerially deposited lead (ADL) and other heavy metals.	Further investigation of potential hazardous materials sites is recommended due to the potential presence of petroleum hydrocarbons, solvents, and ADL in soil and/or groundwater. During final project design, soils and groundwater would be tested to determine management options and special handling requirements for the construction contractor. If encountered, contaminated soil, groundwater, and other hazardous materials would be properly characterized and disposed of at an appropriate facility per applicable regulations. The Department will investigate in depth for contaminants and shall take avoidance, minimization and/or mitigation measures to prevent soil and ground water contamination. The Department will also ensure workers' safety.	Section 2.2.5.4
Air Quality	None.	The project would not increase concentrations of criteria pollutants that would result in air quality standard violations. The project would not violate standards for carbon monoxide (CO) or particulate matter less than 2.5 micrograms in diameter ($PM_{2.5}$). Minor increases in mobile source air toxics in the project horizon year (2035) would be offset by emissions improvements from national control programs. Construction activities associated with the proposed project would be relatively short in duration and intensity and would not exceed state thresholds for construction emissions, with the exception of one pollutant, Nitrogen oxides (NO_x).	Implementation of the Department's Special Provisions, Standard Specifications, and other recommended measures listed in Section 2.2.6.4 would minimize or eliminate dust from construction activities and reduce the project's emissions of NO_x below the state threshold of significance.	Section 2.2.6.4

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Noise	Residences and other land uses along SR 85 and US 101 have existing and future noise levels that approach or exceed federal noise abatement criteria.	Depending on the location, the project would have no effect on existing noise levels, or no more than a 3-decibel increase. A 3-decibel increase in the noise level is barely perceptible to the human ear (Caltrans 2011c). Construction noise would be temporary, limited in duration, and generally at or below the existing freeway noise levels. A traffic noise abatement evaluation following Department procedures identified feasible sound walls, but none were determined cost-effective.	Measures would be implemented to minimize or reduce the potential for temporary noise impacts resulting from project construction. The final decision regarding noise abatement will be made following completion of the project design and public involvement process.	Section 2.2.7.4

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Natural Communities	None.	The project area is highly developed with commercial, industrial, and residential land uses. Undeveloped areas and roadsides may contain naturally occurring (non-landscaped) vegetation communities. Native plants and trees are restricted to limited areas along US 101 and riparian habitat at certain stream crossings. Landscaped areas are present in almost all intersection cloverleafs and along the sides of the freeway. Serpentine soils and grasslands are present within the southern portion of the corridor, and approximately 0.12 acre would be affected by project construction. Fencing would be used to minimize this impact. Indirect effects to these grasslands could potentially occur from increased deposition of nitrogen associated with additional traffic with the project. Approximately 77 acres of naturally occurring vegetation along US 101 could be affected by the project. US 101 passes through Coyote Valley, an important wildlife corridor. Wildlife may cross beneath the highway using culverts or under bridges. The project would not affect these crossings except for some culvert extensions, and temporary construction disturbance. The project would not involve work within any creek crossing, and would not result in habitat fragmentation or impacts to fish passage.	Replacement landscaping, including tree planting, would be provided. A project landscaping plan will be developed during final design and plantings will be complete within two years. Tree removal will take place before the start of the nesting season for protected raptors and migratory birds (February 1-August 31). Vegetation will be preserved in areas of the project limits where no construction is planned. Preconstruction surveys for serpentine grasslands will be conducted during the spring before construction begins. If serpentine grasslands are present within the limits of construction, an approximate 5-foot buffer will be placed around the grasslands using environmentally sensitive area (ESA) fencing. Compensatory mitigation for direct and indirect effects to serpentine grasslands will be provided through payment of a serpentine fee to the Santa Clara Valley Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP). The project will include median barriers where appropriate that are designed to allow wildlife to cross in event they are trapped within the right-of-way. Right-of-way “directional” fencing will modified near culvert openings encourage/allow safe passage under bridges and at culverts.	Section 2.3.1.4

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Wetlands and Other Waters	None.	No permanent or temporary impacts are anticipated to waters of the U.S. or wetlands. The project would not affect culverts that are conveyed entirely underground. Roadway widening would permanently affect 0.06 acre of non-jurisdictional cattail wetlands, which are considered waters of the state.	Temporarily affected areas will be restored to pre-project or ecologically improved conditions. Measures will be employed to prevent construction material or debris from entering surface waters or their channels. Erosion control measures will be in place prior to, during, and after construction to avoid silt or sediment entering surface waters. Compensatory mitigation for permanent impacts of 0.06 acre of waters of the state would be provided through payment of an in-lieu fee to the HCP/NCCP. Alternatively, off-site mitigation would be implemented.	Section 2.3.2.4
Plant Species	None.	Project construction has the potential to increase nitrogen deposition with serpentine soil areas, which could affect plant growth and completion.	Payment of serpentine and nitrogen deposition fees would be made to the Santa Clara Valley HCP/NCCP.	Section 2.3.3.4

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Animal Species	None.	There would be no aquatic impacts, but project construction could affect upland dispersal habitat for the western pond turtle. Project construction at ramp loops would temporarily affect potential foraging and nesting habitat for western burrowing owl. Project construction could temporarily disturb marginally suitable roosting and nesting sites for "high-priority" bat species, but would not have any permanent habitat loss. Project construction during the nesting season (February 1-August 31) could cause nesting migratory birds and raptors to abandon their nests, which could result in nest failure. Project construction may temporarily deter wildlife species from using wildlife crossing structures.	Temporary construction-related effects on western pond turtle habitat and western burrowing owl use of the project area will be avoided or minimized by implementing the proposed measures. Preconstruction surveys will be conducted for bat roosts. If located, the roosts will be flagged and avoided during construction. If construction takes place during the nesting season (February 1 through August 31), preconstruction surveys will be conducted for nesting migratory birds and raptors. If active nests are found, buffers will be imposed until nesting is completed. Modified barriers will be installed in the median to facilitate animal movement across US 101. The barriers will be located from just north of Yuba Buena Road to just north of E Dunne Avenue.	Section 2.3.4.4
Threatened and Endangered Species	None.	Project construction could result in permanent effects to 10.42 acres of potential upland habitat for California red-legged frog (CRLF) and California tiger salamander (CTS), and temporary construction effects to 23.34 acres of upland habitat. Project construction would permanently affect up to 0.12 acre of serpentine habitat that has the potential to contain host plants for bay checkerspot butterflies. Serpentine grassland habitat for coyote ceanothus and Metcalf Canyon Jewel-flower could be indirectly affected by nitrogen deposition related to project construction and project related traffic.	Preconstruction surveys, wildlife exclusion fencing, use of appropriate erosion control materials, and biological monitoring will avoid or minimize effects to CRLF and CTS. Preconstruction surveys and ESA fencing for the host plant for bay checkerspot butterfly, construction outside of the adult flight period (March through early May), and regular watering of exposed soils will avoid or minimize effects to bay checkerspot butterfly. Preconstruction surveys and ESA fencing for Metcalf Canyon jewel-flower and the plant's serpentine grassland habitat will avoid or minimize impacts to Metcalf canyon jewel-flower.	Section 2.3.5.4

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Invasive Species	None.	Invasive species in the project corridor include non-natives such as English ivy, yellow star thistle, jubata grass, sweet fennel, black mustard, soft brome Italian ryegrass, and Italian thistle. Project construction activities have the potential to inadvertently spread invasive species.	Project landscaping and erosion control will not use species listed as noxious weeds. No disposal of soil and plant materials will be allowed from areas that support invasive species to areas dominated by native vegetation. The Resident Engineer will be educated on weed identification and the importance of controlling and preventing the spread of identified invasive non-native species. Gravel and/or fill material to be placed in relatively weed-free areas will come from weed-free sources. Certified weed-free imported materials (or rice straw in upland areas) will be used.	Section 2.3.5.4
Cumulative Impacts	None.	The project would have no impact, including cumulative impact, on land use, growth, farmlands/timberlands, or community impacts. The project would offset impacts to utilities and emergency services, traffic and transportation/pedestrian and bicycle facilities, cultural resources, hydrology and floodplain, water quality and storm water runoff, geology/soils/seismic/topography, paleontology, hazardous waste/materials, air quality, natural communities, wetlands and other waters, plant species, animal species, threatened and endangered species, and invasive species; therefore, cumulative impacts would not occur. The project would not contribute to cumulatively considerable or significant impacts to the visual or noise environment.	None required.	Section 2.4.2

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact		Avoidance, Minimization, and/or Mitigation Measures	Section Reference in IS/EA
	No Build Alternative	Build Alternative		
Climate Change	None.	As the project would increase vehicle speeds during the peak period, future (2035) carbon dioxide emissions would be lower than with the No Build Alternative. Slight increases in greenhouse gas emissions during construction would be offset by the improvement in operational emissions. A protion of the project, from approximately the northern limits to the North Rengstorff Avenue interchange are within areas mapped for vulnerability to future sea level rise. The affected area is approximately the same as the mapped 100-year floodplain evaluated for the project. The project changes in the affected area are primarily installation of signs that would have no contribution to future predicted water levels and are considered a relatively low infrastructure investment.	None required.	Section 2.5

04 - SCl - 101 - PM 16.00/52.55
04 - SCl - 85 - PM 23.0/24.1
EA #04-2G7100, RU: 245
Program ID: 0412000459

Attachment I

Storm Water Data Report Addendum

With Signature Page

1243 Alpine Road, Suite 108
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Memorandum

Date: February 5, 2014

To: Norman Gonzalves, P.E.
Branch Chief, Storm Water Coordination
Caltrans District 4
Office of Water Quality

CC: Mostafa Faghihi
Storm Water Coordination Branch

Dina El-Tawansy
Project Manager
Caltrans District 4

From: Analette Ochoa, P.E and Erica Cruz, P.E. – WRECO

Subject: EA 04-2G7100 US 101 Express Lanes - Storm Water Data Report Summary of Revisions

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This memorandum presents a summary of the second set of revisions to the approved Storm Water Data Report (SWDR) for the US 101 Express Lanes Project, EA 04-2G7100. The SWDR was signed by the Project Engineer on November 14, 2012 and received final signatures from Caltrans on December 7, 2012; a copy of the signature page is attached to this memo (see Attachment 1).

The revisions incorporate changes due to the addition of an auxiliary lane in the northbound direction between Old Bayshore Road and North 1st Street, from approximately Station 1288+00 to Station 1300+00, which consists of 0.35 acres of additional impervious area.

The Evaluation Document Form (EDF) has been updated and is included in this memo.

The revisions made to the approved SWDR are listed in the following sections.

Section 1. Project Description

The Project Description used for the SWDR was updated based on the revised project scope, which includes the addition of an auxiliary lane in the northbound direction between Old Bayshore Road and North 1st Street. The changes include the following:

- Updating the Build Alternative Section to include language on the proposed auxiliary lane. Paragraph 1, line 5 added: Auxiliary lanes are proposed in the following locations:
    - Northbound US 101 between Lawrence Expressway and Fair Oaks Avenue
    - Northbound US 101 between Great America Parkway and Lawrence Expressway
    - Southbound US 101 between Lawrence Expressway and Great America Parkway

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- Northbound US 101 between Old Bayshore Road and North 1st Street

During the first revision (memo dated June 12, 2013) URS re-evaluated the disturbed soil area, added impervious area and reworked impervious area, during that revision the Disturbed Soil area was decreased from 720 to 220 acres, the added impervious area increased and the reworked impervious area decreased. URS re-evaluated the added impervious area to account for the auxiliary lane between Old Bayshore Road and North 1st Street. The added impervious area for the first three auxiliary lanes in the list above was already included in the first reversion of the SWDR (June 12, 2013); the updated area for northbound US 101 between Old Bayshore Road and North 1st Street is highlighted in Table A.

Table A. Revisions to Area Values

	SWDR Report version		
	Nov./Dec. 2012 (Approved)	**May 2013 (1st Revision)**	**Jan 2014 (2nd Revision)**
Disturbed Soil Area (acre)	720	220	220
Existing Impervious Area (acre)	640	640	640
Added Impervious Area (acre)	43.54	60.26	60.61
Reworked Impervious Area (acre)	79.58	64.18	64.18
Added + Reworked Impervious Area (acre)	123.12	124.44	124.79

Section 2. Site Data and Storm Water Quality Design Issues

Table 4 was revised to reflect changes to the added impervious area value to Guadalupe River; see the highlighted values in Table B.

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Table B. Revisions to Table 4 of the SWDR

Receiving Water Body	US 101 Post Mile	SWDR Report version					
		Nov./Dec. 2012 (Approved)		May 2013 (1st Revision)		Jan 2014 (2nd Revision)	
		Added Impervious Area (acre)	Reworked Impervious Area (acre)	Added Impervious Area (acre)	Reworked Impervious Area (acre)	Added Impervious Area (acre)	Reworked Impervious Area (acre)
Llagas Creek (south of project)	R 10.63	3.33	1.43	7.12	2.39	7.12	2.39
Coyote Creek	R 19.21	30.26	17.73	35.56	17.95	35.56	17.95
Coyote Creek	R 26.47 R 26.60	-	-	-	-	-	-
Coyote Creek	29.83	0.71	8.71	3.55	10.80	3.55	10.80
Upper Silver Creek	N/A	0.08	1.40	0.24	2.10	0.24	2.10
Lower Silver Creek	36.37	1.56	13.69	1.92	8.25	1.92	8.25
Coyote Creek	36.69	0.39	6.95	0.51	2.18	0.51	2.18
Guadalupe River	40.19	1.41	14.74	4.11	12.83	4.46	12.83
San Tomas Aquino Creek	42.45	2.39	5.12	2.17	2.09	2.17	2.09
Calabazas Creek	43.32	2.11	5.10	3.38	3.50	3.38	3.50
Sunnyvale East Channel	N/A	1.09	2.59	1.54	1.82	1.54	1.82
Sunnyvale West Channel	N/A	0.11	1.17	0.13	0.21	0.13	0.21
Stevens Creek	48.04	0.10	0.95	0.03	0.06	0.03	0.06
Permanente Creek	N/A	-	-	-	-	-	-
Adobe Creek	50.66	-	-	-	-	-	-

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Fax: 925.941.0018
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Table B. continued

Receiving Water Body	US 101 Post Mile	Added Impervious Area (acre)	Reworked Impervious Area (acre)	Added Impervious Area (acre)	Reworked Impervious Area (acre)	Added Impervious Area (acre)	Reworked Impervious Area (acre)
Matadero Creek	51.37	-	-	-	-	-	-
Total		43.54	79.58	60.26	64.18	60.61	64.18
Total Added and Reworked Impervious Area		123.12		124.44		124.79	

Section 3. Regional Water Quality Control Board Agreements

There are no changes to this section.

Section 4. Design Pollution Prevention BMPs

In paragraph 1, line 1, impervious surface area was revised from “124.44” to “124.79” acres.

Section 5, Section 6, and Section 7

There are no changes to these sections. Although the total added and reworked impervious area increased from 124.44 to 124.79 acres, the project already had the potential to treat 145.67 acres of impervious area. No additional treatment BMPs need to be considered.

Required Attachments

The impervious area values were updated in the Evaluation Documentation Form. A copy of the Evaluation Documentation Form from the approved Storm Water Data Report is attached to this memo (see Attachment 2).

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Attachment 1

Approved Storm Water Data Report Signature Page

1243 Alpine Road, Suite 108
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Phone: 925.941.0017
Fax: 925.941.0018
www.wreco.com

Long Form - Storm Water Data Report

Caltrans

Dist-County-Route: 04-SCl-101, 04-SCl-85
Post Mile Limits: 16.0/52.55 (US 101), 23.0/24.1 (SR 85)
Project Type: Express Lanes – Conversion and Widening
Project ID (or EA): EA 04- 2G7100
Program Identification: TBD
Phase: ☐ PID ☒ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): San Francisco Bay (2) and Central Coast (3)

Is the Project required to consider Treatment BMPs? Yes ☒ No ☐
If yes, can Treatment BMPs be incorporated into the project? Yes ☒ No ☐
If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date: _____

Total Disturbed Soil Area: 720 acres Risk Level: 2 and 3
Estimated: Construction Start Date: Winter 2014 Construction Completion Date: Winter 2016
Notification of Construction (NOC) Date to be submitted: TBD

Erosivity Waiver	Yes ☐	Date: _____	No ☒
Notification of ADL reuse (if Yes, provide date)	Yes ☒	Date: TBD	No ☐
Separate Dewatering Permit (if yes, permit number)	Yes ☒	Permit # TBD	No ☐

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

Analette Ochoa, P.E., Registered Project Engineer — 11/14/12 Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

Nick Saleh, Project Manager — 11/15/2012 Date

Robert Braga, Designated Maintenance Representative — 11/20/12 Date

David Yam, Designated Landscape Architect Representative — 11/28/12 Date

[Stamp Required for PS&E only)

Norman Gonsalves, District/Regional Design SW Coordinator or Designee — 12/07/2012 Date

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Attachment 2

Updated Storm Water Data Report Evaluation Documentation Form

DATE: January 2014

Project ID (or EA): EA 04-2G7100

NO.	CRITERIA	YES ✓	NO ✓	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs. Go to 2
2.	Is this an emergency project?		✓	If **Yes**, go to 10. If **No**, continue to 3.
3.	Have TMDLs or other Pollution Control Requirements been established for surface waters within the project limits? Information provided in the water quality assessment or equivalent document.	✓		If **Yes**, contact the District/Regional NPDES Coordinator to discuss the Department's obligations under the TMDL (if Applicable) or Pollution Control Requirements, go to 9 or 4. _____ *(Dist./Reg. SW Coordinator initials)* If **No**, continue to 4.
4.	Is the project located within an area of a local MS4 Permittee?	✓		If **Yes**. *(Santa Clara Phase 1 and Gilroy, Morgan Hill, Santa Clara Phase II))*, go to 5. If **No**, document in SWDR go to 5.
5.	Is the project directly or indirectly discharging to surface waters?	✓		If **Yes**, continue to 6. If **No**, go to 10.
6.	Is it a new facility or major reconstruction?	✓		If **Yes**, continue to 8. If **No**, go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?	✓		If **Yes**, continue to 8. If **No**, go to 10.
8.	Does the project result in a net increase or one acre or more of new impervious surface?	✓		If **Yes**, continue to 9. If **No**, go to 10. *60.61 acres (Net Increase New Impervious Surface)*
9.	Project is required to consider approved Treatment BMPs.	✓		See Sections 2.4 and either Section 5.5 or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.
10.	Project is not required to consider Treatment BMPs. _____*(Dist./Reg. Design SW Coord. Initials)* _____*(Project Engineer Initials)* _____ *(Date)*			Document for Project Files by completing this form, and attaching it to the SWDR.

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs

Attachment J

Safety Analysis Recommendation Memorandum

State of California
Memorandum

Business, Transportation and Housing Agency

To: **Dina El-Tawansy**
Regional Project Manager
Division of Project Management - South

Date: October 29, 2014
File: 4-SCl-101-PM 16.0/52.55
4-SCl-85-PM 23.0/R24.1
EA 2G7100
(EFIS 0412000459)
Construct Express Lane

From: **Ramiel F. Gutierrez**
Senior Transportation Engineer
Dist. 4- Office of Traffic Safety (SF / SCl)

Subject: **SAFETY ANALYSIS RECOMMENDATIONS FOR SCL US 101 EXPRESS LANES**

The following recommendations are based on the safety impact findings generated by our evaluation and analysis of:

- the preliminary infrastructure modification plans
- the corridor's baseline safety performance
- anticipated changes in operating conditions (especially lane changing and weaving) due to the planned lane addition and introduction of limited access operation throughout the entire corridor.

All recommendations are intended to avoid or mitigate safety impacts related to changes to the existing infrastructure, operating conditions, and especially their effect on driver decision-making and lane-changing maneuvers.

GENERAL COUNTERMEASURE RECOMMENDATIONS WITHIN THE PROJECT LIMITS - BOTH DIRECTIONS OF ROUTE 101

1. Construction and Permanent Pavement Markings and Delineation:

Provide enhanced pavement markings and delineation at all locations within the corridor, where the clarity of the lane and edge lines may adversely be affected by the following construction work. Locations anticipated to be affected will be determined during the PS&E phase.

a. Construction staging that temporary relocates (shifts) delineation, and
b. Proposals to offset / re-locate permanent delineation

c. Proposals to offset / re-locate delineation from existing or proposed longitudinal and diagonal paving joints

2. Signing & Enhanced Pavement Markings

a. Signing

The permanent signing plans will be in accordance with the SCL US 101 Sign Concept Plan (*please see attachment*). Signs and locations where additional barrier-mounted signage may be required will be determined during the PS&E phase upon consultation with the Caltrans District 4 Office of Traffic–Signing Branch (Santa Clara County).

Existing sign panels whose conspicuity has been compromised by the presence of the newly placed signs for the express lanes, and whose reduced conspicuity results in driver comprehension difficulty, will be replaced. These signs and locations are to be determined during the PS & E phase.

b. Enhanced Pavement Markings

The need for enhancements (e.g., contrast treatment and additional reflective markers along buffer striping) will be evaluated during the PS&E phase.

3. Lighting

a. Highway lighting throughout the weave access opening will be placed in accordance with TOPD #11-02 (Traffic Operations Policy Directive #11-02, issued on 3/23/2011). (Please see attached copy of TOPD).

b. To supplement the lighting being installed within the weave access zone openings to satisfy the requirements outlined in TOPD #11-02, additional lighting will be placed within the median as traffic safety devices to mitigate safety impacts brought about by the changes to the existing facility as a result of the establishment of the express lanes. Median (Butterfly) electroliers, with spacing to be determined during the design development, shall be installed at the following *(non-access openings)* segment locations:

1. PM 32.30 to PM 32.80 (2400 Ft)
2. PM 33.30 to PM 34.9 (5808 Ft)
3. PM 35.05 to PM 35.8 (3960 Ft)
4. PM 36.25 to PM 36.7 (2376 Ft)
5. PM 37.50 to PM 39.1 (8448 Ft)
6. PM 39.70 to PM 40.80 (5808 Ft)
7. PM 42.00 to PM 42.70 (3696 Ft)

8. PM 43.60 to PM 44.65 (5544 Ft)
9. PM 45.60 to PM 46.80 (6336 Ft)
10. PM 47.20 to PM 47.7 (2640 Ft)

c. Placement of continuous lighting will be considered as an alternative recommendation for the locations described in Section #5a below.

4. Express Lane Access Openings (Weave Zones)

Where weave zones are located within horizontal curves, locate the beginning of the opening of the weave zone upstream to place a substantial portion of the weave zone within a tangent section.

5. Median Barrier and Glare Screen

a. Installation of (glare screen) concrete median barrier (Type 60G and 60GE) will be considered during the PS & E phase at the following locations:

- Where there is a concentration of accidents occurring during dark driving environment
- Where median and inside shoulders are proposed to be reduced to nonstandard conditions

The Santa Clara Valley Transportation Authority and the Caltrans Traffic Safety reached a consensus on all of the safety countermeasures that are recommended in this memorandum. To insure that these recommendations are implemented, this Express Lanes Project will be continuously monitored by both agencies until it has been completed.

04 - SCl - 101 - PM 16.00/52.55
04 - SCl - 85 - PM 23.0/24.1
EA #04-2G7100, RU: 245
Program ID: 0412000459

Attachment K

Cooperative Agreement

COOPERATIVE AGREEMENT

This agreement, effective on August 10, 2011, is between the State of California, acting through its Department of Transportation, referred to as CALTRANS, and:

Santa Clara Valley Transportation Authority, a political subdivision of the State of California, referred to as VTA.

For the purpose of this agreement, the term PARTNERS collectively refers to CALTRANS and VTA (all signatory parties to this agreement). The term PARTNER refers to any one of those signatory parties individually.

RECITALS

1. California Streets and Highways Code sections 114 and 130 authorize PARTNERS to enter into a cooperative agreement for performance of work within the State Highway System (SHS) right of way.

2. This agreement outlines the terms and conditions of cooperation between PARTNERS to perform PA&ED, PS&E and R/W activities for converting existing high occupancy vehicle (HOV) lanes or carpool lanes into limited-access express lanes, and constructing a second HOV/express lane on US 101 in Santa Clara County.

   For the purpose of this agreement, converting existing HOV lanes or carpool lanes into limited-access express lanes, and constructing a second HOV/express lane on US 101 in Santa Clara County will be referred to as PROJECT. All responsibilities assigned in this agreement to perform PA&ED, PS&E and R/W activities will be referred to as OBLIGATIONS.

3. There are no prior PROJECT-related cooperative agreements.

4. No PROJECT deliverables have been completed prior to this agreement.

5. The estimated date for OBLIGATION COMPLETION is December 31, 2014.

6. In this agreement capitalized words represent defined terms and acronyms. The Definitions section contains a complete definition for each capitalized term.

7. From this point forward, PARTNERS define in this agreement the terms and conditions under which they will accomplish OBLIGATIONS.

RESPONSIBILITIES

8. VTA is SPONSOR of PROJECT.

9. CALTRANS will provide IQA for the portions of WORK within existing and proposed SHS right of way. CALTRANS retains the right to reject noncompliant WORK, protect public safety, preserve property rights, and ensure that all WORK is in the best interest of the SHS.

10. VTA may provide IQA for the portions of WORK outside existing and proposed SHS right of way.

11. VTA is the only FUNDING PARTNER for this agreement. VTA's funding commitment is defined in the FUNDING SUMMARY.

12. CALTRANS is the CEQA lead agency for PROJECT.

13. CALTRANS is the NEPA lead agency for PROJECT.

14. VTA is IMPLEMENTING AGENCY for PA&ED, PS&E and R/W.

SCOPE

Scope: General

15. PARTNERS will perform all OBLIGATIONS in accordance with federal and California laws, regulations, and standards; FHWA STANDARDS; and CALTRANS STANDARDS.

16. IMPLEMENTING AGENCY for a PROJECT COMPONENT will provide a Quality Management Plan (QMP) for that component as part of the PROJECT MANAGEMENT PLAN.

17. Any PARTNER may, at its own expense, have representatives observe any OBLIGATIONS performed by another PARTNER. Observation does not constitute authority over those OBLIGATIONS.

18. Each PARTNER will ensure that all of its personnel participating in OBLIGATIONS are appropriately qualified, and if necessary licensed, to perform the tasks assigned to them.

19. PARTNERS will invite each other to participate in the selection and retention of any consultants who participate in OBLIGATIONS.

20. If WORK is done under contract (not completed by a PARTNER's own employees) and is governed by the California Labor Code's definition of "public works" (section

1720(a)(1)), that PARTNER will conform to sections 1720 – 1815 of the California Labor Code and all applicable regulations and coverage determinations issued by the Director of Industrial Relations.

21. IMPLEMENTING AGENCY for each PROJECT COMPONENT included in this agreement will be available to help resolve WORK related problems generated by that component for the entire duration of PROJECT.

22. CALTRANS will issue, upon proper application, the encroachment permits required for WORK within SHS right of way.

Contractors and/or agents, and utility owners will not perform activities within SHS right of way without an encroachment permit issued in their name.

23. If any PARTNER discovers unanticipated cultural, archaeological, paleontological, or other protected resources during WORK, all WORK in that area will stop and that PARTNER will notify all PARTNERS within 24 hours of discovery. WORK may only resume after a qualified professional has evaluated the nature and significance of the discovery and a plan is approved for its removal or protection.

24. All administrative draft and administrative final reports, studies, materials, and documentation relied upon, produced, created, or utilized for PROJECT will be held in confidence to the extent permitted by law, and where applicable, the provisions of California Government Code section 6254.5(e) shall protect the confidentiality of such documents in the event that said documents are shared between the PARTNERS.

PARTNERS will not distribute, release, or share said documents with anyone other than employees, agents, and consultants who require access to complete PROJECT without the written consent of the PARTNER authorized to release them, unless required or authorized to do so by law.

25. If any PARTNER receives a public records request, pertaining to OBLIGATIONS, that PARTNER will notify PARTNERS within five (5) working days of receipt and make PARTNERS aware of any disclosed public records. PARTNERS will consult with each other prior to the release of any public documents related to the PROJECT and provided by the other partner.

26. If HM-1 or HM-2 is found during a PROJECT COMPONENT, IMPLEMENTING AGENCY for that PROJECT COMPONENT will immediately notify PARTNERS.

27. CALTRANS, independent of PROJECT, is responsible for any HM-1 found within the existing SHS right of way. CALTRANS will undertake HM MANAGEMENT ACTIVITIES related to HM-1 with minimum impact to PROJECT schedule.

28. If HM-1 is found outside existing SHS right of way, responsibility for such HM-1 rests with the owner(s) of the parcel(s) on which the HM-1 is found. VTA, in concert with the

local agency having land use jurisdiction over the parcel(s), will ensure that HM-1 MANAGEMENT ACTIVITIES are undertaken with minimum impact to PROJECT schedule.

29. If HM-2 is found within PROJECT limits, the public agency responsible for the advertisement, award, and administration (AAA) of the PROJECT construction contract will be responsible for HM MANAGEMENT ACTIVITIES related to HM-2.

30. CALTRANS' acquisition or acceptance of title to any property on which any HM-1 or HM-2 is found will proceed in accordance with CALTRANS' policy on such acquisition.

31. PARTNERS will comply with all of the commitments and conditions set forth in the environmental documentation, environmental permits, approvals, and applicable agreements as those commitments and conditions apply to each PARTNER's responsibilities in this agreement.

32. IMPLEMENTING AGENCY for each PROJECT COMPONENT will furnish PARTNERS with regular status reports during the implementation of OBLIGATIONS in that component.

33. Upon OBLIGATION COMPLETION, ownership and title to all materials and equipment constructed or installed as part of WORK within SHS right of way become the property of CALTRANS, except Express Lanes Electronic toll System, Express Lanes overhead sign structures and Express Lanes freeway lighting, which will become the property of VTA.

34. IMPLEMENTING AGENCY for a PROJECT COMPONENT will accept, reject, compromise, settle, or litigate claims of any non-agreement parties hired to do WORK in that component.

35. PARTNERS will confer on any claim that may affect OBLIGATIONS or PARTNERS' liability or responsibility under this agreement in order to retain resolution possibilities for potential future claims. No PARTNER will prejudice the rights of another PARTNER until after PARTNERS confer on claim.

36. PARTNERS will maintain, and will ensure that any party hired by PARTNERS to participate in OBLIGATIONS will maintain, a financial management system that conforms to Generally Accepted Accounting Principles (GAAP), and that can properly accumulate and segregate incurred PROJECT costs, and provide billing and payment support.

37. PARTNERS will comply with the appropriate federal cost principles and administrative requirements outlined in the Applicable Cost Principles and Administrative Requirements table below. These principles and requirements apply to all funding types included in this agreement.

Applicable Cost Principles and Administration Requirements		
The federal cost principles and administrative requirements associated with each organization type apply to that organization.		
Organization Type	**Cost Principles**	**Administrative Requirements**
Federal Governments	2 CFR Part 225	OMB A-102
State and Local Government	2 CFR, Part 225	49 CFR, Part 18
Educational Institutions	2 CFR, Part 220	2 CFR, Part 215
Non-Profit Organizations	2 CFR, Part 230	2 CFR, Part 215
For Profit Organizations	48 CFR, Chapter 1, Part 31	49 CFR, Part 18
CFR (Code of Federal Regulations) **OMB (Office of Management and Budget)**		
Related URLs: • Various OMB Circular: http://www.whitehouse.gov/omb/grants_circulars • Code of Federal Regulations: http://www.gpoaccess.gov/CFR		

38. PARTNERS will maintain and make available to each other all OBLIGATIONS-related documents, including financial data, during the term of this agreement.

39. PARTNERS will retain all OBLIGATIONS-related records for three (3) years after the final voucher.

40. PARTNERS will not incur costs beyond the funding commitments in this agreement. If IMPLEMENTING AGENCY anticipates that funding for WORK will be insufficient to complete WORK, IMPLEMENTING AGENCY will promptly notify SPONSOR.

    IMPLEMENTING AGENCY has no obligation to perform WORK if funds to perform WORK are unavailable.

41. If WORK stops for any reason, IMPLEMENTING AGENCY will place PROJECT right of way in a safe and operable condition acceptable to CALTRANS.

42. If WORK stops for any reason, each PARTNER will continue to implement all of its applicable commitments and conditions included in the PROJECT environmental documentation, permits, agreements, or approvals that are in effect at the time that WORK stops, as they apply to each PARTNER's responsibilities in this agreement, in order to keep PROJECT in environmental compliance until WORK resumes.

43. Each PARTNER accepts responsibility to complete the activities that it selected on the SCOPE SUMMARY. Activities marked with "N/A" on the SCOPE SUMMARY are not included in the scope of this agreement.

Scope: Environmental Permits, Approvals and Agreements

44. Each PARTNER identified in the Environmental Permits table below accepts the responsibility to complete the assigned activities.

Environmental Permits						
Permit	Coordinate	Prepare	Obtain	Implement	Renew	Amend
404 USACOE	VTA	VTA	VTA	VTA	VTA	VTA
401 RWQCB	VTA	VTA	VTA	VTA	VTA	VTA
NPDES SWRCB	VTA	VTA	VTA	VTA	VTA	VTA
RWQCB	VTA	VTA	VTA	VTA	VTA	VTA
1602 DFG	VTA	VTA	VTA	VTA	VTA	VTA
2080.1 DFG	VTA	VTA	VTA	VTA	VTA	VTA

Scope: Project Approval and Environmental Document (PA&ED)

45. CALTRANS is the CEQA lead agency for PROJECT. CALTRANS will determine the type of environmental documentation required and will cause that documentation to be prepared.

46. Any PARTNER involved in the preparation of CEQA environmental documentation will follow the CALTRANS STANDARDS that apply to the CEQA process including, but not limited to, the guidance provided in the Standard Environmental Reference available at www.dot.ca.gov/ser.

47. Pursuant to SAFETEA-LU Section 6004 and/or 6005, CALTRANS is the NEPA lead agency for PROJECT. CALTRANS will assume responsibility for NEPA compliance and will prepare any needed NEPA environmental documentation or will cause that documentation to be prepared.

48. Any PARTNER involved in the preparation of NEPA environmental documentation will follow FHWA STANDARDS that apply to the NEPA process including, but not limited to, the guidance provided in the FHWA Environmental Guidebook available at www.fhwa.dot.gov/hep/index.htm.

49. VTA will prepare the appropriate CEQA environmental documentation to meet CEQA requirements.

50. VTA will prepare the appropriate NEPA environmental documentation to meet NEPA requirements.

51. Any PARTNER preparing any portion of the CEQA environmental documentation, including any studies and reports, will submit that portion of the documentation to the

CEQA lead agency for review, comment, and approval at appropriate stages of development prior to public availability.

52. Any PARTNER preparing any portion of the NEPA environmental documentation (including, but not limited to, studies, reports, public notices, and public meeting materials, determinations, administrative drafts, and final environmental documents) will submit that portion of the documentation to CALTRANS for CALTRANS' review, comment, and approval prior to public availability.

53. VTA will prepare, publicize, and circulate all CEQA-related public notices and will submit said notices to the CEQA lead agency for review, comment, and approval prior to publication and circulation.

54. VTA will prepare, publicize, and circulate all NEPA-related public notices, except Federal Register notices. VTA will submit all notices to CALTRANS for CALTRANS' review, comment, and approval prior to publication and circulation.

CALTRANS will work with the appropriate federal agency to publish notices in the Federal Register.

55. The CEQA lead agency will attend all CEQA-related public meetings.

56. VTA will plan, schedule, prepare materials for, and host all CEQA-related public meetings and will submit all materials to the CEQA lead agency for review, comment, and approval at least 10 working days prior to the public meeting date.

57. The NEPA lead agency will attend all NEPA-related public meetings.

58. VTA will plan, schedule, prepare materials for, and host all NEPA-related public meetings. VTA will submit all materials to CALTRANS for CALTRANS' review, comment, and approval at least 10 working days prior to the public meeting date.

59. If a PARTNER who is not the CEQA or NEPA lead agency holds a public meeting about PROJECT, that PARTNER must clearly state its role in PROJECT and the identity of the CEQA and NEPA lead agencies on all meeting publications. All meeting publications must also inform the attendees that public comments collected at the meetings are not part of the CEQA or NEPA public review process.

That PARTNER will submit all meeting advertisements, agendas, exhibits, handouts, and materials to the appropriate lead agency for review, comment, and approval at least 10 working days prior to publication or use. If that PARTNER makes any changes to the materials, that PARTNER will allow the appropriate lead agency to review, comment on, and approve those changes at least three (3) working days prior to the public meeting date.

The CEQA lead agency maintains final editorial control with respect to text or graphics that could lead to public confusion over CEQA-related roles and responsibilities. The

NEPA lead agency has final approval authority with respect to text or graphics that could lead to public confusion over NEPA-related roles and responsibilities.

60. The PARTNER preparing the environmental documentation, including the studies and reports, will ensure that qualified personnel remain available to help resolve environmental issues and perform any necessary work to ensure that PROJECT remains in environmental compliance.

Scope: Plans, Specifications, and Estimate (PS&E)

61. VTA will ensure that the engineering firm preparing the plans, specifications, and estimate will not be employed by or under contract to the PROJECT construction contractor.

VTA will not employ the engineering firm preparing the plans, specifications, and estimate for construction management of PROJECT.

However, VTA may retain the engineering firm during the construction PROJECT COMPONENT to check shop drawings, do soil foundation tests, test construction materials, and perform construction surveys.

62. VTA will identify and locate all utility facilities within PROJECT area as part of PS&E responsibilities. The plans, specifications, and estimate for PROJECT will identify all utility facilities not relocated or removed in advance of the construction PROJECT COMPONENT.

63. VTA will make all necessary arrangements with utility owners for the timely accommodation, protection, relocation, or removal of any existing utility facilities that conflict with construction of PROJECT or that violate CALTRANS' encroachment policy.

64. VTA will provide CALTRANS a copy of conflict maps, Relocation Plan, proposed Notices to Owner, Report of Investigation, and Utility Agreement (if applicable) for CALTRANS' concurrence prior to issuing the Notices to Owner and executing the Utility Agreement. All utility conflicts will be fully addressed prior to R/W Certification and all arrangements for the protection, relocation, or removal of all conflicting facilities will be completed prior to construction contract award and included in the PROJECT plans, specifications, and estimate.

65. The responsibility to advertise, open bids, award, and approve the construction contract will be handled outside of this agreement.

Scope: Right of Way (R/W)

66. VTA will provide a land surveyor licensed in the State of California to be responsible for surveying and right of way engineering. All survey and right of way engineering documents will bear the professional seal, certificate number, registration classification, expiration date of certificate, and signature of the responsible surveyor.

67. VTA will utilize a public agency currently qualified by CALTRANS or a properly licensed consultant for all right of way activities. A qualified right of way agent will administer all right of way consultant contracts.

VTA will submit a draft Right of Way Certification document to CALTRANS six weeks prior to the scheduled Right of Way Certification milestone date for review.

VTA will submit a final Right of Way certification document to CALTRANS prior to PROJECT advertisement for approval.

68. VTA will prepare and provide to CALTRANS a Right of Way Certification prior to PROJECT advertisement.

69. All right of way conveyances must be completed prior to OBLIGATION COMPLETION.

70. CALTRANS' acceptance of right of way title is subject to review of an Updated Preliminary Title Report provided by VTA verifying that the title is free of all encumbrances and liens. Upon acceptance, VTA will provide CALTRANS with a Policy of Title Insurance in CALTRANS' name.

71. VTA shall comply with Streets and Highways Code section 760 and shall obtain written approval from CALTRANS Division of Right of Way to adopt Resolutions of Necessity at the local level in accordance with the CALTRANS Right of Way Manual, Section 17.04.09.01.

COST

Cost: General

72. The cost of any awards, judgments, or settlements generated by OBLIGATIONS is an OBLIGATIONS COST.

73. CALTRANS, independent of PROJECT, will pay all costs for HM MANAGEMENT ACTIVITIES related to HM-1 found within the existing SHS right of way.

74. Independent of PROJECT, all costs for MANAGEMENT ACTIVITIES related to HM-1 found outside the existing SHS right of way will be the responsibility of the owner(s) of the parcel(s) where the HM-1 is located.

75. HM MANAGEMENT ACTIVITIES costs related to HM-2 are CONSTRUCTION SUPPORT and CONSTRUCTION CAPITAL costs.

76. The cost to comply with and implement the commitments set forth in the environmental documentation is an OBLIGATIONS COST.

77. The cost to ensure that PROJECT remains in environmental compliance is an OBLIGATIONS COST.

78. The cost of any legal challenges to the CEQA or NEPA environmental process or documentation is an OBLIGATIONS COST.

79. Independent of OBLIGATIONS COST, CALTRANS will fund the cost of its own IQA for WORK done within existing or proposed future SHS right of way.

80. VTA will fund the cost of its own IQA for WORK done outside existing or proposed future SHS right of way.

81. CALTRANS will provide encroachment permits to PARTNERS, their contractors, consultants and agents, at no cost.

82. Fines, interest, or penalties levied against a PARTNER will be paid, independent of OBLIGATIONS cost, by the PARTNER whose actions or lack of action caused the levy. That PARTNER will indemnify and defend each other PARTNER.

83. The cost to place PROJECT right of way in a safe and operable condition and meet all environmental commitments is an OBLIGATIONS cost.

84. Because IMPLEMENTING AGENCY is responsible for managing the scope, cost, and schedule of a project component, if there are insufficient funds available in this agreement to place PROJECT the right of way in a safe and operable condition, the appropriate IMPLEMENTING AGENCY accepts responsibility to fund these activities until such time as PARTNERS amend this agreement.

That IMPLEMENTING AGENCY may request reimbursement for these costs during the amendment process.

85. If there are insufficient funds in this agreement to implement applicable commitments and conditions included in the PROJECT environmental documentation, permits, agreements, and/or approvals that are in effect at a time that WORK stops, each PARTNER implementing commitments or conditions accepts responsibility to fund these activities, as they apply to each PARTNER's responsibilities, until such time PARTNERS amend this agreement.

Each PARTNER may request reimbursement for these costs during the amendment process.

Cost: Environmental Permits, Approvals and Agreements

86. The cost of coordinating, obtaining, complying with, implementing, and if necessary renewing and amending resource agency permits, agreements, and/or approvals is an OBLIGATIONS COST.

Cost: Project Approval and Environmental Document (PA&ED)

87. The cost to prepare, publicize, and circulate all CEQA and NEPA-related public notices is an OBLIGATIONS COST.

88. The cost to plan, schedule, prepare, materials for, and host all CEQA and NEPA-related public hearings is an OBLIGATIONS COST.

Cost: Plans, Specifications, and Estimate (PS&E) and Right of Way (R/W) Support

89. VTA will determine the cost to positively identify and locate, protect, relocate, or remove any utility facilities within PROJECT limits, whether inside or outside SHS right of way, in accordance with federal and California laws and regulations, and CALTRANS' policies, procedures, standards, practices, and applicable agreements including, but not limited to, Freeway Master Contracts.

SCHEDULE

90. PARTNERS will manage the schedule for OBLIGATIONS through the work plan included in the PROJECT MANAGEMENT PLAN.

GENERAL CONDITIONS

91. PARTNERS understand that this agreement is in accordance with and governed by the Constitution and laws of the State of California. This agreement will be enforceable in the State of California. Any PARTNER initiating legal action arising from this agreement will file and maintain that legal action in the Superior Court of the county in which the CALTRANS district office that is signatory to this agreement resides, or in the Superior Court of the county in which PROJECT is physically located.

92. All OBLIGATIONS of CALTRANS under the terms of this agreement are subject to the appropriation of resources by the Legislature, the State Budget Act authority, and the allocation of funds by the California Transportation Commission.

93. Any PARTNER performing IQA does so for its own benefit. No one can assign liability to that PARTNER due to its IQA activities.

94. Neither VTA nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by CALTRANS and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CALTRANS under this agreement.

It is understood and agreed that CALTRANS will fully defend, indemnify, and save harmless VTA and all of its officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories or assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS and/or its agents under this agreement.

95. Neither CALTRANS nor any officer or employee thereof is responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by VTA and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon VTA under this agreement.

It is understood and agreed that VTA will fully defend, indemnify, and save harmless CALTRANS and all of its officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories or assertions of liability occurring by reason of anything done or omitted to be done by VTA and/or its agents under this agreement.

96. PARTNERS do not intend this agreement to create a third party beneficiary or define duties, obligations, or rights in parties not signatory to this agreement. PARTNERS do not intend this agreement to affect their legal liability by imposing any standard of care for fulfilling OBLIGATIONS different from the standards imposed by law.

97. PARTNERS will not assign or attempt to assign OBLIGATIONS to parties not signatory to this agreement.

98. PARTNERS will not interpret any ambiguity contained in this agreement against each other. PARTNERS waive the provisions of California Civil Code section 1654.

99. A waiver of a PARTNER's performance under this agreement will not constitute a continuous waiver of any other provision. An amendment made to any article or section of this agreement does not constitute an amendment to or negate all other articles or sections of this agreement.

100. A delay or omission to exercise a right or power due to a default does not negate the use of that right or power in the future when deemed necessary.

101. If any PARTNER defaults in its OBLIGATIONS, a non-defaulting PARTNER will request in writing that the default be remedied within 30 calendar days. If the defaulting PARTNER fails to do so, the non-defaulting PARTNER may initiate dispute resolution.

102. PARTNERS will first attempt to resolve agreement disputes at the PROJECT team level. If they cannot resolve the dispute themselves, the CALTRANS district director and the executive officer of VTA will attempt to negotiate a resolution. If PARTNERS do not

reach a resolution, PARTNERS' legal counsel will initiate mediation. PARTNERS agree to participate in mediation in good faith and will share equally in the cost of mediation.

Neither the dispute nor the mediation process relieves PARTNERS from full and timely performance of OBLIGATIONS in accordance with the terms of this agreement. However, if any PARTNER stops fulfilling OBLIGATIONS, any other PARTNER may seek equitable relief to ensure that OBLIGATIONS continue.

Except for equitable relief, no PARTNER may file a civil complaint until after mediation, or 45 calendar days after filing the written mediation request, whichever occurs first.

PARTNERS will file any civil complaints in the Superior Court of the county in which the CALTRANS district office signatory to this agreement resides or in the Superior Court of the county in which PROJECT is physically located. The prevailing PARTNER will be entitled to an award of all costs, fees, and expenses, including reasonable attorney fees as a result of litigating a dispute under this agreement or to enforce the provisions of this article including equitable relief.

103. PARTNERS maintain the ability to pursue alternative or additional dispute remedies if a previously selected remedy does not achieve resolution.

104. If any provisions in this agreement are found by a court of competent jurisdiction to be, or are in fact, illegal, inoperative, or unenforceable, those provisions do not render any or all other agreement provisions invalid, inoperative, or unenforceable, and those provisions will be automatically severed from this agreement.

105. PARTNERS intend this agreement to be their final expression and supersede any oral understanding or writings pertaining to OBLIGATIONS.

106. If during performance of WORK additional activities or environmental documentation is necessary to keep PROJECT in environmental compliance, PARTNERS will amend this agreement to include completion of those additional tasks.

107. PARTNERS will execute a formal written amendment if there are any changes to OBLIGATIONS.

108. This agreement will terminate upon OBLIGATION COMPLETION or upon 30 calendar days' written notification to terminate and acceptance between PARTNERS, whichever occurs first.

However, all indemnification, document retention, audit, claims, environmental commitment, legal challenge, and ownership articles will remain in effect until terminated or modified in writing by mutual agreement.

109. The following documents are attached to, and made an express part of this agreement: SCOPE SUMMARY, FUNDING SUMMARY.

DEFINITIONS

CALTRANS – The California Department of Transportation

CALTRANS STANDARDS – CALTRANS policies and procedures, including, but not limited to, the guidance provided in the *Guide to Capital Project Delivery Workplan Standards* (previously known as WBS Guide) available at http://www.dot.ca.gov/hq/projmgmt/guidance.htm.

CEQA (California Environmental Quality Act) – The act (California Public Resources Code, sections 21000 et seq.) that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those significant impacts, if feasible.

CFR (Code of Federal Regulations) – The general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

COOPERATIVE AGREEMENT CLOSURE STATEMENT – A document signed by PARTNERS that verifies the completion of all OBLIGATIONS included in this agreement and in all amendments to this agreement.

COST – The responsibility for cost responsibilities in this agreement can take one of three assignments:

- **OBLIGATIONS COST** – A cost associated with fulfilling OBLIGATIONS that will be funded as part of this agreement. The responsibility is defined by the funding commitments in this agreement.
- **PROJECT COST** – A cost associated with PROJECT that can be funded outside of OBLIGATIONS. A PROJECT COST may not necessarily be part of this agreement. This responsibility is defined by the PARTNERS' funding commitments at the time the cost is incurred.
- **PARTNER COST** – A cost that is the responsibility of a specific PARTNER, independent of PROJECT.

FHWA – Federal Highway Administration

FHWA STANDARDS – FHWA regulations, policies and procedures, including, but not limited to, the guidance provided at www.fhwa.dot.gov/topics.htm.

FUNDING PARTNER – A PARTNER that commits a defined dollar amount to fulfill OBLIGATIONS. Each FUNDING PARTNER accepts responsibility to provide the funds identified on the FUNDING SUMMARY under its name.

FUNDING SUMMARY – The table that designates an agreement's funding sources, types of funds, and the PROJECT COMPONENT in which the funds are to be spent. Funds listed on the FUNDING SUMMARY are "not-to-exceed" amounts for each FUNDING PARTNER.

GAAP (Generally Accepted Accounting Principles) – Uniform minimum standards and guidelines for financial accounting and reporting issued by the Federal Accounting Standards Advisory Board that serve to achieve some level of standardization. See http://www.fasab.gov/accepted.html.

HM-1 – Hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law whether it is disturbed by PROJECT or not.

HM-2 – Hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law only if disturbed by PROJECT.

HM MANAGEMENT ACTIVITIES – Management activities related to either HM-1 or HM-2 including, without limitation, any necessary manifest requirements and disposal facility designations.

IMPLEMENTING AGENCY – The PARTNER responsible for managing the scope, cost, and schedule of a PROJECT COMPONENT to ensure the completion of that component.

IQA (Independent Quality Assurance) – Ensuring that IMPLEMENTING AGENCY's quality assurance activities result in WORK being developed in accordance with the applicable standards and within an established Quality Management Plan (QMP). IQA does not include any work necessary to actually develop or deliver WORK or any validation by verifying or rechecking work performed by another PARTNER.

NEPA (National Environmental Policy Act of 1969) – The federal act that establishes a national policy for the environment and a process to disclose the adverse impacts of projects with a federal nexus.

OBLIGATION COMPLETION – PARTNERS have fulfilled all OBLIGATIONS included in this agreement, and all amendments to this agreement, and have signed a COOPERATIVE AGREEMENT CLOSURE STATEMENT.

OBLIGATIONS – All responsibilities included in this agreement.

OBLIGATIONS COST – See COST.

OMB (Office of Management and Budget) – The federal office that oversees preparation of the federal budget and supervises its administration in Executive Branch agencies.

PA&ED (Project Approval and Environmental Document) – See PROJECT COMPONENT.

PARTNER – Any individual signatory party to this agreement.

PARTNERS – The term that collectively references all of the signatory agencies to this agreement. This term only describes the relationship between these agencies to work together to achieve a mutually beneficial goal. It is not used in the traditional legal sense in which one PARTNER's individual actions legally bind the other PARTNERS.

PROJECT – The undertaking to convert existing high occupancy vehicle (HOV) lanes or carpool lanes into limited-access express lanes, and to construct a second HOV/express lane.

PROJECT COMPONENT – A distinct portion of the planning and project development process of a capital project as outlined in California Government Code, section 14529(b).

- **PID (Project Initiation Document)** – The activities required to deliver the project initiation document for PROJECT.
- **PA&ED (Project Approval and Environmental Document)** – The activities required to deliver the project approval and environmental documentation for PROJECT.
- **PS&E (Plans, Specifications, and Estimate)** – The activities required to deliver the plans, specifications, and estimate for PROJECT.
- **R/W (Right of Way) SUPPORT** –The activities required to obtain all property interests for PROJECT.
- **R/W (Right of Way) CAPITAL** – The funds for acquisition of property rights for PROJECT.
- **CONSTRUCTION SUPPORT** – The activities required for the administration, acceptance, and final documentation of the construction contract for PROJECT.
- **CONSTRUCTION CAPITAL** – The funds for the construction contract.

PROJECT COST – See COST.

PROJECT MANAGEMENT PLAN – A group of documents used to guide a project's execution and control throughout that project's lifecycle.

PS&E (Plans, Specifications, and Estimate) – See PROJECT COMPONENT.

QMP (Quality Management Plan) – An integral part of the Project Management Plan that describes IMPLEMENTING AGENCY's quality policy and how it will be used.
R/W (Right of Way) CAPITAL – See PROJECT COMPONENT.

R/W (Right of Way) SUPPORT – See PROJECT COMPONENT.

SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

SCOPE SUMMARY – The attachment in which each PARTNER designates its commitment to specific scope activities within each PROJECT COMPONENT as outlined by the *Guide to Capital Project Delivery Workplan Standards* (previously known as WBS Guide) available at http://www.dot.ca.gov/hq/projmgmt/guidance.htm.

SHS (State Highway System) – All highways, right of way, and related facilities acquired, laid out, constructed, improved, or maintained as a state highway pursuant to constitutional or legislative authorization.

SPONSOR – Any PARTNER that accepts the responsibility to establish scope of PROJECT and the obligation to secure financial resources to fund PROJECT. SPONSOR is responsible for adjusting the PROJECT scope to match committed funds or securing additional funds to fully fund the PROJECT scope. If a PROJECT has more than one SPONSOR, funding adjustments will be made by percentage (as outlined in Responsibilities). Scope adjustments must be developed through the project development process and must be approved by CALTRANS as the owner/operator of the SHS.

WORK – All scope activities included in this agreement.

CONTACT INFORMATION

Below is the primary contact information for each PARTNER to this agreement. PARTNERS will notify each other in writing of any personnel or location changes. Contact information changes do not require an amendment to this agreement.

The primary agreement contact person for CALTRANS is:
Nick Saleh, Project Manager
111 Grand Ave.
Oakland, California 94612
Office Phone: (510) 286-6355
Mobile Phone: (510) 286-6256
Email: Nick-saleh@dot.ca.gov

The primary agreement contact person for VTA is:
Lam Trinh, Project Manager
3331 North First Street, Building B-2
San Jose, California 95134-1927
Office Phone: (408) 952-4217
Email: lam.trinh@vta.org

SIGNATURES

PARTNERS declare that:

1. Each PARTNER is an authorized legal entity under California state law.
2. Each PARTNER has the authority to enter into this agreement.
3. The people signing this agreement have the authority to do so on behalf of their public agencies.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

APPROVED

By: _____
Helena (Lenka) Culik-Caro
Deputy District Director, Design

SANTA CLARA VALLEY TRANSPORTATION AUTHORITY

APPROVED

By: _____ 6/22/11
Michael T. Burns
General Manager

CERTIFIED AS TO FUNDS:

By: _____
Kevin M. Strough
District Budget Manager, Acting

APPROVED AS TO FORM

By: _____
VTA Counsel

SCOPE SUMMARY

4	5	6	7	8	Description	CALTRANS	VTA	N/A
2	160				Perform Preliminary Engineering Studies and Draft Project Report	X	X	
		05			Updated Project information		X	
		10			Engineering Studies		X	
		15			Draft Project Report		X	
		20			Engineering and Land Net Surveys		X	
		30			Environmental Study Request (ESR)		X	
		40			NEPA Delegation	X		
		45			Base Maps and Plan Sheets for Project Report and Environmental Studies		X	
2	165				Perform Environmental Studies and Prepare Draft Environmental Document	X	X	
		05			Environmental Scoping of Alternatives Identified for Studies in Project Initiation Document	X	X	
		10			General Environmental Studies		X	
		15			Biological Studies		X	
		20			Cultural Resource Studies		X	
			05		Archaeological Survey		X	
				05	Area of Potential Effects/Study Area Maps		X	
				10	Native American Consultation		X	
				15	Records and Literature Search		X	
				20	Field Survey		X	
				25	Archaeological Survey Report		X	
				99	Other Archaeological Survey Products		X	
			10		Extended Phase I Archaeological Studies		X	
				05	Native American Consultation		X	
				10	Extended Phase I Proposal		X	
				15	Extended Phase I Field Investigation		X	
				20	Extended Phase I Materials Analysis		X	
				25	Extended Phase I Report		X	
				99	Other Phase I Archaeological Study Products		X	
			15		Phase II Archaeological Studies		X	
				05	Native American Consultation		X	
				10	Phase II Proposal		X	
				15	Phase II Field Investigation		X	
				20	Phase II Materials Analysis		X	
				25	Phase II Report		X	
				99	Other Phase II Archaeological Study Products		X	
			20		Historical and Architectural Resource Studies		X	

4	5	6	7	8	Description	CALTRANS	VTA	N/A
				05	Preliminary Area of Potential Effects/Study Area Maps for Architecture		X	
				10	Historic Resources Evaluation Report - Archaeology		X	
				15	Historic Resource Evaluation Report - Architecture (HRER)		X	
				20	Bridge Evaluation		X	
				99	Other Historical and Architectural Resource Study Products		X	
			25		Cultural Resource Compliance Consultation Documents		X	
				05	Final Area of Potential Effects/Study Area Maps		X	
				10	PRC 5024.5 Consultation		X	
				15	Historic Property Survey Report/Historic Resources Compliance Report		X	
				20	Finding of Effect		X	
				25	Archaeological Data Recovery Plan/Treatment Plan		X	
				30	Memorandum of Agreement		X	
				99	Other Cultural Resources Compliance Consultation Products		X	
		25			Draft Environmental Document or Categorical Exemption/Exclusion	X	X	
			10		Section 4(F) Evaluation		X	
			20		Environmental Quality Control and Other Reviews	X		
			25		Approval to Circulate Resolution	X		
			30		Environmental Coordination		X	
			99		Other Draft Environmental Document Products		X	
		30			NEPA Delegation	X		
2	170				Permits, Agreements, and Route Adoptions during PA&ED component	X	X	
		05			Required permits		X	
		15			Railroad Agreements		X	
		20			Freeway Agreements		X	
		25			Agreement for Material Sites		X	
		30			Executed Maintenance Agreement		X	
		40			Route Adoptions		X	
		45			MOU From Tribal Employment Rights Office (TERO)		X	
		55			NEPA Delegation	X		
2	175				Circulate Draft Environmental Document and Select Preferred Project Alternative Identification	X	X	
		05			DED Circulation		X	
		10			Public Hearing		X	
		15			Public Comment Responses and Correspondence		X	
		20			Project Preferred Alternative	X	X	
		25			NEPA Delegation	X		
2	180				Prepare and Approve Project Report and Final Environmental Document	X	X	
		05			Final Project Report		X	
		10			Final Environmental Document	X	X	

4	5	6	7	8	Description	CALTRANS	VTA	N/A
			05		Approved Final Environmental Document	X	X	
				05	Draft Final Environmental Document Review	X	X	
				10	Revised Draft Final Environmental Document	X	X	
				15	Section 4(F) Evaluation	X	X	
				20	Findings	X	X	
				25	Statement of Overriding Considerations	X	X	
				30	CEQA Certification	X	X	
				40	Section 106 Consultation and MOA	X	X	
				45	Section 7 Consultation	X	X	
				50	Final Section 4(F) Statement	X	X	
				55	Floodplain Only Practicable Alternative Finding	X	X	
				60	Wetlands Only Practicable Alternative Finding	X	X	
				65	Section 404 Compliance	X	X	
				70	Mitigation Measures	X	X	
			10		Public Distribution of Final Environmental Document and Respond To Comments		X	
			15		Final Right of Way Relocation Impact Document		X	
			99		Other Final Environmental Document Products		X	
		15			Completed Environmental Document	X	X	
			05		Record of Decision (NEPA)	X		
			10		Notice of Determination (CEQA)	X		
			20		Environmental Commitments Record		X	
			99		Other Completed Environmental Document Products		X	
		20			NEPA Delegation	X		
3	185				Prepare Base Maps and Plan Sheets for PS&E Development		X	
4	195				Right of Way Property Management and Excess Land		X	
4	200				Utility Relocation		X	
3	205				Permits, Agreements during PS&E Component	X	X	
		05			Required permits		X	
		15			Railroad Agreements		X	
		25			Agreement for Material Sites		X	
		30			Executed Maintenance Agreement	X	X	
		45			MOU From Tribal Employment Rights Office (TERO)		X	
		55			NEPA Delegation	X		
4	220				RIGHT OF WAY ENGINEERING		X	
4	225				Obtain Right of Way Interests for Project Right of Way Certification		X	
3	230				Prepare Draft Plans, Specifications, and Estimates	X	X	
		05			Draft Roadway Plans		X	
		10			Draft Highway Planting Plans		X	
		15			Draft Traffic Plans		X	
		20			Transportation Management Plan		X	
		25			Draft Utility Plans		X	

4	5	6	7	8	Description	CALTRANS	VTA	N/A
		30			Draft Drainage Plans		X	
		35			Draft Specifications		X	
		40			Draft Plans, Specifications, and Estimates Quantities and Estimates		X	
		55			Structures Draft Plans, Specifications, and Estimates Incorporation		X	
		60			Updated Project Information for Plans, Specifications, and Estimates Package		X	
		90			NEPA Delegation	X		
		99			Other Draft Plans, Specifications, and Estimates Products		X	
3	235				Mitigate Environmental Impacts and Clean Up Hazardous Waste	X	X	
		05			Environmental Mitigation		X	
		10			Detailed Site Investigation for Hazardous Waste		X	
		15			Hazardous Waste Management Plan		X	
		20			Hazardous Waste Plans, Specifications, and Estimates		X	
		25			Hazardous Waste Clean-Up		X	
		30			Hazardous Substances Disclosure Document (HSDD)		X	
		35			Long Term Mitigation Monitoring		X	
		40			Updated Environmental Commitments Record		X	
		45			NEPA Delegation	X		
3	240				Draft Structures Plans, Specifications, and Estimates		X	
4	245				Post Right of Way Certification Work		X	
3	250				FINAL STRUCTURES PS&E PACKAGE		X	
3	255				Circulate, Review, and Prepare Final District Plans, Specifications, and Estimates Package	X	X	
		05			Circulated and Reviewed Draft District Plans, Specifications, and Estimates Package	X	X	
		10			Updated Plans, Specifications, and Estimates Package		X	
		15			Environmental Re-Evaluation	X	X	
		20			Final District Plans, Specifications, and Estimates Package		X	
		25			Geotechnical Information Handout		X	
		30			Materials Information Handout		X	
		35			Construction Staking Package and Control		X	
		40			Resident Engineer's Pending File		X	
		45			NEPA Delegation	X		
		50			Secured Lease for Resident Engineer Office Space or Trailer		X	
		55			Contractor Outreach		X	
		65			Right of Way Certification Document		X	
		70			Right of Way Engineering Products		X	
		75			Upgraded/Updated Right of Way Certification Document		X	
		95			Right of Way Certification Activity		X	
3	260				Contract Bid Documents Ready to List		X	
3	265				Awarded and Approved Construction Contract			X

FUNDING SUMMARY

Funding Source	Funding Partner	Fund Type	PA&ED	PS&E	R/W Capital	R/W Support	Subtotal Support	Subtotal Capital	Subtotal Funds Type
LOCAL	VTA	Local	$6,200,000	$6,300,000	$1,500,000	$500,000	$13,000,000	$1,500,000	$14,500,000
		Subtotals by Component	$6,200,000	$6,300,000	$1,500,000	$500,000	$13,000,000	$1,500,000	$14,500,000

Attachment L

Project's Approach for the Future Creek Bridge Widening

DEPARTMENT OF TRANSPORTATION
DISTRICT 4
P.O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5900
FAX (510) 286-6301
TTY 711
www.dot.ca.gov

Flex your power!
Be energy efficient!

December 31, 2013

Mr. John H. Ristow,
Chief Congestion Management Agency Officer
Santa Clara Valley Transportation Authority
331 North First Street, Building B, 2nd Floor
San Jose CA, 95134-1927

Dear Mr. Ristow:

The California Department of Transportation (Caltrans) received your letter committing to develop and implement shoulder improvements on three bridges: US 101, Coyote Creek (PM 19.21), Guadalupe River (PM 40.19) (southbound only), and San Tomas Aquino Creek (PM 42.25) (southbound only).

As noted in your letter, the design exception for the three bridges has been the subject of continuing discussions. The Valley Transportation Authority (VTA) has submitted design exception factsheets, excluding these three bridges, based on potential environmental impacts. These impacts do not have sufficient grounds to grant the requested exception. The project team has considered the option of proceeding with the processing of a complex Environmental Assessment request in June 2013 which was rejected by VTA.

After evaluating your proposal, and in the interest of advancing the environmental approval of the project, Caltrans agrees to the following:

- Split the parent project into two separate projects: first project will address the mainline (34 miles) minus the three bridges referenced above, and a second project, will address the development of the three bridges.

- As referenced previously, VTA and Caltrans will enter into a cooperative agreement specific to the three bridges improvements which are currently excluded from the US 101 Express Lanes Project.

- The widening of the three bridges shall be completed prior to the opening of Santa Clara County's 101 Express Lanes segments which cover the limits of the respective bridges.

We will continue to work closely with VTA for successful completion of both SR 85 and US 101 Express Lanes projects. If you have any questions or concerns, please contact Dina El-Tawansy, Regional Project Manager at (510) 286-7236 for further assistance.

Sincerely,

BIJAN SARTIPI
District Director

c: Nick Saleh, District Division Chief, Project Management – South, District 4
Dina El-Tawansy, Regional Project Manager – South, District 4
Tung Ly, Supervising Transportation Engineer, Design –South, District 4

SANTA CLARA VTA Valley Transportation Authority

November 26, 2013

Mr. Bijan Sartipi, District Director
California Department of Transportation, District 4
111 Grand Avenue
Mail: P.O. Box 23660
Oakland, CA 94623-0660

RE: US 101 Express Lanes Project (Dunne Avenune to San Clara County Line)
CT EA No. 04-2G7100, Contract No. S06119 (P-0721)

Subject: Proposal for Shoulder Improvements on Three Bridges on US 101

Bijan

Dear Mr. Sartipi,

At Caltrans' request, this letter confirms Santa Clara Valley Transportation Authority's (VTA's) commitment to develop and implement a project that will construct shoulder improvements for the following three bridges on US 101 in Santa Clara County (see **Attachment A**):

- Coyote Creek Bridge (PM 19.21),
- Guadalupe River Bridge (PM 40.19) - Southbound only, and
- San Tomas Aquino Creek Bridge (PM 42.25) - Southbound only.

As a follow-on to the memo VTA submitted to Caltrans on November 7, 2012, Caltrans' response letter dated January 15, 2013 (see **Attachment B** for both documents), and many discussions over recent months, this letter documents the proposed approach to complete the subject bridge shoulder improvements.

As background, the US 101 Express Lanes Project is nearing completion of the PA/ED phase. Within the project limits, there are ten creek bridges crossing US 101. Design exceptions for reduced lane and shoulder widths for seven bridges have been agreed upon for the project by the VTA/Caltrans project development team. Requests for design exceptions of the remaining three creek bridges listed above have been a subject of continuing discussion by the project development team. Although VTA believes that there is sufficient justification to approve the design exceptions, the design exception requests have been denied pending a commitment to improve the bridge shoulders in the future.

The VTA/Caltrans project development team has determined that significant additional technical and environmental analyses beyond those required for the 34-mile US 101 express lanes are required to develop a solution that is acceptable to all parties including the regulatory agencies. In order to secure the financing being sought for these projects, it is imperative that the PA/ED for the SR 85 and US 101 express lanes remain on schedule to result in environmental clearance in the spring and summer of 2014, respectively. Given the longer time to perform the analyses for the bridge improvements in relation to the schedule of the 34-mile express lanes, it was agreed (as documented in the Attachment B communications) that the shoulders for these three bridges would be improved as a separate project.

3331 North First Street · San Jose, CA 95134-1906 · Administration 408.321.5555 · Customer Service 408.321.2300

FUNDING

On September 27, 2013, VTA staff presented an update on the Silicon Valley Express Lanes Program to the VTA Board. A copy of this information is attached to this letter for reference (**Attachment C**). This information presents an approximate $600 million program, and a plan for funding the program as follows:

Project Description	PS&E & Construction Capital Cost
SR237 Express Lanes - Phase II	$16,500,000
SR85 Express Lanes Project	$168,000,000
US101 Express Lanes - Project 1	$419,000,000
US101 Express Lanes - Project 2 (Bridge Improvement)	$8,500,000
Total Cost	**$612,000,000**

The $8.5 million Bridge Improvement costs are further broken down as follows:

PA/ED	$1,200,000
ROW Support	$100,000
PS&E	$1,500,000
Construction & Env. Mitigation	$5,700,000
Total	**$8,500,000**

This cost estimate will continue to be refined and updated throughout the development of the project.

As presented to the VTA Board at the September 27, 2013 workshop, funding for the program "... would come from a combination of toll revenue bonds, federal loans and local sources as needed. The exact composition of the funding will vary based on construction cost bids, projected toll revenues, bond market conditions and VTA risk tolerance."

SCHEDULE

VTA is in the process of developing an implementation plan for the SR 85/US 101 express lanes corridor consistent with the presentation given at the September 27, 3013 workshop. Although the exact plan is not yet determined, it is expected that the projects will be developed in phases, with design of the initial phase(s) beginning in 2014.

Two of the three bridges are located within Segment "101B" per the on-going planning effort. The third bridge is located within Segment "101D" (see **Attachment D**). The most aggressive implementation of the US 101 corridor being considered by VTA is presented in the attached Draft Implementation

Schedule (**Attachment E**). In this scenario, construction of Segment "101B" would begin in early 2017 and finish near the end of 2018. Segment "101D" would follow many years later as shown. This figure further shows the latest viable schedule to environmentally clear, design and construct the improvements to the bridges under consideration herein. As shown, VTA commits to initiate the PA/ED phase of the bridge project no later than 45 months before the planned finish of construction of Segment "101B". This will ensure the construction of the bridge improvements is complete prior to completion of express lane Segment "101B". In the specific scenario shown, this means PA/ED would be initiated no later than spring of 2015.

VTA believes the work discussed herein requires no additional programming actions to initiate the PA/ED phase as the work is within the footprint and anticipated scope covered by the US 101 Express Lanes Project's PSR/PDS.

NEXT STEPS

VTA staff plans to continue to develop the Silicon Valley Express Lane Program implementation plan and make a formal recommendation to the VTA Board in the spring of 2014. The cost and the proposed schedule of the improvements for the three bridges will be included in this implementation plan.

VTA and Caltrans will enter into a cooperative agreement specific to the development of the bridge improvements discussed herein. This cooperative agreement will include roles and responsibilities of each agency in supporting the completion of the bridge improvements to precede or coincide with the completion of the corresponding segment of US 101 express lanes (currently identified as segments 101B and 101D).

Finally, in committing to the activities described herein, VTA fully anticipates Caltrans will support the PA/ED schedules for the SR 85 and US 101 Express Lanes as stated herein. As noted, this schedule is critical to secure funding for the program. Specifically, this means that Caltrans will grant design exceptions requested and proceed with a "Routine EA" environmental document for the US 101 Express Lanes Project's PA/ED phase without the bridge improvements to these three bridges.

We look forward to working with Caltrans to continue to develop the Silicon Valley Express Lane Program and related projects. We thank you for your continued support for these critical projects in Santa Clara County. If you wish to discuss this further, please do not hesitate to contact me at (408) 321-5713.

Sincerely,

John H. Ristow
Chief Congestion Management Agency Officer

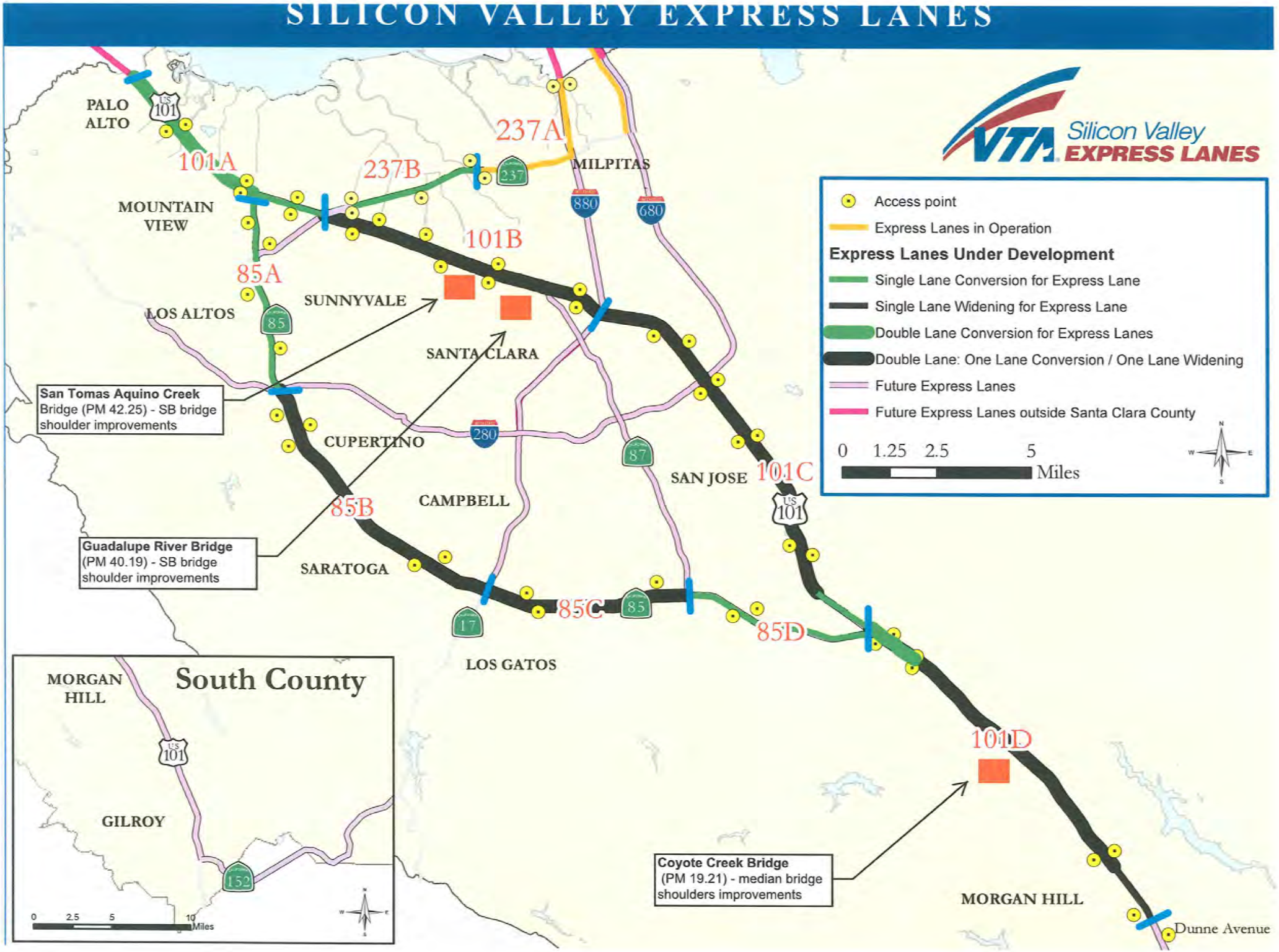
List of Attachments:

Attachment A	Silicon Valley Express Lanes Project Map
Attachment B	VTA 11/7/2012 and Caltrans response 1/15/2013
Attachment C	VTA Board of Directors Meting 9/27/13 Memo
Attachment D	Bridge Improvement Exhibits
Attachment E	Draft Implementation Schedule

cc: Helena Culik-Caro - Caltrans Deputy District Director, Design
Nick Saleh - Caltrans District Division Chief, Project/Program Management South
Dina El-Tawansy - Caltrans Regional Project Manager
Casey Emoto - VTA Deputy Director, Project Development
Gene Gonzalo - VTA Highway Program Manager
Chris Metzger, Lam Trinh - VTA Highway Program
Ramsey Hissen - URS Project Manager
Project File

Attachment A

SILICON VALLEY EXPRESS LANES



Silicon Valley EXPRESS LANES

Attachment B

DEPARTMENT OF TRANSPORTATION
DIVISION OF PROGRAM/PROJECT MANAGEMENT
111 GRAND AVENUE
OAKLAND, CA 94612
PHONE (510) 286-5900
FAX (510) 286-5903
TTY 711
www.dot.ca.gov

Flex your power!
Be energy efficient!

January 15, 2013

Mr. Lam Trinh, Project Manager &
Tom Fitzwater, Environmental Manager
VTA Highway Program
US 101 Express Lanes Project
3331 N First Street, Building B, 2nd Floor
San Jose, CA 95134-1927

Dear Mr. Trinh & Mr. Fitzwater:

The California Department of Transportation (Department) is in receipt of your memorandum concerning a request to defer the widening of three bridges along US 101 i.e., Coyote Creek (PM 19.21), Guadalupe River (PM 40.19), and San Tomas Aquino Creek (PM 42.25) to a future phase of the US 101 Express Lanes Project (Project).

Please be advised that after careful consideration, the Department approves your request for the current Project Approval and Environmental Document (PAED) phase. However, the approval of the Design Phase (PS&E) will be contingent upon Santa Clara Valley Transportation Authority (VTA) presenting a formal financial plan identifying a programmed and fully funded project to widen these three bridges to meet the full design standards.

We will continue to work closely with the (VTA) for the successful completion of the project. If you have any questions or concerns, please contact me at (510) 286-6355 or Dina El-Tawansy, Project Manager at (510) 286-7236.

Sincerely,

NICK SALEH,
Division Chief
Project Management, South

cc: D.El-Tawansy
H. Nikzad
L.Moore

SANTA CLARA
Valley Transportation Authority

MEMORANDUM

Writer's Direct Telephone: 408-952-4217

TO: Nick Saleh, District Division Chief/Project Manager
Division of Project /Program Management - South
111 Grand Avenue
Oakland, CA 94612
(510) 286-6355

FROM: Lam Trinh, Project Manager
Tom Fitzwater, Environmental Manager
VTA Highway Program
US 101 Express Lanes Project
CT EA 04-2G7100, VTA Contract S06119 (P-721)

DATE: November 7, 2012

SUBJECT: **Suggested Approach to Fact Sheets, Project Approval and Environmental Documentation for Future Bridge Widening**

This memo is intended to outline and document the proposed project approach to the deferral of bridge widening of the following three bridges along US 101 for the US 101 Express Lanes Project (Project) to a future phase of the Project.

- Coyote Creek (PM 19.21),
- Guadalupe River (PM 40.19), and
- San Tomas Aquino Creek (PM 42.25).

1.0 BACKGROUND

The Santa Clara Valley Transportation Authority (VTA), Caltrans and the project consultant team met in August 2012 and discussed widening of multiple bridges over creeks within the project limits along US 101 where the proposed double express lanes configuration can be accommodated without widening existing bridges. In order to provide additional shoulder width, the Project is proposing to wide these three bridges in future phase. Caltrans HQ geometrics reviewers agreed with the justifications provided for the proposed design exceptions (pending final approval of the Design Exception Fact Sheets) with exception of the following three bridges: Coyote Creek PM 19.21, Guadalupe River PM 40.19, and San Tomas Aquino Creek PM 42.25. The attendees agreed to defer widening of these three bridges to a future phase of the Project due to the construction challenges and extensive mitigation anticipated. The future widening will provide shoulder widths as agreed with Caltrans HQ Geometricians.

2.0 APPROACH

The following sections of this memo document how the deferral of the bridge widening activities will be documented in the various project deliverables in order to obtain environmental clearance and project approval for the US 101 Express Lanes Project. The bridges to be widened in the future will be addressed in the Project Report and Initial Study/Environmental Assessment documents as follows:

2.1 TECHNICAL STUDIES

The technical studies will document the impacts caused by and the mitigations required for the proposed geometry in the current phase, but will exclude the widening of the three bridges. A brief discussion in general terms of the potential impacts of the widening in a future phase of the Project will be included. It is proposed that the full impacts of the widening and the associated mitigations will be discussed in detail in future studies when funding becomes available.

2.2 ENVIRONMENTAL DOCUMENT

Chapter 1, Proposed Project, will include the introduction, purpose and need, project description, alternatives considered, and permits and approvals required. Chapter 1 will identify the bridges that would be widened in the future under the introduction subsection, and refer the reader to the cumulative impacts section for further detail (see below).

Chapter 2, Affected Environment/Consequences/Avoidance, Minimization, and Mitigation Measures, will include the discussion of impacts of the project alternatives. Chapter 2, which also covers a section on cumulative impacts, will describe the three deferred bridges and summarize the setting and environmental conditions, and potential effects from widening in the future. The potential for effects will be addressed conceptually. Appropriate avoidance and mitigation measures will be fully identified in a future re-validation document or a new environmental document for when the bridges are advanced as funding is available.

2.3 FACT SHEETS

The design exceptions fact sheet will not include a request for approval of the design exceptions at these bridges (i.e. the fact sheet document will assume the bridges are being widened). A future supplemental fact sheet will be prepared during the PS&E phase to document the design exceptions associated with the deferral of the bridge widening at these three bridges for Phase One of the Project.

2.4 PROJECT REPORT

The Project Report will document the deferral of the bridge widening at these three locations to a future phase of the Project. The Project Report will identify the design exceptions that will be associated with the deferral of the bridge widening and will clarify that these exceptions are not currently approved but will be subject to approval through a supplemental Fact Sheet during the PS&E phase of the Project.

The project design team is proceeding with the PA/ED phase based on the above project approach. If this approach needs to be modified, please provide Caltrans comments by **November 21, 2012,** otherwise the design team will assume the approach is acceptable.

Please feel free to contact Lam Trinh at (408) 952-4217 with any questions.

Cc:
Howell Chan, Caltrans Office of Environmental Analysis,
Larry Moore, Caltrans HQ Geometric Design
Hassan Nikzad, Caltrans District Design
Roy Molseed, (VTA)
Chadi Chazbek, Jeff Zimmerman (URS)
Project File

Attachment C

SANTA CLARA
Valley Transportation Authority

Date: September 17, 2013
Current Meeting: September 27, 2013
Board Meeting: September 27, 2013

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority Board of Directors

THROUGH: General Manager, Michael T. Burns

FROM: Chief CMA Officer, John Ristow, and Chief Financial Officer, Joe Smith

SUBJECT: Silicon Valley Express Lanes

FOR INFORMATION ONLY

BACKGROUND:

At the December 2008 Board Meeting, Santa Clara Valley Transportation Authority (VTA) Board of Directors approved the Silicon Valley Express Lanes Program. The Program has been undertaken to provide long-term mobility benefits and to provide another funding stream for transportation improvements. Specifically, the primary objectives of the Program are the following:

1. Provide congestion relief through more effective use of existing roadways;
2. Provide commuters with a new mobility option; and
3. Provide a new funding source for transportation improvements including public transit.

At the December 2008 Board Meeting, the Board of Directors also directed staff to develop funding plan options for the completion of the Program for future consideration. This memorandum highlights the general approach planned to deliver and fund the Express Lanes Program with details to be presented at the September 27, 2013 Board workshop.

DISCUSSION:

Following Board approval of the Silicon Valley Express Lanes Program, staff began implementation following an incremental approach based on available funding to move project phases forward. The implementation included US 101/SR 85 moving into an environmental clearance phase and SR 237 into a full development, construction and operations phase.

As a result, the first phase of the SR 237 Express Lanes project that converted the carpool lane direct connector ramps at the SR 237/I-880 interchange to Express Lanes operations (Attachment A) as the first express lanes project implemented as part of the Program. The opening of this project on March 20, 2012 represents the first major milestone in delivery of the Silicon Valley

Express Lanes Program. The $11.8 million project was funded from $3.5 million American Recovery and Reinvestment Act (ARRA), $4 million Federal Value Pricing Pilot Program (VPPP) and $4.3 million of local funding. The project has been a success by providing both a new option for solo drivers to improve travel times up to 15 minutes in the corridor and has revenues exceeding expenses. The project has also been recognized by both the California Transportation Foundation (CTF) and the Institute of Transportation Engineers (ITE) as "Project of the Year" for 2012.

The implementation of this initial Express Lanes project reflects the characteristics of the Program implementation to date: incremental delivery, VTA to maintain control of the operations and taking steps to minimize financial risk. The result has been a project that has been able to produce travel time benefits to commuters while generating revenues that exceed its day-to-day operational costs. The recommended approach is to continue the incremental implementation for the remaining corridors on US 101/SR 85.

The incremental approach includes the ongoing work to complete environmental clearance for the US 101/SR 85 and SR 237 Corridors. This includes extending Express Lane operations for SR 237 west to near Mathilda Avenue in the City of Sunnyvale, conversion of US 101 carpool lanes to express lanes operations (about 34 miles between the City of Morgan Hill and the City of Palo Alto) and the same for SR 85 (about 24 miles along its entire length from the southern reaches of the City of San Jose to the City of Mountain View).

The remainder of this memorandum provides information on how the ongoing Express Lanes work on SR 237, US 101 and SR 85 can be delivered.

Silicon Valley Express Lanes Program Delivery Considerations

As previously described in this memorandum, to date the Program has taken an incremental approach for delivery of Express Lanes in Santa Clara County. The plan moving forward is to remain consistent with such an incremental approach and is proposed to build upon the following:

Use Traditional Design-Bid-Build Approach. This is the most common approach for delivery of highway projects. In recent informational memorandums, alternative delivery methods have been shared as possible options. However, methods such as design-build or those that involve a public-private partnership could require the passage of legislation or the resolution of other issues not in VTA's control for these approaches to be feasible. The Express Lane system improvements can be built incrementally by designing and building the system segment-by-segment based on available funding/financing and highest travel benefits to motorists.

VTA Board Retains Control of the Program and the Delivery Process. A key working assumption is that operational control of the Program would remain with VTA. This means that decisions related to funding and delivery of the Program and risks related to delivery of the Program would essentially remain with VTA. Particularly when it comes to the construction of the Express Lanes improvements, the financial risks would be different than those related to capital projects funded through a transit sales tax measure. It would also mean that VTA and the

Santa Clara County transportation system also stands to benefit from the improved travel option and potentially positive revenue generated by the system.

Design Incrementally Using Funds from Grants and/or Fund Exchanges. In 2014, environmental clearance is expected for US 101/SR 85 and SR 237 (Phase 2) Express Lanes. The preliminary engineering that is being completed in support of the environmental clearance work will also provide cost estimates for future phases of these improvements. On the basis of this information, the proposal is to start final design work for SR 237 (Phase 2) and for a segment of the US 101/SR 85 Express Lanes. The estimated design development cost for the initial incremental portion of the Program is estimated to be $20 million. Final design development for remaining segments of the US101/ SR 85 Corridors is estimated at an additional $30 million.

Fund Exchange for Design/Development: Provide design/development funds through VTA controlled processes and sources. The recommended approach is to utilize the same STIP/Measure A fund exchange employed in 2006 and 2007 which provided flexible funds to compete the $190 million Proposition 1B highway projects on I-880, US 101, I-280/880 Stevens Creek interchange in San Jose, Mountain View and Palo Alto. The fund exchange allows VTA to maintain control over the process and provide flexible funding which can be used now to advance the projects in the final design development phase.

Construct Incrementally Using a Variety of Funds. The total estimated cost for construction for US 101/SR 85 and SR 237 (Phase 2) Express Lanes is $600 million. As each segment is designed, each incremental segment would move forward for construction. The improvements could be constructed in multiple segments. The underlying challenge that VTA has in moving the Program forward is that the VTA Highway Program does not have a dedicated local source of revenue similar to the dedicated sales tax source that VTA Transit Program utilizes. As a result, the funding would come from a combination of toll revenue bonds, federal loans and local sources as needed. The exact composition of the funding will vary based on construction cost bids, projected toll revenues, bond market conditions and VTA risk tolerance. The following are examples of the multiple components needed for funding sources:

VTA Obtained Contributions: The SR 237 express lanes in operation received federal grants. Other possible sources already mentioned are STIP funds.

Senior Revenue Bonds: Long -term tax exempt bonds backed by future traffic and revenue forecasts from express lanes.

Subordinated Debt: The Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA) established a federal program under which transportation authorities can borrow directly from or use the credit of the U.S. Treasury to finance up to 49% of the cost of major transportation projects.

Public Contributions: Third party funding consisting of Federal grants, local grants and third party loans.

Credit Enhancement: Credit enhancement in the form of bond insurance that would lower interest expense and increase financial feasibility.

Next Steps

There are two next actions for the VTA Board of Directors to consider:

November 7, 2013, VTA Board of Directors meeting:

- Approval of STIP programming for FY 2014 combined with the Measure A fund exchange of STIP funds for the Express Lanes Program to undertake design/development
- Approval of existing Local Program Reserve funds for Express Lanes Program design/development effort also at the November 2013 meeting.
- Staff to return with recommended phasing of the Express Lanes segment in spring 2014

Prepared By: Murali Ramanujam, Casey Emoto, Joseph Smith and John Ristow
Memo No. 4191

Silicon Valley Express Lanes Program

Board Workshop

September 27, 2013

VTA Silicon Valley EXPRESS LANES

Agenda

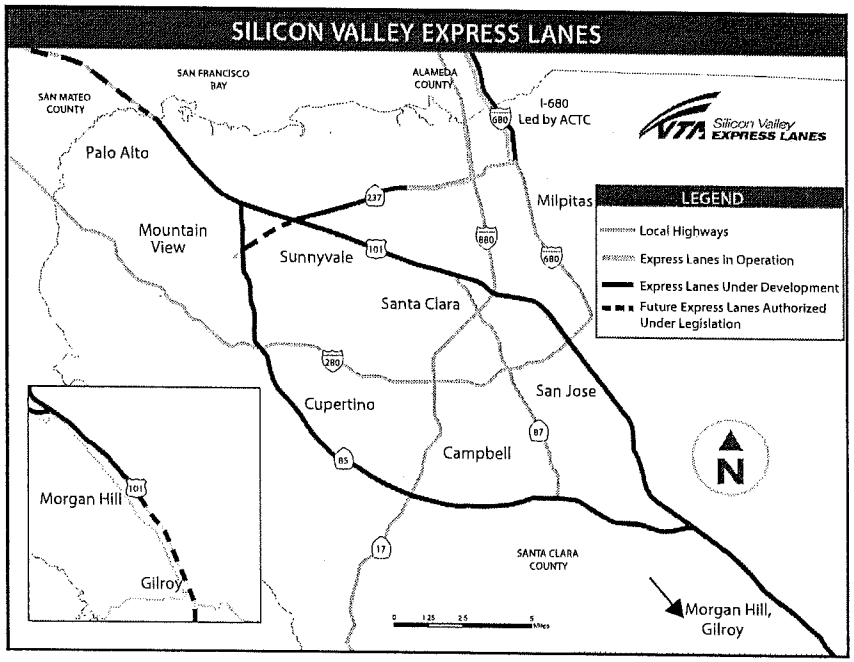
- Background on Silicon Valley Express Lanes
- Funding
- Next Steps

How we got here…

- Legislative Approvals
  - AB 2032 (2004)
  - AB 574 (2007)
  - AB 1105 (2011)
- Equity Study (2004)
- VTA Feasibility Study (2005)
- External communication and outreach

Approved Silicon Valley Express Lanes Program

- 2008 VTA Board approval:
  - Implementation of Express Lanes on US 101/SR 85 and SR 237 corridors
  - Directed staff to return with funding options to complete Express Lanes Program



Silicon Valley EXPRESS LANES

SILICON VALLEY EXPRESS LANES

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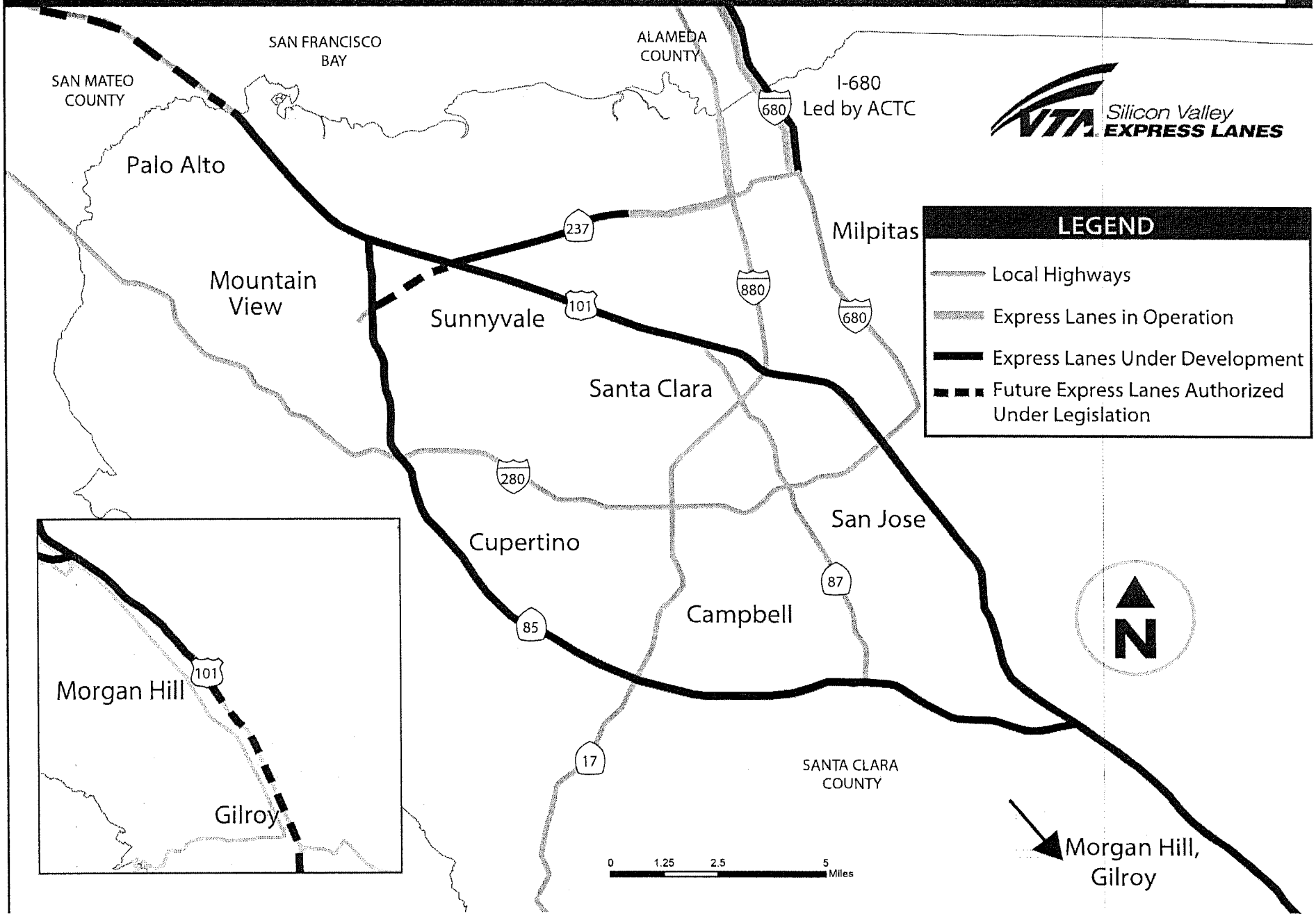
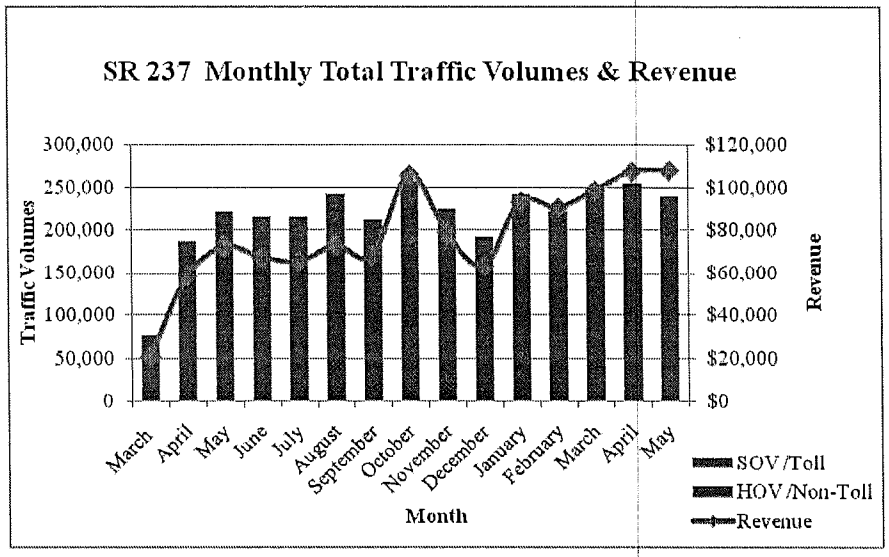


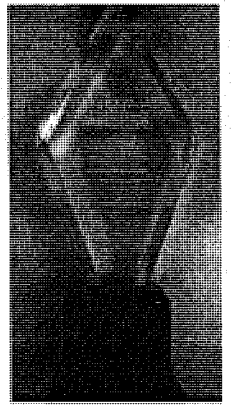
Implementation Actions (2008-2013)

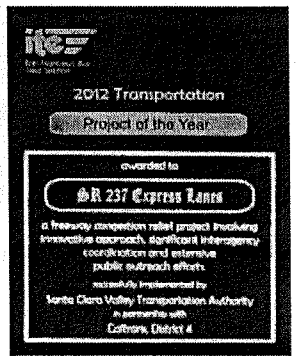
- Proceeded with incremental implementation based on funding availability.
  - I-680 EL opened for tolling in September 2010
  - Proceeded to develop SR 237 EL using lessons learned from I-680 EL
  - Opened SR 237 Express Lanes (Phase 1) for tolling (March 2012)
  - Initiated environmental clearance process for:
    - US 101/SR 85 Express Lanes (Spring 2009)
    - SR 237 Express Lanes Phase 2 (Fall 2012)

Where are we now?

- Award winning SR 237 Express Lanes project
- Project cost $11.8 million
- FY 2013 gross revenue $1.05 million
- Travel time savings up to 15 minutes
- Experience operating Express Lanes



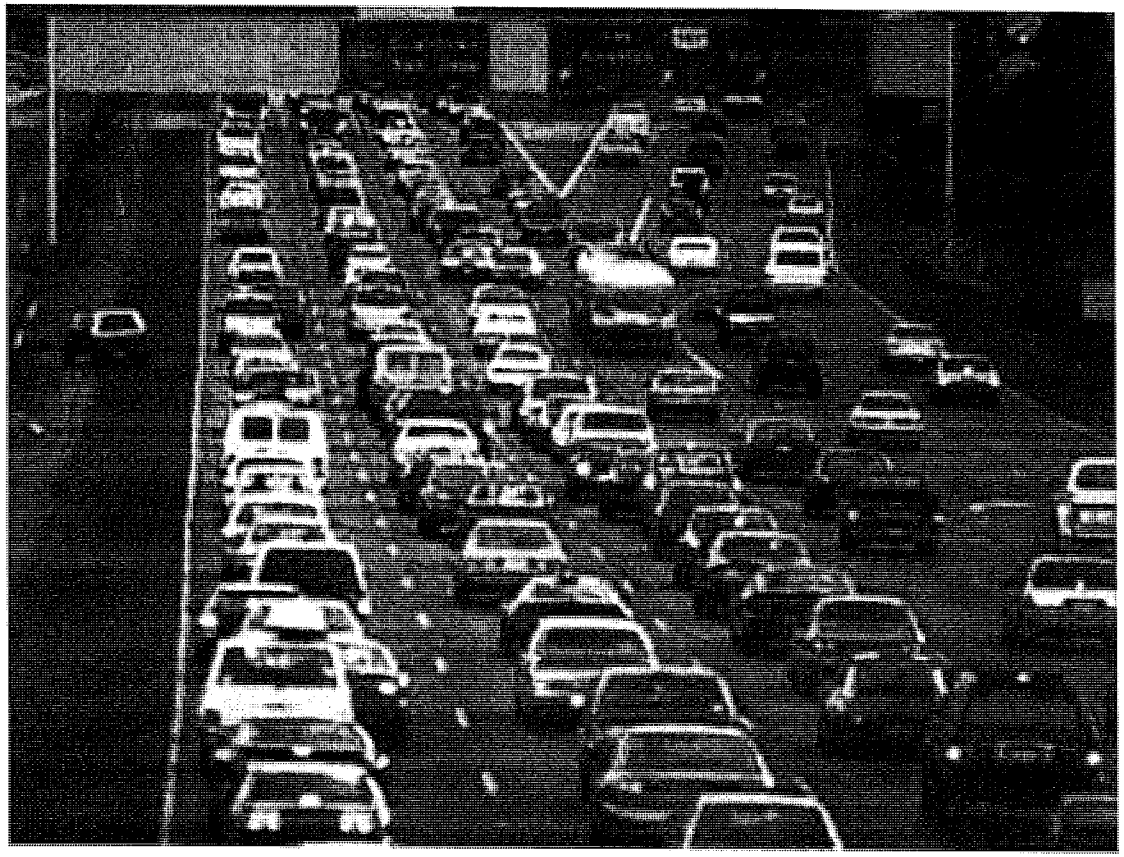




VTA Silicon Valley EXPRESS LANES

Increased Traffic Congestion in the Bay Area

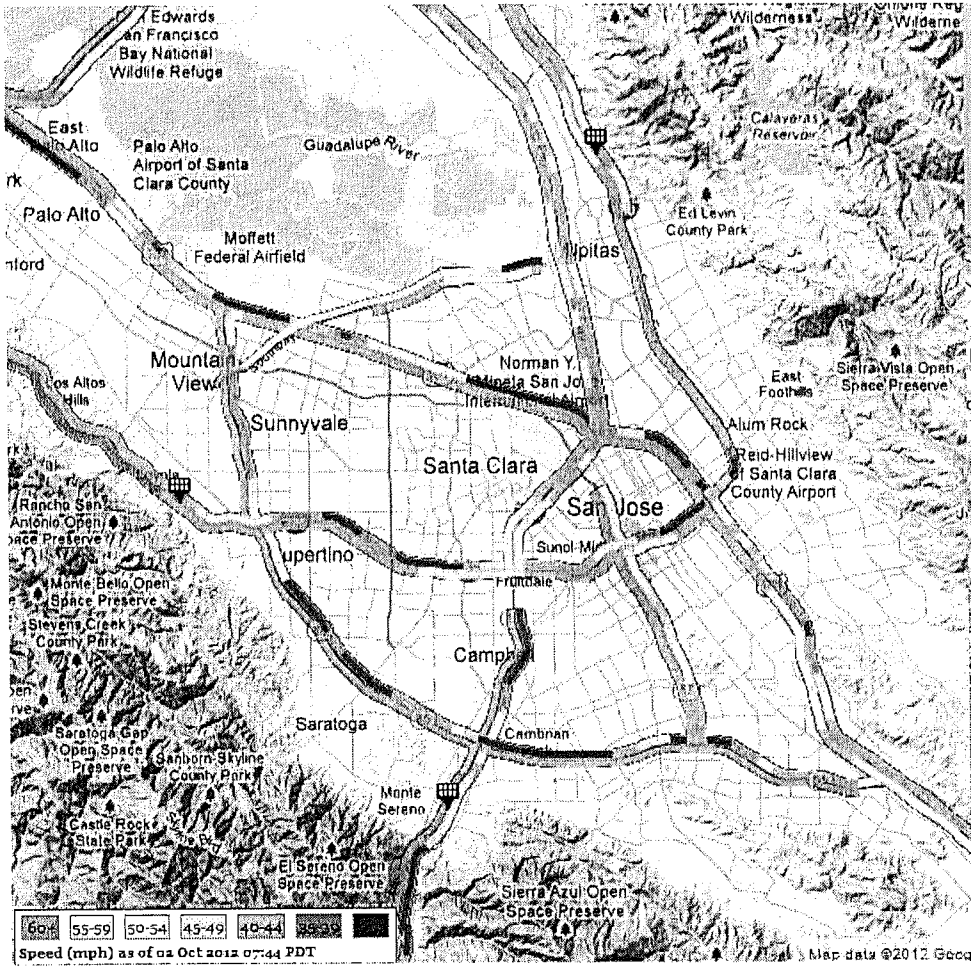
San Jose area traffic congestion increased 25% between April 2012 and April 2013.
(Source: INRIX National Traffic Scorecard)



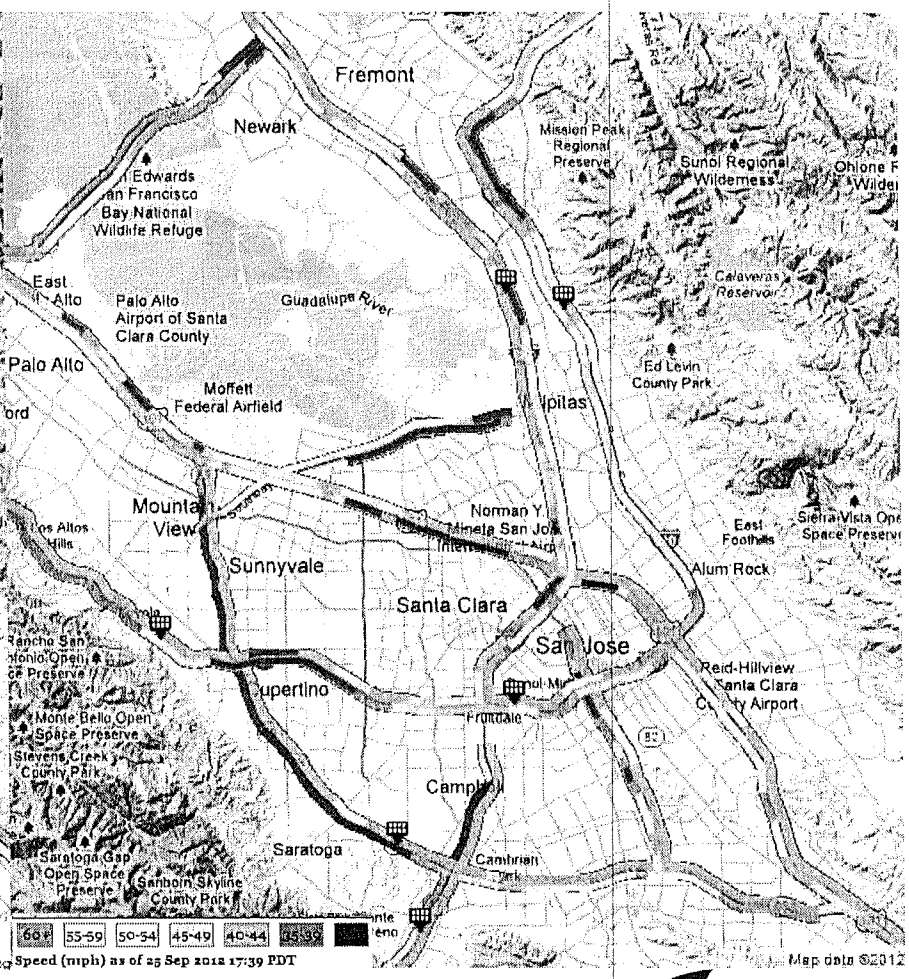
I-280 - US 101 junction in downtown San Jose. (Mercury News)

Congestion Levels in Silicon Valley

AM Peak Hour



PM Peak Hour

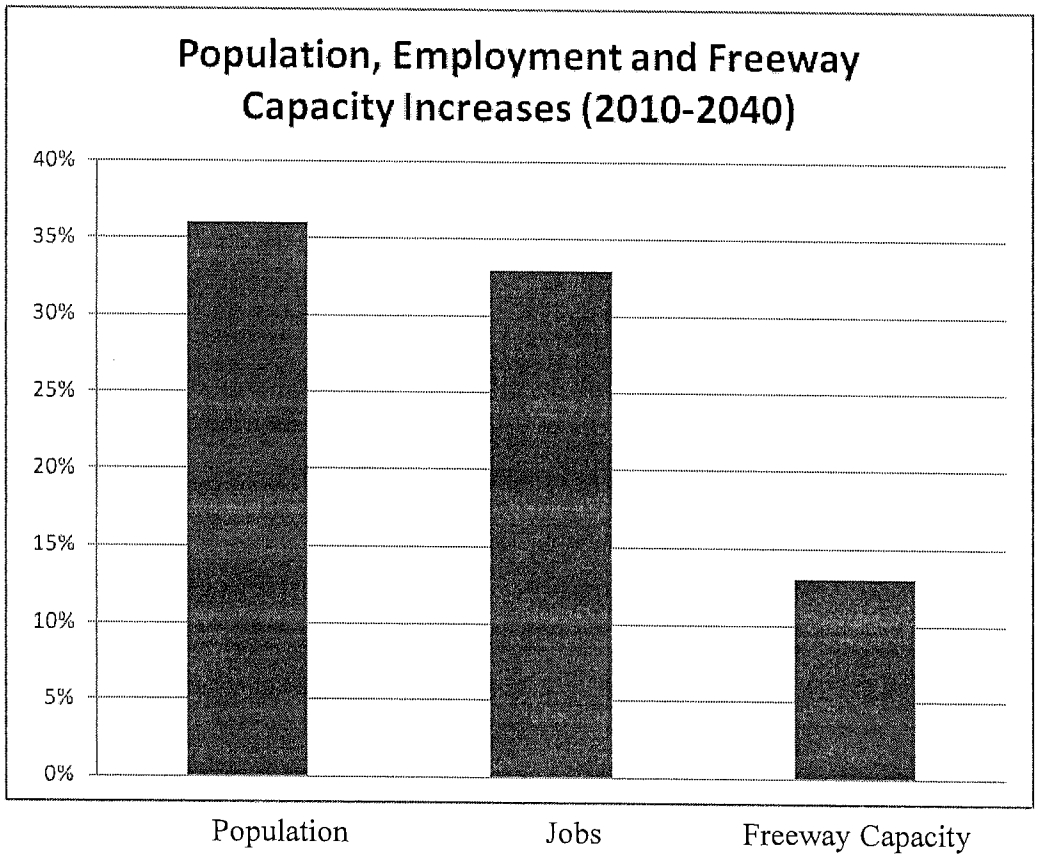


Source: Caltrans PeMs

Speed < 35 mph

Silicon Valley EXPRESS LANES

Silicon Valley 2040 Forecasts

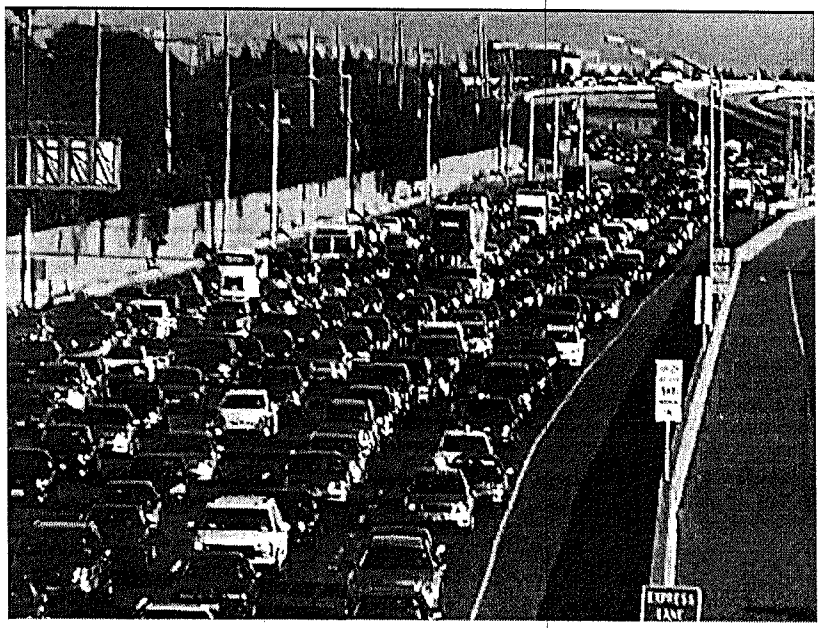


Source: VTP 2040

Silicon Valley EXPRESS LANES

Existing Challenges

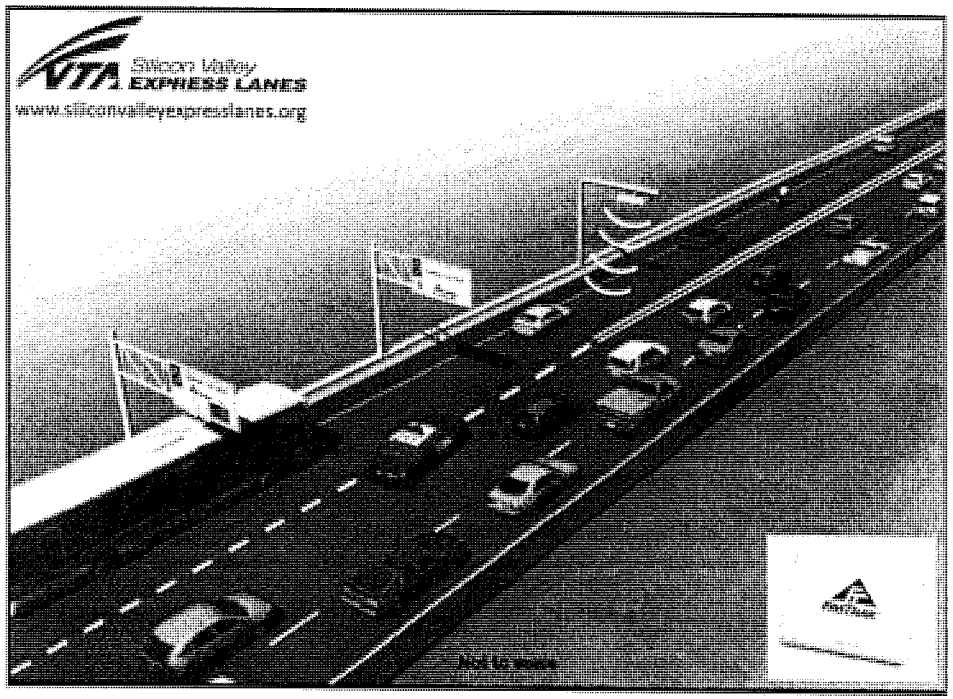
- Highly urbanized corridor with limited room to widen.
- Increased employment and population growth will increase demand.
- No dedicated local funding for highways similar to dedicated sales tax for transit.



Silicon Valley EXPRESS LANES

So why Express Lanes?

- Essential tool to manage traffic demand
- Provides a reliable commute option with travel time reliability
- Source of funding for improvements including transit



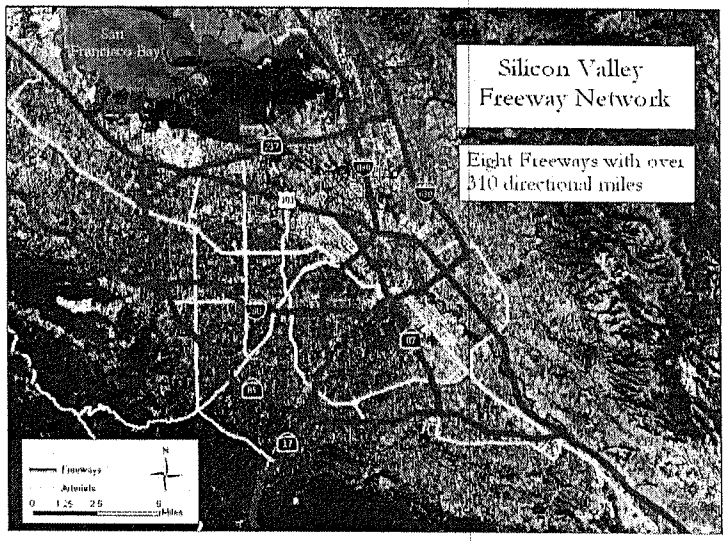
VTA Silicon Valley EXPRESS LANES

A Core Element of Long-Term Countywide Plan

- VTP 2040 identifies EL projects on all highways in Santa Clara County
  - Near term:

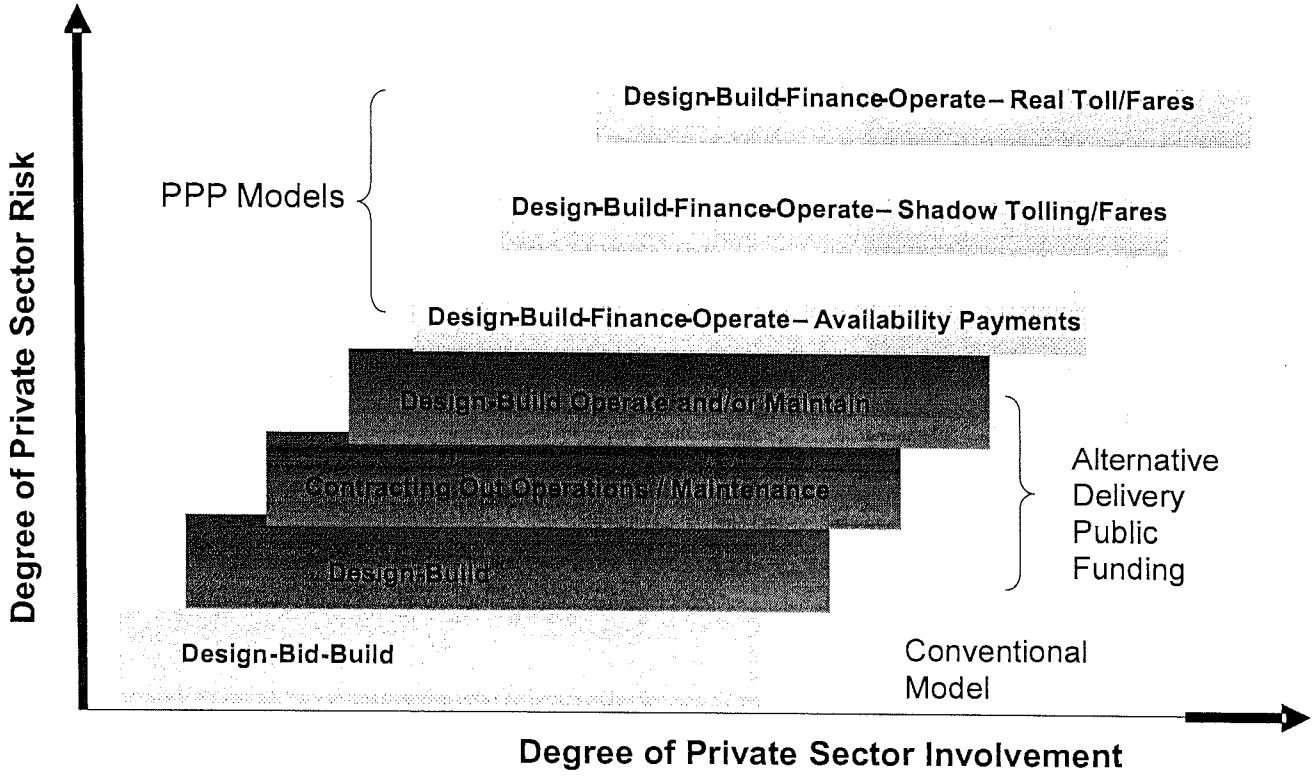
    SR 237, US 101, SR 85
  - Long term:

    I-280, I-880, I-680, SR 87, SR 17
- Revenues from Express Lanes to support transit operations and capital highway improvements



VTA Silicon Valley EXPRESS LANES

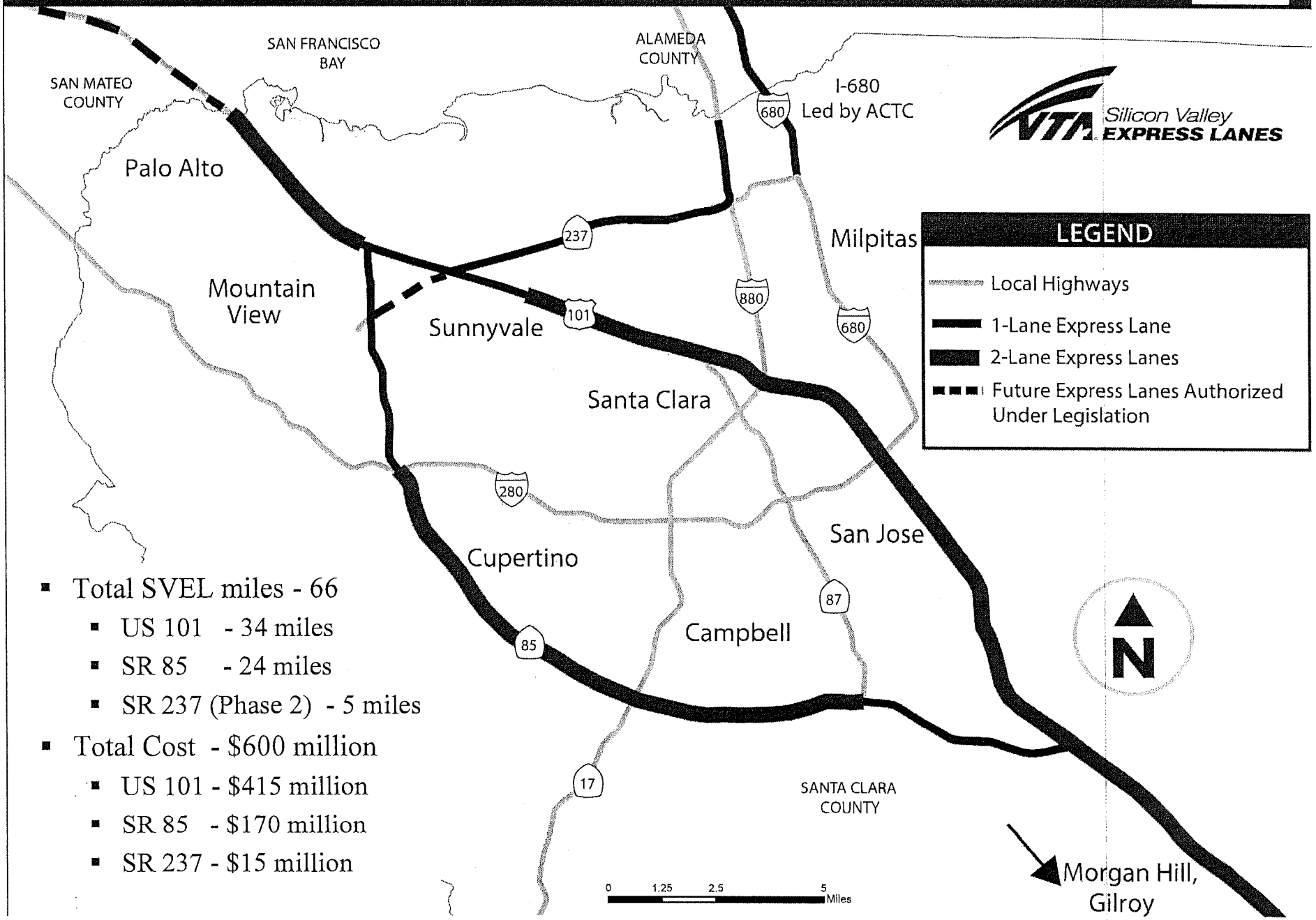
Potential Finance and Delivery Options



Silicon Valley EXPRESS LANES

SILICON VALLEY EXPRESS LANES

4.3.b



- Total SVEL miles - 66
  - US 101 - 34 miles
  - SR 85 - 24 miles
  - SR 237 (Phase 2) - 5 miles
- Total Cost - $600 million
  - US 101 - $415 million
  - SR 85 - $170 million
  - SR 237 - $15 million

Funding Approach

Two-step funding approach

- Step 1: Fund design/development of project
- Step 2: Finance construction costs

Design/Development Funding

- Purpose: Complete design and prepare investment grade Traffic & Revenue study needed for financing of construction.
- Approach:
  1. Program STIP funds to Measure A project
  2. Use Measure A funds to advance design/development
- VTA Risk Exposure: Potential that construction does not occur

Construction Funding

- Purpose: Fund remaining design and construction, capitalized interest, reserves.
- Multiple Components
  - Senior Revenue Bonds – Long-term tax exempt revenue bonds backed by forecast revenues from express lanes
  - Subordinated Debt – e.g., Federal TIFIA loan or public market alternatives
  - Public Contributions – Federal, state, local grants and/or loans

Construction Funding (Contd.)

- Exact composition will depend on several factors:
  - Construction cost bids (design, technology and construction environment)
  - Projected revenues from Traffic & Revenue Study
    - Traffic volumes, toll rates, HOV-2+ vs. HOV-3+, technology/violation levels
  - Bond market (interest rates, investor appetite)
  - VTA risk tolerance (debt structure, lower rating, etc.)

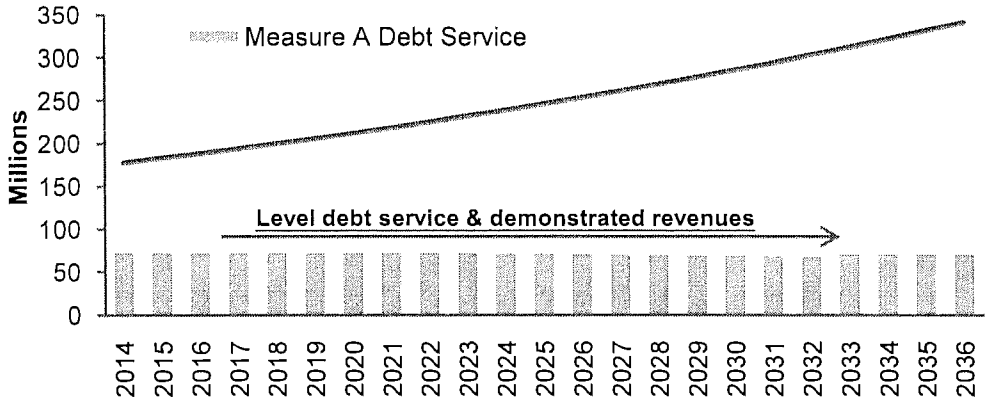
Different Funding Approach

- Funding approach for Express Lanes differs from VTA's traditional approach to financing transit projects

	Sales Tax Bonds	SVEL Financing
Issuing Entity	VTA	Special Purpose Vehicle
Security	Existing revenues from broad based sales tax	Projected revenues forecast for express lanes
Rating	AA to AAA ratings	BBB category
Debt Structure	Level	Ascending/growth dependent
Risks	Sales tax revenue decline	Construction; forecast revenues do not materialize
Rate Covenant	No	Yes
Need for Interim Funding	No	Yes
Need for Equity/Sub. Debt	No	Yes

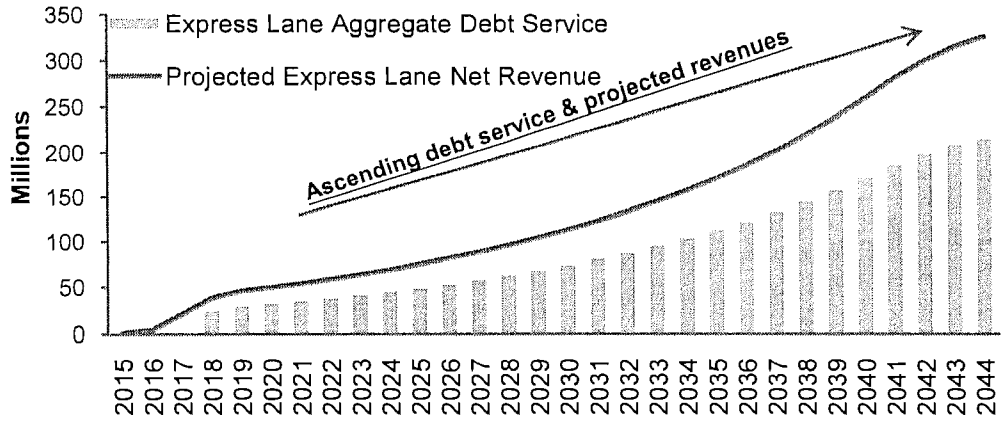
Sales Tax Bonds vs. Express Lanes Finance

Santa Clara VTA's 2000 Measure A Sales Tax Revenue Bond Debt Profile



- Level debt service over the life of the bonds
- Financing based upon historical sales tax revenue
- Minimum debt service coverage exceeds 2.0x

Projected Silicon Valley Express Lanes Debt Profile



- Ascending debt service tracks forecasted growth in revenue
- Revenue projection based upon T&R study forecast, no track record
- Minimum debt service coverage at 1.5x or lower

While riskier, project financing is a well accepted funding approach for Express Lanes

Preliminary Financing Analysis (US 101)

US 101 – HOV 2+	
Sources	
Senior Debt (Toll Revenue Bonds) - CIBS[1]	$89,000,000
Senior Debt (Toll Revenue Bonds) - CABS[2]	$82,000,000
TIFIA	$155,000,000
Third Party	$50,000,000
Funding Gap	**$81,000,000**
Total Sources	**$457,000,000**
Uses	
Capital Costs	$415,000,000
Capitalized Interest	$23,000,000
Debt Service Reserve Fund	$17,500,000
Financing Costs and Reserves	$1,500,000
Total Uses	**$457,000,000**

US 101 – HOV3+	
Sources	
Senior Debt (Toll Revenue Bonds) - CIBS[1]	$182,000,000
Senior Debt (Toll Revenue Bonds) - CABS[2]	$182,000,000
TIFIA	$136,000,000
Funding Gap	**$0**
Total Sources	**$500,000,000**
Uses	
Capital Costs	$415,000,000
Capitalized Interest	$45,500,000
Debt Service Reserve Fund	$36,000,000
Financing Costs and Reserves	$3,500,000
Total Uses	**$500,000,000**

[1] "CIBS" = Current Interest Bonds
[2] "CABS" = Capital Appreciation Bonds
Assumes capital costs as of July 2013, T&R projections as of August 2013 for HOV2+ and T&R projections as of March 2012 for HOV3+

Preliminary Financing Analysis (SR 85)

SR 85 – HOV 2+	
Sources	
Senior Debt (Toll Revenue Bonds) - CIBS[1]	$14,500,000
Senior Debt (Toll Revenue Bonds) - CABS[2]	$14,500,000
TIFIA	$44,000,000
Third Party	$50,000,000
Funding Gap	**$52,000,000**
Total Sources	**$175,000,000**
Uses	
Capital Costs	$170,000,000
Capitalized Interest	$2,000,000
Debt Service Reserve Fund	$2,800,000
Financing Costs and Reserves	$200,000
Total Uses	**$175,000,000**

SR 85 – HOV3+	
Sources	
Senior Debt (Toll Revenue Bonds) - CIBS[1]	$39,000,000
Senior Debt (Toll Revenue Bonds) - CABS[2]	$34,000,000
TIFIA	$68,000,000
Third Party	$44,000,000
Funding Gap	**$0**
Total Sources	**$185,000,000**
Uses	
Capital Costs	$170,000,000
Capitalized Interest	$7,000,000
Debt Service Reserve Fund	$7,500,000
Financing Costs and Reserves	$500,000
Total Uses	**$185,000,000**

[1] "CIBS" = Current Interest Bonds
[2] "CABS" = Capital Appreciation Bonds
Assumes capital costs as of August 2013 and T&R projections as of March 2012

Proposed Funding Plan for Design/Development

- Program $12.5 million of 2014 STIP to Measure A project
- Authorize use of $12.5 million Measure A fund to advance design/development
- Authorize $4.5 million from existing Local Program Reserves to design/development

Estimated STIP & Measure A Allocations

STIP Cycle	Estimated Total Available	Amount to Express Lanes Development	Year Programmed	Project
2014	$19 M	$12.5 M	18 / 19	SVSX
2016	$35 M	$15 M	20 / 21	SVSX
2018	$40 M	$20 M	22 / 23	SVSX

Proposed Project Delivery Approach

- Advance Measure A funds and payback using STIP
  - Maintain control
  - Minimize external financing
  - Advance delivery of revenue generation projects
- Build express lanes improvements incrementally
- Use design-bid-build project delivery

What is the timeline?

- **November 2013**:
  - Approve STIP programming for FY 2014
  - Approve Measure A swap funds for allocation of future STIP funds to Measure A project
  - Approve Local Program Reserve fund for Express Lanes Program

- **Spring 2014**: Approve recommended phasing of Express Lanes segments

Silicon Valley EXPRESS LANES

Thank You!

www.siliconvalleyexpresslanes.org

www.vta.org/expresslanes

Attachment D

US 101 Express Lane Project
Future Creek Bridge Widening

Coyote Creek Bridge, PM 19.21

	Southbound								Northbound							
	Outside Shoulder	GP Lane	GP Lane	GP Lane	Buffer	Express Lane	Express Lane	Inside Shoulder	Inside Shoulder	Express Lane	Express Lane	Buffer	GP Lane	GP Lane	GP Lane	Outside Shoulder
South of Bridge	10'	12'	12'	12'	2'	11'	11'	10'	10'	11'	11'	2'	12'	12'	12'	10'
Without Widening	10'	12'	12'	12'	2'	11'	11'	2'	2'	11'	11'	2'	11'	11'	12'	9'
With Widening	10'	12'	12'	12'	2'	11'	11'	10'	10'	11'	11'	2'	12'	12'	12'	10'
North of Bridge	10'	12'	12'	12'	2'	12'	12'	10'	10'	12'	12'	2'	12'	12'	12'	10'

Guadalupe River Bridge, PM 40.19, (Widen SB101 Bridge Only)

	Southbound									Northbound									
	Outside Shoulder	Auxiliary Lane	GP Lane	GP Lane	GP Lane	Buffer	Express Lane	Express Lane	Inside Shoulder	Inside Shoulder	Express Lane	Express Lane	Buffer	GP Lane	GP Lane	GP Lane	Ramp	Ramp	Outside Shoulder
South of Bridge	10'	12'	12'	11'	11'	2'	11'	11'	2'	3'	11'	11'	2'	11'	11'	12'	12'	12'	10'
Without Widening	8'	12'	12'	11'	11'	2'	11'	11'	2'	3'	11'	11'	2'	11'	11'	12'	12'	12'	6'
With Widening	10'	12'	12'	12'	12'	2'	11'	11'	10'	3'	11'	11'	2'	11'	11'	12'	12'	12'	6'
North of Bridge	10'	12'	12'	12'	12'	2'	11'	11'	4'	3'	11'	11'	2'	11'	11'	12'	12'	12'	10'

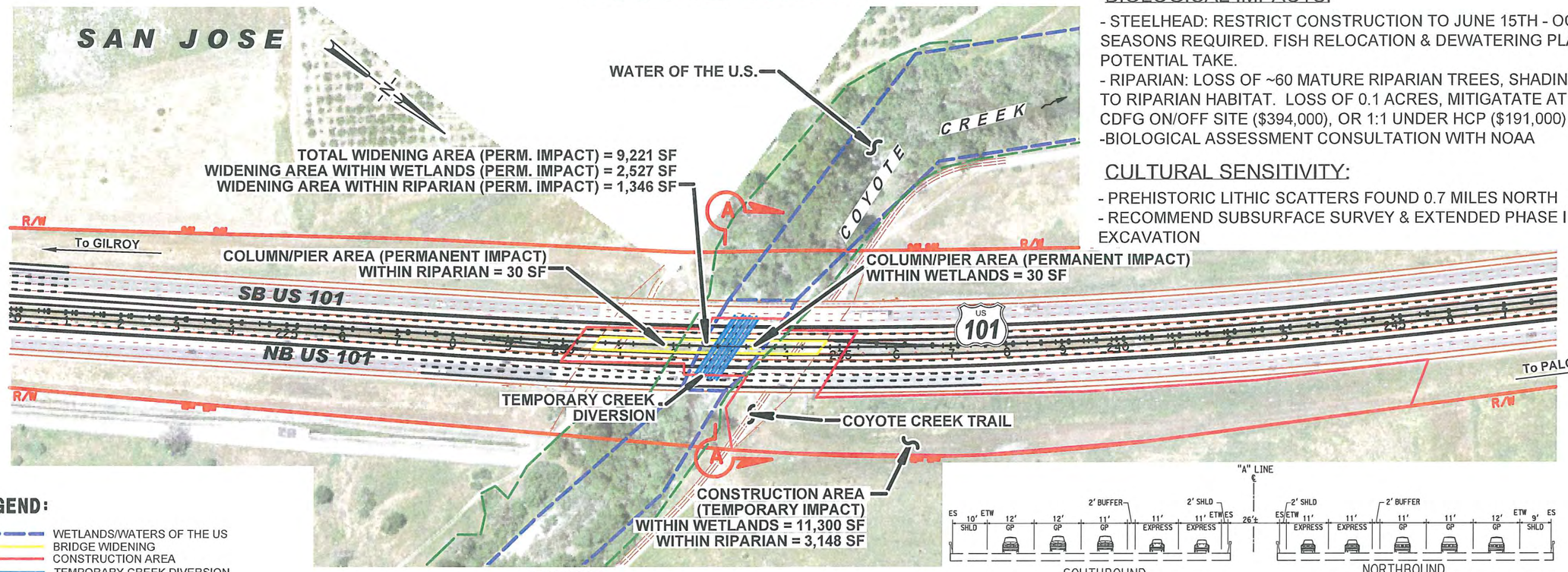
San Tomas Aquino Creek Bridge, PM 42.25, (Widen SB101 Bridge Only)

	Southbound									Northbound								
	Outside Shoulder	Auxiliary Lane	GP Lane	GP Lane	GP Lane	Buffer	Express Lane	Express Lane	Inside Shoulder	Inside Shoulder	Express Lane	Express Lane	Buffer	GP Lane	GP Lane	GP Lane	Auxiliary Lane	Outside Shoulder
South of Bridge	10'	-	12'	11'	11'	2'	11'	11'	10'	10'	11'	11'	2'	11'	11'	12'	-	5'
Without Widening	4'	12'	12'	11'	11'	2'	11'	11'	4'	4'	11'	11'	2'	11'	11'	12'	12'	5'
With Widening	10'	12'	12'	12'	12'	2'	11'	11'	10'	4'	11'	11'	2'	11'	11'	12'	12'	5'
North of Bridge	10'	12'	12'	11'	11'	2'	11'	11'	10'	10'	11'	11'	2'	11'	11'	12'	12'	10'

[X] Lane or Shoulder Width with Approved Design Exceptions

[X] Lane or Shoulder Width with Bridge Widening

US 101 EXPRESS LANES PROJECT
Dunne Ave to San Mateo/Santa Clara County Line
COYOTE CREEK PM 19.21



PM 19.21
37-349 R/L

BIOLOGICAL IMPACTS:

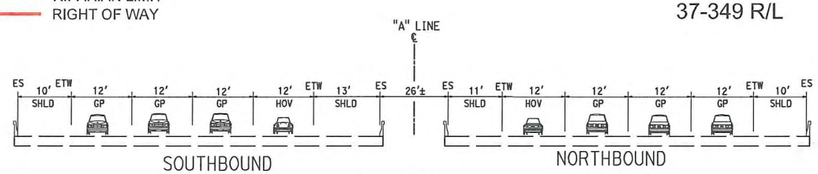
- STEELHEAD: RESTRICT CONSTRUCTION TO JUNE 15TH - OCT 15TH, 2 SEASONS REQUIRED. FISH RELOCATION & DEWATERING PLAN, POTENTIAL TAKE.
- RIPARIAN: LOSS OF ~60 MATURE RIPARIAN TREES, SHADING IMPACTS TO RIPARIAN HABITAT. LOSS OF 0.1 ACRES, MITIGATATE AT 2:1 FOR CDFG ON/OFF SITE ($394,000), OR 1:1 UNDER HCP ($191,000)
-BIOLOGICAL ASSESSMENT CONSULTATION WITH NOAA

CULTURAL SENSITIVITY:

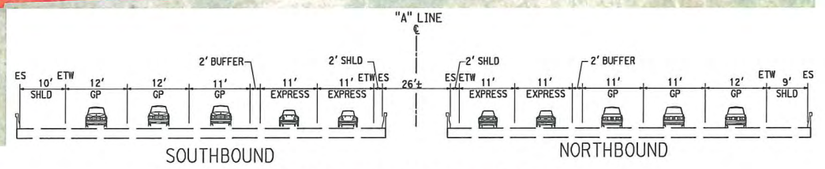
- PREHISTORIC LITHIC SCATTERS FOUND 0.7 MILES NORTH
- RECOMMEND SUBSURFACE SURVEY & EXTENDED PHASE I TEST EXCAVATION

LEGEND:

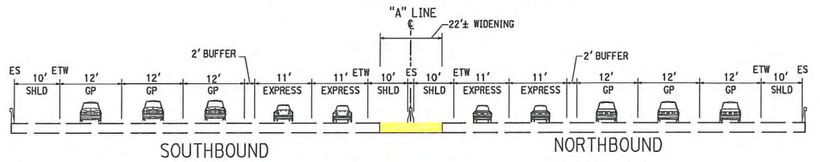
- WETLANDS/WATERS OF THE US
- BRIDGE WIDENING
- CONSTRUCTION AREA
- TEMPORARY CREEK DIVERSION
- RIPARIAN LIMIT
- RIGHT OF WAY



EXISTING
SECTION: A-A



PROPOSED (NO WIDENING)



PROPOSED (WIDEN BRIDGE)
SECTION: A-A

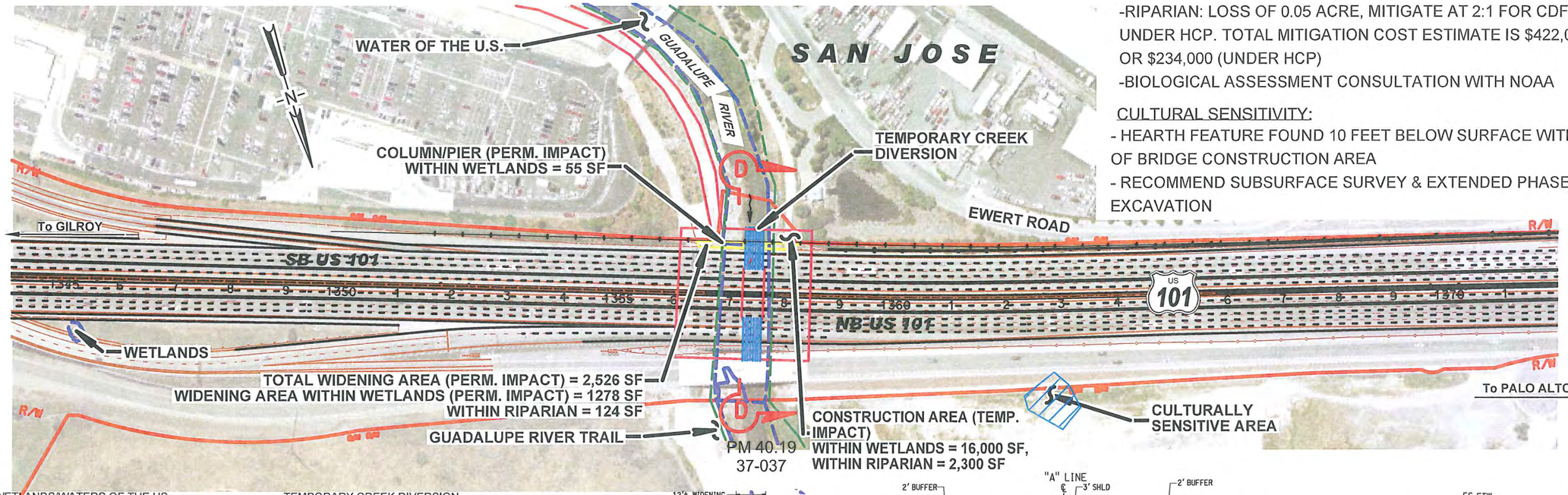
PRELIMINARY
FOR DISCUSSION PURPOSES ONLY

0 100 200 300 Ft

EXHIBIT 1
AUGUST 2013

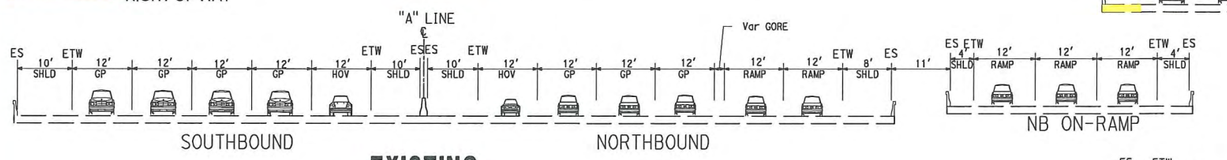
VTA Santa Clara Valley Transportation Authority | Caltrans | URS

US 101 EXPRESS LANES PROJECT
Dunne Ave to San Mateo/Santa Clara County Line
GUADALUPE RIVER PM 40.19

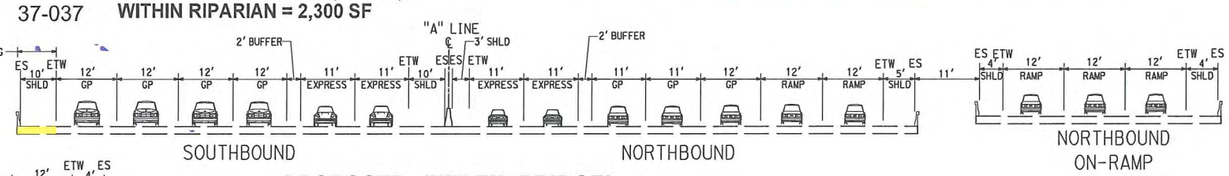


LEGEND:

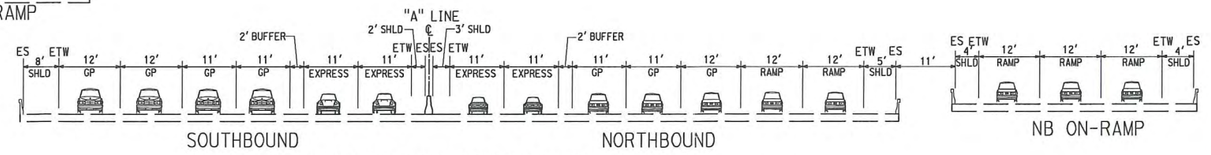
- WETLANDS/WATERS OF THE US
- BRIDGE WIDENING
- CONSTRUCTION AREA
- RIGHT OF WAY
- TEMPORARY CREEK DIVERSION
- RIPARIAN LIMIT
- CULTURALLY SENSITIVE AREA LIMIT



EXISTING
SECTION: D-D



PROPOSED (WIDEN BRIDGE)



PROPOSED (NO WIDENING)
SECTION: D-D

BIOLOGICAL IMPACTS:

- STEELHEAD: RESTRICT CONSTRUCTION TO JUNE 15TH - OCT 31ST, 2 SEASONS REQUIRED, FISH RELOCATION & DEWATERING PLAN, POTENTIAL TAKE.
- WETLAND: LOSS OF 0.1 ACRE MITIGATE AT 3:1 FOR USACE OR 2:1 UNDER HCP
- RIPARIAN: LOSS OF 0.05 ACRE, MITIGATE AT 2:1 FOR CDFG OR 1:1 UNDER HCP. TOTAL MITIGATION COST ESTIMATE IS $422,000 (NO HCP) OR $234,000 (UNDER HCP)
- BIOLOGICAL ASSESSMENT CONSULTATION WITH NOAA

CULTURAL SENSITIVITY:

- HEARTH FEATURE FOUND 10 FEET BELOW SURFACE WITHIN 400 FEET OF BRIDGE CONSTRUCTION AREA
- RECOMMEND SUBSURFACE SURVEY & EXTENDED PHASE 1 TEST EXCAVATION

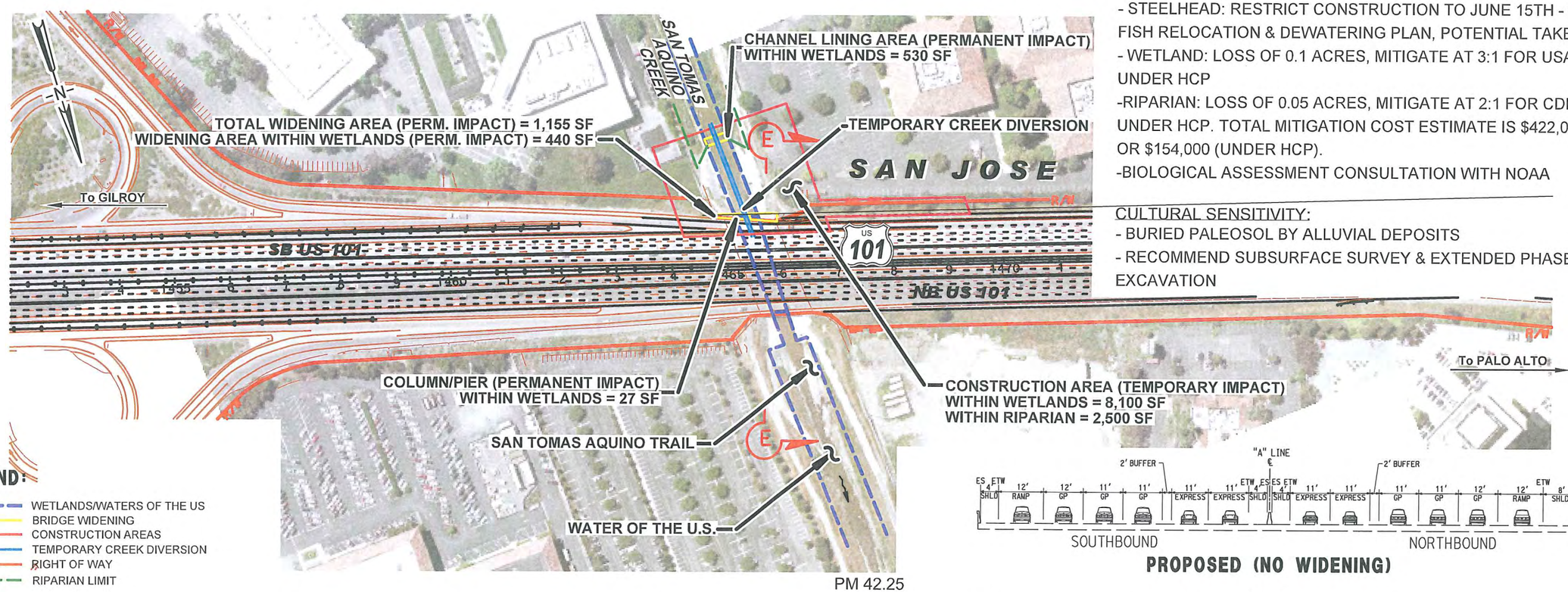
PRELIMINARY
FOR DISCUSSION PURPOSES ONLY

0 100 200 300 Ft

EXHIBIT 2
AUGUST 2013

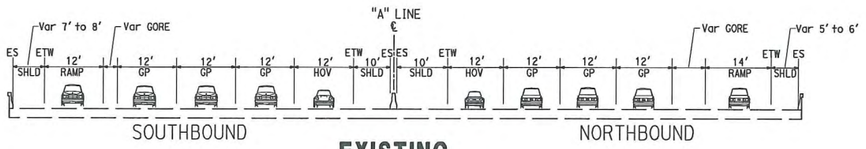
VTA Santa Clara Valley Transportation Authority | Caltrans | URS

US 101 EXPRESS LANES PROJECT
Dunne Ave to San Mateo/Santa Clara County Line
SAN TOMAS AQUINO CREEK PM 42.25



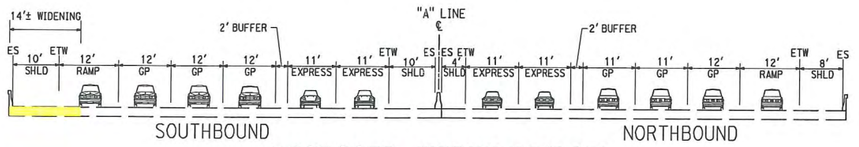
LEGEND:

- WETLANDS/WATERS OF THE US
- BRIDGE WIDENING
- CONSTRUCTION AREAS
- TEMPORARY CREEK DIVERSION
- RIGHT OF WAY
- RIPARIAN LIMIT



EXISTING
SECTION: E-E

PROPOSED (NO WIDENING)



PROPOSED (WIDEN BRIDGE)
SECTION: E-E

BIOLOGICAL IMPACTS:

- STEELHEAD: RESTRICT CONSTRUCTION TO JUNE 15TH - OCT 31ST. FISH RELOCATION & DEWATERING PLAN, POTENTIAL TAKE
- WETLAND: LOSS OF 0.1 ACRES, MITIGATE AT 3:1 FOR USACE OR 2:1 UNDER HCP
- RIPARIAN: LOSS OF 0.05 ACRES, MITIGATE AT 2:1 FOR CDFG OR 1:1 UNDER HCP. TOTAL MITIGATION COST ESTIMATE IS $422,000 (NO HCP) OR $154,000 (UNDER HCP).
- BIOLOGICAL ASSESSMENT CONSULTATION WITH NOAA

CULTURAL SENSITIVITY:

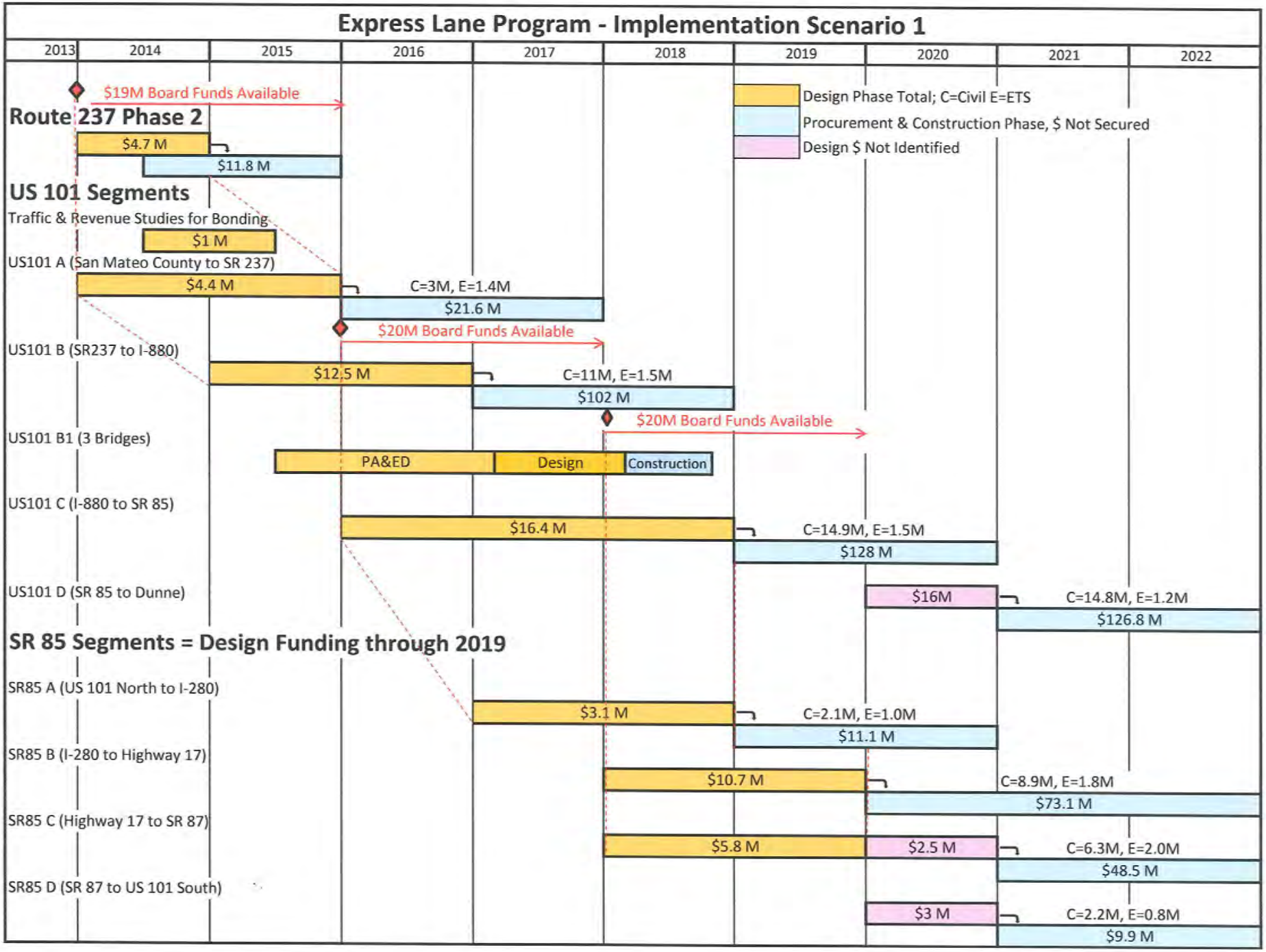
- BURIED PALEOSOL BY ALLUVIAL DEPOSITS
- RECOMMEND SUBSURFACE SURVEY & EXTENDED PHASE 1 TEST EXCAVATION

PRELIMINARY
FOR DISCUSSION PURPOSES ONLY

EXHIBIT 3
AUGUST 2013

VTA Santa Clara Valley Transportation Authority · Caltrans · URS

Attachment E


Express Lane Program - Implementation Scenario 1
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
$19M Board Funds Available
Route 237 Phase 2
$4.7 M
$11.8 M
Design Phase Total; C=Civil E=ETS
Procurement & Construction Phase, $ Not Secured
Design $ Not Identified
US 101 Segments
Traffic & Revenue Studies for Bonding
$1 M
US101 A (San Mateo County to SR 237)
$4.4 M
C=3M, E=1.4M
$21.6 M
$20M Board Funds Available
US101 B (SR237 to I-880)
$12.5 M
C=11M, E=1.5M
$102 M
$20M Board Funds Available
US101 B1 (3 Bridges)
PA&ED
Design
Construction
US101 C (I-880 to SR 85)
$16.4 M
C=14.9M, E=1.5M
$128 M
US101 D (SR 85 to Dunne)
$16M
C=14.8M, E=1.2M
$126.8 M
SR 85 Segments = Design Funding through 2019
SR85 A (US 101 North to I-280)
$3.1 M
C=2.1M, E=1.0M
$11.1 M
SR85 B (I-280 to Highway 17)
$10.7 M
C=8.9M, E=1.8M
$73.1 M
SR85 C (Highway 17 to SR 87)
$5.8 M
$2.5 M
C=6.3M, E=2.0M
$48.5 M
SR85 D (SR 87 to US 101 South)
$3 M
C=2.2M, E=0.8M
$9.9 M

04 - SCl - 101 - PM 16.00/52.55
04 - SCl - 85 - PM 23.0/24.1
EA #04-2G7100, RU: 245
Program ID: 0412000459

Attachment M

Pavement Strategy Checklist

PAVEMENT STRATEGY CHECKLIST

Date: 12/11/13

Project description and project elements:

US 101 Express Lanes Project
Santa Clara Valley Transportation Authority (VTA), in cooperation with the California Department of Transportation (Caltrans), proposes to convert the existing High-Occupancy Vehicle (HOV) lanes along the United States Highway 101 (US 101) to High-Occupancy Toll (HOT) lanes (hereafter known as express lanes) and add a second express lane in each direction on northbound and southbound US 101 within the overall project limits of East Dunne Avenue interchange in Morgan Hill to the Santa Clara/San Mateo County line just north of the Oregon Expressway/Embarcadero Road interchange in Palo Alto. The express lanes will allow HOVs and eligible clean air vehicles to continue to use the lanes for free and eligible single-occupant vehicles (SOVs) to pay a toll. The project will also convert the US 101/State Route (SR) 85 HOV direct connectors in Mountain View to express lane connectors and restripe the northern 1.1 mile of SR 85 to introduce a buffer separating the mixed flow lanes from the express lane and connecting the SR 85 express lanes to the US 101 express lanes. A project Vicinity Map and Project Location Map are provided in Attachment A. The project length is 36.55 miles on US 101 and 1.1 miles on SR 85, for a total of 37.65 miles. The project does not require any right-of-way acquisition.

US 101 in Santa Clara County is a 52.55-mile-long freeway that connects San Benito County to San Mateo County, through the cities of Gilroy, Morgan Hill, San Jose, Santa Clara, Sunnyvale, Mountain View, and Palo Alto. The facility within the project limits consists of 3 mixed flow lanes and one HOV lane in each direction, with auxiliary lanes in some locations.

The proposed project consists of a combination of a one and two-lane Express Lane facility separated from the general purpose lanes by a striped buffer. The buffer zone, delineated with solid stripes, will have designated openings to provide access into and out of the express lanes facility. The addition of the second express lane will involve a combination of inside and outside widening. The majority of the inside widening will occur within the US 101 segments south of the Mountain View SR 85/US 101 interchange in southern Santa Clara County where a wide unpaved median exists. The project proposes to widen and pave the median to accommodate the additional lanes. The outside widening will occur in the remainder of the corridor to accommodate the additional lanes where needed.

In the section between the southern project limit and the SR 85/US 101 interchange in southern San Jose, where the median width varies between 46 and 86 feet, pavement widening would be constructed in the median to accommodate the dual express lane facility. A retaining wall in the median is required to accommodate the inside widening where a split profile exists between northbound and southbound US 101. A dual express lane facility is proposed for the majority of the corridor, with the exception of short segments near the SR 85 express lane connectors where a single express lane is proposed. A single express lane is proposed between the SR 85/US 101 Interchange and the Blossom Hill Road Interchange in San Jose, and between the Mathilda Avenue interchange and the SR 85/US 101 interchange in Mountain View. Outside widening is proposed to accommodate dual express lanes between the Blossom Hill Road interchange and the Mathilda Avenue interchange.

EA: 04-2G7100 Project Manager: Dina El-Tawansy, Caltrans

Co/Rte: SCl/101, SCl/85 Office: Santa Clara County

Project Engineer: Caroline Pineda Program: HB5 Major Program

Design Senior: Hassan Nikzad PM Limits: 16.0/52.55, 23.0/24.1

Materials Engineer (8th floor) : Samia Ara Signature _____

This project is at the following phase (please check one):

☐ PID (PSSR, etc.) ☒ PR ☐ PS&E ☐ OTHER

Describe existing structural section (e.g., shoulder, traveled way). Show limits if different sections are within the project:

See Draft Project Report Attachment M – Life Cycle Cost Analysis (Appendix C. LCCA Assumption Memo)

What pavement types/structural sections does Materials propose for each segment (shoulders and traveled way)?

Pavement widening at the locations of existing rigid pavement:

For Design Factors: TI = 16.0, R-value = 20, 40-year design life, Table 623.1E (Type II, Central Coast Climate Region, with lateral support)

Section Component	Thickness (feet)
CRCP	0.85
ATPB	0.25
HMA (Type A)	0.25
Class 4 AS	0.50
Class 3 Perm*	1.00
Total	2.85

*For this alternative, Class 3 Perm is to augment the need for subbase pursuant to Table 623.1E. Detail matching of ATPB will be evaluated during PS&E design phase.

For Design Factors: TI = 14.5, R-value = 20*, 40-year design life, Table 623.1E (Type II, Central Coast Climate Region, with lateral support)

Section Component	Thickness
	(feet)
CRCP	0.85
HMA (Type A)	0.25
Class 4 AS	0.70
Lime stabilization	1.00
Total	2.80

* Subgrade should be improved with lime stabilization to a minimum depth of 12 inches.

Pavement widening at the locations of existing flexible pavement:

For Design Factors: TI = 14.0, R-value = 20, 20-year design life, GE (required) = 3.58

Section Component	Thickness	Gravel Equivalent
	(feet)	(feet)
RHMA-G	0.15	
HMA (Type A)	0.50	1.09
LCB	0.65	1.24
Class 4 AS	1.00	1.00
Lime stabilization	1.00	1.00
Total	3.30	4.33

For Design Factors: TI = 14.5, R-value = 20, 40-year design life, GE (required) = 3.71

Section Component	Thickness	Gravel Equivalent
	(feet)	(feet)
OGFC	0.10	--
RHMA-G	0.15	
HMA (Type A)	1.60	3.88
Class 3 AB	0.50	Ignored
SEG (Class B1)	--	--
Total	2.35	3.88

Pavement is involved in:

☐ Entire project OR ☒ Part of the project

Assumptions (Is future widening in Regional Transportation Plan? Yes or no?): Yes

Please provide information for all of the following items that apply to this project.

	Yes	No	Question
1.	☒	☐	Are you implementing an innovative strategy (e.g., cold foam Hot-Mix Asphalt (HMA)), pre-cast concrete pavement, continuously reinforced pavement, etc)? If so, which are you implementing and why? If not, why not? Continuous reinforced pavement has been proposed. Open Graded Friction Course has been proposed.
2.	☒	☐	Has Rapid Rehab strategy been considered (e.g., weekend closures and lane replacements)? Explain: Weekend closure and nighttime work will be required for this project. Rapid rehab strategies will be considered and details will be developed during the design phase.
3.	☒	☐	Are you using Rubberized Hot-Mix Asphalt (RHMA) in this project? If not, justify: Yes, rubberized hot mix asphalt (RHMA-G) is being used.
4.	☒	☐	Was Life Cycle Analysis performed? Yes. See Draft Project Report Attachment M – Life Cycle Cost Analysis.
5.	☐	☒	Does existing pavement have a settlement problem? Explain: No indication of settlement problem exists in the corridor.
6.	☒	☐	a) Is this project (or part of project) maintaining the grade profile? Yes, grade profile will be maintained. b) If not, explain how the profile change affects the pavement strategy choice (cut v. fill):
7.	☒	☐	Will there be a new barrier? A concrete barrier Type 60F will be provided at the locations where the overhead signs are proposed. The existing thrie-beam barrier and existing concrete barrier Type 50 will be replaced with a concrete barrier Type 60 or concrete barrier Type 60C. A new concrete barrier Type 60R Modified will be provided at locations where the shoulder is less than 2 feet.
8.	☒	☐	Is the proposed structural section on cut or fill or both? Provide limits of both, if applicable. There will be a combination of cut and fill throughout the entire express lane corridor.

	Yes	No	Question
9.	☐	☒	Are highly expansive basement soils present? No, design R-value is 20.
10.	☒	☐	Are as-builts (including structural section information regarding edge drains, under drains, lime treatment, permeable blanket, etc.) available? If no, did you check map files and online? If yes, existing structural section was based on (check one): ☒ as-built ☐ actual boring
11.	☒	☐	Do the project limits have problems with groundwater (e.g., high water table, flow requirements, etc.)? If yes, explain: At the north end of the project, between approximately Central Expressway on SR 85 and Oregon Expressway on US 101, layers of soft to stiff silty clay were encountered from ground surface to depths in the order of 20 to 30 feet below ground surface. Groundwater was measured in this area at depths ranging from about 3 to 28 feet. In consideration of these soft to stiff clays, a foundation for overhead signs will be required in this area, consisting of either driven piles or drilled piers.
12.	☐	☐	Has the availability of pavement materials (i.e., long haul distances from plants) been considered? To be determined during the design phase. If yes, how does material availability affect pavement type selection?
13.	☐	☒	Will the existing pavement be rehabilitated? No pavement rehabilitation anticipated. What are the age and condition of the existing adjacent lanes? To be determined during the design phase once pavement deflection studies are complete.

<table>
<tr><th></th><th>Yes</th><th>No</th><th>Question</th></tr>
<tr><td>14.</td><td>☒</td><td>☐</td><td>What is the type of pavement/structural section (corridor pavement type/structural section continuity) on upstream/downstream roadway? Explain if several:

SB/NB Inside Lane and Shoulder Conform (at Dunne Avenue) :
<table>
<tr><th>Feet</th><th>Item</th></tr>
<tr><td>0.15</td><td>RHMA-G</td></tr>
<tr><td>0.55</td><td>HMA (Type A)</td></tr>
<tr><td>0.70</td><td>LCB</td></tr>
<tr><td>1.10</td><td>Class 4 AS</td></tr>
<tr><td>- - -</td><td>SEG (Class B1)</td></tr>
</table>
SB/NB Inside Lane and Shoulder Conform (at Metcalf Road):
<table>
<tr><th>Feet</th><th>Item</th></tr>
<tr><td>0.85</td><td>CRCP</td></tr>
<tr><td>0.25</td><td>ATPB</td></tr>
<tr><td>0.25</td><td>HMA (Type A)</td></tr>
<tr><td>0.50</td><td>Class 4 AS</td></tr>
<tr><td>1.00</td><td>Class 3 Perm</td></tr>
</table>
SB/NB Outside Lane and Shoulder Conform (at North Mathilda Drive):
<table>
<tr><th>Feet</th><th>Item</th></tr>
<tr><td>0.10</td><td>OGFC</td></tr>
<tr><td>0.15</td><td>RHMA-G</td></tr>
<tr><td>1.60</td><td>HMA (Type A)</td></tr>
<tr><td>0.50</td><td>Class 3 AB</td></tr>
<tr><td>- - -</td><td>SEG (Class B1)</td></tr>
</table></td></tr>
<tr><td>15.</td><td>☒

☒</td><td>☐

☐</td><td>Is TMP data (lane closure charts) available and was it considered?
Yes. See Draft Project Report Attachment F – TMP Data Sheet.

Will there be nighttime paving? If so, provide lane closure hours:
Closure hours to be determined during the design phase.</td></tr>
<tr><td>16.</td><td>☐</td><td>☒</td><td>Was field Maintenance input considered?
Field Maintenance input to be evaluated during the design phase.</td></tr>
<tr><td>17.</td><td>☒</td><td>☐</td><td>Were climate conditions (extreme temperature, rainfall, etc.) considered?
Yes, the climate in this area is classified as Mediterranean, with dry summers and mild winters. Precipitation in San Jose averages 15.08 inches per year, primarily confined to the months of October through April. November, December, January, February and March usually have the most precipitation accumulation, averaging 1.73, 2.00, 3.03, 2.84 and 2.69 inches per month, respectively

If so, which ones do you anticipate affecting the pavement job?
Temperatures in the winter season will restrict the contractor’s ability to place AC product especially in the night hours.</td></tr>
</table>

	Yes	No	Question
18.			Which stage construction requirements (matching adjacent sections, temporary paving, etc.) were considered? Proposed pavement will match adjacent sections.
19.	☒	☐	Is this a large-scale project? Explain all quantity take-off: See Draft Project Report Attachment D –Cost Estimates.
20.	☒	☐	Is there Open-Graded Hot-Mix Asphalt (OGHMA) on the existing pavement? Yes, there is existing OGHMA north of Metcalf Road in the southbound direction and between south of Story Road interchange and De La Cruz Blvd in both directions.
21.	☒	☐	Was environmental impact considered? Yes, an IS-EA has been prepared.
22.			What is the proposed pavement design life? For each structural section alternative proposed, a 20-year design life was used for a Traffic Index (TI) value of 13 to 14 and a 40-year design life was used for a TI value of 14.5 to 16.
23.			What is the final lane line configuration? The project consists of converting the existing HOV lane along both northbound and southbound US 101 into an express lane and widening the freeway to add a second express lane for the majority of the corridor. The project also proposes to build new express lanes in the northbound direction between East Dunne Avenue and the existing HOV lane at Cochrane Road, and in the southbound direction between Burnett Avenue and East Dunne Avenue. With these changes, there would be two express lanes on US 101 extending from approximately the Cochrane Road interchange in Morgan Hill to just south of the Oregon Expressway/ Embarcadero Road interchange in Palo Alto in the northbound direction, and from just south of the Oregon Expressway/Embarcadero Road interchange to just north of East Dunne Avenue overcrossing in the southbound direction. The facility within the project limits consists of 3 mixed flow lanes and one HOV lane in each direction, with auxiliary lanes in some locations.

	Yes	No	Question
24.	☒	☐	Are there vertical clearance issues? If yes, explain: Standard vertical clearance is not provided at 20 locations along the mainline of US 101. The proposed project is maintaining the existing vertical clearances along the corridor. The proposed non-standard vertical clearances range from 14.95 to 18.22 feet.

Table 2-19: Non-standard Minimum Vertical Clearances (HDM 309.2)

No.	Location	Sheet	Vertical Clearance		
			Minimum (ft)	Existing (ft)	Proposed (ft)
M9.1	E Main Avenue Overcrossing	VC-1	16.5	16.30	16.30
M9.2	Metcalf Road Overcrossing	VC-1	16.5	16.40	15.75
M9.3	Hellyer Avenue Overcrossing	VC-2	16.5	15.42	15.42
M9.4	Capitol Expressway Overcrossing	VC-2	16.5	16.40	16.16
M9.5	Story Road Overcrossing	VC-3	16.5	15.48	15.33
M9.6	I-280-680 Separation R	VC-3	16.5	16.47	16.33
M9.7	Alum Rock Avenue Overcrossing	VC-4	16.5	16.50	16.40
M9.8	North San Jose Underpass	VC-4	16.5	16.40	16.40
M9.9	De La Cruz Boulevard Overcrossing	VC-5	16.5	15.09	15.09
M9.10	Agnew Underpass	VC-5	16.5	15.42	15.33
M9.11	Lafayette Street (NB) Overcrossing	VC-6	16.5	15.32	15.20
M9.12	San Tomas Expressway Overcrossing	VC-6	16.5	15.09	15.09
M9.13	Ahwanee Avenue Pedestrian Overcrossing	VC-7	18.5	18.56	17.50
M9.14	Fair Oaks Avenue Overcrossing	VC-7	16.5	15.09	14.95
M9.15	Borregas Avenue Pedestrian Overcrossing	VC-8	18.5	18.37	18.22
M9.16	Mathilda Avenue Overcrossing	VC-8	16.5	15.09	15.09
M9.17	SR 237 Separation	VC-9	16.5	14.99	14.99
M9.18	Moffett Boulevard Overcrossing	VC-9	16.5	15.09	15.09
M9.19	Rengstorff Avenue Overcrossing	VC-10	16.5	14.99	14.99
M9.20	San Antonio Road Overcrossing	VC-10	16.5	14.99	14.99

	Yes	No	Question
25.			What is the traffic index? For each structural section alternative proposed, a Traffic Index (TI) value of 13 to 14 was used for a 20-year design life and a TI value of 14.5 to 16 was used for a 40-year design life.
26.	☐	☒	Are there existing retrofit edge drains? No existing retrofit edge drain.
27.	☐	☒	Will shoulders be used as detours? The shoulders will not be used as detours.
28.	☐ ☒	☒ ☐	Is there settlement at bridge approaches? Liquefaction can result in loss of foundation support and settlement of overlying structures. High to very high liquefaction susceptibility has been mapped within younger fluvial deposits where larger drainages cross the alignment, such as Coyote Creek, Guadalupe River, and San Tomas Aquino Creek. Very high liquefaction susceptibility has also been mapped at the north end of the project alignment along US 101 between San Antonio Road and Oregon Expressway, where the alignment is underlain by unconsolidated to semi-consolidated alluvial deposits. Are bridge approach slabs being replaced? Does such replacement include shoulders? Bridge approach slab type N and R are being placed. Shoulders are included.
29.	☒	☐	Is there a minimum standard (2% or 1.5%) cross-slope? If not standard, provide date of design exception approval:_____ 1.5% cross slope for existing rigid pavement The widened pavement will have cross slope of 2%.
30.			Provide the pavement condition report. Pavement condition report to be prepared during the design phase.
31	☐	☒	Other factors? Explain:

04 - SCl - 101 - PM 16.00/52.55
04 - SCl - 85 - PM 23.0/24.1
EA #04-2G7100, RU: 245
Program ID: 0412000459

Attachment N

High Profile Project Agreement

Federal Highway Administration
California Division Office, California Department of Transportation and Santa Clara Valley Transportation Authority Project Oversight Agreement

for

U.S. 101 Express Lanes

EA: 04-2G710

December 16, 2014

A. Summary of Applicable Requirements:

On October 14, 2010, Federal Highway Administration (FHWA) and California Department of Transportation (Caltrans) signed an updated Joint Stewardship and Oversight Agreement (S&O Agreement). Per the updated S&O Agreement, FHWA and Caltrans will utilize a risk-based approach to project oversight that does not rely simply on project cost to determine FHWA stewardship and oversight. This risk-based approach to project oversight is conducted in two steps:

1) selecting the projects that traditionally pose a risk to the health of the Federal-aid Highway Program ("High Profile Projects"), and
2) within the High Profile Projects (HPP), further delegating approval authorities in activities that pose a low risk to the individual projects.

Each HPP has a Project Responsibilities List (see Attachment A) developed to define which approval actions are handled by FHWA or Caltrans, or Caltrans-designee. Other areas of Federal involvement and/or approval actions for this project are summarized in this Agreement (i.e., attending meetings, design reviews, conducting project inspections, etc.)

B. General Project Description:

For this Agreement, the HPP ("Project") consists of converting the existing High-Occupancy Vehicle (HOV) lanes on U.S. 101 to Express Lanes (also known as High-Occupancy Toll [HOT] lanes) and constructing an additional express lane as follows:

1) Convert the existing single HOV lanes into express lane facilities and construct an additional express lane in both directions along U.S. 101, from Dunne Avenue in Morgan Hill to Santa Clara/San Mateo County.

2) Convert U.S.101/SR 85 HOV direct connector in Mountain View to express lane connectors.

This Project includes two major components:

A. Design, installation, operation, management and maintenance of the electronic toll system (ETS), and
B. Infrastructure elements necessary to accommodate implementation of express lanes.

The estimated total project costs: $ 431 Million.

C. Parties to the Agreement:

This Agreement is between the Federal Highway Administration-California Division Office (FHWA), Caltrans District 4 (Caltrans) and Santa Clara Valley Transportation Authority (VTA).

1) FHWA Project Personnel and Resources for Oversight:

An FHWA Project Oversight Manager (POM) has been assigned to manage the FHWA oversight of this project. The FHWA POM will be responsible for all FHWA project actions and approvals as provided in Attachment A with the guidance of the FHWA Division Office management and the assistance of other FHWA personnel. Division Office staff (e.g. ITS engineer, safety engineer, traffic operations engineer, financial specialist, realty specialist) will be available for project reviews and technical assistance in order to provide expeditious reviews and approvals of project actions. Oversight will be conducted through review of project documents and data, project inspections, and various other means, as deemed necessary by FHWA. The United States Department of Transportation ("US DOT") Office of Inspector General may also perform audits of project costs and other financial data as that office deems appropriate.

2) Caltrans and VTA Personnel and Resources:

In accordance with Deputy Directive DD-23-Rl, Caltrans has designated Dina El-Tawansy, Regional Project Manager, as the Primary Point of Contact (PPOC) with FHWA, with overall responsibility for the Project under the S&O Agreement.

VTA has designated Gene Gonzalo, Highway Program Manager, as the Point of Contact. It is recognized that Caltrans may delegate certain project responsibilities to the VTA under a separate Project Cooperative Agreement and, prior to construction, an Encroachment Permit. All applicable terms and conditions of this agreement are incorporated into the subordinate agreement(s) between Caltrans and VTA.

These designations may be revised as needed, with prompt notification to FHWA POM

D. Reporting Requirements:

The FHWA POM will be responsible for providing periodic updates of the costs and schedules of the Project to FHWA Headquarters and the USDOT Office of the Secretary of Transportation (OST). Briefings will also be provided to assist various agencies with tracking information.

Caltrans/VTA will be responsible for providing FHWA with monthly updates at a minimum (using all available information) with respect to project cost and scheduling to assist with this task. Along with the monthly updates, Caltrans/VTA shall provide meeting invitations to the designated FHWA POM of all regularly scheduled weekly technical meetings, partnering meetings, audits, inspections, etc. in order to keep the FHWA POM updated on the Project's progress. Caltrans/VTA shall also keep FHWA POM engaged in any unforeseen circumstances which may impact the Project or may require FHWA POM's prior review or approval.

E. Project Specific Requirements:

Oversight activities specific to this project are detailed in Attachment A (Project Responsibilities List). Items not fully addressed by the Project Responsibilities List that pertain to this project are further discussed below:

1. Planning:
FHWA and Caltrans/VTA will ensure that the Project is included in the current Regional Transportation Plan and Transportation Improvement Plan.

2. Environment:
Caltrans has assumed NEPA responsibilities pursuant to 23 U.S.C. 327.

3. Design:
FHWA approvals for design activities will be done in accordance with the attached Project Responsibilities List (see Attachment A) including geometric design exceptions to the 13 controlling federal standard criteria and interchange access modifications prior to authorization for advertising.

4. Right of Way:
FHWA approvals for Right-of-Way activities will be granted in accordance with the Project Responsibilities List (see Attachment A).

5. Construction:
The level of construction oversight by FHWA will be based on the Project Responsibilities List (see Attachment A). The FHWA POM is responsible for FHWA construction oversight. This oversight may include routine inspections throughout the construction life of the Project. Changes to the final construction documents (plans, specifications, etc.), the Project schedule, or other significant element of the Project will be approved by FHWA. FHWA retains the approval of major change orders and will be

implemented per the Caltrans Construction Manual Procedure 5-308 - Federal Highway Administration Change Order Requirements.

Peter Pangilinan
FHWA Project Oversight Manager
Federal Highway Administration

Dina El-Tawansy
Regional Project Manager
California Department Of
Transportation

Gene C, Gonzalo
Highway Program Manager
Santa Clara Valley Transportation Authority

ATTACHMENT A: PROJECT RESPONSIBILITIES LIST

The Project Responsibilities List identifies the responsible agency for project level actions. It is organized by columns listed as High Profile and Assigned Projects. Within each column, activities are listed and the appropriate Approval Authority (FHWA or Caltrans) is identified. The FHWA will maintain approval authority for activities that cannot be assigned and activities that may pose a risk to individual projects. The activities with highlighted cells under the High Profile projects column, which show FHWA, may be assigned to Caltrans if the particular activity is of low risk to the project or the Federal-aid Highway Program (FAHP).

APPROVAL ACTION	Approval Authority
	High Profile Projects
ADMINISTRATION	
Financial Management	
All Federal Vouchers (progress payments and final)	FHWA
Federal-aid Project Agreement and Modification—Preliminary Engineering through Construction [23 CFR 630.110]	FHWA
Federal Funding Eligibility Determinations	FHWA
Obligate Federal funds	FHWA
Section 1.9 Waiver [23 CFR Section 1.9]	FHWA
PROJECT DEVELOPMENT	
ROW	
Accept ROW certificate 3 as a condition of PS&E approval [23 CFR 635.309(c)(3)]	FHWA
Accept ROW certificates 1 and 2 as a condition of PS&E approval [23 CFR 635.309(c)(1)&(2)]	Caltrans
Air space agreements / Non-highway use and occupancy not on the Interstate [23 CFR 710.405]	FHWA
Air space agreements / Non-highway use and occupancy on the Interstate [23 CFR 710.405]	FHWA
Control of Access [23 CFR 620.203(h)]	FHWA
Functional Replacement [23 CFR 710.509]	FHWA
Junkyard Control [23 CFR 751.25]	FHWA
Outdoor Advertising Sign Removal Projects [23 CFR 750.307]	FHWA
Protective Buying and Hardship Acquisition [23 CFR 710.307, 503]	FHWA
Public Interest Finding (PIF) - Disposal of federally funded ROW [23 CFR 710.403, 409]	FHWA
Railroad Agreement [23 CFR 646.216 (3)(d)]	Caltrans
Relinquishment of a Highway Facility for continued highway purposes [23 CFR 620.201, 202, 203]	FHWA
Request for Credits for Early Acquisition of ROW [23 CFR 710.501]	FHWA
Request for Direct Federal Acquisition [23 CFR 710.603]	FHWA

APPROVAL ACTION	Approval Authority
	High Profile Projects
Request for Federal Land Transfer [23 CFR 710.601]	FHWA
Request for Waivers [49 CFR 24.204(b)]	FHWA
Utility Agreement [23 CFR 645.113, 119]	Caltrans
Utility Relocation [23 CFR 645 subparts A and B]	FHWA
Withholding of Payments [23 CFR 710.203(c), 23 CFR 1.36]	FHWA
Environment	
Categorical Exclusion (CE) [23 CFR771.117 (c) and (d): SAFETEA-LU 6004; 23 CFR 771.117 all other CEs: SAFETEA-LU 6005]	Caltrans (1)
Certification of Public Hearing [23 CFR 771.111(h)(2)(vi)]	Caltrans
Draft Environmental Impact Statement (DEIS) [23 CFR 771.123; 23 CFR 771.123 (e); SAFETEA-LU 6005]	Caltrans (1)
Environmental Assessment (EA) Availability to the Public [23 CFR 771.1199(c); SAFETEA-LU 6005]	Caltrans (1)
Final Environmental Impact Statement (FEIS) [23 CFR 771.125; 23 CFR 771.125(c); SAFETEA-LU 6005]	Caltrans (1)
FEIS Legal Sufficiency [23 CFR 771.125(b); SAFETEA-LU 6005]	Caltrans (1)
Finding of No Significant Impact [23 CFR 771.121; SAFETEA-LU 6005]	Caltrans (1)
Noise Abatement [23 CFR 772]	Caltrans
Project-Level Transportation Conformity for CE processed under SAFETEA-LU 6004 MOU [40 CFR 93]	Caltrans (1)
Project-Level Transportation Conformity for CE, EA and Environmental Impact Statement (EIS) processed under SAFETEA-LU 6005 MOU [40 CFR 93]	FHWA
Record of Decision [23 CFR 771.127; SAFETEA-LU 6005]	Caltrans (1)
Re-evaluation on Approved Environmental Documents [23 CFR 771.129; SAFETEA-LU 6004 & 6005]	Caltrans (1)
Section 4(f) *De Minimis* Determination [SAFETEA-LU 6004, 6005 & 6009, 49 USC 303]	Caltrans (1)
Section 4(f) Individual [23 CFR 771.135; SAFETEA-LU 6004 & 6005]	Caltrans (1)
Section 4(f) Programmatic [23 CFR 771.135; SAFETEA-LU 6004 & 6005]	Caltrans (1)
Supplemental EIS [23 CFR 771.130; SAFETEA-LU 6005]	Caltrans (1)
Preliminary Design	
Consultant Selection [23CFR 172.5]	FHWA
Financial Plans for projects from $100M to $499M [SAFETEA-LU 1904]	Caltrans
High Risk ITS Project Development (i.e. SERF, SEMP, etc.) [23 CFR 940.11]	FHWA
Major Projects and TIFIA Loan Projects - Project Management Plan and Financial Plan Approval [SAFETEA-LU 1904]	FHWA
Low Risk ITS Project Development [23 CFR 940.11]	Caltrans

APPROVAL ACTION	Approval Authority
	High Profile Projects
New/Modified Interstate Access Determination of Engineering and Operations Acceptability [Feb 1998 Federal Register, Vol#28 - (minor access changes assigned to Caltrans, see letter dated September 15, 1994]	FHWA (Caltrans)
PIF – Airspace Clearance FAA [23 CFR 620.104]	FHWA
PIF - Use of Negotiated Consultant Contracts [23 CFR 172.5(3)]	FHWA
Request for Qualifications [23 CFR 636] Design Build, and Public Private Partnerships Statement of Qualifications	N/A
Detailed Design	
Approve preliminary plans for major and unusual structures	FHWA
Design Exceptions, non-Interstate (all other projects) [23 CFR 625.3]	Caltrans
Design Exceptions on the Interstate (13 controlling Criteria) [23 CFR 625.3]	FHWA
Experimental Features (Pilot and Demo) aka CEWP, design/sequencing	FHWA
New/Modified Interstate Access Control Change - Final Approval [Feb 1998 Federal Register, Vol#28]	FHWA
PIF – Statewide and project specific use of proprietary products and processes [23 CFR 635.411]. If statewide, FHWA approval.	Caltrans
PIF and Cost Justification Letter - Statewide and Project Specific - Concur in use of publicly furnished materials and expenses [23 CFR 635.407]. If statewide, FHWA approval.	Caltrans
ROW encroachments - Use and occupancy of acquired ROW [23 CFR 710.401, HDM 504.8]	FHWA
Value Engineering [23 CFR 627, SAFETEA-LU 1904]	Caltrans
PS&E and Advertising	
Authorize advertising for bids [23 CFR 635.112]	FHWA
Approval of Final Request for Proposal [23 CFR 636] Design Build and Public Private Partnerships	FHWA
Authorize utility or railroad force account work [23 CFR 645.113 & 646.216]	Caltrans
Bid Analysis (Engineer Estimates)	Caltrans
Consultant Agreements [23 CFR 172.7 - 172.9]	Caltrans
Contingencies greater than 5% and Supplemental Work Items greater than 10% (Project Delivery Directive Memo from Rick Land 10/14/2009)	FHWA
Exempt bridge from Coast Guard permit requirements [23 CFR 650.805]	FHWA
Hiring of consultant to serve in a "management" role [23 CFR 172.9(d)]	Caltrans
Noise - Reasonable and Feasible Determination for PS&E approval [23 CFR 772.11(g)]	Caltrans (1)
PIF - Advertising period less than three weeks [23 CFR 635.112]	FHWA
PIF - Use of contracting method other than competitive bidding [23 CFR 635.104 & 204]	FHWA
PIF - Use of Force Account [23 CFR 635.204, 205]	Caltrans
PIF - Use of Mandatory Borrow/Disposal Sites [23 CFR 635.407]	Caltrans

APPROVAL ACTION	Approval Authority
	High Profile Projects
PIF - Use of Publicly Owned Equipment [23 CFR 635.106]	Caltrans
PS&E [23 CFR 630.205, 23 USC 106]	FHWA
Supplemental Work Item Justification	FHWA
Utility and railroad agreements [23 CFR 645.113 & 646.216]	Caltrans
Warranties [23 CFR 635.413]	FHWA
Construction	
Accept Materials Certification [23 CFR 637.207] (Non-ITS elements)	Caltrans
Accept Materials Certification [23 CFR 637.207] (ITS elements)	Caltrans
Addenda during advertising period [23 CFR 635.112(c)]	Caltrans
Buy America Waiver [23 CFR 635.410, ISTEA Sec. 1041(a) & 1048(a), 41 CFR 10 (a-d)] Submit to HQ if >$50K.	FHWA
Concur in award of contract [23 CFR 635.114]	FHWA
Concur in rejection of all bids [23 CFR 635.114]	FHWA
Concur in settlement of contract claims [23 CFR 635.124; C&M Manual, Chapter 2]	Caltrans
Concur in termination of contracts [23 CFR 635.125]	FHWA
Construction engineering by local agency [23 CFR 635.105]	Caltrans
Contract time extensions [23 CFR 635.120 & 121]	Caltrans
Final inspection/acceptance of completed work [23 USC 114(a)]	Caltrans
Incentive/Disincentive Amount Justification [23 CFR 635.127]	Caltrans
Innovative Contracting Requirements [SEP 14 & 15]	FHWA
Liquidated Damages (rates subject to FHWA approval) [23 CFR 635.127]	Caltrans
Major changes and extra work [23 CFR 635.120]	FHWA
Minor changes and extra work [23 CFR 635.120]	Caltrans
Subcontracting Requirements [23 CFR 635.116(b)]	Caltrans
Research	
Experimental Features [FAPG Ch. 6, Sect G 6042.4]	FHWA
Emergency Relief	
ER Damage Assessments and Reports on the SHS [23 CFR 668, 23 USC 120 and 125]	FHWA
ER Damage Assessments and Reports off the SHS [23 CFR 668; 23 USC 120 and 125; ER Q&A, Question #5 Revised DAF and #8 Coordination with Other Agencies]	FHWA/ Caltrans
(1) Caltrans has assumed responsibility for these items under the Section 6004 and 6005 MOUs. The FHWA will reassume responsibility should any of the applicable agreements be terminated or expire. Additionally, the FHWA remains responsible for several projects that have been excluded from the assumption of NEPA responsibilities by Caltrans.	