IVY STATION DEVELOPMENT PROJECT
ADDITIONAL OFF-HOURS CONSTRUCTION

Supplemental Noise Report

Prepared for
Bernards Builders & Management Services
8824 National Blvd
Culver City, CA 90232

June 2018

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1. Introduction

1.1 Project Introduction

Bernards Brothers, Inc (Bernards) proposes additional off-hours construction activities for the Ivy Station Transit-Oriented Mixed-Use Development Project (Project) at 8824 National Boulevard in Culver City (City), California. The Project consists of the development of office, residential, and hotel buildings built over a subterranean parking structure, requiring soil excavation and foundation concrete pouring. Project construction is currently ongoing, including preparation for concrete pours.

The Culver City Noise Ordinance limits construction to essentially daytime hours Monday through Sunday; therefore, does not allow night construction. The Project currently has a temporary use permit (TUP) issued from the City for the off hours Project construction activities of concrete pours, and soil excavation/hauling. A noise technical report was prepared by ESA in November 2017 to support the City's environmental review process regarding the potential noise and lighting impacts at the nearest residence associated with these off-hour activities. The report concluded that the Project's off-hours construction would not result in adverse noise and lighting impacts to the nearest residence, and the TUP was approved by the City on December 22. 2017 and is valid until March 31, 2019.

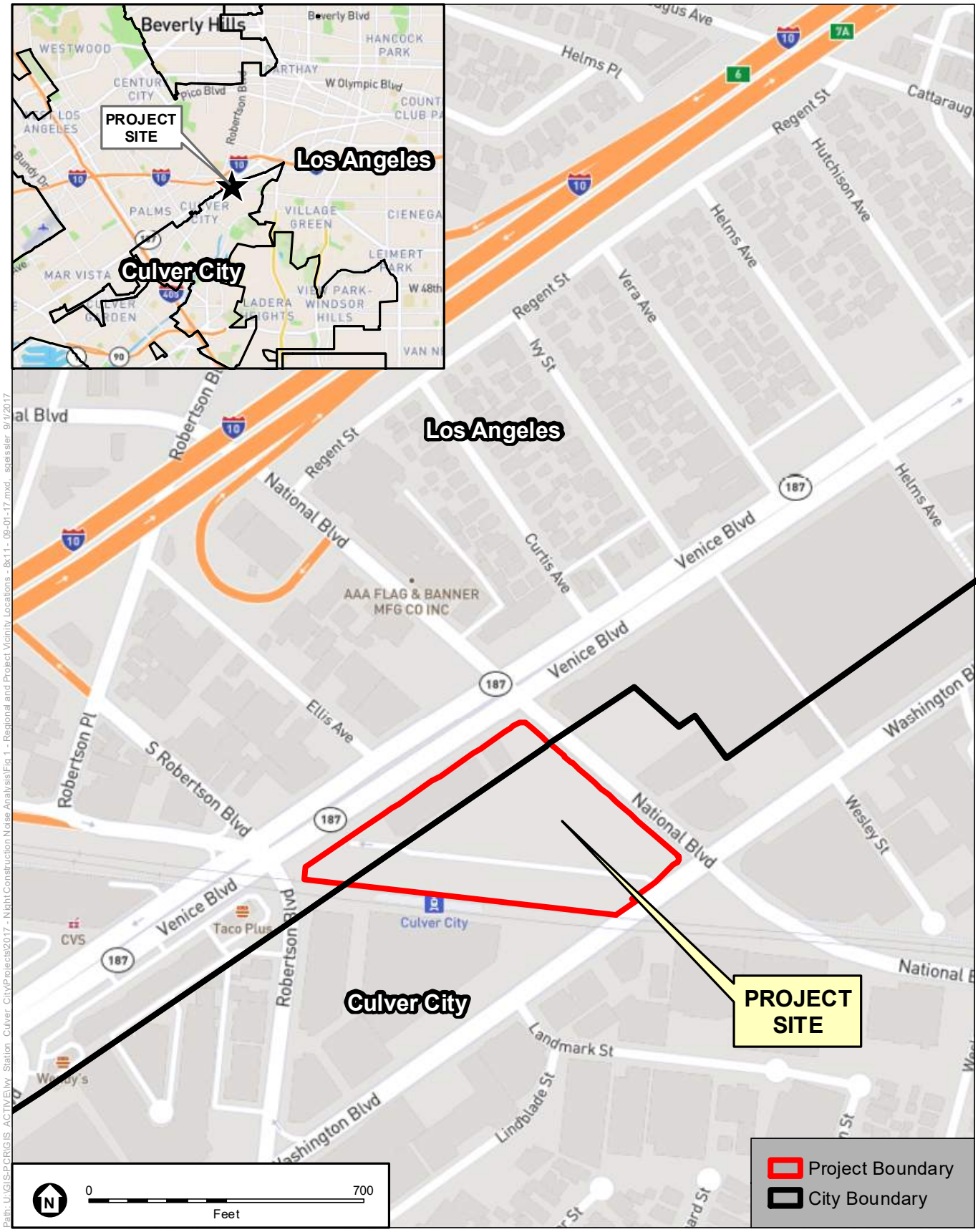
Since the TUP was approved, the Client has requested the use of the adjacent streets at the southeast corner of the Project site (i.e., intersection of Washington and National Boulevards) to facilitate additional off-hours construction activities including utility work, supplemental concrete pours, and structural deliveries such as wood framing, structural steel, metal studs, and drywall, which would provide a benefit the public by reducing daytime traffic congestion around the Project site. Therefore, the Client is requesting an amendment to the existing TUP for City review and approval of the proposed additional off-hours activities in the public right-of-way.

This supplemental noise report for the additional off hours Project activities is required as part of the request for an amendment to the TUP. This report supplements the previous 2017 report, but identifies applicable noise regulations, and evaluates potential short- and long-term noise impacts associated with the proposed additional off-hours construction of the Project. Where applicable, measures to mitigate or minimize noise impacts are included.

Information used to prepare this supplemental report included the noise analysis in the Project's Mitigated Negative Declaration (MND), the 2017 off-hours noise report for the TUP, the Culver City General Plan Noise Element and Municipal Code Noise Ordinance, meetings with Culver City representatives, construction data provided by Bernards, and other sources identified herein.

1.2 Project Location

The Project site is located at 8824 National Boulevard in Culver City, California, which is bisected by the boundary of the City of Los Angeles and Culver City, as shown in **Figure 1**. The Project site includes 4.15 acres within Culver City and 1.38 acres within the City of Los Angeles, for a total of approximately 5.53 acres.



SOURCE: Open Street Map, 2017.

Ivy Station

Figure 1
Regional and Project Vicinity Locations

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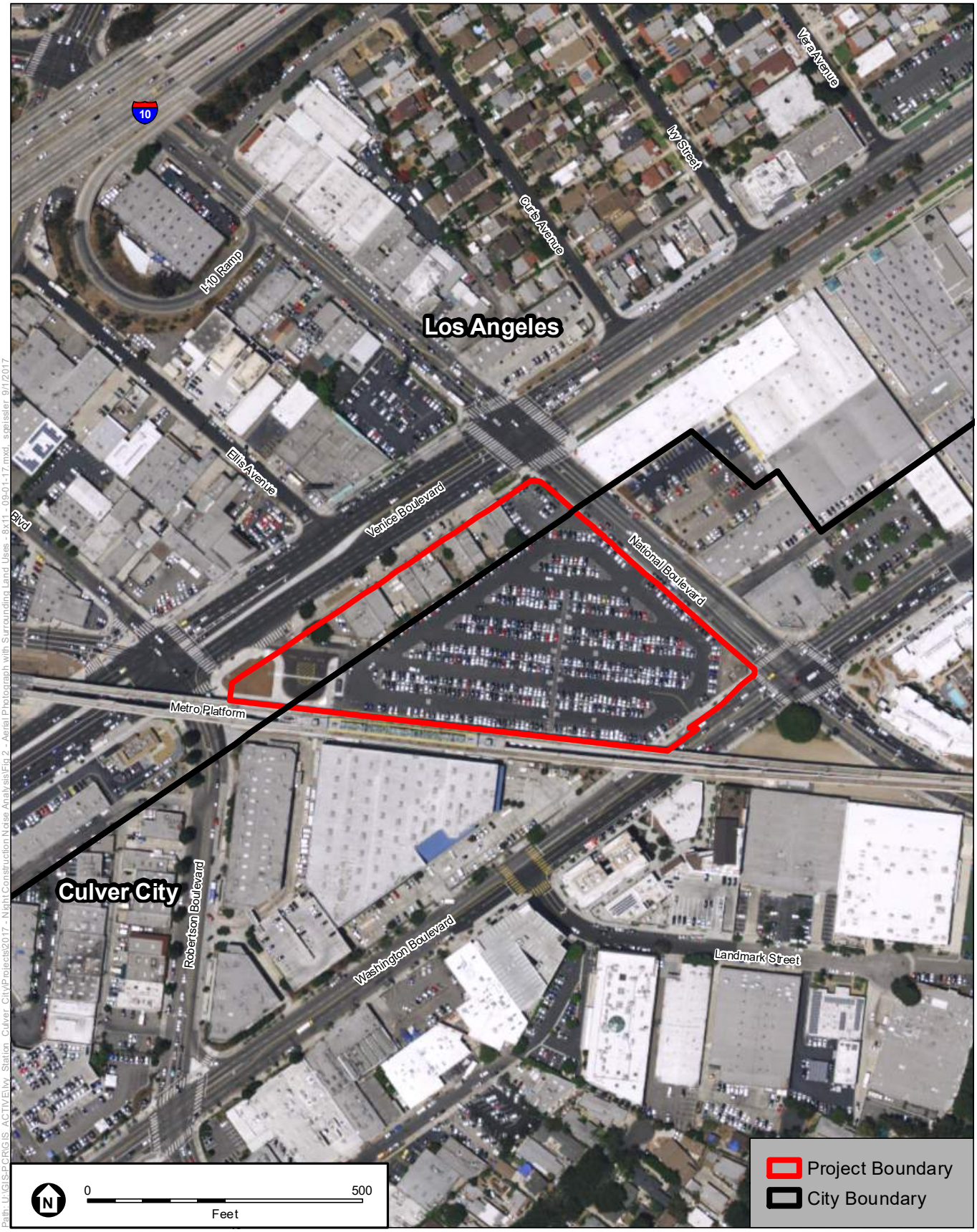

SOURCE: NAIP, 2016-07-11 (Aerial).

Ivy Station

Figure 2
Aerial Photograph with Surrounding Land Uses

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The Project site is bounded by Venice Boulevard and commercial uses to the northwest; National Boulevard and commercial uses to the northeast, Washington Boulevard and commercial and light industrial uses to the southeast, and the Metro right-of-way and Metro Station to the south. Interstate 10 (I-10) is located approximately 0.2 miles north of the Project site, as shown in **Figure 2**. Downtown Los Angeles is approximately seven miles east of the Project site.

2. Project Description

The proposed additional off-hours Project construction activities would include utility work, structural deliveries, and additional concrete pours (in addition to off-hours concrete pours already assessed in the 2017 noise report). The additional activities would occur off-site but adjacent to the southeastern portion of the Project site along Washington and National Boulevards, as detailed in Appendix A, TUP Plans. The additional off-hours Project construction activities would occur in the public right-of-way on Monday – Saturday during evening hours of 7 p.m. to 10 p.m. and/or the night hours of 10 p.m. to 6 a.m., outside of the City's allowable construction hours on Monday - Friday, and on Saturday of the City's noise ordinance. Therefore, an amendment to the Project's TUP is needed.

Overall, the additional off-hours Project construction would occur over approximately 23 months, and is anticipated to start in May 2018 and end in March 2020, as detailed in Appendix A, TUP Plans. The utility work would potentially occur over the entire off-hours Project construction period of approximately 23 months from May 2018 to March 2020. The additional concrete pours would occur over 11 months from May 2018 to March 2019. The structural deliveries would occur over 7 months from December 2018 to June 2019.

Utility Work

Off-hours utility work would occur by the Client and by utility companies along Washington Boulevard and National Boulevard in the sidewalk and traffic lanes adjacent to the southeast corner of the Project site, as shown in the TUP plan drawings in Appendix A. The off-hours utility work along Washington Boulevard would include the street installation of new sanitary sewer and storm drains, electrical duct bank, traffic signal and street light, water line, and power infrastructure. The off-hours utility work along National Boulevard would include the street installation of new sanitary sewer and storm drains, traffic signal, water line, power infrastructure, and natural gas line. The off-hours work would occur for various durations and dates, as shown on the schedule in the TUP drawings, including overlapping dates of activities, though not occurring simultaneously. The off-site work would require saw cutting, demolition, and asphalt grinding activities in the street for new utility installation, which would occur during allowable daytime hours of 9:00 a.m. to 3:30 p.m., and/or the evening hours of 7:00 p.m. to 10:00 p.m. The remaining utility work (i.e., installation of utility lines (placement), new storm sewer and drains, electrical duct bank, traffic signal and street light) would occur during the off-hours of evening and night hours to minimize daytime traffic impacts. The off-hours utility installation would require materials and equipment deliveries via trucks, and the use of a crane, and power hand tools, along the street adjacent to the Project site, as shown on the TUP drawings, Appendix A.

Concrete Work

The additional off-hours concrete work would reduce the overall amount of Project concrete pours by 14, resulting in larger sections of concrete. To facilitate this, the concrete pumps would be located from the previously assessed location on Venice Boulevard closer to the southeast corner of the Project site, which would be closer to the nearest residence directly across the intersection to the southeast. The additional concrete work would occupy the sidewalk and traffic lanes of Washington Boulevard and National Boulevard adjacent to the southeast corner of the Project site, as shown in the TUP plan drawings, Appendix A. Concrete pours would start at 10:00 p.m. and end at 6:00 a.m. The concrete pours would require concrete truck transport and staging, and concrete pumping activities, with the concrete equipment list from the 2017 report, with new locations, as shown on the TUP drawings, Appendix A.

Structural Deliveries

Off-hours structural deliveries of wood frames, structural steel, metal studs, and dry wall material would utilize the sidewalk and traffic lane of National Boulevard adjacent to the southeast corner of the Project site, as shown in the TUP plan drawings, Appendix A. The deliveries would arrive in sequence (i.e., not all at once) at 10:00 p.m. and end at 6:00 a.m., and would require the operation of a crane to off-load the trucks.

3. Environmental Setting

3.1 Existing Conditions

The Project site is currently undergoing Project construction. The Project site is bounded on three sides by four-lane arterials of Venice Boulevard, National Boulevard, and Washington Boulevard; and the Metrorail right-of-way and Culver City Metrorail Station. I-10 is located approximately 0.2 miles north of the Project site. The areas adjacent to the Project site are primarily commercial and light industrial, and the residential development within Culver City. Therefore, the predominant noise source surrounding the Project site is vehicle traffic noise on the adjacent roadways and nearby I-10. Secondary noise sources including existing general commercial activities, loading dock/delivery truck activities, trash compaction, refuse service activities, and landscape maintenance activities.

Existing Ambient Noise Levels

To identify the existing ambient noise environment at the residence in Culver City nearest the Project site, a continuous long-term noise measurement was conducted from Friday August 25, 2017 to Sunday August 27, 2017 at the southeastern corner of the Project site (i.e., adjacent to the nearest residence in Culver City), identified as Receptor (R)4 on **Figure 7**.

The noise measurement was conducted with Larson Davis model LxT. Type 2 sound level meter. During the measurement, the microphone for sound level meter was placed five feet above the ground surface. The sound level meter was calibrated with a Larson Davis model CAL 200 before and after the measurement. Following the calibration, a wind screen was placed over the microphone, and the frequency weighting was set on “A” and slow response.

The results of the ambient night noise measurement at location R4 are summarized in **Table 1**. As shown in Table 1, on the night of Friday, August 25, 2017, the measured evening/night hourly average noise levels at location R4 ranged from a high of 69.4 dBA L_{eq} at 7:00 p.m. to a low of 57.6 dBA L_{eq} at 3:00 a.m. Overall, for the 12-hour evening/night period (7:00 p.m. to 7:00 a.m.), the average noise level was 65.4 dBA L_{eq}. On the night of Saturday August 26, the measured evening/night hourly average noise levels at location R4 ranged from a high of 68.6 dBA L_{eq} at 7:00 p.m to a low of 56.3 dBA L_{eq} at 3:00 a.m. Overall, for the 12-hour evening/night period (7:00 p.m. to 7:00 a.m.), the average noise level was 64.5 dBA L_{eq}. The primary noise source during the measurements was vehicle traffic along the roadways adjacent to the Project site.

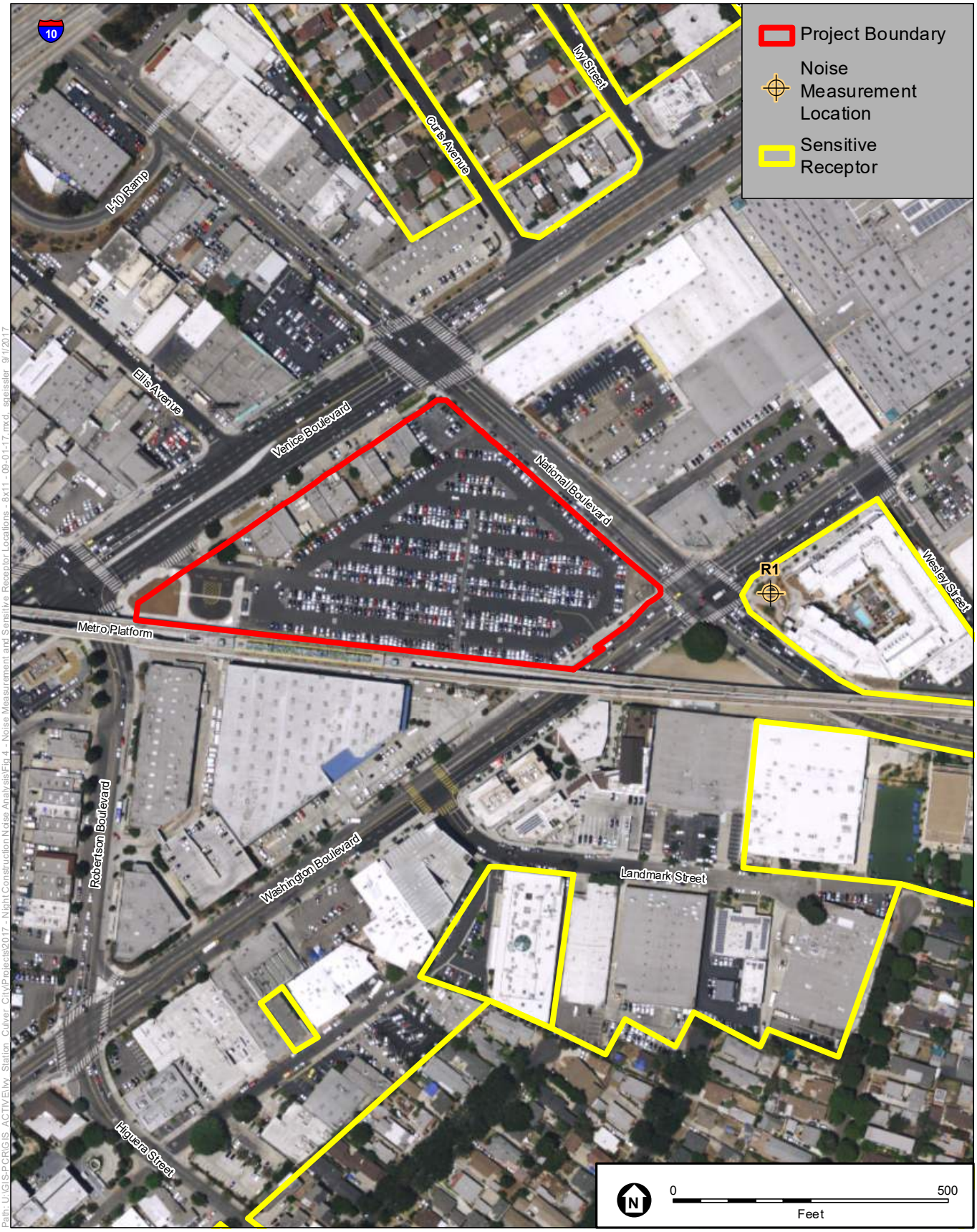
In addition, in 2015, ambient noise measurements conducted onsite for the 2015 MND provided similar night hourly average noise levels during the midweek at the southwest corner of the project site averaged 66 dBA L_{eq} for the night period (10:00 p.m. to 7:00 a.m.) with hourly averages ranging from 57 to 73 dBA L_{eq}.

TABLE 1
SUMMARY OF AMBIENT NIGHT NOISE MEASUREMENTS

Location, Day of the Week, Date, and Duration	Hourly Average Noise Levels, dBA L_{eq}
R4	
Friday Night, 8/25/17,	
7:00 p.m. to 8:00 p.m.	69.4
8:00 p.m. to 9:00 p.m.	68.7
9:00 p.m. to 10:00 p.m.	66.7
10:00 p.m. to 11:00 p.m.	65.8
11:00 p.m. to 12:00 p.m.	64.5
12:00 p.m. to 1:00 a.m.	65.4
1:00 a.m. to 2:00 a.m.	62.5
2:00 a.m. to 3:00 a.m.	58.6
3:00 a.m. to 4:00 a.m.	57.4
4:00 a.m. to 5:00 a.m.	59.0
5:00 a.m. to 6:00 a.m.	63.0
6:00 a.m. to 7:00 a.m.	65.0
7:00 a.m. to 8:00 a.m.	67.5
7:00 p.m. to 7:00 a.m. (12-hour period)	65.4

R4	
Saturday Night 8/26/17,	
7:00 p.m. to 8:00 p.m.	68.6
8:00 p.m. to 9:00 p.m.	66.5
9:00 p.m. to 10:00 p.m.	65.9
10:00 p.m. to 11:00 p.m.	66.6
11:00 p.m. to 12:00 p.m.	65.5
12:00 p.m. to 1:00 a.m.	62.4
1:00 a.m. to 2:00 a.m.	62.3
2:00 a.m. to 3:00 a.m.	60.9
3:00 a.m. to 4:00 a.m.	56.3
4:00 a.m. to 5:00 a.m.	59.7
5:00 a.m. to 6:00 a.m.	61.6
6:00 a.m. to 7:00 a.m.	63.8
7:00 a.m. to 8:00 a.m.	64.864.5
7:00 p.m. to 7:00 a.m. (12-hour period)	

SOURCE: ESA, 2017.



SOURCE: NAIP, 2016-07-11 (Aerial).

Ivy Station

Figure 7
Ambient Noise Measurement and Sensitive Receptor Locations

ESA

Path: U:\GIS-PCR\GIS_ACTIVE\Ivy_Station_Culver_City\Projects\2017 - Night Construction Noise Analysis\Fig 4 - Noise Measurement and Sensitive Receptor Locations - 8x11 - 09-01-17.mxd, sgeissler 9/1/2017

Noise Sensitive Receptors

Noise sensitive land uses are defined as those specific land uses that have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. The noise sensitive uses in Culver City closest to the Project site are the multi-family residences (Access Apartments) at the intersection of National and Washington Boulevards, approximately 170 feet southeast of the Project site across the intersection. This residence represents the nearest sensitive receptor in Culver City to the Project site, and, therefore, illustrates the worst-case scenario for potential noise impacts from the Project's additional off-hours construction activities.

3.3 Regulatory Setting

Local

Culver City General Plan Noise Element

The Noise Element of the General Plan identifies noise-sensitive land uses and noise sources, defines areas of noise impact, and establishes goals, policies, and programs to ensure that City residents are protected from excessive noise (Culver City 1995). The noise goals and policies of the Noise Element applicable to the Project's night construction includes:

Policy 2.A Create a comprehensive ordinance establishing noise regulation criteria, and standards for noise sources and receptors to include but not be limited to the following:

- Noise reduction features during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses, such as schools, hospitals, convalescent homes, and libraries.
- Temporary sound barrier installation at construction site if construction noise is impacting nearby noise sensitive land uses.
- Noise abatement and acoustical design criteria for construction and operation of any new development.

The City's noise standards are contained in the City's 1995 General Plan Noise Element, which establishes a nighttime (10:00 p.m. to 7:00 a.m.) levels of 50 dBA Leq for a duration of 30 minutes, and 65 dBA Leq for a duration of one minute, at the property line of the noise sensitive receptor, as shown in **Table 2** below (City 1995).

TABLE 2
CULVER CITY NOISE STANDARDS

Daytime levels 7:00 AM – 10:00 PM	Nighttime Levels 10:00 PM – 7:00 AM	Duration
55 dBA - Leq	50 dBA - Leq	30 minute
60 dBA - Leq	55 dBA - Leq	15 minute
65 dBA - Leq	60 dBA - Leq	5 minute
70 dBA - Leq	65 dBA - Leq	1 minute
75 dBA - Leq	70 dBA - Leq	Never

Source: City 1995.

Culver City Municipal Code

Chapter 9.07 of the City of Culver City Municipal Code (CCMC) provides specific noise restrictions and exemptions for noise sources within Culver City. Culver City's noise regulations state that construction activity shall be prohibited, except between the hours of 8:00 A.M. and 8:00 P.M. Mondays through Fridays; 9:00 A.M. and 7:00 P.M. Saturdays; 10:00 A.M. and 7:00 P.M. Sundays.

4. Impacts and Mitigation Measures

4.1 Methodology

The noise levels from the additional off-hours construction activities were estimated using the FHWA's Roadway Construction Noise Model (RCNM), and construction information provided by the Client. Noise levels from each activity were estimated at the residence in Culver City nearest the Project site based on the distance from the activity locations adjacent to the Project site. To present a conservative impact analysis, the estimated noise levels were calculated for a scenario in which all major heavy construction equipment of each activity was assumed to be operating simultaneously for each phase (e.g., concrete pouring) and located at the construction area nearest to the nearest residence. These assumptions represent the worst-case noise scenario, as typically, construction activities spread out throughout a project site, located further away from the affected receptors. The estimated noise levels for each activity at the nearest residence were then compared against the City's noise standards to determine whether an exceedance of allowable noise levels would occur.

4.2 Impact Thresholds

As provided to ESA by Culver City, the maximum construction noise of the off-hours Project construction at the property line of the nearest residence in Culver City shall not exceed 70 dBA $L_{max.}$ during the City's daytime hours of 7:00 a.m. to 10:00 p.m. and 65 dBA L_{max} during the City's night hours of 10:00 p.m. to 7:00 a.m., based on the City's day and nighttime noise standards (City 1995), shown in Table 2. In addition, the City's noise standards establishes hourly average noise levels of 55 dBA L_{eq} daytime and 50 dBA L_{eq} nighttime (City 1995), as shown in Table 2.

4.3 Project Impact Analysis

The proposed additional off-hours Project construction activities would include utility work, concrete pouring, and structural deliveries, requiring the use of heavy equipment including as haul trucks, a crane, concrete trucks, and concrete pumps. During each activity, there would be a different mix of equipment used. As such, construction activity noise levels adjacent to the Project site would vary depending on the particular type, number, and duration of use of the equipment, and location for each activity. The individual pieces of construction equipment anticipated during Project night construction produce maximum noise levels ranging from approximately 75 to 90 dBA L_{max} at a reference distance of 50 feet from the noise source (FHWA 2006). These maximum noise levels would occur when equipment is operating at full power, and include estimated usage factors for the equipment, which are based on FHWA's RNCM User's Guide.[1]

During Project construction, the nearest residence in Culver City that would be exposed to the additional off-hours Project's construction noise would be the existing multi-family residence located across the street intersection from the southeast corner of the Project site. During construction activities, the highest noise levels would be generated when multiple pieces of construction equipment are being operated concurrently for each activity. As discussed previously, the Project's estimated construction noise levels were calculated for a worse-case scenario in which all construction equipment was assumed to be operating simultaneously for each activity, and located adjacent to the southeast corner of the Project site, as shown in Appendix A, TUP Plans.

The estimated construction noise levels at the nearest residence were calculated using FHWA's RCNM, based on the concurrent operation of equipment for each activity (i.e., concrete trucks, booms, and pumps for concrete pours). **Table 3** shows the estimated unmitigated construction noise levels that would occur at the nearest residence during the additional off-hours Project's construction activities at the Project Site. Details for the construction noise calculations for each construction phase are shown in Appendix B.

TABLE 3
UNMITIGATED ESTIMATED CONSTRUCTION NOISE LEVELS AT NEAREST RESIDENCE

Construction Phase	Estimated Maximum Construction Noise Levels (dBA L_{max})	Estimated Average Construction Noise Levels (dBA L_{eq})
Utility Work		
Pavement cutting/breaking/grinding	74	67
Trenching and excavation	65	61
Utility Line Placement	64	60
Backfill Trench	62	58
Street Light and Storm Drains	64	60
Concrete Pours	70	69
Wood Framing Deliveries	61	58

[1] Federal Highway Administration (FHWA), Roadway Construction Noise Model User's Guide, 2006.

Culver City Noise Standards		
Daytime Hours	*70*	*55**
Night Hours	*65*	*50**

* existing measured ambient levels exceed these standards, therefore, these standards are adjusted to the ambient plus 3 dBA.
SOURCE: ESA, 2017.

Utility Work (7:00 p.m. to 6:00 a.m.)

As shown in Table 3, the off-hours utility work phases would not exceed Culver City's maximum day and night noise limit of 70 and 65 dBA L_{max}, respectively, at a residence, except for pavement cutting/breaking/grinding with maximum noise levels of 74 dBA L_{max}.

As shown in Table 3, all of the off-hours utility work phases would exceed Culver City's night noise limit of 50 dBA L_{eq} at a residence; however, the measured ambient noise levels at the residence is already greater than the City's standard. Therefore, adjusting the standard to the ambient plus 3 dBA (i.e., a 3 dBA increase is a perceived change) would be approximately 59.3 dBA L_{eq} during the quietest hour measured (at 3:00 a.m.). However, all of the utility work phases would still exceed to a lesser degree, the adjusted standard at the residence, except for backfilling trench.

In addition, the hourly average noise levels of the utility phases of would range from 58 - 67 dBA L_{eq} (the highest due to pavement cutting) at the residence, which would be higher than the average ambient night noise level of approximately 56.3 dBA L_{eq}, measured during the quietest hour of 3:00 a.m. The combined utility noise and existing ambient noise level during the 3 a.m. hour would range from approximately 62 - 67 dBA L_{eq}, which would be an increase ambient levels of approximately 6-10 dBA over existing ambient, during the quietest hour of 3:00 a.m., which would be a perceptible to a strongly perceptible increase. A change in noise levels of 10 dBA (due to pavement cutting) is subjectively heard as doubling of the perceived loudness.

Concrete Pours (10:00 p.m. to 6:00 a.m.)

As shown in Table 3, the night concrete pours would generate 70 dBA L_{max} at the residence, which would exceed Culver City's night noise limit of 65 dBA L_{max} at a residence.

As shown in Table 3, the night concrete pours would generate hourly average noise levels of 69 dBA L_{eq} at the residence, which would exceed the City's night noise limit of 50 dBA L_{eq} at a residence; however, adjusting the standard to the ambient plus 3 dBA (a perceived change), the adjusted standard would be approximately 59.3 dBA L_{eq} during the quietest hour (at 3:00 a.m.), which the night concrete pours of 69 dBA L_{eq} at the residence would still exceed.

In addition, the hourly average noise levels of the additional off- hours concrete pours of 67 dBA L_{eq} at the residence would be slightly higher than the average ambient night noise level of approximately 65 dBA L_{eq}. The combined resultant ambient noise level would increase ambient levels by less than 3 dBA, which would be a less than perceptible increase. However, during the quietest hour of 3:00 a.m., the ambient night noise level would be substantially lower, measured

at approximately 56.3 dBA L_{eq}. The combined concrete noise and existing ambient noise level during the 3 a.m. hour would be approximately 67 dBA L_{eq}, which would be an increase ambient levels of approximately 10 dBA over existing ambient, which would be a strongly perceptible increase during the quietest hour of 3:00 a.m. A change in noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness. Therefore, the ambient increase would range from 3 dBA to 10 dBA (perceptible to strongly perceptible) during the additional concrete pours during the night period.

Structural Deliveries (10:00 p.m. to 6:00 a.m.)

As shown in Table 3, the night structural deliveries of wood and steel framing would generate 61 dBA L_{max} at the residence, which would not exceed Culver City's night noise limit of 65 dBA L_{max} at a residence.

As shown in Table 3, the night structural deliveries would generate 58 dBA L_{eq} at the residence, which would exceed the City's night noise limit of 50 dBA L_{eq} at a residence; however, the adjusted standard would be approximately 59.3 dBA L_{eq} during the quietest hour (at 3:00 a.m.). Therefore, the structural deliveries noise of 58 dBA L_{eq} at the residence would not exceed the adjusted City hourly average night standard of 59.3 dBA L_{eq} at a residence.

In addition, the hourly average noise levels of the night structural deliveries of 58 dBA L_{eq} at the residence would be slightly higher than the average ambient night noise level of approximately 56.3 dBA L_{eq} during the quietest hour of 3 a.m. However, the combined resultant ambient noise level of 60.2 dBA L_{eq} would increase ambient levels by approximately 4 dBA, which would be a barely perceptible increase.

Mitigation

The following noise reduction measures that shall be implemented to reduce construction noise levels at the residence during off –hours construction:

> **Noise Reduction Measure NOISE-1**: All mobile off-road construction equipment operating at the project site shall be equipped with properly operating mufflers. Idling equipment shall be turned off when not in use.
>
> **Noise Reduction Measure NOISE-2:** The construction contractor(s) shall ensure that the concrete pumps are muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.
>
> **Noise Reduction Measure NOISE-3:** The construction contractor(s) shall ensure that the construction equipment are muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.

Table 4 shows the estimated mitigated construction noise levels that would occur at the nearest residence during the additional off-hours Project's construction activities at the Project site. Details for the construction noise calculations for each construction phase are shown in Appendix B.

TABLE 4
MITIGATED ESTIMATED CONSTRUCTION NOISE LEVELS AT NEAREST RESIDENCE

Construction Phase	Estimated Maximum Construction Noise Levels (dBA L_{max})	Estimated Average Construction Noise Levels (dBA L_{eq})
Utility Work		
Pavement cutting/breaking/grinding	59	52
Trenching and excavation	50	46
Utility Line Placement	49	45
Backfill Trench	47	43
Street Light and Storm Drains	49	45
Concrete Pours	55	54
Wood Framing Deliveries	61	58
Culver City Noise Standards		
Daytime Hours	*70*	*55**
Night Hours	*65*	*50**

* existing measured ambient levels exceed these standards, therefore, these standards are adjusted to the ambient plus 3 dBA.
SOURCE: ESA, 2017.

As shown in Table 4, after the mitigation is implemented, the additional off-hours construction noise for utility work and concrete pours would be reduced as follows:

Utility Work (7:00 p.m. to 6:00 a.m.)

- Implementing Noise Reduction Measure NOISE-3, temporary noise barriers (a 10-15 dBA reduction) in the street, or moving pavement cutting/breaking/grinding to the allowable construction hours during the daytime or prior to 10 p.m. would reduce this noise level below the City's maximum noise standard.
- Implementing Noise Reduction Measure NOISE-3, and moving pavement cutting/breaking/grinding to the allowable construction hours or prior to 10 p.m. would reduce noise levels below the adjusted hourly average night noise standard.
- Implementing Noise Reduction Measure NOISE-3, and moving the pavement cutting activities to the allowable construction hours would reduce utility noise levels to a perceptible increase.

Concrete Pours (10:00 p.m. to 6:00 a.m.)

- Implementing Noise Reduction Measures NOISE-2 and NOISE-3 would reduce the concrete pour noise level below the City's maximum night noise standard. All equipment within the Project perimeter fence, where noise barriers can be installed.

- Implementing Noise Reduction Measures NOISE-2 and NOISE-3 would reduce noise levels below the adjusted hourly average night noise standard.
- Implementing Noise Reduction Measures NOISE-2 and NOISE-3 would reduce hourly average noise levels at the quietest hour at night to perceptible.

5. Conclusion

Utility Work

The utility work phases would not exceed Culver City's maximum day and night noise limit of 70 and 65 dBA L_{max}, respectively, at the residence, except during pavement cutting/breaking/grinding with maximum noise levels of 74 dBA L_{max}. Implementing Noise Reduction Measure NOISE-3, temporary noise barriers (a 10-15 dBA reduction) in the street, or moving pavement cutting/breaking/grinding to the allowable construction hours (prior to 8 or 7 p.m. on weekdays and Saturdays, respectively) would reduce noise levels below the City's maximum night noise standard.

The utility work phases would exceed Culver City's night noise limit of 50 dBA L_{eq} at the residence, and would also exceed the adjusted standard at the residence, except for backfill trench. Implementing Noise Reduction Measure NOISE-3, temporary noise barriers in the street, or moving pavement cutting/breaking/grinding to the allowable construction hours (prior to 8 or 7 p.m. on weekdays and Saturdays, respectively) would reduce noise levels below the adjusted standard.

The utility work would increase the ambient noise levels at the quietest hour from 6 dBA to 10 dBA (less than perceptible to strongly perceptible) during the utility phases during the night period. Implementing Noise Reduction Measure NOISE-3, temporary noise barriers in the street, or moving pavement cutting/breaking/grinding prior to 7 p.m. would reduce the noise levels to perceptible.

Concrete Pours

The night concrete pours would generate 70 dBA L_{max} at the residence, which would exceed Culver City's night maximum noise limit of 65 dBA L_{max} at a residence. Implementing Noise Reduction Measure NOISE-2, would reduce the pump noise; however, 70 dBA L_{max} would still occur at the residence. Implementing Noise Reduction Measure NOISE-3 of temporary noise barriers in the street (blocking the truck noise), would reduce the concrete pour noise level below the City's maximum night noise standard.

The night concrete pours would generate hourly average noise levels of 69 dBA L_{eq} at the residence, which would exceed Culver City's night noise limit of 50 dBA L_{eq} at a residence, and the adjusted standard of approximately 59.3 dBA L_{eq} during the quietest hour (at 3:00 a.m.), which the night concrete pours of 69 dBA L_{eq} at the residence would exceed. Implementing Noise Reduction Measure NOISE-2 and NOISE-3 of temporary noise barriers in the street (blocking the truck noise), would reduce noise levels below the adjusted standard.

The hourly average noise levels of the additional off-hours concrete pours of 67 dBA L_{eq} at the residence would increase the ambient levels from 3 dBA to 10 dBA (perceptible to strongly perceptible) during the additional concrete pours during the night period. Implementing Noise Reduction Measures NOISE-2 and NOISE-3, would reduce noise levels to perceptible.

Structural Deliveries (10:00 p.m. to 6:00 a.m.)

The night structural deliveries of wood and steel framing would generate 61 dBA L_{max} at the residence, which would not exceed Culver City's night noise limit of 65 dBA L_{max} at a residence.

The night structural deliveries would generate 58 dBA L_{eq} at the residence, which would exceed Culver City's night noise limit of 50 dBA L_{eq} at a residence. However, the structural deliveries noise of 58 dBA L_{eq} at the residence would not exceed the adjusted City hourly average night standard of 59.3 dBA L_{eq} at a residence.

The hourly average noise levels of the night structural deliveries of 58 dBA L_{eq} at the residence would be slightly higher than the average ambient night noise level of approximately 56.3 dBA L_{eq} during the quietest hour of 3 a.m. However, the combined resultant ambient noise level of 60.2 dBA L_{eq} would increase ambient levels by approximately 4 dBA, which would be a perceptible increase.

6. References

Culver City (Culver City), 1995 General Plan Noise Element. 1995.

Federal Highway Administration (FHWA), Roadway Construction Noise Model User's Guide, 2006.

Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment, May, 2006.

U.S. Environmental Protection Agency (USEPA), *EPA Identifies Noise Levels Affecting Health and Welfare*, April 1974.

Appendix A
TUP Plans

IVY STATION: OFF-SITE WORK

Off Site Work along Washington Blvd:
1.Work by Bernards:
a.Install new SS – 16 Working Days (Inc. 2 days for saw cut, demo and asphalt grinding)
b.Install new SD – 16 Working Days (Inc. 2 days for saw cut, demo and asphalt grinding)
c.Install new electrical ductbank – 20 Working Days (Inc. 2 days for saw cut, demo and asphalt grinding)
d.Install new traffic signal and street light – 120 Working days
2.Work by Utility Company:
a.Install new water line (By GSW) – Estimated time 6 months. Start time TBD.
b.Install new power (By SCE) – Estimated time 6 months. Start time TBD.

Off Site Work along National Blvd:
1.Work by Bernards:
a.Install new SS – 20 Working Days (Inc. 2 days for saw cut, demo and asphalt grinding)
b.Install new SD – 10 Working Days (Inc. 2 days for saw cut, demo and asphalt grinding)
c.Install new traffic signal – 120 Working Days
2.Work by Utility Company:
a.Install new water line (By GSW) – Estimated time 6 months. Start time TBD.
b.Install new power (By SCE) – Estimated time 6 months. Start time TBD.
c.Install new gas line (By The Gas Company) - Estimated time 6 months. Start time TBD.

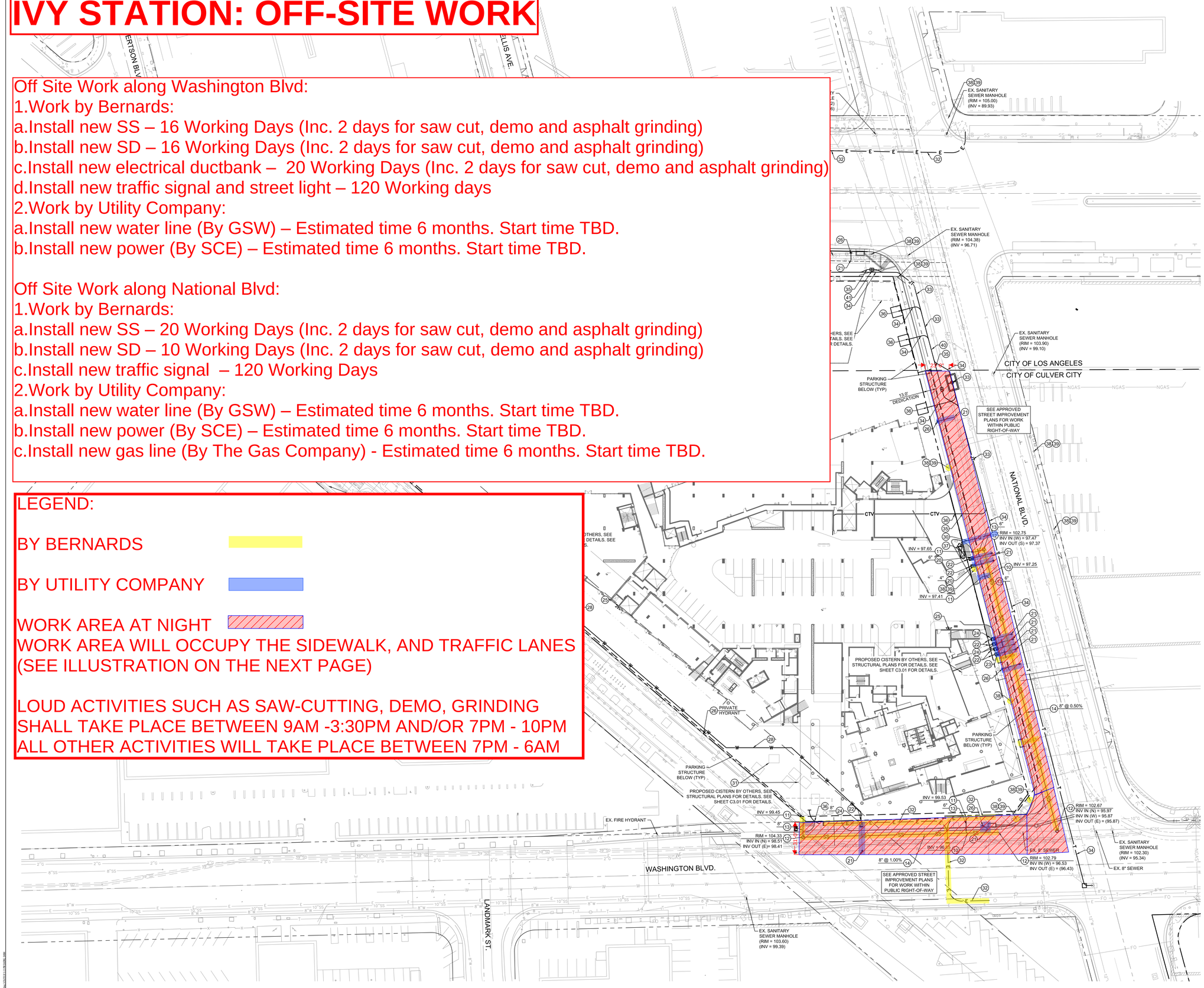
LEGEND:

BY BERNARDS

BY UTILITY COMPANY

WORK AREA AT NIGHT
WORK AREA WILL OCCUPY THE SIDEWALK, AND TRAFFIC LANES (SEE ILLUSTRATION ON THE NEXT PAGE)

LOUD ACTIVITIES SUCH AS SAW-CUTTING, DEMO, GRINDING SHALL TAKE PLACE BETWEEN 9AM -3:30PM AND/OR 7PM - 10PM
ALL OTHER ACTIVITIES WILL TAKE PLACE BETWEEN 7PM - 6AM



811 DIAL TOLL FREE 811
Know what's below. Call before you dig.
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- RIGHT-OF-WAY LINE
- CENTER LINE
- CITY BOUNDARY LINE
- EXISTING SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- EXISTING WATER LINE
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING GAS LINE
- EXISTING GAS LINE
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- PROPOSED JOINT TRENCH FOR TELEVISION AND TELEPHONE LINES
- PROPOSED TELEPHONE LINE
- PROPOSED TELEVISION LINE
- EXISTING COMMUNICATIONS LINE
- EXISTING COMMUNICATIONS LINE
- BUILDING BELOW
- POTHOLE AND VERIFY UTILITY LOCATION

GENERAL NOTES:

1. SEE GRADING/DRAINAGE PLAN FOR STORM DRAIN CONSTRUCTION NOTES.
2. SEE PLUMBING PLAN FOR BUILDING PERIMETER SURFACE DRAIN LINES AND STORM DRAIN LINES ABOVE STRUCTURE.
3. INVERTS SHOWN WITH "*" ARE BASED ON RECORD DOCUMENTS.
4. INVERTS SHOWN WITH "±" ARE BASED ON INTERPOLATION OF SURVEYED INVERTS USING RECORD SLOPES OF PIPES.
5. BACKFLOW DEVICE LOCATION AND DETAIL PER PLUMBING PLAN.
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12. CONSTRUCT SANITARY SEWER MANHOLE PER OFFSITE PLANS.
13. CONSTRUCT SANITARY SEWER SERVICE LATERAL PER OFFSITE PLANS. SIZE PER PLAN.
14. CONSTRUCT SANITARY SEWER MAIN EXTENSION PER OFFSITE PLANS. SIZE PER PLAN.
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29. PROPOSED THRUST BLOCK PER DETAIL 2 ON SHEET C7.00.

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33. PROPOSED JOINT TRENCH PER DRY UTILITY PLANS
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35. PROPOSED TELEVISION LINE PER DRY UTILITY PLANS
36. SEE DRY UTILITY PLANS FOR BUILDING SERVICE CONNECTIONS
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Kimley»Horn
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LOS ANGELES, CA 90017
213.261.4040

IVY STATION

CULVER CITY, CA

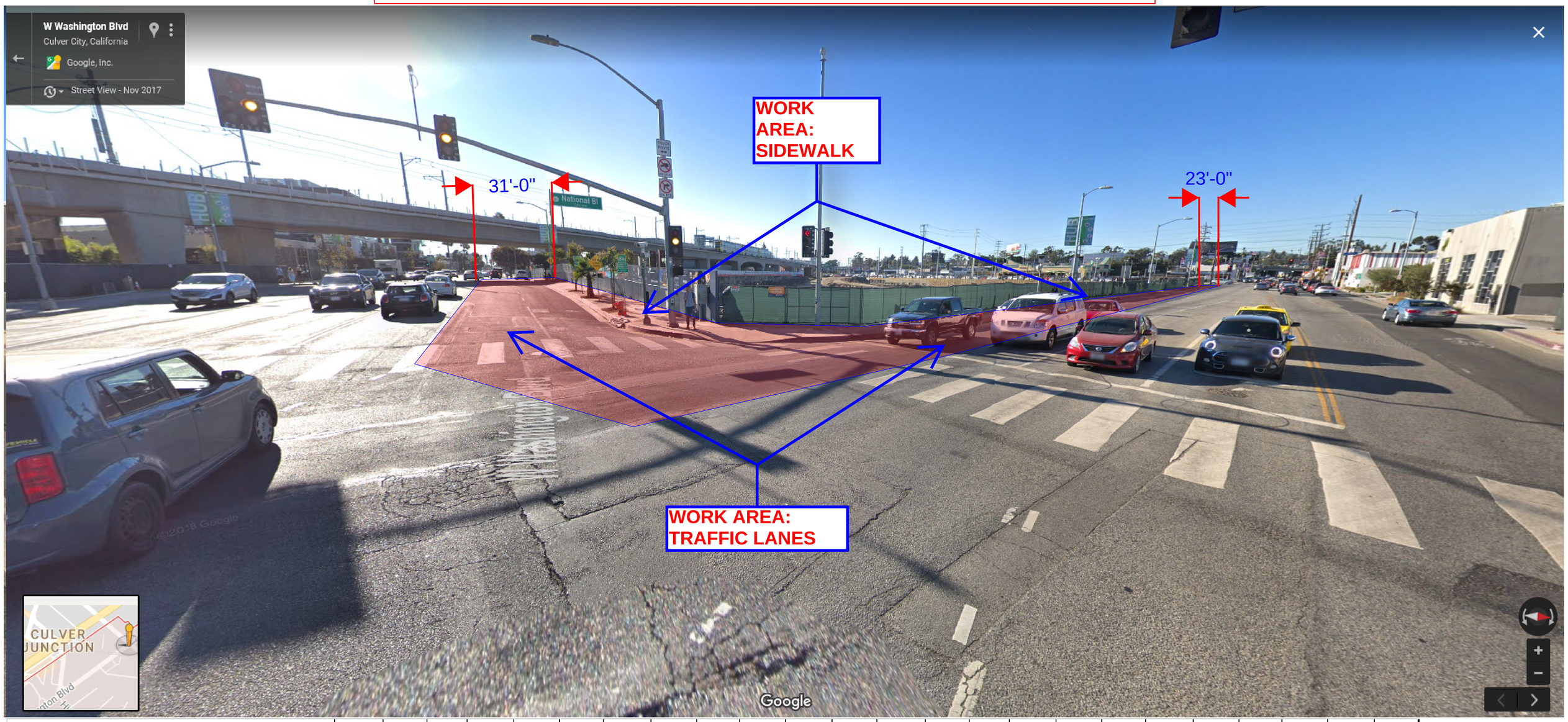
LOWE ENTERPRISES, INC.
AECOM CAPITAL
LOS ANGELES, CA

REGISTERED PROFESSIONAL ENGINEER MICHAEL CHIO No. C67851 CIVIL STATE OF CALIFORNIA

SUBMITTAL
LID AND FINE GRADING SUBMITTAL
PROJECT NO.
099038001
DATE
1.24.2018
REVISIONS:

SHEET TITLE:
UTILITY PLAN

WORK AREA FOR OFF-SITE & UTILITIES ALONG WASHINGTON AND NATIONAL BLVD. STREETS WILL BE IMAPCTED AT THE SAME TIME



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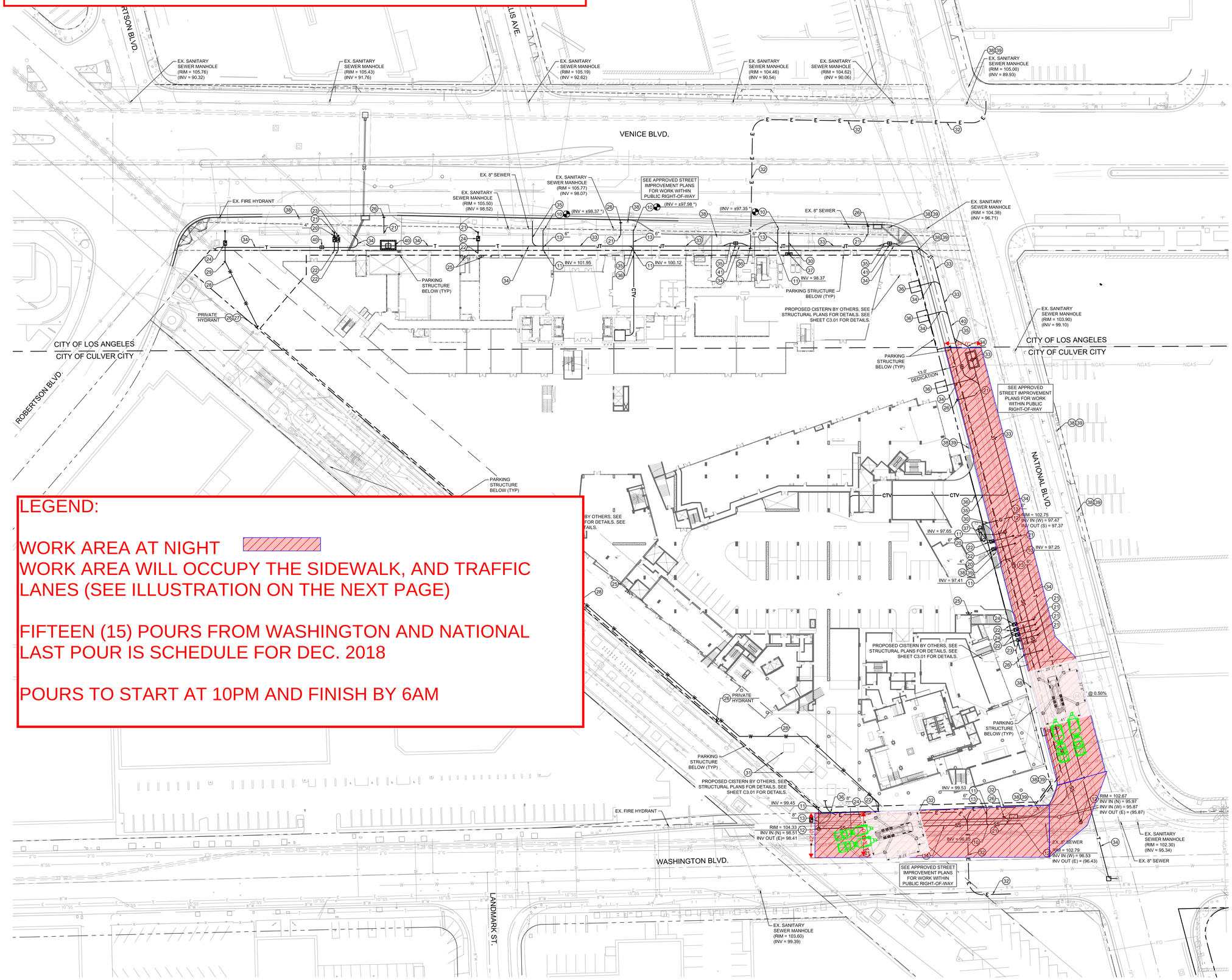
GSW WATERLINE ON NATIONAL																								
GAS COMPANY GAS LINE ON NATIONAL																								

IVY STATION: CONCRETE WORK



LEGEND:

WORK AREA AT NIGHT

WORK AREA WILL OCCUPY THE SIDEWALK, AND TRAFFIC LANES (SEE ILLUSTRATION ON THE NEXT PAGE)

FIFTEEN (15) POURS FROM WASHINGTON AND NATIONAL

LAST POUR IS SCHEDULE FOR DEC. 2018

POURS TO START AT 10PM AND FINISH BY 6AM

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- RIGHT-OF-WAY LINE
- CENTER LINE
- CITY BOUNDARY LINE
- EXISTING SANITARY SEWER
- EXISTING SANITARY SEWER
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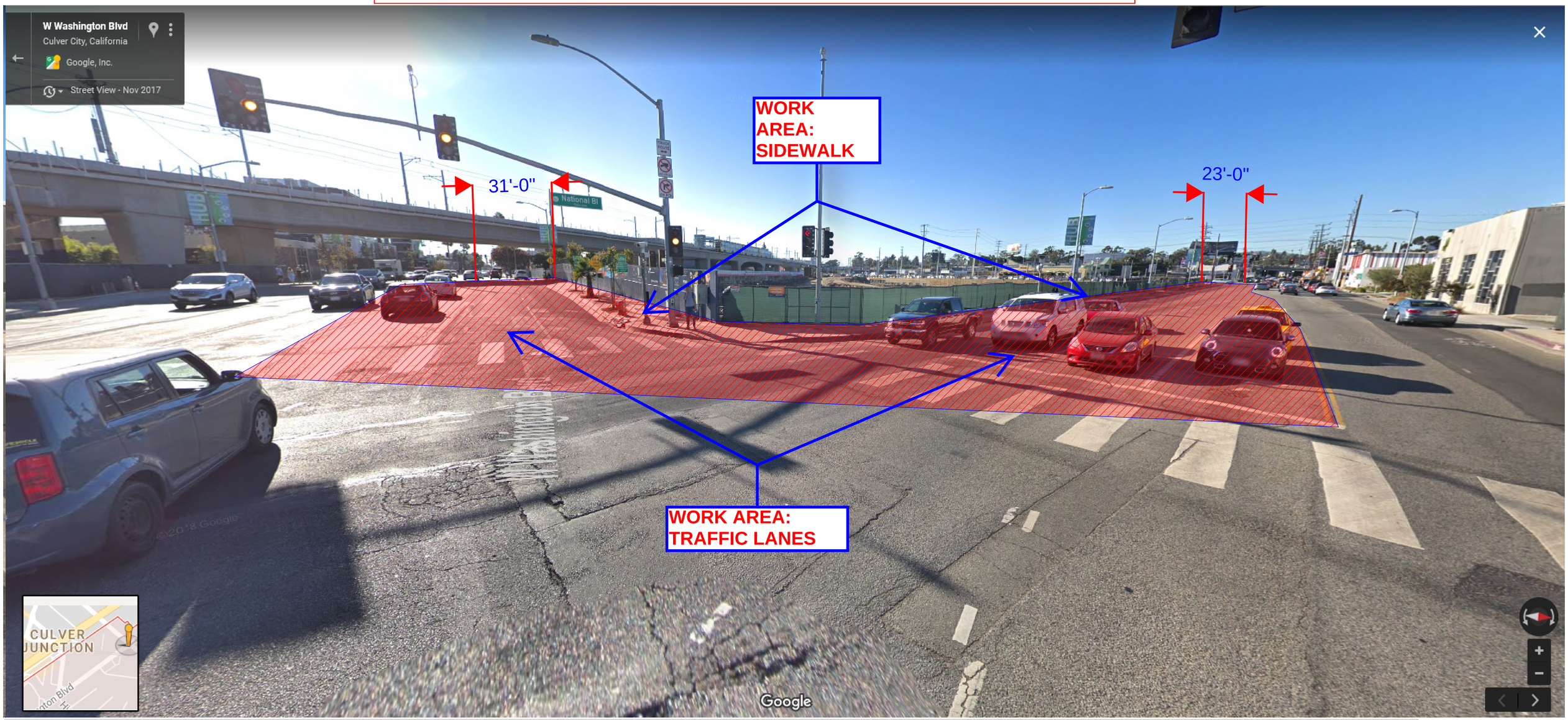
REGISTERED PROFESSIONAL ENGINEER MICHAEL CHOI No. C67851 CIVIL STATE OF CALIFORNIA

SUBMITTAL
LID AND FINE GRADING SUBMITTAL
JOB NUMBER
099038001
DATE
1.24.2018
REVISIONS

SHEET TITLE
UTILITY PLAN

PAGE 3

WORK AREA FOR CONCRETE POURS ALONG WASHINGTON AND NATIONAL BLVD.
NATIONAL SOUTH BOND AND WASHINGTON WEST BOND TO BE CLOSED



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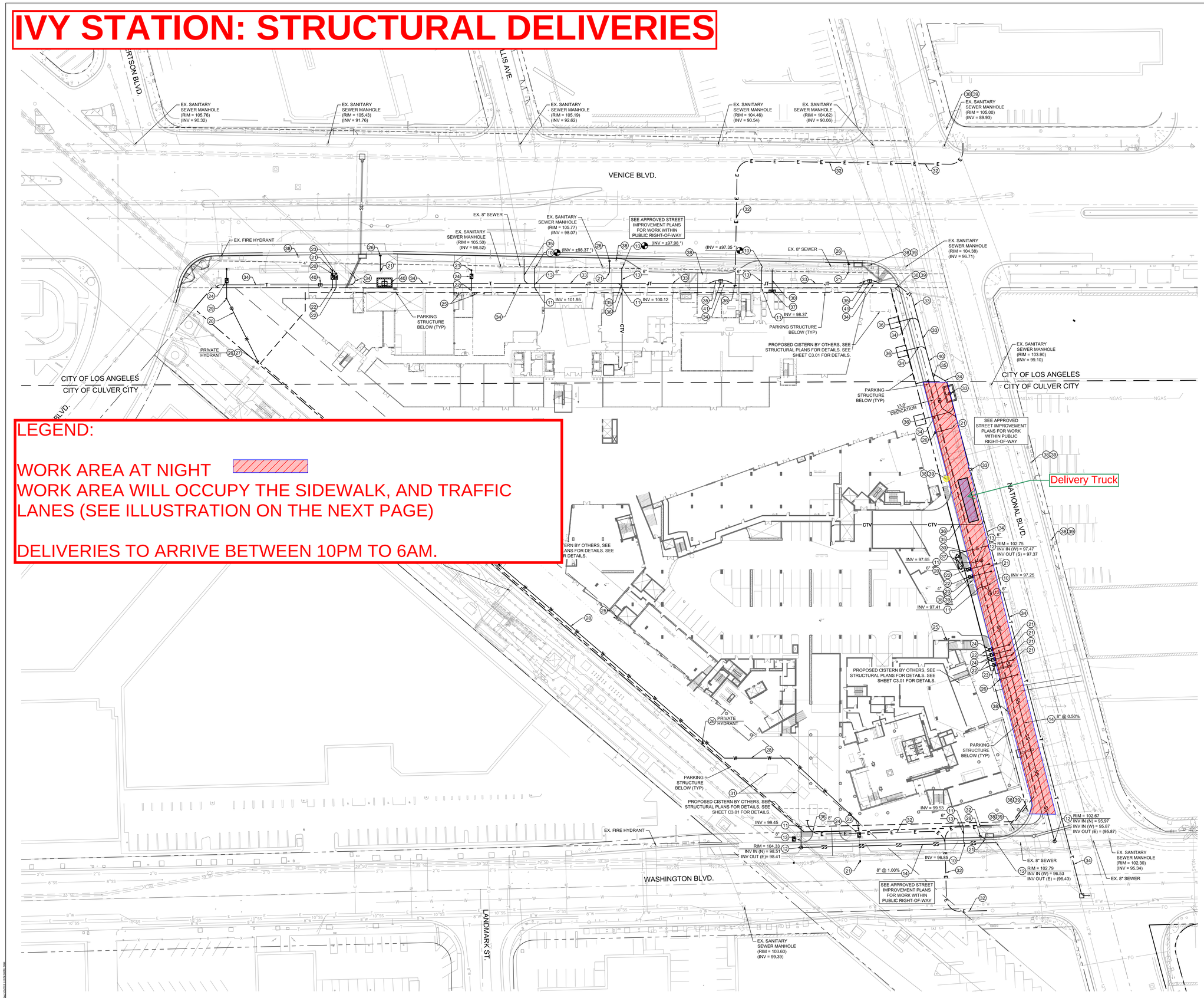
GSW WATERLINE ON NATIONAL																								
GAS COMPANY GAS LINE ON NATIONAL																								

IVY STATION: STRUCTURAL DELIVERIES



LEGEND:

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DELIVERIES TO ARRIVE BETWEEN 10PM TO 6AM.

LEGEND

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- PROPOSED PROPERTY LINE
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- CENTER LINE
- CITY BOUNDARY LINE
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15. CONNECT TO EXISTING SANITARY SEWER MANHOLE PER OFFSITE PLANS.

WATER KEYNOTES

20. PROPOSED DOMESTIC WATER METER AND SERVICE TO BE INSTALLED BY WATER PURVEYOR. SIZE PER PLAN.
21. CONNECTION TO EXISTING WATER SERVICE BY LADWP (CITY OF LA) AND GSW (CITY OF CULVER CITY).
22. SEE PLUMBING PLAN FOR CONTINUATION AND BACKFLOW DEVICE INSIDE THE BUILDING.
23. PROPOSED 1 $\frac{1}{2}$" IRRIGATION METER AND 1 $\frac{1}{2}$" SERVICE TO BE INSTALLED BY LADWP (CITY OF LOS ANGELES) AND GSW (CITY OF CULVER CITY). SIZE PER LANDSCAPE PLANS.
24. PROPOSED 6" (UNLESS OTHERWISE NOTED) FIRE WATER METER AND SERVICE TO BE INSTALLED BY LADWP (CITY OF LOS ANGELES) AND GSW (CITY OF CULVER CITY).
25. PROPOSED FDC PER PLUMBING PLANS.
26. PROPOSED FIRE HYDRANT AND SERVICE LINE INSTALLED BY LADWP (CITY OF LOS ANGELES) AND GSW (CITY OF CULVER CITY). PRIVATE HYDRANTS (CLOW 850 OR APPROVED EQUIVALENT) TO BE INSTALLED BY CONTRACTOR.
27. RELOCATE EXISTING HYDRANT OUTSIDE OF BASEMENT FOOTPRINT.
28. PROPOSED 8" DIP FIRE WATER SERVICE LINE. SEE PLUMBING PLANS FOR FIRE LINE ROUTING WITHIN BUILDING FOOTPRINT.
29. PROPOSED THRUST BLOCK PER DETAIL 2 ON SHEET C7.00.

GAS AND ELECTRIC KEYNOTES

30. PROPOSED GAS SERVICE TO BE COORDINATED WITH GAS COMPANY. SEE DRY UTILITY PLANS FOR ROUTING.
31. PROPOSED BELOW GROUND ELECTRICAL EQUIPMENT BY OTHERS.
32. PROPOSED ELECTRICAL ROUTING PER DRY UTILITY PLANS
33. PROPOSED JOINT TRENCH PER DRY UTILITY PLANS
34. PROPOSED TELEPHONE LINE PER DRY UTILITY PLANS
35. PROPOSED TELEVISION LINE PER DRY UTILITY PLANS
36. SEE DRY UTILITY PLANS FOR BUILDING SERVICE CONNECTIONS
37. PROPOSED GAS METER PER DRY UTILITY PLANS. SEE DRY UTILITY PLANS FOR METER LOCATION.
38. PROPOSED STREET LIGHT PER STREET IMPROVEMENT PLANS. SEE STREET IMPROVEMENT PLANS FOR LIGHTING EQUIPMENT DESIGN AND LOCATIONS.
39. PROPOSED TRAFFIC SIGNAL PER STREET IMPROVEMENT PLANS. SEE STREET IMPROVEMENT PLANS FOR TRAFFIC SIGNAL EQUIPMENT DESIGN AND LOCATIONS.
40. PROPOSED TELEPHONE EQUIPMENT P
41. PROPOSED TELEVISION EQUIPMENT P

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CULVER CITY, CA

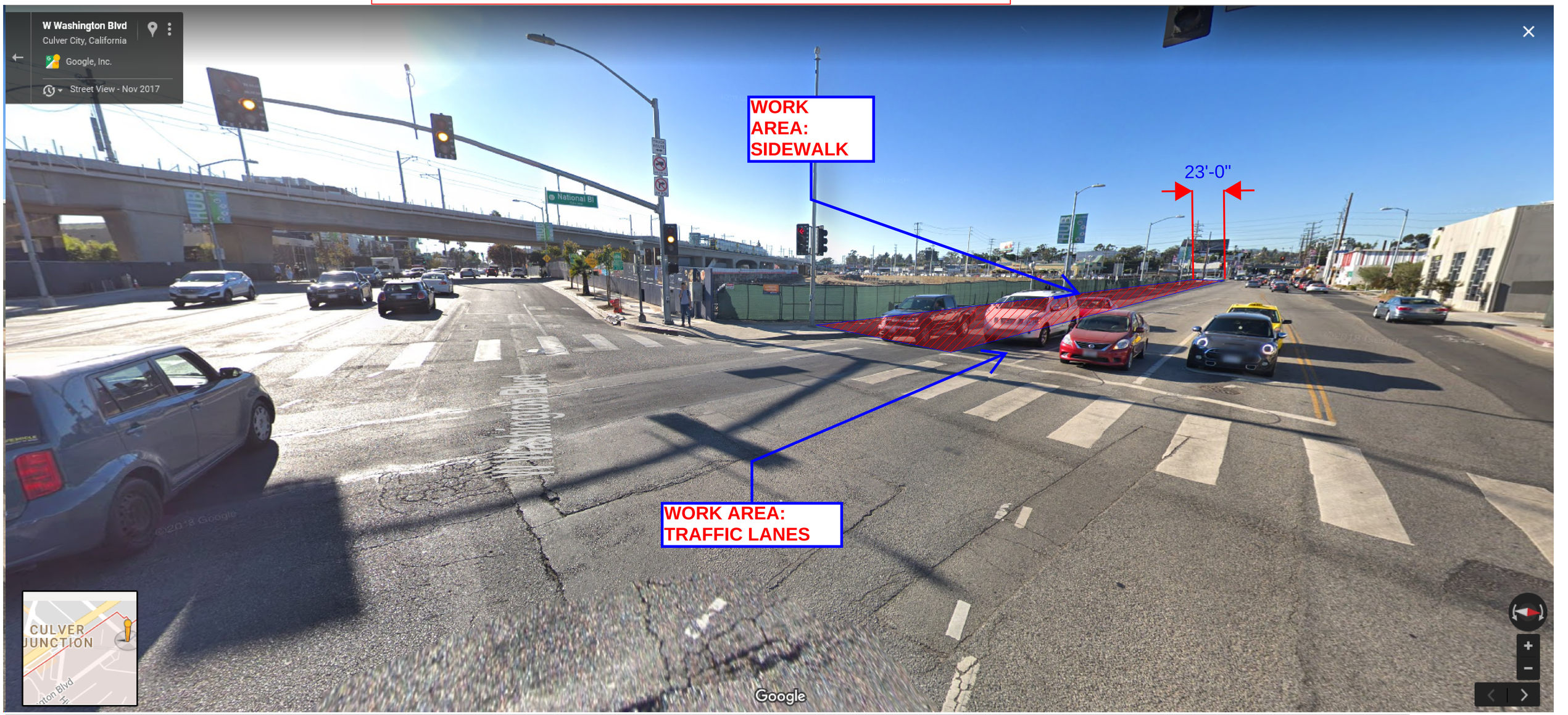
LOWE ENTERPRISES, INC.
AECOM CAPITAL
LOS ANGELES, CA

REGISTERED PROFESSIONAL ENGINEER MICHAEL CHIO No. C67851 CIVIL STATE OF CALIFORNIA

SUBMITTAL
LID AND FINE GRADING SUBMITTAL
JOB NUMBER
099038001
DATE
1.24.2018
SCALE(S)

SHEET TITLE
UTILITY PLAN

WORK AREA FOR STRUCTURAL DELIVERIES ALONG NATION BLVD.



ACTIVITY	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
CONCRETE PLACEMENT OFFICE																								
CONCRETE PLACEMENT HOTEL AND RESI																								
STRUCTURAL DELIVERIES																								
SANITARY ALONG WASHINGTON																								
STORM DRAIN ALONG WASHINGTON																								
ELECTRICAL DUCK BANK ALONG WASHINGTON																								
TRAFFIC SIGNAL & STREET LIGHT AT WASHINGTON																								
WORK BY UTILITY COMPANIES ALONG WASHINGTON:																								
GSW WATERLINE ON WASHINGTON																								
SCE POWER ON WASHINGTON																								
SANITARY ALONG NATIONAL																								
STORM DRAIN ALONG NATIONAL																								
TRAFFIC SIGNAL & STREET LIGHT AT NATIONAL																								
WORK BY UTILITY COMPANIES ALONG NATIONAL:																								
GSW WATERLINE ON NATIONAL																								
GAS COMPANY GAS LINE ON NATIONAL																								

Appendix B

Additional Off Hours Construction Noise Calculations

Project: Ivy Station Revised Off-Hour Construction Activities

Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	8	Daytime hours (7 am to 7 pm)
	0	Evening hours (7 pm to 10 pm)
	0	Nighttime hours (10 pm to 7 am)
Leq to L10 factor	3	

				Sensitive Receptor				
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**
Concrete Pouring					**55**	***54***		
Concrete Pump on National	1	81	20%	240	52	45	48	15
Concrete Trucks on National	2	79	40%	195	55	51	54	15
Concrete Pump on Washington	1	81	20%	290	51	44	47	15
Concrete Trucks on Washington	2	79	40%	315	51	47	50	15
Structural Deliveries					**61**	***58***		
Cranes	1	81	40%	500	61	57	60	0
Delivery Truck	1	75	40%	420	57	53	56	0
Utility Work								
Pavement cutting/breaking/grinding					**59**	***52***		
Concrete Saw	1	90	20%	315	59	52	55	15
Trenching and excavation for utility line					**50**	***46***		
Excavator	1	81	40%	315	50	46	49	15
Utility line installation					**49**	***45***		
Cranes	1	81	40%	350	49	45	48	15
Backfill trench with concrete slurry					**47**	***43***		
Concrete Truck	1	79	40%	350	47	43	46	15
The other remaining activities (street light, storm drains , etc)					**49**	***45***		
Cranes	1	81	40%	350	49	45	48	15

Project: Ivy Station Revised Off-Hour Construction Activities

Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	8	Daytime hours (7 am to 7 pm)
	0	Evening hours (7 pm to 10 pm)
	0	Nighttime hours (10 pm to 7 am)
Leq to L10 factor	3	

				Sensitive Receptor				
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**
Concrete Pouring					**70**	***69***		
Concrete Pump on National	1	81	20%	240	67	60	63	0
Concrete Trucks on National	2	79	40%	195	70	66	69	0
Concrete Pump on Washington	1	81	20%	290	66	59	62	0
Concrete Trucks on Washington	2	79	40%	315	66	62	65	0
Structural Deliveries					**61**	***58***		
Cranes	1	81	40%	500	61	57	60	0
Delivery Truck	1	75	40%	420	57	53	56	0
Utility Work								
Pavement cutting/breaking/grinding					**74**	***67***		
Concrete Saw	1	90	20%	315	74	67	70	0
Trenching and excavation for utility line					**65**	***61***		
Excavator	1	81	40%	315	65	61	64	0
Utility line installation					**64**	***60***		
Cranes	1	81	40%	350	64	60	63	0
Backfill trench with concrete slurry					**62**	***58***		
Concrete Truck	1	79	40%	350	62	58	61	0
The other remaining activities (street light, storm drains , etc)					**64**	***60***		
Cranes	1	81	40%	350	64	60	63	0