



Noise Abatement Decision Report

Based on the US 101 Express Lanes Project Noise Study Report
(Illingworth & Rodkin, Inc., May 2013)

Santa Clara County, California

04-SCI-101 PM 16.00/52.55

04-SCI-85 PM 23.0/R24.1

Project No. 0412000459/EA 2G7100

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Submitted By:

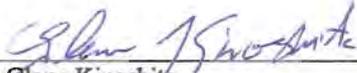


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List of Abbreviated Terms

Benefited residence	A dwelling unit expected to receive a noise reduction of at least 5 dBA from the proposed abatement measure
Caltrans	California Department of Transportation
Critical design receptor	The design receptor that is impacted and for which the absolute noise levels, build vs. existing noise levels, or achievable noise reduction will be at a maximum where noise abatement is considered
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
Date of public knowledge	The date of approval of the project CE, FONSI, or ROD.
dB	Decibel; a measure of sound pressure level on a logarithmic scale
dBA	A-weighted sound pressure level
DMS	dynamic message signs
ED	Environmental Document
FHWA	Federal Highway Administration
HOT	high occupancy toll
HOV	high occupancy vehicle
L_{eq}	Equivalent sound level (energy averaged sound level)
$L_{eq[1h]}$	A-weighted, energy average sound level during a 1-hour period
LT	Long-term
NAC	Noise abatement criteria
NADR	Noise Abatement Decision Report
NSR	Noise Study Report
Protocol	Caltrans Traffic Noise Analysis Protocol
Reasonable allowance	A single dollar value—a reasonable allowance per benefited receptor
SOV	single occupancy vehicle
SR	State Route
ST	Short-term
TCE	Temporary Construction Easement
TNM	Traffic Noise Model

TOS	Traffic Operations Systems
US 101	United States Highway 101
VTA	Santa Clara Valley Transportation Authority

1. Introduction

The Noise Abatement Decision Report (NADR) presents the preliminary noise abatement decision as defined in the Caltrans Traffic Noise Analysis Protocol (Protocol). This report has been approved by a California licensed professional civil engineer. The project level Noise Study Report (NSR) (Illingworth & Rodkin, Inc., May 2013) prepared for this project is hereby incorporated by reference.

1.1. Noise Abatement Assessment Requirements

Title 23, Code of Federal Regulations (CFR), Part 772 of the Federal Highway Administration (FHWA) standards (23 CFR 772) and the Protocol require that noise abatement be considered for projects that are predicted to result in traffic noise impacts. A traffic noise impact is considered to occur when future predicted design-year noise levels with the project “approach or exceed” Noise Abatement Criteria (NAC) defined in 23 CFR 772 (Table 1-1) or when the predicted design-year noise levels with the project substantially exceed existing noise levels. A predicted design-year noise level is considered to “approach” the NAC when it is within 1 decibel (dB) of the NAC. A substantial increase is defined as being a 12 dB increase above existing conditions.

Table 1-1: Federal Noise Abatement Criteria

Activity Category	Activity $L_{eq[h]}$ ¹	Evaluation Location	Description of Activities
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ²	67	Exterior	Residential.
C ²	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.

Table 1-1: Federal Noise Abatement Criteria

Activity Category	Activity ¹ Leq[h]	Evaluation Location	Description of Activities
F			Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G			Undeveloped lands that are not permitted.

23 CFR 772 requires that noise abatement measures that are reasonable and feasible and are likely to be incorporated into the project be identified before adoption of the final Environmental Document (ED).

The Protocol establishes a process for assessing the reasonableness and feasibility of noise abatement. Before publication of the draft ED, a *preliminary noise abatement decision* is made. The preliminary noise abatement decision is based on the *feasibility* of evaluated abatement and the *preliminary reasonableness determination*. Noise abatement is considered to be acoustically feasible if it provides noise reduction of at least 5 A-weighted decibels (dBA) at receptors subject to noise impacts. Other nonacoustical factors relating to geometric standards (e.g., sight distances), safety, maintenance, and security can also affect feasibility.

The overall reasonableness of noise abatement is determined by the following three factors:

- the viewpoints of benefited receptors,
- the cost of noise abatement, and
- the noise reduction design goal.

The preliminary reasonableness determination reported in this document is based on the noise reduction design goal and the cost of abatement. The viewpoints of benefited receptors are determined by a survey that is normally conducted during the public review period for the project ED.

Caltrans' noise reduction design goal is that a barrier must be predicted to provide at least 7 dB of noise reduction at one or more benefited receptors. The cost reasonableness of abatement is determined by calculating a cost allowance that is considered to be a reasonable amount of money to spend on abatement. This *reasonable allowance* is then compared to the engineer's cost estimate for the

abatement. If the engineer's cost estimate is less than the allowance and the abatement will provide at least 7 dB of noise reduction at one or more benefited receptors, then the preliminary determination is that the abatement is reasonable. If the cost estimate is higher than the allowance or if the design goal cannot be achieved, the preliminary determination is that abatement is not reasonable.

The NADR presents the preliminary noise abatement decision based on acoustical and nonacoustical feasibility factors, the design goal, and the relationship between noise abatement allowances and the engineer's cost estimate. The NADR does not present the final decision regarding noise abatement; rather, it presents key information on abatement to be considered throughout the environmental review process, based on the best available information at the time the draft ED is published. The final overall reasonableness decision will take this information into account, along with the results of the survey of benefited receptors conducted during the environmental review process.

At the end of the public review process for the ED, the final noise abatement decision is made and is indicated in the final ED. The preliminary noise abatement decision will become the final noise abatement decision unless compelling information received during the environmental review process indicates that it should be changed.

1.2. Purpose of the Noise Abatement Decision Report

The purpose of the NADR is to:

- summarize the conclusions of the NSR relating to acoustical feasibility, the design goal, and the reasonable allowances for abatement evaluated;
- present the engineer's cost estimate for evaluated abatement;
- present the engineer's evaluation of nonacoustical feasibility issues,
- present the preliminary noise abatement decision, and
- present preliminary information on secondary effects of abatement (impacts on cultural resources, scenic views, hazardous materials, biology, etc.).

The NADR does not address noise barriers or other noise-reducing treatments required as mitigation for significant adverse environmental effects identified under the California Environmental Quality Act (CEQA).

1.3. Project Description

The 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 United States Highway 101 (US 101) to high occupancy toll (HOT) lanes (hereafter known as express lanes). A second express lane would be added in each direction on US 101 within the overall project limits from the 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 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 mixed flow lanes from the express lane, and connect the SR 85 express lanes to the US 101 express 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.

1.3.1. Proposed Project

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 in the southbound direction.

It is anticipated that the project will require Temporary Construction Easements (TCEs). Right-of-way activities are currently being coordinated based on the approval of design exceptions. Utility relocations are anticipated due to conflicts with outside widening.

1.3.2. Construction Activities

In the section between the southern project limit and the SR 85 interchange in southern San Jose, where the median width varies between 46 and 86 feet, the 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 interchange and the Blossom Hill Road interchange in San Jose, and between the Mathilda Avenue interchange in Sunnyvale and the SR 85 interchange in Mountain View. Outside widening is proposed to accommodate dual express lanes between the Blossom Hill Road interchange and the Mathilda Avenue interchange.

Bridge widening and modifications to existing overcrossing abutments would be required at a number of grade separations and undercrossings. Widening of creek bridges is not proposed as part of this project.

Overhead signs and tolling devices would be installed in the median throughout the project corridor. The piles for the overhead signs would be up to 6 feet in diameter and extend to approximately 30 feet below ground surface. The piles for the tolling devices would be up to 2.5 feet in diameter and would extend to approximately 10 feet below ground surface. Some 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.

Trenching would be conducted along the outside edge of pavement for installation of conduits. The depth of trenching would be 3 to 5 feet below the roadway surface. Conduits would be jacked across the freeway to the median where needed to provide power and communication feeds to the new overhead signage and tolling equipment.

During construction, some lane and ramp closures would be required, but full freeway closures are not expected.

Biofiltration devices are proposed to provide storm water treatment for impervious areas that would be added or reworked as part of the project. These devices would be installed within the existing right-of-way.

1.4. Affected Land Uses

The existing noise environment throughout the project corridor varies by location, depending on site characteristics such as proximity to US 101 and other noise sources, the relative highway and local elevations and terrain, and any intervening structures or barriers. Single- and multi-family residences (Category B land uses), active recreational areas (Category C land uses), schools (Activity Category D land uses), churches (Activity Category D land uses), and hospitals (Activity Category D land uses) are located along the project corridor. Churches, schools and hospitals with active outdoor use areas were evaluated under Activity Category C. However, churches, schools and hospitals without active outdoor use areas were evaluated under Activity Category D.

Areas of potential noise impacts with respect to this project extend along US 101 to the north and south of the roadway throughout the majority of the project area. Regions within the study area where the proposed project could cause noise levels to approach or exceed the NAC under Future Build conditions have been identified. The proposed addition of express lanes as part of this project is not predicted to cause substantial noise increases.

1.4.1. Future Undeveloped Land Uses

The Protocol requires that the NSR discuss the development of future land uses in the vicinity of the project. Most of the areas adjacent to US 101 are built-out. Lists of approved and proposed projects in the Cities of Palo Alto, Mountain View, Sunnyvale, San Jose, and Morgan Hill were reviewed to identify undeveloped lands for which development is planned, designed, and programmed so that it may be considered approved prior to project approval. According to the Protocol, future development would be considered planned, designed, and programmed once it has received final development approval. The review focused on projects within

approximately 500 feet of the centerline of US 101 where traffic noise levels from the highway could dominate the noise environment. Projects located beyond this distance were excluded from further analysis.

Palo Alto

A review of the City of Palo Alto's new planning applications through October 2012 found no noise-sensitive projects proposed near US 101.

Mountain View

A review of the City of Mountain View Planning Division's project list identified two projects near US 101: 1) a 63-room hotel project located at 870 Leong Drive and 2) a project to construct six row houses at 115 Evandale Avenue.

The 63-room hotel project site is approximately 410 feet from the center of US 101 southbound and approximately 100 feet from a US 101 entrance ramp. Currently, there are no barriers to shield the noise from US 101. Noise levels measured and modeled at ST-1 could represent shielded land use areas at this proposed future project, while ST-2 represents noise levels from unshielded land use areas. From the results table in Chapter 6 of this report, the worst-hour noise levels would range from 62 dBA Leq[h] when shielded to 69 dBA Leq[h] or less when not shielded. Both approximations are below the NAC for Category E land uses.

The row houses located at 115 Evandale Avenue are approximately 550 feet from the centerline of US 101 southbound. This location is currently a vacant lot with a motor home lot and other residential land uses lying between the site and US 101. Additionally, an existing sound barrier, approximately 10 feet in height, shields the proposed future project from US 101 traffic noise. Noise levels measured and modeled at ST-2 are in the vicinity of this proposed future project and show the worst-hour noise levels to be approximately 69 dBA Leq[h] or less. This exceeds the NAC for Category B residential land uses, but since the proposed future project site is several rows back from ST-2, providing at least 5 dBA of attenuation, the noise levels are expected to be below the NAC.

Sunnyvale

A review of the City of Sunnyvale's development update list found one noise-sensitive project proposed near US 101. A General Plan Amendment Initiation request has been approved to change the Industrial building designation to Residential

Very High Density at 520 East Weddell Drive. Currently, the site is zoned for industrial use and is located approximately 150 feet from the centerline of US 101 northbound. Since this land use designation has been approved to change to residential land use, this location is considered to be noise-sensitive. This proposed future project is approximately 990 feet south of receptor ST-13; both noise-sensitive locations are within 500 feet of US 101. Therefore, the noise levels measured and modeled at ST-13 could represent the levels at the proposed future project site and show the worst-hour noise levels to be approximately 74 dBA Leq[h]. There are no existing sound barriers along US 101 to shield the noise for the land use, but noise abatement measures would be required since the worst-hour noise levels exceed the NAC for Category B and Category E land uses.

Santa Clara

A review of the City of Santa Clara Approved Major Projects list from January 2008 through June 2012 found no noise-sensitive projects proposed near US 101.

San Jose

A review of the City of San Jose Department of Planning, Building, and Code Enforcement's Development Activity Highlights and Five-Year Forecast (2013-2017) found no noise-sensitive projects proposed near US 101.

Morgan Hill

A review of the City of Morgan Hill Planning Division Project Status Report resulted in identifying a single noise-sensitive project proposed near US 101. A project to build 49 single-family units on undeveloped land in the northwest corner of the intersection at Walnut Grove Drive and San Pedro Avenue has been approved. The size of the land is 460 feet by 775 feet and ranges from 450 to 930 feet from US 101. ST-153, located at 16370 Saint John Court, is the receptor in the closest proximity to this proposed future project site. ST-153 is approximately 169 feet from the centerline of US 101 southbound and approximately 1,490 feet south of the proposed future project site. The worst-hour noise level was determined to be approximately 67 dBA Leq[h] or less. Since ST-153 is less than half the distance from US 101 than the proposed future project site, the actual levels measured at the site should be less than 67 dBA Leq[h], and therefore, within the Category B NAC requirement for residential land use.

2. Results of the Noise Study Report

The NSR for this project was prepared by Illingworth & Rodkin, Inc. in May 2013 and approved by Glen Kinoshita on May 6, 2013.

Noise measurements were conducted in October and November 2011 and March 2012 to document the noise environment at sensitive uses along the project corridor. Long-term (LT) reference noise measurements were made at 11 locations along the US 101 and SR 85 corridors to quantify the daily trend in noise levels and to establish the peak traffic noise hour.

One hundred forty-one (141) short-term (ST) noise measurements were made along the US 101 and SR 85 corridors in concurrent time intervals with the data collected at the long-term reference measurement sites. This method facilitates a direct comparison between both the short-term and long-term noise measurements and allows for the identification of the worst-hour noise levels at Category B and C land uses in the project vicinity where long-term noise measurements were not made.

The measurement locations were chosen to accurately represent areas exposed to potential traffic noise impacts through a review of project mapping, aerial photos, and field reconnaissance. Noise-sensitive Category B, Category C, and Category D land uses border the project corridor. As stated in the Protocol, noise abatement is only considered for Category B and Category C areas of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential outdoor use areas, parks and recreation areas, trails, etc. In situations where no exterior activity areas exist or are far from or shielded from the roadway, the interior NAC limit applies.

Following established methods for a traffic noise study, the short-term and long-term measurements, together with the measured traffic conditions, vehicle mix, and site-specific geographical information, were then used to determine future noise levels in the project area. Calculated and measured noise levels were compared to assess any differences, to calibrate or validate the FHWA's Traffic Noise Model (TNM) for use in determining noise levels with and without the project, and to consider any applicable noise abatement measures.

For purposes of this study, noise barriers that have been committed to as part of other projects but not yet constructed were treated as existing noise barriers. These barriers are identified and discussed in this report.

2.1. Noise Level Predictions and Assessment of Noise Impacts

Noise levels were predicted for 16 segments along US 101 between Oregon Expressway in Palo Alto and Tennant Avenue in Morgan Hill. Noise impacts were identified for outdoor use areas as well by the number of affected units, or receptors. Typical noise increases resulting from the project were calculated to be 0 to 1 dBA $L_{eq[1h]}$ higher than existing noise levels. Overall, the project would result in a 0 to 3 dBA increase in noise levels. This is not considered a substantial project-related noise level increase with regard to the Department's Protocol (meaning it would be less than 12 dBA, as described in Section 2.2.7.1).

Traffic noise modeling and impact assessment was conducted only at land uses where frequent human usage occurs and a lowered noise level would be of benefit. The primary focus of this study is on NAC activity Category B land uses that are not protected by Caltrans noise barriers. The noise barriers within the State right-of-way are typically constructed to meet the criteria in Chapter 1100 of the Highway Design Manual. The manual states that noise barriers should not be higher than 14 feet above the pavement when located within 15 feet of the edge of traveled way and 16 feet above ground when located more than 15 feet from the edge of traveled way.

Noise barriers were evaluated at the most acoustically effective location within the State right-of-way. Where US 101 is at, or elevated above receptors, the most acoustically effective location for a barrier is near the edge of shoulder, either on structure or at the top of slope. Where US 101 is located in a cut-section, the most acoustically effective location for a barrier is typically at the right-of-way. In many locations, receptors located behind existing noise barriers currently experience, or would experience in the future, worst-hour noise levels that approach or exceed the NAC. Increasing the height of the existing barriers (or replacement with larger noise barriers) was assessed in this analysis. Feasible barrier locations, as well as measured and modeled receptor locations, are indicated in Appendices A and B for receptors along the US 101 corridor.

2.1.1. Segment 1 – Oregon Expressway to SR 85 (North)

This segment contains residences (Category B), Greer Park (Category C), and the Emerson School and the Girls' Middle School (Category D) located southwest of US 101 from Oregon Expressway to San Antonio Road and from Rengstorff Avenue to

Shoreline Boulevard. Noise levels are expected to increase in this segment by 0 to 2 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are listed below:

- Single-family residences on Leghorn Street (R27 and R27A) and multi-family residences on Plymouth Street (R29) adjacent to southbound US 101 south of North Rengstorff Avenue;
- Residential neighborhood on Spring Street adjacent to southbound US 101 on-ramp from Old Middlefield Road (R34, R35, and R36);
- Sterling Park residential development along West Bayshore Road (R24); and
- Greer Park (R20 and R21).

Existing 10-foot to 16-foot noise barriers shield the majority of these land uses, except for Greer Park, the Emerson School, or the Girls' Middle School. Five noise barriers (SW1–SW5) were evaluated in 2008 to abate noise impacts as part of the US 101 Auxiliary Lanes Project Noise Study Report (Illingworth and Rodkin 2008, EA 04-4A3300) and were analyzed for the US 101 Express Lanes Project as SWA through SWE.

2.1.2. Segment 2 – SR 85 (North) to SR 237

This segment contains residences (Category B) and baseball fields at Moffett Federal Airfield and Sunnyvale Golf Course (Category C). Noise levels are expected to increase in this segment by 1 to 3 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- Single-family residences located south of US 101 between SR 85 and Ellis Street (ST-2 and LT-1);
- Sunnyvale Municipal Golf Course (R-4a and R-4b); and
- Baseball fields at Moffett Federal Airfield located north of US 101 (R-2a and R-2b).

The existing noise barrier that currently shields residences located south of US 101 between SR 85 and Ellis Street is already at the maximum allowable height. As a result, additional noise abatement was not considered for residences represented by receptors ST-2 and LT-1. Two new barriers, SW1 and SW2, were assessed to abate noise impacts at the baseball fields at Moffett Federal Airfield and the Sunnyvale Municipal Golf Course.

2.1.3. Segment 3 – SR 237 to Lawrence Expressway

This segment contains residences (Category B), places of worship (Category D), and hotels and motels (Category E). Noise levels are anticipated to increase in this segment by 1 to 3 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- America's Best Value Inn (ST-13);
- Single- and multi-family residences located north and south of US 101 between North Fair Oaks and Lawrence Expressway (ST-19, ST-20, ST-21, ST-22, ST-24, ST-25, ST-26 and ST-27); and
- Sun Ridge Apartments located south of US 101 between SR 237 and Fair Oaks Avenue (LT-2).

No exterior uses were identified at the America's Best Value Inn (ST-13); therefore, noise abatement was not considered for this location. The existing noise barriers that shield residences located south of US 101 between Mathilda Avenue and Lawrence Expressway (SB Walls 2 and 3) are already at the maximum allowable heights. As a result, additional noise abatement was not considered at impacted receptors in these areas. Single and multi-family residences located north of US 101 between North Fair Oaks Avenue and Lawrence Expressway are shielded by an existing 12-foot high wall (NB Wall 21). Noise abatement in the form of a replacement sound wall was considered for this area.

2.1.4. Segment 4 – Lawrence Expressway to San Tomas/Montague Expressway

This segment contains residences (Category B) and the San Tomas Aquino Creek Trail (Category C). Noise levels are anticipated to increase in this segment by 1 to 2 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- Avalon Silicon Valley Apartments (ST-30);
- First-row single-family residences along Wildwood Avenue north of US 101; and
- San Tomas Aquino Creek Trail (LT-4).

Existing 12-foot high noise barriers currently shield the Avalon Silicon Valley Apartments (SB Wall 4) and the residences along Wildwood Avenue (NB Wall 20). A barrier does not currently shield the San Tomas Aquino Creek Trail. Noise abatement in the form of replacement sound walls for SB Wall 4 and NB Wall 20 was considered. Two new sound walls, SW3a and SW3b, were assessed to abate noise impacts at the San Tomas Aquino Creek Trail.

2.1.5. Segment 5 – San Tomas/Montague Expressway to SR 87

This segment contains the Guadalupe River Trail (Category C) and La Quinta Inn (Category E). No Category B land uses are located within this segment. Noise levels are anticipated to increase in this segment by 0 to 2 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B :

- Guadalupe River Trail (ST-38).

A barrier does not currently shield the Guadalupe River Trail. Two new sound walls, SW4a and SW4b, were assessed to abate noise impacts at the Guadalupe River Trail.

2.1.6. Segment 6 – SR 87 to I-880

This segment contains various airport hotels (Category E). No Category B land uses are located within this segment. All noise sensitive receptors are predicted to experience future Build noise levels that are more than 10 dBA below the NAC. As a result, noise abatement was not considered in this area.

2.1.7. Segment 7 – I-880 to East Taylor Street

This segment contains residences (Category B). Noise levels are anticipated to increase in this segment by 0 to 1 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- First-row residences south of US 101 between Oakland Road and Taylor Street (ST-44, ST-45, ST-47, and ST-49).

Many of these noise sensitive uses are currently shielded by existing 8- to 12-foot-high sound walls. A new sound wall, SW5, and replacement sound walls, SB Walls 5 and 6, SB Walls 7 and 8, were considered to abate noise impacts in these areas.

2.1.8. Segment 8 – East Taylor Street to I-280/680

This segment contains residences (Category B), a school and several churches (Category C). Noise levels are anticipated to increase in this segment by 0 to 2 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- Watson Park (R-50a, R-50b, and R-50c);
- Five Wounds School (ST-55); and
- First-row single- and multi-family residences on northbound and southbound sides of US 101 (ST-51, ST-52, ST-53, ST-54, ST-57, ST-58, ST-59, ST-60, ST-62, ST-64, LT-6 and R-62a).

Watson Park is not currently shielded by an existing barrier. The remaining Category B and C land uses are shielded by existing 10 to 14-foot high barriers. A new sound wall, SW6, was assessed to abate noise impacts at Watson Park. Replacement sound walls for existing SB Walls 9, 10, 11, 13, and existing NB Walls 14, 15, 16, 17, 18, were assessed to abate noise impacts at the Five Wounds School and at the residences.

2.1.9. Segment 9 – I-280/680 to Tully Road

This segment contains residences (Category B); the Fair Swim Center (Category C); and a Best Western (Category E). Noise levels are anticipated to increase in this segment by 0 to 1 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- First row residences (ST-68, ST-69, ST-70, ST-71, ST-72, ST-73, ST-74, ST-76, ST-77, and LT-8).

With the exception of ST-68, which is representative of single family residences located along the northbound off-ramp to Story Road, all of these noise sensitive uses are currently shielded by existing 12 to 16-foot high sound walls. A new soundwall, SW7, was assessed to abate noise impacts at single-family residences represented by ST-68. Replacement sound walls for existing SB Walls 16 and 17, and existing NB Walls 11 and 12 were assessed to abate noise impacts at the remaining residences.

2.1.10. Segment 10 – Tully Road to East Capitol Expressway

This segment contains residences (Category B). Noise levels are anticipated to increase in this segment by 0 to 1 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- First-row single-family residences located southwest of US 101 (ST-88, ST-90, and ST-94); and
- Single- and multi-family residences located northeast of US 101 (ST-85, ST-86, ST-91, and ST-93).

Currently, 7 to 14-foot high noise barriers shield residences within this segment. Replacement sound walls for existing NB Walls 9 and 10, and SW Walls 18 and 19 were assessed to abate noise impacts at these residences.

2.1.11. Segment 11 – East Capitol Expressway to Hellyer Avenue

This segment contains residences (Category B) and the Ramblewood Elementary School and Hellyer County Park (Category C). Noise levels are anticipated to increase in this segment by 1 to 2 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- Single-family residences located east of US 101 between Yerba Buena Road and Hellyer Avenue (ST-105, R-105a, R-105b, R-105c, and R-106a).

These residences are elevated above the freeway and are not shielded by an existing noise barrier. Two new barriers, SW8 and SW9, were assessed to abate noise impacts at these residences.

2.1.12. Segment 12 – Hellyer Avenue to Blossom Hill Road

This segment contains residences (Category B) and the Samuel Stipe Elementary School and Hellyer County Park (Category C). Noise levels are anticipated to increase in this segment by 1 to 2 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- First-row single-family residences located along Snow Drive, west of US 101 and south of Hellyer County Park (ST-109 and ST-113);
- First-row single-family homes located west of US 101 along Great Oaks Drive (ST-119 and ST-121);
- First-row single-family homes located east of US 101 between Fullerton Drive and the on-ramp from Silver Creek Valley Road (ST-115, ST-117, ST-118, and ST-120).

These residences are shielded by existing barriers that are already at the maximum allowable height. Therefore, noise abatement was not considered.

2.1.13. Segment 13 – Blossom Hill Road to SR 85 (South)

This segment contains residences (Category B). Noise levels are anticipated to increase in this segment by 2 to 3 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- First-row single-family residences located west of US 101 along Silver Leaf Road (ST-128, ST-130, LT-11, and LT-12); and
- Coyote Creek Trail (R-127a and R-128a).

Coyote Creek Trail is not currently shielded by an existing barrier. The residences are shielded by an existing 12-foot high sound wall. A new soundwall, SW18, was assessed to abate noise impacts at Coyote Creek Trail. A replacement wall for existing SB Wall 31 was assessed to abate noise impacts at the residences.

2.1.14. Segment 14 – SR 85 (South) to Bailey Avenue

This segment contains residences (Category B) and Coyote Creek Trail and the Parkway Fishing Lakes (Category C). Noise levels are anticipated to increase in this segment by 0 to 2 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- Single-family residences located east of US 101 and north of Bailey Road (R-139b and R-139c).

The single-family residences located east of US 101 and north of Bailey Road are not shielded by an existing sound wall. A new sound wall, SW10, was assessed to abate noise impacts at the residences.

2.1.15. Segment 15 – Bailey Avenue to Cochrane Road

This segment contains residences (Category B), the Coyote Creek Trail, and the Coyote Creek Golf Club (Category C). Noise levels are anticipated to increase in this segment by 1 to 2 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- Coyote Creek Golf Course (LT-14, R-142a, R-142b, R-142c, and R-142d);
- Single-family residences located on both sides of US 101 near Burnett Avenue (R-143a, R-143b, ST-144, R-144a, and ST-145).

These noise sensitive areas are not shielded by existing barriers. Four new sound walls, SW11, SW12, SW13 and SW13 were assessed to abate noise impacts at Coyote Creek Golf Course and the residences.

2.1.16. Segment 16 – Cochrane Road to Tennant Avenue

This segment contains residences (Category B) and various hotels and motels (Category E). Noise levels are anticipated to increase in this segment by 0 to 1 dBA $L_{eq[h]}$ from existing to 2035 Build conditions.

The locations that are predicted to approach or exceed the NAC are described below and depicted in Appendix B:

- Single-family residences throughout this segment (ST-146, R-146a, ST-147, ST-148, R-148a, R-149a, ST-150, and ST-153).

Three new noise barriers, SW15, SW16, and SW17, and two replacement barriers for existing SB Wall 33 and existing SB Wall 34 were assessed to abate noise impacts at the single-family residences.

2.2. Proposed Noise Abatement Options

Noise abatement, in the form of new noise barriers, was assessed for receptors with noise levels that exceed state or federal thresholds and areas of frequent human use where a lowered noise level would be of benefit. A total of 47 potential barriers were evaluated for feasibility at Category B and Category C land uses where the NAC would be approached or exceeded. According to the Protocol, noise abatement must be predicted to provide at least a 5 dB minimum reduction to be considered feasible. Additionally, the Protocol acoustical design goal states that the noise barrier must provide at least 7 dB of noise reduction at one or more benefited receptors. Noise abatement measures that provide noise reduction of more than 5 dB are encouraged as long as they meet the reasonableness guidelines. Reasonableness is determined based on whether a proposed noise abatement measure is acceptable to the benefited receptors and within the cost allowance per benefited receptor. The cost is based on the current allowance per benefited receptor of \$55,000, which is set by the Protocol.

Once a noise barrier achieved the minimum of a 5 dB reduction at a given receptor and achieved the 7 dB noise reduction design goal for at least one receptor, the reasonableness allowance was determined. Table 2-1 lists the feasible barriers and summarizes the reasonable allowance calculations made for each feasible noise barrier that met the 7 dB noise reduction design goal.

Table 2-1: Summary of Barrier Evaluation from the Noise Study Report

Sound Wall	Approximate Stationing/Location	Barrier Height (feet)	Acoustically Feasible?	Number of Benefited Receptors	Reasonable Allowance per Receptor	Total Reasonable Monetary Allowance
SWA	SB 51+00 to 59+00 (800 feet)	12*	Yes	4	\$55,000	\$220,000
		14*	Yes	4	\$55,000	\$220,000
		16*	Yes	4	\$55,000	\$220,000
SWC	SB 169+50 to	10*	Yes	4	\$55,000	\$220,000

Sound Wall	Approximate Stationing/Location	Barrier Height (feet)	Acoustically Feasible?	Number of Benefited Receptors	Reasonable Allowance per Receptor	Total Reasonable Monetary Allowance
	177+50 (800 feet)	12*	Yes	4	\$55,000	\$220,000
		14*	Yes	4	\$55,000	\$220,000
		16*	Yes	4	\$55,000	\$220,000
SW1	SB EOS, between Ellis Street on-ramp and SR 237 (3,150 feet)	8	Yes	7	\$55,000	\$385,000
		10*	Yes	7	\$55,000	\$385,000
		12*	Yes	7	\$55,000	\$385,000
		14*	Yes	7	\$55,000	\$385,000
		16*	Yes	7	\$55,000	\$385,000
SW3a	SB EOS, north of Montague Expwy (825 feet)	12*	Yes	1	\$55,000	\$55,000
		14*	Yes	1	\$55,000	\$55,000
		16*	Yes	1	\$55,000	\$55,000
SW3b	NB EOS, north of Montague Expwy (955 feet)	12*	Yes	1	\$55,000	\$55,000
		14*	Yes	1	\$55,000	\$55,000
		16*	Yes	1	\$55,000	\$55,000
SW5	SB EOS, west of East Taylor Street (675 feet)	10	Yes	1	\$55,000	\$55,000
		12	Yes	1	\$55,000	\$55,000
		14*	Yes	1	\$55,000	\$55,000
		16*	Yes	1	\$55,000	\$55,000
SW6	SB EOS, east of East Taylor Street (1,600 feet)	10*	Yes	6	\$55,000	\$330,000
		12*	Yes	8	\$55,000	\$440,000
		14*	Yes	8	\$55,000	\$440,000
		16*	Yes	8	\$55,000	\$440,000
SW18	NB EOS, commercial uses to Blossom Hill Road off-ramp (2,770 feet)	8	Yes	2	\$55,000	\$110,000
		10	Yes	2	\$55,000	\$110,000
		12*	Yes	2	\$55,000	\$110,000
		14*	Yes	2	\$55,000	\$110,000
		16*	Yes	2	\$55,000	\$110,000
SW11	SB EOS, north of Coyote Creek Golf Road (8,780 feet)	14*	Yes	7	\$55,000	\$385,000
		16*	Yes	7	\$55,000	\$385,000
SW13	SB EOS, near Burnett Avenue (3,650 feet)	8	Yes	8	\$55,000	\$440,000
		10*	Yes	8	\$55,000	\$440,000
		12*	Yes	9	\$55,000	\$495,000
		14*	Yes	9	\$55,000	\$495,000
		16*	Yes	9	\$55,000	\$495,000
SW15	SB EOS, north of Dunne Avenue and Existing SB Wall 33 (3,130 feet)	8	Yes	8	\$55,000	\$440,000
		10	Yes	8	\$55,000	\$440,000
		12*	Yes	9	\$55,000	\$495,000
		14*	Yes	9	\$55,000	\$495,000
		16*	Yes	9	\$55,000	\$495,000
SW16	NB EOS, north of Main Street (1,120 feet)	14*	Yes	2	\$55,000	\$110,000
		16*	Yes	2	\$55,000	\$110,000

*Barrier is calculated to break line-of-sight between truck stacks and receptors.

Sound Wall SWA: SWA would be located along the southbound US 101 right-of-way from approximately Station 51+00 to 59+00. This wall would feasibly abate traffic noise for Greer Park (4 benefited receptors), represented by Receptors R20 and

R21. A minimum barrier height of 10 feet would be necessary to be considered feasible, and a minimum height of 12 feet would be required to meet the noise reduction design goal of 7 dBA for at least one receptor and provide a break in the line-of-sight to truck exhaust stacks. The reasonable allowance calculated for barriers of 12, 14, and 16 feet is \$220,000.

Sound Wall SWC: SWC would be located along the southbound US 101 right-of-way south of N. Rengstorff Avenue from approximately Station 169+50 to 177+50. This wall would feasibly abate traffic noise for four single-family homes represented by Receptors R27 and R27A. A minimum barrier height of 8 feet would be required to achieve a feasible noise reduction. A 10-foot barrier would provide at least 7 dBA of noise reduction, meeting the reasonableness design goal, and would provide a break in the line-of-sight to truck exhaust stacks. The reasonable allowance calculated for barrier heights of 10 to 16 feet in height is \$220,000.

Sound Wall SW1: SW1 was analyzed at the southbound US 101 edge of shoulder between the Ellis Street on ramp to US 101 and SR 237 over an approximate distance of 3,150 feet. This wall would feasibly abate traffic noise at the golf course, as represented by the 7 holes closest to US 101 that are anticipated to exceed the NAC, and would meet the 7 dB noise reduction goal at a minimum height of 8 feet. The barrier would break line-of-sight between truck stacks and the golf course at a minimum height of 10 feet. The reasonableness allowance calculated for barrier heights of 8 to 16 feet is \$385,000.

Sound Walls SW3a and SW3b: SW3a and SW3b were analyzed at both the southbound and northbound US 101 edge of shoulder over an approximate distance of 825 and 955 feet, respectively. These walls would feasibly abate traffic noise at the trail and would meet the 7 dB noise reduction goal at a minimum height of 12 feet. The barriers would break line-of-sight between truck stacks and the trail at a minimum height of 12 feet. The reasonableness allowance calculated for barrier heights of 12 to 16 feet is \$55,000 for each barrier.

Sound Wall SW5: SW5 was analyzed at the southbound US 101 edge of shoulder over an approximate distance of 675 feet. This wall would feasibly abate traffic noise at the common use area and would meet the 7 dB noise reduction goal at a minimum height of 10 feet. A minimum barrier height of 14 feet would be necessary to break the line-of sight between truck stacks and receptors in the common area. The reasonableness allowance calculated for barrier heights of 10 to 16 feet is \$55,000.

Sound Wall SW6: SW6 was analyzed at the southbound US 101 edge of shoulder, east of East Taylor Street. SW6 is planned as an approximate 1,600 foot noise barrier and would feasibly abate traffic noise for Watson Park, as represented by ST-50, R-50a, R-50b, R-50c, and R-50d. The 7 dB noise reduction goal would be met at a minimum height of 10 feet. SW6 would break the line-of-sight between truck stacks and first row receptors at a minimum height of 8-feet. The reasonableness allowance calculated for SW6 at barrier heights of 10 to 16 feet is \$330,000 to \$440,000.

Sound Wall SW18: SW18 was analyzed at the northbound US 101 edge of shoulder, between commercial uses located off Enzo Drive and the off-ramp to Blossom Hill Road. The reasonableness of noise abatement will likely be affected by the limited number of benefitted receptors. SW18 is planned as an approximate 2,770 foot long noise barrier and would feasibly abate traffic noise for this portion of Coyote Creek Trail, as represented by R-127a and R-128a. The 7 dB noise reduction goal would be met at a minimum height of 8 feet. The barrier would break line-of-sight between truck stacks and the trail at a minimum height of 12 feet. The reasonableness allowance calculated for SW18 at barrier heights of 8 to 16 feet is \$110,000.

Sound Wall SW11: SW11 was analyzed at the edge of shoulder of the southbound side of US 101, north of Coyote Creek Golf Road. SW11 would be approximately 8,780 feet in length and would feasibly abate traffic noise for the portion of the golf course on the west side of US 101. The 7 dB noise reduction goal would be met at a minimum height of 14 feet. SW11 would break the line-of-sight between truck stacks and the golf course at a minimum height of 12 feet. The reasonableness allowance calculated for SW11 at barrier heights of 14 to 16 feet is \$385,000.

Sound Wall SW13: SW13 was analyzed at the edge of southbound side of US 101 in the vicinity of Burnett Avenue. SW13 would be approximately 3,650 feet in length and would feasibly abate traffic noise for residences on the western side of US 101. The 7 dB noise reduction design goal would be met at a minimum height of 8 feet. SW13 would break the line-of-sight between truck stacks and first row residences at a minimum height of 10 feet. The reasonableness allowance calculated for SW13 at barrier heights of 8 to 16 feet is \$440,000 to \$495,000.

Sound Walls SW15 and SW16: SW15 would be approximately 3,130 feet in length and would feasibly abate traffic noise for residences on the western side of US 101. The 7 dB noise reduction goal would be met at a minimum height of 8 feet. SW15 would break the line-of-sight between truck stacks and residences at a minimum

height of 12 feet. The reasonableness allowance calculated for SW15 at barrier heights of 8 to 16 feet is \$440,000 to \$495,000. SW16 would be approximately 1,120 feet in length and would feasibly abate traffic noise for residences on the eastern side of US 101, north of E. Main Street. The reasonableness allowance calculated for SW16 at barrier heights of 14 to 16 feet is \$110,000.

3. Preliminary Noise Abatement Decision

3.1. Summary of Key Information

A preliminary noise abatement analysis was conducted that identified the feasibility of constructing or replacing noise barriers along US 101 to reduce traffic noise levels. Noise barriers were evaluated at the most acoustically effective location within the State right-of-way.

Table 3-1 lists the potential barriers that met the Protocol acoustical design goal (at least 7 dB of noise reduction at one or more benefited receptors) in areas where the NAC was approached or exceeded. Table 3-1 also identifies the total reasonableness allowance for each barrier and the estimated barrier construction cost. The total reasonableness allowance for each feasible barrier ranged from \$55,000 to \$495,000 depending on the barrier height and number of benefited receptors. In all cases, the estimated construction costs of the walls well exceeded the combined reasonableness allowance for the benefited receptors. None of the barriers evaluated meet both the feasibility and reasonableness criteria described in Section 1.1.

Table 3-1: Summary of Key Abatement Information

Sound Wall	Barrier Height (feet)	Acoustically Feasible?	Number of Benefited Receptors	Total Reasonable Monetary Allowance	Estimated Construction Cost	Cost Less than Allowance?
SWA	12*	Yes	4	\$220,000	\$960,000	No
	14*	Yes	4	\$220,000	\$1,120,000	No
	16*	Yes	4	\$220,000	\$1,280,000	No
SWC	10*	Yes	4	\$220,000	\$800,000	No
	12*	Yes	4	\$220,000	\$960,000	No
	14*	Yes	4	\$220,000	\$1,120,000	No
	16*	Yes	4	\$220,000	\$1,280,000	No
SW1	8	Yes	7	\$385,000	\$2,520,000	No
	10*	Yes	7	\$385,000	\$3,150,000	No
	12*	Yes	7	\$385,000	\$3,780,000	No
	14*	Yes	7	\$385,000	\$4,410,000	No
	16*	Yes	7	\$385,000	\$5,040,000	No
SW3a	12*	Yes	1	\$55,000	\$990,000	No
	14*	Yes	1	\$55,000	\$1,155,000	No
	16*	Yes	1	\$55,000	\$1,320,000	No
SW3b	12*	Yes	1	\$55,000	\$1,146,000	No
	14*	Yes	1	\$55,000	\$1,337,000	No
	16*	Yes	1	\$55,000	\$1,528,000	No
SW5	10	Yes	1	\$55,000	\$675,000	No

Sound Wall	Barrier Height (feet)	Acoustically Feasible?	Number of Benefited Receptors	Total Reasonable Monetary Allowance	Estimated Construction Cost	Cost Less than Allowance?
	12	Yes	1	\$55,000	\$810,000	No
	14*	Yes	1	\$55,000	\$945,000	No
	16*	Yes	1	\$55,000	\$1,080,000	No
SW6	10*	Yes	6	\$330,000	\$1,600,000	No
	12*	Yes	8	\$440,000	\$1,920,000	No
	14*	Yes	8	\$440,000	\$2,240,000	No
	16*	Yes	8	\$440,000	\$2,560,000	No
SW18	8	Yes	2	\$110,000	\$2,216,000	No
	10	Yes	2	\$110,000	\$2,770,000	No
	12*	Yes	2	\$110,000	\$3,324,000	No
	14*	Yes	2	\$110,000	\$3,878,000	No
	16*	Yes	2	\$110,000	\$4,432,000	No
SW11	14*	Yes	7	\$385,000	\$12,292,000	No
	16*	Yes	7	\$385,000	\$14,048,000	No
SW13	8	Yes	8	\$440,000	\$2,920,000	No
	10*	Yes	8	\$440,000	\$3,650,000	No
	12*	Yes	9	\$495,000	\$4,380,000	No
	14*	Yes	9	\$495,000	\$5,110,000	No
	16*	Yes	9	\$495,000	\$5,840,000	No
SW15	8	Yes	8	\$440,000	\$2,504,000	No
	10	Yes	8	\$440,000	\$3,130,000	No
	12*	Yes	9	\$495,000	\$3,756,000	No
	14*	Yes	9	\$495,000	\$4,832,000	No
	16*	Yes	9	\$495,000	\$5,008,000	No
SW16	14*	Yes	2	\$110,000	\$1,568,000	No
	16*	Yes	2	\$110,000	\$1,792,000	No

Note: Total reasonableness allowance was calculated based on the allowance of \$55,000 per benefited receptor, which is set by the Protocol. Estimated construction cost was calculated based on the square footage of the analyzed wall multiplied by an estimated construction cost of \$100 per square foot. The estimated construction cost ranges based on the length and height of the analyzed wall.

3.2. Preliminary Recommendation and Decision

As none of the barriers evaluated meet the feasibility and reasonableness criteria established by 23 CFR 772, no noise abatements are proposed.

The preliminary noise abatement decision presented in this report is based on preliminary project alignments and profiles, which may be subject to change. In addition, other projects have identified commitments to construct noise barriers, as described in this report, and the conclusions in this NADR assume that those barriers will be completed independent of the US 101 Express Lanes Project. As such, the physical characteristics of noise abatement described herein also may be subject to change. If pertinent parameters change substantially during the final project design, the preliminary noise abatement decision may be changed or eliminated from the final

project design. A final decision to construct noise abatement will be made upon completion of the project design.

The preliminary noise abatement decision presented here will be included in the draft ED, which will be circulated for public review.

4. Secondary Effects of Abatement

No noise abatement is recommended in the preliminary noise abatement decision. Therefore, no secondary effects on cultural resources, scenic views, hazardous materials, biology, or other resources would occur.

5. References

California Department of Transportation (Caltrans). 2011. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects. May 2011.

Illingworth and Rodkin, Inc. 2013. Noise Study Report. US 101 Express Lanes Project, Santa Clara County. District 4, US 101 PM 16.00/52.55; SR 85 PM 23.0/R24.1. EA 2G7100. Prepared for Caltrans under subcontract to URS. May 2013.

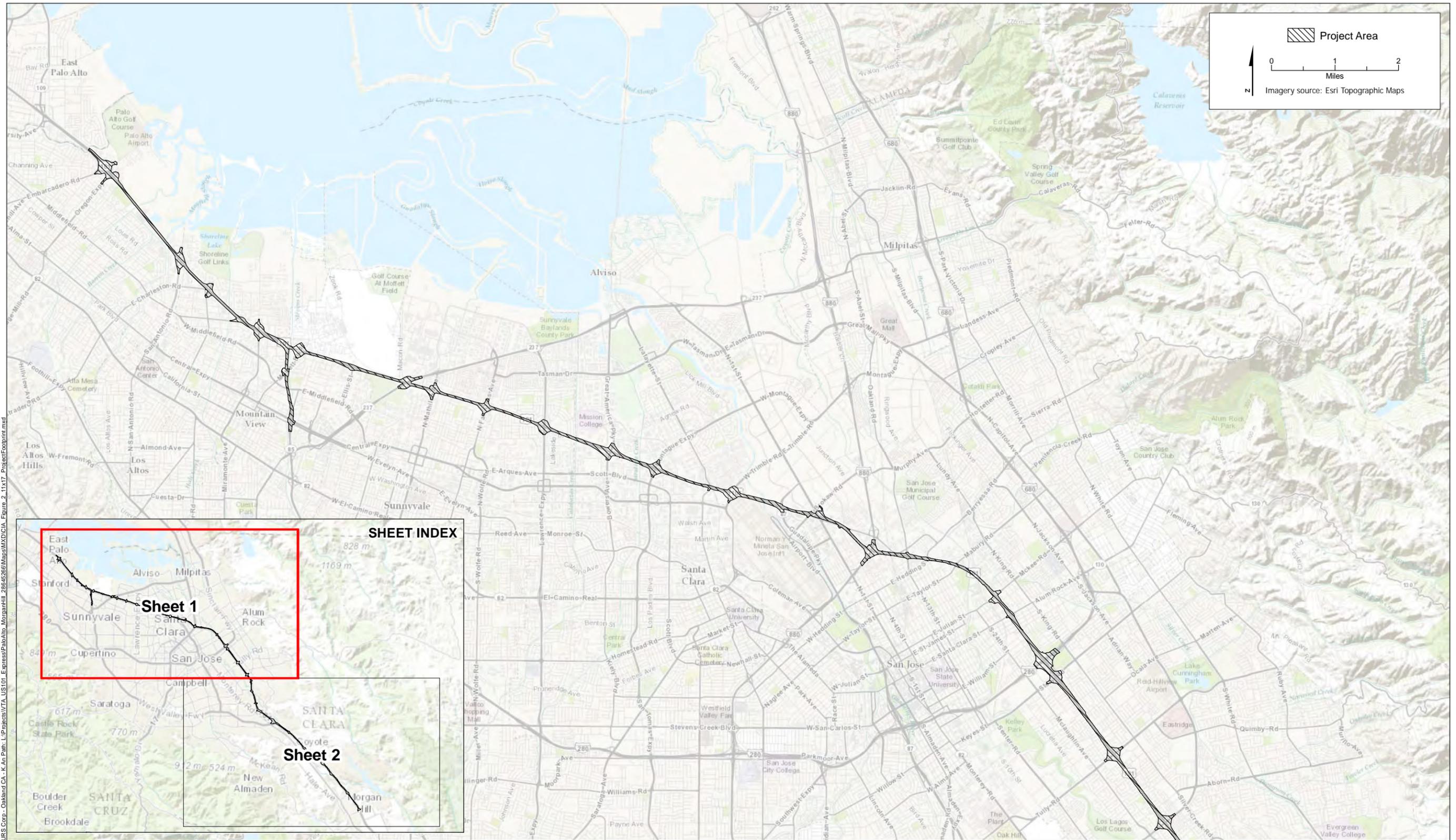
Illingworth and Rodkin, Inc. 2008. Noise Study Report. US 101 Auxiliary Lanes. District 4, US 101 PM 48.97/52.17. Prepared for Caltrans under subcontract to URS. November 2008.

Figures



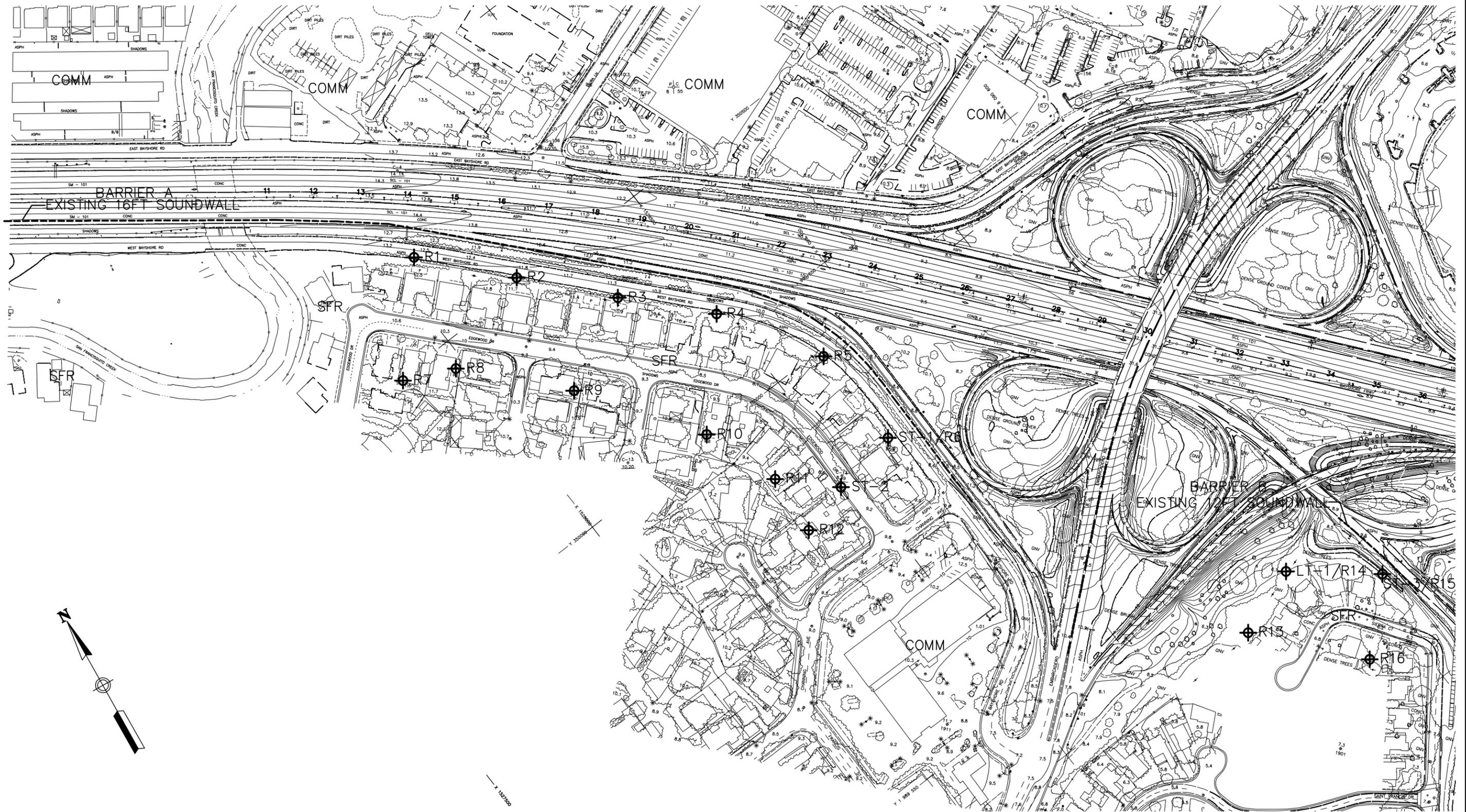
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Figure 1
Project Location and Regional Setting



URS Corp - Oakland CA - K-An Path - L-Projects\VT- US101 Express\Palto\Map\Monarch\Hill_28645266\Map\MXD\CIA_Figure_2_1x17_ProjectFootprint.mxd

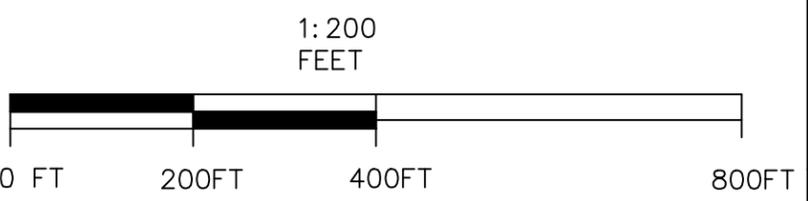
Appendix A
US 101 Segment 1 Receptor Locations and Noise
Barriers



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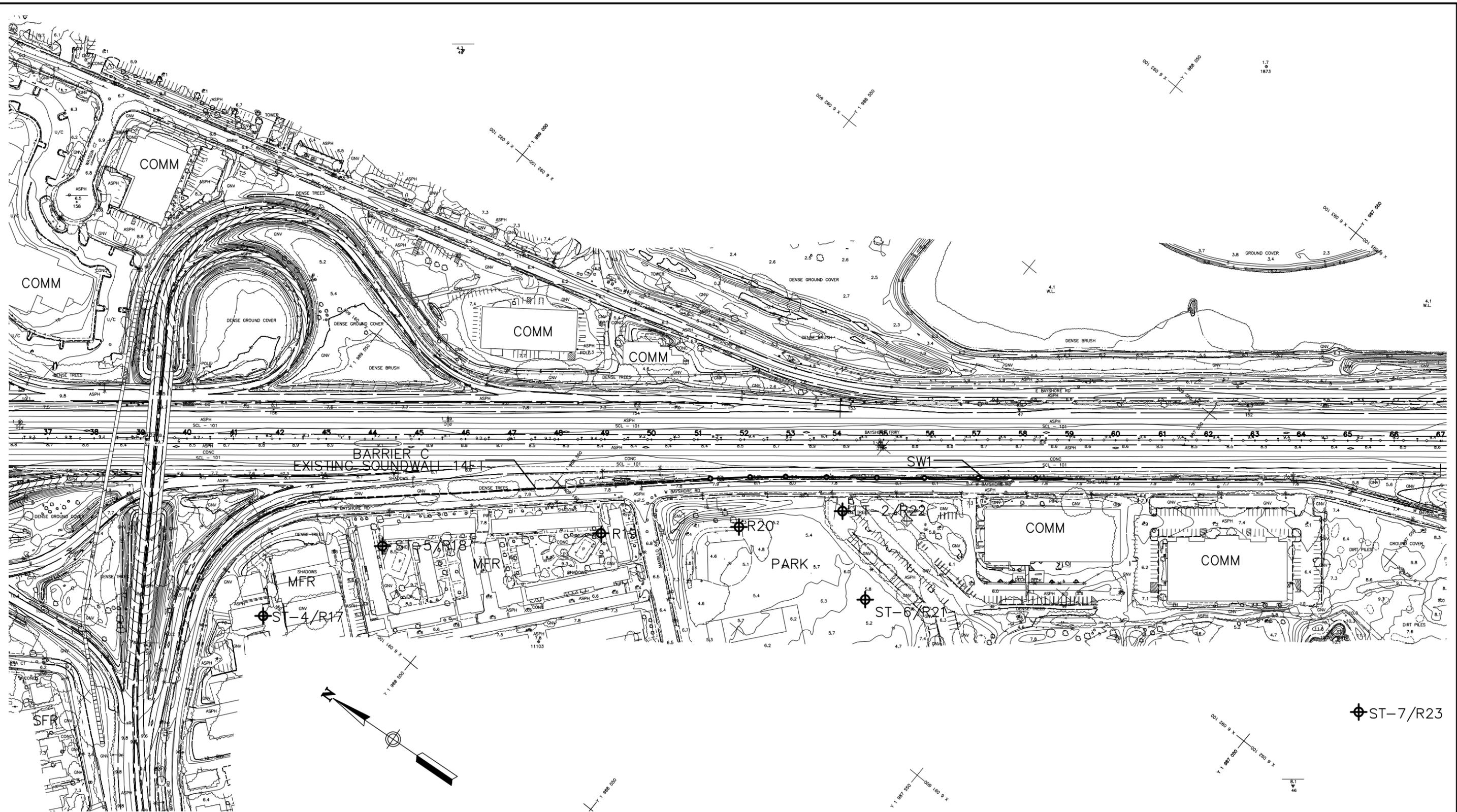
- ⊕ RECIEVER LOCATION
- FEASIBLE SOUNDWALL
- - - EXISTING SOUNDWALL

- SFR - SINGLE FAMILY RESIDENCE
- MFR - MULTI-FAMILY RESIDENCE
- COMM - COMMERCIAL



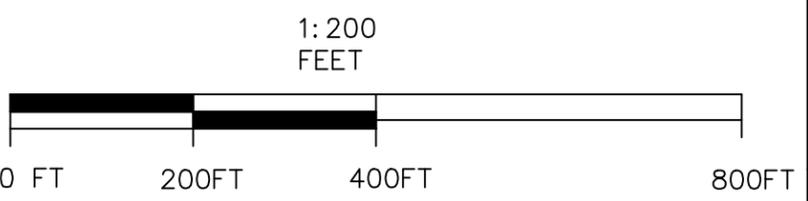
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SENSITIVE RECEIVER &
NOISE BARRIER LOCATIONS

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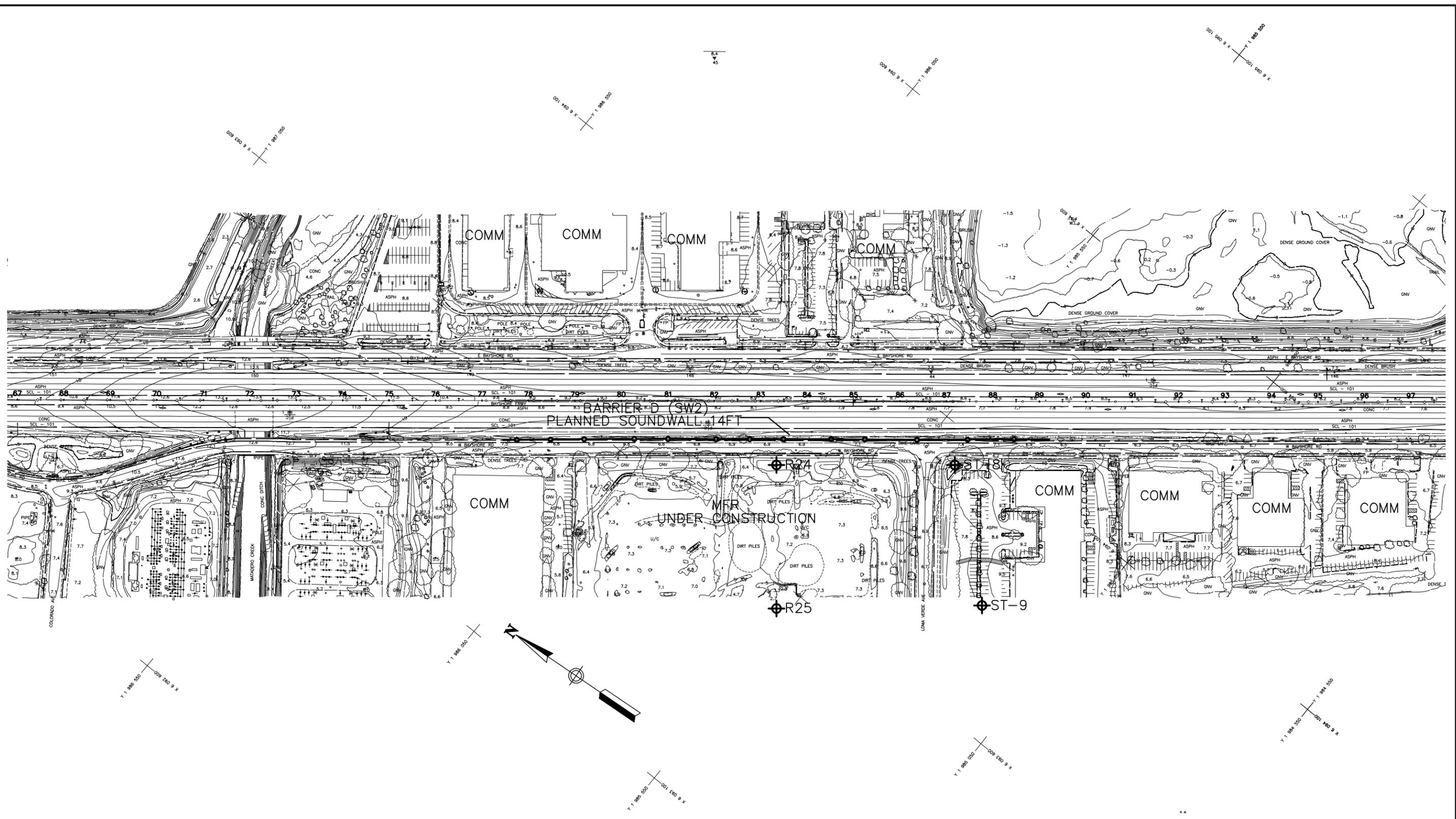
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- ⊕ RECIEVER LOCATION
- FEASIBLE SOUNDWALL
- EXISTING SOUNDWALL
- SFR — SINGLE FAMILY RESIDENCE
- MFR — MULTI-FAMILY RESIDENCE
- COMM — COMMERCIAL



U.S. 101 AUXILIARY LANES
SENSITIVE RECEIVER &
NOISE BARRIER LOCATIONS



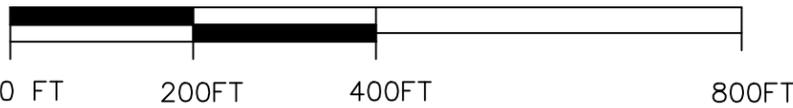


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-  RECIEVER LOCATION
-  FEASIBLE SOUNDWALL
-  EXISTING SOUNDWALL

- SFR — SINGLE FAMILY RESIDENCE
- MFR — MULTI-FAMILY RESIDENCE
- COMM — COMMERCIAL

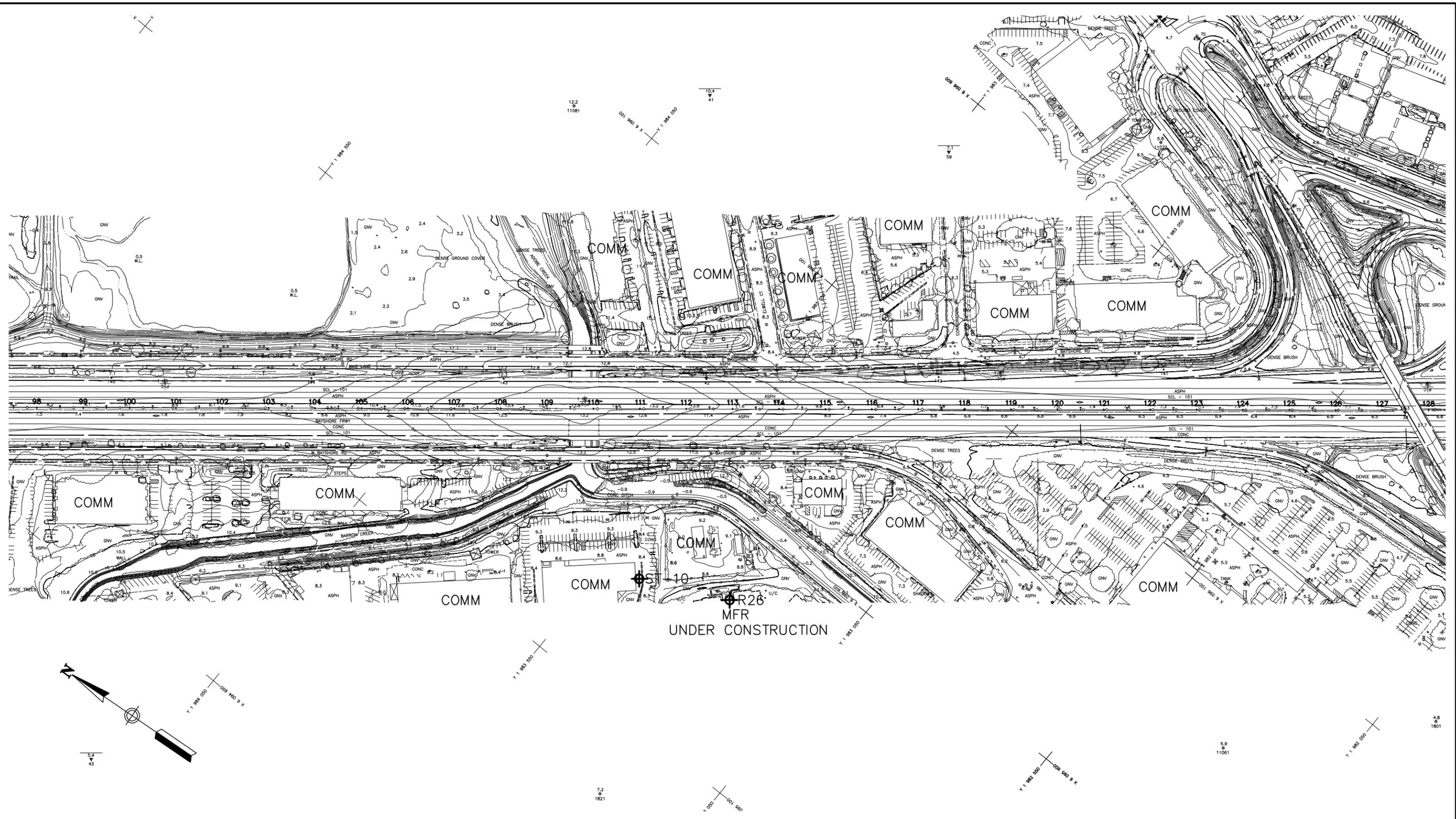
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NOISE BARRIER LOCATIONS

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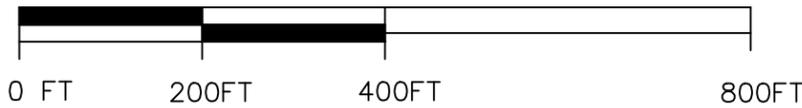


LEGEND

- RECIEVER LOCATION
- FEASIBLE SOUNDWALL
- EXISTING SOUNDWALL

- SFR – SINGLE FAMILY RESIDENCE
- MFR – MULTI-FAMILY RESIDENCE
- COMM – COMMERCIAL

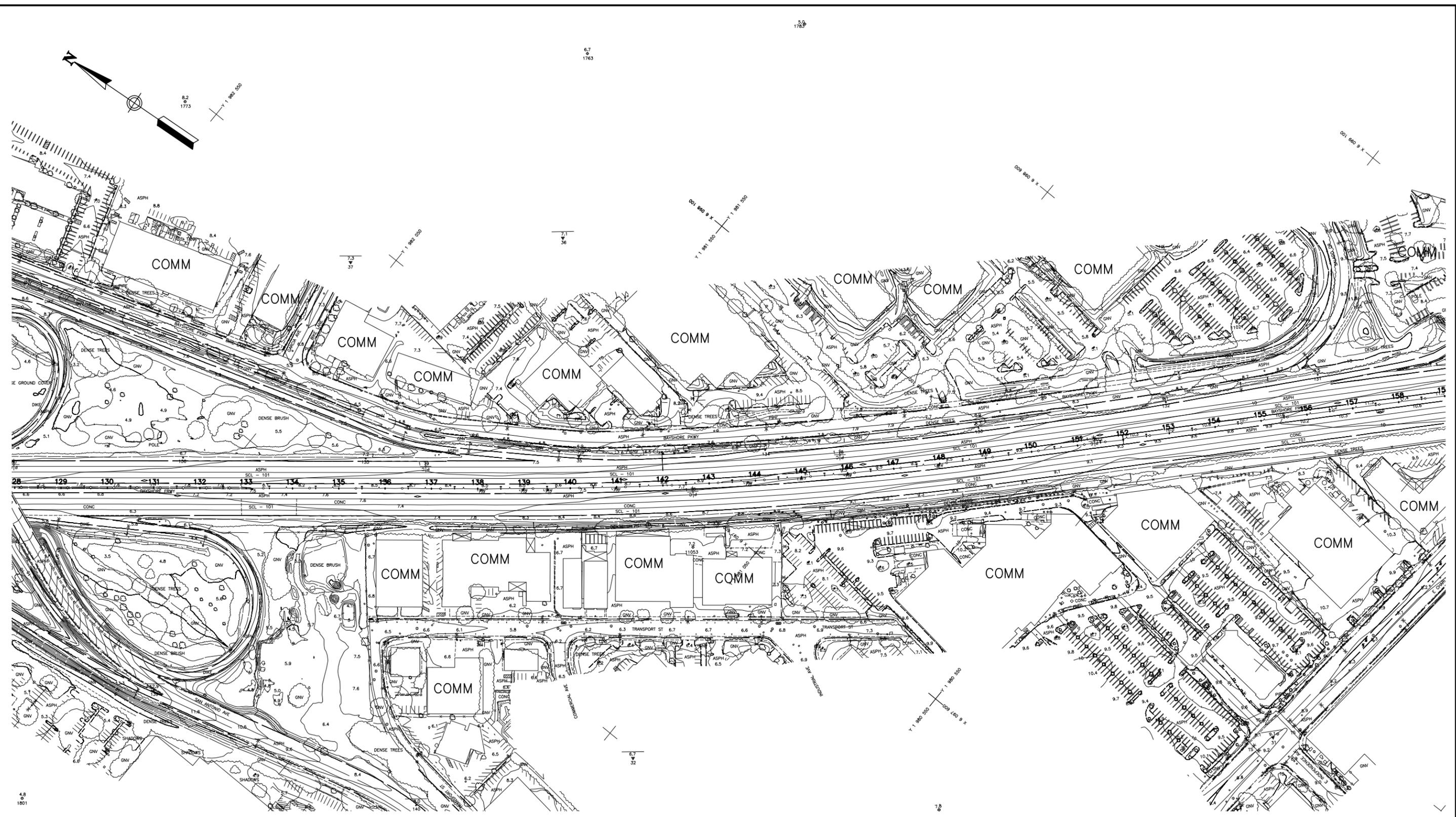
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SENSITIVE RECEIVER &
NOISE BARRIER LOCATIONS

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

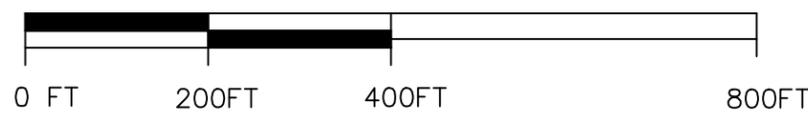
SHEET NO. 4 OF 7



LEGEND

-  RECIEVER LOCATION
-  FEASIBLE SOUNDWALL
-  EXISTING SOUNDWALL
- SFR – SINGLE FAMILY RESIDENCE
- MFR – MULTI-FAMILY RESIDENCE
- COMM – COMMERCIAL

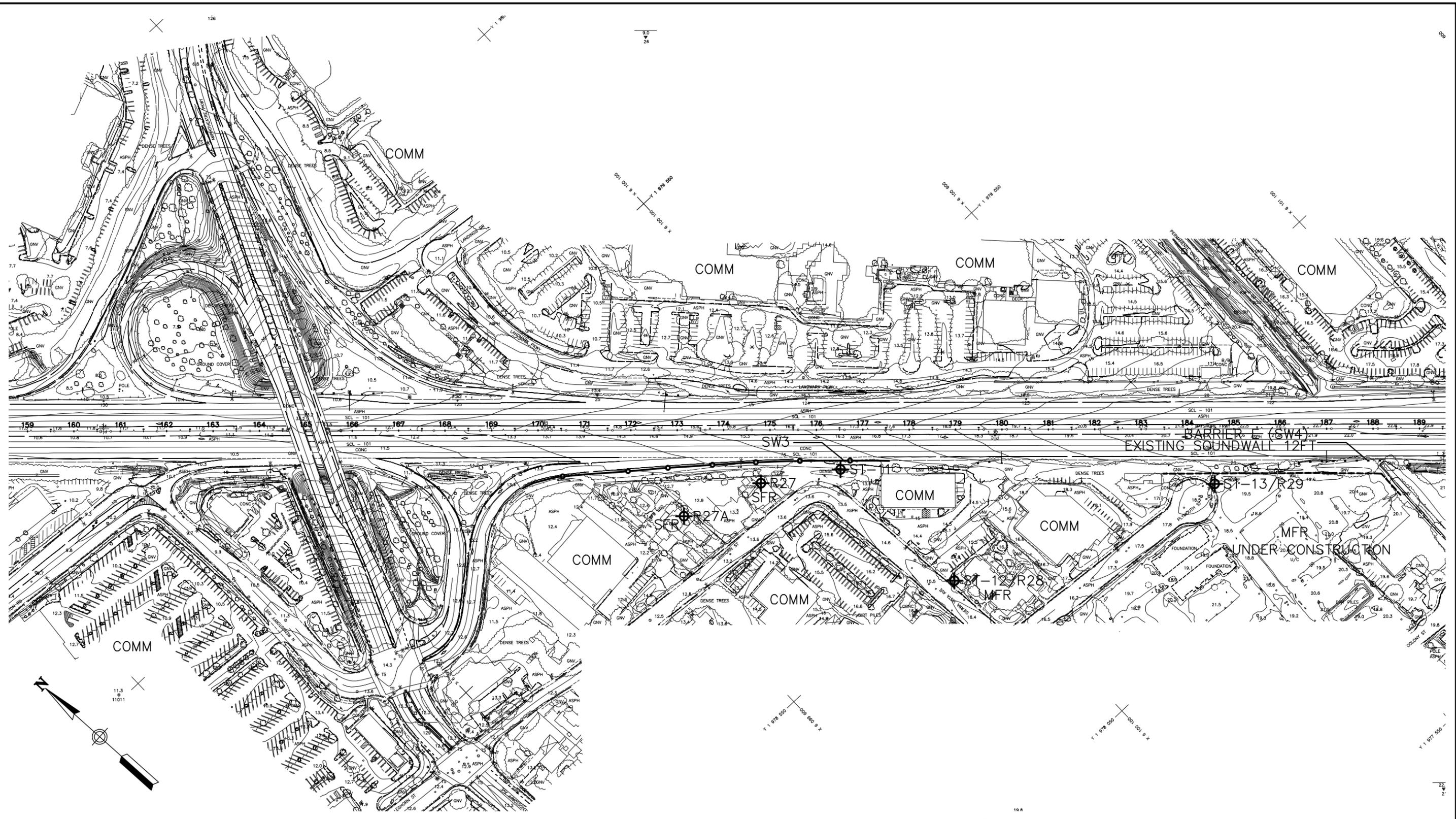
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FEET



U.S. 101 AUXILIARY LANES
SENSITIVE RECEIVER &
NOISE BARRIER LOCATIONS

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET NO. 5 OF 7

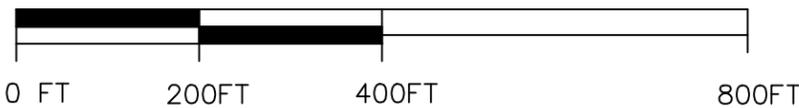


LEGEND

- RECIEVER LOCATION
- FEASIBLE SOUNDWALL
- EXISTING SOUNDWALL

- SFR — SINGLE FAMILY RESIDENCE
- MFR — MULTI-FAMILY RESIDENCE
- COMM — COMMERCIAL

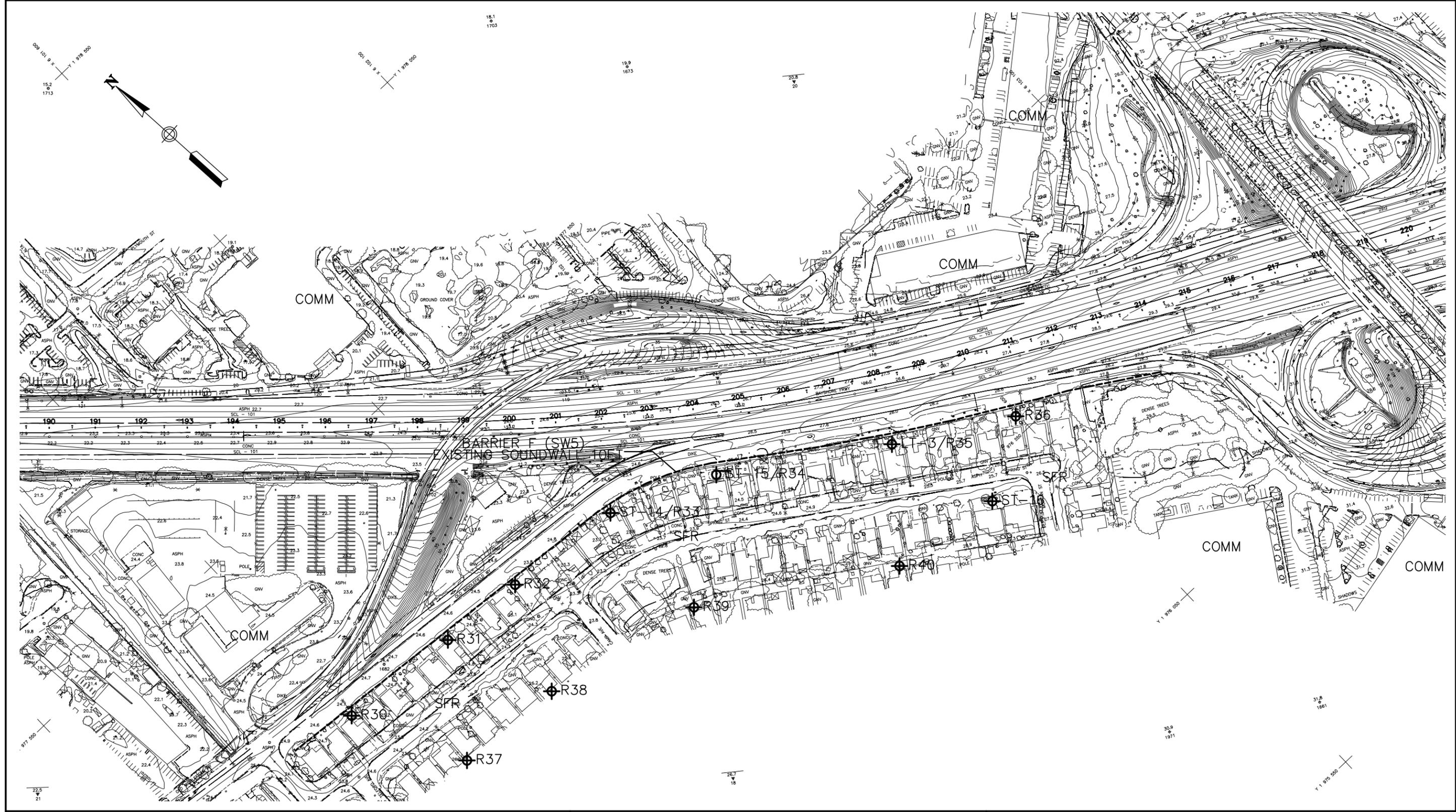
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U.S. 101 AUXILIARY LANES
SENSITIVE RECEIVER &
NOISE BARRIER LOCATIONS

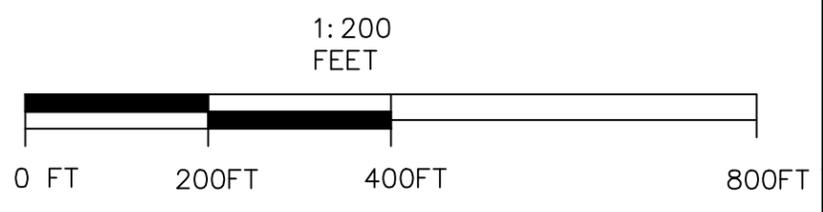
ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET NO. 6 OF 7



- LEGEND**
- ⊕ RECIEVER LOCATION
 - FEASIBLE SOUNDWALL
 - EXISTING SOUNDWALL

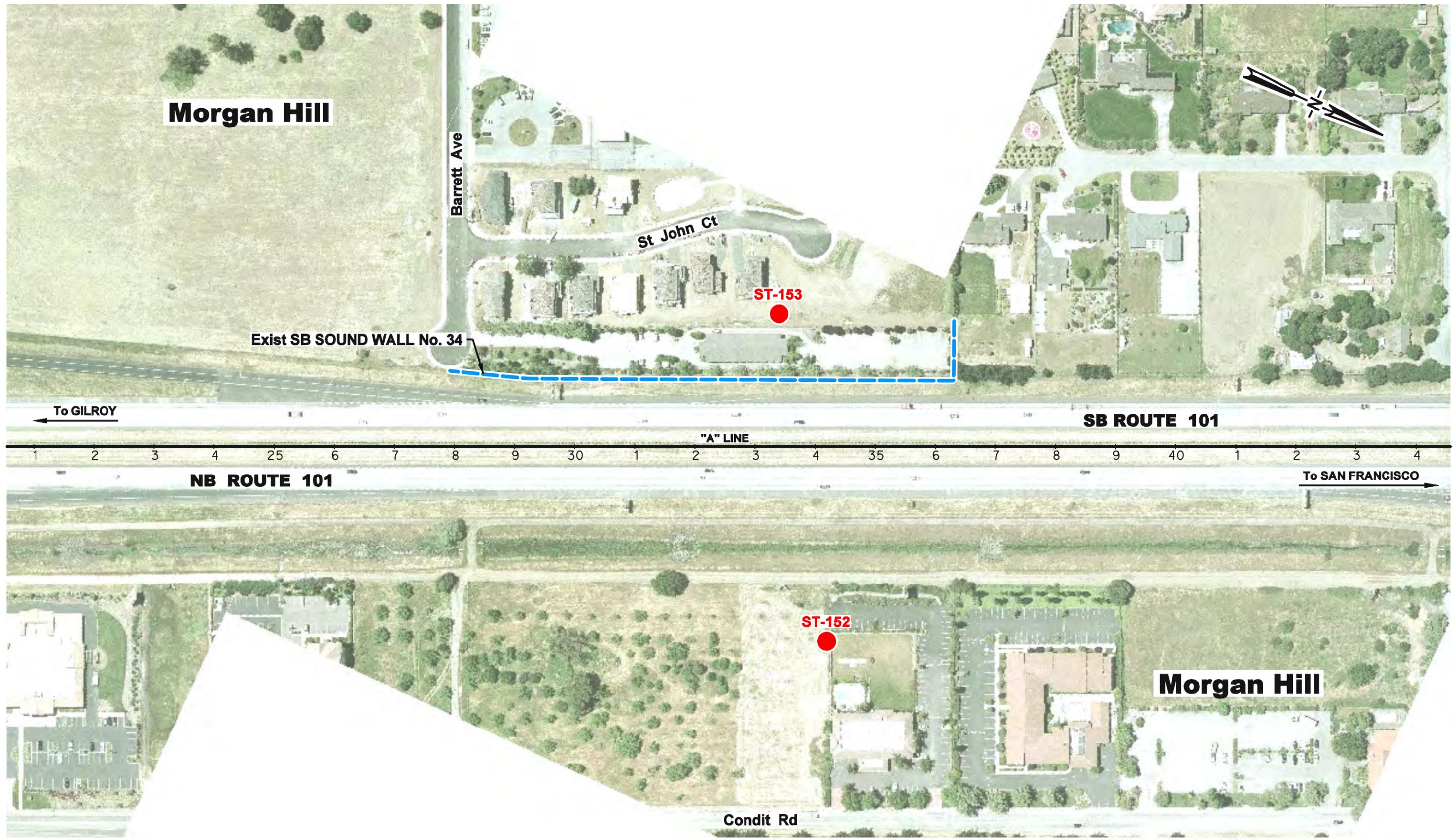
- SFR — SINGLE FAMILY RESIDENCE
- MFR — MULTI-FAMILY RESIDENCE
- COMM — COMMERCIAL



U.S. 101 AUXILIARY LANES
SENSITIVE RECEIVER &
NOISE BARRIER LOCATIONS

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

Appendix B
US 101 Segments 2-16 Receptor Locations and Noise
Barriers



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

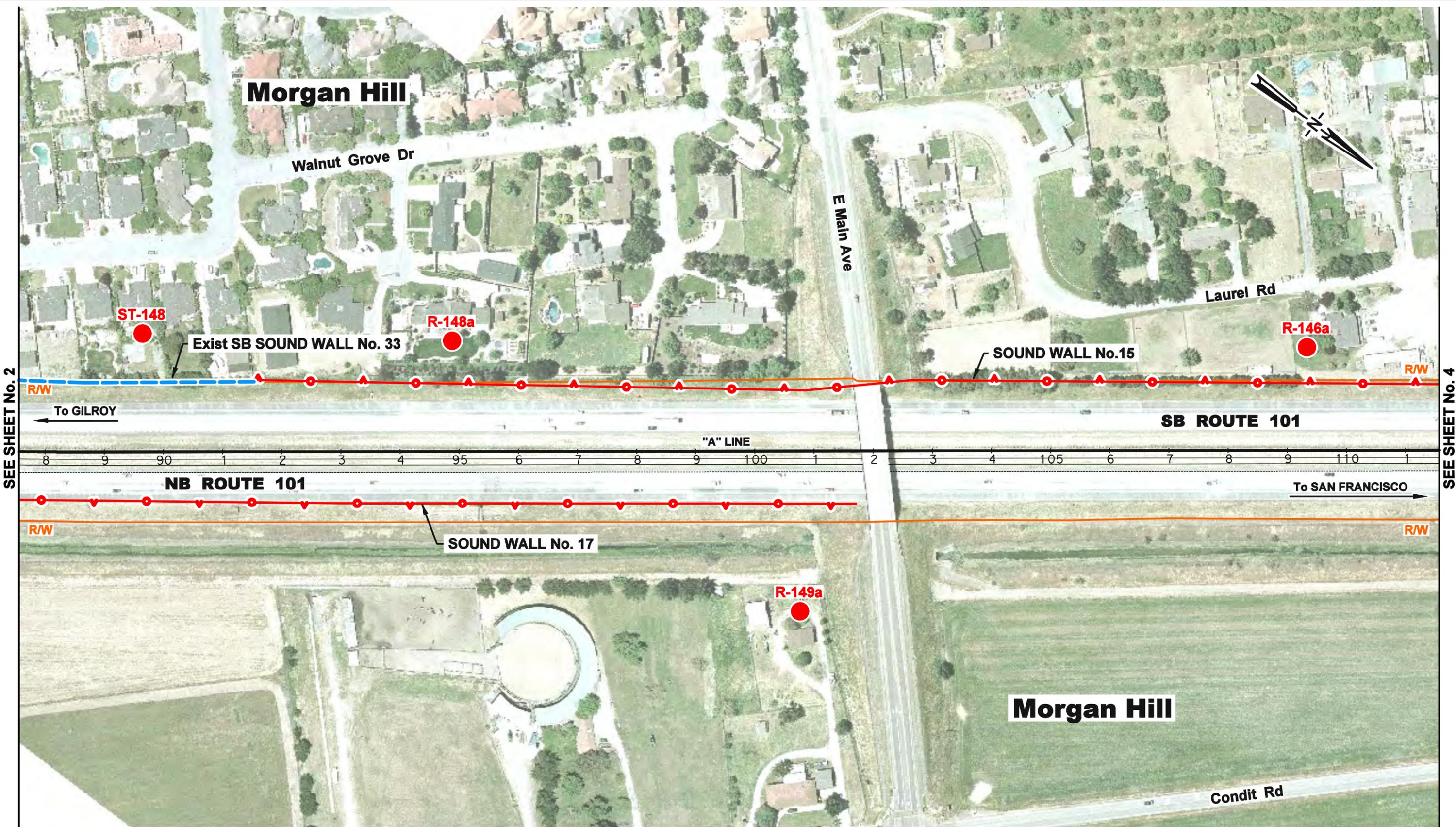


3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



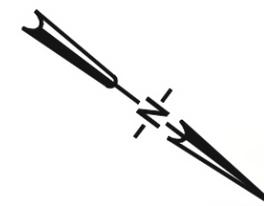
3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

Morgan Hill



Laurel Rd

ST-146

SOUND WALL No. 15

R/W

R/W

To GILROY

SB ROUTE 101

"A" LINE

NB ROUTE 101

To SAN FRANCISCO

R/W

R/W

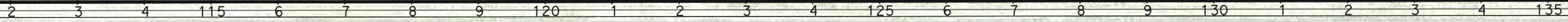
SOUND WALL No. 16

ST-147

Condit Rd

Morgan Hill

SEE SHEET No. 3



3/01/13

**MODELED NOISE RECEPTOR &
BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 4 OF 55

Morgan Hill

Peebles Ave

R-145a

ST-145

Freeway Vista

R/W

R/W

SOUND WALL No. 13

SB ROUTE 101

To GILROY

"A" LINE

NB ROUTE 101

To SAN FRANCISCO

R/W

R/W

SOUND WALL No. 14

R-143b

Peebles Ave

Morgan Hill

SEE SHEET No. 6

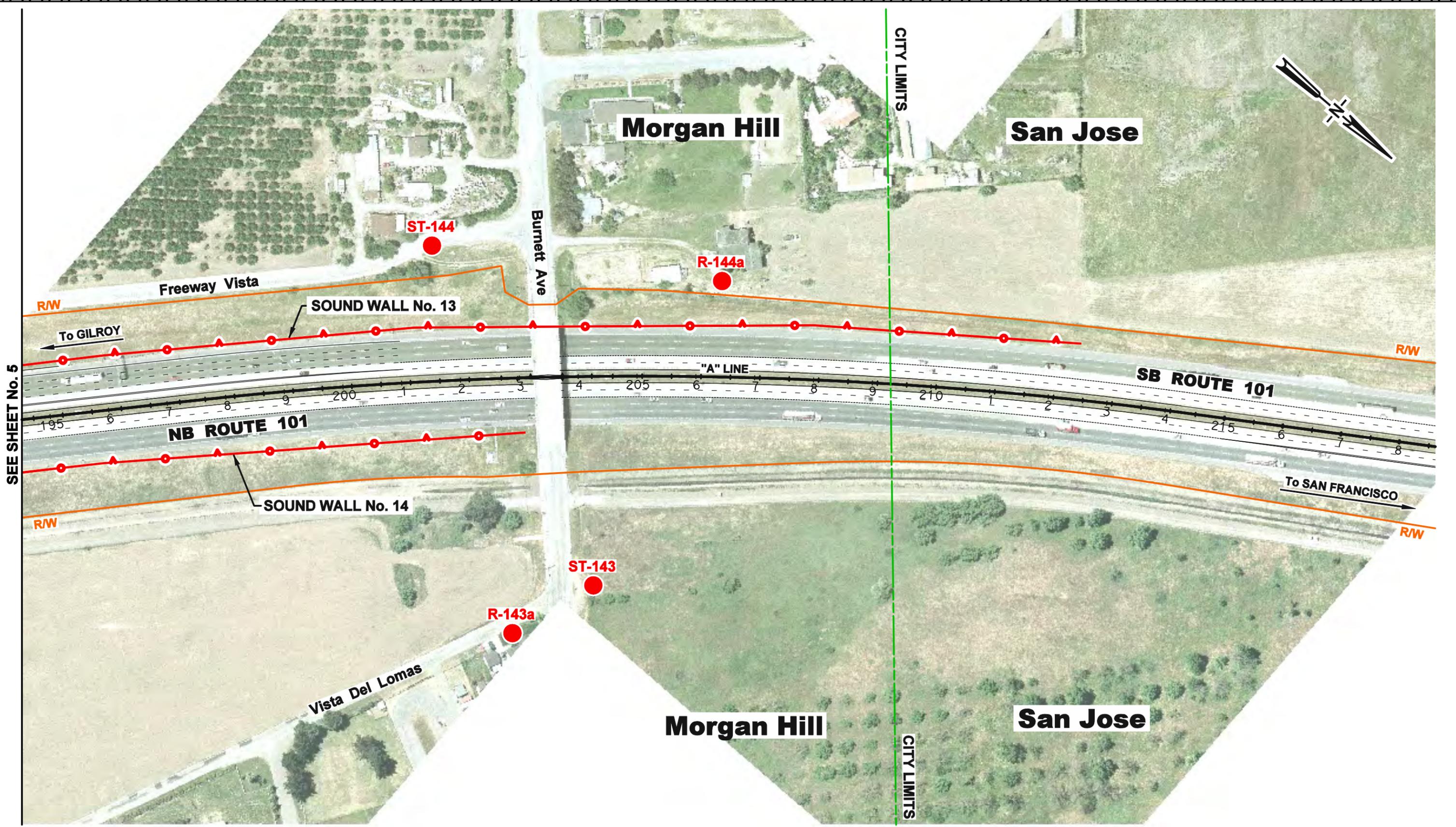
3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 5 OF 55



SEE SHEET No. 5

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 6 OF 55

San Jose

ST-142



COYOTE CREEK GOLF COURSE

R-142c

SOUND WALL No. 11

SB ROUTE 101

NB ROUTE 101

SOUND WALL No. 12

San Jose

R-142d

COYOTE CREEK GOLF COURSE

R/W

Coyote Creek Golf Dr

To GILROY

R/W

SEE SHEET No. 8

To SAN FRANCISCO



3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT

ILLINGWORTH & RODKIN, INC.
Acoustics - Air Quality

SHEET 7 OF 55

San Jose

COYOTE CREEK GOLF COURSE



LT-14

R/W

To GILROY

SOUND WALL No. 11

R/W

SEE SHEET No. 7

NB ROUTE 101

"A" LINE

SB ROUTE 101

SEE SHEET No. 9

R/W

SOUND WALL No. 12

To SAN FRANCISCO

R/W

R-142e

COYOTE CREEK GOLF COURSE

San Jose

R-142f

3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 8 OF 55

San Jose

COYOTE CREEK GOLF COURSE

R-142b



SEE SHEET No. 8

SEE SHEET No. 10

R/W

R/W

To GILROY

SOUND WALL No. 11

SB ROUTE 101

"A" LINE

NB ROUTE 101

To SAN FRANCISCO

R/W

R/W

San Jose

3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 9 OF 55

San Jose

COYOTE CREEK GOLF COURSE

R-142a

Coyote Creek Trail



R/W

R/W

SOUND WALL No. 11

To GILROY

SB ROUTE 101

"A" LINE

SEE SHEET No. 9



NB ROUTE 101

To SAN FRANCISCO

R/W

R/W

San Jose

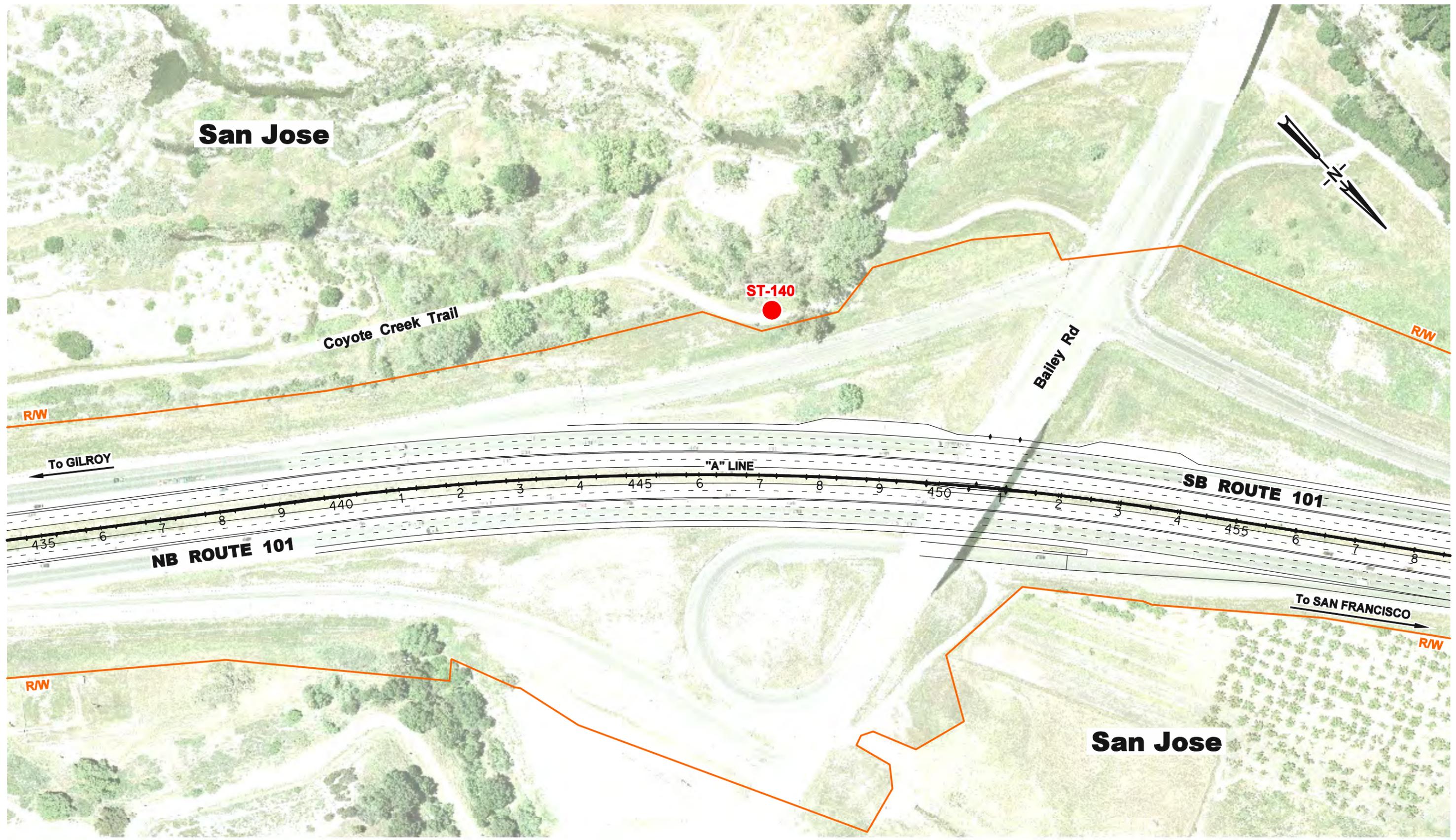
3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 10 OF 55



San Jose

ST-140

Coyote Creek Trail

Bailey Rd

R/W

R/W

To GILROY

"A" LINE

SB ROUTE 101

NB ROUTE 101

To SAN FRANCISCO

R/W

R/W

San Jose

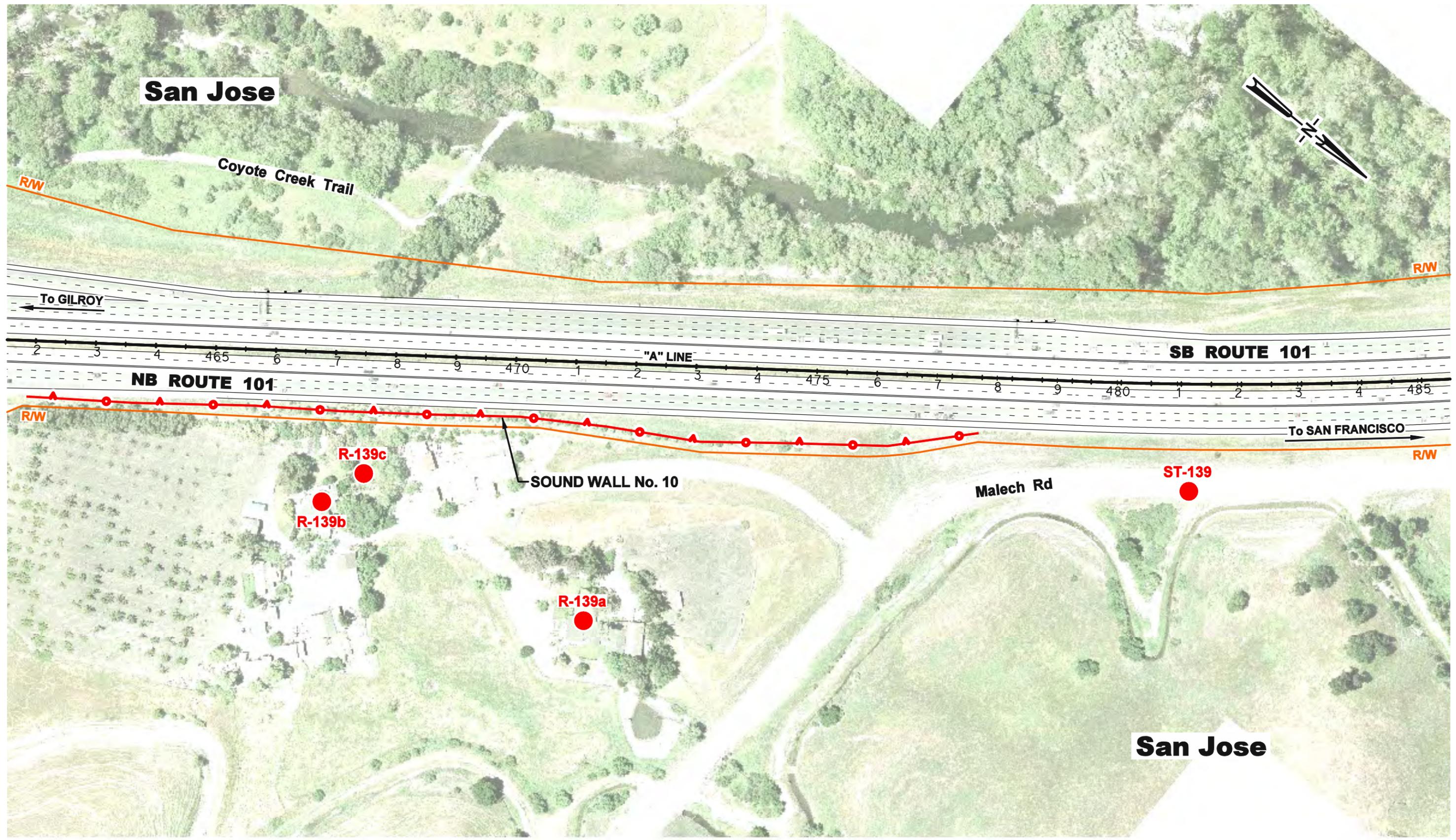


3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 11 OF 55



San Jose

Coyote Creek Trail

To GILROY

NB ROUTE 101

"A" LINE

SB ROUTE 101

To SAN FRANCISCO

R-139c
R-139b

SOUND WALL No. 10

R-139a

Malech Rd

ST-139

San Jose



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

San Jose



R-137a



R/W

To GILROY

R/W

SB ROUTE 101

"A" LINE



NB ROUTE 101

To SAN FRANCISCO

R/W

R/W

Malech Rd

San Jose

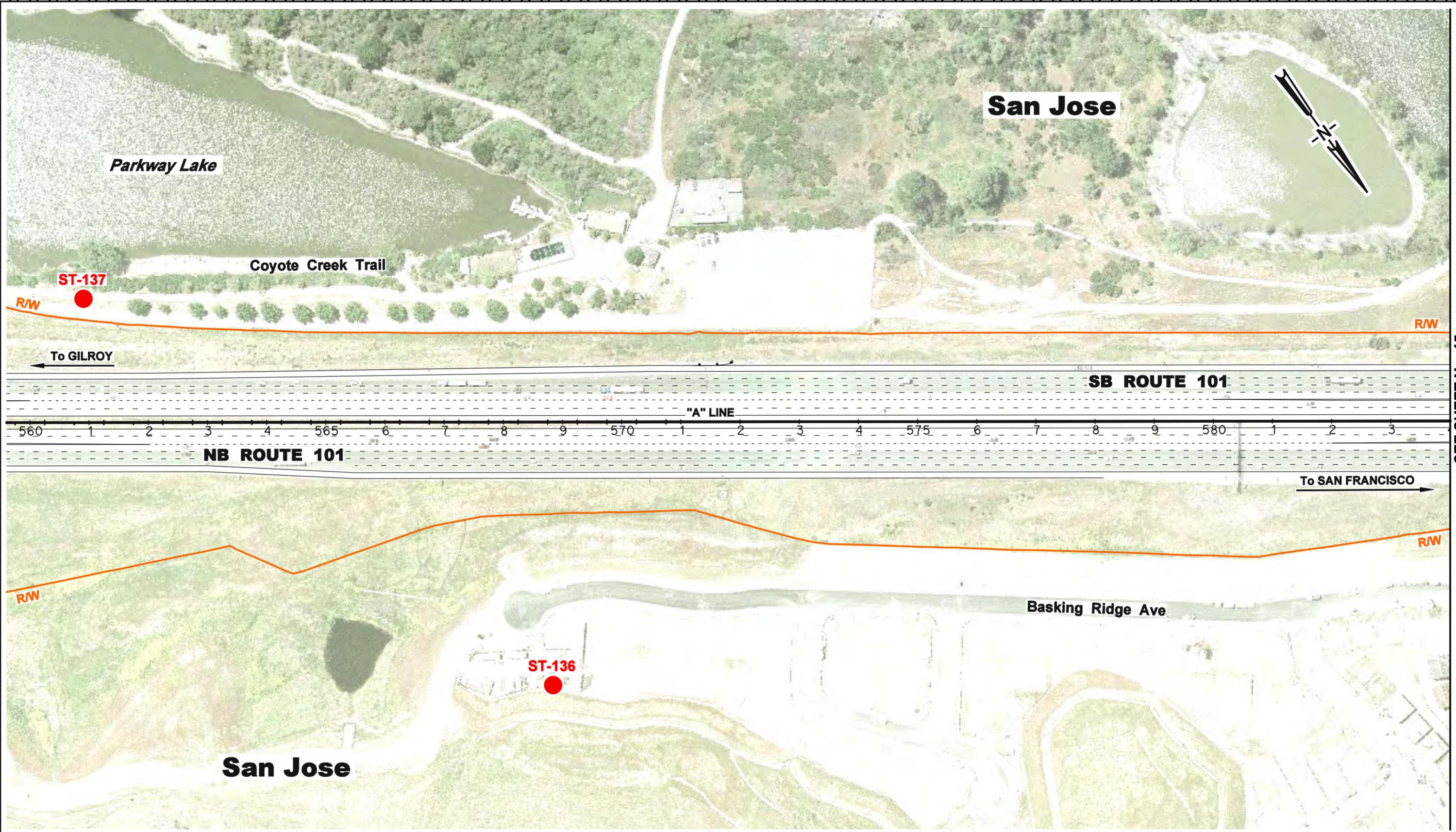


3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 13 OF 55



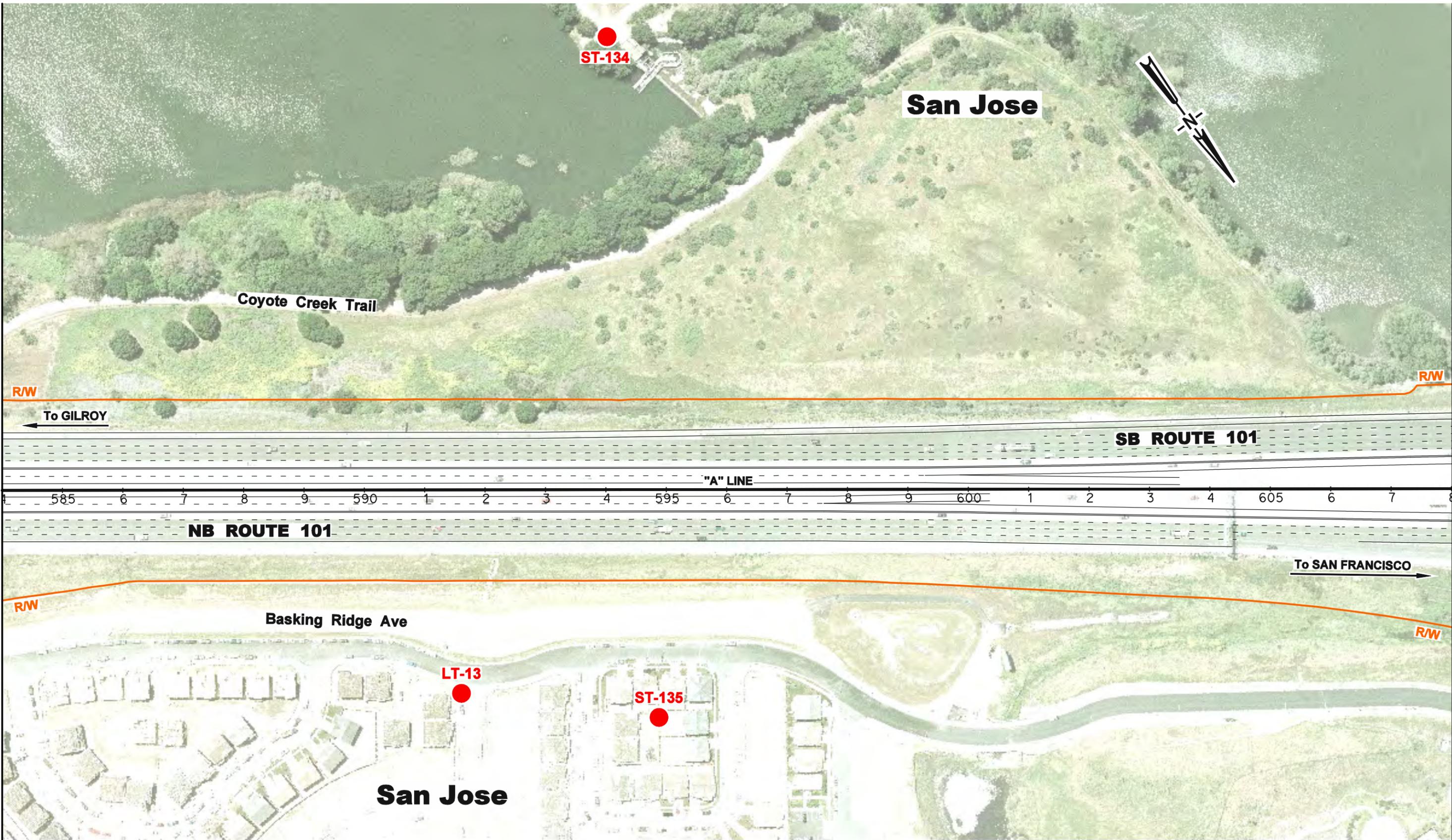
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3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 14

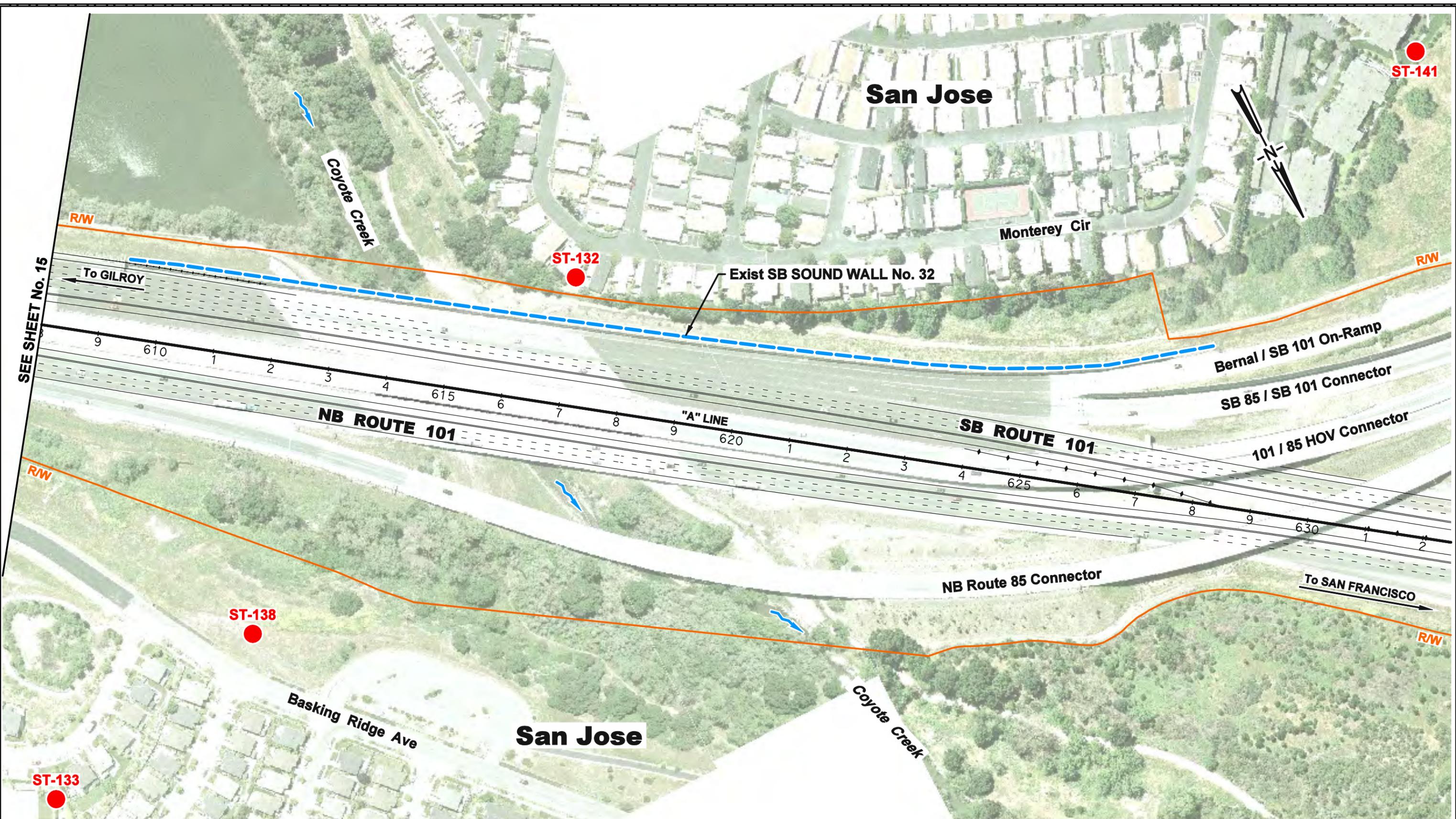
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3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT

ILLINGWORTH & RODKIN, INC.
 Acoustics • Air Quality



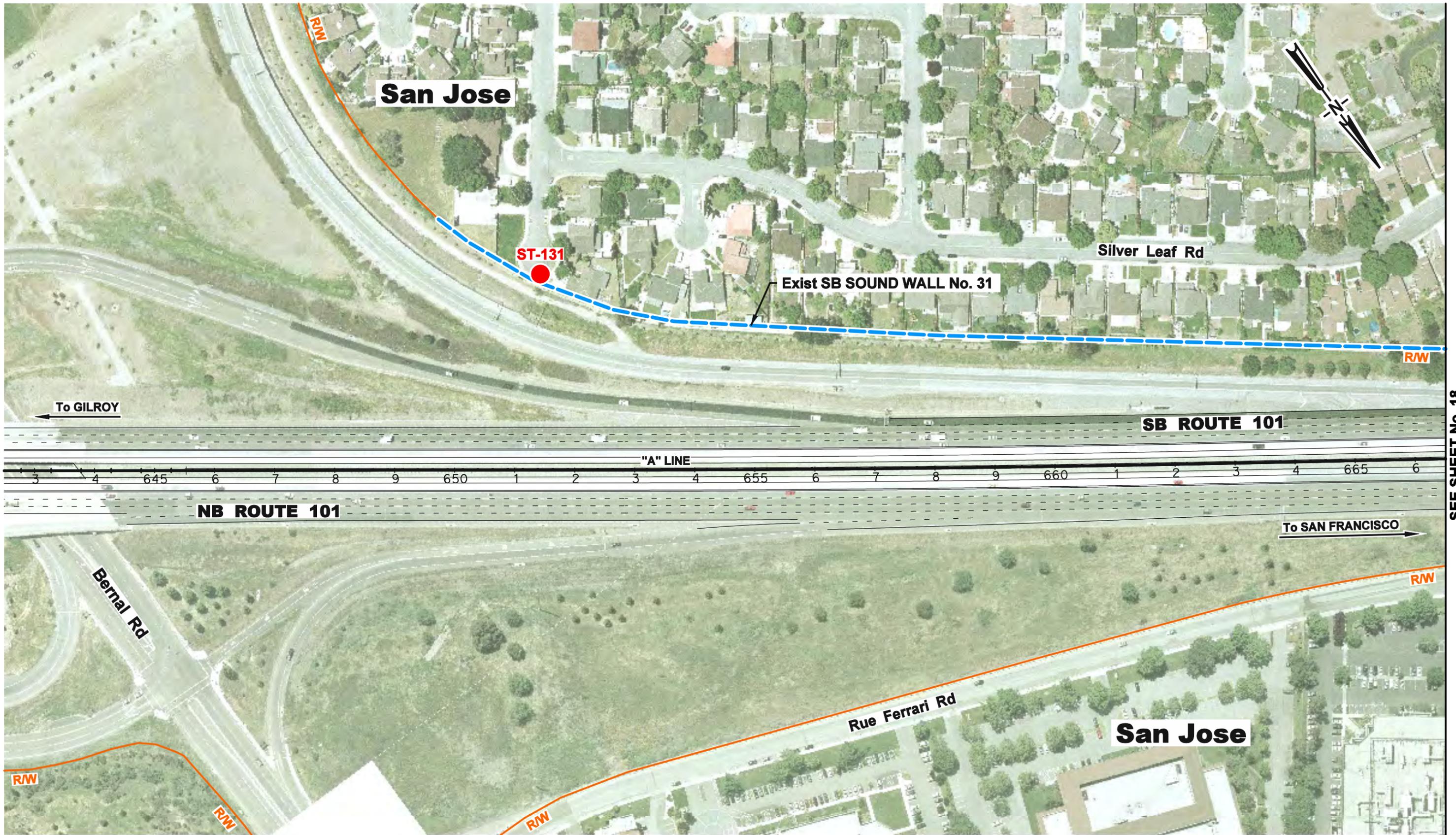
SEE SHEET No. 15

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics - Air Quality



SEE SHEET No. 18

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

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3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 18

SEE SHEET No. 20

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 19

SEE SHEET No. 21



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics - Air Quality



SEE SHEET No. 20

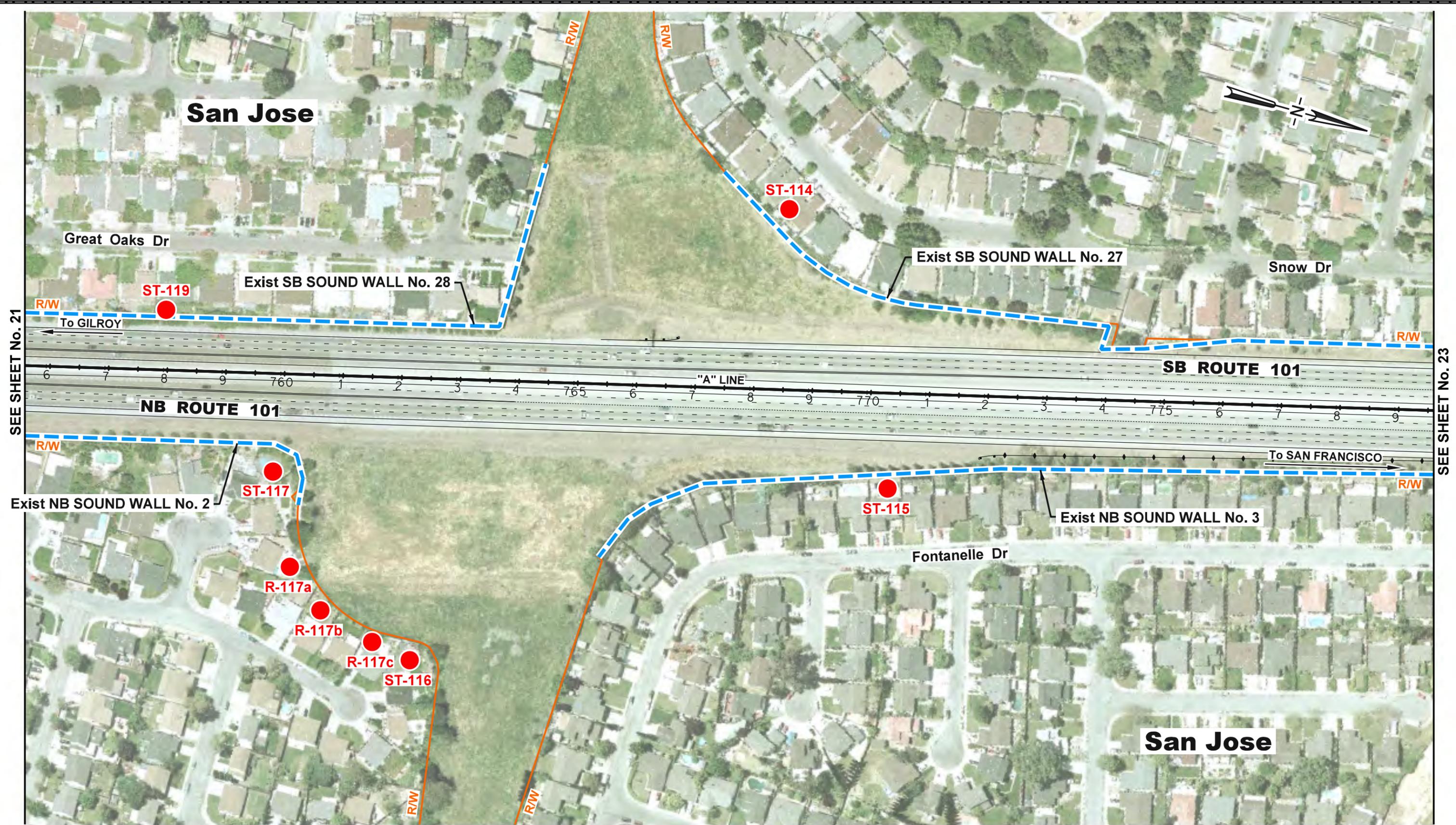
SEE SHEET No. 22

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 21

SEE SHEET No. 23

3/27/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 22 OF 55

San Jose



Snow Dr

Exist SB SOUND WALL No. 27

ST-110

LT-10

ST-109

ST-113

SEE SHEET No. 22

R/W

To GILROY

R/W

SB ROUTE 101

"A" LINE

NB ROUTE 101

To SAN FRANCISCO

SEE SHEET No. 24

R/W

ST-112

Exist NB SOUND WALL No. 4

Exist NB SOUND WALL No. 5

ST-108

Fontanelle Dr

ST-111

Coyote Rd

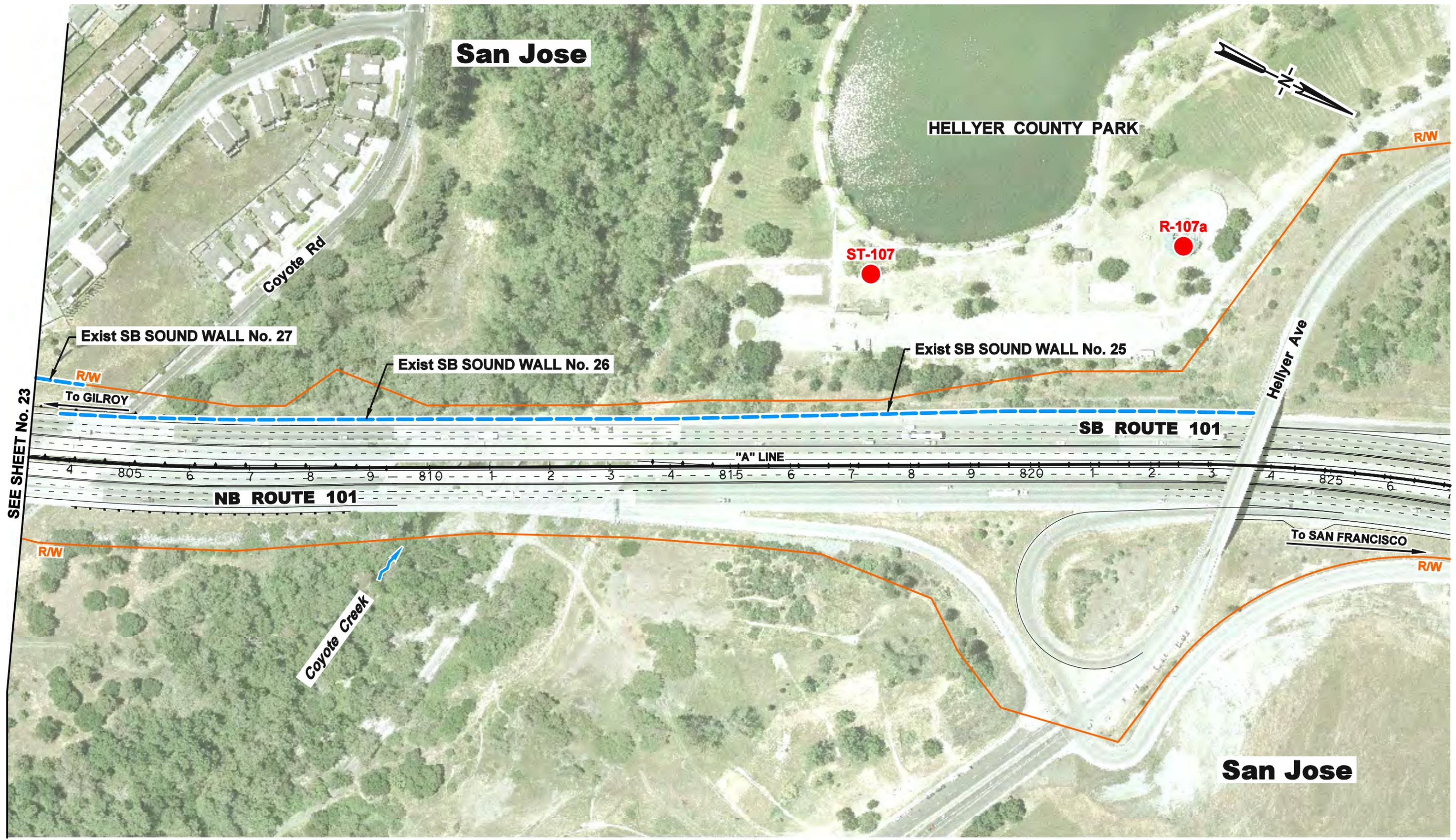
San Jose

3/01/13

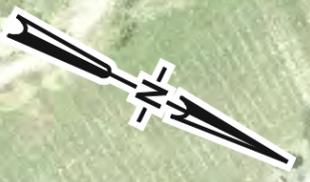
**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



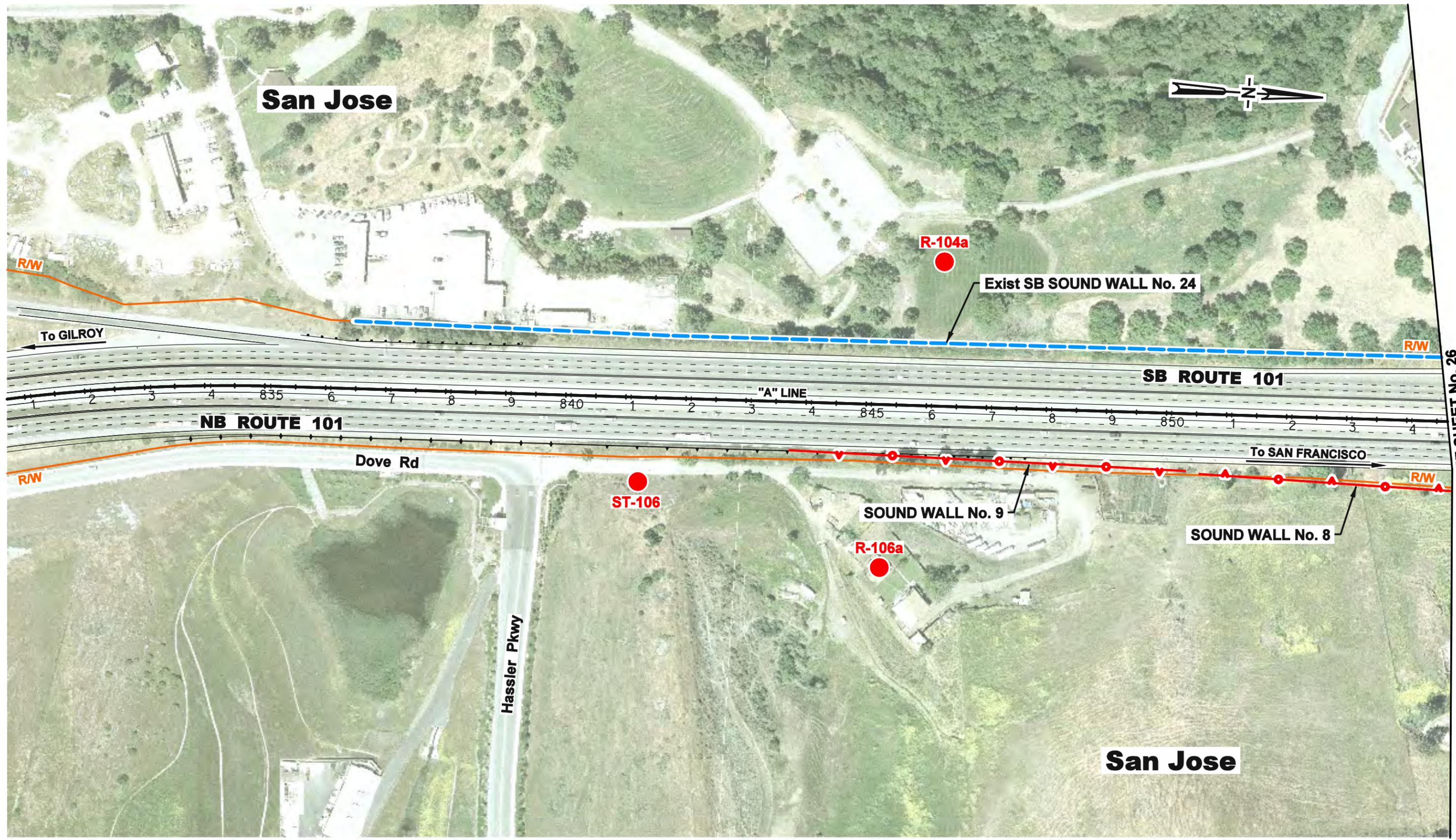
SEE SHEET No. 23



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

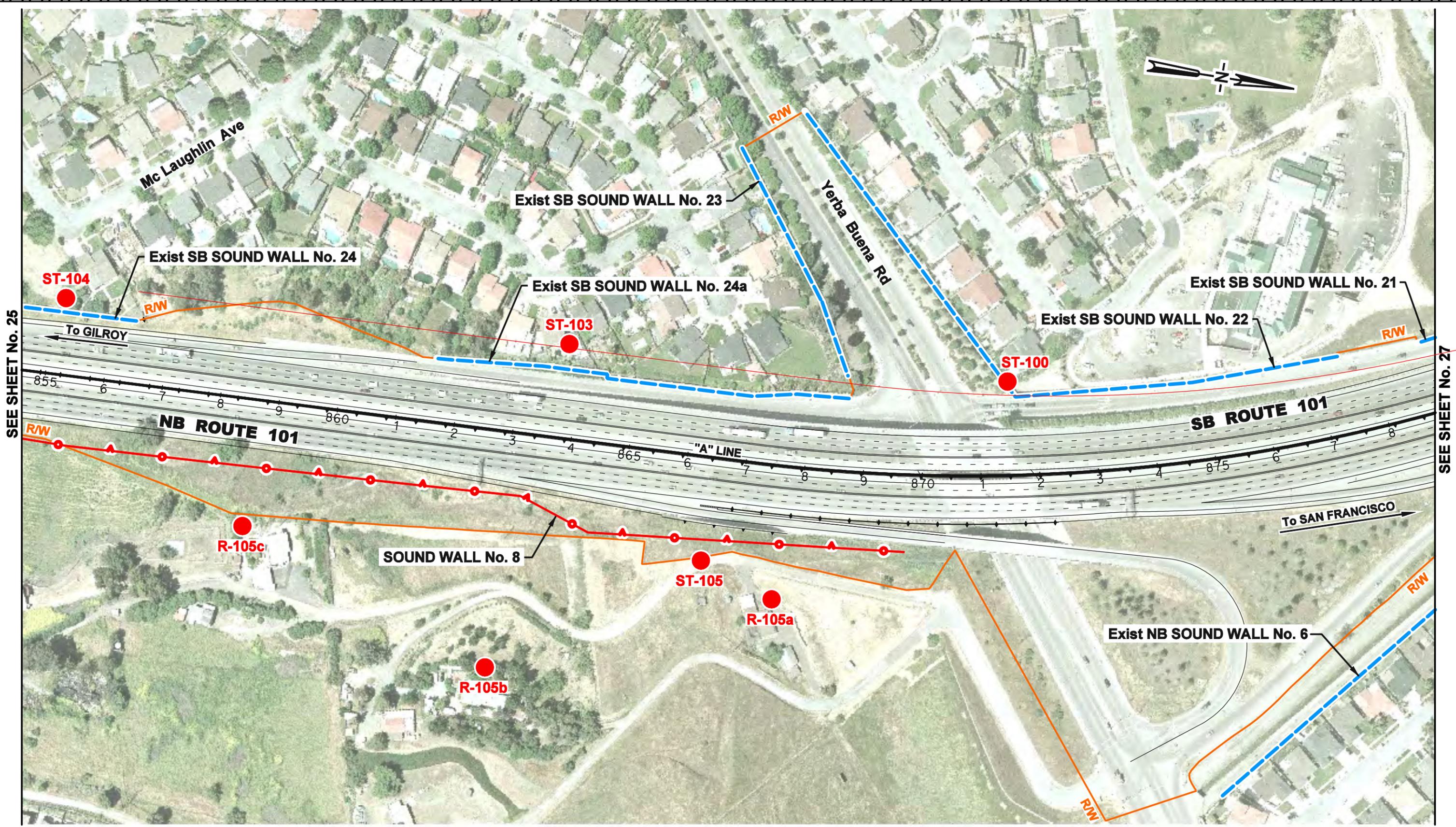


3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 25

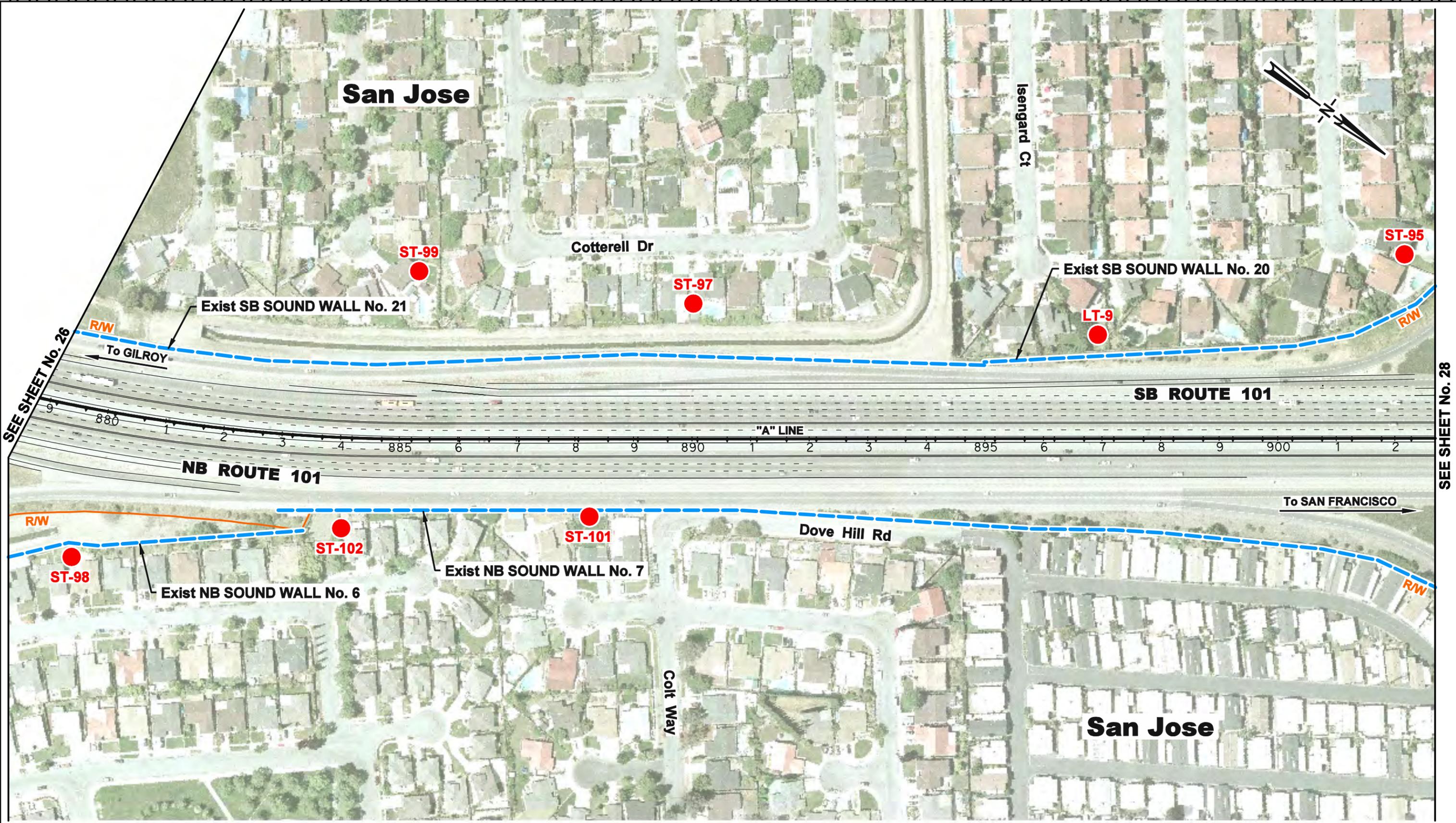
SEE SHEET No. 27

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 26

SEE SHEET No. 28

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 27

SEE SHEET No. 29

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



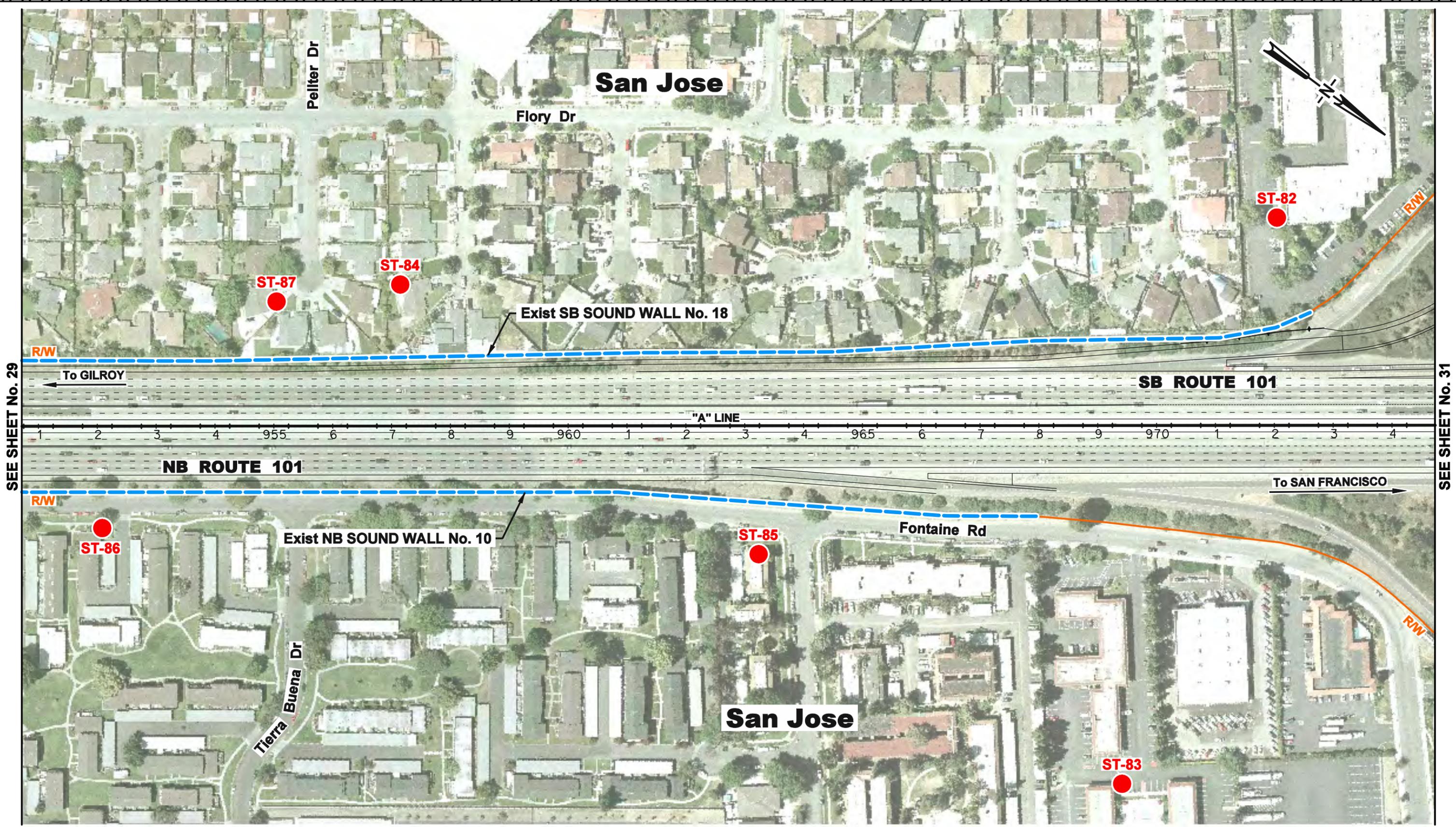
SEE SHEET No. 28

SEE SHEET No. 30

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 29

SEE SHEET No. 31

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 30

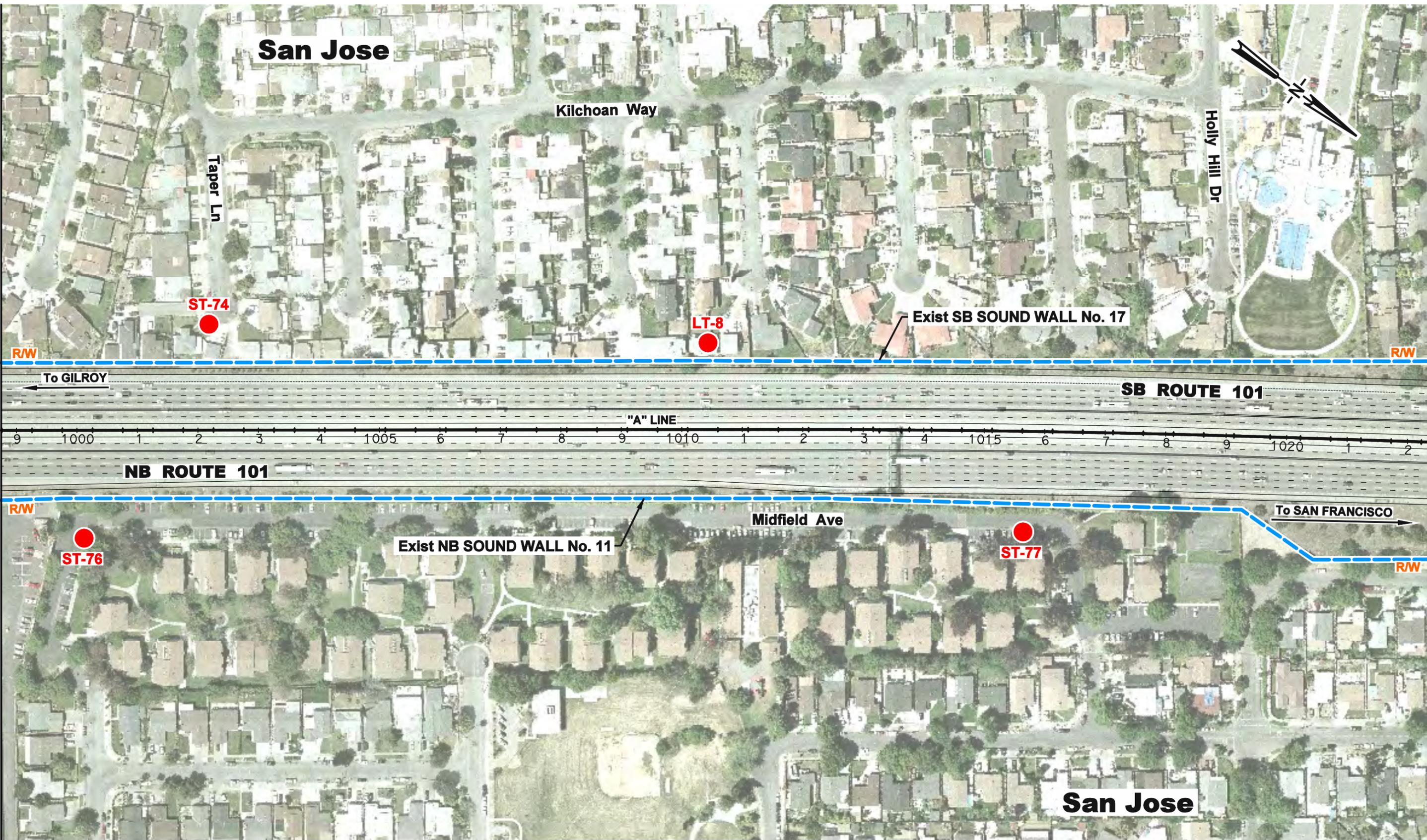
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3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT



ILLINGWORTH & RODKIN, INC.
 Acoustics • Air Quality



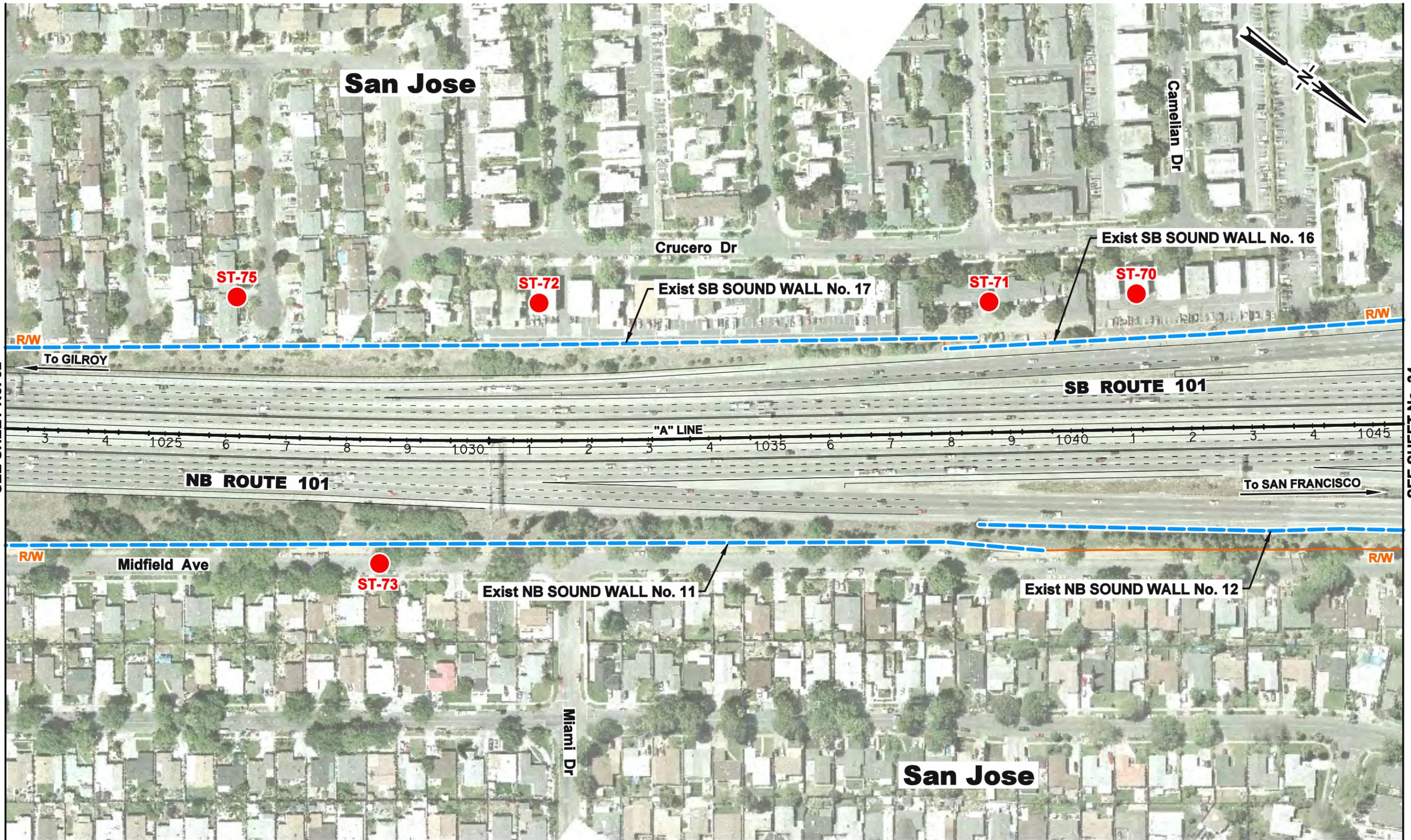
SEE SHEET No. 31

SEE SHEET No. 33

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 32

SEE SHEET No. 34

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

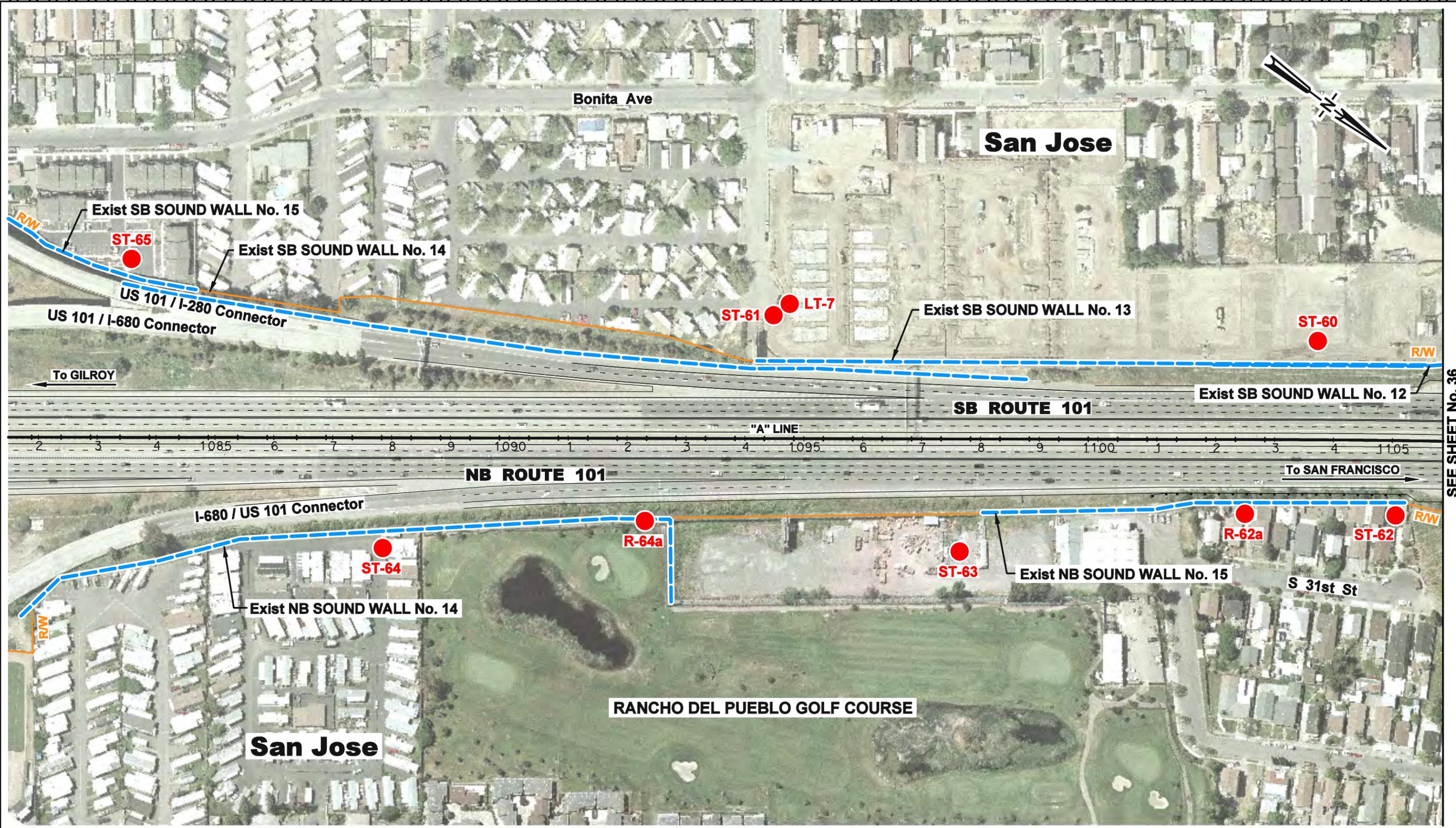
SHEET 33 OF 55



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MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT

ILLINGWORTH & RODKIN, INC.
 Acoustics • Air Quality



SEE SHEET No. 36

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 35

SEE SHEET No. 37



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



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3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

San Jose

WATSON PARK

R-50d

ST-50

R-50c

Coyote Creek

SOUND WALL No. 6

R-50b

R-50a

SB ROUTE 101

NB ROUTE 101

"A" LINE

To SAN FRANCISCO

Rail Road OC

San Jose

SEE SHEET No. 37

SEE SHEET No. 39



3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 38 OF 55

San Jose



Taylor St

Exist SB SOUND WALL No. 7

ST-46

Exist SB SOUND WALL No. 8

ST-47

ST-49

SOUND WALL No. 5

N Bayshore Rd West

SB ROUTE 101

SEE SHEET No. 38

R/W

To GILROY

SEE SHEET No. 40

R/W

"A" LINE

1185

6

7

8

9

1190

1

2

3

1195

6

7

8

9

1200

1

2

3

4

1205

NB ROUTE 101

Mabury Rd

To SAN FRANCISCO

R/W

Exist NB SOUND WALL No. 19

San Jose



3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT

ILLINGWORTH & RODKIN, INC.
Acoustics - Air Quality

SHEET 39 OF 55

San Jose

ST-43



E Hedding St

Berryessa Rd

Oakland Rd

Exist SB SOUND WALL No. 7

Exist SB SOUND WALL No. 6

Exist SB SOUND WALL No. 5

ST-45

ST-48

ST-44

ST-42

SEE SHEET No. 39

To GILROY

SB ROUTE 101

"A" LINE

NB ROUTE 101

To SAN FRANCISCO

Exist NB SOUND WALL No. 19

Exist NB SOUND WALL No. 19a

Mabury Rd

Berryessa Rd

San Jose



3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

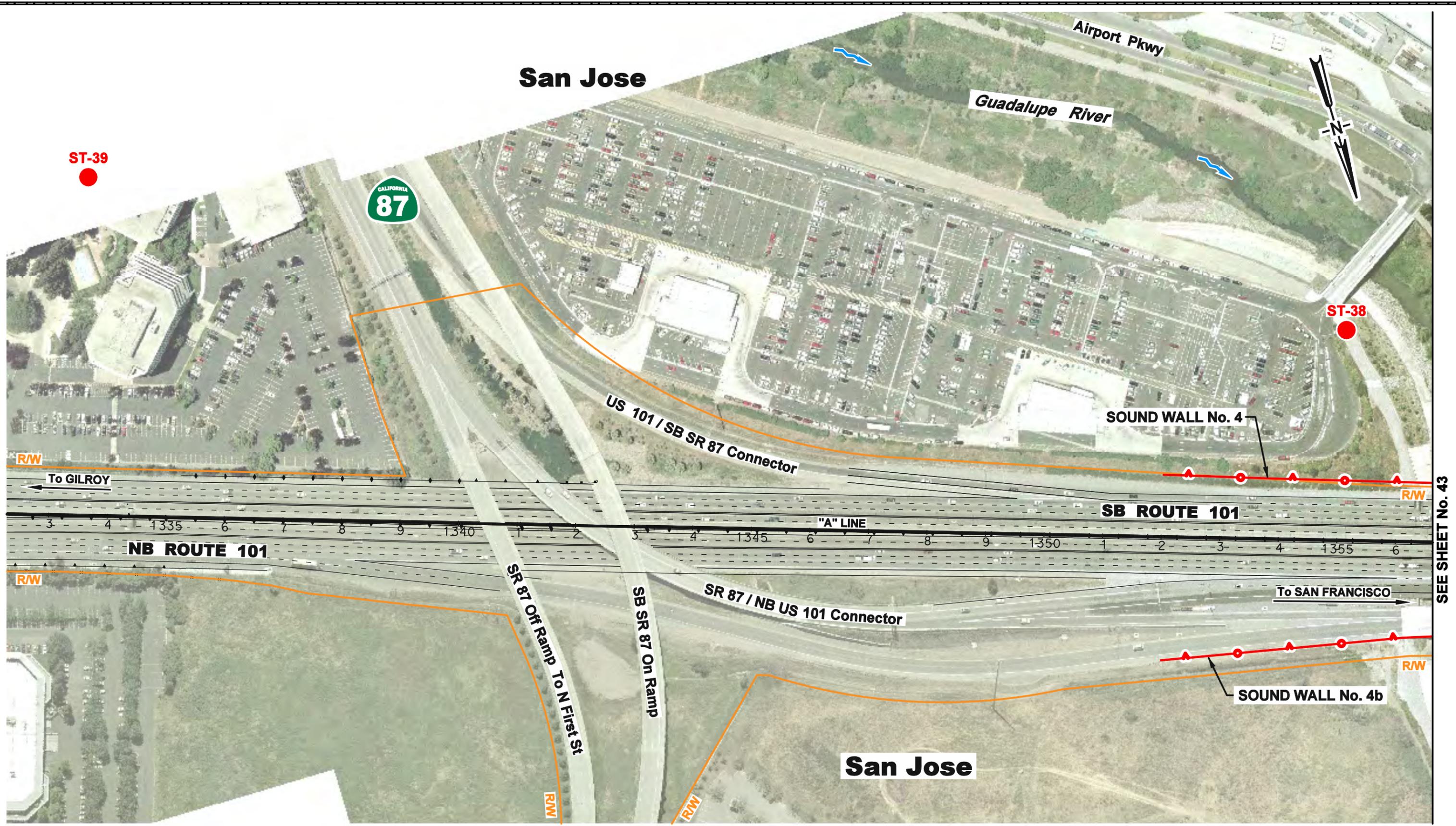
SHEET 40 OF 55



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 43

3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT



ILLINGWORTH & RODKIN, INC.
 Acoustics • Air Quality

San Jose

SAN JOSE INTERNATIONAL AIRPORT



SOUND WALL No. 4

Ewert Rd

SB ROUTE 101

"A" LINE

To SAN FRANCISCO

NB ROUTE 101

Channing Ave

SOUND WALL No. 4b

San Jose

SEE SHEET No. 42

To GILROY

R/W

R/W

R-38a

R-38b

LT-5

R/W

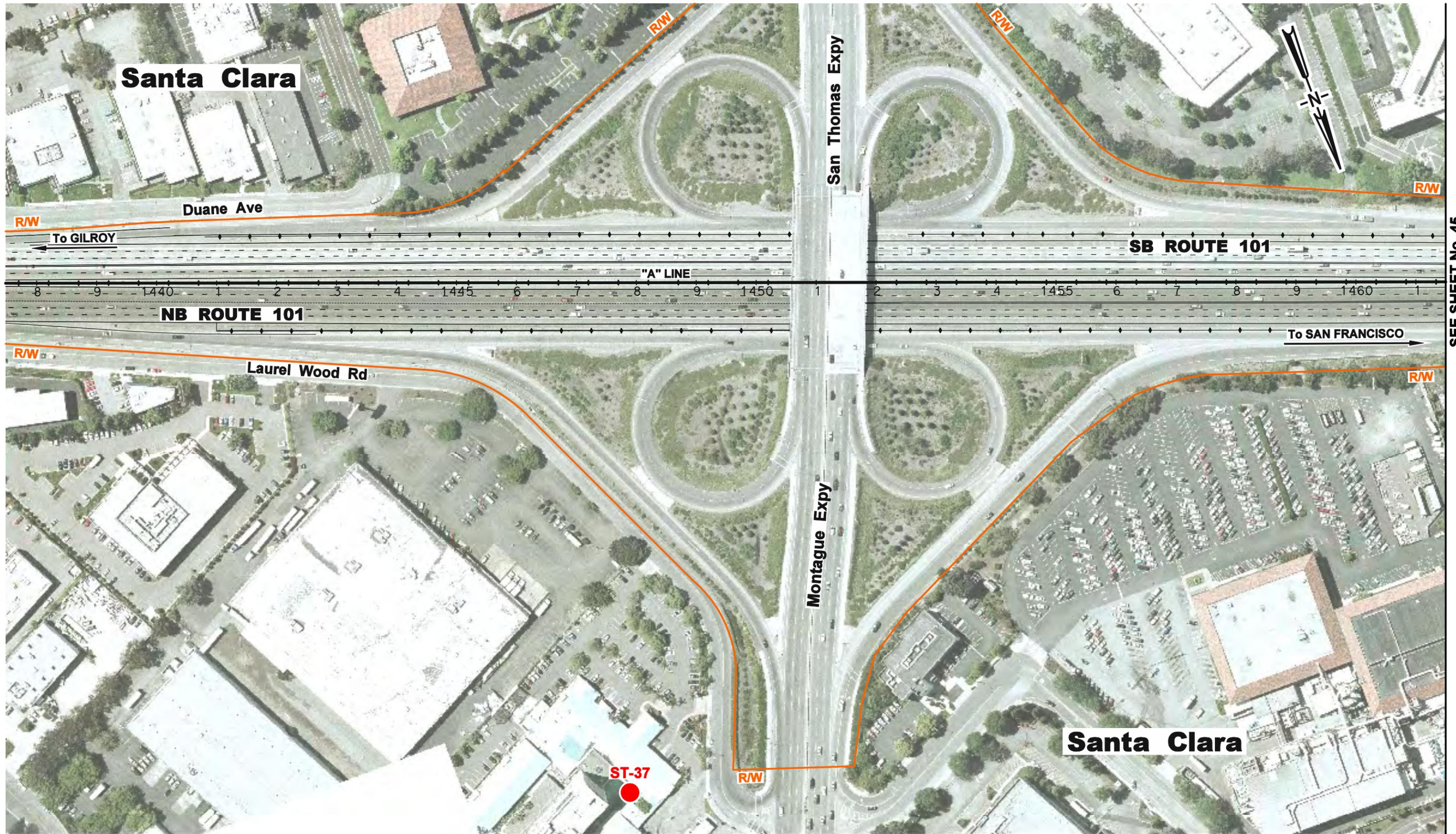
3/01/13

MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 43 OF 55



SEE SHEET No. 45



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 44 OF 55

Santa Clara

LT-4

SOUND WALL No. 3



R/W

R/W

To GILROY

SB ROUTE 101

"A" LINE

NB ROUTE 101

To SAN FRANCISCO

R/W

R/W

R-36a

SOUND WALL No. 3b

San Tomas Aquino Creek

ST-36

Santa Clara

Freedom Cir

SEE SHEET No. 44



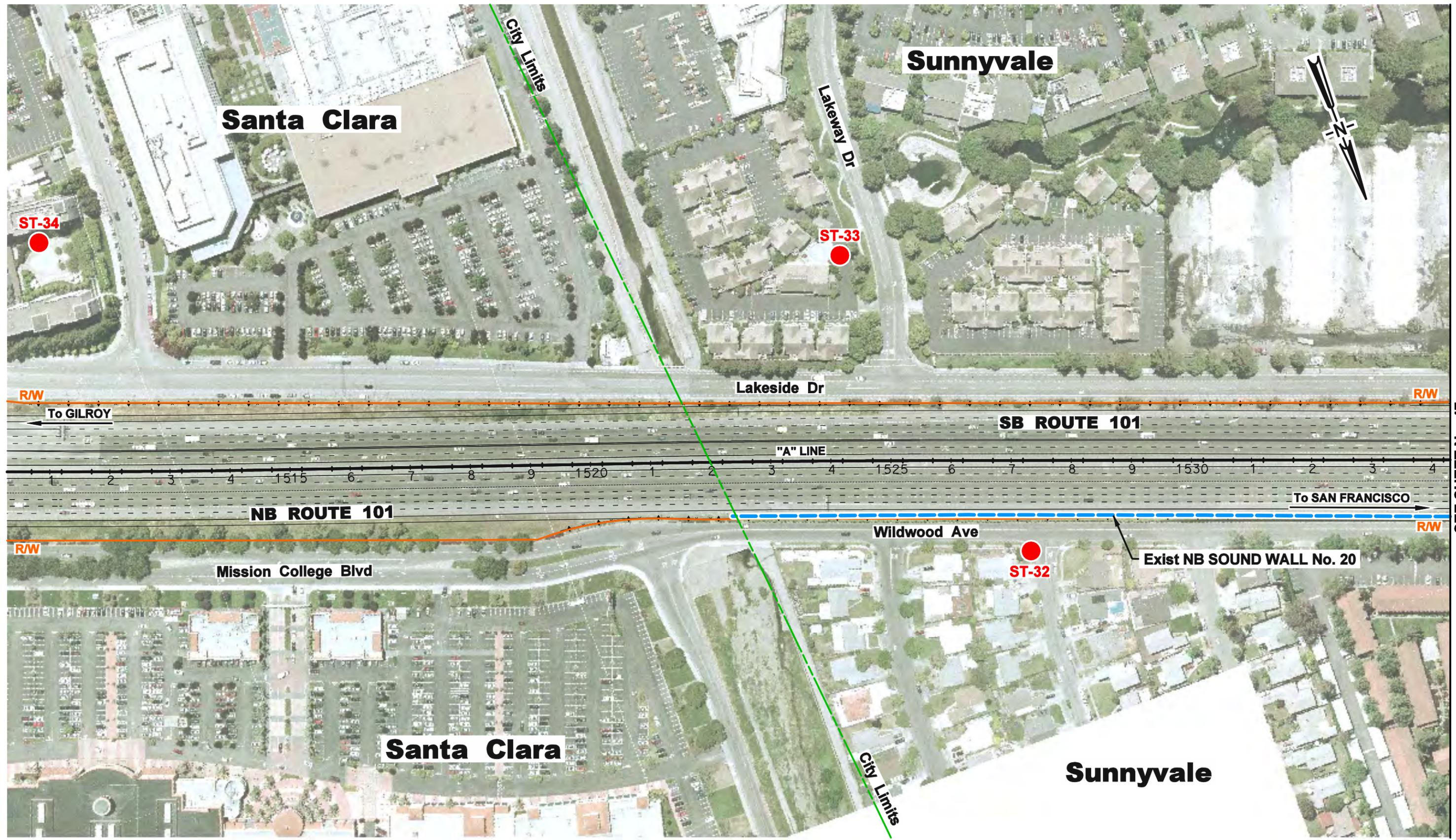
3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 45 OF 55





SEE SHEET No. 46

SEE SHEET No. 48

SEE SHEET No. 46



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

SHEET 47 OF 55

Sunnyvale

Amador Ave

San Rafael St



ST-22

Exist SB SOUND WALL No. 3

ST-21

LT-3

E Ahwanee Ave

SB ROUTE 101

SEE SHEET No. 47

R/W

To GILROY

R/W

SEE SHEET No. 49



NB ROUTE 101

To SAN FRANCISCO

R/W

ST-27

ST-26

ST-25

Exist NB SOUND WALL No. 21

Lakewood Dr

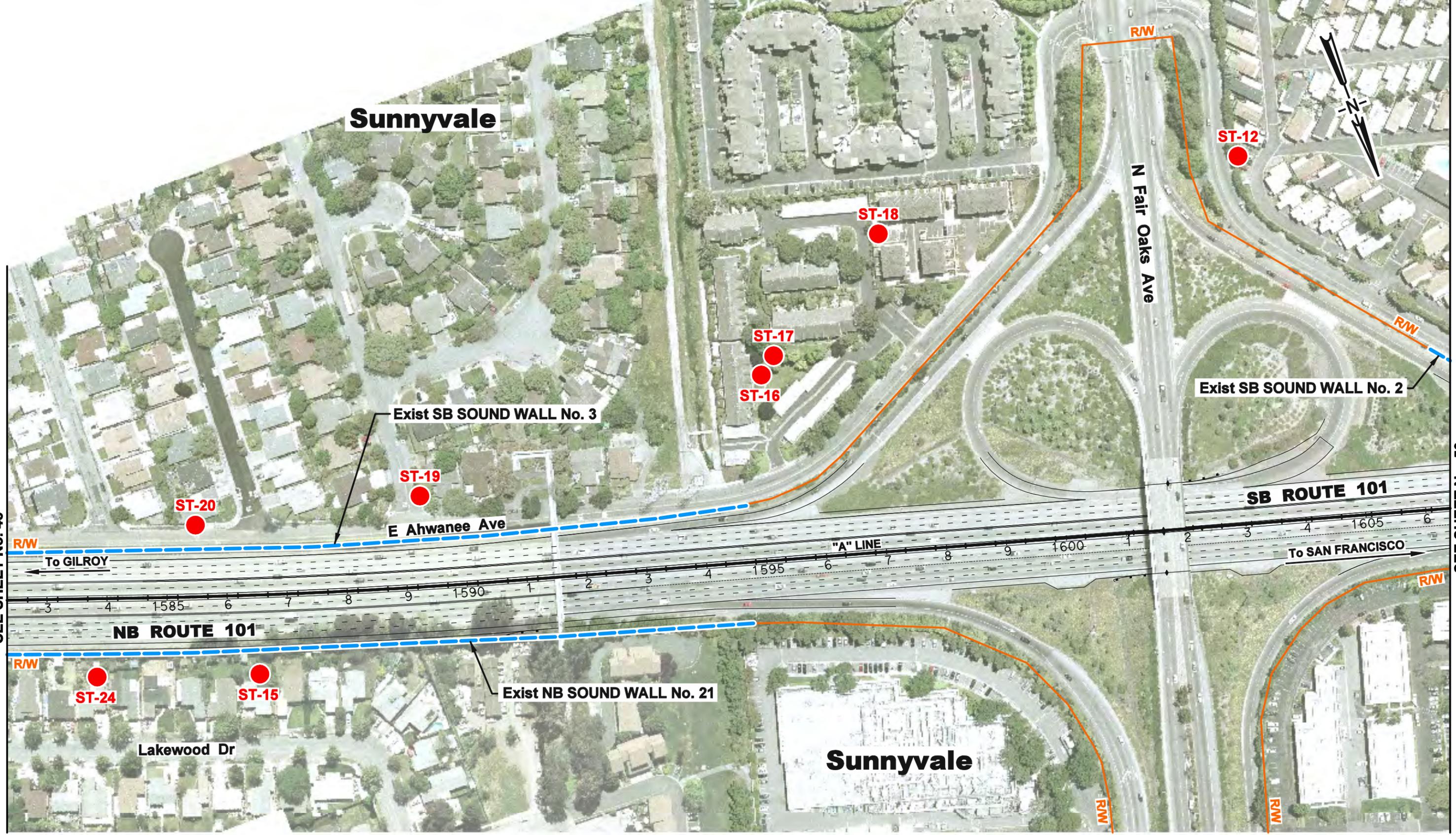
Sunnyvale

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 48

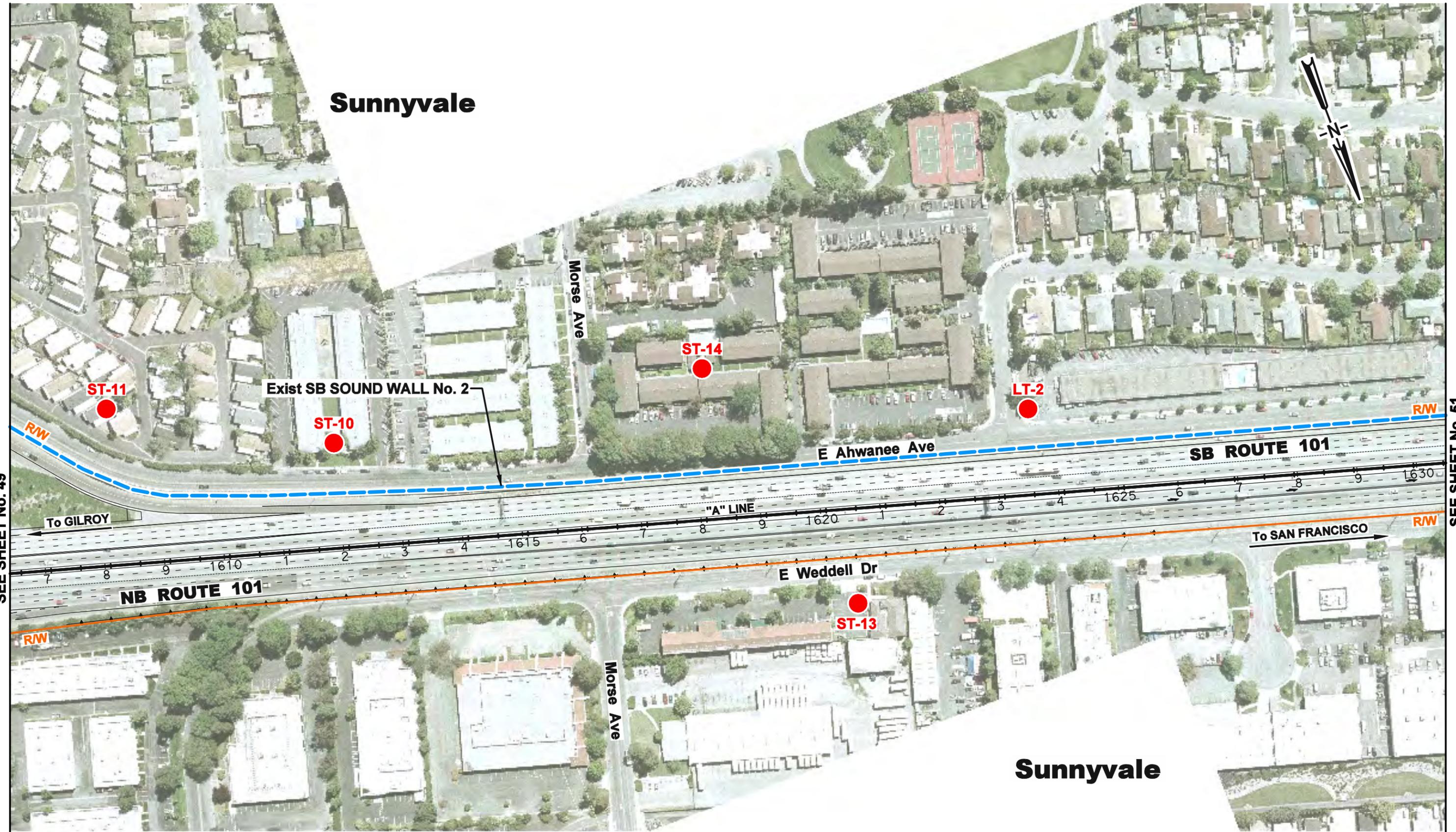
SEE SHEET No. 50



3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality



SEE SHEET No. 49

SEE SHEET No. 51

3/01/13

**MODELED NOISE RECEPTOR & BARRIER LOCATION
US 101 EXPRESS LANES PROJECT**

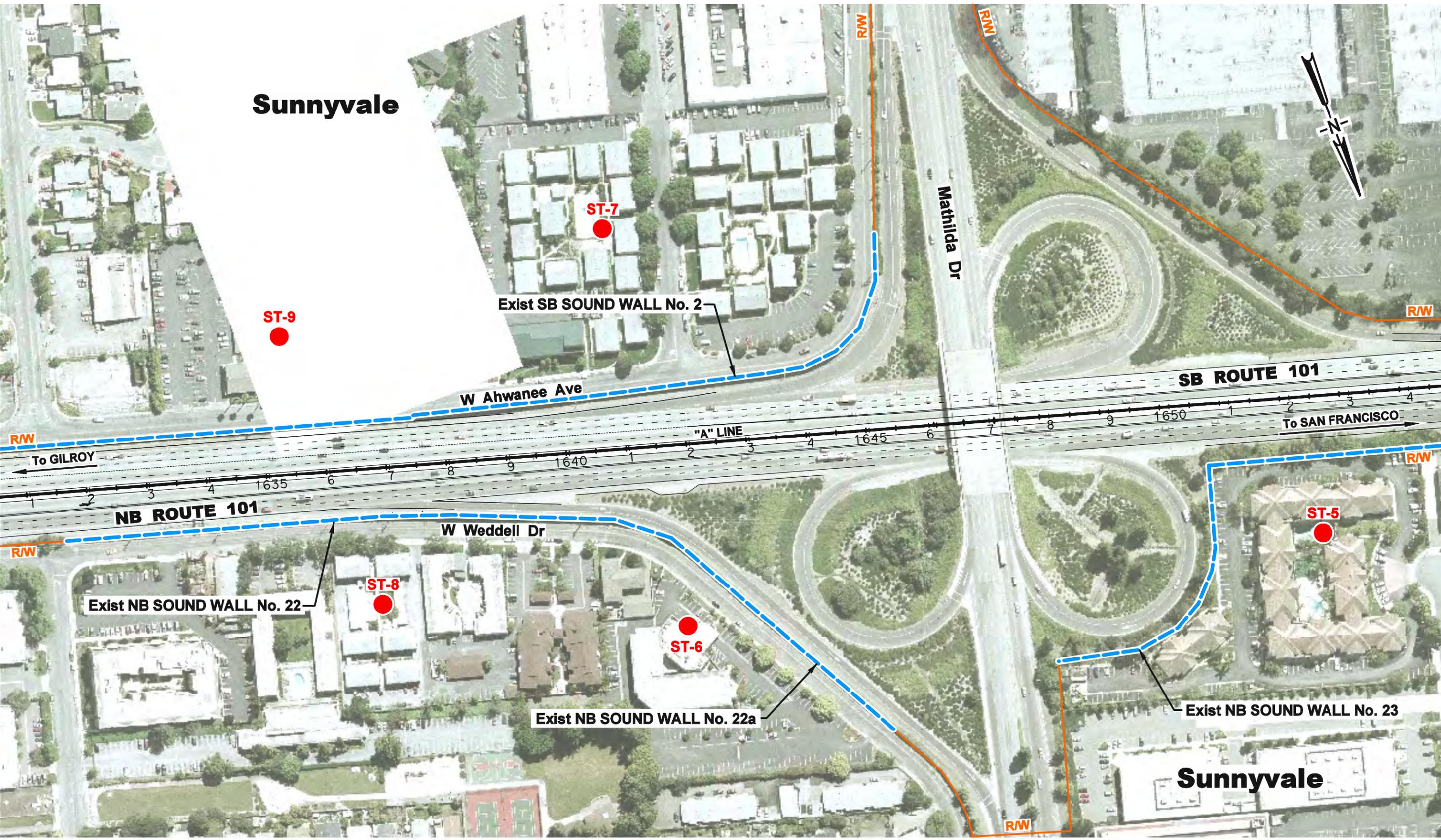


ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

Sunnyvale



SEE SHEET No. 50

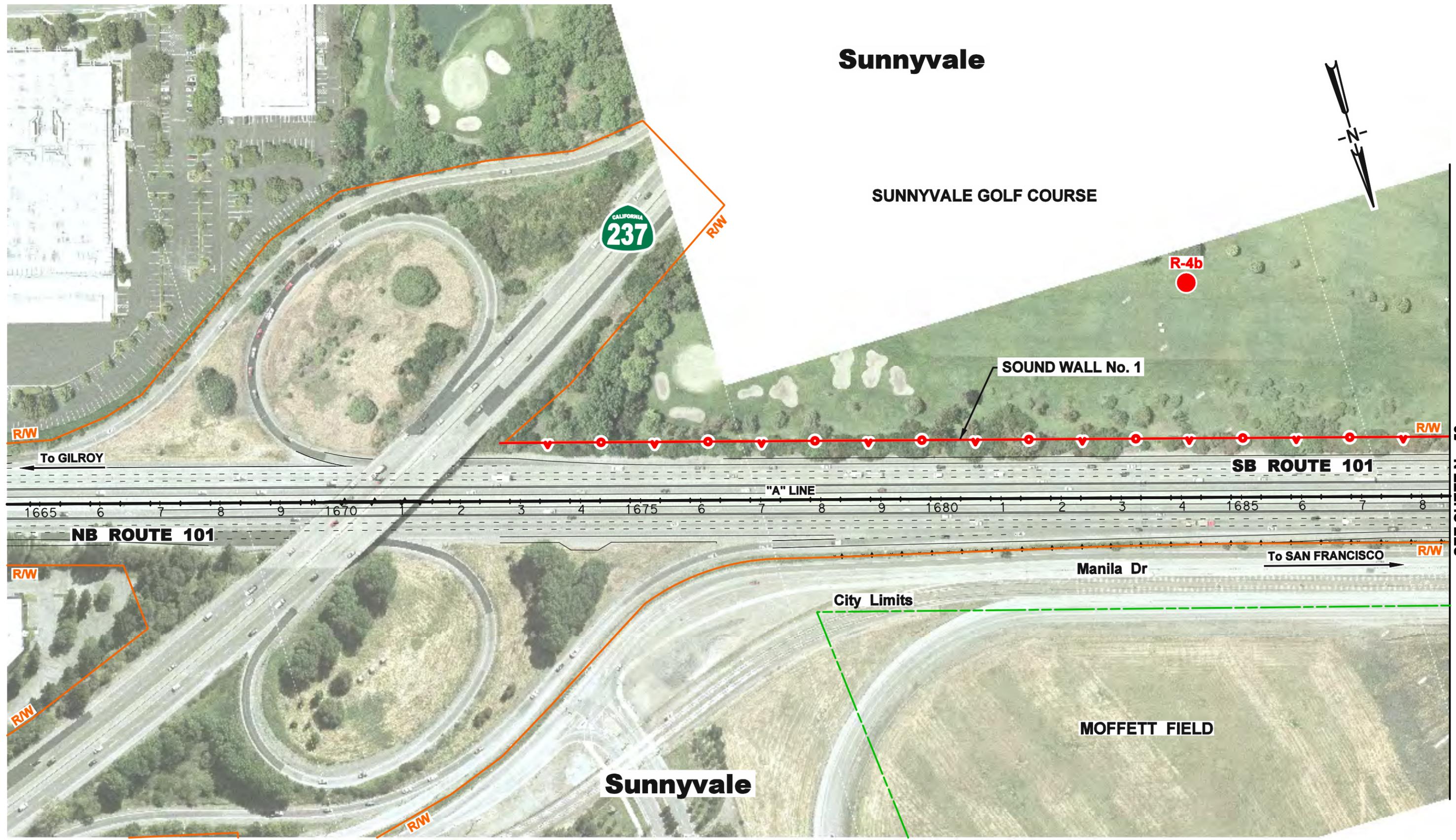


3/01/13

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US 101 EXPRESS LANES PROJECT**



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Sunnyvale

SUNNYVALE GOLF COURSE

R-4b

SOUND WALL No. 1

SB ROUTE 101

NB ROUTE 101

Manila Dr

City Limits

MOFFETT FIELD

Sunnyvale

To GILROY

To SAN FRANCISCO

R/W

R/W

R/W

R/W

R/W

"A" LINE

1665 6 7 8 9 1670 2 3 4 6 1675 6 7 8 9 1680 1 2 3 4 1685 6 7 8

3/01/13

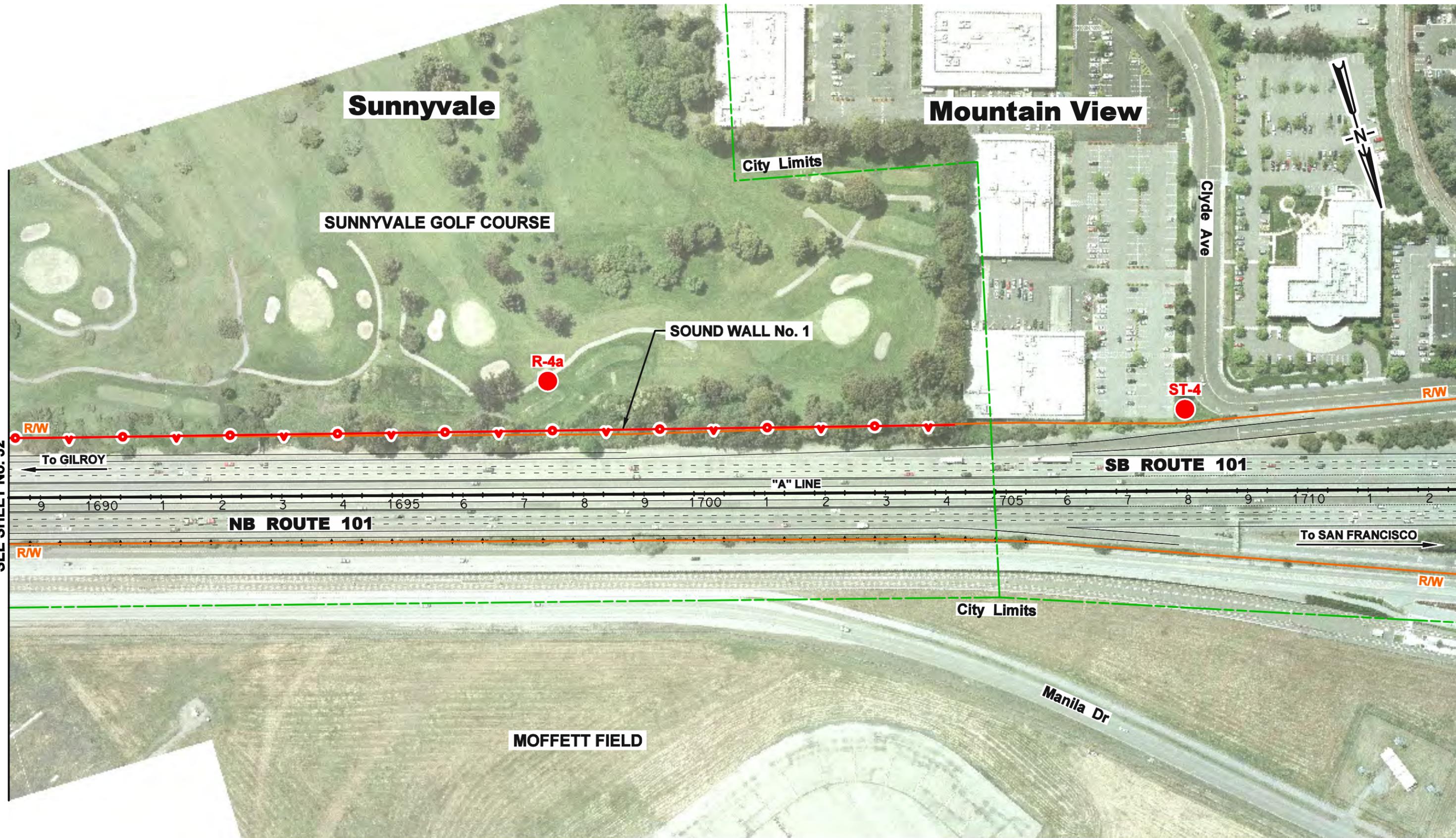
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SHEET 52 OF 55

SEE SHEET No. 53

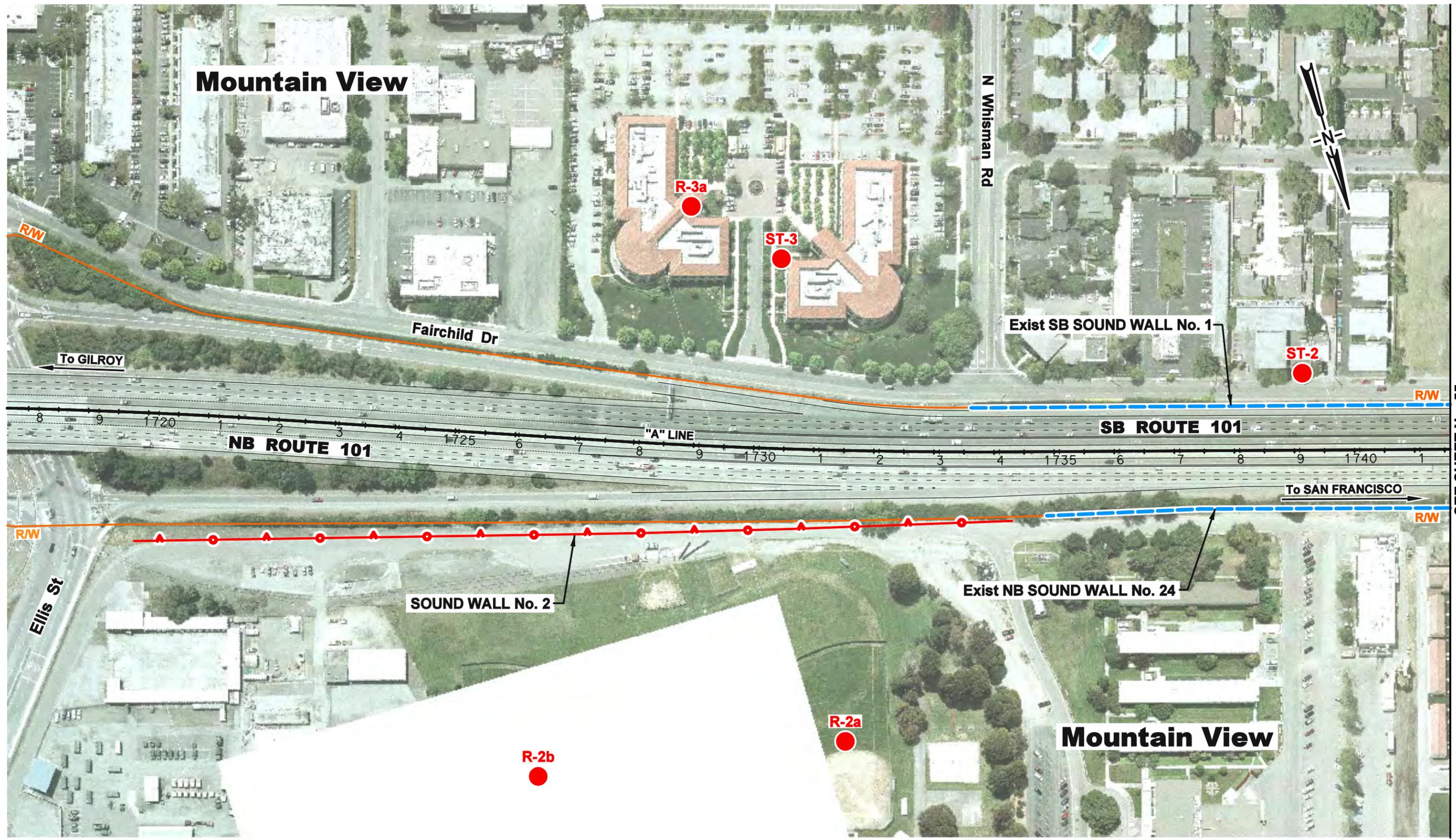


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SHEET 53 OF 55

Mountain View



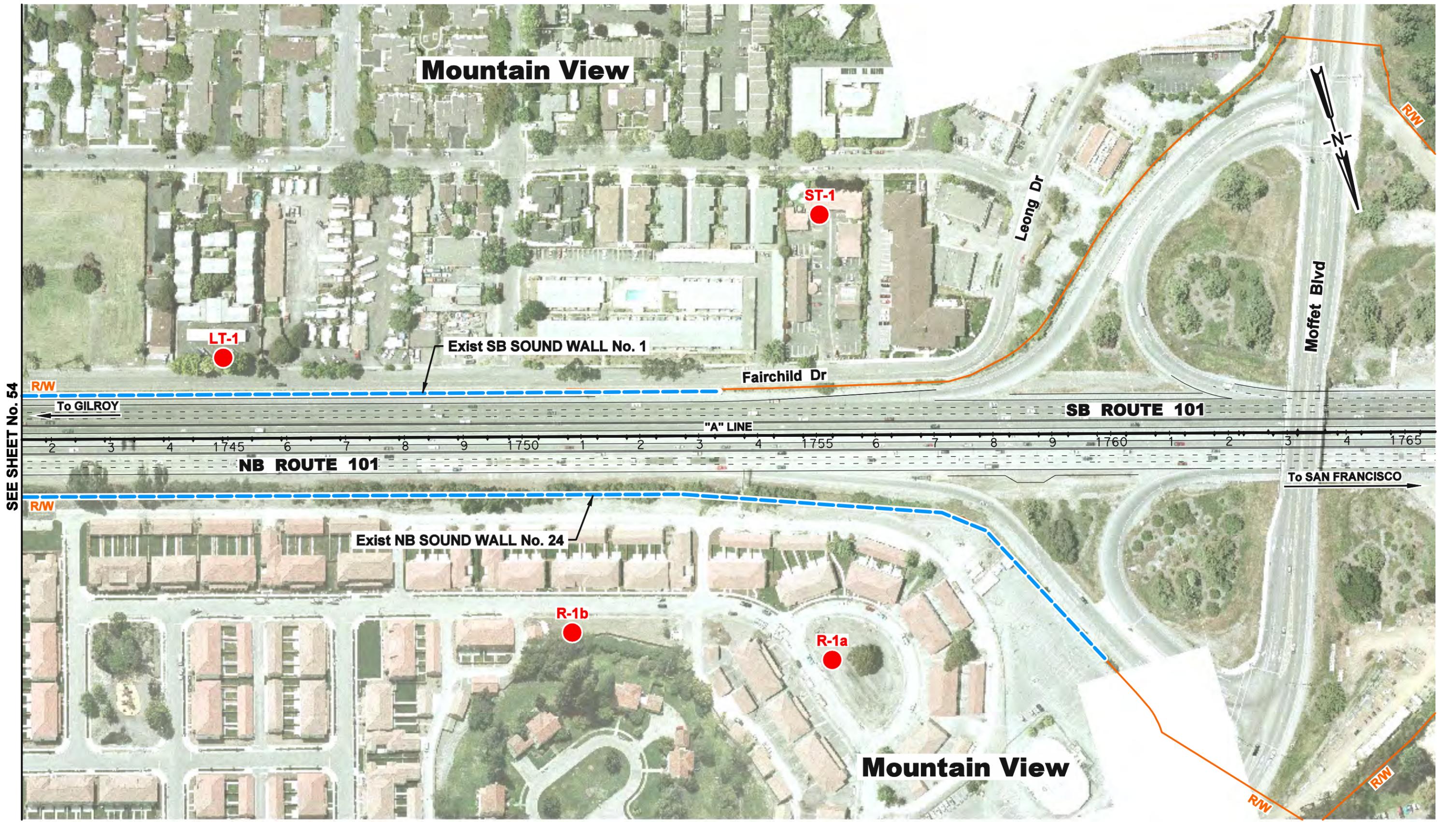
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Mountain View



SEE SHEET No. 54

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