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| **Services** | Geotechnical Engineering Study |
| **Project** | Proposed Nerradscali Subdivision |
| **Location** | Sacramento, California |
| **Client** | Mr. Darren Brown |
| **Project No.** | 05-22016G |
| **Date** | March 23, 2022 |

A Report Prepared for:

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**GEOTECHNICAL ENGINEERING STUDY**
**PROPOSED NERRADSCALI SUBDIVISION**
**905 NORTH AVENUE**
**SACRAMENTO, CALIFORNIA 95838**

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March 23, 2022
Allerion Project No. 05-22016G

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# GEOTECHNICAL ENGINEERING STUDY

**PROPOSED NERRADSCALI SUBDIVISION**
**905 NORTH AVENUE**
**SACRAMENTO, CALIFORNIA 95838**

## INTRODUCTION

### PURPOSE AND SCOPE OF STUDY

This report presents the results of our Geotechnical Engineering Study for the proposed improvements to be designed and constructed on the above referenced subject site (refer to the Location Plan, Figure 1, Appendix A). The purpose of the study is to evaluate the general conditions of the earth materials at the site to provide conclusions and recommendations related to the geotechnical and geological aspects of the project as discussed in our proposal / agreement of February 9, 2022, and executed February 10, 2022.

The scope of our work included a site reconnaissance, review of client provided and readily available published documents (including aerial images, topographic maps, and nearby groundwater levels), exploring and sampling the general subsurface earth and groundwater conditions, performing soil mechanics laboratory tests, assessing potential for geological hazards (including liquefaction and expansive soil conditions), performing geotechnical analysis, and making recommendations for earthwork, foundation design, lateral resistance, floor slab-on-grade support, and on-site pavements.

The attached Appendices contain further information including graphic presentations (Site Vicinity Map and Map of Explorations - Appendix A); field exploration procedures and logs of subsurface explorations (Appendix B); laboratory testing and procedures used (Appendix C); Guide Specifications for Earthwork (Appendix D); and SEAOC/OSHPD U.S. Seismic Design Maps (Appendix E).

### PROJECT LOCATION

The project is proposed on a 1.32+/- acre residential parcel (APN: 237-020-009-200). The subject site is bounded by North Avenue to the south, residential properties to the east and west, and City of Sacramento easement and I-80 to the North.

**PROPOSED PROJECT INFORMATION**

In preparing this report we reviewed the grading plan by RFE Engineering, Inc. January 24, 2022, "On-Site Improvement Plans" (Sheet No. C6), and reviewed Google Earth aerial photography (5/14/2021) related to the subject site. Based on the referenced plan and information provided by the client, the proposed project consists of the design and construction of one (1) single-family residential home with a footprint area of 1,700 +/- square feet, four (4) half plex's with footprints of 1,150+/- square feet and two (2) half plex's with footprints of 1,280 +/- square feet. A stormwater detention pond is proposed in the northeastern portion of the site. The proposed improvements also include landscaping, concrete driveways, asphalt driving aisles, paved parking area and on-site concrete sidewalks.

## FINDINGS

**SITE HISTORICAL BACKGROUND**

Google Earth aerial images dating back to May 1993 indicate the site and surrounding properties appeared as described in the Site Description section below and Project Location section above.

**SITE DESCRIPTION**

During our site visit, the subject site was relatively flat lying with minor surface elevation changes. The eastern portion of the parcel was vacant and covered with volunteer grasses. A dense cluster of trees was in the northeastern portion of the site as well as metal scraps and various other debris. A single-story residential home enclosed by a wooden fence was in the southwestern portion of the parcel. In the northeastern corner of the site was a tower supporting southerly trending high tension electric lines. Two concrete slabs were in the northwestern portion of the site. Overall drainage of the subject site trended generally to the north toward a canal.

**GEOLOGY AND SEISMICITY**

The site is located within California's Great Valley Geomorphic Province, a geologically young, large, flat-lying alluvial plain in the central portion of California. The Province is 40 to 60 miles (60 to 100 km) wide and stretches approximately 450 miles (720 km) from north-northwest to south-southeast, inland from and parallel to the Pacific Ocean Coast Ranges to the west and Sierra Nevada Mountains to the east. The

Great Valley has been filled with hundreds to thousands of feet of eroded sediments, ranging in age from Pleistocene to Holocene.

Based on our review of readily available published geologic literature/maps (CGS "Preliminary Geologic Map of the Sacramento 30' X 60' Quadrangle, California", 2011; scale 1:100,000) the site is mapped to be underlain by Quaternary-aged Fan Deposits (Map Symbol: Qf). The total thickness of the formation was not determined and is beyond the scope of this study. The native earth materials discovered in the explorations are considered to be consistent with the mapped earth materials.

## EARTH MATERIAL CONDITIONS

As shown on the Exploratory Logs (Appendix B), the subsurface earth material conditions were generally consistent throughout the site. The uppermost soils encountered to a depth of approximately 1½ feet below existing ground surface (begs) consisted of medium stiff, moist, dark brown, Sandy SILT, with occasional Gravel (Unified Soil Classification: ML). Underlying the silt was discovered stiff to very stiff, moist, light brown and dark brown, Sandy Silty CLAY (CL) to varying depths between 2½ to 3 feet begs. The earth materials encountered below the upper soil to a depth of approximately 13 feet begs consisted of very stiff and hard, moist, light brown with orange mottles and red-brown, Sandy SILT (ML). The earth materials encountered below this layer consisted of dense, moist, dark brown to brown, SAND (SP) to a depth of approximately 19 feet begs. Underlying the sand layer was found hard, moist, light brown, Sandy SILT (ML) to the maximum explored depth of approximately 21½ feet begs.

Since the earth material profile is generalized, the reader is advised to consult the Explorations Logs contained in Appendix B, if the earth material conditions at a specific depth and location are desired. The logs contain a more detailed earth material description regarding color, earth material type, and Unified Soil Classification System (USCS) symbol.

Earth material conditions cannot be fully determined by surface and subsurface explorations and earth material sampling. Hence, unexpected earth material conditions might be encountered during construction. If earth material conditions are encountered during construction which vary from earth materials encountered during the investigation, then appropriate recommendations will be needed

during construction. Therefore, we suggest a contingency fund for additional expenditures that might have to be made due to unforeseen conditions.

## PERCOLATION TESTING

One percolation test boring was drilled with a 4-inch outer-diameter continuous flight helical solid stem auger (SSA) powered by a truck mounted drill rig to the approximate depth indicated in the table below within the proposed detention pond. The approximate depth of the percolation boring was selected per the referenced grading plans. Please refer the attached "Exploration Location Map – Figure 2" for approximate location of the percolation test.

The outer wall of the boring was scored to reduce the effects of smearing. Approximately six (6)-inches of clean gravel was added to the bottom of the test hole. In the test boring a 2-inch inner diameter (ID) PVC slotted pipe was installed into the hole on top of the gravel. Clean gravel was placed in the annular space between the boring wall and pipe.

The boring was filled with water to the presoak level to let the soils presoak before performing the test. Following the presoak time water was adjusted in each hole to at least 12 inches above the bottom of the boring. The drop in water level was measured at specific time intervals until a steady rate of drop in water level was obtained when at least three consecutive readings were within 10 percent from each other. Pre-adjusted percolation rate was determined by dividing the drop in water level over the time required for the drop in water level. The infiltration rate was determined using the percolation rate divided by a Conversion Factor. The test results are shown on Table 1, below.

TABLE 1. RESULTS OF PERCOLATION TEST

| PERCOLATION TEST NO. | BORING DEPTH (ft) | BORING DIAMETER (in) | STEADY FLOW PERCOLATION RATE (in/hr) | CALCULATED INFILTRATION RATE (in/hr) | TESTED SOIL DESCRIPTION |
|---|---|---|---|---|---|
| P-1 | 6 | 4.0 | 0.12 | 0.02 | Sandy SILT |

The infiltration rate (per the test method referenced above) of the soils shown on the above table could be used by the General Civil Engineer as preliminary infiltration rates of the soils at the location and depth indicated. A safety factor was not applied to these values. Once the basins have been constructed,

we suggest the infiltration rates be confirmed by double ring infiltrometer tests in the soil exposed in the bottoms of the basins.

### GROUNDWATER CONDITIONS

Observations of groundwater conditions were made during and just after drilling the exploratory borings. Free groundwater was not encountered in any of the subsurface explorations.

## CONCLUSIONS AND DISCUSSIONS

### SITE SUITABILITY AND GEOTECHNICAL CONSIDERATIONS

From a geotechnical standpoint, the site is considered suitable for the proposed construction provided the conclusions and recommendations presented in this report are incorporated into the design and construction of the project. Geotechnical considerations that were evaluated by our office include disturbed soils due to historic agriculture usage and loose topsoil, which are discussed in the following sections of this report.

### BEARING CAPABILITY

Field and laboratory tests show that the affirmed undisturbed, native earth materials encountered at the exploration locations are considered competent for support of the proposed construction. The upper loose / soft soils and any disturbed soils (including undocumented fill, materials disturbed/backfilled of the soils loosened due to agriculture, clearing trees, etc.) that are present at the time of construction are not considered stable and should not be utilized to directly support new structural elements. Mitigation measures for unsuitable soil conditions are discussed in the Recommendations section of this report. Mitigation measures considered include removal and replacing the disturbed and/or loose soils with engineered fill; or, foundation elements designed to extend through the unsuitable soils.

Engineered fill, composed of approved materials placed and compacted according to the following recommendations, and undisturbed native soils are considered competent for support of low to moderate loading increases.

## COMPRESSIBLE AND EXPANSIVE SOILS

Compressible materials consisting of surficial disturbed material, loose soils, undocumented fills, debris, rubble, rubbish, etc., are considered unsuitable materials for support of the proposed structures. Such materials can differentially settle. We consider that any undocumented fill encountered and disturbed and / or soft/loose soil materials in the construction areas should be removed and replaced with engineered fill, or special foundation mitigation measures designed. Overexcavated earth materials deemed suitable for re-use as engineered fill could be stockpiled. If the unsuitable materials are not removed, then special foundation systems should be designed to account for the potential settlements. In areas where unsuitable or loose, wet soils are encountered, remedial grading should be undertaken to remove the loose soils and ensure the removal of the entire disturbed soils.

Engineered fill, composed of approved granular materials placed and compacted according to those discussed in the recommendations section, below, and undisturbed native soils are considered competent for support of low to moderate loading increases anticipated for this project.

Based on visual observation and on laboratory test results performed on a representative soil sample of the underlying, relatively thin layer of clay soil (Plasticity Index (PI) of 16, percent fines of 59) we consider the expansion potential of the subsurface soils to be low.

Mitigation measures for potentially compressible soils would be to assure that native, undisturbed, granular earth materials, recompacted soil, and/or engineered fill comprised of non- to low-expansive soil is beneath the rough pad soil grade. Mitigation measures are presented in the Recommendations section below for potentially compressible soils.

## GROUNDWATER AND SEASONAL MOISTURE

As previously mentioned, free groundwater was not encountered during our subsurface investigation. However, groundwater levels could be seasonal – varying between the winter and summer months. It is our opinion that perched groundwater could have an impact on the proposed design or construction depending on the foundation system selected by designers and depths of underground structures. If wet-season construction is undertaken, then groundwater seepage into excavations is expected to be generally controllable by pumping/diversion; likewise, inflow from surface (dependent on quantity and

duration of storm intensity/rainfall) is expected to be similarly controllable as temporarily necessary. **If the uppermost soils should become saturated, then this condition would likely impede or delay grading operations**.

Groundwater levels can fluctuate on a seasonal basis due to changes in precipitation, irrigation, pumping, etc. We consider groundwater levels might change based on site topography and the time our investigation was performed. Excavations below perched groundwater (if encountered) might be impacted by seepage; therefore, we recommend grading and utility excavations be performed during dry season when groundwater levels are lowest.

## SEISMIC HAZARDS

Seismic ground shaking of the earth materials underlying the site can cause ground failures, including fault rupture, liquefaction and densification, lateral spreading, landsliding, and tsunamis / seiches. The following sections discuss our conclusions / opinions regarding these conditions based on our findings and literature review.

### Fault Rupture

Fault rupture hazards are important near active faults and tend to reoccur along the surface traces of previous fault movements. The site is not located within an Alquist-Priolo Special Studies Zone. We consider the potential for fault rupture, damage from fault displacement, or fault movement directly below the site to be very low. However, the site is located within an area where shaking from earthquake generated ground motion waves should be considered likely.

### Seismic Ground Shaking

The mapped and design spectral response accelerations (refer to Appendix E) presents seismic design criteria for the subject project site obtained from the SEAOC/OSHPD Seismic Design Maps (https://seismicmaps.org) that are based on data provided by ASCE 7-16 and are for use with the 2019 California Building Code (CBC). The values for spectral response accelerations with a Risk Category of II are summarized on the following table.

| Mapped and Design Spectral Accelerations | |
|---|---|
| **Description** | **Value** |
| Site Soil Classification[1] | D |
| Seismic Design Category[2] | D |
| Site Latitude, Longitude | 38.6404947, -121.445908 |
| $S_S$ - Spectral Acceleration for a Short Period | 0.523 g |
| $S_1$ - Spectral Acceleration for a 1-Second Period | 0.242 g |
| $S_{MS}$ - $MCE_R$, 5% damped Spectral Acceleration for a Short Period | 0.722 g |
| $S_{M1}$ - $MCE_R$, Spectral Acceleration for a 1-Second Period[1] | 0.512 g |
| $S_{DS}$ - design, 5% damped, Spectral Acceleration for a Short Period | 0.481 g |
| $S_{D1}$ - design, 5% damped, Spectral Accel. for a 1-Second Period[1] | 0.341 g |
| $T_L$ | 12 |
| PGA | 0.22 |
| $PGA_M$ | 0.303 |
| $F_{PGA}$ | 1.38 |

[1] The *2019 CBC* requires an earth material profile determination extending to a depth of 100 feet for site soil classification. ACG's explorations extended to depth of about 21.5 feet begs, and Exception 2 of ASCE 7-16 Section 11.4.8 for Site Class D is used to calculate $S_{M1}$ and $S_{D1}$. [2] In general accordance with the 2019 CBC (refers to *ASCE 7-16*) Seismic Design Category is based on spectral acceleration for a 1-sec Period, short & 1-sec period response acceleration parameters ($S_1$, $S_{DS}$ & $S_{D1}$, respectively) and corresponding Risk Category. Please refer to ASCE/SEI 7-16 Section 11.4.8 for base shear (V) calculations. Please refer to Appendix E for the U.S. Seismic Design Maps.

## Liquefaction and Seismic Settlement Evaluation

Liquefaction occurs when saturated fine-grained sands and/or silts lose their physical strength temporarily during earthquake induced shaking and behave as a liquid. This is due to loss of point-to-point grain contact and transfer of normal stress to the pore water. Liquefaction potential varies with water level, soil type, material gradation, relative density, and probable intensity and duration of ground shaking. Dynamic settlement of the soils that experience liquefaction may occur after earthquake shaking has ceased.

The California Geological Survey (CGS) has designated certain areas within California as potential liquefaction hazard zones. These are areas considered at risk of liquefaction-related ground failure during a seismic event based upon mapped surficial deposits and the depth to the areal groundwater table. The project site is not currently mapped for potential liquefaction hazard by the CGS (refer to CGS website: https://www.conservation.ca.gov/cgs/earthquakes).

Subsurface exploration information indicates the site is predominately underlain by generally dense sand soils and very stiff to hard sandy silt soils to the maximum depth explored of

approximately 21½ feet begs. Based on the information discussed above, it is our opinion that the potential for liquefaction at the site is very low if a seismic event should occur that might impact the site.

**Ground Lurching**

Ground lurching is a result of the rolling motion imparted to the ground surface due to seismic waves released by an earthquake that can cause cracks in weaker soils. The potential for cracking at this site is considered low due to the generally dense relative densities and hard soil consistencies.

**Earthquake Induced Landsliding**

Based on information available on the California Geological Survey (CGS) website the subject site is not currently within a State of California Seismic Hazard Zone for seismically induced landsliding. In addition, there are no steep slopes on or adjacent to the subject site. Therefore, seismically induced and/or other landslides are not considered a significant hazard at the site.

**Tsunamis and Seiche Evaluation**

The site is not located near large bodies of water and the site is located at elevation of approximately 35 feet above MSL. Based on the geometry of the site, the potential for tsunami damage or damage caused by oscillatory waves (Seiche) is considered unlikely at the site.

## ON-SITE EARTH MATERIALS SUITABILITY

On-site soils like those encountered in the test borings are generally considered suitable for re-use as engineered fill provided the materials are processed to remove excessive moisture, rubble, rubbish, oversize materials, significant organic matter, or any other substance deemed unsuitable (as determined by an ACG field representative).

## EXCAVATION CONDITIONS

It is anticipated that the soil materials at the site can be readily moved by conventional earth moving equipment to at least the maximum depth explored of approximately 21½ feet begs.

**POTENTIAL SLOPE STABILITY**

No landslides, slumps, or other indications of slope instabilities were observed in the flat-lying site area during our field investigation. We consider the potential for slope instability to be negligible.

## RECOMMENDATIONS

Recommendations for earthwork and the design and construction of the proposed structure(s) and associated improvements follow. All recommendations could require modifications based on conditions encountered during earthworks and general construction. In addition, changes in the locations of the proposed structures and pavements could also necessitate modifications to the recommendations provided herein.

**EARTHWORK**

Earthwork specifications which may be used as a guide in the preparation of contract documents for site preparation / grading are included in Appendix D. However, recommendations in the text of this report supersede those presented in Appendix D. **The conclusions and recommendations contained in this report should be incorporated into the guide specifications.**

**Site Clearing and Stripping**

Each building pad is considered to extend laterally away from (outside of) all perimeter foundation/building edges at least five (5) feet in plan view, or to edges of any adjacent features restricting this width. The improvement areas should be stripped to sufficient depth to remove all organic laden topsoil. The actual stripping depth should be determined by our representative at the time of construction. The cleared and stripped materials should be removed from the site or stockpiled for possible use as landscape materials.

We recommend the construction areas be cleared of all obstructions or unsuitable materials, including all loose, wet, or disturbed soil, undocumented fill, rubble, rubbish, vegetation, structural elements **(includes slabs and pavements)** to be razed, and any buried utility lines to be removed. Any foundations, pavements, cisterns, septic tanks, leach fields, water wells,

etcetera, that might be encountered and are to be abandoned should be removed. In addition, in areas where trees have been or will be cleared, remedial grading includes removing the entire tree root systems and the loosened soils resulting from the removal. The excavated soils could be evaluated by ACG for reuse as engineered fill. The resulting subgrades of excavation(s) should be prepared and filled to planned project subgrade level with engineered fill as discussed in the following sections.

Excavations resulting from the removal of unsuitable materials and/or loose soils should be cleared to expose firm, stable material. The surface of the resulting excavations should be scarified to a depth of 8 inches and backfilled with approved earth materials compacted to the requirements given below under subgrade preparation. Utilities that extend into the construction area and are scheduled to be abandoned should be properly capped or plugged with grout at the perimeter of the construction zone or moved as directed in the plans. It may be feasible to abandon on-site utilities in-place by filling them with grout, provided they will not interfere with future utilities or affect building foundations. The utility lines should be addressed on a case-by-case basis.

**Subgrade Preparation**

Once the construction areas have been cleared, any unsuitable soils over-excavated, and any other excavations made, then subgrades that will receive engineered fill, that are to be left at existing grade, or that represent final subgrades in soil achieved by excavation should be scarified to at least 8 inches. Suitability of soils exposed in the bottom of all subgrades should be verified by an ACG special inspector during site grading. Upon favorable review, exposed soil subgrades should be scarified and recompacted (in-place) an additional 8 inches and/or prior to placing engineered fill materials to planned rough pad grade. The scarified soils should be uniformly moisture conditioned as determined by ACG's field representative based upon the compaction characteristics of the earth material (typically 1 to 4 percent over optimum) and compacted to at least 90 percent relative compaction per ASTM D 1557. The geotechnical engineer's special inspector should observe the recompacted subgrades be proof-rolled with very heavy

construction equipment (e.g., loaded water truck) in order to verify subgrade earth material stability. **Inability to achieve the recommended moisture content, compaction, and/or instability of the subgrade materials is/are considered unsuitable conditions and would be used as criteria for remediation, such as the removal of loose, wet, or soft soils; or, for the need of special stabilizing measures.**

If unsuitable materials are encountered at subgrade such that they are expansive, unstable and/or proper compaction cannot be obtained, then mitigation measures would be recommended. In addition, construction equipment on saturated soils could destabilize the earth materials, sometimes to several feet of depth, which might necessitate further over excavation and/or special stabilization.

An ACG special inspector should observe and approve the subgrade soils exposed in all excavations to confirm suitable conditions have been reached and should observe and approve the scarification, moisture conditioning and recompaction of the exposed soil subgrades.

**Material for Fill**

All fill materials should be inorganic, low plasticity soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer. Imported earth materials and or earth materials from onsite borrow areas may be used as engineered fill material for general site grading, foundation backfill, foundation areas, trench backfill, slab areas, and pavement areas, provided they meet the following soil classification criteria. All fill materials from any source (on-site or off-site) to be used for engineered fill should be pre-approved by this firm and should be observed by our representative and samples obtained for laboratory classification testing at least four days prior to any materials being used for engineered fill.

| **Gradation** (ASTM C 136) | **Percent Finer by Weight** |
|---|---|
| 3" | 100 |
| No. 4 Sieve | 25 - 100 |
| No. 200 Sieve | 10 – 35 |

- Liquid Limit ..... 35 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansive index (ASTM D 4829) ..... 40 (max)

**Fill Placement and Compaction**

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Materials for engineered fill should be spread and compacted in lifts not exceeding 8 inches in uncompacted thickness. Engineered fill placed at the site and subgrades requiring recompaction should be uniformly compacted to at least 90 percent relative compaction in building areas, and to at least 95 percent relative compaction in the upper 12-inches of pavement and flatwork areas, as determined by ASTM Test Designation D 1557, or to the method as might be determined by an ACG special inspector. The moisture content of engineered fill materials should be determined by ACG's field representative based upon the compaction characteristics of the earth material (typically 1 to 4 percent over optimum). ACG should continuously observe and test the grading and earthwork operations. Such observations and tests are essential to identify field conditions that differ from those predicted by this investigation, to adjust these recommendations to actual field conditions encountered, and to verify that the grading is in overall accordance with the recommendations presented in this report and the 2019 CBC.

If construction proceeds during or shortly after the wet winter months, it may require time to dry the on-site soils since their moisture content will probably be appreciably above the optimum. In addition, if subgrade soils are wet at the time of construction, they could be rutted, loosened, or otherwise disturbed to several feet of depth by the construction equipment and require additional over-excavation and/or stabilization.

Construction occurring in later summer or early fall (after on-site earth materials becoming dry) may require substantial amounts of water to be added during earthwork operations to enable the appropriate moisture content and compaction to be achieved.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of foundations, exterior flatwork/slabs, and pavements. Construction traffic over the completed subgrade should be avoided to prevent disturbance of subgrade soils. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade consisting of engineered fill should become desiccated, saturated, or disturbed, the affected material should be removed, or these materials should be scarified, moisture conditioned, and recompacted prior to construction.

The geotechnical engineer should be retained during the earthwork construction phase of the project to continuously observe earthwork and to perform necessary tests and observations during subgrade preparation, backfilling of excavations to the completed subgrade, placement and compaction of engineered fills, proof-rolling, backfilling of utility trenches, etc.

**Utility Trench Backfill**

Generally, utility trenches should be backfilled with mechanically compacted fill placed in lifts not exceeding 6 inches in uncompacted thickness. Water content of the fill material should be adjusted (typically 1 to 4 percent over optimum) during the trench backfilling operations to obtain compaction. If on-site soil or import fill material is used, then the material should be compacted to at least 90 percent relative compaction. Imported sand could also be used for bedding and shading backfill in trenches provided the sand is compacted to at least 95 percent relative compaction. **Public and private utility companies' standard plans and specifications should be adhered to when backfilling their utility trenches.** Excavations parallel with the building's footings should be in compliance with the 2019 CBC Section 1809.14 setback requirements.

Utility trenches should be plugged with lean concrete wherever the utility line passes beneath the perimeters of the structures. The plug should be at least one foot on either side of the

perimeter of the building perimeter foundation and extend from the bottom of the building foundation to the bottom of the trench.

**Finish Grading and Site Drainage**

We consider on-site soils to be moderately susceptible to erosion where drainage concentrations occur. Concentrated flowing water should be either dissipated or channeled to appropriate discharge facilities. Appropriate erosion control measures should be provided, where applicable, by the general civil engineer on his grading and/or winterization plan.

Positive surface gradients should be provided adjacent to the buildings and pavement areas (includes flatwork) to direct surface water away from the buildings and pavements for at least ten feet and toward suitable discharge facilities. Ponding of surface water should not be allowed adjacent to the buildings or pavements or on top of pavement. Positive drainage should be provided during construction and maintained throughout the life of the project. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Backfill against foundations, exterior walls, and in utility and sprinkler line trenches should be well compacted as previously recommended and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a horizontal setback distance of at least 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention.

Downspouts, roof drains or scuppers should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems should not be installed within 5 feet of foundation walls. Landscaped irrigation adjacent to the foundation system should be minimized or eliminated.

All grades must provide effective drainage away from the buildings during and after construction. Water permitted to pond next to a building can result in greater soil movements than those discussed in this report. These greater movements can result in unacceptable differential floor slab movements, cracked slabs and walls, vapor transmission issues in interior slabs, and roof

leaks. Estimated movements described in this report are based on effective drainage for the life of the structures and cannot be relied upon if effective drainage is not maintained.

Per 2019 CBC Section 1804.4, the soil ground surface should be sloped at least 5 percent (2 percent for pavement) down and away from the buildings for at least of 10 feet beyond the perimeter of the buildings or pavement. After building construction and landscaping, we recommend the Civil Engineer and/or surveyor verify final grades to document that effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary, as part of the structure's maintenance program.

**Cut and Fill Slopes**

Cut/fill slopes are not anticipated. If slopes should be needed, then permanent excavation and embankment slopes up to 10 feet of height in soil should be graded at an inclination of 2 horizontal to 1 vertical (2H: 1V) or flatter. The crowns of all slopes should be constructed so that surface run-off water is not allowed to flow over the faces of the slopes. All cut slopes should be observed during grading by the Geotechnical Engineer and/or Engineering Geologist to determine if any adverse defects are present. If defects are observed, then additional study and/or recommendations would be made at that time.

For temporary excavations, the individual contractor(s) is/are responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.

**Earthwork Construction Considerations**

At the time of our study, moisture contents of the surface and near-surface native soils were low. Based on these moisture contents, some moisture conditioning will likely be needed for the project to make the soil compactible and suitable for use as engineered fill. The soils may need to be dried by aeration during wet weather conditions, or a chemical treatment, such as cement,

lime, or kiln dust, may be needed to stabilize the soil. The soils may need more moisture and water during the dry season to make the soil compactible and suitable. Subgrade conditions may require a rock protective mat covering of exposed subgrades to limit disturbance of the site soils as well as provide a stable base for construction equipment.

Although the exposed subgrades are anticipated to be relatively stable upon initial exposure, on site soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wet and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance. If unstable subgrade conditions develop, then stabilization measures will need to be employed. Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content just prior to construction of the floor slabs and pavements. Construction traffic over the completed subgrades should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed, or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

We anticipate that site grading for concrete foundations, slab construction, pavements and shallow utility trenches could be performed with conventional earthmoving equipment.

**We emphasize the contractor is responsible for designing and constructing stable, temporary excavations (including utility trenches) as required to maintain stability of both the excavation sides and bottom and should be in accordance with OSHA excavation and trench safety standards.**

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through May) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork may require additional mitigation measures beyond that which

would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

**Geotechnical Engineering Earthwork Construction Observation**

As previously discussed, variations in subsurface conditions are possible and may be encountered during construction. In order to permit correlation between the preliminary subsurface data obtained during this investigation and the actual subsurface conditions encountered during construction, as well as affirm substantial conformance with the plans and specifications, a representative of this firm should be present during all phases of the site earthwork to make tests and observations of the site preparation, selection of satisfactory fill materials, proof rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade, etc. Additionally, if lime or cement treatment is needed to stabilize or dry the soil, then our representative should perform observations during mixing, remixing and compaction.

Any site earthwork performed without the presence of our representative will be entirely at the grading contractor's and/or owner's risk and no responsibility for such operations will be accepted by our firm. Sufficient notification **(at least two working days)** is necessary so that our special inspections and testing will coincide with the construction schedule.

***We emphasize the importance of ACG's presence during the observation and testing of the grading operations. ACG's observation of the subsurface soil conditions, especially under the loads imposed by construction equipment, is considered an extension of our investigation, particularly within those areas away from the subsurface explorations.***

**Guide Specifications**

Earthwork guide specifications which may be used as a guide in the preparation of contract documents for site grading are included in Appendix D. **The conclusions and recommendations contained in this report should be incorporated into the guide specifications.**

## CRITERIA FOR FOUNDATION DESIGN

Based on the field and laboratory information for this study, we recommend the proposed half plexus and the residential home be supported upon isolated and/or continuous spread footings penetrate below the lowest adjacent building pad soil grade into the bearing earth materials at least 12-inches for one-story structures and 18-inches for 2- to 3-story structures. Foundation dimensions and reinforcement should be based on allowable dead plus live soil bearing values of 1,700 pounds per square foot (psf) for continuous footings of at least 15 inches in width and isolated footings at least 24 inches wide (both directions). The foundations should be supported on engineered fill and/or undisturbed, native soil. The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total loads that include short duration wind or seismic conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.

Total settlement is estimated at about 1-inch for static compression and is expected to occur the structure is built. We recommend that all footings be reinforced as designed by the structural engineer to provide structural continuity, to permit strong spanning of local irregularities and to be rigid enough to accommodate potential differential movements. Foundations should be proportioned to reduce differential foundation movement estimated at ½-inch over 20 linear feet. Proportioning based on equal total settlement is recommended; however, proportioning to relative constant dead-load pressure would reduce differential settlement between adjacent foundations.

### Lateral Resistance

Foundations placed in approved soil bearing materials (undisturbed native soil and/or engineered fill) could be designed using a coefficient of friction of 0.30 for native and/or engineered fill soils. A design passive resistance value of 275 pounds per square foot per foot (psf/ft) of depth (with a maximum value of 2,750 pounds per square foot) is recommended for native, undisturbed soil and/or engineered fill comprised of pre-approved soil. If both friction and passive pressures are combined, then the smaller value should be halved. For fine grained soils, in no case should the lateral sliding resistance exceed one-half the dead load.

The sides of the excavations for the foundations should be nearly vertical and the concrete should be placed neat against these vertical faces for the passive earth pressure values to be valid. If the loaded side is sloped or benched in the soil, and then backfilled with engineered fill, then the nominal passive pressure should be reduced to the soil frictional or adhesive resistance.

**General Foundation Considerations**

ACG's geotechnical engineer or his representative should observe earth material conditions exposed in foundation excavations to confirm the adequacy for structural foundation bearing, confirm the appropriateness of these recommendations, and to allow for an opportunity to provide additional recommendations if deemed necessary. If the earth material conditions encountered differ significantly from those presented in this report, then supplemental recommendations will be required.

An important factor in soils supporting structural improvements is a change in moisture content. The recommendations herein are predicated on the soil moisture beneath and within five feet of the building perimeters, slabs and pavements being maintained in a uniform condition during and after construction. Please be advised that over watering or under watering, types of plants (trees should be at least the distance away from the improvement equal to their maximum height), altering design site drainage, etc., might be detrimental to the foundation, slabs, and/or pavements. We suggest that automatic timing devices be utilized on irrigation systems; however, provision should be made to interrupt the normal watering cycle during and following periods of rainfall. Additional foundation movements could occur if water, from any source, saturates the foundation soils; therefore, proper drainage should be provided during in the final design, during construction, and maintained for the life of the development.

Static and seismic settlement could affect various aspects of the planned development, including utilities, building entrances, sidewalks, footings, and grade beams. Design of these elements should incorporate features to mitigate the effects of the predicted settlements. Because of the anticipated settlements during an earthquake, it may be necessary to replace esthetic features, sheetrock, glazing, exterior flatwork, etc., after a major earthquake.

The foundation excavations should be clean (i.e., free of all loose slough) and maintained in a moist condition between 1 to 4 percent over optimum just prior to placing steel and concrete. The concrete for the foundation should not be placed against a dry excavation surface.

The base of all foundation excavations should be free of water, loose soil, and gravel prior to placing concrete. Concrete should be placed soon after excavating and placement of engineered fill (and lime treatment, if needed) to reduce bearing soil disturbance. Should the soils at bearing level become excessively dry, disturbed, or saturated, the affected soil should be removed prior to placing concrete. In addition, as previously described, unsuitable soils should be completely removed from any proposed construction areas prior to construction. Concrete should not be chuted against the excavation sidewalls. Concrete should be pumped or placed by means of a tremie or elephant's trunk to avoid aggregate segregation and earth contamination. Rebar reinforcement should be properly supported with proper clearances maintained during concrete placement. The concrete should be properly vibrated to mitigate formation of voids and to promote bonding of the concrete to steel reinforcing. These recommendations are predicated upon ACG's representative observing the bearing materials as well as the manner of concrete placement.

**Foundation Setback**

The bottoms of utility trenches placed along the perimeter of the foundation should be above an imaginary plane that projects at a 2H:1V angle projected down from a point on the side of the footing that is 9-inches above the lowest outermost edge of the bottom of the foundation per the 2019 CBC Section 1809.14. Where trenches pass through the plane, the trench should be installed perpendicular to the face of the foundation for at least the distance of the depth of the foundation. Alternatively, the foundation could be deepened to attain the recommended setback. Foundation details under the influence of this recommendation should be forwarded along with the structural load information to the geotechnical engineer for review.

## INTERIOR FLOOR SLAB-ON-GROUND SUPPORT

On most project sites, the site mass grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade soils may be disturbed due to utility excavations,

construction traffic, desiccation, rainfall, etc. As a result, the floor slab subgrade soils may not be suitable for placement of base rock and concrete and corrective action will be required.

We recommend the subgrade soil underlying the floor slab be graded per the Earthwork section, above, and then thoroughly proof rolled with a loaded tandem axle dump truck or water truck prior to final grading and placement of base rock. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the affected material as engineered fill.

A building pad comprised of ACG approved subgrade soil (graded per the criteria contained within the above "Earthwork" section) is considered suitable for support of the slabs-on-ground of the building without further treatment. The subgrade soils should be maintained at 1 to 4 percent above the compaction moisture content in the upper 12 inches. In all cases the floor slab should not be placed on a dry subgrade.

**Lightly loaded building floor slab design, thickness and reinforcement should be as designed by the structural designer for the anticipated loadings based on a modulus of subgrade soil reaction (k) estimated at 75 pounds per square inch per inch (psi/in). We recommend that slabs-on-grade should be at least 4-inches thick for light duty use. The slabs should be supported on at least 5-inches thick crushed rock or at least 5 inches of Class II aggregate base (compacted to 95% relative compaction) that is underlain by approved subgrade soils prepared per the recommendations of this report.** The exterior ground surface should be at least 6 inches below the top of the floor slab. We emphasize that all surfaces should slope to drain away from all sides of the building. Slabs subjected to heavier loads may require thicker slab sections and/or increased reinforcement.

Slabs-on-grade subject to low frequency, light vehicle traffic should be at least five inches thick, or as per the project structural engineer, and have at least a six-inch thick layer of Class 2 aggregate base (compacted to at least 95 percent relative compaction) placed beneath the slabs. If elastic design is utilized for designing slabs-on-grade founded on at least a six-inch thick layer of Class 2 aggregate base compacted to at least 95 percent relative compaction, then the design k value may be increased to 125

pci. The modulus was provided based on the slab being supported on 6 inches or more of compacted aggregate base and estimates obtained from NAVFAC 7.1 design charts. This value is for a small, loaded area (1 sq. foot or less) such as for small truck wheel loads or point loads and should be adjusted for larger loaded areas. Slabs subjected to heavier loads may require thicker slab sections and/or increased reinforcement. The slabs should be separated from the foundations supporting the structures to allow for differential movements between the two elements. We suggest the structural designer consider slab reinforcement consist of at least #3 reinforcing bars placed on maximum 24-inch centers at mid-slab height.

**Floor Slab Moisture Penetration Resistance**

***We are not experts regarding measures for mitigating (or preventing) moisture intrusion into building's first floor slab(s)-on-grade. If such should be desired, then an expert regarding moisture intrusion should be consulted.***

We suggest the following measures for mitigating (not preventing) moisture intrusion into moisture sensitive interior floor slab(s). The floor slabs should be underlain by a 4-inch-thick layer of crushed washed rock which is intended to serve as a capillary mitigating moisture break and to provide uniform slab support. Gradation of this material should be such that 100 percent will pass a 1-inch sieve and 0 to 5 percent passes the No. 4 sieve. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder. At a minimum, we recommend in areas where it is desired to reduce floor dampness where moisture-sensitive coverings are anticipated, construction should have a suitable waterproof vapor retarder (at least 15 mils thick polyethylene vapor retarder sheeting, Raven Industries "VaporBlock 15, Stego Industries 15 mil "StegoWrap" or W.R. Meadows Sealtight 15 mil "Perminator") incorporated into the floor slab design. The water vapor retarder should be decay resistant material complying with ASTM E96 not exceeding 0.04 perms, ASTM E154 and ASTM E1745 Class A. The vapor barrier should be placed between the concrete slab and the compacted granular aggregate subbase material. The water vapor retarder (vapor barrier) should be installed in accordance with ASTM Specification E 1643-94 or the manufacturer's recommendations, whichever is more stringent. If maximum two

inches of clean sand should be placed above the vapor retarder (not recommended), then we recommend a moisture barrier be placed against the outer face of the perimeter foundation. Please note that the sand can be a conduit for water beneath the slab. In addition, the sand can form boils/pockets in the slab concrete. If proposed floor areas or coverings are considered especially sensitive to moisture emissions, additional recommendations from a specialty consultant should be obtained. If desired, further resistance to moisture vapor intrusion could be achieved with proper curing of the concrete, adding a sealant to the mix (e.g., Moxie), having a mix design with low slump (e.g., 2 to 4 inches), low water/cement ratio (we suggest not greater than 0.48), and high strength (we suggest at least 3000 psi).

The structural engineer/Architect and slab-on-grade floor installation contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor barrier. In areas of exposed concrete, control joints should be saw-cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). To control the width of cracking, continuous slab reinforcement should be considered in exposed concrete slabs.

Positive separations and/or isolation joints should be provided between slabs and all foundations, columns, or utility lines to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined in the Earthwork section of this report and Appendix D. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

**EXTERIOR FLATWORK**

We recommend exterior concrete flatwork subject to only pedestrian traffic be at least 4 inches thick and underlain by at least 5 inches of Class II aggregate base by approved subgrade soils prepared per the "Earthwork" recommendations section of this report.

To reduce the potential for distress to exterior flatwork that might be caused by differential movement of subgrade soils, we recommend that such flatwork be installed with crack-control joints at appropriate spacing as designed by the project architect. Flatwork, which should be installed with crack control

joints, includes driveways, sidewalks, and architectural features. All subgrades should be prepared according to the recommendations in the Earthwork section before placing concrete. Positive drainage should be established and maintained adjacent to all flatwork.

## PAVEMENT SECTION ALTERNATIVES

**The R-value test result by exudation at 300 psi is 19 for Sandy Silt subgrade soil that was obtained from R-1 location shown in Figure 2 - Explorations Map.** Based on the R-value indicated and the Traffic indices (T.I.'s) indicated below, pavement section alternatives for the on-site pavement were evaluated per the CalTrans "Highway Design Manual" (HDM). A factor of safety per CalTrans HDM was **not** applied for on-site pavements. The Traffic Index selected for the final pavement design should be based upon the CalTrans "Highway Design Manual" - latest revision and/or edition - including consideration of the vehicular traffic anticipated, number of repetitions, etc., - as determined by your general civil engineer or per regulatory agency requirements. Estimated pavement sections for light (T.I. = 5; e.g., daily cars and pickups, weekly light delivery trucks, occasional fire trucks up to 40 tons, etc.) to medium duty vehicles (T.I. = 6 to 7; e.g., weekly garbage trucks, construction equipment, etc.) are summarized on the following table:

| DESIGN TRAFFIC INDEX | RECOMMENDED PAVEMENT SECTION ALTERNATIVES Inches (Feet) | | | |
|---|---|---|---|---|
| | Asphalt Concrete (AC) (Type B) | Aggregate Base (AB) (Class 2*) | Jointed Portland Cement Concrete** | Aggregate Base (Class 2*) |
| 5.0 | 2" (0.15')<br>2.5" (0.2') | 10" (0.85')<br>8" (0.65') | 5" (0.4') | 6" (0.5') |
| 6.0 | 2.5" (0.2')<br>3" (0.25) | 12" (1.0')<br>11" (0.9') | 6" (0.6') | 7" (0.6') |
| 7.0 | 3" (0.25')<br>4" (0.35') | 14" (1.15')<br>12" (1.0') | 6" (0.6') | 8" (0.65') |

(* Caltrans Class 2 aggregate base (AB). ** Portland Cement Concrete (PCC) should have a modulus of rupture of at least 625 psi)

The above sections should be used for preliminary design and planning purposes only. We recommend representative subgrade sample(s) be obtained and "R" Value test(s) be performed on actual earth materials exposed once pavement areas have been pioneered. These additional test results may then be used to evaluate pavement sections for construction. It is possible that significant variations in

pavement sections (vs. those listed above) could result if the resulting test(s) is/are different than that used for this study.

The preliminary sections above should be reviewed and approved by the owner, the civil engineer, and the governing authorities prior to construction. In addition, other recommendations for the stated traffic indices are available, if needed. The total thickness of most sections would closely approximate those given. Thinner sections than those recommended could result in increased maintenance and/or shorter pavement life. If desired, please contact this office for further analysis.

Asphalt concrete paved areas should be designed, constructed, and maintained in accordance with, for example, the recommendations of the Asphalt Institute, CalTrans Highway Design Manual, or other widely recognized authority. Concrete paved areas should be designed and constructed in accordance with the recommendations of the American Concrete Institute, CalTrans Highway Design Manual, or other widely recognized authority, particularly regarding thickened edges, joints, and drainage.

Materials and compaction requirements within the structural sections should conform to the applicable provisions of the CalTrans Standard Specifications (latest edition) including at least 95 percent relative compaction of at least the uppermost twelve inches of subgrade earth materials. Asphalt concrete pavement should conform to the specifications of Type A or B per section 39, and aggregate base should conform to the specifications of Class II per Section 26 of the referenced specifications.

Concrete pavements could be reinforced with nominal rebar, such as at least #4 bars spaced no greater than 24 inches, on center, both ways, placed at above mid-slab height, but with proper concrete cover, as designed by the pavement engineer or structural engineer. If concrete pavements are to be unreinforced, then we suggest the designer use expansion/contraction and/or construction joints spaced no greater than 24 times the pavement thickness, both ways, in nearly square patterns, and detailed in general accordance with ACI Guidelines. Doweling of concrete pavements at critical pathways is also recommended.

We recommend that reinforced concrete pads be provided for truck pad areas in front of and beneath trash receptacles as determined by the structural designer. The trash collection trucks should be parked on the rigid concrete pavement when the trash receptacles are lifted. The concrete pads should be at

least 6 inches thick and properly reinforced. Thickened edges should be used along outside edges of concrete pavements. Edge thickness should be at least 2 inches thicker than concrete pavement thickness and taper to the actual concrete pavement thickness 36 inches inward from the edge. Integral curbs may be used in lieu of thickened edges.

The above pavement section alternatives were estimated on the basis that a comparable soil type with R-value indicated above would constitute the final subgrade of the pavement. We emphasize that ACG should be retained to observe and test final subgrade soil(s) exposed to affirm that the soil is comparable to that indicated above. Where differing earth materials are encountered, they should be tested to affirm that they will also provide the same or better support for pavement sections like those recommended above for preliminary design.

Adequate drainage systems should be provided to prevent both surface and subsurface saturation of the subgrade soils. As a design option, a subdrain system beneath and along the edges of the pavements might be considered. The purpose of the system would be to mitigate saturation and loss of strength/stability of the subgrade soils. Subdrains should be especially considered beneath valley drains, if utilized for the project. As an alternate to edge drains (especially around landscape planters), barrier curbing that extends to at least four inches into the soil subgrade below the bottom of the aggregate base layer could be considered to limit infiltration of water beneath the adjacent pavement. Drainage inlets should be perforated (weep holes installed) at the level of the aggregate base layer. A layer of geotextile fabric should be placed on the outside of the drain inlet over the weep holes to reduce the potential for migration or piping of fines through the holes.

Base course or pavement materials should not be placed when the subgrade surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

**Pavement Construction Considerations**

On most project sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrades may become disturbed due to utility excavations, construction traffic, rainfall, etc. As a result, the pavement subgrade may not be

suitable for placement of aggregate base and pavement. We recommend the area underlying the pavement be rough graded and proof-rolled prior to placement of aggregate base material. Particular attention should be paid to high traffic areas and utility trenches that were backfilled. Areas where disturbance has occurred and materials are unsuitable, they should be removed and replaced with compacted structural fill.

The aggregate base should be uniformly moisture-conditioned and compacted to at least 95 percent relative compaction (modified proctor) in accordance with this report. Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

Minimizing subgrade saturation is an important factor in maintaining subgrade strength. Water allowed to pond on or adjacent to pavements could saturate the subgrade and cause premature pavement deterioration. The pavement should be sloped to provide rapid surface drainage, and positive surface drainage should be maintained away from the edge of the paved areas. Design alternatives which could reduce the risk of subgrade saturation and improve long-term pavement performance include crowning the pavement subgrades to drain toward the edges, rather than to the center of the pavement areas; and installing surface drains next to any areas where surface water could pond. Properly designed and constructed subsurface drainage will reduce the time subgrade soils are saturated and can also improve subgrade strength and performance. In areas where there will be irrigation adjacent to pavements, we recommend the owner consider installing perimeter drains for the pavements.

Preventative maintenance should be planned and provided for through an on-going pavement management program to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

**SUBDRAINAGE**

Subdrains might be needed to control subsurface water that might become perched in top and/or fill soils. Each case should be evaluated by the Geotechnical Engineer so that he/she could make appropriate mitigation recommendations.

## LIMITATIONS

This report contains statements regarding opinions, conclusions, and recommendations, all of which involve certain risks and uncertainties. These statements are often, but are not always, made through the use of words or phrases such as “anticipates”, “intends”, “estimates”, “plans”, “expects”, “we believe”, “we consider”, “it is our opinion”, “mitigation or mitigate”, “suggest”, “may be”, “expected”, “predicated”, “advised”, and similar words or phrases, or future or conditional verbs such as “will”, “would”, “should”, “potential”, “can continue”, “could”, “may”, or similar expressions. Actual results may differ significantly from the expectations contained in the statements. Among the factors that may result in differences are the inherent uncertainties associated with earth material conditions, groundwater, project development activities, regulatory requirements, and changes in the planned development.

The analysis and recommendations submitted in this report are based in part upon the data from the exploratory borings at the indicated locations and in part on information provided by the client. The nature and extent of subsurface variations between the test borings across the site (or due to the modifying effects of weather and/or man) may not become evident until further exploration or during construction. If variations then appear evident, then the conclusions, opinions, and recommendations in this report shall be considered invalid, unless the variations are reviewed and the conclusions, opinions, and recommendations are modified or approved in writing.

This report was prepared to assist the client in the evaluation of the site and to assist the architect and/or engineer in the design of the improvements. This firm should be provided the opportunity for a general review of final plans and specifications to determine that the recommendations of this report have been properly interpreted and implemented in the plans and specifications.

If there are any significant changes in the project as described herein, then the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and conclusions and recommendations modified or verified in writing.

This report is issued for the client's use only. In addition, it is his responsibility to ensure that the information and recommendations contained herein are called to the attention of the designer for the project; and, that necessary steps are taken to implement the recommendations during construction.

The findings in this report were developed on the date(s) indicated. Changes in the conditions of the property can occur with the passage of time, whether they are due to natural processes or the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control. Therefore, this report and the findings on which it is based are subject to our review at the onset of and during construction, or within two years, whichever first occurs.

The scope of services of this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria, etc.) assessment of the site or identification or prevention of pollutants, hazardous materials, or any other adverse conditions. If the owner is concerned about the potential of such contamination or pollution, other studies should be undertaken.

No warranties, either expressed or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. If any changes in the nature, design, or location of the project as outlined in this report are planned, the conclusion and recommendations contained in this report shall not be considered valid unless ACG reviews the changes, and either verifies or modifies the conclusions of this report in writing.

This report is applicable only for the project and site studied and should not be used for design and/or construction on any other site.

We appreciate this opportunity to be of service on this project. If you have any questions regarding this report, then please do not hesitate to contact us.

## REFERENCES

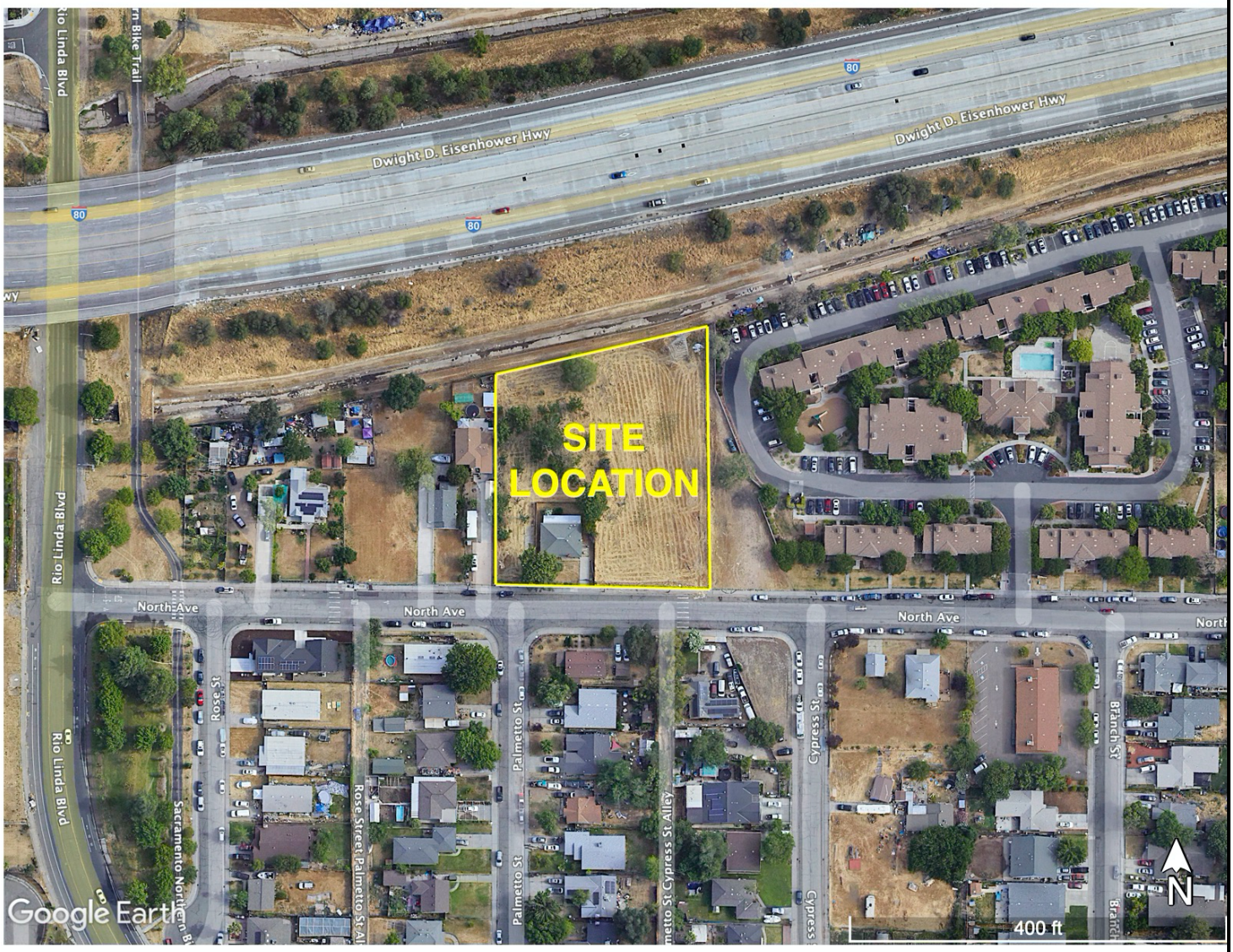
1. American Society for Civil Engineers, 2016 “Minimum Design Loads for Buildings and Other Structures,” ASCE/SEI 7-16.
2. ASTM, “Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort,” Volume 04.08
3. California Building Code, 2019, “California Code of Regulations, Title 24, Part 2, Volume 2 of 2,” California Building Standards Commission, published by ICBO.
4. CGS “Preliminary Geologic Map of the Sacramento 30’ x 60’ Quadrangle, California”, 2011, scale 1:100,000. Compilation and Digital Preparation by Carlos I. Gutierrez.
5. CGS website (https://www.conservation.ca.gov/cgs/earthquakes) for Regulatory Maps, Reports and GIS data that includes Earthquake Fault Zones, Landslide and Liquefaction Zones.
6. Hart, Earl W., Revised 1994, "Fault-Rupture Hazard Zones in California, Alquist Priolo, Special Studies Zones Act of 1972,” California Division of Mines and Geology, Special Publication 42.
7. Jennings, Charles W. and Bryant, William A., 2010, “Fault Activity Map of California” (scale 1: 750,000) published by CGS, Geologic Data Map No. 6.
8. SEAOC/OSHPD U.S. Seismic Hazard Maps (reference ASCE/SEI 7-16, 2018 International Building Code/2019 California Building Code).
9. RFE Engineering, Inc., “On-Site Improvement Plans” (Sheet No. C6), dated January 24, 2022.
10. Google Earth Aerial Photography of the Subject Site.

# APPENDICES

## APPENDIX A

### VICINITY MAP

### EXPLORATIONS MAP




**NOTES:**

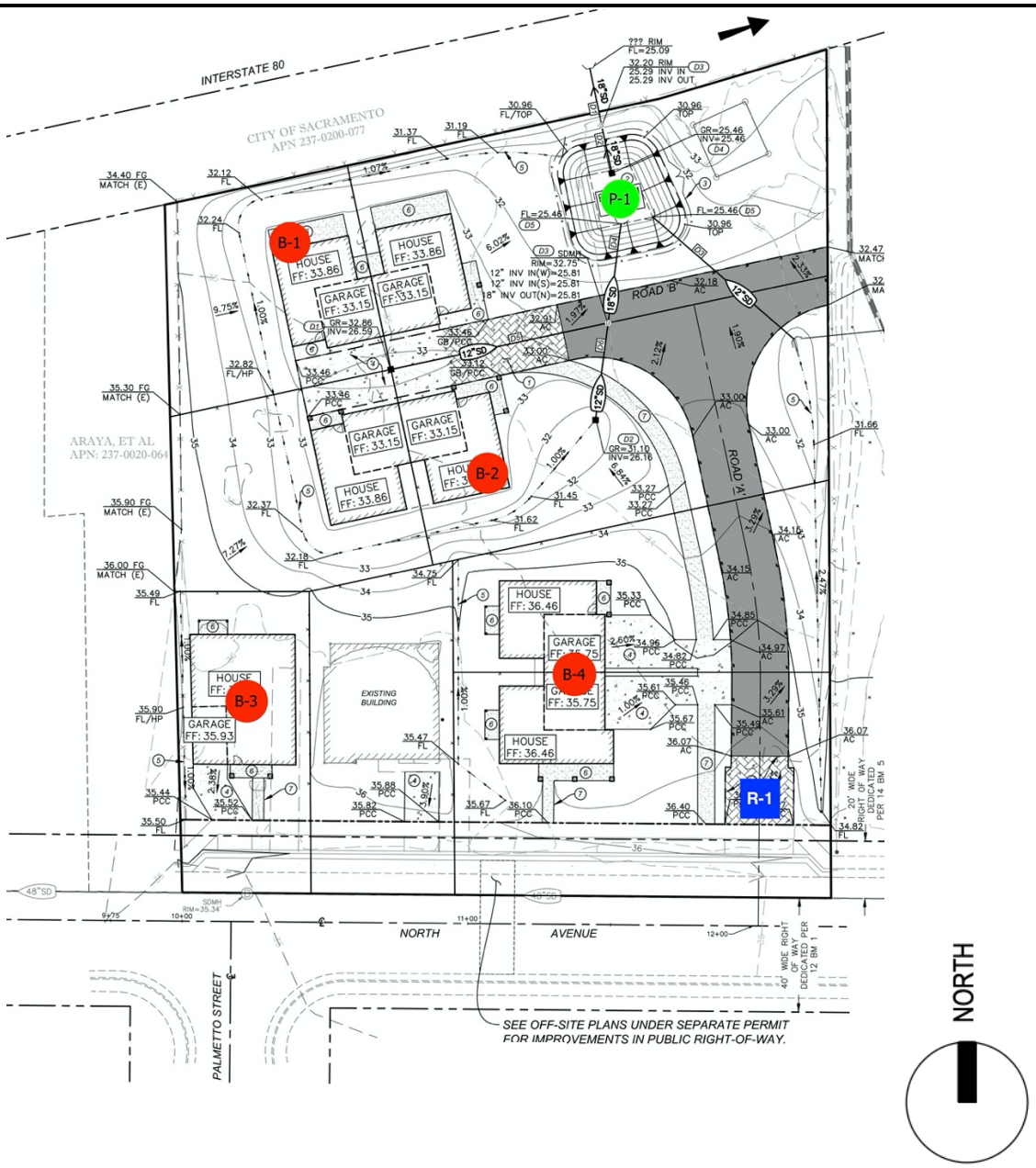
Location of site (designated by yellow border) is approximate.
Source for base map: Imagery from Google Earth 2022©.

**ALLERION CONSULTING GROUP, INC.**
1050 Melody Lane, Suite 160
Roseville, CA 95678
Phone: 916-742-5096

# VICINITY MAP

**Proposed Nerradscali Subdivision**
**905 North Avenue**
**Sacramento, California**

| | |
|---|---|
| **ACG JOB NO.** | 05-22016G |
| **DATE** | 03/23/2022 |
| **FIGURE** | 1 |




**LEGEND:**

- B-x – Approximate Location and Number of Boring
- P-x – Approximate Location and Number of Percolation Test
- R-1 – Approximate Location of R-value Sample

**NOTES:**

Source for base map: RFE Engineering, Inc., "On-Site Improvement Plans" (Sheet No. C6), dated January 24, 2022.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## EXPLORATIONS MAP

**Proposed Nerradscali Subdivision**
**905 North Avenue**
**Sacramento, California**

| ACG JOB NO. | DATE | FIGURE |
|---|---|---|
| 05-22016G | 03/23/2022 | 2 |

# APPENDIX B

## FIELD EXPLORATION METHODS

## LOGS OF SUBSURFACE EXPLORATIONS

**FIELD EXPLORATION METHODS**

Field exploration included a general geotechnical engineering reconnaissance within the study area, as well as the excavation of subsurface explorations at approximate locations shown on the Explorations Map, Figure 2, Appendix A. Locations of explorations were determined in the field by estimating from the existing site features shown on an aerial photo. The exploration locations should only be considered accurate to the degree implied by the means and methods used to define them. The explorations were accomplished, and the soil logging and sampling performed by, a Staff Geologist and/or Engineer under the direct supervision of a California licensed Geotechnical Engineer. The explorations were conducted to determine the geometry and geotechnical characteristics of subsurface geologic deposits at the site.

The exploratory borings were advanced with a 4-inch outer-diameter continuous flight helical solid stem augers (SSA) powered by a truck mounted drill rig. Relatively undisturbed soil samples were recovered from the borings at selected intervals by either a 1.4-inch SPT (standard penetration) or 2-inch inner-diameter samplers (Modified California) advanced with an automatic hammer driving a 140 lb. hammer freely falling 30 inches (standard 350-foot/lb. striking force). The number of blows of the hammer required to drive the samplers each 6-inch to 18-inch interval of each drive is denoted as the penetration resistance or "blow count" and provides a field estimate of soil consistency/relative density. Blow counts shown on the logs have not been corrected/converted. Selected undisturbed samples were retained in moisture-proof containers for laboratory testing and reference. Bulk soil samples were recovered directly from excavation cuttings and placed in sealed plastic sample bag(s).

Soils were logged in the field by the Staff Geologist or Engineer and were field classified based on inspection of samples and auger cuttings per the Unified Soil Classification System (ASTM D2487) by color, gradation, texture, type, etc. Groundwater observations were made in the explorations during and after drilling. Exploration log prepared for the exploration provides soil descriptions and field estimated depths. The exploration logs are included in this Appendix B which also contains the Explorations Log Legend. This log includes visual classifications of the materials encountered during drilling as well as the field engineer's interpretation of the subsurface conditions. Final exploration logs included with this report represents the geotechnical engineer's interpretation of the field logs.

Samples of the subsurface soil earth materials were obtained from the exploratory borings for use in laboratory testing to further determine the soil's engineering properties and geotechnical design parameters to be used for future site improvements. The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Bulk soil samples were recovered directly from excavation cuttings and placed in a plastic sample bag. Soil samples were then transported to ACG's soil mechanics laboratory for further testing. Field descriptions within the exploration logs have been modified, where appropriate, to reflect laboratory test results. Upon completion of drilling the test borings were backfilled from final test boring depth up to original ground surface with soil cuttings.

Project: **Proposed Nerradscali Subdivision**
Project Location: **Sacramento, CA**
Project Number: **05-22016G**

# Log of Boring B-1
**Sheet 1 of 1**

| | | |
|---|---|---|
| Date(s) Drilled **2/23/2022** | Logged By **CH** | Checked By **MK** |
| Drilling Method **Solid Stem Auger (SSA)** | Drill Bit Size/Type **4" SSA** | Total Depth of Borehole **11.5 feet begs** |
| Drill Rig Type **CME 45** | Drilling Contractor **Cal-Nev Geo Exploration** | Approximate Surface Elevation **35 feet above MSL** |
| Groundwater Level and Date Measured **Not Encountered** | Sampling Method(s) **Modified California, SPT** | Hammer Data **140 lb., 30", Auto** |
| Borehole Backfill **Soil Cuttings** | Location **See Explorations Map** | |

| Apprx. Elevation (feet) | Apprx. Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/6 inches | Material Type (USCS) | Graphic Log | MATERIAL DESCRIPTION | Recovery (percent) | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | Remarks and Other Tests |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 | 0 | | | | ML | | Medium Stiff, Moist, Dark Brown, Fine Sandy SILT | | | | | | | |
| | | | | | CL | | Very Stiff, Moist, Light Brown, Fine Sandy Silty CLAY | | | | | | | |
| | | | 1 | 6<br>8<br>31 | ML | | Hard, Moist, Light Brown, Fine Sandy SILT | | 16.5 | 106 | | | | |
| 30 | 5 | | 2 | 50/6" | | | Red-Brown with Rock Fragments | | | | | | | |
| | | | | | | | Light Brown | | | | | | | |
| 25 | 10 | | 3 | 16<br>36<br>50/6" | | | | | | | | | | |
| | | | | | | | Boring was completed at a depth of approximately 11.5 feet begs. Free groundwater was not encountered during or after the drilling. Boring was backfilled with soil cuttings. | | | | | | | |
| 20 | 15 | | | | | | | | | | | | | |
| 15 | 20 | | | | | | | | | | | | | |
| 10 | 25 | | | | | | | | | | | | | |
| 5 | 30 | | | | | | | | | | | | | |

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Project: **Proposed Nerradscali Subdivision**
Project Location: **Sacramento, CA**
Project Number: **05-22016G**

# Log of Boring B-2
**Sheet 1 of 1**

| | | |
|---|---|---|
| Date(s) Drilled **2/23/2022** | Logged By **CH** | Checked By **MK** |
| Drilling Method **Solid Stem Auger (SSA)** | Drill Bit Size/Type **4" SSA** | Total Depth of Borehole **11.5 feet begs** |
| Drill Rig Type **CME 45** | Drilling Contractor **Cal-Nev Geo Exploration** | Approximate Surface Elevation **34 feet above MSL** |
| Groundwater Level and Date Measured **Not Encountered** | Sampling Method(s) **Modified California, SPT** | Hammer Data **140 lb., 30", Auto** |
| Borehole Backfill **Soil Cuttings** | Location **See Explorations Map** | |

| Apprx. Elevation (feet) | Apprx. Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/6 inches | Material Type (USCS) | Graphic Log | MATERIAL DESCRIPTION | Recovery (percent) | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | Remarks and Other Tests |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 | 0 | | | | ML | | Medium Stiff, Moist, Dark Brown, Fine Sandy SILT | | | | | | | |
| | | | | | CL | | Very Stiff, Moist, Dark Brown, Fine Sandy Silty CLAY | | | | | | | |
| | | | 1 | 28<br>50\1" | ML | | Hard, Moist, Dark Brown, Fine Sandy SILT | | 18.4 | | 59 | 38 | 16 | |
| 29 | 5 | | 2 | 16<br>32<br>42 | | | Light Brown<br>Light Brown with Orange Mottles | | | | | | | |
| 24 | 10 | | 3 | 34<br>50/1" | | | Light Brown, No Mottles | | | | | | | |
| | | | | | SP | | Dense, Moist, Dark Brown to Brown, Fine to Medium SAND | | | | | | | |
| 19 | 15 | | 4 | 11<br>15<br>20 | | | | | 8.3 | | | | | |
| | | | | | ML | | Hard, Moist, Light Brown, Fine Sandy SILT | | | | | | | |
| 14 | 20 | | 5 | 14<br>25<br>50\6" | | | Boring was completed at a depth of approximately 21.5 feet begs. Free groundwater was not encountered during or after the drilling. Boring was backfilled with soil cuttings. | | | | | | | |
| 9 | 25 | | | | | | | | | | | | | |
| 4 | 30 | | | | | | | | | | | | | |

/Volumes/Ace Quality Control/ACE Projects/ALLERION Projects/2022/Geotechnical /05-22016G Nerradscali Subdivision, Sacramento/Boring Logs/Field Worksheet Logs.bg4[Allerion-30.tpl]

Allerion
Consulting Group, Inc.

Project: **Proposed Nerradscali Subdivision**
Project Location: **Sacramento, CA**
Project Number: **05-22016G**

# Log of Boring B-3
**Sheet 1 of 1**

| | | |
|---|---|---|
| Date(s) Drilled **2/23/2022** | Logged By **CH** | Checked By **MK** |
| Drilling Method **Solid Stem Auger (SSA)** | Drill Bit Size/Type **4" SSA** | Total Depth of Borehole **21.5 feet begs** |
| Drill Rig Type **CME 45** | Drilling Contractor **Cal-Nev Geo Exploration** | Approximate Surface Elevation **37 feet above MSL** |
| Groundwater Level and Date Measured **Not Encountered** | Sampling Method(s) **Modified California, SPT** | Hammer Data **140 lb., 30", Auto** |
| Borehole Backfill **Soil Cuttings** | Location **See Explorations Map** | |

| Apprx. Elevation (feet) | Apprx. Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/6 inches | Material Type (USCS) | Graphic Log | MATERIAL DESCRIPTION | Recovery (percent) | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | Remarks and Other Tests |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37 | 0 | | | | ML | | Medium Stiff, Moist, Dark Brown, Fine Sandy SILT with Gravel | | | | | | | |
| | | | 1 | 2<br>3<br>17 | | | Very Stiff, Light Brown with Orange Mottles, Fine Sandy SILT | | 12.7 | | 50 | | | |
| 32 | 5 | | 2 | 26<br>43<br>50\6" | | | Hard, No Mottles<br>Light Brown with White Streaks<br>Light Brown with Orange Mottles | | 24 | 95 | | | | |
| 27 | 10 | | 3 | 11<br>19<br>30 | | | | | | | | | | |
| | | | | | | | Boring was completed at a depth of approximately 11.5 feet begs. Free groundwater was not encountered during or after the drilling. Boring was backfilled with soil cuttings. | | | | | | | |
| 22 | 15 | | | | | | | | | | | | | |
| 17 | 20 | | | | | | | | | | | | | |
| 12 | 25 | | | | | | | | | | | | | |
| 7 | 30 | | | | | | | | | | | | | |

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Allerion
Consulting Group, Inc.

Project: **Proposed Nerradscali Subdivision**
Project Location: **Sacramento, CA**
Project Number: **05-22016G**

# Log of Boring B-4
**Sheet 1 of 1**

| | | |
|---|---|---|
| Date(s) Drilled **2/23/2022** | Logged By **CH** | Checked By **MK** |
| Drilling Method **Solid Stem Auger (SSA)** | Drill Bit Size/Type **4" SSA** | Total Depth of Borehole **11 feet begs** |
| Drill Rig Type **CME 45** | Drilling Contractor **Cal-Nev Geo Exploration** | Approximate Surface Elevation **36 feet above MSL** |
| Groundwater Level and Date Measured **Not Encountered** | Sampling Method(s) **Modified California, SPT** | Hammer Data **140 lb., 30", Auto** |
| Borehole Backfill **Soil Cuttings** | Location **See Explorations Map** | |

| Apprx. Elevation (feet) | Apprx. Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/6 inches | Material Type (USCS) | Graphic Log | MATERIAL DESCRIPTION | Recovery (percent) | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | Remarks and Other Tests |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36 | 0 | | | | ML | | Medium Stiff, Moist, Dark Brown, Fine Sandy SILT | | | | | | | |
| | | | | | CL | | Stiff, Moist, light brown, Fine Sandy Silty CLAY | | | | | | | |
| | | | 1 | 6<br>50\6" | ML | | Hard, Moist, Light Brown, Fine Sandy SILT | | 16.1 | 101 | | | | |
| 31 | 5 | | 2 | 10<br>9<br>15 | | | Very Stiff, Light Brown with Orange Mottles | | | | | | | |
| 26 | 10 | | 3 | 16<br>50/6" | | | Hard, Light Brown No Mottles | | | | | | | |
| | | | | | | | Boring was completed at a depth of approximately 11 feet begs. Free groundwater was not encountered during or after the drilling. Boring was backfilled with soil cuttings. | | | | | | | |
| 21 | 15 | | | | | | | | | | | | | |
| 16 | 20 | | | | | | | | | | | | | |
| 11 | 25 | | | | | | | | | | | | | |
| 6 | 30 | | | | | | | | | | | | | |

/Volumes/Ace Quality Control/ACE Projects/ALLERION Projects/2022/Geotechnical /05-22016G Nerradscali Subdivision, Sacramento/Boring Logs/Field Worksheet Logs.bg4[Allerion-30.tpl]

Allerion
Consulting Group, Inc.

Project: **Proposed Nerradscali Subdivision**
Project Location: **Sacramento, CA**
Project Number: **05-22016G**

# Key to Log of Boring

**Sheet 1 of 1**

| 1 Apprx. Elevation (feet) | 2 Apprx. Depth (feet) | 3 Sample Type | 4 Sample Number | 5 Sampling Resistance, blows/6 inches | 6 Material Type (USCS) | 7 Graphic Log | 8 MATERIAL DESCRIPTION | 9 Recovery (percent) | 10 Water Content, % | 11 Dry Unit Weight, pcf | 12 Percent Fines | 13 LL, % | 14 PI, % | 15 Remarks and Other Tests |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## COLUMN DESCRIPTIONS

**1** Apprx. Elevation (feet): Approximate Elevation (MSL, feet).
**2** Apprx. Depth (feet): Approximate Depth in feet below the ground surface.
**3** Sample Type: Type of soil sample collected at the depth interval shown.
**4** Sample Number: Sample identification number.
**5** Sampling Resistance, blows/6 inches: Number of blows to advance driven sampler 6 inches (or distance shown) beyond seating interval using the hammer identified on the boring log.
**6** Material Type (USCS): Type of material encountered per USCS.
**7** Graphic Log: Graphic depiction of the subsurface material encountered.
**8** MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
**9** Recovery (percent): Percent Recovery
**10** Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
**11** Dry Unit Weight, pcf: Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.
**12** Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.
**13** LL, %: Liquid Limit, expressed as a water content.
**14** PI, %: Plasticity Index, expressed as a water content.
**15** Remarks and Other Tests : Comments and observations regarding drilling or sampling made by driller or field personnel.

## FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess constituents
COMP: Compaction test (Proctor)
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

## MATERIAL GRAPHIC SYMBOLS

Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
SILT, SILT w/SAND, SANDY SILT (ML)
Poorly graded SAND (SP)

## TYPICAL SAMPLER GRAPHIC SYMBOLS

Bulk Sample
3-inch-OD California Modified w/ 2.38-inch-ID Stainless Steel Tube
2.5-inch-OD Modified California w/ 1.91-inch-ID stainless steel tube
2-inch-OD split spoon (SPT)

## OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting)
Minor change in material properties within a stratum
Inferred/gradational contact between strata
Queried contact between strata

## GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System (USCS). Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.



Allerion Consulting Group, Inc.

**Figure B-1**

# APPENDIX C

## LABORATORY TESTING

## LABORATORY TESTING

Samples retrieved during the field exploration were taken to the soil mechanics laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix B. An applicable laboratory testing program was formulated for classification testing and to determine engineering properties of the subsurface earth materials. The field descriptions were confirmed or modified based on the test results.

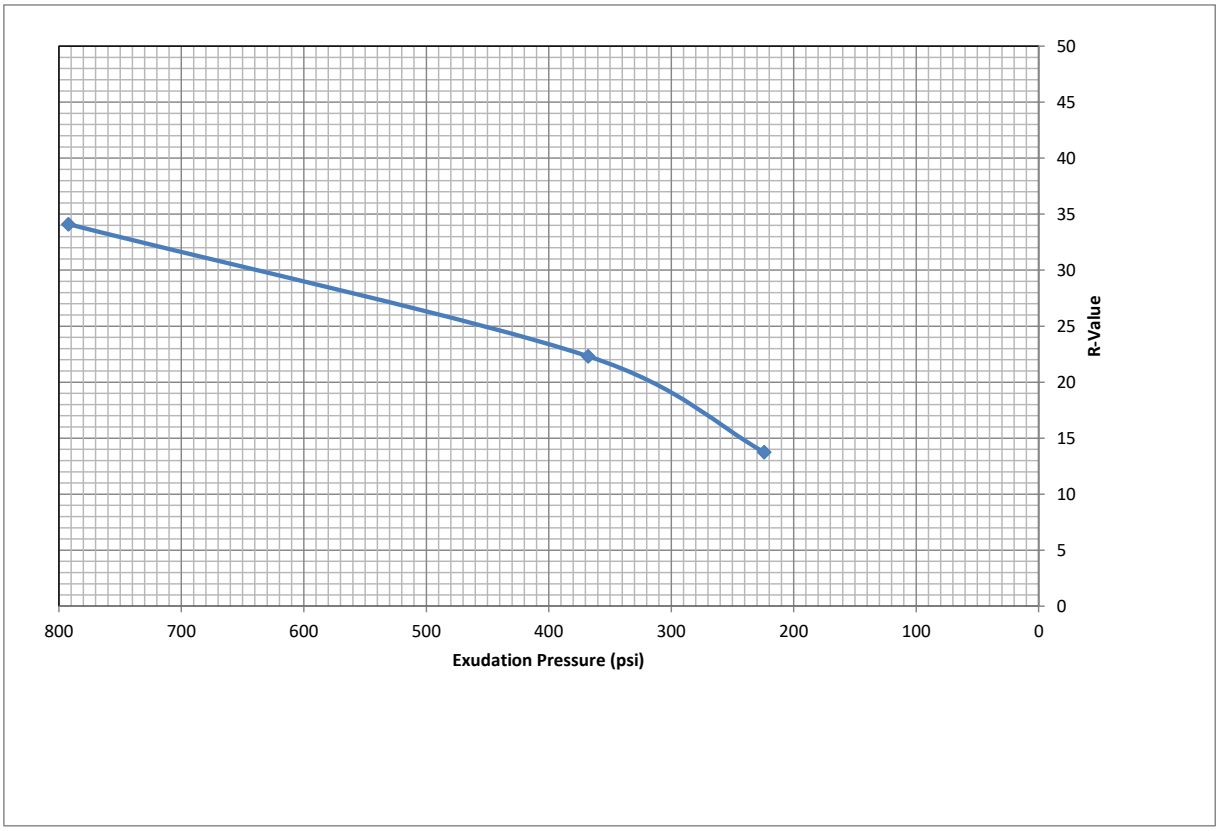
Soil mechanics laboratory tests were performed on soil samples recovered from the explorations to further determine the physical and engineering properties of the soils. These tests included R-value test (CTM 301), gradation (ASTM D422), dry density (ASTM D 2937), Atterberg limits (ASTM D 4318) and natural moisture content (ASTM D 2216). The results of these tests are shown on the Exploration Log at the depth that each sample was recovered. The R-value test results are attached. The laboratory test results were used for the geotechnical engineering analyses, and the development of engineering, earthwork, and construction recommendations.

CONSTRUCTION TESTING SERVICES

# Resistance "R" Value by Stabilometer

Test Performed in General Accordance with: ☑ CT 301 ☐ ASTM D 2844-07

| | | | |
|---|---|---|---|
| **Project Name:** | Nerradscali Subdivision | **CTS Job No.** | 18291 |
| **Project Location:** | Sacramento, CA | **Client:** | ACE Quality Control |
| **Date Sampled:** | 2/23/2022 | **Sample Location:** | 905 North Ave |
| **Date Tested:** | 2/28/2022 | **Lab Log In:** | 240494 |
| **Sampled by:** | Client | **Source:** | N/A |
| **Tested by:** | James Bridges | **Description:** | Silty Sand |




| Specimen | Dry Density (pcf) | Moisture Content %) | Exudation Pressure (psi) | Corrected R Value | Expansion Pressure (psf) |
|---|---|---|---|---|---|
| A | 114.0 | 13.5 | 792 | 34 | 128 |
| B | 114.1 | 14.6 | 368 | 22 | 66 |
| C | 113.8 | 15.7 | 224 | 14 | <1 |

**R-Value at 300 psi** **19**

***Limitations:***

*The materials tested was sampled and/or transported to our laboratory by parties other than CTS personnel. This report therefore makes no representation of whether the sample tested was representative of the subject material. Testing was performed in accordance with the applicable test methods by qualified personnel. Pursuant to applicable building codes and/or specifications, the results presented in this report are for the items listed herein and for the exclusive use of the Client and the registered design professional in responsible charge. The results apply only to the samples tested and are not to be considered as a guarantee or warranty, express or implied. In the event changes to the specifications (and/or materials) were made and not communicated to CTS, then CTS assumes no responsibility for the accuracy of pass/fail statements (meets/did not meet), if provided*

Reviewed by: Amy Reeves, EIT

Title: Staff Engineer

Date: 3/2/2022

4400 Yankee Hill Road, Rocklin, CA 95677 | (916) 419-4747 office | (916) 419-4774 fax
2118 Rheem Drive, Pleasanton, CA 94588 | (925) 462-5151 office | (925) 462-5183 fax

# APPENDIX D

## GUIDE SPECIFICATIONS FOR EARTHWORK

**GUIDE SPECIFICATIONS FOR EARTHWORK**

A. General Description

1. This item shall consist of all clearing and grubbing, removal of existing obstructions, preparation of the land to be filled, filling the land, spreading, compaction and control of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades and slopes as shown on the accepted plans.

2. The Geotechnical Engineer is not responsible for determining line, grade elevations or slope gradients. The property owner or his representative shall designate the party that will be responsible for those items of work.

B. Geotechnical Report

1. The Geotechnical Report has been prepared for this project by Allerion Consulting Group (ACG), Roseville, California, (916-742-5096). This report was for design purposes only and may not be sufficient to prepare an accurate bid. A copy of the report is available for review at **ACG's** office.

2. Contents of these guide specifications shall be integrated with the Geotechnical Report of which they are a part and shall not be used as a self-contained document. Where a conflict occurs between these guide specifications and the conclusions and recommendations contained in the report, then the conclusions and recommendations shall take precedence and these guide specifications adjusted accordingly.

C. Site Preparation

1. Clearing Area(s) to be Filled: All trees, brush, logs, rubbish, and other debris shall be removed and disposed of to leave the areas that have been disturbed with a neat appearance. Underground structures shall be removed or may be crushed in place upon approval by the Geotechnical Engineer. Excavations and depressions resulting from the removal of the above items shall be cleaned out to firm undisturbed soil and backfilled with suitable materials in accordance with the specifications contained herein. Stockpiles of clean soil may be reused as filled material provided the soil is free of significant vegetation, debris, rubble, and rubbish and is approved by the Geotechnical Engineer.

2. Surfaces upon which fill is to be placed, as well as subgrades of structure pad(s) left at existing grade, shall have all organic material removed; or, with permission of the Geotechnical Engineer, closes cut and remove vegetation and thoroughly disc and blend the remaining nominal organics into the upper soil. Discing must be thorough enough so that no concentrations of organics remain, which may require re-discing or cross-discing several times.

3. Organic laden material removed per paragraph C.2. above, may be used as fill in landscaped areas provided that the material shall not extend closer than ten (10) feet to any structure, shall not exceed two (2) feet in thickness or be used where the material could, in the opinion of the Geotechnical Engineer, create a slope stability problem, and shall be compacted to at least eighty-two (82) percent relative compaction per ASTM Test Designation D 1557. Alternatively, the organic laden material may be hauled off-site and suitably disposed of.

4. Upon completion of the organic removal, exposed surface shall be plowed or scarified to a depth of at least six (6) inches, and until the surface is free from ruts, hummocks, or other uneven features which would tend to prevent uniform compaction by the equipment to be used. Where vegetation has been close cut and removed and remaining organics blended with the upper soil, further scarifying may not be necessary. Where fills are to be placed on hill slopes, scarifying shall be to depths adequate to provide bond between fill and fill foundation. Where considered necessary by the Geotechnical Engineer, (typically where the slope ratio of the original ground is steeper than five (5) horizontal to one (1) vertical), the ground surface shall be stepped or benched to achieve this bond. Vertical dimension of the required benches shall be as determined by the Geotechnical Engineer, based upon location, degree, and condition of the hill slope.

5. After the foundation for the fill has been cleared and scarified, it shall be disced or bladed until it is uniform and free from large clods, uniformly moisture conditioned to the range specified by the Geotechnical Engineer, and compacted to not less than [refer to report -- if not recommended, use 90] percent of maximum dry density as determined by ASTM D 1557, or to such other density as may be determined appropriate for the materials and conditions and acceptable to the Geotechnical Engineer and the owner or his representative.

D. Fill Materials

1. Materials for fill shall consist of material approved by the Geotechnical Engineer.

2. The materials used for fill shall be free from organic matter and other deleterious substances and shall not contain rocks, clods, lumps, or cobbles exceeding four (4) inches in greatest dimension with not more than fifteen (15) percent larger than two and one-half (2-1/2) inches.

3. Imported materials to be used for fill shall be non-expansive [typically, have a plasticity index not exceeding twelve (12)], shall be of maximum one (1) inch size, and shall be tested and approved by the Geotechnical Engineer prior to commencement of grading and before being imported to the site.

4. The Contractor shall notify the Geotechnical Engineer at least four (4) working days in advance of the Contractor's intention to import soil; shall designate the borrow area; and, shall permit the Geotechnical Engineer to sample the borrow area for the purposes of examining the material and performing the appropriate tests to evaluate the quality and compaction characteristics of the soil. Compaction requirements for the material shall be based upon the characteristics of the material as determined by the Geotechnical Engineer.

E. Placement of Fill

1. The selected fill material shall be placed in level, uniform layers (lifts) which, when compacted, shall not exceed six (6) inches in thickness. Water shall be added to the fill, or the fill allowed to dry as necessary to obtain fill moisture content at which compaction as specified can be achieved. Each layer shall be thoroughly mixed during the spreading to obtain uniformity of moisture in each layer.

2. The fill material shall be compacted within the appropriate moisture content range (typically optimum to slightly above the optimum) as determined by the Geotechnical Engineer for the soil(s) being used.

3. Each layer of fill shall be compacted to not less than [refer to report; if not recommended, use 90] percent of maximum dry density as determined by ASTM Test Designation D 1557. Compaction equipment shall be of such design that it will be able to compact the fill to the specified density. Compaction shall be accomplished while the fill material is within the specified moisture content range. Compaction of each layer shall be continuous over its entire area and the compaction equipment shall make sufficient trips to ensure that the required density has been obtained. No ponding or jetting is permitted.

4. If work has been interrupted for any reason, the Geotechnical Engineer shall be notified by the contractor at least two (2) working days prior to the intended resumption of grading.

F. Geotechnical Engineer

1. Owner is retaining Geotechnical Engineer to make observations and tests to determine general compliance with Plans and Specifications, to verify expected or unexpected variations in subsurface conditions, and to give assistance in appropriate decisions. Cost of Geotechnical Engineer will be borne by the Owner, except costs incurred for re-tests and/or re-observations caused by failure of the Contractor to meet specified requirements will be paid by the Owner and back charged to Contractor.

G. Observation and Testing

1. Field density tests shall be made by the Geotechnical Engineer or his representative of the compaction of each layer of fill. Density tests shall be taken in the compacted material below any surfaces disturbed by the construction equipment. When these tests indicate that the density of any layer of fill or portion thereof is below the required density or moisture content, the particular layer or portion shall be reworked until the required density or moisture content has been obtained.

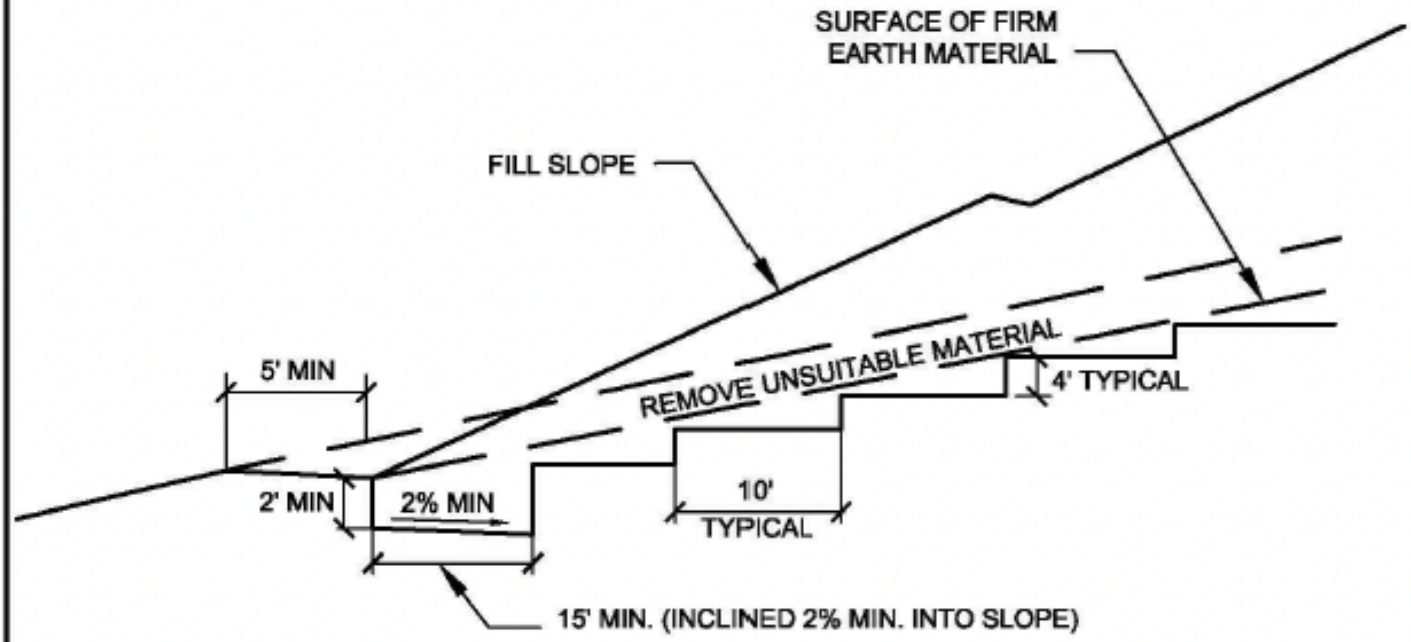
2. All aspects of the site earthwork shall be observed and tested as deemed necessary by the Geotechnical Engineer or his representative so that he can render a professional opinion of the completed fill for substantial compliance with plans and specifications and design concepts. The grading contractor shall give the Geotechnical Engineer at least two (2) working days' notice prior to beginning any site earthwork to allow proper scheduling of the work.

H. Seasonal Limits

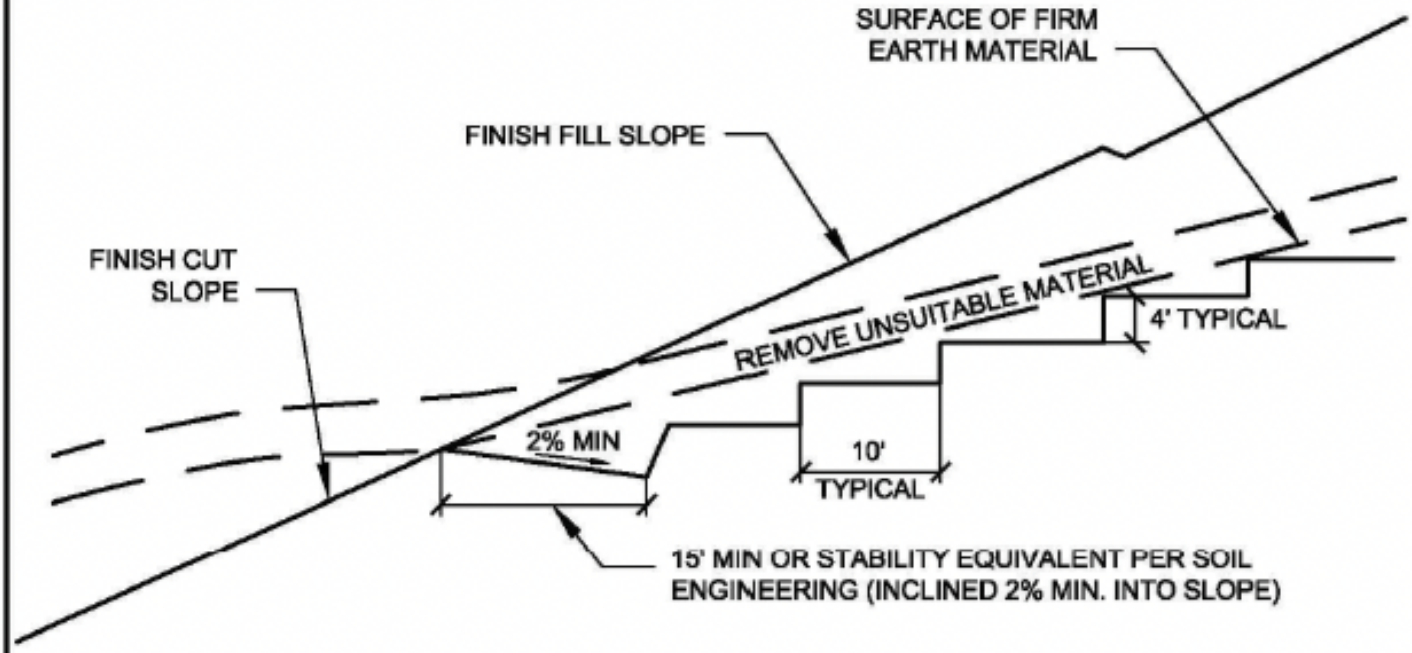
1. No fill material shall be placed, spread, or compacted during unfavorable weather conditions. When work is interrupted by heavy rain, fill operations shall not be resumed until the Geotechnical Engineer or his representative indicates that the moisture content and density of the previously placed fill are as specified.

GRADING DETAILS
(On following pages)

## BENCHING FILL OVER NATURAL

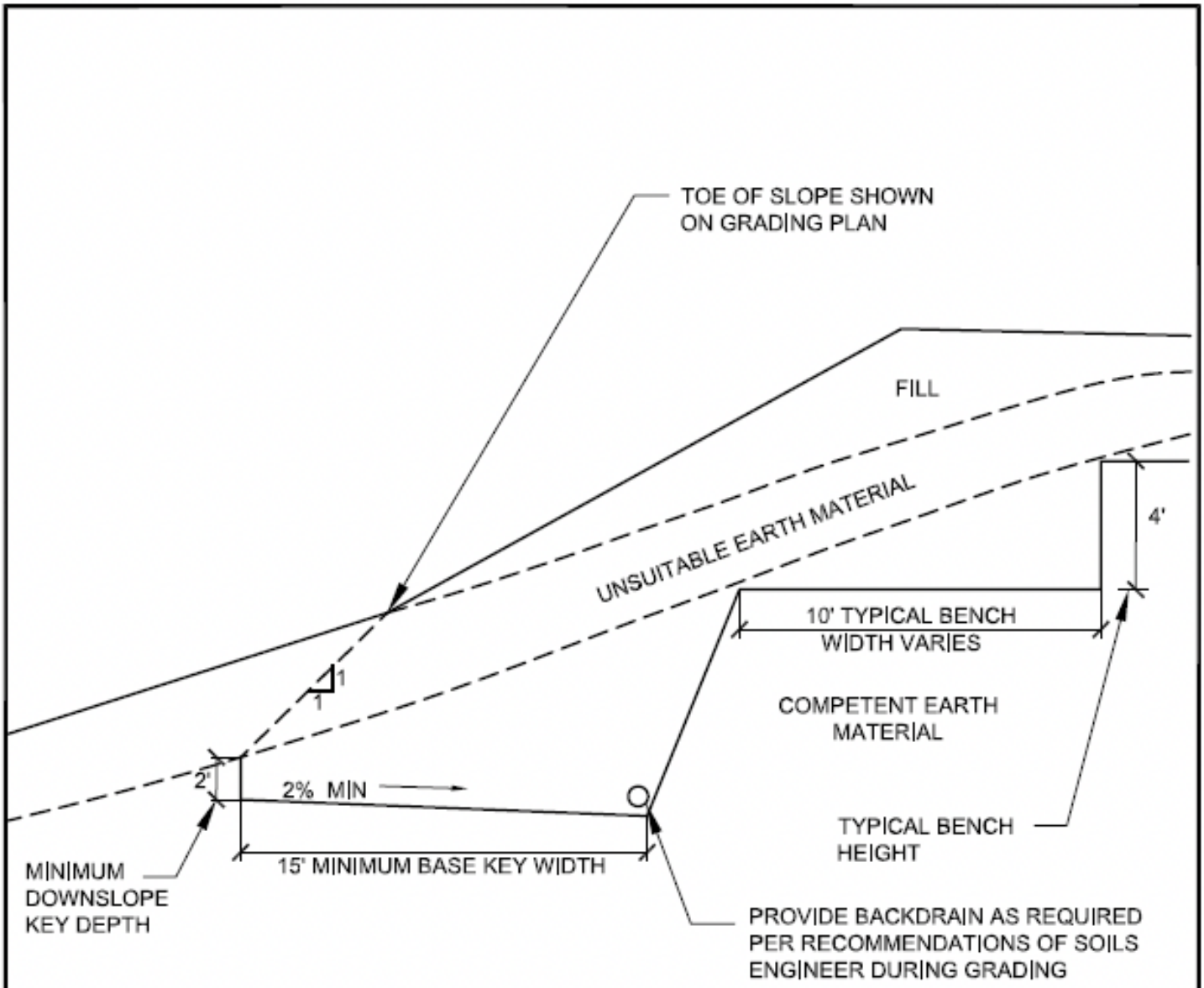



## BENCHING FILL OVER CUT




NOT TO SCALE

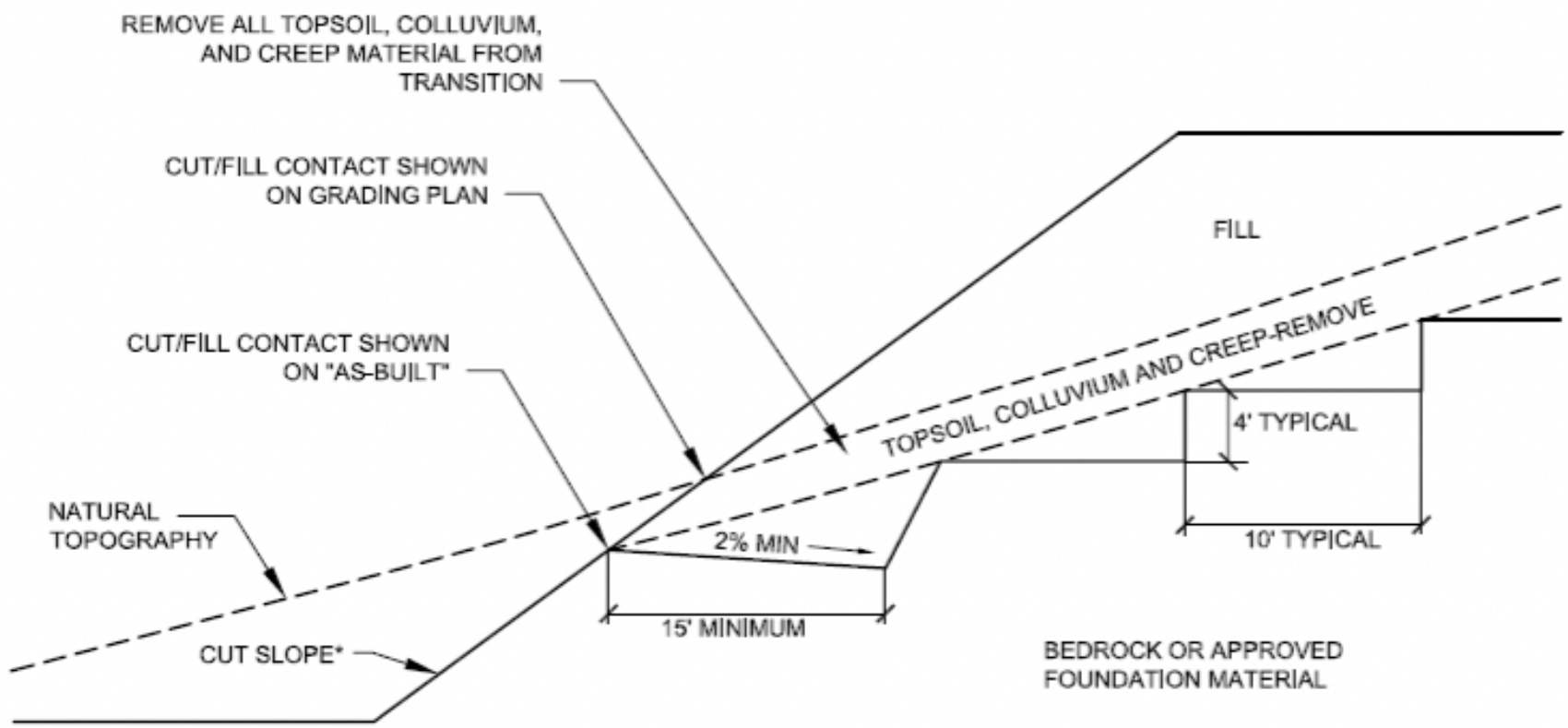
# BENCHING FOR COMPACTED FILL DETAIL




WHERE NATURAL SLOPE GRADIENT IS 5:1 OR LESS, BENCHING IS NOT NECESSARY. FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.

NOT TO SCALE

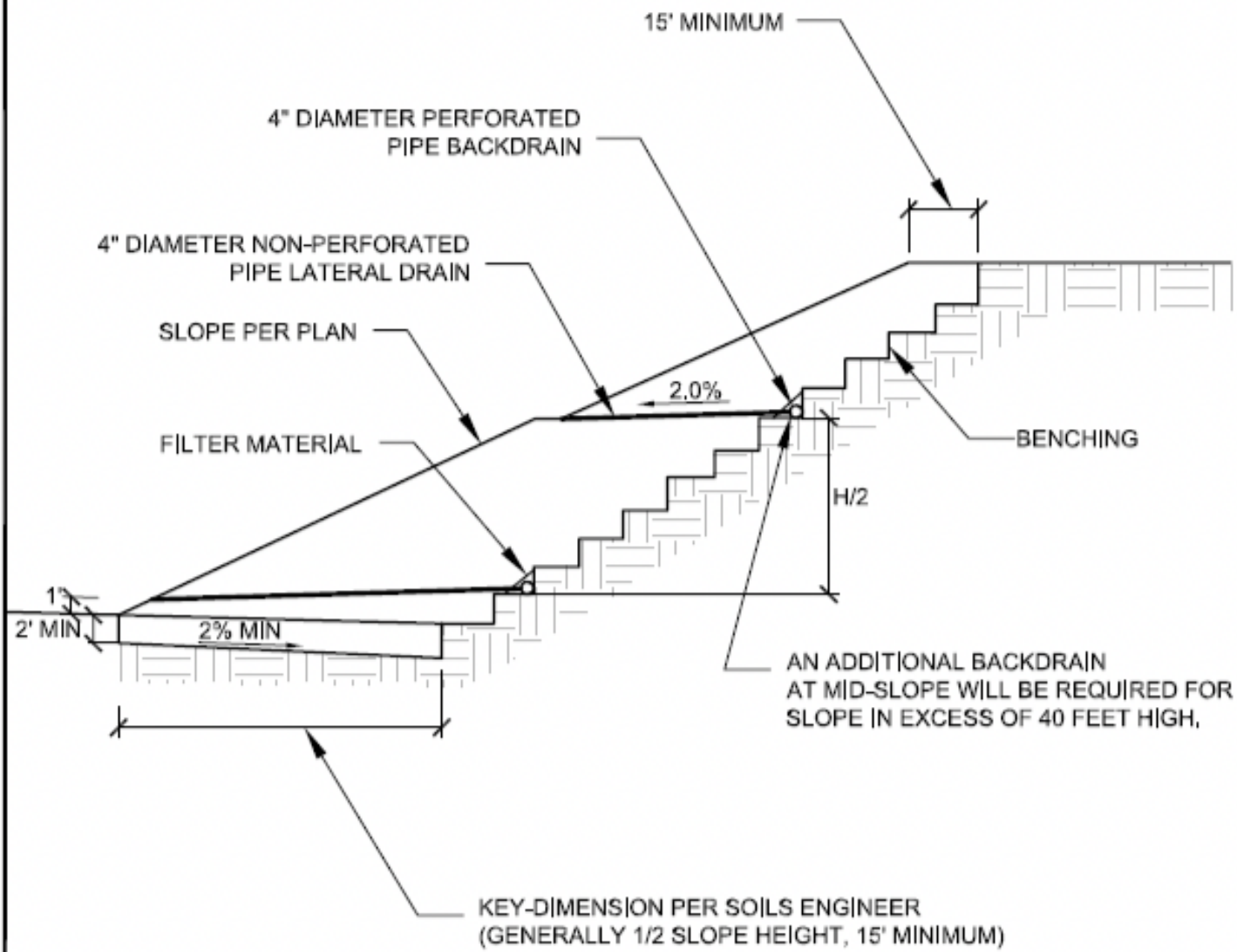
# FILL SLOPE ABOVE NATURAL GROUND DETAIL




*NOTE: CUT SLOPE PORTION SHOULD BE MADE PRIOR TO PLACEMENT OF FILL

NOT TO SCALE

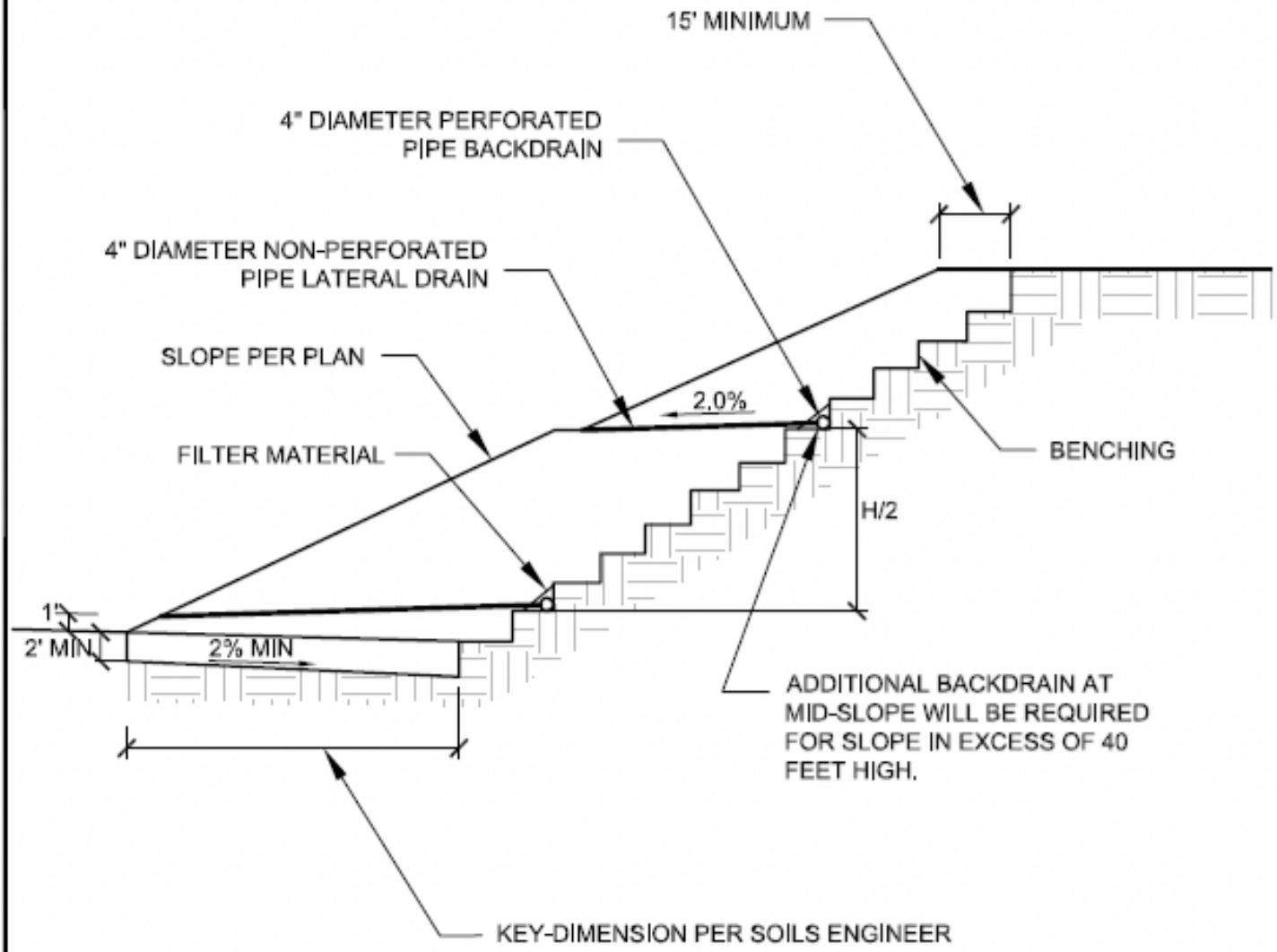
# FILL SLOPE ABOVE CUT SLOPE DETAIL




DIMENSIONS ARE MINIMUM RECOMMENDED

NOT TO SCALE

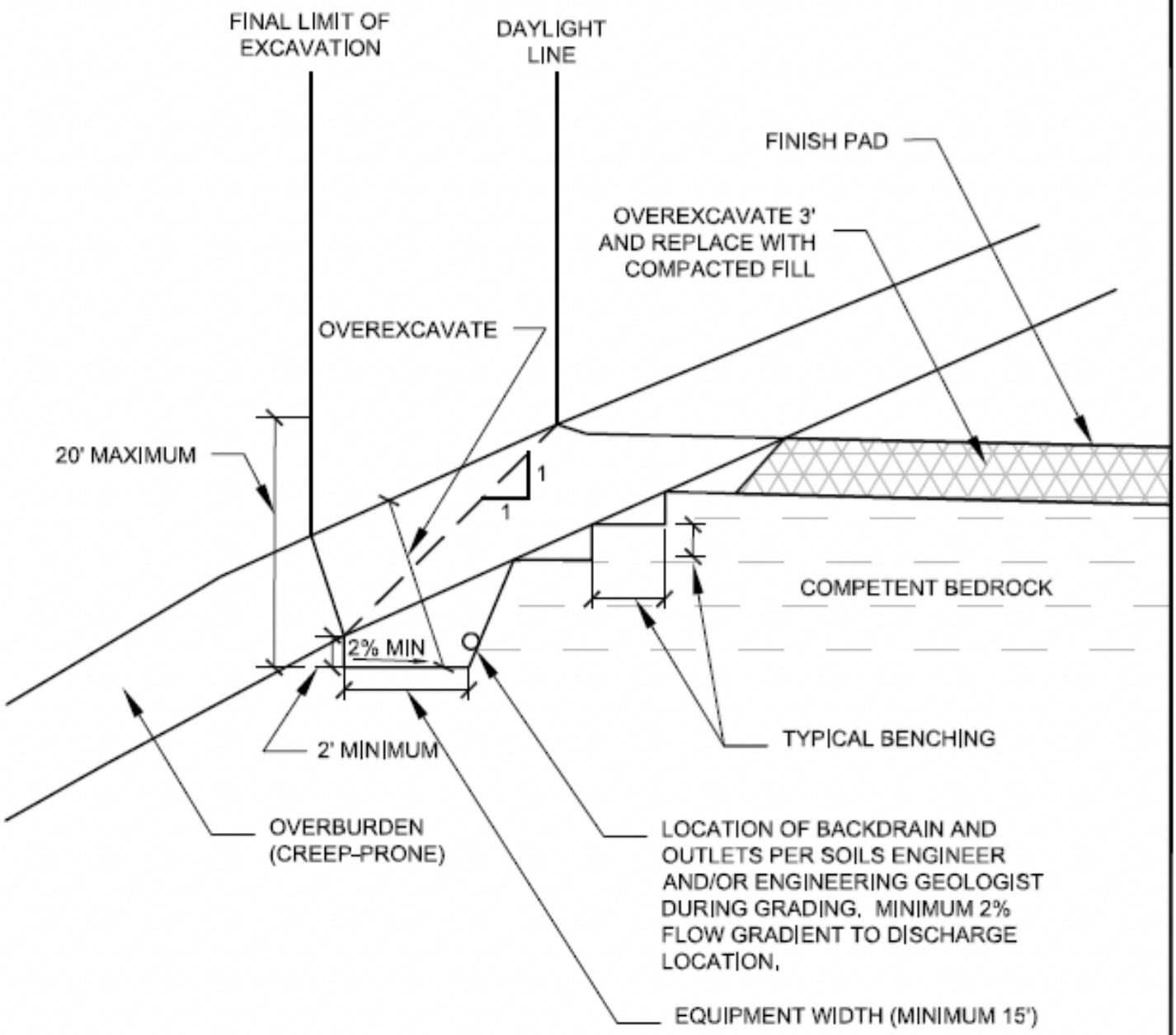
# TYPICAL SLOPE STABILIZATION FILL DETAIL




DIMENSIONS ARE MINIMUM RECOMMENDED

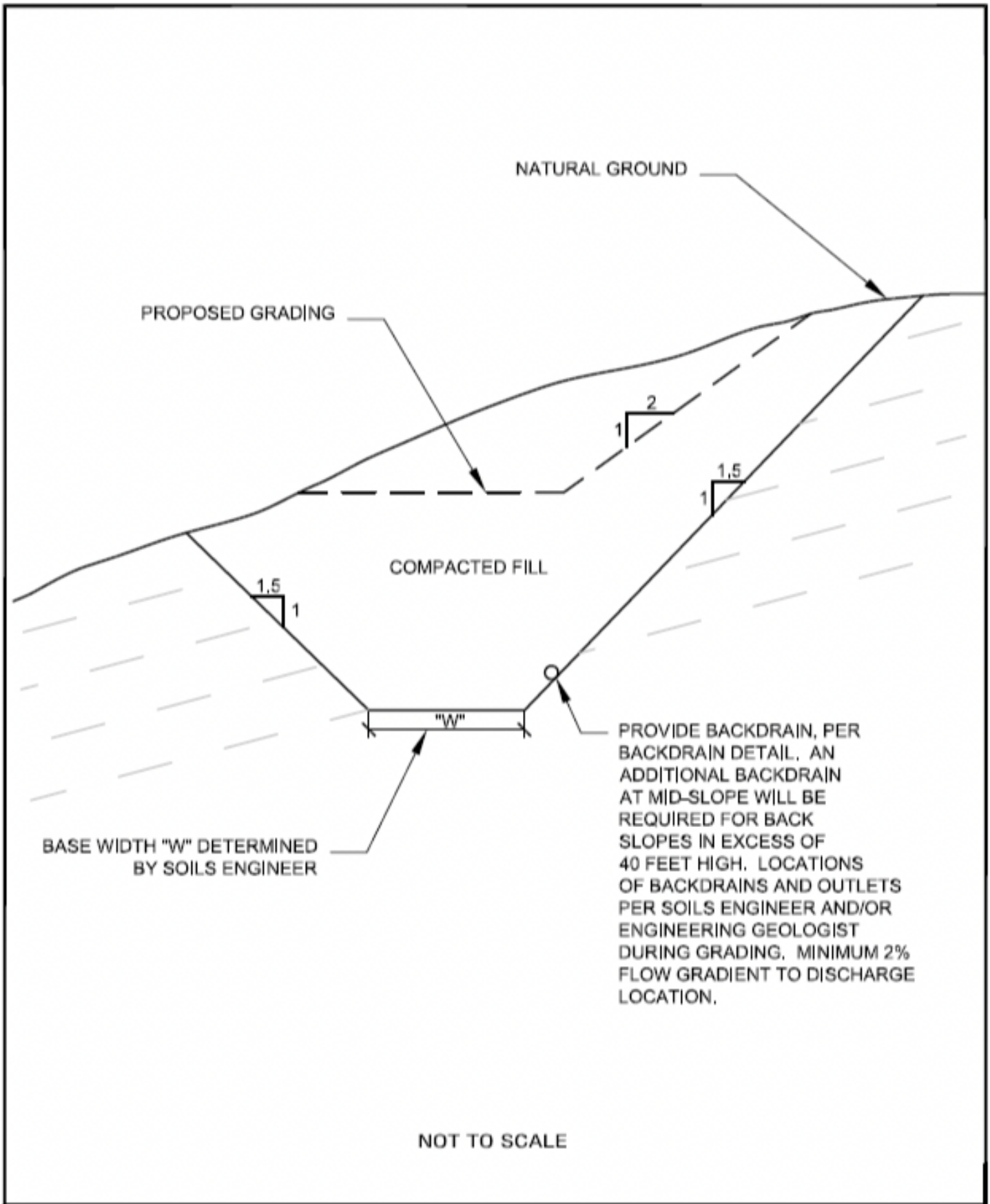
NOT TO SCALE

# TYPICAL BUTTRESS FILL DETAIL



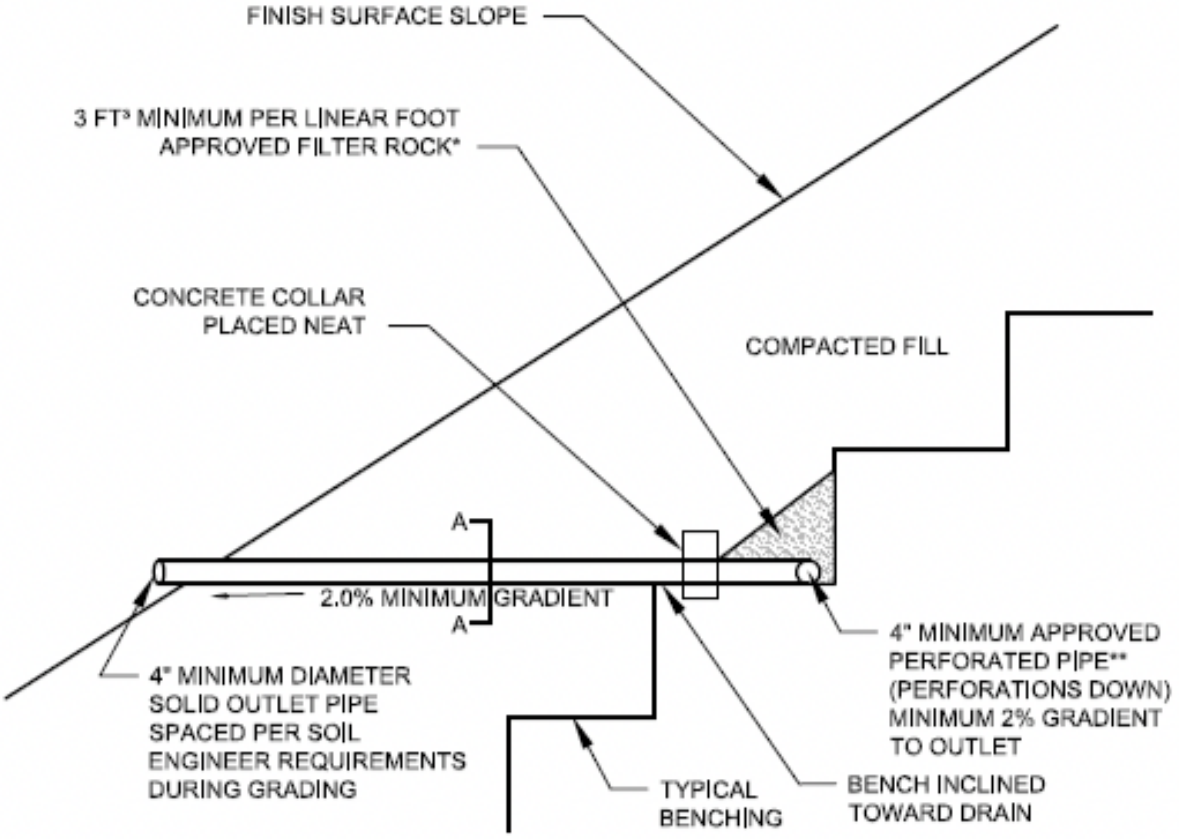

NOT TO SCALE

# DAYLIGHT SHEAR KEY DETAIL

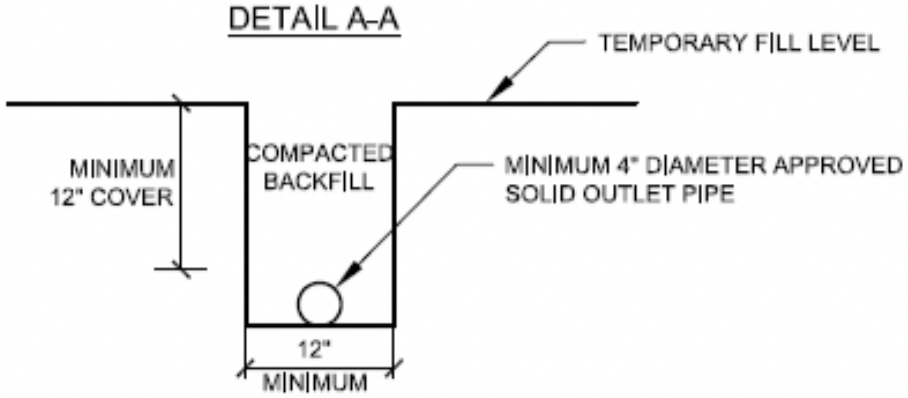



NOT TO SCALE

# TYPICAL SHEAR KEY DETAIL




DETAIL A-A



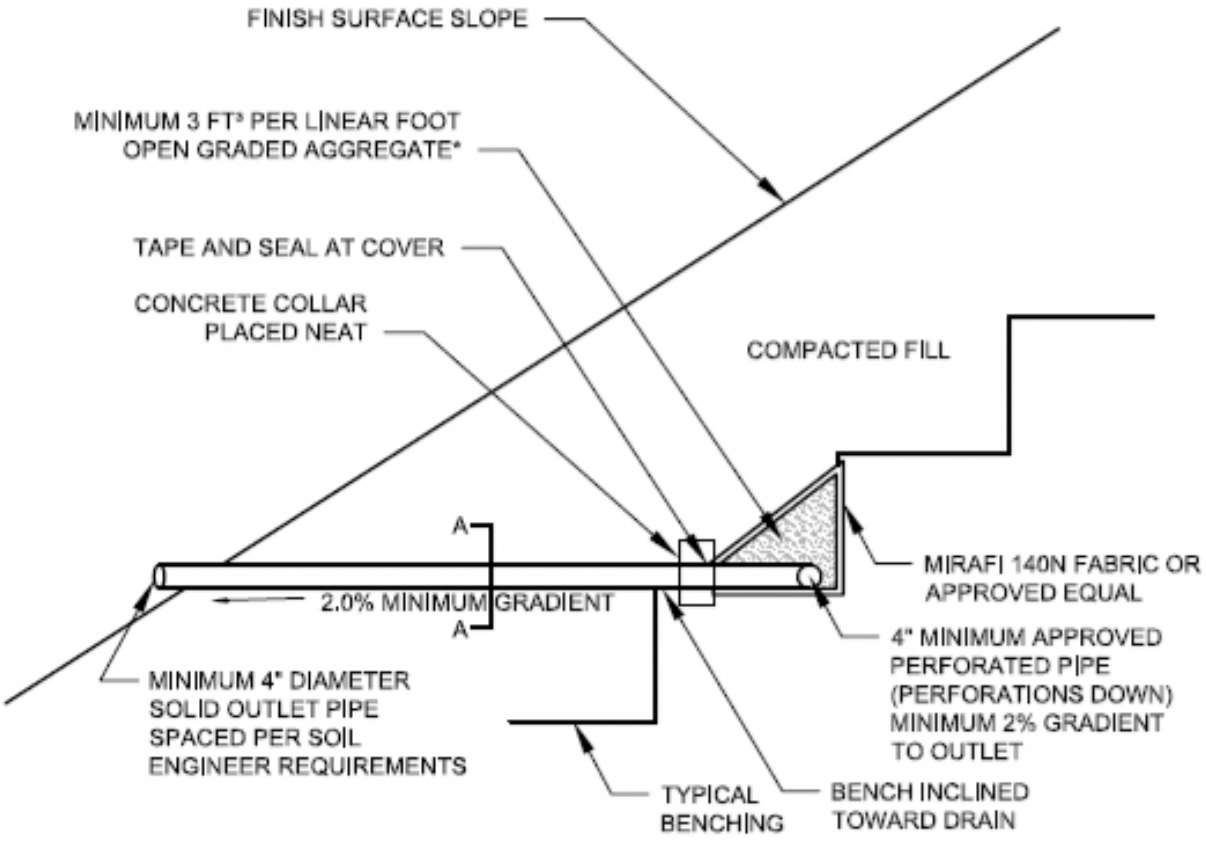

**APPROVED PIPE TYPE:
SCHEDULE 40 POLYVINYL CHLORIDE
(P.V.C.) OR APPROVED EQUAL.
MINIMUM CRUSH STRENGTH 1000 PSI

*FILTER ROCK TO MEET FOLLOWING
SPECIFICATIONS OR APPROVED EQUAL:

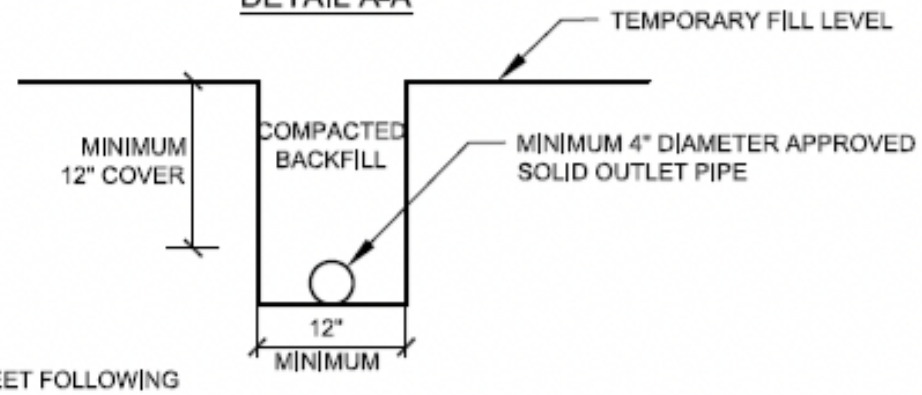
| SIEVE SIZE | PERCENTAGE PASSING |
|---|---|
| 1" | 100 |
| ¾" | 90-100 |
| ⅜" | 40-100 |
| NO. 4 | 25-40 |
| NO. 30 | 5-15 |
| NO. 50 | 0-7 |
| NO. 200 | 0-3 |

NOT TO SCALE

# TYPICAL BACKDRAIN DETAIL




DETAIL A-A

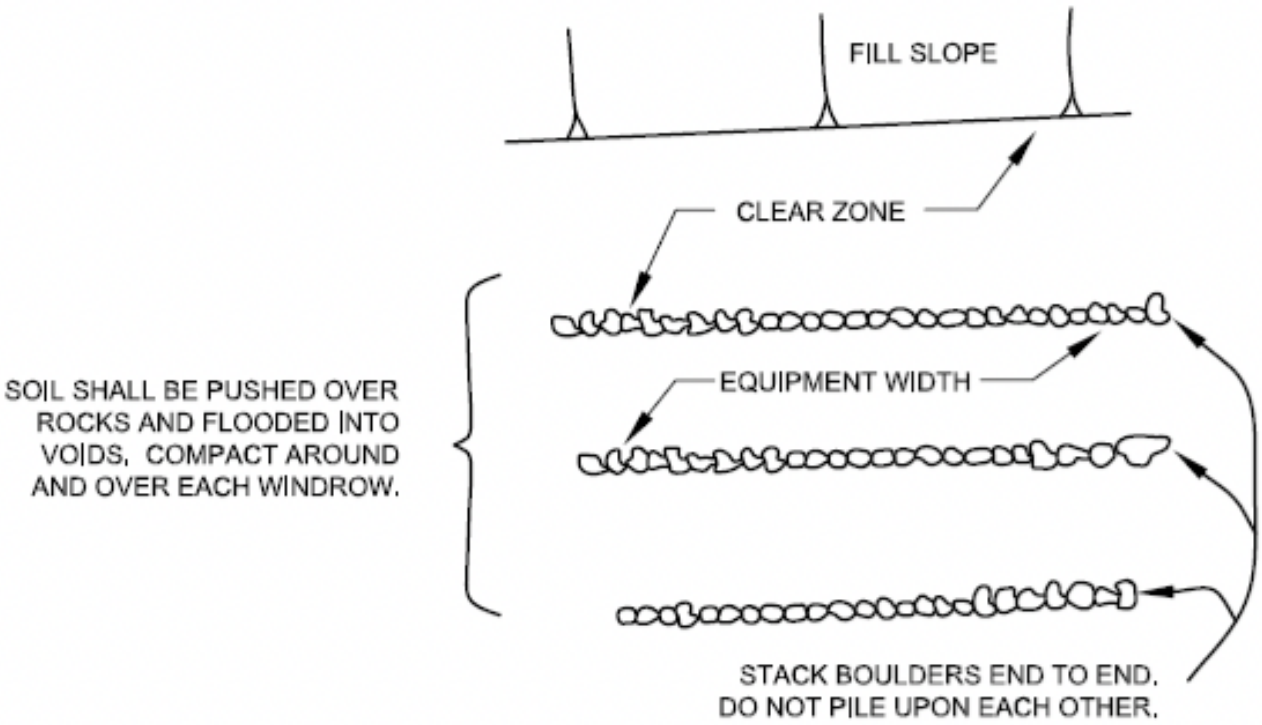


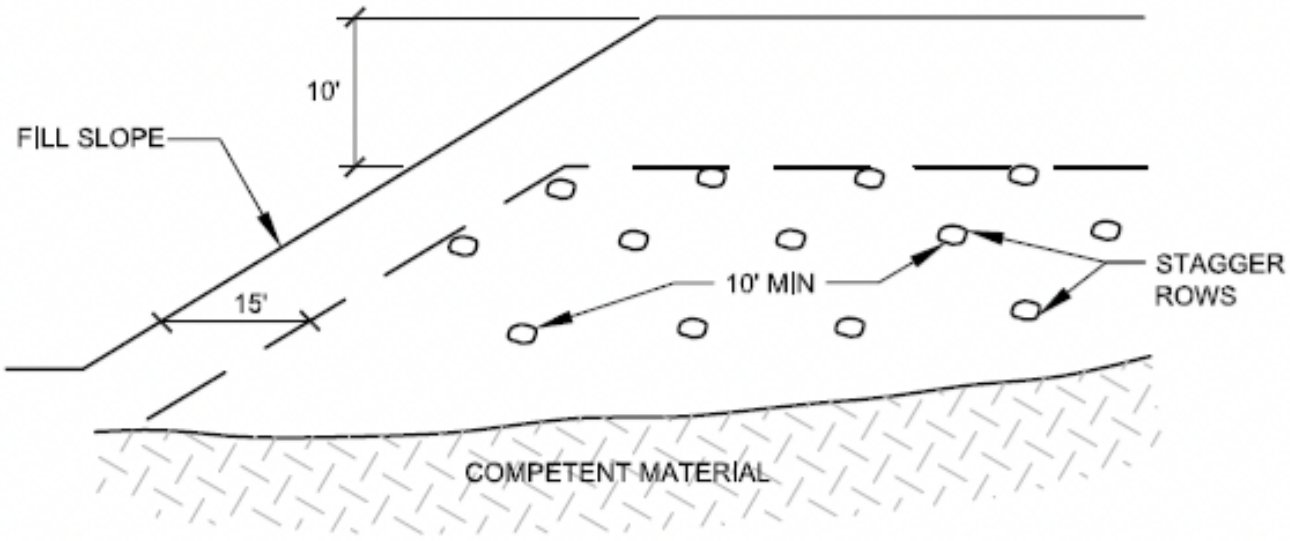

*NOTE: AGGREGATE TO MEET FOLLOWING SPECIFICATIONS OR APPROVED EQUAL:

| SIEVE SIZE | PERCENTAGE PASSING |
|---|---|
| 1 ½" | 100 |
| 1" | 5-40 |
| ¾" | 0-17 |
| ⅜" | 0-7 |
| NO. 200 | 0-3 |

NOT TO SCALE

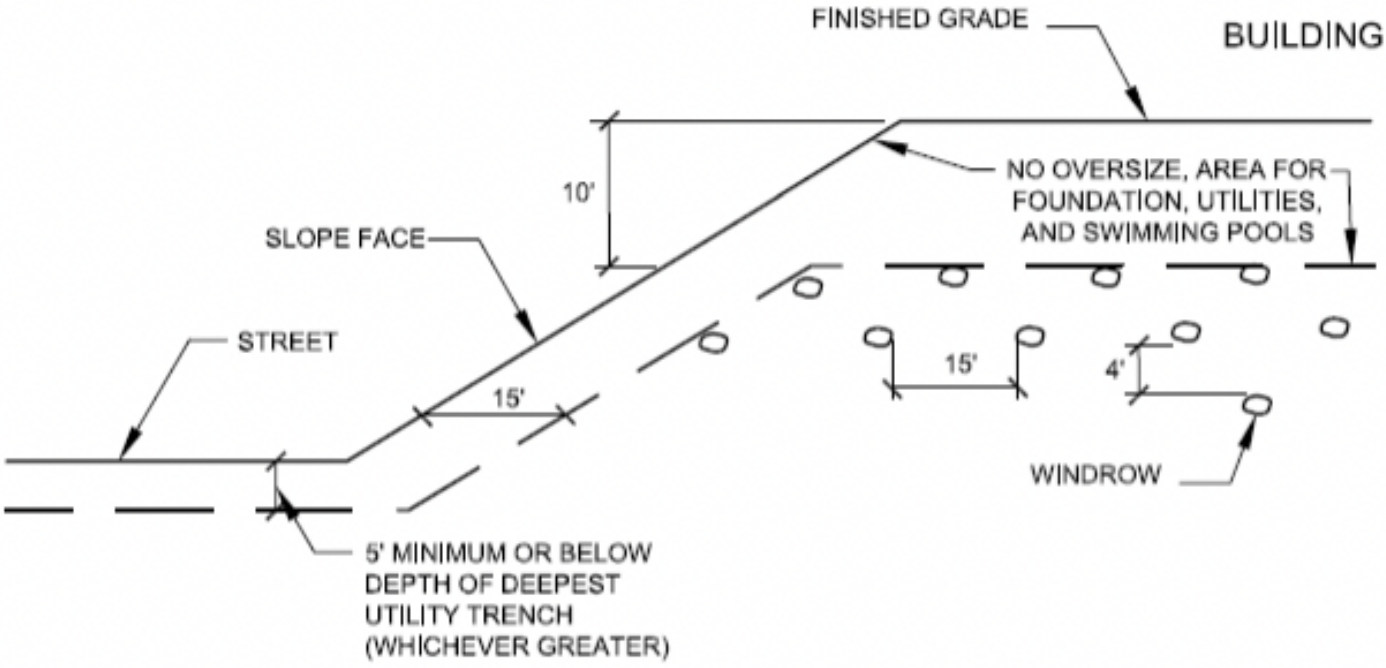
# BACKDRAIN DETAIL (GEOFRABIC)



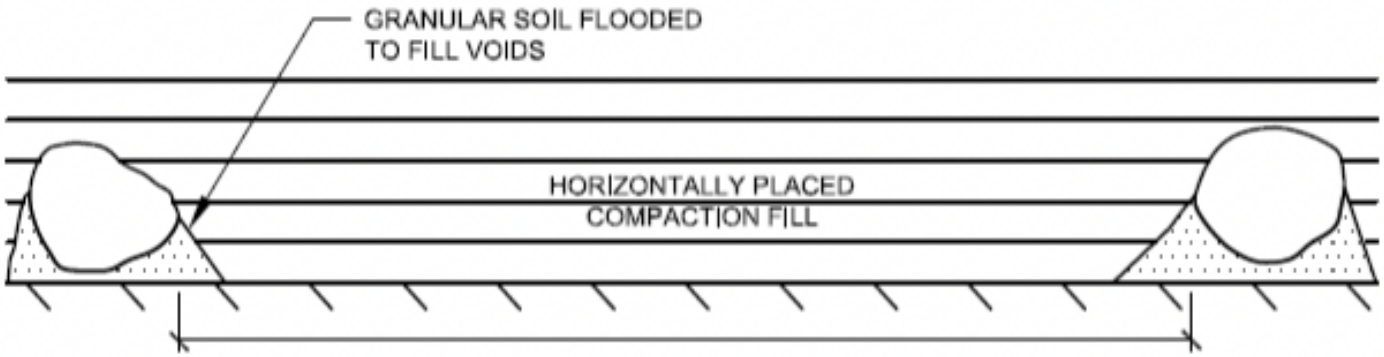




NOT TO SCALE

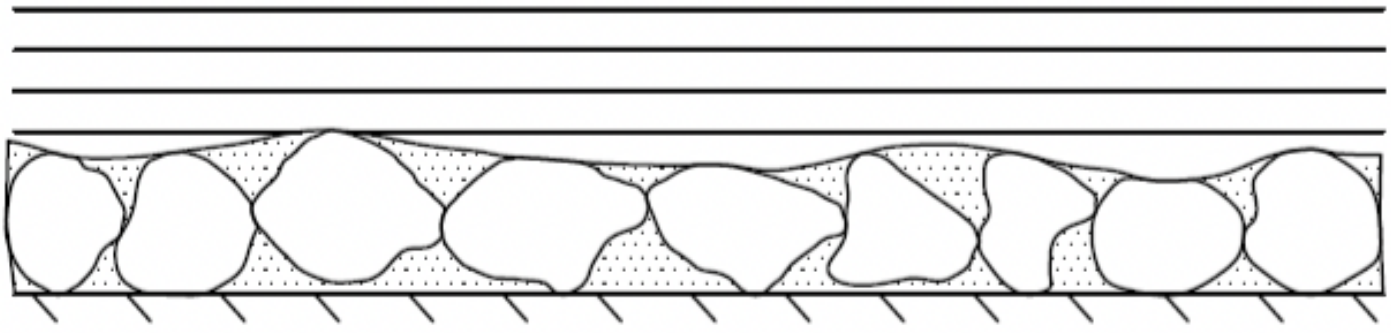
# ROCK DISPOSAL DETAIL




TYPICAL WINDROW DETAIL (EDGE VIEW)




PROFILE VIEW

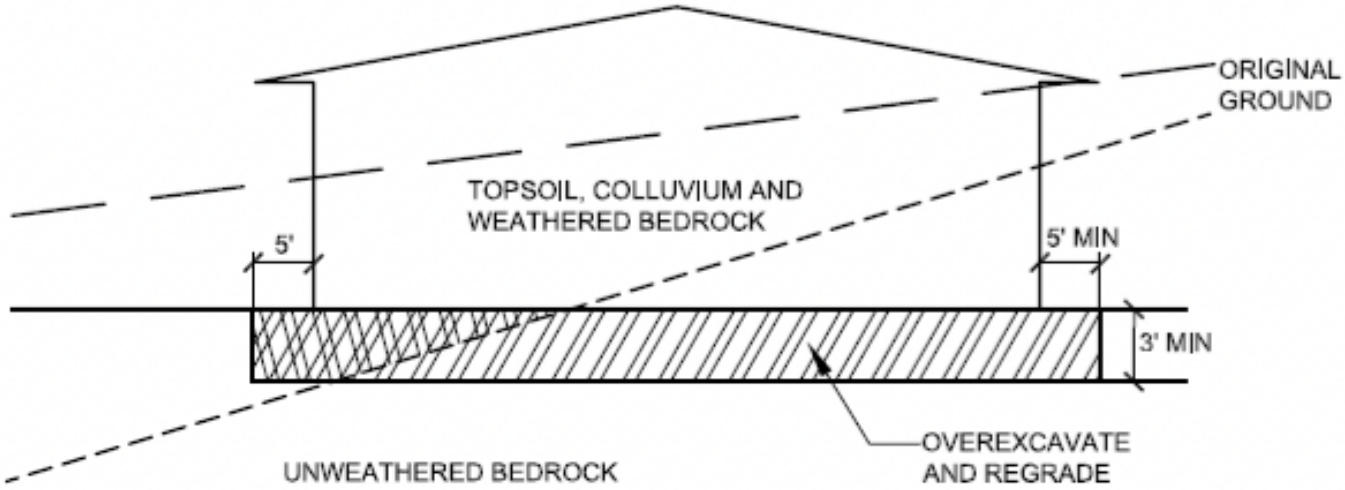


NOT TO SCALE

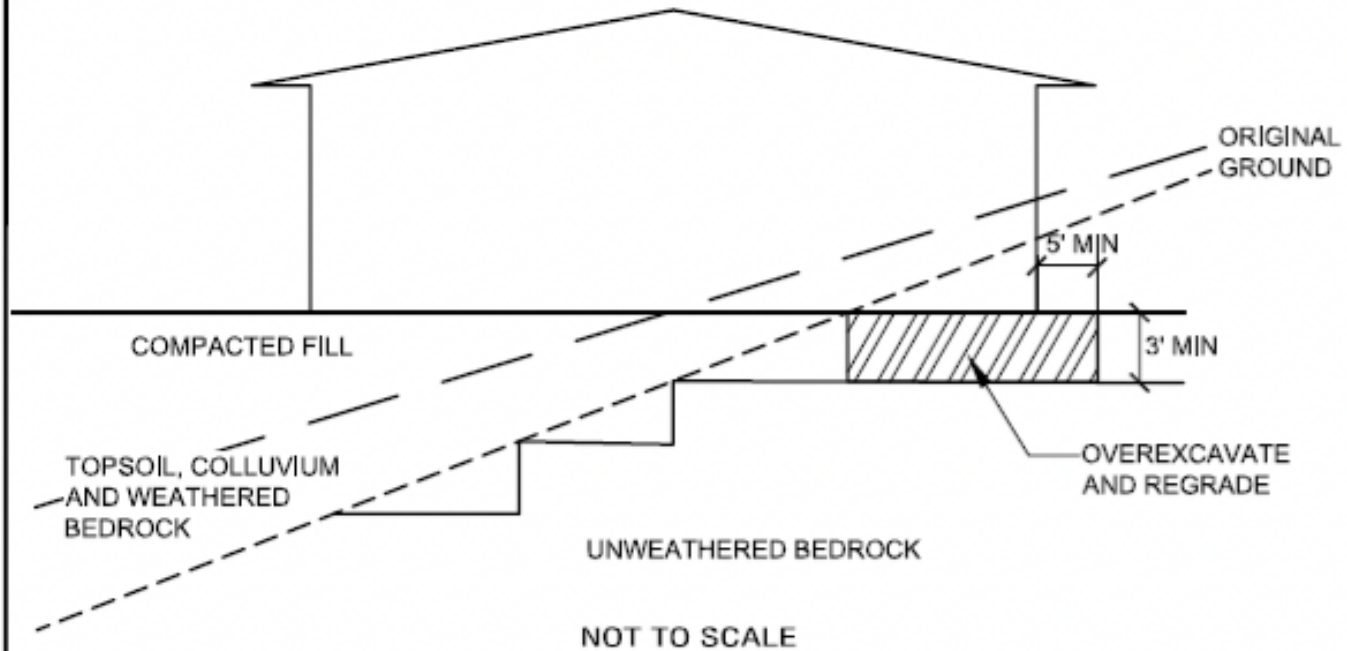
# ROCK DISPOSAL DETAIL

## GENERAL GRADING RECOMMENDATIONS

### CUT LOT

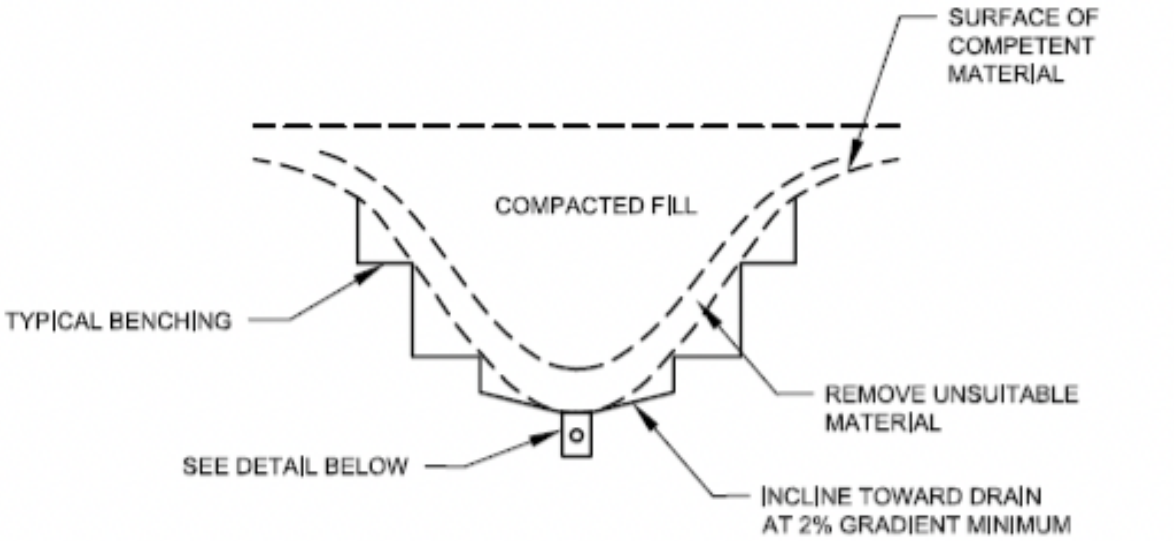



### CUT/FILL LOT (TRANSITION)

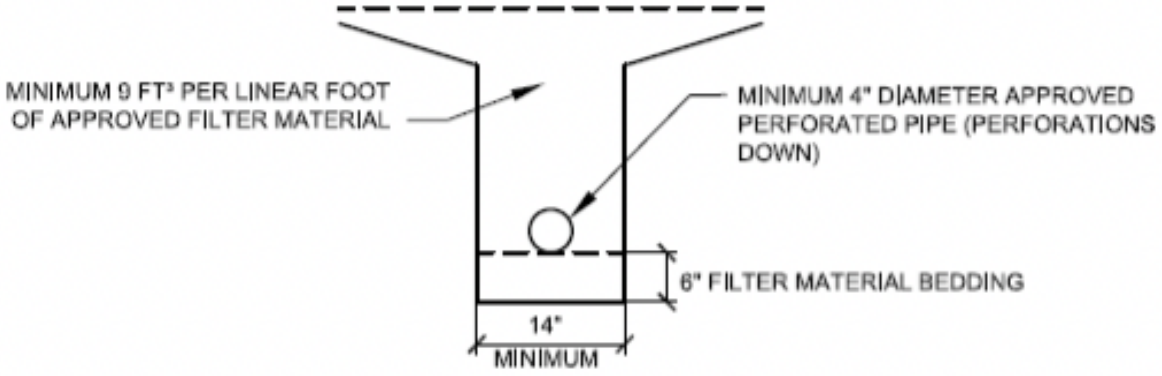



NOT TO SCALE

# TRANSITION LOT DETAIL




DETAIL




FILTER MATERIAL TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

| SIEVE SIZE | PERCENTAGE PASSING |
|---|---|
| 1" | 100 |
| ¾" | 90-100 |
| ⅜" | 40-100 |
| NO. 4 | 25-40 |
| NO. 30 | 18-33 |
| NO. 8 | 5-15 |
| NO. 50 | 0-7 |
| NO. 200 | 0-3 |

APPROVED PIPE TO BE SCHEDULE 40 POLY-VINYL-CHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 psi

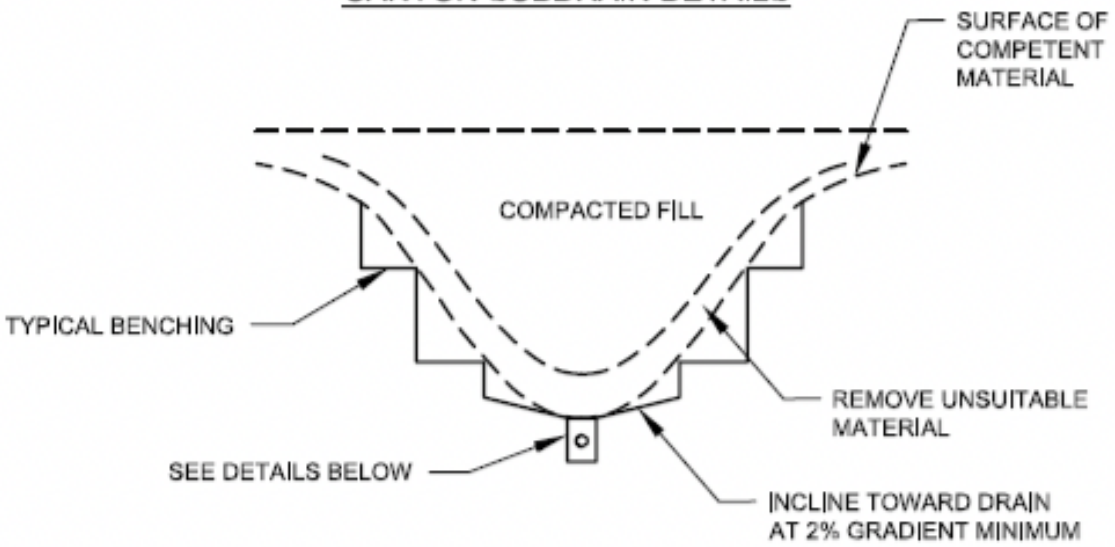
PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

| LENGTH OF RUN | PIPE DIAMETER |
|---|---|
| INITIAL 500' | 4" |
| 500' TO 1500' | 6" |
| > 1500' | 8" |

NOT TO SCALE

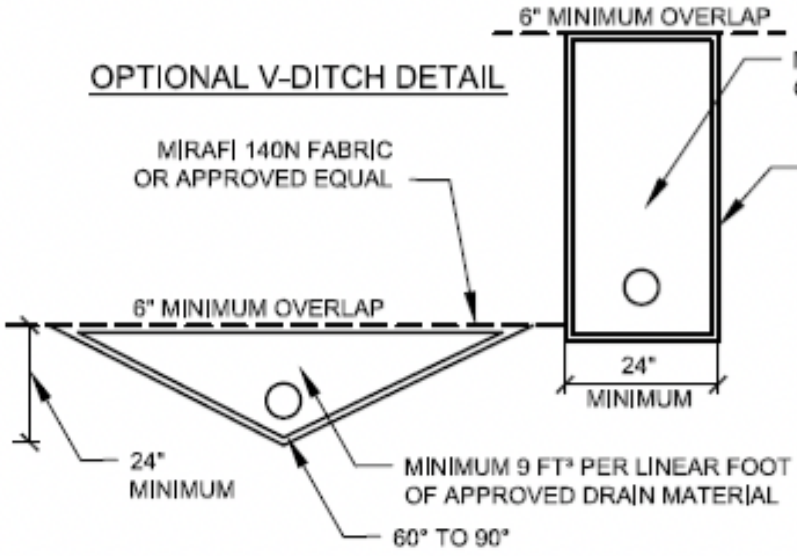
# TYPICAL CANYON SUBDRAIN DETAIL

## CANYON SUBDRAIN DETAILS




## TRENCH DETAILS

### OPTIONAL V-DITCH DETAIL




APPROVED PIPE TO BE SCHEDULE 40 POLY-VINYLCHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 PSI.

DRAIN MATERIAL TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

| SIEVE SIZE | PERCENTAGE PASSING |
|---|---|
| 1 ½" | 88-100 |
| 1" | 5-40 |
| ¾" | 0-17 |
| ⅜" | 0-7 |
| NO. 200 | 0-3 |

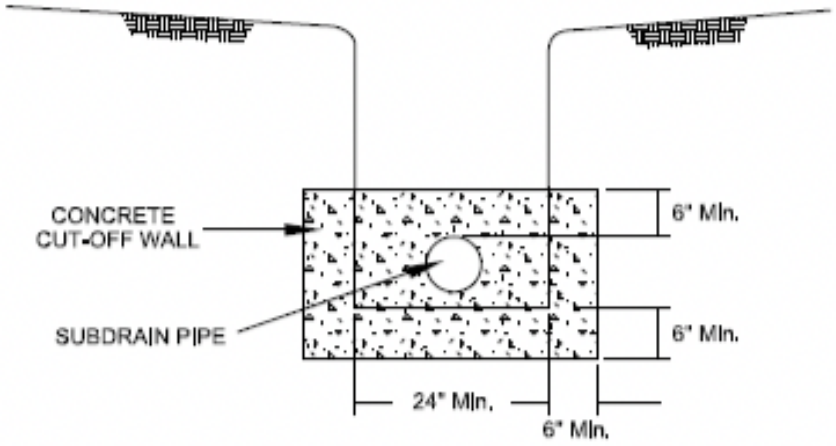
PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

| LENGTH OF RUN | PIPE DIAMETER |
|---|---|
| INITIAL 500' | 4" |
| 500' TO 1500' | 6" |
| > 1500' | 8" |

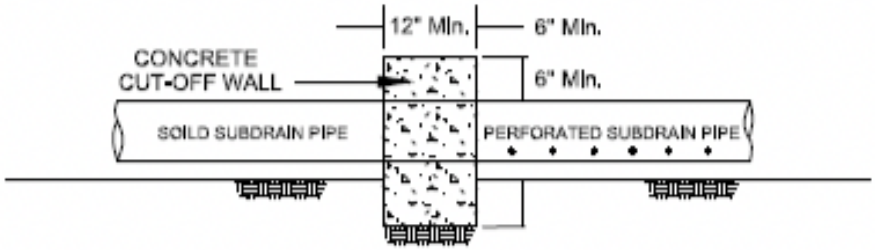
NOT TO SCALE

# GEOFABRIC SUBDRAIN

FRONT VIEW



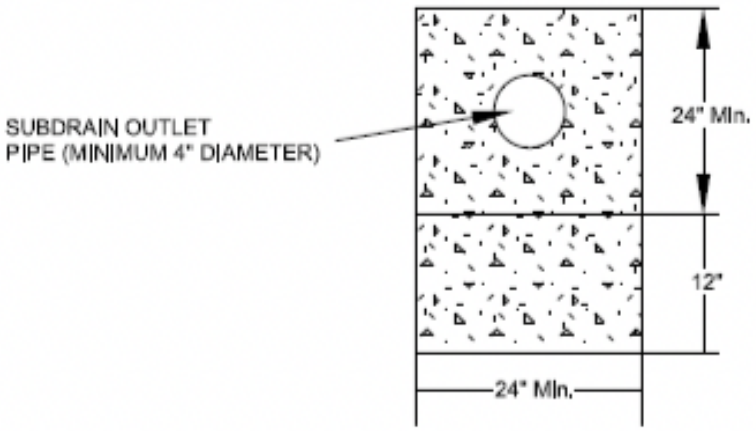

SIDE VIEW



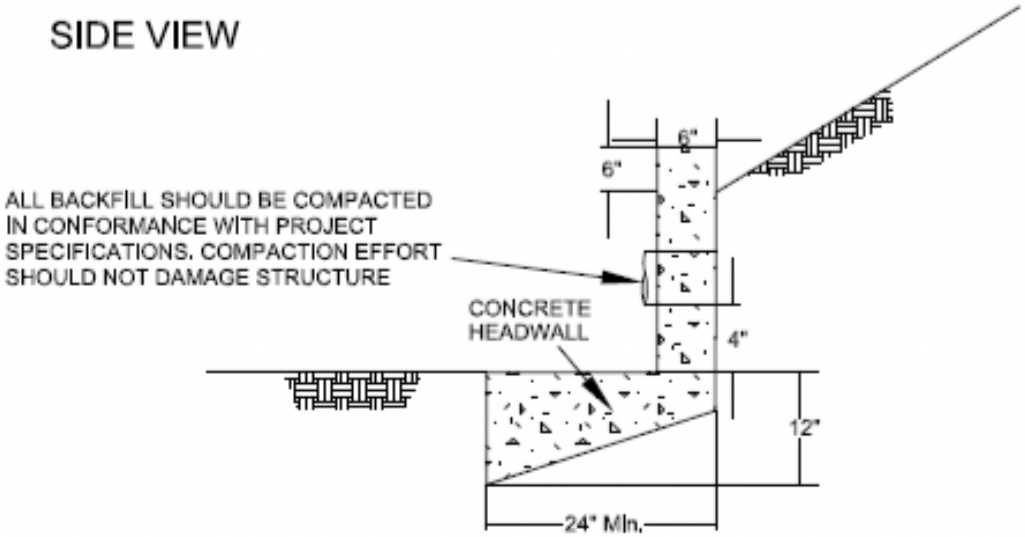

NOT TO SCALE

# RECOMMENDED SUBDRAIN CUT-OFF WALL

## FRONT VIEW




## SIDE VIEW




NOTE: HEADWALL SHOULD OUTLET AT TOE OF SLOPE
OR INTO CONTROLLED SURFACE DRAINAGE DEVICE

ALL DISCHARGE SHOULD BE CONTROLLED

THIS DETAIL IS A MINIMUM DESIGN AND MAY BE
MODIFIED DEPENDING UPON ENCOUNTERED
CONDITIONS AND LOCAL REQUIREMENTS

NOT TO SCALE

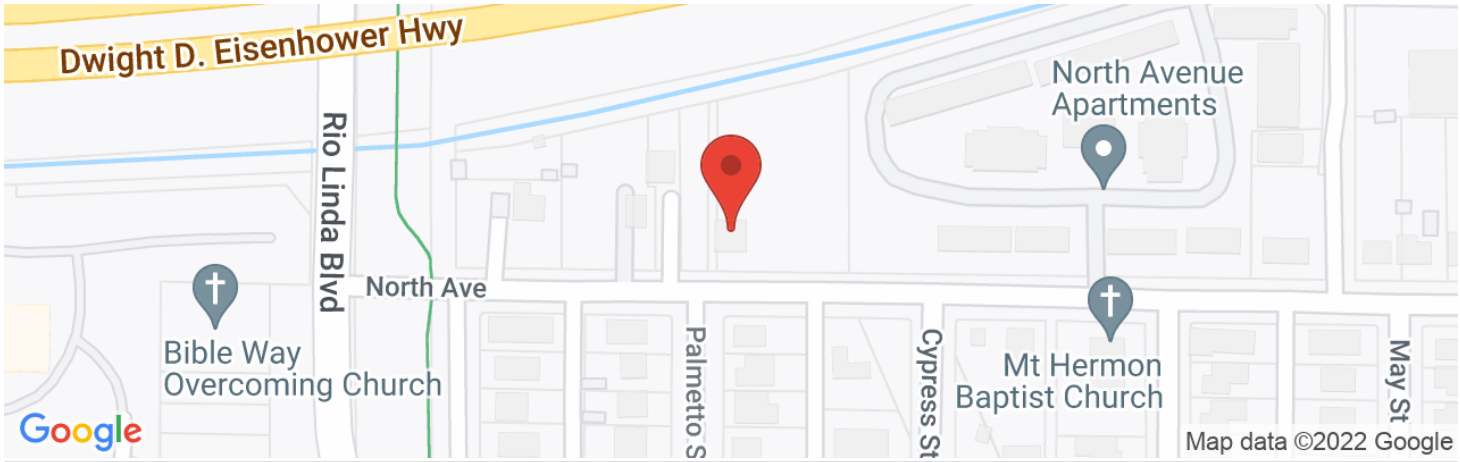
# TYPICAL SUBDRAIN OUTLET HEADWALL DETAIL

# APPENDIX E

## SEAOC/OSHPD U.S. Seismic Hazard Maps

# 905 North Ave, Sacramento, CA 95838, USA

### Latitude, Longitude: 38.6404947, -121.445908




| | |
|---|---|
| **Date** | 3/21/2022, 12:09:45 PM |
| **Design Code Reference Document** | ASCE7-16 |
| **Risk Category** | II |
| **Site Class** | D - Default (See Section 11.4.3) |

| Type | Value | Description |
|---|---|---|
| $S_S$ | 0.523 | $MCE_R$ ground motion. (for 0.2 second period) |
| $S_1$ | 0.242 | $MCE_R$ ground motion. (for 1.0s period) |
| $S_{MS}$ | 0.722 | Site-modified spectral acceleration value |
| $S_{M1}$ | null -See Section 11.4.8 | Site-modified spectral acceleration value |
| $S_{DS}$ | 0.481 | Numeric seismic design value at 0.2 second SA |
| $S_{D1}$ | null -See Section 11.4.8 | Numeric seismic design value at 1.0 second SA |

| Type | Value | Description |
|---|---|---|
| SDC | null -See Section 11.4.8 | Seismic design category |
| $F_a$ | 1.382 | Site amplification factor at 0.2 second |
| $F_v$ | null -See Section 11.4.8 | Site amplification factor at 1.0 second |
| PGA | 0.22 | $MCE_G$ peak ground acceleration |
| $F_{PGA}$ | 1.38 | Site amplification factor at PGA |
| $PGA_M$ | 0.303 | Site modified peak ground acceleration |
| $T_L$ | 12 | Long-period transition period in seconds |
| SsRT | 0.523 | Probabilistic risk-targeted ground motion. (0.2 second) |
| SsUH | 0.549 | Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration |
| SsD | 1.5 | Factored deterministic acceleration value. (0.2 second) |
| S1RT | 0.242 | Probabilistic risk-targeted ground motion. (1.0 second) |
| S1UH | 0.257 | Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration. |
| S1D | 0.6 | Factored deterministic acceleration value. (1.0 second) |
| PGAd | 0.5 | Factored deterministic acceleration value. (Peak Ground Acceleration) |
| $C_{RS}$ | 0.952 | Mapped value of the risk coefficient at short periods |
| $C_{R1}$ | 0.942 | Mapped value of the risk coefficient at a period of 1 s |

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Consulting Group, Inc.


**Corporate Office:**
1050 Melody Lane, Suite 160
Roseville, California 95678
Ph: 916.742.5096
**AllerionConsulting.com**


Building Envelope | Geotechnical | Environmental | Firestop Systems

**RESIDENTIAL SUBDIVISION AGREEMENT**
**FOR TRENCH ONLY**

**(Rule 15 – ¾ Difference Rule Not Applicable)**

**BETWEEN**

**NERRADSCALI CORPORATION**

**and**

**PACIFIC BELL TELEPHONE COMPANY DBA AT&T CALIFORNIA**

**RE:**

**905 NORTH AVENUE SUBDIVISION**

**REFERENCES:**

**AT&T JOB # A02K24X**

**JOINT TRENCH # 23-3009**

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Exhibit C Executive Orders and Associated Regulations

THIS AGREEMENT ("Agreement") is between NERRADSCALI CORPORATION, a California corporation ("Applicant"), and PACIFIC BELL TELEPHONE COMPANY, a California corporation, dba AT&T California ("AT&T"), collectively the ("Parties").

## I. DEFINITIONS.

As used in this Agreement, the following terms apply:

A. The term "Tariff" refers to Schedule Cal. P.U.C. No. A2.

B. The term "USS" refers to underground supporting structure, which includes, but is not limited to, conduit, inner duct, manholes, service boxes and related equipment.

C. The terms "Trench and Trenching" include, but are not limited to, excavating, backfilling, compacting, and as necessary, breaking and replacing pavement, sidewalks, driveways, curbs and gutters; and restoring all other surface features, disturbed by underground construction, including landscaping, plus the cost of performing such work.

D. The term "Hazardous Substance" refers to any substances, materials and chemicals that are or become regulated under applicable local, state, or federal law, regulation, or ordinance.

E. The term "Subdivision" refers to improved or unimproved land under a definite plan of development with the property subdivided into individual lots that are identified by filed and approved subdivision plans, where it can be shown that there are reasonable prospects within the next three years for five or more permanent telephone line terminations, at a density of at least one line per acre.

F. The term "CPUC" refers to the California Public Utilities Commission.

## II. RECITALS.

A. Applicant is constructing a residential Subdivision at North Ave and Rio Linda Blvd, in Sacramento California known as 905 NORTH AVENUE SUBDIVISION, (the "Project").

B. Applicant has requested that AT&T provide telecommunication service to the Project. A copy of Applicant's approved tract map is attached to this Agreement as Exhibit A.

C. Applicant has agreed to construct the necessary Trenching required to extend AT&T's existing communication facilities to and within the Project.

D. AT&T is willing to accept Applicant's request subject to the terms and conditions of this Agreement.

In consideration of the above, the Parties agree as follows:

## III. SPECIFIC PROVISIONS.

A. Tariff.

1. The construction of that portion of AT&T's facilities that is within the Project, including the portion that is two hundred feet (200') or less in length and adjacent to the boundary of the Project, shall be in accordance with Rule 15 of the Tariff.

2. Applicant shall complete the Trench and USS for service connection facilities on the property served in accordance with the provisions of Rule 16 of the Tariff.

B. Construction.

1. Applicant will be responsible for the Trenching to and within the Project and the costs thereof.

2. Plans and specifications for the Trenching shall be prepared in accordance with AT&T's drawings and specifications, which AT&T shall provide to Applicant within 60 days after execution of this Agreement. **APPLICANT SHALL NOT DEVIATE FROM AT&T'S TRENCH SPECIFICATIONS WITHOUT AT&T'S PRIOR WRITTEN CONSENT.**

3. Trenching shall conform to the construction specifications of the City or County that has jurisdiction over the Project in accordance with AT&T's standards and practices.

4. Applicant shall obtain all permits necessary for excavation from the public agency(ies) that have jurisdiction over the Project.

5. Applicant will be responsible for supplying and placing at its cost the USS for service connection facilities on the property served and for street crossings. Applicant shall construct the USS in accordance with AT&T's specifications.

6. Upon completion of the Trench and the USS, AT&T shall, at its expense, place in the Trench all cables, wires and associated equipment ("Communications Facilities") for the provisioning of telecommunication service for the Project.

7. If, during the installation or construction of Communications Facilities, AT&T employees, subcontractors, or agents encounter Hazardous Substance(s) that may be disturbed by AT&T's activities:

   a. AT&T shall give prompt verbal and written notice of the discovery of the Hazardous Substance(s) to Applicant;

   b. AT&T shall suspend performance under this Agreement until containment and removal of the Hazardous Substance(s) has been completed, and approved by the appropriate governmental agency(ies), if such approval is required, or approved by AT&T, if governmental agency(ies) approval is not required or if Applicant reasonably demonstrates that the Hazardous Substance will not be disturbed by AT&T's activities;

   c. AT&T's performance of its obligations under this Agreement is extended for the amount of time which it takes to complete containment/removal of the Hazardous Substance(s); and,

   d. If Applicant elects not to remove/contain the Hazardous Substance(s), AT&T may terminate this Agreement, and without further liability, by giving advance notice to Applicant no later than ten (10) days after the date the Applicant notifies AT&T of its decision not to remove/contain the Hazardous Substance(s). In this case, Applicant agrees to reimburse AT&T for the costs incurred by AT&T for the placement of USS (where applicable), for cables and wiring on the Project, and for the wrecking associated with that placement up to the effective date of the termination. Upon such payment, Applicant shall become the owner of said USS, wire and cables.

C. Term.

This Agreement is effective upon execution and shall continue in effect until terminated or canceled as provided by law or this Agreement.

D. Inspection and Acceptance.

AT&T shall have the right to inspect and accept the Trench and the USS prior to placing any communication facilities therein. Applicant shall notify AT&T's Construction Coordinator on 916-484-2414 forty-eight (48) hours in advance of the start of construction to coordinate the inspection activities.

E. Placement of Facilities.

AT&T and any other Trench occupant shall jointly determine the dates and sequence of construction of each of their respective facilities in the Trench. Pursuant to the notice requirement in Section IV.H, Applicant will be required to provide fifteen (15) working days advance notice prior to the start of Trenching so AT&T will have adequate time to order materials and coordinate the placement of its facilities.

F. Payment.

1. AT&T's share of the cost for the Trench required to extend AT&T's existing communication facilities to and within the project that is within the boundary of the subdivision property and that is 200' or less in length and adjacent to the boundary of the subdivision property is $4,518.00, as reflected on Exhibit B hereto.

2. Within thirty (30) days of completion of the Trench by Applicant and acceptance by AT&T, Applicant shall submit to AT&T a bill for AT&T's share of the Trench. Applicant's bill for the joint Trench reimbursement shall include: a) the name and location of the Subdivision; b) the joint trench number; and c) AT&T's job number. Applicant shall submit with its bill a copy of the signed Completion and Acceptance Certificate that AT&T's Inspector gave to Applicant upon acceptance of the trenching. AT&T shall pay Applicant's bill within sixty (60) days of receiving it.

   In the event Applicant fails to complete all work described herein, AT&T shall be obligated to compensate Applicant only for that portion of the work satisfactorily completed by Applicant, as determined by AT&T.

   Bills shall be sent to:

   AT&T California
   2700 Watt Ave Room 3473
   Sacramento, CA 95821
   ATTN: David Rettenmaier

3. In accordance with Rules 15 and 3.D of the Tariff, if a municipality requires Applicant to install a USS that will be deeded to AT&T, or if Applicant elects to do so, within thirty (30) days of execution of this Agreement by both parties, Applicant shall pay to AT&T the amount of [written amount in dollars and cents] / $[dollar and cents figures]. This amount represents a [insert current rate]% tax component for the Contribution in Aid of Construction based on the value of the USS that will be constructed by Applicant and deeded to AT&T.

   Payments shall be sent to:

AT&T California
[street address]
[city], CA [zip code]
ATTN: [name]

G. Cancellation, Modification or Deferment.

If Applicant cancels, modifies or defers its request for line extension and/or service connection facilities within the Subdivision, Applicant shall pay any charges incurred by AT&T, in accordance with the Tariff.

H. Indemnity; Limitation of Liability.

1. Applicant shall indemnify, defend at AT&T's request and at no cost or expense to AT&T, and hold harmless AT&T and its officers, agents and employees, as well as its associated and affiliated companies and their respective officers, agents, and employees ("Indemnitees"), from and against any and all losses, damages, expenses, costs, penalties, fines, fees (including reasonable attorney's and consultant's fees), or liabilities (collectively "Liabilities"), incurred as a result of any injury to or death of any person(s) or damage to any property(ies) arising out of or in connection with the materials used or the work performed by Applicant under this Agreement or the condition of the Project's property, including environmental contamination, except where such Liabilities are caused by the sole negligence or willful misconduct of Indemnitees.

2. AT&T shall notify Applicant within a reasonable time of any written claim or demand against AT&T for which Applicant is responsible under this section. Applicant shall also (a) keep AT&T fully informed as to the progress of such defense, and (b) afford AT&T, at its own expense, an opportunity to participate with Applicant in the defense or settlement of such claims, demand, lawsuits or other legal proceedings.

3. AT&T shall indemnify, defend, and hold harmless Applicant, from and against any and all losses, damages, expenses, costs, penalties, fines, fees (including reasonable attorney's and consultant's fees), or liabilities (collectively "Liabilities"), incurred as a result of any injury to or death of any person(s) or damage to any property(ies) arising out of or in connection AT&T's installation of facilities in the USS, except where such Liabilities are caused by the negligence or willful misconduct of Applicant. Applicant shall notify AT&T within a reasonable time of any written claims or demand against Applicant for which AT&T is responsible under this section.

4. These indemnities shall survive the termination or cancellation of this Agreement or any provision to the contrary herein.

5. IN NO EVENT WILL AT&T BE LIABLE TO APPLICANT FOR INCIDENTAL, SPECIAL, INDIRECT, PUNITIVE, OR CONSEQUENTIAL DAMAGES, WHETHER BY TORT OR CONTRACT, INCLUDING LOST REVENUES, LOSS OF PROFITS OR OTHER COMMERCIAL OR ECONOMIC LOSS ARISING OUT OF THE PERFORMANCE OF THIS CONTRACT, INCLUDING, WITHOUT LIMITATION, NEGLIGENT PERFORMANCE OR FAILURE TO PERFORM, OR A DEFECT OR FAILURE TO PERFORM OR DEFECT OF CABLE OR WIRING, REGARDLESS OF THE FORESEEABILITY THEREOF.

I. Insurance.

1. With respect to Applicant's performance under this Agreement, and in addition to Applicant's obligation to indemnify, Applicant shall at its sole cost and expense, maintain the insurance coverages and limits required by this Section and any additional insurance and/or bonds required by law:

   i. at all times during the term of this Agreement and until completion of all work associated with this Agreement, whichever is later; and

   ii. with respect to any coverage maintained in a "claims-made" policy, for two (2) years following the term of this Agreement or completion of all work associated with this Agreement, whichever is later. If a "claims-made" policy is maintained, the retroactive date must precede the commencement of work under this Agreement;

2. Applicant shall also require each subcontractor who may perform work under this Agreement or enter upon the work site to maintain coverages, requirements, and limits at least as broad as those listed in this section from the time when the subcontractor begins work, throughout the term of the subcontractor's work and, with respect to any coverage maintained on a "claims-made" policy, for two (2) years thereafter;

   a. procure the required insurance from an insurance company eligible to do business in the state or states where work will be performed and having and maintaining a Financial Strength Rating of "A-" or better and a Financial Size Category of "VII" or better, as rated in the A.M. Best Key Rating Guide for Property and Casualty Insurance Companies, except that, in the case of Workers' Compensation insurance, Applicant may procure insurance from the state fund of the state where work is to be performed; and

b. deliver to AT&T certificates of insurance stating the types of insurance and policy limits. Applicant shall provide or will endeavor to have the issuing insurance company provide at least 30 days advance written notice of cancellation, non-renewal, or reduction in coverage, terms, or limits to AT&T. Applicant shall deliver such certificates:

i. prior to commencement of any work;

ii. prior to expiration of any insurance policy required in this Section; and

iii. for any coverage maintained on a "claims-made" policy, for two (2) years following the term of this Agreement or completion of all work associated with this Agreement, whichever is later.

3. The Parties agree:

a. the failure of AT&T to demand such certificate of insurance or failure of AT&T to identify a deficiency will not be construed as a waiver of Applicant's obligation to maintain the insurance required under this Agreement;

b. that the insurance required under this Agreement does not represent that coverage and limits will necessarily be adequate to protect Applicant, nor be deemed as a limitation on Applicant's liability to AT&T in this Agreement;

c. Applicant may meet the required insurance coverages and limits with any combination of primary and Umbrella/Excess liability insurance; and

Applicant is responsible for any deductible or self-insured retention.

4. The insurance coverage required by this section includes:

a. Workers' Compensation insurance with benefits afforded under the laws of any state in which the work is to be performed and Employers Liability insurance with limits of at least:

$500,000 for Bodily Injury – each accident

$500,000 for Bodily Injury by disease – policy limits

$500,000 for Bodily Injury by disease – each employee

To the fullest extent allowable by Law, the policy must include a waiver of subrogation in favor of AT&T, its affiliates, and their directors, officers and employees.

In states where Workers' Compensation insurance is a monopolistic state-run system, Applicant shall add Stop Gap Employers Liability with limits not less than $500,000 each accident or disease.

b. Commercial General Liability insurance written on Insurance Services Office (ISO) Form CG 00 01 12 04 or a substitute form providing equivalent coverage, covering liability arising from premises, operations, personal injury, products/completed operations, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract) with limits of at least:

$2,000,000 General Aggregate limit;

$1,000,000 each occurrence limit for all bodily injury or property damage incurred in any one (1) occurrence;

$1,000,000 each occurrence limit for Personal Injury and Advertising Injury;

$2,000,000 Products/Completed Operations Aggregate limit;

$1,000,000 each occurrence limit for Products/Completed Operations;

$1,000,000 Damage to Premises Rented to You (Fire Legal Liability).

The Commercial General Liability insurance policy must:

i. include AT&T, its affiliates, and their directors, officers, and employees as Additional Insureds. Applicant shall provide a copy of the Additional Insured endorsement to AT&T. The Additional Insured endorsement may either be specific to AT&T or may be "blanket" or "automatic" addressing any person or entity as required by contract. A copy of the Additional Insured endorsement must be provided within 60 days of execution of this Agreement

and within 60 days of each Commercial General Liability policy renewal;

ii. include a waiver of subrogation in favor of AT&T, its affiliates, and their directors, officers and employees; and

iii. be primary and non-contributory with respect to any insurance or self-insurance that is maintained by AT&T.

c. Business Automobile Liability insurance with limits of at least $1,000,000 each accident for bodily injury and property damage, extending to all owned, hired, and non-owned vehicles.

d. Umbrella/Excess Liability insurance with limits of at least $1,000,000 each occurrence with terms and conditions at least as broad as the underlying Commercial General Liability, Business Auto Liability, and Employers Liability policies. Umbrella/Excess Liability limits will be primary and non-contributory with respect to any insurance or self-insurance that is maintained by AT&T.

J. Warranty.

1. Applicant warrants that all work to be furnished by it under this Agreement:

a. shall conform in all respects to the requirements of this Agreement;

b. are adequate for the purposes for which they are intended;

c. are free from any defects in design, workmanship and title; and

d. are free of defects causing caving or sinking of the Trench, paving or other materials, for a period of two (2) years following acceptance of the Trench.

2. Applicant warrants that qualified personnel shall perform all work promptly and with diligence, to AT&T's reasonable satisfaction, and that work shall also be subject to all statutory and express or implied warranties. This warranty shall survive inspection, acceptance, termination and payment.

3. Except as disclosed to and acknowledged by AT&T in writing, Applicant is not aware of the presence of any Hazardous Substance at the locations on the Project where AT&T will be installing USS, cable and wiring and performing wrecking in association with such installations.

K. Title.

Upon the inspection and acceptance in writing of the Trench by AT&T, title to the associated communications facilities placed by or for AT&T shall vest in AT&T, provided the Trench is free of all liens and encumbrances.

L. Liens.

Applicant, its agents and contractors shall keep the Trench free from any statutory or common law lien arising out of any work performed, materials furnished or obligations incurred by Applicant, its agents or contractors. In the event a lien is recorded against the Trench and it is not removed from the record within ten (10) days after notice is given by AT&T to Applicant to do so, AT&T shall have the right to pay and discharge the lien without regard to whether the lien shall be lawful, valid or correct. Applicant shall, within thirty (30) days after written notice from AT&T, reimburse AT&T for any such claim paid by it.

M. Licenses and Easements.

Prior to construction of the Project, Applicant shall furnish AT&T with any and all licenses and grants of easements that are necessary to accommodate the Project, at no cost to AT&T, for the construction and maintenance of AT&T's facilities.

N. Performance.

If Applicant should default in the performance of any work which it is obligated to perform under this Agreement within the time allowed for such work, AT&T may elect, by written notice to Applicant, to perform the work at Applicant's sole risk and expense; and Applicant shall pay to AT&T upon demand AT&T's actual costs for performing the work.

O. Damage to Facilities.

Applicant, its employees, agents and contractors shall exercise special precaution and care to avoid causing damage to AT&T's facilities in performing work under the Project. Applicant shall assume responsibility for any and all losses, costs or expenses arising out of, caused by, or in any way connected with such damages, including consequential damages. Applicant shall immediately report the occurrence of any such damage to AT&T. Applicant shall, on demand, reimburse AT&T for the entire expense incurred in replacing or repairing the damage.

P. Tax Liability.

Applicant agrees to pay and to hold AT&T harmless from and against, all penalties, interest, taxes or other charges that may be levied or assessed against Applicant, as required by law, rule, regulation, or the Tariff.

Q. Schedule of Work.

Applicant will be responsible for signing and returning this Agreement before AT&T begins detailed engineering of the Project. AT&T shall have its facilities installed contingent upon mutually acceptable schedules, timely obtaining of permits, licenses and other documents, and not being delayed by those uncontrollable forces described in Section III.R below.

R. Force Majeure.

Neither party shall be held liable to the other for any delay in performance under this Agreement from any cause beyond its control and without its fault or negligence, such as acts of God, acts of civil or military authority, government regulations, the presence of archeological or historical artifacts, or Hazardous Substances on, in, or near the Project, embargoes, epidemics, war, terrorist acts, riots, insurrections, fires, explosions, earthquakes, nuclear accidents, floods, strikes, power blackouts, volcanic action, other major environmental disturbances, unusually severe weather conditions, inability to secure products or services of other persons or transportation facilities, or acts or omissions of carriers.

S. Compliance With Laws.

Applicant shall comply with all applicable federal, state, county, and local statutes, laws, ordinances, regulations, and codes that are now in force or as may be amended in the future. Applicant further agrees to comply with all applicable Executive Orders and regulations, which are attached to this Agreement as Exhibit C. As used in Exhibit C, "Contractor" means Applicant.

T. Liability for Costs Arising from Municipal Requirements.

Per Rule 15.A of the Tariff, Applicant shall be responsible for all costs arising from any municipal requirement or any request from Applicant regarding a route or a type of construction that is not governed by the Tariff or that differs from that determined by AT&T and causes AT&T to deviate from its design standards. Such costs shall include, but not be limited to, increased costs for labor and materials, the costs to screen and maintain the screening for aboveground facilities, and the costs to place flush mounted boxes or conduit. AT&T shall send a bill to Applicant for all such costs it incurs, which Applicant shall pay within thirty (30) days of receipt.

## IV. GENERAL PROVISIONS.

A. Assignment.

Applicant shall not wholly or partially assign this Agreement without the prior written consent of AT&T.

B. Binding Effect.

This Agreement shall be for the benefit of and is binding upon the respective successors and assigns of the parties.

C. Termination.

This Agreement automatically terminates upon completion of all Trenching work required by Applicant under this Agreement and acceptance of that work by AT&T. In the event of any material default or breach of this Agreement by Applicant, in addition to all other rights and remedies which AT&T may have at law or in equity, AT&T shall have the immediate right to terminate this Agreement by giving thirty (30) days prior written notice of termination. The notice shall specify the cause of termination and shall give Applicant a reasonable opportunity to cure and correct any such cause. In the event this Agreement is terminated or suspended as provided herein, AT&T shall not be liable to Applicant or any other person or entity for any losses, damages or claims that arise as a result of termination. Applicant shall pay to AT&T any costs or expenses incurred by AT&T prior to termination of this Agreement. Any termination of this Agreement in whole or in part shall not release Applicant from any liability or obligation under this Agreement, whether of indemnity or otherwise, which may have accrued or which may be accruing or which arises out of any claim that may have accrued or may be accruing at the time of termination.

D. Attorneys' Fees.

If any action is brought to adjudicate the rights granted in this Agreement or to enforce any of the terms of this Agreement, the prevailing party shall be entitled to an award of reasonable attorneys' fees in an amount to be determined by a court or a tribunal of competent jurisdiction.

E. Entire Agreement.

This Agreement and the attached Exhibits are incorporated herein and constitute the entire Agreement between the parties with respect to the subject matter. All prior agreements, representations, statements, negotiations and understandings are superseded.

F. Independent Contractor.

Applicant, its agents, employees and contractors shall perform all work under this Agreement as independent contractors and not as affiliates, partners, joint ventures, agents, employees, servants or assigns of AT&T.

G. Jurisdiction.

This Agreement is subject to the applicable rules, regulations and tariffs on file with the CPUC and is also subject to changes or modifications as the CPUC may order.

H. Notices.

All notices or other communications hereunder are deemed given when sent by facsimile to the respective person at the respective facsimile number set forth below or when made in writing and either: delivered in person, delivered to an agent, such as an overnight or similar delivery service, or deposited in the United States mail, postage prepaid and addressed as follows:

| | |
|---|---|
| APPLICANT | AT&T California |
| 3960 Kingsbarn Dr | 2700 Watt Ave Room 3473 |
| Roseville, CA 95747 | Sacramento, CA 95821 |

I. Waiver and Amendment.

The provisions of this Agreement shall not be waived, altered, or amended by any representations or promises of any party unless consented to in writing by both parties.

J. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which shall be deemed to be one agreement. A signature received electronically via e-mail or via facsimile shall be as legally binding for all purposes as an original signature.

The duly authorized representatives of Applicant and AT&T have executed this Agreement by affixing their signatures on the dates indicated below.

NERRADSCALI CORPORATION

JT# 23-3009

$4,518.00

By: _____

Printed Name: Darren Brown

Title: Owner

Date Signed: 3/30/2023

PACIFIC BELL TELEPHONE COMPANY,
A CALIFORNIA CORPORATION

By: Kimberly Bradley

Printed Name: Kimberly Bradley

Title: Design Engineer

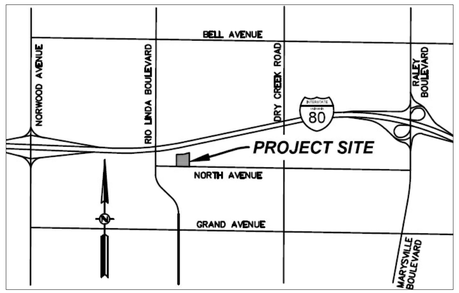
Date Signed: 3/30/2023

# Exhibit A
# Applicant's Approved Tract Map

# 905 NORTH AVENUE SUBDIVISION
# 905 NORTH AVENUE, SACRAMENTO, CA 95838
# JOINT TRENCH COMPOSITE



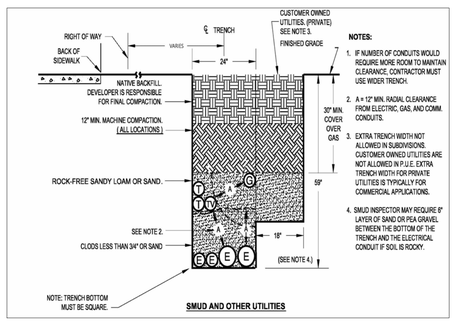
REVISIONS



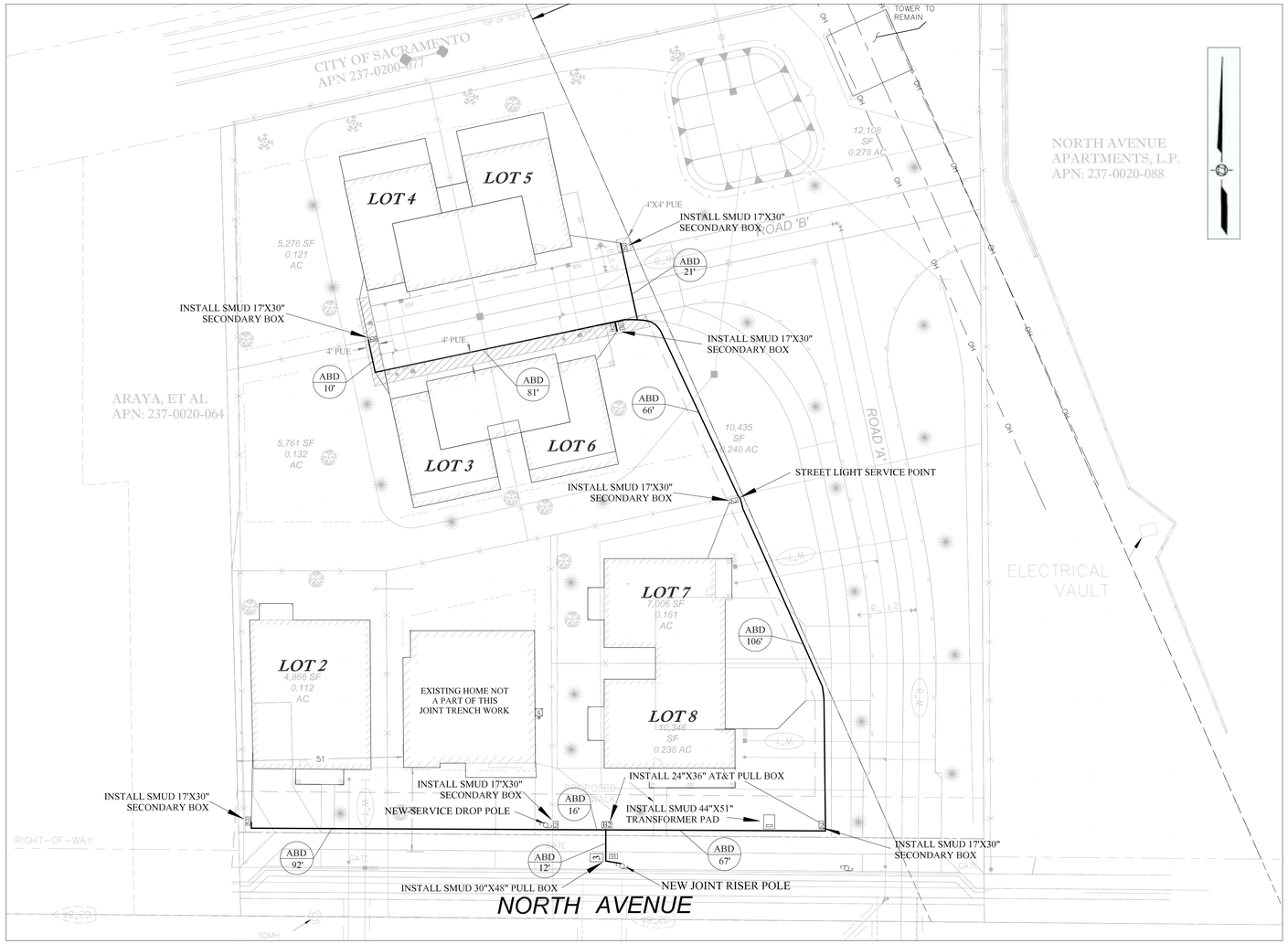

VICINITY MAP

## MINIMUM SEPARATION AND CLEARANCE REQUIREMENTS

| | | G | DUCT T | DB T | C | S | P |
|---|---|---|---|---|---|---|---|
| G | (GAS) SEE NOTES 4, 7 & 13 | — | 12" | 12" | 12" | 6" | 12" |
| T | (TELEPHONE) DUCT | 12" | — | 1" | 1" | 12" | 12" |
| T | (TELEPHONE) DIRECT BURY | 12" | 1" | — | 1" | 12" | 12" |
| C | (CATV) | 12" | 1" | 1" | — | 12" | 12" |
| S | (ELECTRIC SECONDARY) | 6" | 12" | 12" | 12" | — | 3" |
| P | (ELECTRIC PRIMARY) | 12" | 12" | 12" | 12" | 3" | — |
| SL | (STREETLIGHT) SEE NOTE 5 | 6" | 12" | 12" | 12" | 1" | 3" |




NOTES:
1. IF NUMBER OF CONDUITS WOULD REQUIRE MORE ROOM TO MAINTAIN CLEARANCE, CONTRACTOR MUST USE WIDER TRENCH.
2. A = 12" MIN. RADIAL CLEARANCE FROM ELECTRIC, GAS, AND COMM. CONDUITS.
3. EXTRA TRENCH WIDTH NOT ALLOWED IN SUBDIVISIONS. CUSTOMER OWNED UTILITIES ARE NOT ALLOWED IN P.U.E. EXTRA TRENCH WIDTH FOR PRIVATE UTILITIES IS TYPICALLY FOR COMMERCIAL APPLICATIONS.
4. SMUD INSPECTOR MAY REQUIRE 8" LAYER OF SAND OR PEA GRAVEL BETWEEN THE BOTTOM OF THE TRENCH AND THE ELECTRICAL CONDUIT IF SOIL IS ROCKY.

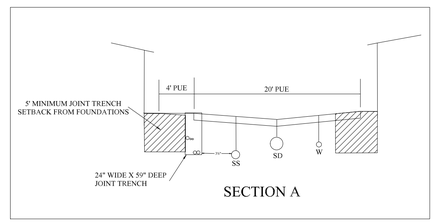



## TRENCH LEGEND

A - SMUD
B - AT&T
C - PG&E GAS
D - COMCAST
—— JOINT TRENCH MAIN

| | JOINT TRENCH CONTACTS | | | |
|---|---|---|---|---|
| | COMPANY | NAME | PHONE | JOB # |
| A | SMUD | LEIGH CARRUTH | (916) 732-6746 | 30178973 |
| B | AT&T | KIMBERLY BRADLEY | (916) 484-2401 | |
| C | PG&E | YVONNE THOMAS | (916) 607-5764 | |
| D | COMCAST | MARK DUBY | (916) 275-7911 | |
| | | | | |

| JOINT TRENCH RECAP | | | |
|---|---|---|---|
| SECTION | FOOTAGE | SIZE | TYPE |
| ABD | 471 | 24"X59" | DIST |
| | | | |
| | | | |
| | | | |
| TOTAL | 471 | | |
| | | | |
| SECTION | QTY | SIZE | TYPE |
| A | 1 | 44"X51" | TRANS |
| A | 1 | 30"x48" | PRIMARY BOX |
| A | 7 | 17"x30" | #2 SEC BOX |
| B | 1 | 24"x36" | B2 PULL BOX |
| D | 2 | 17"X30" | D1 PULL BOX |
| | | | |




SECTION A

905 NORTH AVENUE
JOINT TRENCH COMPOSITE

APEX UTILITY CONSULTANTS LLC
168 Temperence River Court
Folsom, CA 95630
(916) 417-7062

CALL: 811
CALL BEFORE YOU DIG
USA
UNDERGROUND SERVICE ALERT
CALL: 811
CALL TWO WORKING DAYS BEFORE YOU DIG

## JOINT TRENCH CONSTRUCTION NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF CONSTRUCTION WITH THE RESPECTIVE UTILITY AGENCIES, ALLOWING 48 HOURS PRIOR TO THE NEED FOR INSTALLATIONS.
2. THE CONTRACTOR SHALL NOTIFY DEVELOPER 48 HOURS PRIOR TO THE NEED FOR SURVEY STAKING. THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF ALL CONSTRUCTION STAKING SET BY THE DEVELOPERS SURVEYORS AND WILL BE BACK CHARGED FOR ANY RE-STAKING THAT IS REQUIRED.
3. THE CONTRACTOR IS RESPONSIBLE TO PROTECT IN PLACE ALL EXISTING FACILITIES.
4. EXCAVATION MAY BE REQUIRED OVER, UNDER OR ADJACENT TO EXISTING UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE TO LOCATE, EXPOSE AND PROTECT ALL EXISTING FACILITIES.
5. THE CONTRACTOR SHALL COORDINATE ALL TIE-INS WITH UTILITY COMPANIES AS REQUIRED.
6. THE CONTRACTOR IS RESPONSIBLE TO HAVE ALL INSTALLATIONS INSPECTED AND APPROVED BY THE RESPECTIVE UTILITY COMPANY PRIOR TO ANY BACK FILLING. (48 HOUR NOTICE)
7. CONTRACTOR WILL COMPLY WITH ALL LAWS, ORDINANCES AND REGULATIONS. CONTRACTOR SHALL BE FAMILIAR WITH CAL-OSHA INDUSTRIAL ORDERS AND SHALL CONDUCT HIS WORK ACCORDINGLY. WHEN WORKING AROUND ENERGIZED EQUIPMENT, THE UTILITY OWNER SHALL BE NOTIFIED TO SUPPLY THE APPROPRIATE MAN POWER AND SAFETY PRECAUTIONS AS NEEDED THE CONTRACTOR IS RESPONSIBLE FOR PUBLIC SAFETY AND TRAFFIC CONTROL MEASURES.
8. THE CONTRACTOR TO BE AWARE THAT THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE BASED UPON RECORD DATA MADE AVAILABLE BY PG&E, TELEPHONE, CATV, IMPROVEMENT PWNS AND CITY RECORDS. APEX UTILITY CONSULTANTS, LLC ASSUMES NO RESPONSIBILITY FOR THE INFORMATION SHOWN. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE PRECISE LOCATION OF ALL UNDERGROUND FACILITIES. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) (811) AT LEAST 48 HOURS (2 WORKING DAYS) PRIOR TO START OF WORK.
9. JOINT TRENCH FACILITIES SHALL MAINTAIN A MINIMUM OF 3' HORIZONTAL CLEARANCE FROM EDGE OF JOINT TRENCH TO EDGE OF "WET UTILITIES WITH A MINIMUM 6" VERTICAL CLEARANCE WHEN CROSSING (U.O.N), THE CONTRACTOR SHALL REFER TO PG&E UO STANDARD S5453 FOR ADDITIONAL INFORMATION.
10. TRANSITION TRENCH FOR VAULTS/PEDESTALS NOT SHOWN FOR CLARITY. THE CONTRACTOR SHALL PROVIDE INCIDENTAL TRENCHING AS REQUIRED FOR CONDUIT/CABLE ROUTING INTO VAULTS/PEDESTALS. CONTRACTOR SHALL INCLUDE COST OF TRANSITION TRENCH IN VAULT/PEDESTAL EXCAVATION COST.
11. THE CONTRACTOR SHALL OFFSET VAULTS/PEDESTALS AS REQUIRED FOR CONDUIT/CABLE ROUTING.
12. THE CONTRACTOR SHALL FIELD ADJUST VAULTS/PEDESTALS AS REQUIRED TO AVOID CONFLICTS WITH DRIVEWAYS, SIDEWALKS, HANDICAP RAMPS, FIRE HYDRANTS, WATER k SEWER LATERALS, ETC.
13. ALL CONDUIT SHALL BE MANDREL TESTED AND PROVED PRIOR TO MAKING CONNECTION AS DIRECTED BY THE GOVERNING INSPECTOR. UTILITY COMPANIES SHALL MAKE ALL "HOT" TIE-INS AND CONNECTIONS. THE CONTRACTOR SHALL NOT ENTER OR WORK ON ANY ENERGIZED FACILITIES. UNLESS DIRECTED BY THE UTILITY INSPECTOR- THIS COST SHALL BE INCLUDED IN CONTRACTOR BID.
14. EDGE OF SPLICE BOXES AND PEDESTALS SHALL BE 5' FROM EDGE OF F.H. AND 3' FROM STREET LIGHT (TYP.) CONTRACTOR TO AVOID DISTURBING F.H. THRUST BLOCK.
15. THE CONTRACTOR SHALL PERFORM ALL TRENCHING, EXCAVATING, BACKFILLING, INSTALLATION AND ALL OTHER WORK AS SHOWN OR NOTED ON THESE PLANS AND SPECIFICATIONS.
16. ALL TRENCHES, BOXES AND CONDUIT LAYOUTS IN THIS PLAN SET ARE SHOWN SCHEMATICALLY. THE CONTRACTOR SHALL INSTALL ALL UTILITY VAULTS, PADS, CONDUITS, ETC. IN PROPER RELATION TO FINAL GRADE.
17. ALL JOINT TRENCH CONSTRUCTION WORK SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARD PRACTICES AND SPECIFICATIONS OF EACH PARTICIPATING UTILITY COMPANY AND CONFORM TO THE CURRENTLY ADOPTED EDITIONS OF THE STANDARD PLANS AND SPECIFICATIONS OF THE CITY OR COUNTY INVOLVED.
18. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
19. THE BOTTOM OF ALL TRENCHES SHALL BE CLEARED OF ROCKS AND ALL OTHER HARD SURFACE MATERIAL. A SAND BEDDING OF AT LEAST 2" (TWO INCHES) SHALL BE PROVIDED ON WHICH THE UTILITIES WILL BE PLACED. (MAY NOT BE REQUIRED IN NATIVE SAND AREAS, CONSULT WITH LOCAL AGENCIES).
20. SERVICE LOCATIONS SHOWN ARE APPROXIMATE, THE CONTRACTOR SHALL FIELD VERIFY THEIR EXACT LOCATIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL HELD ADJUST SERVICE STUB AND CROSSING LOCATIONS AS REQUIRED TO AVOID CONFLICTS WITH OTHER FACILITIES.
21. SERVICE COMPLETION TRENCHES SHALL BE INSTALLED AFTER CURB AND GUTTER, UNLESS DIRECTED OTHERWISE. THE CONTRACTOR SHALL COORDINATE ADDITIONAL MOVE-INS AS NECESSARY TO COMPLETE THE SERVICES TO EACH INDIVIDUAL UNIT WITH THE DEVELOPER, UTILITY COMPANIES & ALL INVOLVED AGENCIES. THE COST OF THESE MOVE-INS SHALL BE INCLUDED IN THE CONTRACTORS UNIT BID PRICE FOR TRENCHING.
22. THE CONTRACTOR SHALL NOTIFY APEX UTILITY CONSULTANTS, LLC OF ANY DIFFERENCES IN THE ACTUAL LOCATION OF EXISTING FACILITIES FROM THAT SHOWN IN THESE PLANS, OR ANY OTHER CONFLICTS WITH THE DESIGN, PRIOR TO CONTINUING WORK IN THAT AREA. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT FIRST NOTIFYING APEX UTILITY CONSULTANTS, LLC
23. APEX UTILITY CONSULTANTS, LLC ASSUMES NO RESPONSIBILITY FOR ANY DIFFERENCES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHOULD VISIT THE PROJECT SITE PRIOR TO SUBMITTING BID.
24. THE CONTRACTOR SHALL COORDINATE ALL CONNECTIONS BETWEEN EXISTING AND PROPOSED FACILITIES WITH THE RESPECTIVE UTILITY INSPECTOR. ALL EXISTING CONDUIT TO BE USED
25. THE CONTRACTOR IS REQUIRED TO EXCAVATE "BELL HOLES" AT THE TIE-IN LOCATIONS AS REQUIRED BY THE UTILITY

APEX

| | |
|---|---|
| DRAWN: | DG |
| JOB NO.: | 619 |
| DATE: | 3/29/2023 |
| SCALE: | 1" = 20' |

SHEET
1 OF 1

## Exhibit B

## AT&T's Calculation of Its Share of Costs for the Trench

# SUBDIVISION JOINT TRENCH AUTHORIZATION - FORM B

| DISTRICT | ARC NO. | DATE | REVISION NO. | REVISION DATE | SMUD JOB NO. |
|---|---|---|---|---|---|
| | | 3/29/2023 | | | SMUD 30178973 |

| JOB LOCATION | APPLICANT NAME AND ADDRESS |
|---|---|
| **905 North Avenue Subdivision, 905 North Ave. Sacramento, CA 95838** | **Nerradscali Corp., 3960 Kingsbarns Dr. Roseville, CA 95747** |

| TRENCH COST DETAIL | | | | UNIT COST ADDITIVES | | | TRENCH COST | | OCCUPANTS RESPECTIVE SHARE OF TOTAL COSTS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | A - ELECTRIC | | B -TELEPHONE | | C - GAS | | D - CATV | | E - | |
| SECTION | FOOTAGE/QTY | SIZE | TYPE | BASIC | I | II | UNIT COST | TOTAL COST | % | COST | % | COST | % | COST | % | COST | % | COST |
| ABD | 471 | 24"X59" | DIST | | | | 40.00 | 18,840.00 | 67 | 12,622.80 | 20 | 3,768.00 | | | 13 | 2,449.20 | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| A | 1 | 44"X51" | TRANS | | | | 1200.00 | 1,200.00 | 100 | 1,200.00 | | | | | | | | |
| A | 1 | 30"x48" | PULL BOX | | | | 1400.00 | 1,400.00 | 100 | 1,400.00 | | | | | | | | |
| A | 7 | 17"x30" | #2 SEC BOX | | | | 600.00 | 4,200.00 | 100 | 4,200.00 | | | | | | | | |
| B | 1 | 24"X36" | B2 PULL BOX | | | | **750.00** | **750.00** | | | 100 | **750.00** | | | | | | |
| D | 2 | 17"X30" | D1 PULL BOX | | | | 600.00 | 1,200.00 | | | | | | | 100 | 1,200.00 | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | 27,640.00 | | 19,422.80 | | **4,518.00** | | 0.00 | | 3,649.20 | | 0.00 |

## UTILITY COORDINATING DETAIL

| UTILITY | JOB NO. | BA NO. | ENGINEER | PHONE NO. | FIELD COORDINATOR | PHONE NO. |
|---|---|---|---|---|---|---|
| SMUD | 30178973 | | Leigh Carruth | (916) 732-6746 | | |
| AT&T | | | Kimberley Bradley | (916) 484-2401 | | |
| | | | | | | |
| Comcast | | | Mark Duby | (916) 275-7911 | | |
| | | | | | | |
| | | | | | | |

| NOTES: All facility notches adjoining mainline trench may require tapers. See SMUD Residential Development Requirements/participating utility requirements. | UTILITY APPROVAL | SIGNATURE | DATE |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

**AT&T JOB # A02K24X**

**AT&T TOTAL = $4,518.00**

# Exhibit C

# Executive Orders and Associated Regulations

AT&T Bell and Nevada Bell, as common carriers of telecommunications services, engage in work as contractors for various departments and agencies of the United States Government. Also, certain facilities may be constructed pursuant to federally assisted construction programs. Because of the foregoing, work under this contract may be subject to the provisions of certain Executive Orders, federal laws and associated regulations. To the extent that such Executive Orders, federal laws and associated regulations apply to the work under this contract, and only to that extent, Contractor agrees to comply with the provisions of all such Executive Orders, federal laws and associated regulations as no in force or as may be amended in the future, including, but not limited to the following:

1. **EQUAL EMPLOYMENT OPPORTUNITY PROVISIONS.**
In accordance with Executive Order 11246, dated September 24, 1965, and 41 C.F.R. § 60-1.4, the parties incorporate herein by this reference the regulations and contract clauses required by those provisions to be made a part of nonexempt contracts and subcontracts.

2. **CERTIFICATION OF NONSEGREGATED FACILITIES.**
In accordance with Executive Order 11246, dated September 24, 1965, and 41 C.F.R. § 60-1.8, Contractor certifies that it does not and will not maintain or provide for its employees any facilities segregated on the basis of race, color, religion, sex, or national origin at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control, where such segregated facilities are maintained. The term "facilities" as used herein means waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, wash rooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, provided that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes. Contractor will obtain similar certifications from proposed subcontractors prior to the award of any nonexempt subcontract.

3. **CERTIFICATION OF AFFIRMATIVE ACTION PROGRAM**.
Contractor certified that it has developed and is maintaining an Affirmative Action Plan as required by 41 C.F.R. § 60-1.40.

4. **CERTIFICATION OF FILING**.
Contractor certifies that it will file annually, on or before the 31st of March, complete and accurate reports on Standard Form 100 (EEO-1) or such forms as may be promulgated in its place as required by 41 C.F.R. § 60-1.7.

5. **AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA.**
In accordance with Executive Order 11701, dated January 24, 1973, and 41 C.F.R. 60-250.20, the parties incorporate herein by this reference the regulations and contract clauses required by those provisions to be made a part of Government contracts and subcontracts.

6. **AFFIRMATIVE ACTION FOR HANDICAPPED PERSONS.**
In accordance with Executive Order 11758, dated January 15, 1974, and 41 C.F.R. § 60-741.20, the parties incorporate herein by this reference the regulations and contract clauses required by those provisions to be made a part of Government contracts and subcontracts.

7. **UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS.**
48 C.F.R., Ch. 1, § 19.740(4) and 19.708(a) require that the following clause is included:

*Utilization of Small Business concerns and Small Disadvantaged Business Concerns (June, 1985)*

(a) It is the policy of the United States that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals shall have the maximum practicable opportunity to participate in performing contracts let by and Federal agency, including contracts and subcontracts for subsystems, assemblies, components, and related services for major systems. It is further the policy of the United States that its prime contractors establish procedures to ensure the timely payment of amounts due pursuant to the terms of their subcontracts with small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals.

(b) The Contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with efficient contract performance. The Contractor further agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the awarding agency of the United States as may be necessary to determine the extent of the Contractor's compliance with this clause.

(c) As used in this contract, the term "small business concern" shall mean a small business as defined pursuant to section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto. The term "small business concern owned and controlled by socially and economically disadvantaged individuals" shall mean a small business concern:

(1) Which is at least 51 percent owned by one or more socially and economically disadvantaged individuals; or, in the case of any publicly owned businesses, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individuals; and

(2) Whose management and daily business operations are controlled by one or more of such individuals.

The Contractor shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans and other minorities, or any other individual found to be disadvantaged by the Administration pursuant to section 8(a) of the Small Business Act.

(d) Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as either a small business concern or a small business concern owned and controlled by socially and economically disadvantaged individuals.

*Small Business and Small Disadvantaged Business Subcontracting Plan*.
Contractor, unless it is a small business concern, as defined in section 3 of the Small Business Act, agrees to adopt and comply with a small business and small disadvantaged business subcontracting plan, which shall be included in and made a part of this contract. The parties incorporate herein by this reference the regulations and contract clauses required by 48 C.F.R., Ch. 1, §§ 19.704(4) and 19.708(b) to be made a part of Government contracts and subcontracts.

8. **WOMEN-OWNED SMALL BUSINESSES.**
As prescribed in 48 C.F.R., Ch. 1, § 19.902, the following clause is included in solicitations and contracts when the contract amount is expected to be over the small purchase threshold, unless (a) the contract is to be performed entirely outside the United States, its possessions, Puerto Rico, and the Trust Territory of the Pacific Islands, or (b) a personal services contract is contemplate:

(a) "Woman-owned small businesses," as used in this clause, means businesses that are at least 51 percent owned by women who are United States citizens and who also control and operate the business.

"Control," as used in this clause, means exercising the power to make policy decisions.

"Operate," as used in this clause, means being actively involved in the day-to-day management of the business.

(b) Policy. It is the policy of the Government to award contracts to concerns that agree to perform substantially in labor surplus areas (LSA's) when this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place subcontracts in accordance with this policy.

(c) Order of Preference. In complying with paragraph (b) above and with paragraph (c) of the clause of this contract entitled Utilization of Small Business Concerns and Small Disadvantaged Business Concerns, the Contractor shall observe the following order of preference in awarding subcontracts: (1) small business concerns that are LSA concerns, (2) other small business concerns, and (3) other LSA concerns.

(d) Definitions. "Labor surplus area," as used in this clause, means a geographical area identified by the Department of Labor in accordance with 20 C.F.R. § 654, Subpart A, as an area of concentrated unemployment or underemployment or an area of labor surplus.

"Labor surplus area concern," as used in this clause, means a concern that together with its first-tier subcontractors will perform substantially in labor surplus areas. Performance is substantially in labor surplus area if the costs incurred under the contract on account of manufacturing, production, or performance of appropriate services in labor surplus areas exceed 50 percent of the contract price.

*Labor Surplus Area Subcontract Program.*

(a) See the Utilization of Labor Surplus Area Concerns clause of this contract for applicable definitions.

(b) The Contractor agrees to establish and conduct a program to encourage labor surplus area (LSA) concerns to compete for subcontracts within their capabilities at prices no higher than obtainable elsewhere. The contractor shall --

(1) Designate a liaison officer who will (i) maintain liaison with authorized representatives of the Government on LSA matters, (ii) supervise compliance with the Utilization of Labor Surplus Area Concerns clause, and (iii) administer the Contractor's labor surplus area subcontracting program;

(2) Provide adequate and timely consideration of the potentialities of LSA concerns in all make-or-buy decisions;

(3) Ensure that LSA concerns have an equitable opportunity to compete for subcontracts, particularly by arranging solicitations, time for the preparation of offers, quantities, specifications, and delivery schedules so as to facilitate the participation of LSA concerns;

(4) include the Utilization of Labor Surplus Area Concerns clause in subcontracts that offer substantial LSA subcontracting opportunities; and

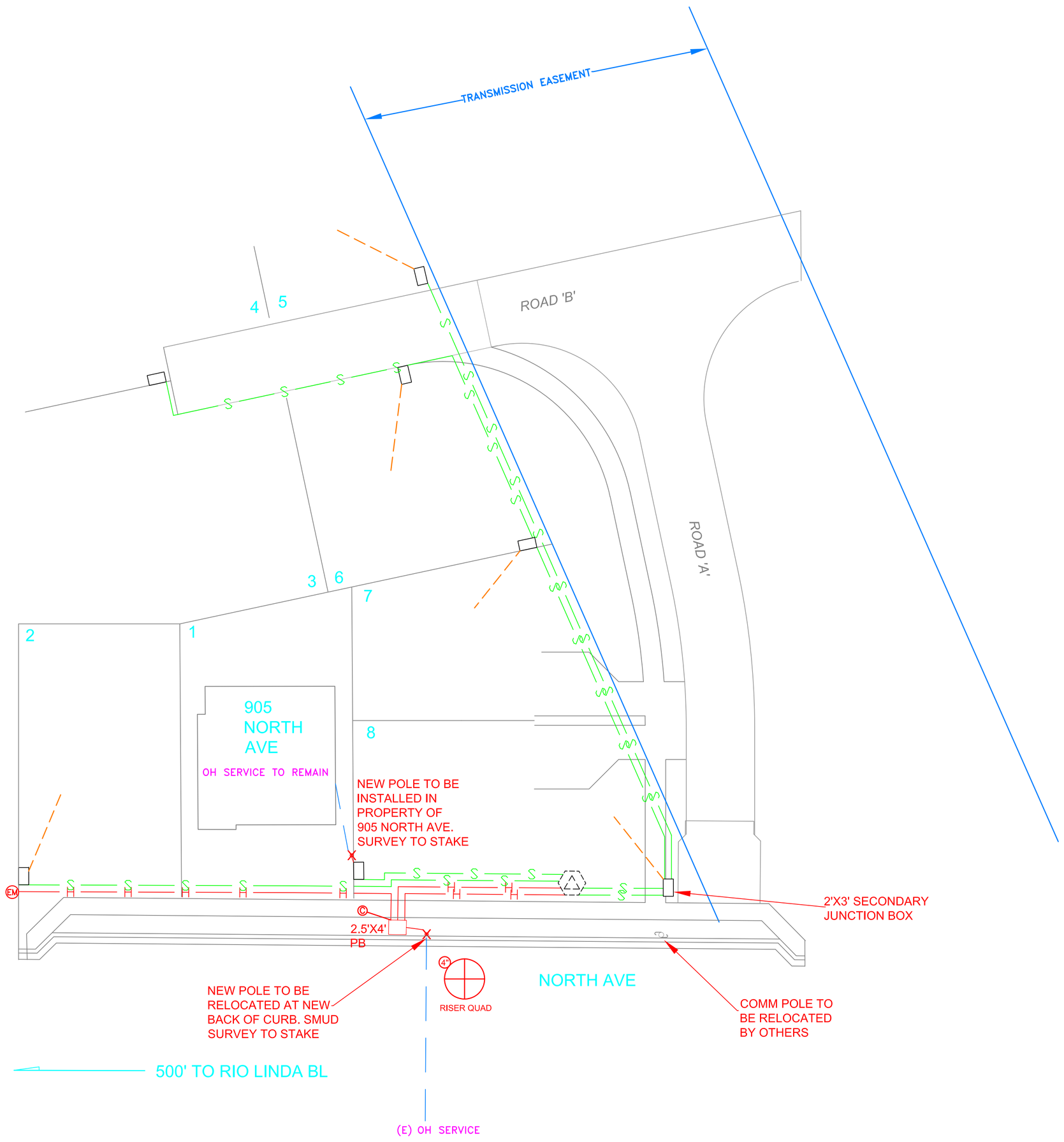
(5) Maintain records showing (i) the procedures adopted and (ii) the Contractor's performance, to comply with this clause. The records will be kept available for review by the Government until the expiration of 1 year after the award of this contract, or for such longer period as may be required by any other clause of this contract or by applicable law or regulations.

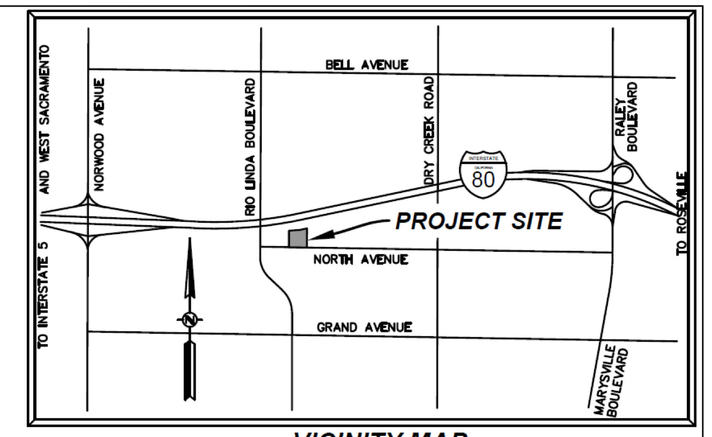
(c) The Contractor further agrees to insert in any related subcontract that may exceed $500,000 and that contains the Utilization of Labor Surplus Area Concerns clause, terms that conform substantially to the language of this clause, including this paragraph (c), and to notify the Contracting Officer of the names of subcontractors.

## SYMBOL LEGEND

| | |
|---|---|
| | PULLBOX; EACH BOX HAS SIZE LABEL ADJACENT |
| | TRANSFORMER PAD |
| | 17"x30" SECONDARY BOX |
| S.L. | 17"x30" SECONDARY BOX WITH STREET LIGHT CONNECT |
| F | FUSING CUBICLE AND PAD |
| T | T-TAP |
| © | PVC ELBOW CONCRETE ENCASED |
| EM | ELECTRONIC MARKER |
| S | 1-4" SECONDARY CONDUIT |
| H | 1-4" PRIMARY CONDUIT |
| H | 1-6" FEEDER CONDUIT |

**DEVELOPER:**
- CONCRETE ENCASE ALL 22 DEGREE ELBOWS
- CONCRETE ENCASE ALL 90 DEGREE ELBOWS AS NOTED




***VICINITY MAP***
*NO SCALE*

**DEVELOPER NOTES:**

- TO SCHEDULE YOUR PRE-CONSTRUCTION MEETING PLEASE CALL (916) 732-5990 AT LEAST TWO FULL WORKING DAYS PRIOR TO MEETING.
- STAKING OF P/L, FOUNDATION, AND PUE ARE REQUIRED.
- MINIMUM OF 5' HORIZONTAL SEPARATION BETWEEN TRENCH AND BUILDING FOUNDATIONS IS REQUIRED AT ALL LOCATIONS.
- EXACT LOCATION OF ALL FACILITIES TO BE DETERMINED BY SMUD INSPECTOR.
- TRANSFORMERS CLOSER THAN 5' FROM VEHICULAR TRAFFIC WILL REQUIRE BOLLARDS.
- DEVELOPER RESPONSIBLE FOR INSTALLATION OF ELECTRIC SERVICE ELBOW(S) INTO SECONDARY SERVICE BOX AT ALL LOCATIONS AT TIME OF JOINT TRENCH INSTALLATION – PER INSPECTOR APPROVAL. ELECTRIC SERVICE CONDUIT SHALL BE 2-INCH FOR A 200 AMP SERVICE, 3-INCH FOR A 400 AMP SERVICE, AND HAVE A MINIMUM COVER OF 30 INCHES.
- WHERE SLOPE OR MOUNDED LANDSCAPE IS PLANNED, DEVELOPER IS RESPONSIBLE TO PROVIDE PERMANENT RETAINING WALLS OR APPROPRIATE GRADE CHANGES TO ENSURE PULLBOXES ARE NOT COVERED AND PROPER OPERATING CLEARANCES ARE MAINTAINED. WOOD IS NOT CONSIDERED PERMANENT AND IS NOT AN ACCEPTABLE MATERIAL. ALL SMUD EQUIPMENT SHALL BE PLACED LEVEL, WITH THE EXCEPTION OF 17"X30" SERVICE BOXES, WHICH MAY HAVE A 2:1 MAXIMUM SLOPE.
- 5' PUE ON THE WEST SIDE OF TRANSMISSION CORRIDOR TO BE STAKED BY DEVELOPER
- FOUNDATION OF HOMES ON LOTS 3 AND 6 TO BE STAKED BY DEVELOPER

**INSPECTOR NOTES:**

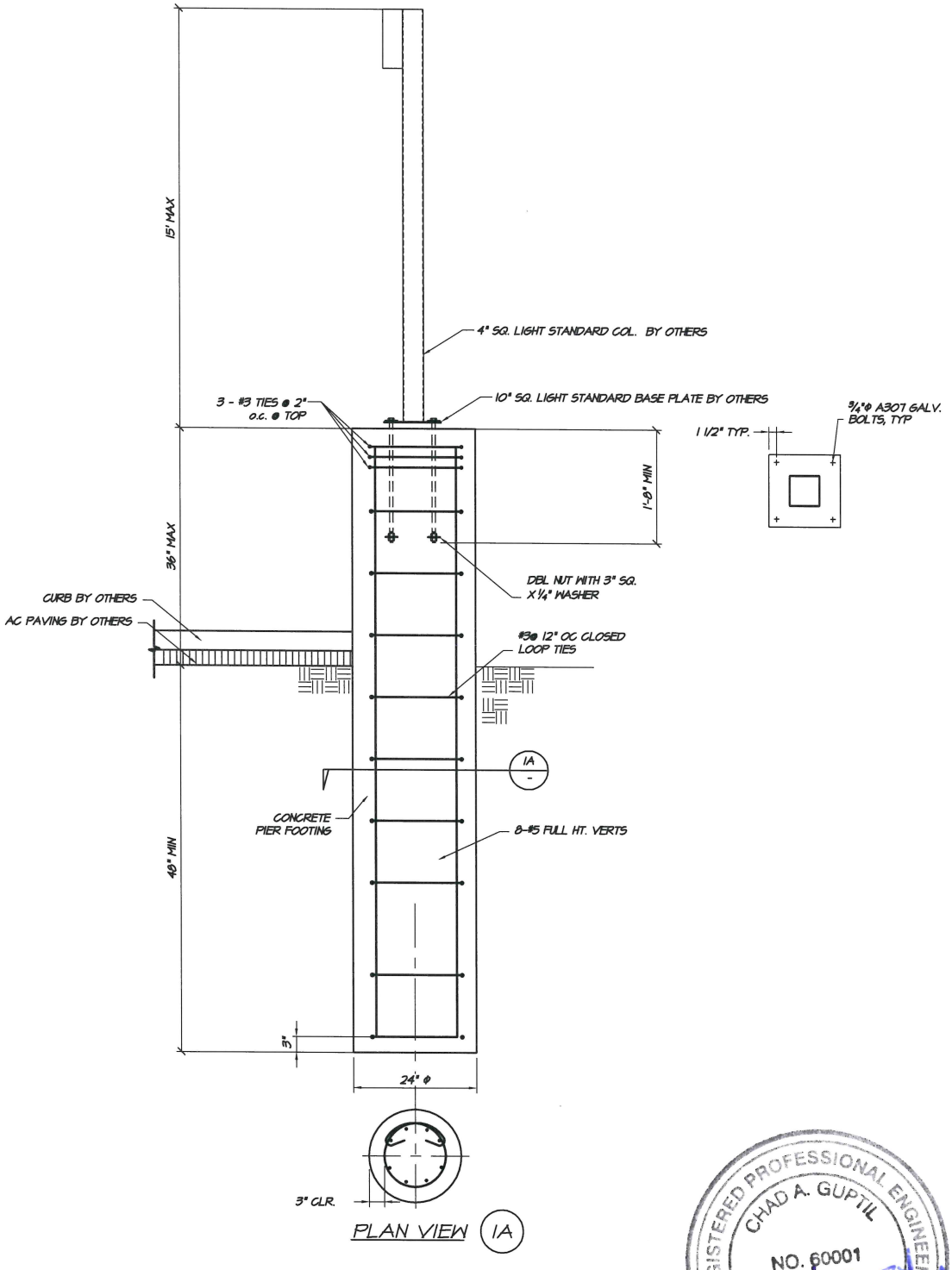
- JOINT TRENCH C/L 2' BACK OF ROAD RIGHT OF WAY ON NORTH AVE WITH 12.5' PUE
- JOINT TRENCH C/L IN THE MIDDLE OF 5' PUE WITHIN LOTS 6, 7 AND 8.
- JOINT TRENCH C/L AT EDGE OF ROAD B, 6' FEET FROM FOUNDATION OF HOME
- ALL SECONDARY BOXES TO BE TRAFFIC RATED EXCEPT AT LOT 6/7

| RELATED JOBS | |
|---|---|
| SO# | DESCRIPTION |
| | IDLE FACILITIES |
| | POLE RELOCATION |
| | OFFSITE WORK |
| | ST. LIGHTS |
| | SPRINKLER |

0 20 40 60
SCALE: 1"=20'

277J2

| | | | |
|---|---|---|---|
| DESIGNER: LEIGH CARRUTH | JOB NAME: 905 NORTH AVE SUBDIVISION | | |
| PHONE: 916-732-6746 | | | |
| DATE: 3/3/2023 | LOCATION: 905 NORTH AVE | | |
| MAP NUMBER: 354/158 | TYPE OF DRAWING: SUBSTRUCTURE | FILE NO. F- | |
| SMUD SACRAMENTO MUNICIPAL UTILITY DISTRICT | JOB NUMBER: SO# 30178973 | REV. | SHEET 1 OF 1 |




PLAN VIEW (1A)

(X1) DETAIL

3/4" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
CHAD A. GUPTIL
NO. 60001
EXP. 6-30-24
CIVIL
STATE OF CALIFORNIA

2-14-23

CROSSINGS LIGHT STANDARD

# Aluminum Poles

## **SSA** SQUARE STRAIGHT ALUMINUM

| | | |
|---|---|---|
| **Catalog #** | | **Type** |
| **Project** | | |
| **Comments** | | **Date** |
| **Prepared by** | | |

**FEATURES**
- Straight square shaft 6005-T6 aluminum alloy polished
- 356-T6 cast aluminum alloy base with aluminum knock-in bolt covers
- 8'-35' mounting heights
- Drilled or tenon (specify)

### DESIGN CONSIDERATIONS - VIBRATIONS AND NON-GROUND MOUNTED INSTALLATIONS

The information contained herein is for general guidance only and is not a replacement for professional judgment. Design considerations for wind-induced vibrations and non-ground mounted installations (e.g., installations on bridges or buildings) are not included in this document. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Refer to the Cooper Lighting Solutions Light Pole White Paper for risk factors and design considerations. Learn more.

**NOTE:** The Limited Warranty for this product specifically excludes fatigue failure or similar damage resulting from vibration, harmonic oscillation or resonance.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Cooper Lighting Solutinos or visit www.cooperlighting.com for available options, accessories and ordering information.

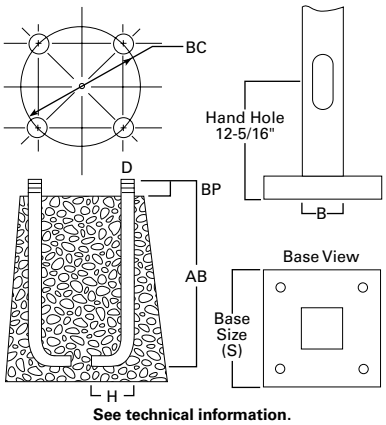
### ORDERING INFORMATION

**SAMPLE NUMBER:** SSA4T08WXM1G

| Product Family | Shaft Size (Inches) [1] | Wall Thickness (Inches) | Mounting Height (Feet) | Base Type | Finish | Mounting Type | Number and Location of Arms | Options (Add as Suffix) |
|---|---|---|---|---|---|---|---|---|
| **SSA**=Square Straight Aluminum | **4**=4"<br>**5**=5"<br>**6**=6"<br>**9**=9" Steel; 6-3/4" Aluminum | **T**=0.125"<br>**M**=0.188"<br>**X**=0.250" | **08**=8'<br>**10**=10'<br>**12**=12'<br>**15**=15'<br>**18**=18'<br>**20**=20'<br>**25**=25'<br>**30**=30'<br>**35**=35' | **W**=Aluminum | **A**=Satin Brushed Aluminum<br>**B**=Clear Anodized<br>**C**=Dark Bronze Anodized<br>**D**=Black Anodized<br>**E**=Medium Bronze Anodized<br>**F**=Dark Bronze<br>**J**=Summit White<br>**K**=Carbon Bronze<br>**L**=Dark Platinum<br>**R**=Hartford Green<br>**S**=Silver<br>**T**=Graphite Metallic<br>**V**=Grey<br>**W**=White<br>**X**=Custom Color<br>**BK**=Black Smooth<br>**BT**=Black Textured | **2**=2-3/8" O.D. Tenon (4" Long)<br>**3**=3-1/2" O.D. Tenon (5" Long)<br>**4**=4" O.D. Tenon (6" Long)<br>**9**=3" O.D. Tenon (4" Long)<br>**6**=2-3/8" O.D. Tenon (6" Long)<br>**7**=4" O.D. Tenon (10" Long)<br>**A**=Type A Drilling<br>**C**=Type C Drilling<br>**E**=Type E Drilling<br>**F**=Type F Drilling<br>**G**=Type G Drilling<br>**J**=Type J Drilling<br>**K**=Type K Drilling<br>**M**=Type M Drilling<br>**N**=Type N Drilling<br>**R**=Type R Drilling | **1**=Single<br>**2**=2 at 180°<br>**3**=Triple [2]<br>**4**=4 at 90°<br>**5**=2 at 90°<br>**X**=None | **A**=1/2" Tapped Hub [3]<br>**B**=3/4" Tapped Hub [3]<br>**C**=Convenience Outlet [4]<br>**E**=GFCI Convenience Outlet [4]<br>**F**=Vibration Pad<br>**G**=Ground Lug<br>**H**=Additional Hand Hole [5]<br>**V**=Vibration Dampener |

**NOTES: 1.** All shaft sizes nominal. **2.** Square poles are 3 at 90°, round poles are 3 at 120°. **3.** Tapped Hub is located 5' below the pole top and on the same side of pole as hand hole, unless specified otherwise. **4.** Outlet is located 4' above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only. **5.** Additional hand hole is located 12" below pole top and 90° from standard hand hole location, unless otherwise specified.

### ANCHORAGE DATA




**See technical information.**

| Pole | Anchor Bolt and Template Package | Template Only | Bolt Circle (inches) | Number of Bolts | Anchor Bolt Size (inches) |
|---|---|---|---|---|---|
| SSA4TxxW | 317QB404 | 229354D | 9 | 4 | 3/4 x 17 x 3 |
| SSA4MxxW | 317QB404 | 229354D | 9 | 4 | 3/4 x 17 x 3 |
| SSA5TxxW | 317QB405 | 229357D | 11 | 4 | 3/4 x 17 x 3 |
| SSA5MxxW | 317QB405 | 229357D | 11 | 4 | 3/4 x 17 x 3 |
| SSA6MxxW | 436QB406 | 229243D | 12-1/2 | 4 | 1 x 36 x 4 |
| SSA6XxxW | 436QB406 | 229243D | 12-1/2 | 4 | 1 x 36 x 4 |
| SSA9XxxW | 436QB468 | 228520D | 14-1/4 | 4 | 1 x 36 x 4 |

**Effective Projected Area** (At Pole Top)

| Mounting Height (Feet) | Catalog Number [1, 2] | Wall Thickness (Inches) | Base Square [3] (Inches) | Bolt Circle Diameter (Inches) | Anchor Bolt Projection [3] (Inches) | Shaft Size [3] (Inches) | Anchor Bolt Diameter x Length x Hook (Inches) | Net Weight (Pounds) | Maximum Effective Projected Area (Square Feet) [4] | | | | Max. Fixture Load - Includes Bracket (Pounds) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MH** | | | **S** | **BC** | **BP** | **B** | **D x AB x H** | | **70 mph** | **80 mph** | **90 mph** | **100 mph** | |
| 8 | SSA4T08W | 0.125 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 23 | 26.6 | 19.9 | 15.2 | 11.9 | 350 |
| 12 | SSA4T12W | 0.125 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 32 | 16.0 | 11.5 | 8.5 | 6.3 | 260 |
| 15 | SSA4T15W | 0.125 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 39 | 9.1 | 6.2 | 4.2 | 2.8 | 200 |
| 15 | SSA4M15W | 0.188 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 55 | 14.8 | 10.6 | 7.7 | 5.6 | 200 |
| 15 | SSA5T15W | 0.125 | 11-9/16 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 52 | 16.0 | 11.3 | 8.1 | 5.8 | 260 |
| 18 | SSA4T18W | 0.125 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 46 | 6.4 | 4.0 | 2.3 | 1.1 | 100 |
| 18 | SSA4M18W | 0.188 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 66 | 11.0 | 7.4 | 5.0 | 3.3 | 150 |
| 18 | SSA5T18W | 0.125 | 11-9/16 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 61 | 11.8 | 7.8 | 5.1 | 3.2 | 150 |
| 18 | SSA5M18W | 0.188 | 11-9/16 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 85 | 19.2 | 13.5 | 9.6 | 6.8 | 260 |
| 20 | SSA4M20W | 0.188 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 72 | 8.8 | 5.6 | 3.5 | 1.9 | 150 |
| 20 | SSA5T20W | 0.125 | 11-9/16 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 66 | 9.5 | 5.9 | 3.5 | 1.7 | 100 |
| 20 | SSA5M20W | 0.188 | 11-9/16 | 11-1/8 | 3-1/4 | 5 | 3/4 x 17 x 3 | 94 | 16.4 | 11.2 | 7.6 | 5.0 | 150 |
| 25 | SSA5M25W | 0.188 | 11-1/2 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 115 | 10.2 | 6.0 | 3.2 | 1.1 | 100 |
| 25 | SSA6M25W | 0.188 | 12-3/4 | 12-1/2 | 4 | 6 | 1 x 36 x 4 | 140 | 16.6 | 10.6 | 6.5 | 3.5 | 260 |
| 30 | SSA6X30W | 0.250 | 12-3/4 | 12-1/2 | 4 | 6 | 1 x 36 x 4 | 215 | 14.8 | 9.0 | 5.0 | 2.1 | 260 |
| 30 | SSA9X30W [5] | 0.250 | 15-1/8 | 14-5/8 | 4-1/8 | 6-3/4 | 1 x 36 x 4 | 237 | 21.1 | 13.5 | 8.2 | 4.5 | 260 |
| 35 | SSA9X35W [5] | 0.250 | 15-1/8 | 14-5/8 | 4-1/8 | 6-3/4 | 1 x 36 x 4 | 274 | 14.1 | 7.6 | 3.1 | -- | 150 |

**Effective Projected Area** (18" Above Pole Top)

| Mounting Height (Feet) | Catalog Number [1, 2] | Wall Thickness (Inches) | Base Square [3] (Inches) | Bolt Circle Diameter (Inches) | Anchor Bolt Projection [3] (Inches) | Shaft Size [3] (Inches) | Anchor Bolt Diameter x Length x Hook (Inches) | Net Weight (Pounds) | Maximum Effective Projected Area (Square Feet) [4] | | | | Max. Fixture Load - Includes Bracket (Pounds) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MH** | | | **S** | **BC** | **BP** | **B** | **D x AB x H** | | **70 mph** | **80 mph** | **90 mph** | **100 mph** | |
| 8 | SSA4T08W | 0.125 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 23 | 22.2 | 16.6 | 12.7 | 10 | 350 |
| 12 | SSA4T12W | 0.125 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 32 | 14.1 | 10.1 | 7.4 | 5.5 | 260 |
| 15 | SSA4T15W | 0.125 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 39 | 8.2 | 5.6 | 3.8 | 2.5 | 200 |
| 15 | SSA4M15W | 0.188 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 55 | 13.4 | 9.6 | 6.9 | 5.1 | 200 |
| 15 | SSA5T15W | 0.125 | 11-9/16 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 52 | 14.4 | 10.2 | 7.3 | 5.2 | 260 |
| 18 | SSA4T18W | 0.125 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 46 | 5.9 | 3.6 | 2.1 | 0.9 | 100 |
| 18 | SSA4M18W | 0.188 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 66 | 10.0 | 6.8 | 4.6 | 3.0 | 150 |
| 18 | SSA5T18W | 0.125 | 11-9/16 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 61 | 10.8 | 7.2 | 4.7 | 2.9 | 150 |
| 18 | SSA5M18W | 0.188 | 11-9/16 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 85 | 17.6 | 12.4 | 8.8 | 6.2 | 260 |
| 20 | SSA4M20W | 0.188 | 10 | 9 | 3-1/8 | 4 | 3/4 x 17 x 3 | 72 | 8.1 | 5.2 | 3.2 | 1.7 | 150 |
| 20 | SSA5T20W | 0.125 | 11-9/16 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 66 | 8.8 | 5.5 | 3.2 | 1.5 | 100 |
| 20 | SSA5M20W | 0.188 | 11-9/16 | 11-1/8 | 3-1/4 | 5 | 3/4 x 17 x 3 | 94 | 15.2 | 10.3 | 7.0 | 4.7 | 150 |
| 25 | SSA5M25W | 0.188 | 11-1/2 | 11 | 3-1/4 | 5 | 3/4 x 17 x 3 | 115 | 9.5 | 5.6 | 3.0 | 1.0 | 100 |
| 25 | SSA6M25W | 0.188 | 12-3/4 | 12-1/2 | 4 | 6 | 1 x 36 x 4 | 140 | 15.6 | 9.9 | 6.1 | 3.3 | 260 |
| 30 | SSA6X30W | 0.250 | 12-3/4 | 12-1/2 | 4 | 6 | 1 x 36 x 4 | 215 | 14.0 | 8.5 | 4.7 | 2.0 | 260 |
| 30 | SSA9X30W [5] | 0.250 | 15-1/8 | 14-5/8 | 4-1/8 | 6-3/4 | 1 x 36 x 4 | 237 | 20.0 | 12.8 | 7.8 | 4.3 | 260 |
| 35 | SSA9X35W [5] | 0.250 | 15-1/8 | 14-5/8 | 4-1/8 | 6-3/4 | 1 x 36 x 4 | 274 | 13.5 | 7.2 | 2.9 | -- | 150 |

NOTES:

**1.** Catalog number includes pole with hardware kit. Anchor bolts not included. Before installing, make sure proper anchor bolts and templates are obtained.

**2.** Tenon size or machining for rectangular arms must be specified. Hand hole position relative to drill location.

**3.** Shaft size, base square, anchor bolts and projections may vary slightly. All dimensions nominal.

**4.** EPAs based on shaft properties with wind normal to flat. EPAs calculated using base wind velocity as indicated plus 30% gust factor.

**5.** Factory installed vibration damper.

## VIBRATION

Vibrations may cause damage to structures, including poles. Vibrations are unpredictable, and there are many factors and variables that can cause damaging vibrations. Many wind conditions exist that can create damaging vibrations to poles and luminaires, such as constant winds between 10-30 mph. Although all pole types can experience vibration, straight square poles seem to be most prone. Vibration dampers and/or a round tapered design may be used to mitigate damage from vibrations, but there is no guarantee damaging vibrations will be prevented. Vibration dampers are not included with this pole but can be ordered separately. Consult with a professional, and local and federal standards, to ensure this pole is appropriate for the intended purpose and installation location. Refer to Cooper Lighting Solutions' Light Pole White Paper for risk factors and design considerations.

## MAINTENANCE

Perform inspections periodically. A prudent inspection schedule would be: one week after installation, one month after installation, yearly after installation, and following any major wind event. During the inspection, check the poles for cracks. If cracks are detected, remedial action is required. Recheck anchor bolt torques and re-tighten according to the recommended torque values. Check for missing covers and pole caps and replace as necessary. Check the pole for corrosion and deterioration of the finish. Should there be corrosion or deterioration, take remedial action to correct.

**WARNING:** Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to pole white paper WP513001EN for additional support information. Before installing, make sure proper anchor bolts and templates are obtained. The use of unauthorized accessories such as banners, signs, cameras or pennants for which the pole was not designed voids the pole warranty and may result in pole failure causing serious injury or property damage. Information regarding total loading capacity can be supplied upon request. The pole warranty is void unless poles are used and installed as a complete pole and luminaire combination. This warranty specifically excludes failure as the result of a third party act or omission, misuse, unanticipated uses, fatigue failure or similar phenomena resulting from induced vibration, harmonic oscillation or resonance associated with movement of air currents around the product.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Cooper Lighting Solutions or visit www.cooperlighting.com for available options, accessories and ordering information.

**Cooper Lighting Solutions**
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

**Canada Sales**
5925 McLaughlin Road
Mississauga, Ontario L5R 1B8
P: 905-501-3000
F: 905-501-3172

## DESCRIPTION

The Breckenridge LED integrates energy saving LED technology with a proven post-top design.

| | | |
|---|---|---|
| Catalog # | | Type |
| Project | | |
| Comments | | Date |
| Prepared by | | |

## SPECIFICATION FEATURES

**Construction**
Die-cast aluminum housing with spun and stamped aluminum top. Overcenter latch for relamping and power module access. Top is completely removable without the use of tools. Available in multiple colors (black, bronze, grey or white). ANSI wattage/source label.

**Optical**
Injection molded acrylic refractor available in symmetric or asymmetric distributions. Offered standard in 4000K (+/- 275K) CCT and minimum 70 CRI.

**Electrical**
120-277V 50/60Hz operation standard. 480V and 347V available as options. 10kV /10kA common and differential mode surge protection standard. Thermal management transfers heat rapidly away from the LED source for optimal efficiency and light output. Ambient operating temperature from -40°C to 40°C. Standard three-position tunnel type compression terminal block. 95% lumen maintenance expected at 60,000 hours. Light square is IP66 enclosure rated.

**Controls**
0-10V dimming driver standard. Photocontrol and After Hours Dim options available. Refer to control options section.

**Mounting**
Post top mount fits 3" O.D. tenons. Secured by square head 3/8" stainless steel mounting bolts.

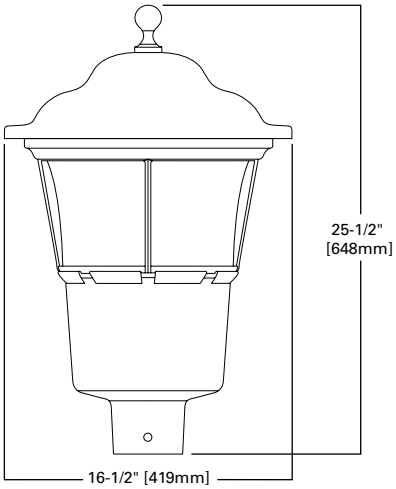
**Warranty**
Five-year warranty.

# MPB
# BRECKENRIDGE LED

**LED**

**DECORATIVE POST TOP LUMINAIRE**

## DIMENSIONS




**EPA**
**Effective Projected Area:**
1.7 Square Feet

**SHIPPING DATA**
**Approximate Net Weight:**
34 lbs. (14 kgs.)

## CONTROL OPTIONS

**Photocontrol** (4 or 4N7)
Optional photocontrol receptacles provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-PIN standards can be utilized with the 4N7 receptacle.

**After Hours Dim** (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

## POWER AND LUMENS

| Drive Current | | 600mA | 800mA | 1A |
|---|---|---|---|---|
| Nominal Power @ 120-277V (Watts) | | 34 | 44 | 58 |
| Input Current @ 120V (Amps) | | 0.30 | 0.39 | 0.51 |
| Input Current @ 208V (Amps) | | 0.17 | 0.22 | 0.29 |
| Input Current @ 240V (Amps) | | 0.15 | 0.19 | 0.26 |
| Input Current @ 277V (Amps) | | 0.14 | 0.17 | 0.23 |
| Input Current @ 347V (Amps) | | 0.11 | 0.15 | 0.17 |
| Input Current @ 480V (Amps) | | 0.08 | 0.11 | 0.14 |
| Distribution | | | | |
| SYM | 4000K, 5000K, 6000K Lumens | 3,357 | 4,117 | 5,096 |
| | BUG Rating | B1-U3-G2 | B1-U4-G2 | B2-U4-G2 |
| | 3000K Lumens | 3,174 | 3,893 | 4,818 |
| | BUG Rating | B1-U3-G2 | B1-U4-G2 | B2-U4-G2 |
| ASYM | 4000K, 5000K, 6000K Lumens | 3,004 | 3,685 | 4,560 |
| | BUG Rating | B1-U3-G3 | B1-U3-G3 | B1-U4-G3 |
| | 3000K Lumens | 2,841 | 3,483 | 4,311 |
| | BUG Rating | B1-U3-G3 | B1-U3-G3 | B1-U4-G3 |

## LUMEN MAINTENANCE

| Ambient Temperature | TM-21 Lumen Maintenance (60,000 Hours) | Projected L70 (Hours) |
|---|---|---|
| Up to 40°C | >95% | 416,000 |

## ORDERING INFORMATION

**Sample Number:** MPB-AF-D-U-SYM-4-AP

| Product Family [1] | Light Engine | Driver | Voltage | Distribution | Options (Add as Needed) | Color | Accessories (Order Separately) |
|---|---|---|---|---|---|---|---|
| **MPB**=Breckenridge | **AF**=1A Drive Current | **D**=Dimming | **U**=Universal (120-277V)<br>**8**=480V<br>**9**=347V | **SYM**=Symmetric<br>**ASYM**=Asymmetric | **7027**=70 CRI / 2700K [2]<br>**7030**=70 CRI / 3000K [2]<br>**7050**=70 CRI / 5000K [2]<br>**7060**=70 CRI / 6000K [2]<br>**8030**=80 CRI / 3000K [2]<br>**600**=Drive Current Factory Set to 600mA (nominal)<br>**800**=Drive Current Factory Set to 800mA (nominal)<br>**4**=NEMA Photocontrol Receptacle<br>**4N7**=NEMA 7-PIN Photocontrol Receptacle (Internal Mount) [3]<br>**AHD145**=After Hours Dim, 5 Hours [4]<br>**AHD245**=After Hours Dim, 6 Hours [4]<br>**AHD255**=After Hours Dim, 7 Hours [4]<br>**AHD355**=After Hours Dim, 8 Hours [4] | **AP**=Grey<br>**BK**=Black<br>**BZ**=Bronze<br>**WH**=White | **OA1223**=10kV/10kA UL 1449 Surge Module Replacement<br>**OA/RA1013**=Photocontrol Shorting Cap<br>**OA/RA1014**=NEMA Photocontrol - 120V<br>**OA/RA1016**=NEMA Photocontrol - Multi-Tap<br>**OA/RA1027**=NEMA Photocontrol - 480V<br>**OA/RA1201**=NEMA Photocontrol - 347V |

**NOTES:**
**1.** Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
**2.** Use dedicated IES files for various CCTs and CRIs when performing layouts. These files are published on the Breckenridge LED luminaire product page on the website. Extended lead times apply.
**3.** Total height of photocontrol/node cannot exceed 4.3".
**4.** Requires the use of Photocontrol (4 or 4N7) receptacle. See After Hours Dim supplemental guide for additional information.

# Lumark

## DESCRIPTION

The RL LED luminaire provides uncompromising optical performance and outstanding versatility for a wide variety of area and roadway applications. Patented modular LightBAR™ technology delivers uniform and energy-conscious illumination to walkways, parking lots, and roadways. UL/cUL listed for wet locations.

| | | | |
|---|---|---|---|
| **Catalog #** | | **Type** | |
| **Project** | | | |
| **Comments** | | **Date** | |
| **Prepared by** | | | |

## SPECIFICATION FEATURES

### Construction
Heavy-duty cast aluminum housing and removable door. 3G vibration rated to ensure strength of construction and longevity in application. Die-cast aluminum door frame features integral hinges for tool-less maintenance access.

### Optics
Choice of twelve patented, high-efficiency AccuLED Optics™ distributions. Optics are precisely designed to shape the light output, maximizing efficiency and application spacing. AccuLED Optics technology creates consistent distributions with the scalability to meet customized application requirements. Offered Standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 3000K CCT, 5000K CCT and 5700K CCT. For the ultimate level of spill light control, an optional house-side shield accessory can be field or factory installed. The house-side shield is designed to seamlessly integrate with the SL2, SL3 or SL4 optics.

### Electrical
LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Greater than 0.9 power factor, less than 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightBARs feature an IP66 enclosure rating and maintain greater than 95% lumen maintenance at 60,000 hours per IESNA TM-21. Occupancy sensor and dimming options available.

### Mounting
Two-bolt/one-bracket slipfitter with cast-in pipe stop and leveling steps. Fixed-in-place birdguard seals around 1-1/4" or 2" mounting arms.

### Finish
Components finished in a standard grey, five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Consult your lighting representative at Cooper Lighting Solutions for a complete selection of standard colors including black and bronze. RAL and custom color matches available. Options to meet Buy American and other domestic preference requirements.

### Warranty
Five-year warranty.

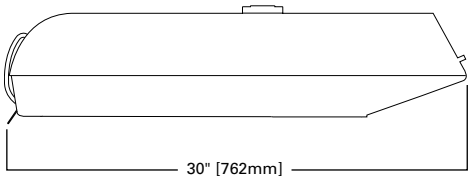
# RL
## LED ROADWAY LARGE COBRAHEAD

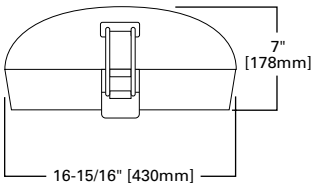
**1 - 6 LightBARs**

**LED**

**ROADWAY LUMINAIRE**

## DIMENSIONS




## CERTIFICATION DATA
UL/cUL Listed
LM79 / LM80 Compliant
ISO 9001
IP66 LightBARs
3G Vibration Rated

## ENERGY DATA
**Electronic LED Driver**
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-40°C Minimum Temperature
40°C Ambient Temperature Rating
50°C [Optional] Ambient Temperature Rating

## EPA
**Effective Projected Area:** (Sq. Ft.)
0.87

## SHIPPING DATA
**Approximate Net Weight:**
35 lbs. (15.91 kgs.)

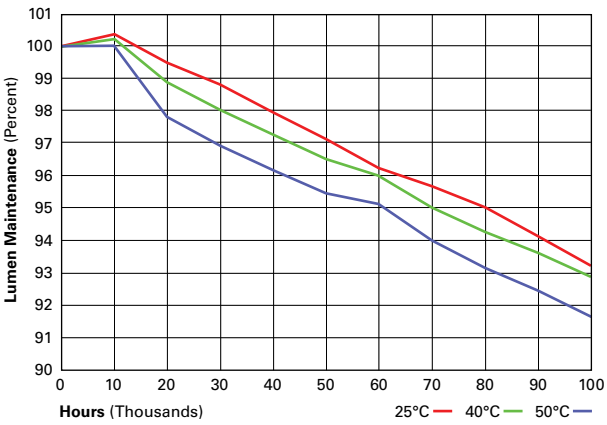
## POWER AND LUMENS BY BAR COUNT (21 LED LIGHTBARS)

| Number of LightBARs | | E01 | E02 | E03 | E04 | E05 | E06 |
|---|---|---|---|---|---|---|---|
| **Drive Current** | | 350mA Drive Current | | | | | |
| **Power** (Watts) | | 25W | 52W | 75W | 97W | 127W | 149W |
| **Current @ 120V** (A) | | 0.22 | 0.44 | 0.63 | 0.82 | 1.07 | 1.26 |
| **Current @ 277V** (A) | | 0.10 | 0.20 | 0.28 | 0.36 | 0.48 | 0.56 |
| **Power** (Watts) | | 31W | 58W | 82W | 99W | 132W | 159W |
| **Current @ 347V** (A) | | 0.11 | 0.19 | 0.28 | 0.29 | 0.39 | 0.48 |
| **Current @480V** (A) | | 0.09 | 0.15 | 0.20 | 0.21 | 0.30 | 0.36 |
| **T2** | Lumens | 2,999 | 5,997 | 8,996 | 11,994 | 14,993 | 17,991 |
| | BUG Rating | B1-U0-G1 | B2-U0-G2 | B3-U0-G3 | B3-U0-G3 | B3-U0-G3 | B3-U0-G3 |
| **T3** | Lumens | 2,986 | 5,972 | 8,957 | 11,943 | 14,929 | 17,915 |
| | BUG Rating | B1-U0-G1 | B2-U0-G2 | B3-U0-G3 | B3-U0-G3 | B3-U0-G3 | B3-U0-G3 |
| **T4** | Lumens | 2,939 | 5,877 | 8,816 | 11,754 | 14,693 | 17,632 |
| | BUG Rating | B1-U0-G1 | B1-U0-G2 | B1-U0-G2 | B2-U0-G3 | B2-U0-G3 | B2-U0-G3 |
| **5MQ** | Lumens | 3,108 | 6,215 | 9,323 | 12,431 | 15,538 | 18,646 |
| | BUG Rating | B2-U0-G1 | B3-U0-G1 | B3-U0-G2 | B4-U0-G2 | B4-U0-G2 | B4-U0-G2 |
| **5WQ** | Lumens | 3,066 | 6,131 | 9,197 | 12,262 | 15,328 | 18,393 |
| | BUG Rating | B2-U0-G1 | B3-U0-G1 | B3-U0-G2 | B4-U0-G2 | B4-U0-G2 | B4-U0-G2 |
| **5XQ** | Lumens | 3,092 | 6,184 | 9,276 | 12,368 | 15,461 | 18,553 |
| | BUG Rating | B2-U0-G1 | B3-U0-G2 | B3-U0-G3 | B4-U0-G3 | B4-U0-G3 | B4-U0-G4 |
| **SL2** | Lumens | 2,928 | 5,856 | 8,784 | 11,712 | 14,640 | 17,568 |
| | BUG Rating | B1-U0-G1 | B1-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G2 | B3-U0-G3 |
| **SL3** | Lumens | 2,969 | 5,937 | 8,906 | 11,875 | 14,843 | 17,812 |
| | BUG Rating | B1-U0-G1 | B1-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G3 | B3-U0-G3 |
| **SL4** | Lumens | 2,882 | 5,764 | 8,646 | 11,528 | 14,410 | 17,292 |
| | BUG Rating | B1-U0-G1 | B1-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G3 | B3-U0-G3 |
| **RW** | Lumens | 3,004 | 6,007 | 9,011 | 12,015 | 15,018 | 18,022 |
| | BUG Rating | B2-U0-G2 | B3-U0-G3 | B3-U0-G3 | B3-U0-G3 | B4-U0-G4 | B4-U0-G4 |
| **SLL/SLR** | Lumens | 2,693 | 5,387 | 8,080 | 10,774 | 13,467 | 16,161 |
| | BUG Rating | B1-U0-G2 | B1-U0-G2 | B1-U0-G3 | B2-U0-G3 | B2-U0-G4 | B2-U0-G4 |

## LUMEN MAINTENANCE

| Ambient Temperature | 25,000 Hours* | 50,000 Hours* | 60,000 Hours* | 100,000 Hours | Theoretical L70 (Hours) |
|---|---|---|---|---|---|
| **25°C** | > 99% | > 97% | > 96% | > 93% | > 450,000 |
| **40°C** | > 98% | > 97% | > 96% | > 92% | > 425,000 |
| **50°C** | > 97% | > 96% | > 95% | > 91% | > 400,000 |

* Per IESNA TM-21 data.




## LUMEN MULTIPLIER

| Ambient Temperature | Lumen Multiplier |
|---|---|
| **10°C** | 1.02 |
| **15°C** | 1.01 |
| **25°C** | 1.00 |
| **40°C** | 0.99 |
| **50°C** | 0.96 |

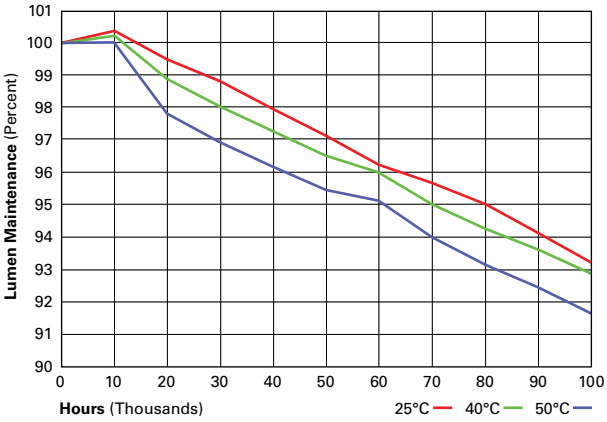
## POWER AND LUMENS BY BAR COUNT (7 LED LIGHTBARS)

| **Number of LightBARs** | | **F01** | **F02** | **F03** | **F04** | **F05** | **F06** |
|---|---|---|---|---|---|---|---|
| **Drive Current** | | 1A Drive Current | | | | | |
| **Power** (Watts) | | 26W | 55W | 78W | 102W | 133W | 157W |
| **Current @ 120V** (A) | | 0.22 | 0.46 | 0.66 | 0.86 | 1.12 | 1.31 |
| **Current @ 277V** (A) | | 0.10 | 0.21 | 0.29 | 0.37 | 0.50 | 0.58 |
| **Power** (Watts) | | 32W | 60W | 85W | 105W | 137W | 164W |
| **Current @ 347V** (A) | | 0.11 | 0.19 | 0.28 | 0.30 | 0.41 | 0.49 |
| **Current @ 480V** (A) | | 0.09 | 0.15 | 0.21 | 0.22 | 0.31 | 0.37 |
| **T2** | Lumens | 2,475 | 4,951 | 7,426 | 9,902 | 12,377 | 14,852 |
| | BUG Rating | B1-U0-G1 | B2-U0-G2 | B2-U0-G2 | B3-U0-G3 | B3-U0-G3 | B3-U0-G3 |
| **T3** | Lumens | 2,465 | 4,930 | 7,395 | 9,859 | 12,324 | 14,789 |
| | BUG Rating | B1-U0-G1 | B2-U0-G2 | B2-U0-G2 | B3-U0-G3 | B3-U0-G3 | B3-U0-G3 |
| **T4** | Lumens | 2,426 | 4,852 | 7,278 | 9,704 | 12,129 | 14,555 |
| | BUG Rating | B1-U0-G1 | B1-U0-G2 | B1-U0-G2 | B2-U0-G2 | B2-U0-G3 | B2-U0-G3 |
| **5MQ** | Lumens | 2,565 | 5,131 | 7,696 | 10,262 | 12,827 | 15,393 |
| | BUG Rating | B2-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G2 | B4-U0-G2 | B4-U0-G2 |
| **5WQ** | Lumens | 2,531 | 5,061 | 7,592 | 10,123 | 12,654 | 15,184 |
| | BUG Rating | B2-U0-G1 | B3-U0-G1 | B3-U0-G2 | B4-U0-G2 | B4-U0-G2 | B4-U0-G2 |
| **5XQ** | Lumens | 2,553 | 5,105 | 7,658 | 10,210 | 12,763 | 15,316 |
| | BUG Rating | B2-U0-G1 | B3-U0-G2 | B3-U0-G3 | B4-U0-G3 | B4-U0-G3 | B4-U0-G3 |
| **SL2** | Lumens | 2,417 | 4,834 | 7,251 | 9,668 | 12,086 | 14,503 |
| | BUG Rating | B1-U0-G1 | B1-U0-G1 | B1-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G2 |
| **SL3** | Lumens | 2,451 | 4,901 | 7,352 | 9,803 | 12,254 | 14,704 |
| | BUG Rating | B1-U0-G1 | B1-U0-G1 | B1-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G3 |
| **SL4** | Lumens | 2,379 | 4,758 | 7,138 | 9,517 | 11,896 | 14,275 |
| | BUG Rating | B1-U0-G1 | B1-U0-G2 | B1-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G3 |
| **RW** | Lumens | 2,480 | 4,959 | 7,439 | 9,918 | 12,398 | 14,878 |
| | BUG Rating | B1-U0-G1 | B2-U0-G2 | B3-U0-G3 | B3-U0-G3 | B3-U0-G3 | B4-U0-G4 |
| **SLL/SLR** | Lumens | 2,224 | 4,447 | 6,671 | 8,894 | 11,118 | 13,341 |
| | BUG Rating | B1-U0-G1 | B1-U0-G2 | B1-U0-G3 | B1-U0-G3 | B2-U0-G3 | B2-U0-G4 |

## LUMEN MAINTENANCE

| **Ambient Temperature** | **25,000 Hours*** | **50,000 Hours*** | **60,000 Hours*** | **100,000 Hours** | **Theoretical L70 (Hours)** |
|---|---|---|---|---|---|
| **25°C** | > 99% | > 97% | > 96% | > 93% | > 450,000 |
| **40°C** | > 98% | > 97% | > 96% | > 92% | > 425,000 |
| **50°C** | > 97% | > 96% | > 95% | > 91% | > 400,000 |

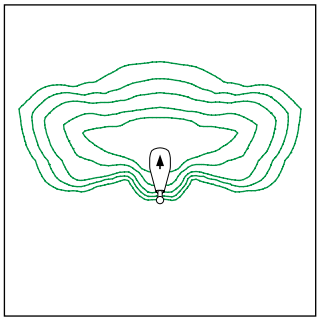
* Per IESNA TM-21 data.



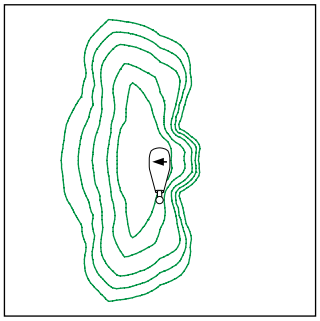

## LUMEN MULTIPLIER

| **Ambient Temperature** | **Lumen Multiplier** |
|---|---|
| **10°C** | 1.02 |
| **15°C** | 1.01 |
| **25°C** | 1.00 |
| **40°C** | 0.99 |
| **50°C** | 0.96 |

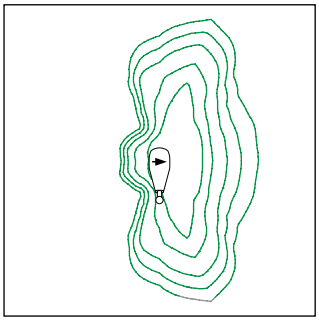
## OPTIC ORIENTATION



**Standard**



**Optics Rotated Left @ 90°** [L90]



**Optics Rotated Right @ 90°** [R90]

## CONTROL OPTIONS

**0-10V** (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

**Photocontrol** (PER and PER7)
Photocontrol receptacles (PER and PER7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

**WaveLinx Wireless Outdoor Lighting Control Module** (WOLC-7P-10A)
The 7-pin wireless outdoor lighting control module enables WaveLinx to control outdoor area, site and flood lighting. WaveLinx controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

## ORDERING INFORMATION

**Sample Number:** LDRL-T3-E06-E-AP

| Lamp Type | Product Family [1] | Distribution | Number of LightBARs [2, 3] | Voltage |
|---|---|---|---|---|
| **LD**=Solid State Light Emitting Diodes<br>**BAA-LD** =Solid State Light Emitting Diodes, Buy American Act Compliant [10]<br>**TAA-LD**=Solid State Light Emitting Diodes, Trade Agreements Act Compliant [10] | **RL**=Roadway Large Cobrahead | **T2**=Type II<br>**T3**=Type III<br>**T4**=Type IV<br>**SL2**=Type II w/Spill Control<br>**SL3**=Type III w/Spill Control<br>**SL4**=Type IV w/Spill Control<br>**RW**=Rectangular Wide<br>**5MQ**=Type V Square Medium<br>**5WQ**=Type V Square Wide<br>**5XQ**=Type V Square Extra Wide<br>**SLL**=90° Spill Light Eliminator Left<br>**SLR**=90° Spill Light Eliminator Right | **E01**=(1) 21 LED LightBAR<br>**E02**=(2) 21 LED LightBARs<br>**E03**=(3) 21 LED LightBARs<br>**E04**=(4) 21 LED LightBARs<br>**E05**=(5) 21 LightBARs<br>**E06**=(6) 21 LightBARs<br>**F01**=(1) 7 LED LightBAR<br>**F02**=(2) 7 LED LightBARs<br>**F03**=(3) 7 LED LightBARs<br>**F04**=(4) 7 LED LightBARs<br>**F05**=(5) 7 LED LightBARs<br>**F06**=(6) 7 LED LightBARs | **E**=Universal (120-277V)<br>**347**=347V<br>**480**=480V [4] |

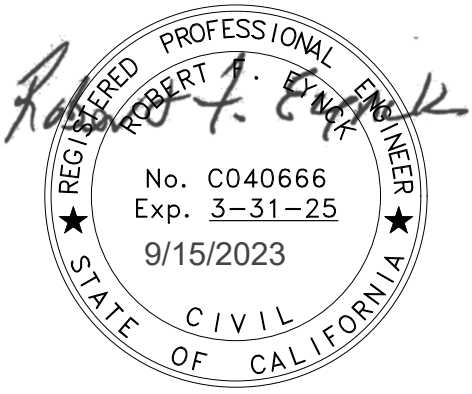
| **Options** (Add as Suffix) | **Accessories** (Order Separately)[11] |
|---|---|
| **7030**=70 CRI / 3000K CCT [5]<br>**7050**=70 CRI / 5000K CCT [5]<br>**7060**=70 CRI / 5700K CCT [5]<br>**8030**=80 CRI / 3000K CCT [5]<br>**HA**=50°C High Ambient Temperature Rating<br>**PER**=NEMA Twistlock Photocontrol Receptacle<br>**PER7**=NEMA 7-PIN Twistlock Photocontrol Receptacle<br>**DIM**=0-10V Dimming Driver<br>**2L**=Two Circuits [6]<br>**L90**=Optics Rotated Left 90°<br>**R90**=Optics Rotated Right 90°<br>**LCF**=LightBAR Cover Plate Matches Housing Finish<br>**K**=Level Indicator<br>**HSS**=Factory Installed House Side Shield [7]<br>**BK**=Black<br>**BZ**=Bronze | **OA/RA1013**=Photocontrol Shorting Cap<br>**OA/RA1014**=NEMA Photocontrol - 120V<br>**OA/RA1016**=NEMA Photocontrol - Multi-Tap<br>**OA/RA1027**=NEMA Photocontrol - 480V<br>**OA/RA1201**=NEMA Photocontrol - 347V<br>**MA1252**=10kV Circuit Module Replacement<br>**LB/HSS-21**=Field Installed House Side Shield for "E" LightBARs [7, 8]<br>**LB/HSS-07**=Field Installed House Side Shield for "F" LightBARs [7, 8]<br>**WOLC-7P-10A**=WaveLinx Outdoor Control Module (7-pin) [9] |

**NOTES:**
**1.** Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
**2.** Standard 4000K CCT and 70 CRI nominal.
**3.** 21 LED LightBAR powered at 350mA, 7 LED LightBAR powered at 1A.
**4.** Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
**5.** Extended lead times apply. See website for IES files.
**6.** Low-level output varies by bar count specified. Consult factory. Not available with 347V or 480V. Requires quantity two or more light bars.
**7.** Only for use with SL2, SL3 and SL4 distributions. Not available with L90 or R90 options.
**8.** One required for each light bar. Not available with L90 or R90 options.
**9.** Requires 7-pin NEMA twistlock photocontrol receptacle. The WOLC-7 cannot be used in conjunction with additional sensors or controls.
**10.** Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
**11.** Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.

# DRAINAGE STUDY
## FOR
## 905 NORTH AVENUE

**Sacramento, CA 95838**

**September 2023**

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**CWE Project No. 21-188**

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# APPENDIX

APPENDIX A ..... VICINITY MAP AND SITE PLAN EXHIBITS

APPENDIX B .....PROJECT SITE SHED MAP EXHIBITS

APPENDIX C .....MISCELLANEOUS DOCUMENTATION

APPENDIX D ..... SUPPORTING CALCULATIONS

## A. PROJECT LOCATION

The proposed residential grading, drainage, and utilities project is located east of the intersection of North Avenue and Rio Linda Boulevard, just south of Interstate 80 in the City of Sacramento, State of California, 95838. The approximate coordinates of the project site are latitude 38.640581° north and longitude -121.445747° west. The project property is about 1.41 acres and has APN 237-0200-092. Approximately 1.32 acres will be disturbed as part of this project, which includes off-site improvements encompassing the widening of North Avenue. The project's location is shown on the Vicinity Map in Appendix A. All elevations referenced are on the North American Vertical Datum of 1988 (NAVD88).

## B. EXISTING SITE CONDITIONS

In its existing condition, the site is partially developed with a house on-site with driveway access to North Avenue. Additionally, there are two wooden sheds and one metal shed north of the existing house. There is an electrical transmission tower located at the northeast corner of the property which includes a 100-foot-wide easement that encumbers a portion of the eastern part of the site. The southern property line extends 20 feet beyond the existing right-of-way, and there is rolled curb, gutter, and sidewalk along the project frontage, between the City right-of-way and the southern property line. The remainder of the site is undeveloped and contains a fair number of trees and short, dead grass. The site slopes consistently from southwest to northeast, and it is expected that the most incident rainfall is infiltrated, with some surface flow terminating into the City-owned concrete channel north of the property. The slope of the ground is moderate (between 2-5%).

There is no existing on-site drainage infrastructure, and most rainfall is either infiltrated or discharged by surface runoff. The frontage curb, gutter, and sidewalk produce the only runoff to the south, which is conveyed by existing City-owned underground pipes. Existing drainage patterns are further discussed in section E of this report. The property is located within Zone "X", indicating the site is outside the 0.2 annual chance flood plain as determined by the national flood insurance program according to Map number: 06067C0064 dated: June 16, 2015. The Pre-construction Shed Map, SM1, in Appendix B shows existing conditions on the project site.

Table 1 below summarizes the surrounding properties.

**Table 1: Site Description (Surrounding Areas)**

| | |
|---|---|
| North | City-owned concrete channel, beyond which is Interstate 80 |
| South | North Avenue, beyond which are residential properties |
| East | North Avenue Apartments |
| West | Residential property |

Geotechnical Findings

A geotechnical investigation was performed by Allerion Consulting Group on March 23, 2022 and discovered the following information.

The site was generally consistent in subsurface earth material and the uppermost soils to a depth of approximately 1.5 feet consisted of medium stiff, moist, dark brown, sandy silt, with occasional gravel. Underlying the silt was discovered stiff to very stiff, moist, light brown and dark brown, sandy silty clay to varying depths between 2.5 to 3 feet. The material encountered below the upper soil to a depth of approximately 13 feet consisted of very stiff and hard, moist, light brown with orange mottles and red-brown, sandy silt. Below this consisted of dense, moist, dark brown to brown, SAND to a depth of approximately 19 feet.

Groundwater was not encountered within any of the exploratory borings.

## C. PROPOSED PROJECT DESCRIPTION

This project proposes to improve the site by subdividing the property into 8 lots and constructing residential structures on each lot (except the lot with the existing house). Additionally, a private access drive, easement, and adjacent pedestrian sidewalk will be constructed to provide access and fire protection to the landlocked lots. North Avenue will be widened to the standard 35.5' half width right-of-way of a minor collector per City of Sacramento standards. This will include additional paving and rolled curb, gutter, and detached sidewalk within the expanded public right-of-way. The existing house lot and one other lot will have direct access to North Avenue, while the remaining 6 will connect to the private access drive, which will have driveway access to North Avenue at the southeast corner of the property. In addition to the aforementioned improvements, the project proposes landscaping and underground water, sanitary sewer, and drainage infrastructure.

The project will also add an on-site private detention basin that will serve to attenuate flows and provide flood control for the site. The site aims to maintain existing drainage patterns by sheet flowing the public sidewalk to North Avenue and convey the remainder of the site to the detention basin at the north of the property, eventually discharging into the 48" storm drain pipe within North Ave. See section F for an in-depth discussion of the proposed storm drainage improvements. Other underground infrastructure will include private water and sanitary sewer lines, as well as minimal storm drain piping to convey flows to the basin.

The total area to be disturbed will be approximately 1.32 acres. The Site plan in Appendix A shows the proposed site and the Post-Construction Shed Map, SM2, in Appendix B shows proposed site grading.

## D. PURPOSE OF REPORT

The purpose of this report is to present the design of the storm drainage system and to demonstrate that the design complies with the City of Sacramento Design and Procedures Manual, the City of Sacramento Onsite Design Manual, and the Sacramento Region Stormwater Quality Design Manual.

The report is divided into four (4) main parts:

1. Description of existing drainage conditions and evaluation of pre-construction runoff.
2. Description of proposed drainage improvements, evaluation of post-construction runoff, analysis of proposed storm drainage system, and discussion of water quality treatment applicability.
3. Conclusions based on drainage analysis.
4. Recommendations.

## E. EXISTING STORM DRAINAGE CONDITIONS

CWE used topographic data from a survey performed by Michael Dequine and Associates, Inc. in April, 2018. Using this data, CWE determined drainage shed limits of the existing site. The site is mostly pervious with some concrete paving and buildings on-site. The frontage includes rolled curb, gutter, and sidewalk with asphalt paving beyond the lip of gutter. The existing drainage sheds can be seen on the Pre-Construction Shed Map, SM1, in Appendix B. There are two primary drainage sheds for the site which terminate in opposite directions. The largest shed includes the entire area from the back of existing sidewalk to the north property line. This area slopes at an average of 2.5% from south to north where it sheet flows to an existing City-owned concrete drainage channel off-site. It is expected that most rainfall is infiltrated for smaller, more common storms as most of the site is undeveloped. The smaller shed includes the project frontage, which conveys flow via curb and gutter to the west where it is accepted by a public drainage inlet beyond the project property. The existing site is approximately 89.3% pervious and is mostly covered by short, dead grass and several trees. There is no existing drainage infrastructure on-site, as the only nearby facilities are a 48” public storm drain pipe in North Avenue and a City-owned concrete channel north of the property. Existing hydraulic calculations were not done for existing conditions, as the City of Sacramento DOU Onsite Design Manual static method only requires post-development conditions to determine required detention and storm drain pipe sizing. These methods and results are further discussed later in this report. The existing drainage shed summary can be seen in Table 1 below.

**Table 1: Existing Shed Summary**

| Drainage Shed | Area (SF) | Percent Impervious |
|---|---|---|
| A-X1 | 57,078 | 3.93% |
| A-X2 (Frontage) | 4,327 | 100% |

*See Pre-Construction Shed Map, SM1, in Appendix A for more information

## F. POST-CONSTRUCTION STORM DRAINAGE CONDITIONS

The post-construction storm drainage system was designed to satisfy requirements of the City of Sacramento DOU Design and Procedures Manual and Onsite Design Manual. According to these standards, developments must aim to mitigate post-construction flows using onsite storage methods as well as design storm drain conveyance systems to satisfy certain conditions for the 10-yr and 100-yr storms. For this project, the detention basin was designed using the Static Analysis method as outlined in section 3.1.1 of the Onsite Design Manual and the pipes were analyzed for the 10-yr storm using the rational method (Static Analysis) as outlined in section 3.1.2. The Post-Construction Shed Map, SM2, can be seen in Appendix B.

**Onsite Project Storage**

According to the DOU Onsite Design Manual, any project that adds more than 500 square feet of impervious surface must be fully mitigated as to not inundate the City's separated stormwater system. For this project, mitigation will be achieved by a singular detention basin for the entire site designed per the Static Method as outlined in section 3.1.1 of the Onsite Design Manual. According to Figure 1 of the manual, this project is in the City of Sacramento drainage basin 157, meaning it must store 7,000 cubic feet of volume for each additional acre of impervious surface resulting from the development. This number is taken from Figure 10 of the Onsite Manual. Comparing the Pre-Construction Shed Map to the Post-Construction Shed Map, there is an increase of 20,442 square feet of impervious surface resulting from this project. That attributes to 0.469 acres of additional impervious surface and therefore 3,285 cubic feet of required detention volume. A summary of the pre and post project land cover can be seen on the shed maps in Appendix B. A summary of the required detention volume calculation can be seen in Table 2 below.

**Table 2: Required Detention Volume**

| Project Condition | Impervious Surface (SF) | Impervious Surface Increase (SF) | Impervious Surface Increase (AC) | Detention Volume Requirement | Detention Design Volume (CF) |
|---|---|---|---|---|---|
| Existing | 6,571 | 20,442 | 0.469 | 7,000 CF/AC | **3,285** |
| Developed | 27,013 | | | | |

For this project, the universal detention basin has been designed to exceed the required capacity based on the Onsite Design Manual and calculated in Table 2. In addition to determining the required volume of the basin, the outlet control structure has been designed based on Equation 3-1 in the Manual. This equation and methodology can be seen in Appendix C and calculations can be seen in Appendix D. Using equation 3-1, an orifice diameter of 2 inches will be used for the outlet control structure.

It should be noted that DMA-5 as seen on the Post-Construction Shed Map is the only shed that does not flow to the on-site detention basin. This shed includes the expanded project frontage and sheet flows to North Avenue. As can be seen on the Pre-Construction Shed Map, shed A-X2 is a similar shed that includes the existing project frontage. It would not be feasible or practical to route DMA-5 to a detention basin as it mimics the existing sheet flow conditions of the project frontage. Additionally, the detention basin was sized to accommodate increased impervious area for the entire site, including DMA-5, and therefore provides attenuation in-lieu of this area. Therefore, this small area will not be designed to flow to the on-site detention basin.

**Onsite Hydraulic Analysis and Overland Release**

Per the DOU Design and Procedures Manual, projects that are less than 10 acres may use the Rational Method to determine flows for designing underground storm drain pipes. Per the Onsite Design Manual, only a 10-yr event storm analysis is required. The 10-yr flows for this project were calculated per Equations 3-2 and 3-3 of the Manual which implement the rational method using weighted coefficients based on pervious and impervious area and weighted time of concentrations seen in Table 3-1. The methodology can be seen in Appendix C and the calculations can be seen in Appendix D. Using these equations, the flows for each DMA (except DMA-5) can be seen in Table 3 below.

**Table 3: 10-YR Design Flows**

| Drainage Management Area (DMA) | 10-YR Design Flow (CFS) |
|---|---|
| DMA-1 | 0.557 |
| DMA-2 | 0.910 |
| DMA-3 | 0.151 |
| DMA-4 | 0.309 |

According to the Onsite Design Manual, private drainage pipe shall be sized to keep the 10-yr storm HGL below vehicular and/or pedestrian access surfaces. To ensure the system meets this requirement, the on-site storm drain network was analyzed using a Manning's equation excel spreadsheet, which is consistent with the Onsite Design Manual. The Manual indicates the starting HGL to be at the invert elevation of all pipes entering the detention basin at the connection point to the facility. The outlet of the detention basin was not analyzed as the basin was designed to fully store the 100-yr storm. The excel spreadsheet uses factors such as pipe diameter, water level in the pipe, slope, and Manning's n to calculate the flow. For the purposes of finding the 10-year HGL, CWE used the 10-year peak flows found above in Table 3 to work backwards and calculate the water level in the pipe. These values were then added to the most-upstream invert elevation of the pipe to

find the 10-year HGL. Per the calculations as seen in Appendix D, each on-site pipe meets the requirement to keep the HGL below proposed grade. A summary of the results can be seen in Table 4 below.

**Table 4: 10-YR HGL Analysis**

| Pipe # | 10-YR Starting HGL (ft) | 10-YR HGL at Drainage Node (ft) | Nearest Vehicular/Pedestrian Elevation at Drainage Node (ft) | Freeboard (ft) |
|---|---|---|---|---|
| 1 | 25.46’ | 26.77’ | 32.88’ | 6.11’ |
| 2 | N/A | 29.29’ | 33.99’ | 4.70’ |
| 3 | N/A | 27.31 | 31.89’ | 4.58’ |
| 4 | 26.90’ | 30.56’ | 32.84’ | 2.28’ |

The last requirement for this project from the DOU Onsite Design Manual is to ensure that all building finished floors maintain 6 inches of freeboard to the City’s highest adjacent 100-yr event HGL and 12 inches of freeboard above the controlling overland release point of the site. Based on the City of Sacramento Basin 157 Drainage Master Plan, the 100-yr event HGL for the project site is 37.2’, which would require the finished floor elevations to be 37.7’. The previous submittal proposed that the buildings towards the back of the site had finished floor elevations of 33.46’. Raising the finished floors to at least six inches above the 100-year event HGL would mean that the buildings would need to be raised 4.24’ higher than initially proposed. Not only would this create an excessive amount of import, but the site would have to be redesigned and graded in a way that completely conflicts with the existing drainage patterns. Most of the existing onsite runoff flows into a city-owned concrete channel past the back of the site, so CWE designed the site to mimic that. After deeming the City requirement unfeasible, CWE had several discussions with Lorenzo Hernandez of the City of Sacramento DOU regarding a compromise. It was agreed upon that for this project, if the finished floor elevations could be raised to 35.0’, then this requirement would be met. This elevation is still well more than 1 foot above the overland release point in the city-owned channel, which is 33.17’. Therefore, the controlling minimum finished floor elevation will be 35.0’ and all proposed buildings were designed to be at or above this elevation.

## G. STORMWATER QUALITY EVALUATION

The City of Sacramento defers to the Stormwater Quality Design Manual (SQDM) for requirements of hydromodification, low impact development, and stormwater quality. According to Table 3-2 of the manual, single family residential projects with a gross area of less than 20 acres are exempt from these three categories and are only required to implement the source control measures outlined in

Table 3-3 of the manual seen below. Table 3-2 can be seen in Appendix C. The development at 905 North Avenue is below this 20-acre threshold and therefore will only be designed for the items below.

**Table 5: Post-Construction Source Control Measures**

| Source Control | Used | Description |
|---|---|---|
| Efficient Irrigation | YES | Irrigation to be designed by landscaped architect. |
| Fueling Areas | N/A | No fueling areas proposed. |
| Landscaping | YES | Landscape throughout property, landscaping between building and detention basin, landscape strip between sidewalk and curb |
| Loading Areas | N/A | No loading areas proposed |
| Outdoor Storage Areas | N/A | No outdoor storage areas proposed. |
| Outdoor Work Areas | N/A | No outdoor work areas proposed |
| Storm Drain Markings and Signs | YES | Storm drains will be marked. |
| Vehicle/Equipment Wash Areas | N/A | No vehicle equipment wash areas proposed. |
| Waste Management Areas | N/A | No waste management areas proposed. |

Reference Table 3-3 from the Sacramento Region Stormwater Quality Design Manual

## H. CONCLUSIONS

- A universal detention basin for the property is designed for a volume consistent with the requirements outlined in the City of Sacramento DOU Onsite Design Manual. This basin will also have an outlet control structure designed per the Manual.
- The 10-yr design storm will be adequately conveyed by the private on-site piping and will contain the HGL elevations under vehicular/pedestrian access areas.
- The development has been designed to maintain sufficient freeboard above the overland release point at the back of the site.
- New impervious areas will require new stormwater quality measures including source control measures only.

## I. RECOMMENDATIONS

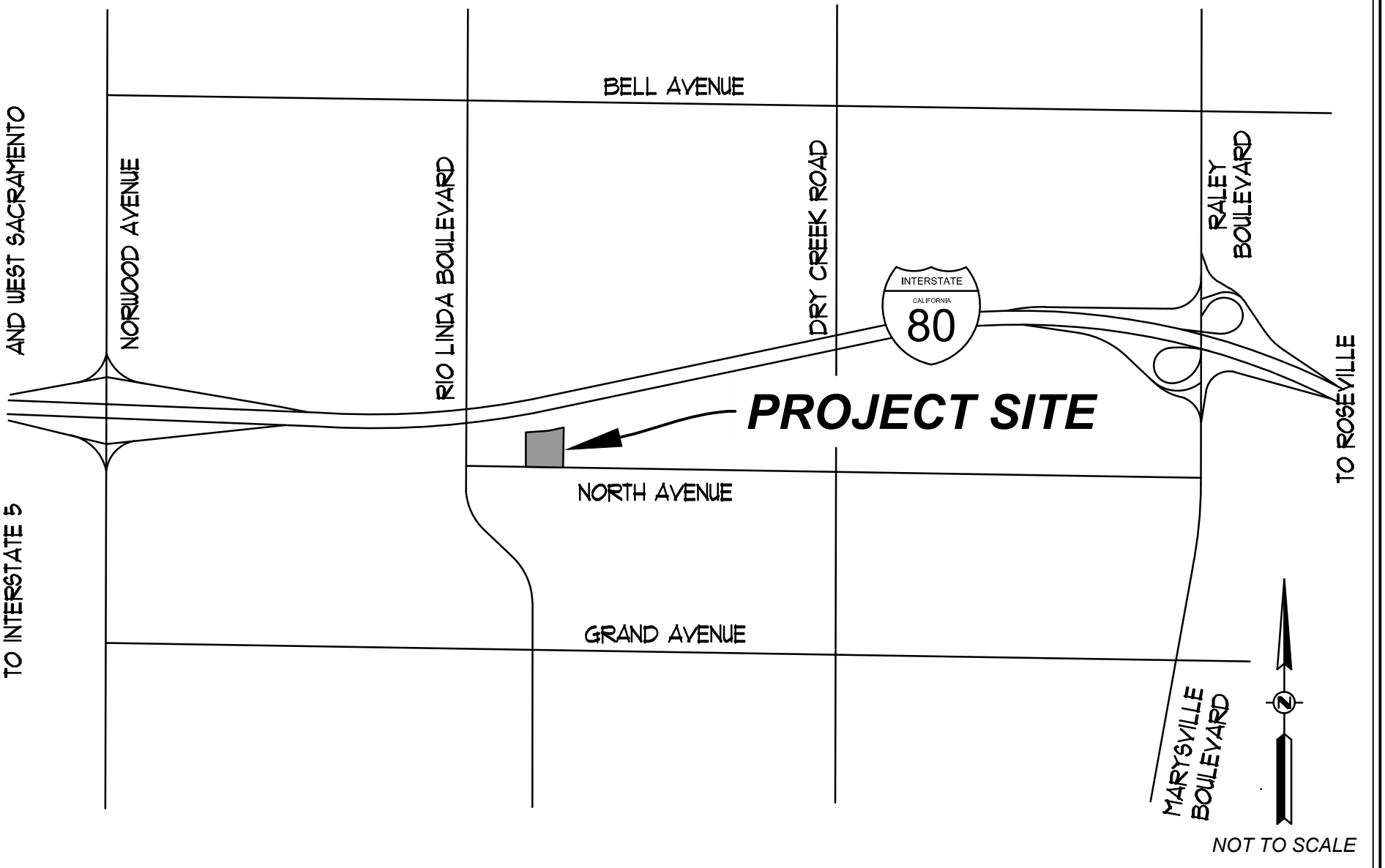
In order to sufficiently account for on-site and off-site drainage and water quality treatment, as applicable to this project, CWE recommends that the final design and construction include grading and storm drainage improvements consistent with the 905 North Avenue Improvement Plans and the conclusions outlined in this drainage study.

## J. REFERENCES


- City of Sacramento Department of Utilities Onsite Design Manual (May 1st, 2020)
- City of Sacramento Department of Utilities Design and Procedures Manual, Section 11 (2018)
- Sacramento Region Stormwater Quality Design Manual (July 2018)
- City of Sacramento Basin 157 Drainage Master Plan (September 2007)

# APPENDIX A

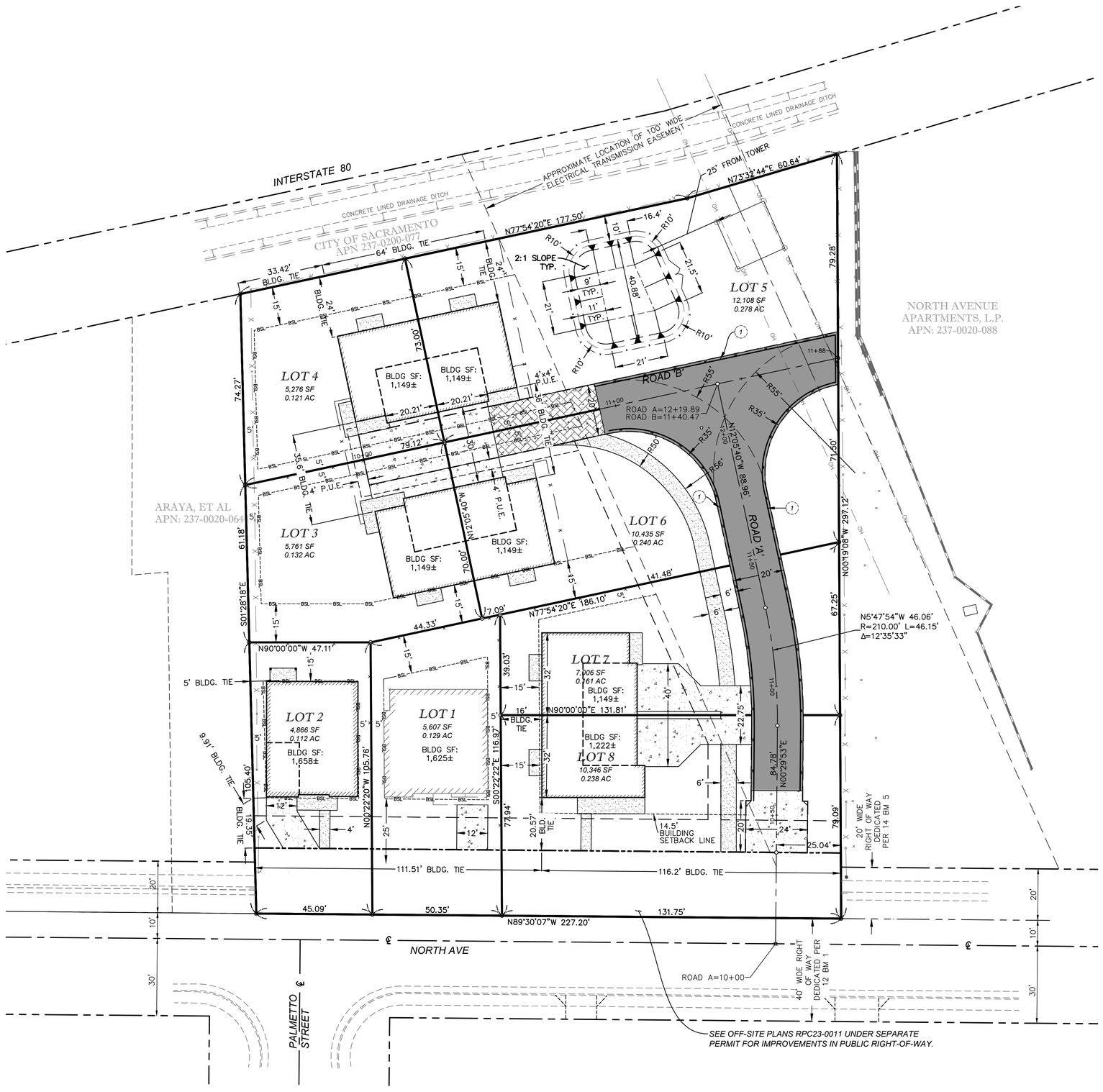
## VICINITY MAP AND SITE PLAN EXHIBITS




*NERRADSCALI SUBDIVISION*
*905 NORTH AVE*
*SACRAMENTO, CA 95838*

# *VICINITY MAP*

*2260 Douglas Blvd, Suite 160, Roseville, CA 95661*
*Ph: 916-772-7800 | www.cwecorp.com*




## NOTES:

*DIMENSIONS ARE TO BOTTOM FACE OF CURB UNLESS SPECIFIED OTHERWISE. BUILDING OUTLINE REPRESENT THE OUTER-MOST ELEMENT OF BUILDINGS. CONTRACTOR SHALL REFER TO FOUNDATION PLANS FOR CONSTRUCTION OF FOUNDATION AND BUILDING SLAB.*

## UNDERGROUND UTILITY NOTE:

*THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.*

## NOTICE TO CONTRACTOR - ORDER OF WORK:

*PRIOR TO THE START OF ANY CIVIL WORK, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES BY POTHOLING AT ALL POINTS OF POTENTIAL CONFLICT WITH PROPOSED UTILITIES OR PROPOSED POINTS OF CONNECTION WITH EXISTING UTILITIES. IF THE ACTUAL LOCATIONS OF THE EXISTING UTILITIES FOUND IN THE FIELD ARE DIFFERENT FROM WHAT IS SHOWN ON THESE PLANS, THE CONTRACTOR SHALL CONTACT RFE ENGINEERING IMMEDIATELY AND PROVIDE THE ACTUAL LOCATION INFORMATION. RFE ENGINEERING WILL VERIFY IF THERE ARE ANY CONFLICTS WITH THE IMPROVEMENTS AND WILL PROVIDE MODIFICATIONS TO THE DESIGN TO MITIGATE THE CONFLICTS IF ANY CONFLICTS EXIST.*

## LEGEND:

*BUILDING SETBACK* ——BSL——BSL——BSL——

*FIRE LANE STRIPING* ————————

## FIRE STRIPING KEY NOTE:

(1) *FIRE LANE DESIGNATION STRIPE AS DELINEATED ON THE DRAWINGS. CURBS SHALL BE PAINTED RED MARKED BY WHITE LETTERING "FIRE LANE - NO PARKING" A MINIMUM OF THREE INCHES TALL WITH A ½ INCH WIDE MINIMUM STROKE. THE INTERVAL BETWEEN STENCILED LETTERING SHALL BE ADEQUATE TO INFORM THE PUBLIC OF THE EXISTENCE OF THE FIRE LANE BUT IN NO EVENT SHALL THE INTERVAL EXCEED 50 FEET.*

| NO. | REVISION | DATE | BY | APPR'D |
|---|---|---|---|---|
| | | | | |

| | BY | CHECK |
|---|---|---|
| DESIGN | MJW | RFE |
| DRAWN | DCJ | RFE |
| QUANT. | | |

ORIGINAL SCALE IS IN INCHES 0 1 2

REGISTERED PROFESSIONAL ENGINEER ROBERT F. ETNER No. C040666 Exp. 3-31-25 CIVIL STATE OF CALIFORNIA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Ph: 916-772-1900 | www.cwecorp.com


**PROPERTY OWNER / DEVELOPER**
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EMAIL: DARRENBBROWN@COMCAST.NET

ON-SITE IMPROVEMENT PLANS FOR
**NERRADSCALI SUBDIVISION**
SACRAMENTO, CA 95838
APN: 237-0200-092

# HORIZONTAL CONTROL PLAN

Sheet
**C5**
6 of 14
9/12/2023

1 INCH = 20 FEET

811 Know what's **below.** **Call** before you dig. or (800) 227-2600

CWE PROJECT NO. 21-188 – 905 NORTH AVENUE, SACRAMENTO, CA 95838

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# APPENDIX B

## PROJECT SITE SHED MAP EXHIBITS

INTERSTATE 80

CONCRETE LINED DRAINAGE DITCH

CONCRETE LINED DRAINAGE DITCH

CITY OF SACRAMENTO
APN 237-0200-077

NORTH AVENUE APARTMENTS, L.P.
APN: 237-0020-088

DARREN BROWN
APN: 237-0200-092

ARAYA, ET AL
APN: 237-0020-06

WOODEN SHED TO BE REMOVED

WOODEN SHED TO BE REMOVED

METAL SHED TO BE REMOVED

A-X1
57,078 SF

PARCEL 1
0.207 ACRES

PARCEL 2
APN: 237-0200-092
1.129 ACRES

PARCEL 3
0.074 ACRES

RESIDENTIAL STRUCTURE TO REMAIN

51'

26'

A-X2
4,327 SF

RIGHT-OF-WAY

RIGHT-OF-WAY

20'

10'

30'

48"SD

48"SD

℄

NORTH AVE

SDMH RIM=35.34'
48" RCP (E)(W) INV THRU =25.64'
18" RCP (S) INV=30.04'

SDMH
48" RCP
42" CMP (E) INV TH
8" PIPE (NW)
8" PIPE (SE) IN
18" PIPE (S) INV=31.77'
18" PIPE (SW) INV=32.02'

PALMETTO STREET

EXISTING 12' WIDE SPEED BUMP

## LEGEND

DRAINAGE AREA DESIGNATIONS AND AREA — A-X1, 3,181 SF

DRAINAGE AREA BOUNDARY

OVERLAND RELEASE

## PRE-CONSTRUCTION SHED AREAS (SF)

| DMA | IMPERVIOUS | PERVIOUS | TOTAL | % IMPERVIOUS |
|---|---|---|---|---|
| | SF | SF | SF | |
| A-X1 | 2,244 | 54,834 | 57,078 | 3.93% |
| A-X2 | 4,327 | 0 | 4,327 | 100.00% |
| TOTAL | 6,571 | 54,834 | 61,405 | 10.70% |

20 0 20 40
1 INCH = 20 FEET

| NO. | REVISION | DATE | BY | APPR'D |
|---|---|---|---|---|
| | | | | |

| | BY | CHECK |
|---|---|---|
| DESIGN | MJW | RFE |
| DRAWN | DCJ | RFE |
| QUANT. | | |

ORIGINAL SCALE IS IN INCHES 0 1 2

REGISTERED PROFESSIONAL ENGINEER
ROBERT F. ETNOR
No. C040666
Exp. 3-31-25
CIVIL
STATE OF CALIFORNIA

2260 Douglas Blvd, Suite 160, Roseville, CA 95661
Ph: 916-772-7500 | www.cwecorp.com

**PROPERTY OWNER / DEVELOPER**
NERRADSCALI CORPORATION
3960 KINGSBARNS DRIVE
ROSEVILLE, CA 95747

CONTACT: DARREN BROWN
PH.: (916) 300-7962
EMAIL: DARRENBBROWN@COMCAST.NET

ON-SITE IMPROVEMENT PLANS FOR
**NERRADSCALI SUBDIVISION**
SACRAMENTO, CA 95838
APN: 237-0200-092

# PRE-CONSTRUCTION SHED MAP

Sheet
SM1
1 of 2
9/12/2023

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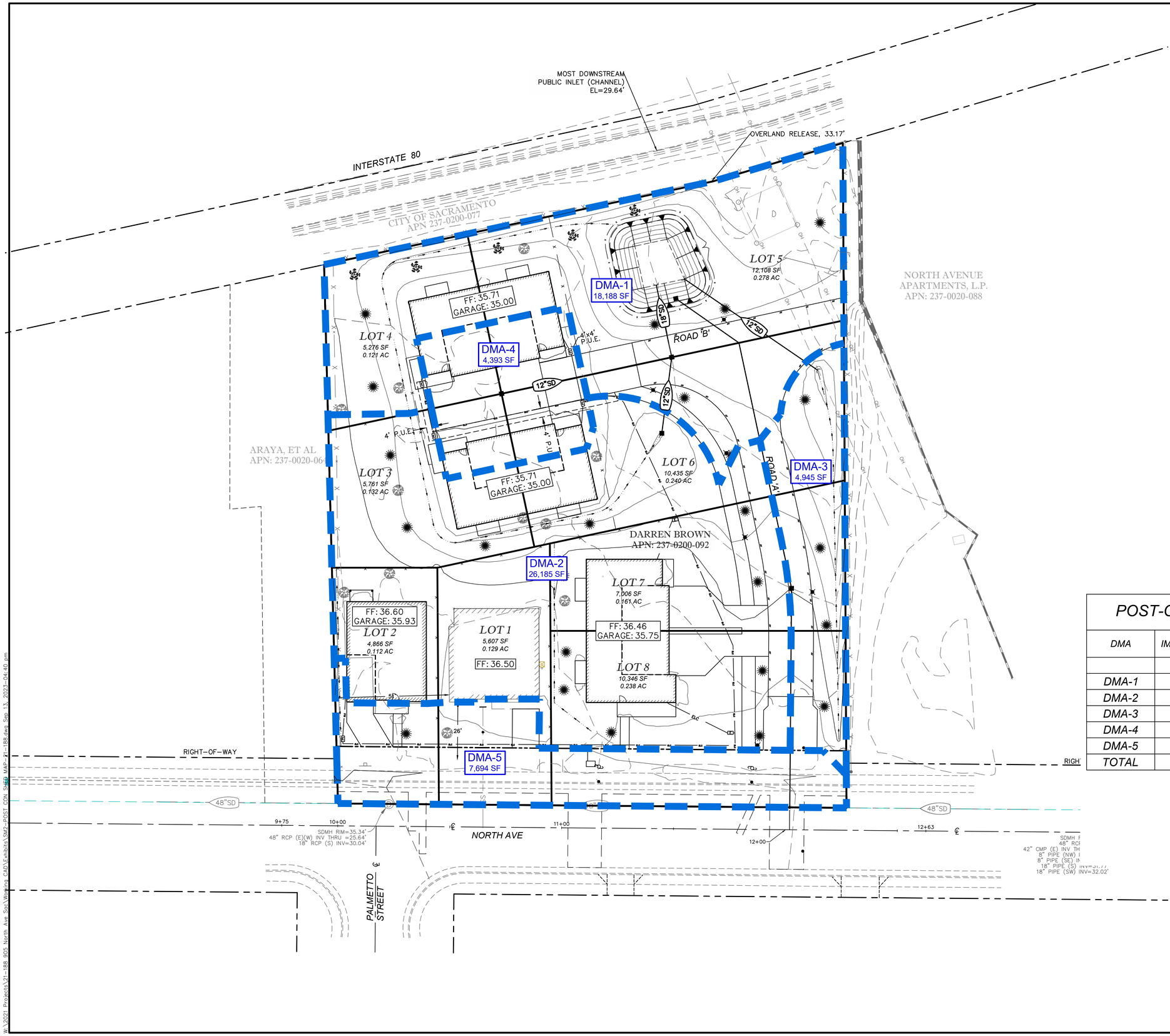


## LEGEND

DRAINAGE AREA DESIGNATIONS AND AREA — DMA-1, 3,181 SF

DRAINAGE AREA BOUNDARY

OVERLAND RELEASE

## POST-CONSTRUCTION SHED AREAS (SF)

| DMA | IMPERVIOUS | PERVIOUS | TOTAL | % IMPERVIOUS |
|---|---|---|---|---|
| | SF | SF | SF | |
| DMA-1 | 5,369 | 12,819 | 18,188 | 29.52% |
| DMA-2 | 10,313 | 15,872 | 26,185 | 39.39% |
| DMA-3 | 1,451 | 3,494 | 4,945 | 29.34% |
| DMA-4 | 4,393 | 0 | 4,393 | 100.00% |
| DMA-5 | 5,487 | 2,207 | 7,694 | 71.32% |
| TOTAL | 27,013 | 34,392 | 61,405 | 43.99% |

1 INCH = 20 FEET

| NO. | REVISION | DATE | BY | APPR'D |
|---|---|---|---|---|
| | | | | |

BY: DESIGN MJW; DRAWN DCJ; QUANT. | CHECK RFE; RFE

ORIGINAL SCALE IS IN INCHES (0, 1, 2)

REGISTERED PROFESSIONAL ENGINEER
ROBERT F. ETNOR
No. C040666
Exp. 3-31-25
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STATE OF CALIFORNIA


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PH.: (916) 300-7962
EMAIL: DARRENBBROWN@COMCAST.NET

ON-SITE IMPROVEMENT PLANS FOR
**NERRADSCALI SUBDIVISION**
SACRAMENTO, CA 95838
APN: 237-0200-092

# POST-CONSTRUCTION SHED MAP

Sheet
SM2
2 of 2
9/12/2023

CWE PROJECT NO. 21-188 – 905 NORTH AVENUE, SACRAMENTO, CA 95838

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# APPENDIX C

## MISCELLANEOUS DOCUMENTATION

is required, it may also include the onsite project drainage design, eliminating the requirement for a separate onsite drainage study.

For onsite drainage studies, the designer may use either a static or dynamic analysis for mitigation sizing and drainage system design as described in the Sections 3.1.1, 3.1.2 and 3.1.3. The same method (either static or dynamic) must be used for the project's entire drainage analysis. Any required drainage design study shall be completed and approved prior to the approval of onsite plans and shall demonstrate conformance with mitigation (Section 3.2.1), finished floor (Section 3.5) and drain pipe criteria (Section 3.6).

An onsite drainage study shall include the following (at a minimum):

- A written description of the project.
- Reference to the City drainage basin that contains the project and regional study if applicable.
- Elevation datum used in study and for all referenced information.
- 10 and 100-year event tailwater elevations and sources.
- Summary of proposed drainage improvements.
- Attached excerpts of studies and other information that may be referenced.
- Summary of the methods used for the drainage study.
- Copies of calculations, spread sheets or computer models.
- An exhibit that:
  - Depicts existing and proposed impervious areas.
  - Shows proposed detention methods and locations including the volume of storage provided.
  - Depicts the onsite drainage system and connection points to the City system; including drainage inlet and manhole locations; and pipe lengths, sizes, slopes and invert elevations.
  - Denotes the elevation and location of the controlling overland release point(s) on the City drainage system. See Section 11.1.3 of the DPM for a definition of overland release point.
  - Depicts onsite drainage shed areas, includes overland release arrows to the public right-of-way and calls out drainage shed breakpoint elevations.
  - Denotes finished floor elevations for all proposed buildings.

### 3.1.1 Onsite Project Storage Method (Static Analysis)

Projects required to provide drainage mitigation (see Section 3.2.1), not performing a dynamic analysis, shall use the following procedure to size the detention volume and outlet orifice:

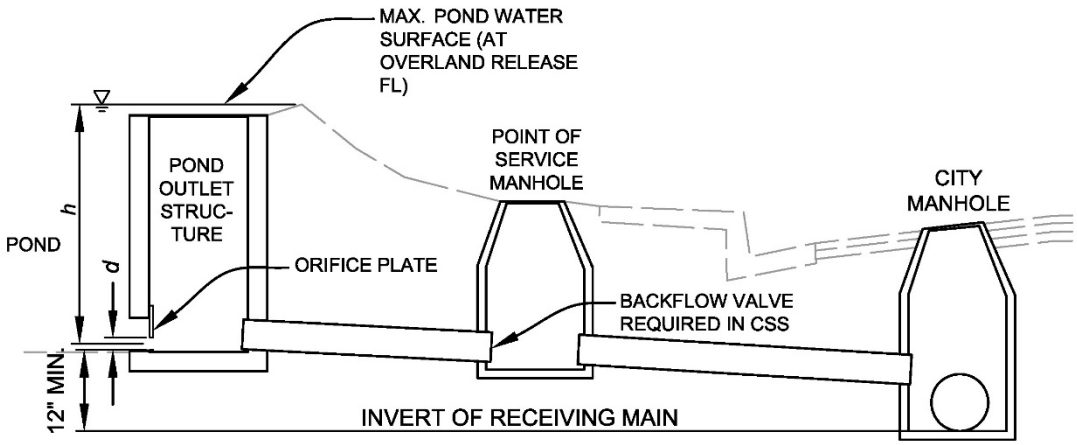
1. If required by the DOU, the designer must calculate and replace the volume of storage removed by the project at and below the existing 100-year event hydraulic grade line (HGL) of the City's drainage system, in addition to mitigating for increased imperviousness.
2. To mitigate for increased imperviousness, determine which City drainage basin the project resides in (**Figure 1**) and the associated storage required per acre of increased imperviousness for the 100-year event (as specified in **Figure 10**).
3. Determine the additional acreage of impervious surface resulting from the project. All surfaces shall be considered completely pervious or impervious. Impervious surfaces generally include

roof-tops and traditional pavement. Green roofs, pervious pavement, gravel, pavers with pervious base and joints shall be considered entirely pervious.

4. Multiply the additional impervious area by the 100-year event storage required per acre. If required, add to the flood replacement volume determined in step 1. The storage volume shall be completely contained at least one-foot above the Invert elevation of the receiving City main.
5. If a portion of the 100-year event detention volume is being stored within vehicular and/or pedestrian access surfaces, calculate the 10-year event storage volume and ensure it is completely contained within underground pipes and/or designated detention facilities. To determine the 10-year event storage volume, multiply the additional impervious area by the 10-year event storage required per acre for the basin (as specified in **Figure 10**).
6. Determine the orifice diameter (d) in inches for metering the stored discharge to the City drainage system (see Equation 3-1 and Figure 3-1):
7. Calculate the maximum head (h) in feet upstream of the orifice, by subtracting the elevation at the center of the orifice from the overland release flow line elevation for the project site (see Figure 3-1),
8. Determine orifice flow (Q) in CFS, by multiplying the Nominal Capacity of the City drainage basin (as specified in **Figure 10**) by the entire area draining to the detention pond,
9. Determine the orifice diameter in inches using Equation 3-1.

**Equation 3-1** $$d = 6.17\sqrt{\frac{Q}{\sqrt{h}}}$$

**Figure 3-1 Onsite Project Storage Discharge**




## 3.1.2 Rational Method (Static Analysis)

Projects required to provide calculations sizing the onsite drainage system pipes (see Section 3.6), not performing a dynamic analysis, shall use the rational method as specified below; only a 10-year event storm analysis is required.

The 10-year event starting HGL elevation shall be obtained as follows:

- For gravity flow situations without onsite detention, the starting HGL shall be obtained from a previously approved City storm drain master plan that includes the project site. If an approved master plan does not exist, assume the HGL is 0.5-feet above the most downstream adjacent City drainage inlet grate elevation. If there is no gutter, assume the HGL is the lowest adjacent street or alley surface elevation fronting the project site.
- For projects that include onsite dry detention areas, assume the starting HGL for each pipe segment connected to a detention facility is the invert elevation at the segments point of connection to the facility. For onsite detention areas that include a permanent pool, the starting HGL for each pipe segment connected to the pool, is the permanent pool water surface elevation.

Drainage studies utilizing the rational method shall demonstrate all proposed private "drainage pipe" meets the criteria specified in Section 3.6 of this manual, and shall include:

1. Applicable runoff for drainage shed areas using Equations 3-2 & 3-3, and
2. 10-year event HGL throughout the analyzed system utilizing Manning's equation

**Equation 3-2** $$Q = CiA_S$$

**Equation 3-3** $$i = at^b$$

Where:

Q = Peak flow rate to a particular node (CFS)
C = Runoff coefficient (unit-less, Refer to Table 3-1)
i = Rainfall intensity (inches/hour)
$A_S$ = Shed area draining to a particular Node (acres)
a = Rainfall intensity coefficient = 8.10 (10-year event) and 14.465 (100 -year event)
b = Rainfall intensity coefficient = -0.573 (10-year event) and -0.602 (100-year event)
t = Time of concentration (minutes) = Inlet Time + Time thru pipe/channel to a particular Node (Refer to Table 3-1 for Inlet Time)

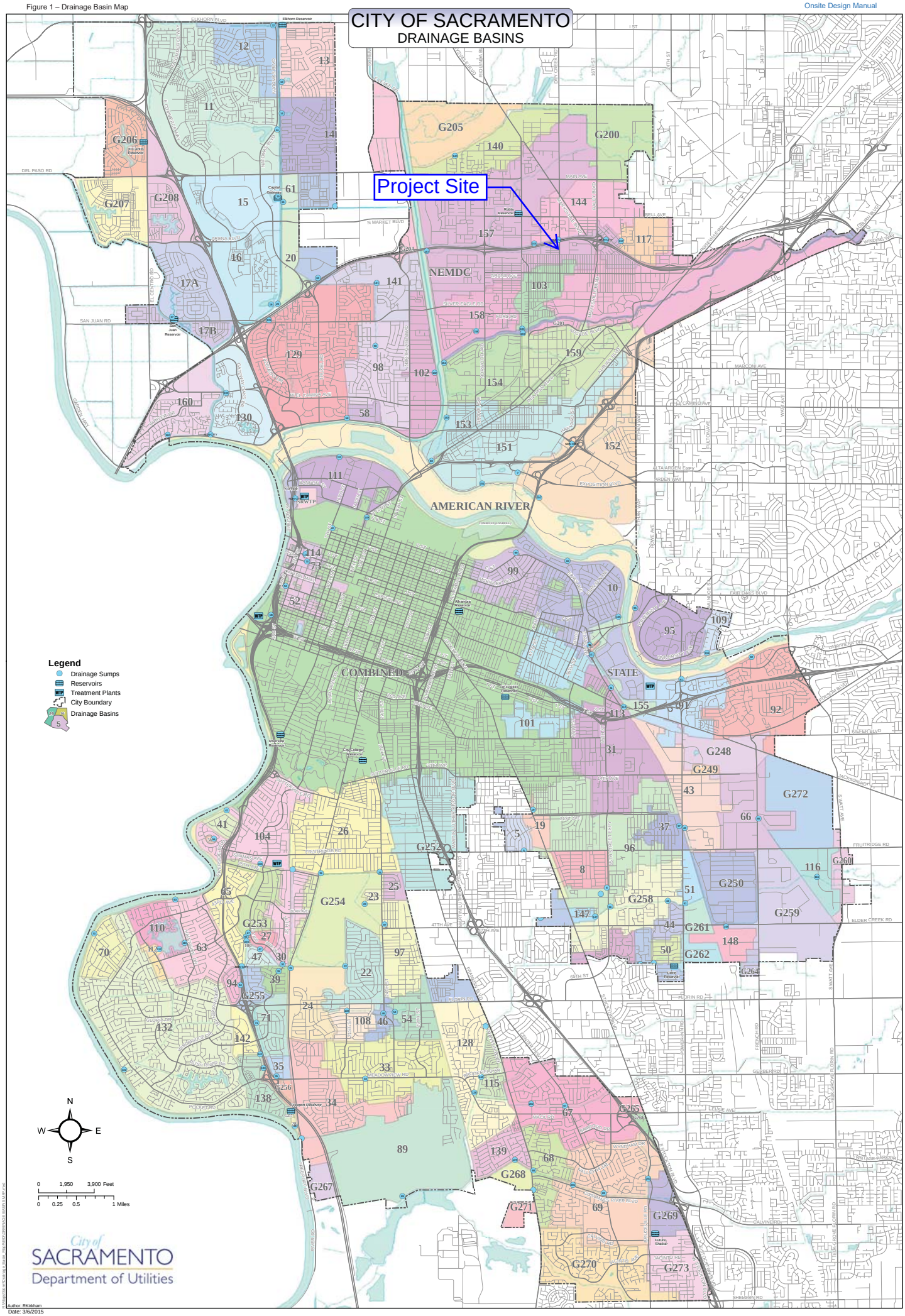
Designer shall use an area weighted average of pervious and impervious areas for calculating the C factor and Inlet Time.

**Table 3-1 Runoff Coefficients and Inlet Times**

| Imperviousness/ Land Use | Runoff Coefficient C | Inlet Time $t_i$ |
|---|---|---|
| Proposed/Existing Development | | |
| Impervious areas | 0.95 | 5 |
| Pervious areas | 0.40 | 10 |

### 3.1.3 Onsite Computer Model (Dynamic Analysis)

Projects may use a computer dynamic model for sizing onsite detention and/or drainage pipe. The model results shall demonstrate that finished floor elevations meet the requirements specified in Section 3.5 and that any proposed drainage pipe meets the criteria specified in Section 3.6.




Author: RKirkham
Date: 3/6/2015

| Basin | Nominal Capacity CFS/AC | Storage per Acre of Increased Imperviousness (Cubic Feet) | |
|---|---|---|---|
| | | 100-Year | 10-Year |
| 138 | 0.14 | 8,900 | 4,450 |
| 139 | 0.17 | 7,900 | 3,950 |
| 140 | 0.21 | 6,700 | 3,450 |
| 141 | 0.3 | 5,300 | 2,700 |
| 142 | 0.25 | 6,000 | 3,050 |
| 144 | 0.31 | 5,200 | 2,600 |
| 147 | 0.1 | 10,600 | 5,500 |
| 148 | 0.37 | 4,600 | 2,250 |
| 149 | UP | NA | NA |
| 151 | 0.26 | 5,800 | 2,950 |
| 152 | 0.23 | 6,300 | 3,250 |
| 153 | 0.14 | 8,900 | 4,450 |
| 154 | 0.13 | 9,300 | 4,700 |
| 155 | 0.26 | 5,800 | 2,950 |
| 157 | 0.2 | 7,000 | 3,600 |
| 158 | 0.1 | 10,600 | 5,500 |
| 159 | 0.05 | 12,800 | 7,500 |
| 160 | 0.46 | 3,800 | 1,990 |
| 161 | UP | NA | NA |
| G200 | 0.2 | 7,000 | 3,600 |
| G201 | 0.2 | 7,000 | 3,600 |
| G204 | 0.1 | 10,600 | 5,500 |
| G205 | 0.1 | 10,600 | 5,500 |
| G206 | NN | 10,600 | 5,500 |
| G207 | NN | 10,600 | 5,500 |
| G208 | NN | 10,600 | 5,500 |
| G209 | 0.1 | 10,600 | 5,500 |

| Basin | Nominal Capacity CFS/AC | Storage per Acre of Increased Imperviousness (Cubic Feet) | |
|---|---|---|---|
| | | 100-Year | 10-Year |
| G248 | 0 | 15,000 | 10,500 |
| G249 | 0 | 15,000 | 10,500 |
| G250 | 0.1 | 10,600 | 5,500 |
| G251 | 0.2 | 7,000 | 3,600 |
| G252 | 0.08 | 11,600 | 6,200 |
| G253 | 0.13 | 9,300 | 4,700 |
| G254 | 0.12 | 9,700 | 4,950 |
| G255 | 0.2 | 7,000 | 3,600 |
| G256 | 0.12 | 9,700 | 4,950 |
| G257 | 0.12 | 9,700 | 4,950 |
| G258 | 0.2 | 7,000 | 3,600 |
| G259 | 0.2 | 7,000 | 3,600 |
| G260 | 0.2 | 7,000 | 3,600 |
| G261 | 0.2 | 7,000 | 3,600 |
| G262 | 0.15 | 8,600 | 4,300 |
| G263 | 0.2 | 7,000 | 3,600 |
| G264 | 0.2 | 7,000 | 3,600 |
| G265 | 0.2 | 7,000 | 3,600 |
| G266 | 0.11 | 10,200 | 5,200 |
| G267 | 0.1 | 10,600 | 5,500 |
| G268 | 0.17 | 7,900 | 3,950 |
| G269 | 0.48 | 3,700 | 1,950 |
| G270 | 0.17 | 7,900 | 3,950 |
| G271 | 0.2 | 7,000 | 3,600 |
| G272 | 0 | 15,000 | 10,500 |
| G273 | 0.5 | 3,700 | 1,900 |
| CSS | 0.18 | 7,600 | 3,800 |

NN = North Natomas 0.1cfs/ac - Mitigate increase in impervious area relative to approved basin wide master plan at 0.1cfs/ac

NN4 = North Natomas 0.4cfs/ac - Mitigate increase in impervious area relative to approved basin wide master plan at 0.4cfs/ac

UP = Underpass - Do not drain to these basins

**Note:**
100-year event volume must be contained onsite and may include parking lot storage or other surface flooding.
10-year event volume must be completely contained in underground pipe and/or within a detention facility.

### 11.3.5.2 Exemptions

A Drainage Design Report will not be required when:

1. An approved Drainage Study already exists that includes the Project, which is consistent with this Section as determined by DOU,
2. Project is consistent with site runoff and storage anticipated by existing Drainage Study,
3. All applicable public drainage improvements to be constructed by the Project are defined in existing Drainage Study and consistent with Project, and
4. All applicable improvements identified by existing Drainage Study to serve or mitigate for potential impacts from Project are in-place or will be constructed by Project.

   Or,
5. Project does not require public drainage improvements.

### 11.3.5.3 Conformance with Plans

Infrastructure in Drainage Design Report shall be based on existing improvements and those to be constructed by Project. During the course of Project design, if the Designer modifies the street alignment, lot configuration, impervious area, land use, length, size and alignment of the storm drain pipes, location of a Detention Pond or pump station, On-site storage volume, Stormwater quality measures, etc., the Drainage Design Report shall be revised to reflect these changes. In all cases, the accepted Plans shall match the current accepted Drainage Design Report.

### 11.3.5.4 Modification of Past Study

If the Project is included in, but does not conform to an existing Drainage Study, the existing Drainage Study must be updated to account for all changes, such as land use, imperviousness, slope, routing, etc.

1. If the Drainage Study utilizes the Rational Method, and the Designer elects to use the Rational Method, proceed to Section 11.3.5.5,
2. If the Drainage study utilizes a dynamic model, proceed to Section 11.3.5.6.

### 11.3.5.5 Level One - Rational Method

For Projects of less than 10 acres, Designer may elect to analyze Stormwater runoff and routing using the Rational Method. The Rational Method may not be used for Projects with public Detention Ponds or pump stations, or Projects consisting of more than 10 acres including all phases.

Downstream 10 and 100 Year Event HGLs shall be based on an existing Study, if available. If no Study exists for downstream connection, 10 and 100 Year Event HGLs shall be assumed as 0.5-feet and 1.0-feet, respectively above adjacent drain inlet at the most downstream point analyzed.

Level One Drainage Design Report calculations shall include the following:

1. Applicable runoff for sub sheds using Equations 11-1 & 11-2, and
2. 10 & 100 Year Event HGL throughout analyzed system utilizing Manning's equation

Equation 11-1 $Q = CiA_S$

Equation 11-2 $i = at^b$

Where:
$Q$ = Peak flow rate to a particular node (CFS)
$C$ = Runoff coefficient (*unit-less*, Refer to Table 11-1)
$i$ = Rainfall intensity (inches/hour)
$A_S$ = Shed area draining to a particular Node (acres)
$a$ = Rainfall intensity coefficient = 8.10 (10 Year Event) and 14.465 (100 Year Event)
$b$ = Rainfall intensity coefficient = -0.573 (10 Year Event) and -0.602 (100 Year Event)
$t$ = Time of concentration (minutes) = Inlet Time + Time thru pipe/channel to a particular Node (Refer to Table 11-1 for Inlet Time)

Designer shall use a weighted average of pervious and impervious areas for calculating the $C$ factor and Inlet Time.

The discharge $Q$ for sites utilizing metered storage (refer to Onsite Design Manual) may be reduced to the peak discharge rate from the applicable Detention Ponds.

**Table 11-1 Runoff Coefficients and Inlet Times**

| Imperviousness/ Land Use | Runoff Coefficient $C$ | Inlet Time $t_i$ |
|---|---|---|
| Proposed/Existing Development | | |
| Impervious areas | 0.95 | 5 |
| Pervious areas | 0.40 | 10 |

(use area weighted average)

### 11.3.5.6 Level Two – Dynamic Modeling

Designer shall analyze the Project Stormwater impact and any required mitigation using dynamic modeling for all Projects larger than 10 acres, and may elect to for smaller Projects. Model setup and report parameters shall be in accordance with applicable DOU model user guide. The latest version of the user guides may be obtained from DOU.

Drainage Design Reports in Basins that have a previously approved Storm Drain Master Plan shall utilize the model and software of the approved study. New drainage models shall use XPSWMM for the Separated Drainage System and InfoWorks for the Combined Sewer System.

## 11.3 DRAINAGE STUDIES

The maximum allowable 10 and 100 Year Event water surface and Overland Release elevations are different for a Greenfield Development versus an Infill Development. All Projects must also meet Existing Development and public safety criteria. Refer to Plate 11-2 MASTER PLANNING CRITERIA EXHIBIT.

Drainage Studies include Storm Drain Master Plans and Drainage Design Reports (Levels 1 or 2). Some Projects may require acceptance of a Storm Drain Master Plan in conjunction with a Tentative Map or other entitlement. DOU will also require acceptance of a Drainage Design Report in conjunction with the Plans for most Projects proposing public drainage improvements.

All Drainage Studies shall be submitted with a Drainage Study Checklist, stamped by a registered civil engineer. If items on the Checklist are deficient, the Drainage Study may be returned for correction without review.

Existing 100 Year Event Stormwater detention volume to be removed by Project shall be accounted for in Drainage Study and replaced as necessary, in addition to other mitigation measures required herein. Typical minor losses shall be disregarded (Refer to Section 11.4.5).

Elevations for Separated Drainage studies shall be tied to a City benchmark, Datum NAVD 88. Elevations for Combined Sewer studies shall be tied to a City benchmark, Datum NGVD 29.

If a Project is required to comply with Stormwater quality standards, detailed analysis and sizing calculations shall be included with the Drainage Study (Refer to Section 11.11). Drainage Studies need not include on-site privately maintained drainage pipes and appurtenances, except as applicable to mitigate Project impacts to the public drainage system. Requirements for the design of such On-Site drainage facilities and sizing of drainage services are covered by the Onsite Design Manual.

### 11.3.1 Greenfield Development

The 10 Year Event HGL shall be a minimum of 6-inches below all new DI Grates. The Finished Floor of new structures shall be at least 12-inches above the 100 Year Event HGL, and 18-inches above the Overland Release Point (Refer to Section 11.7).

### 11.3.2 Infill Development

The 10 Year Event HGL shall be at or below all new DI Grates placed in gutters. Refer to 11.3.7 for inlets placed in roadside ditches. The Finished Floor of new structures shall be at least 6-inches above the 100 Year Event HGL and 12-inches above the Overland Release Point (Refer to Section 11.7).

*Table 3-2 Required Stormwater Quality Control Measures for Priority Projects*

| Priority Project Categories[1] | Required Stormwater Quality Control Measures | | | | |
|---|---|---|---|---|---|
| | Source Control[2] | Hydromodification Control[3] | Low Impact Development Control | Treatment Control | Full Capture Trash Control[7] |
| Single Family Residential Impervious area ≥ 1 acre | X | | X | | X For projects with at least 10 du/acre[8] |
| Single Family Residential Gross Area ≥ 20 acres | X | X | X | X | |
| Multi-family Residential Impervious Area < 1 acre | X | | | | |
| Multi-family Residential Impervious Area ≥ 1 acre | X | X | X | X | |
| Commercial/ Industrial Development[6] Impervious area < 1 acre | X | | | | X For industrial projects where primary activities involve product manufacture, storage, or distribution. For commercial projects were primary activities involve sale or transfer of goods or services to consumers |
| Commercial/ Industrial Development[6] Impervious area ≥ 1 acre | X | X | X | X | |
| Automotive Repair Shops[6] Impervious area < 1 acre | X | | | | |
| Automotive Repair Shops[6] Impervious area ≥ 1 acre | X | X | X | X | |
| Retail Gasoline Outlet[6] Impervious area < 1 acre | X | | | | |
| Retail Gasoline Outlet[6] Impervious area ≥ 1 acre | X | X | X | X | |
| Restaurants Impervious area < 1 acre | X | | | | |
| Restaurants Impervious area ≥ 1 acre | X | X | X | X | |
| Hillside Development Slope ≥ 25% | X | X | X | X | |
| Parking Lots[4][6] Impervious area < 5,000 square feet or 25 parking spaces | X | | | | X For Public Transportation Stations, which are facilities or sites where public transit agencies' vehicles load or unload passengers or goods (e.g., bus stations and stops) |
| Parking Lots[4][6] Impervious area ≥ 5,000 square feet or 25 parking spaces | X | X | X | X | |
| Streets & Roads[5][6] Impervious area < 5 acres | X | | | | |
| Streets & Roads[5][6] Impervious area ≥ 5 acres | X | X | X | X | |

## *Table 3-3 Stormwater Quality Control Measure Selection Matrix*

✓ **Required Based Upon Table 3-2** • **Acceptable Option** **"NA" Not applicable or allowed**

| **Priority Project Category** [a] | **Residential** | | | **Commercial/Industrial** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Control Measure** | **Single Family Residential Impervious area ≥ 1 ac** | **Single Family Residential Gross area ≥ 20 ac** | **Multi-family Residential Impervious area ≥ 1 ac** | **Commercial Impervious area ≥ 1 ac** | **Auto Repair Shops Impervious area ≥ 1 ac** | **Retail Gasoline Outlets Impervious area ≥ 1 ac** | **Restaurants Impervious area ≥ 1 ac** | **Industrial Impervious area ≥ 1 ac** | **Hillside Developments ≥ 25% slope** | **Parking lots [b] ≥ 5,000 sf or 25 spaces** | **Streets/Roads [c] Impervious area ≥ 5 ac** |
| **Source Control [d]** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Efficient Irrigation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Fueling Areas | NA | NA | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | NA |
| Landscaping | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Loading Areas | NA | NA | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | NA |
| Outdoor Storage Areas | NA | NA | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | NA |
| Outdoor Work Areas | NA | NA | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | NA |
| Storm Drain Markings and Signs | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vehicle/Equipment Wash Areas | NA | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | NA |
| Waste Management Areas | NA | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA |
| **Hydromodification Control, LID, and Treatment Control[e][f]** | **(LID Only)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Alternative Driveways | • | • | • | NA | NA | NA | NA | NA | • | NA | NA |
| Capture and Re-Use | • | • | • | • | • | • | • | • | • | NA | NA |
| Compost-Amended Soil | • | • | • | • | NA | NA | • | • | NA | • | NA |
| Constructed Wetland Basin | • | • | • | • | NA | NA | • | • | NA | • | • |
| Disconnected Pavement | • | • | • | • | • | • | • | • | • | • | • |
| Disconnected Roof Drains | • | • | • | • | • | • | • | • | • | NA | NA |
| Green Roof | NA | NA | NA | • | • | • | • | • | • | NA | NA |
| Infiltration Basin | • | • | • | • | NA | NA | • | NA | NA | • | • |
| Infiltration Trench | • | • | • | • | NA | NA | • | NA | NA | • | • |

# APPENDIX D

## SUPPORTING CALCULATIONS

## Post-Construction Design Flows (10-yr Storm)

Project: 905 North Avenue
Location: 905 North Avenue, Sacramento, CA 95838
Jurisdiction: City of Sacramento
Designer: AEB
Date: 8/24/2023

| Drainage Shed | Associated Node | Shed Area | | Node Tributary Area | | Shed Percent Impervious | Shed Weighted Runoff Coefficient | Shed Weighted Inlet Time | Rainfall Intensity[1] | 10-yr Flow[2] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | sf | acre | sf | acre | % | C | t (min) | in/hr | CFS |
| DMA-01 | A1 | 18,188 | 0.418 | 53,711 | 1.233 | 30% | 0.562 | 8.524 | 2.373 | 0.557 |
| DMA-02 | A2 | 26,185 | 0.601 | 26,185 | 0.601 | 39% | 0.617 | 8.031 | 2.455 | 0.910 |
| DMA-03 | A3 | 4,945 | 0.114 | 4,945 | 0.114 | 29% | 0.561 | 8.533 | 2.371 | 0.151 |
| DMA-04 | A4 | 4,393 | 0.101 | 4,393 | 0.101 | 100% | 0.950 | 5.000 | 3.221 | 0.309 |

[1]Rainfall Intensity based on Equation 3-3 of the City of Sacramento DOU Onsite Design Manual

[2]Flow equation based on Equation 3-2 of the City of Sacramento DOU Onsite Design Manual

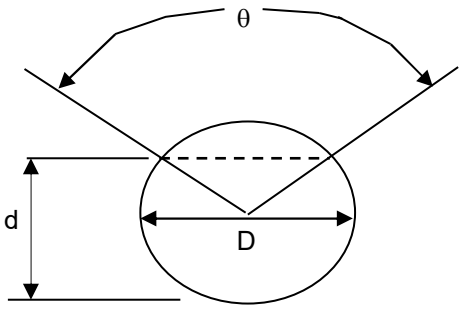
**MANNING'S EQUATION FOR PIPE FLOW**

Project: Nerradscali Subdivision  Location: Pipe #1 - DMA-02

By:  Date:

Chk. By:  Date:  mdo version 12.8.00

Clear Data Entry Cells




INPUT

| | | |
|---|---|---|
| D= | 18 | inches |
| d= | 2.35 | inches |
| n= | 0.01 | mannings coeff |
| θ= | 84.7 | degrees |
| S= | 0.0336 | slope in/in |

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

| Solution to Mannings Equation | | | | |
|---|---|---|---|---|
| Area,ft$^2$ | Wetted Perimeter, ft | Hydraulic Radius, ft | velocity ft/s | flow, cfs |
| 0.14 | 1.11 | 0.12 | 6.72 | 0.91 |

| Manning's n-values | |
|---|---|
| PVC | 0.01 |
| PE (<9"dia) | 0.015 |
| PE (>12"dia) | 0.02 |
| PE(9-12"dia) | 0.017 |
| CMP | 0.025 |
| ADS N12 | 0.012 |
| HCMP | 0.023 |
| Conc | 0.013 |

Created by: Mike O'Shea

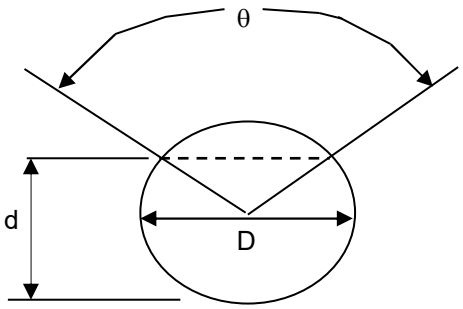
**MANNING'S EQUATION FOR PIPE FLOW**

Project: Nerradscali Subdivision  Location: Pipe #2 - DMA-04

By:  Date:

Chk. By:  Date:  mdo version 12.8.00

Clear Data Entry Cells




INPUT

| | | |
|---|---|---|
| D= | 12 | inches |
| d= | 2.1 | inches |
| n= | 0.01 | mannings coeff |
| θ= | 98.9 | degrees |
| S= | 0.01 | slope in/in |

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

| Solution to Mannings Equation | | | | |
|---|---|---|---|---|
| Area,ft$^2$ | Wetted Perimeter, ft | Hydraulic Radius, ft | velocity ft/s | flow, cfs |
| 0.09 | 0.86 | 0.11 | 3.35 | 0.31 |

| Manning's n-values | |
|---|---|
| PVC | 0.01 |
| PE (<9"dia) | 0.015 |
| PE (>12"dia) | 0.02 |
| PE(9-12"dia) | 0.017 |
| CMP | 0.025 |
| ADS N12 | 0.012 |
| HCMP | 0.023 |
| Conc | 0.013 |

Created by: Mike O'Shea

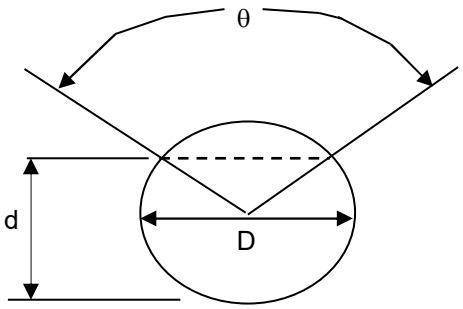
**MANNING'S EQUATION FOR PIPE FLOW**

Project: Nerradscali Subdivision  Location: Pipe #3 - DMA-02

By:  Date:

Chk. By:  Date:  mdo version 12.8.00

Clear Data Entry Cells




INPUT

| | | |
|---|---|---|
| D= | 12 | inches |
| d= | 3.6 | inches |
| n= | 0.01 | mannings coeff |
| θ= | 132.8 | degrees |
| S= | 0.01 | slope in/in |

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

| Solution to Mannings Equation | | | | |
|---|---|---|---|---|
| Area,$ft^2$ | Wetted Perimeter, ft | Hydraulic Radius, ft | velocity ft/s | flow, cfs |
| 0.20 | 1.16 | 0.17 | 4.58 | 0.91 |

| Manning's n-values | |
|---|---|
| PVC | 0.01 |
| PE (<9"dia) | 0.015 |
| PE (>12"dia) | 0.02 |
| PE(9-12"dia) | 0.017 |
| CMP | 0.025 |
| ADS N12 | 0.012 |
| HCMP | 0.023 |
| Conc | 0.013 |

Created by: Mike O'Shea

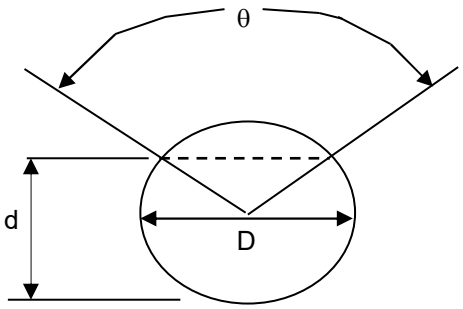
**MANNING'S EQUATION FOR PIPE FLOW**

Project: Nerradscali Subdivision  Location: Pipe #4 - DMA-03

By:  Date:

Chk. By:  Date:  mdo version 12.8.00

Clear Data Entry Cells




INPUT

| | | |
|---|---|---|
| D= | 12 | inches |
| d= | 1 | inches |
| n= | 0.01 | mannings coeff |
| θ= | 67.1 | degrees |
| S= | 0.0489 | slope in/in |

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

| Solution to Mannings Equation | | | | |
|---|---|---|---|---|
| Area,$ft^2$ | Wetted Perimeter, ft | Hydraulic Radius, ft | velocity ft/s | flow, cfs |
| 0.03 | 0.59 | 0.05 | 4.66 | 0.15 |

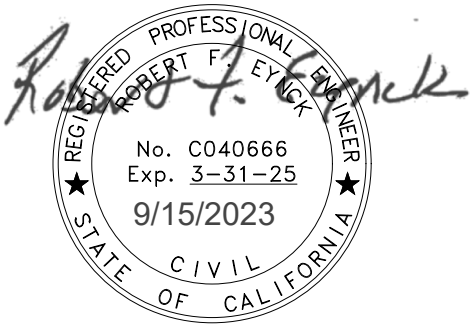
| Manning's n-values | |
|---|---|
| PVC | 0.01 |
| PE (<9"dia) | 0.015 |
| PE (>12"dia) | 0.02 |
| PE(9-12"dia) | 0.017 |
| CMP | 0.025 |
| ADS N12 | 0.012 |
| HCMP | 0.023 |
| Conc | 0.013 |

Created by: Mike O'Shea

# WATER STUDY
## FOR
## 905 NORTH AVENUE

### Sacramento, CA 95838

### September 2023




**Prepared by,**
**CWE**
**2260 Douglas Blvd., Suite 160**
**Roseville, CA 95661**
**Ph 916-772-7800**
**CWE Project No. 21-188**

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# APPENDIX

APPENDIX A ..... VICINITY MAP AND SITE PLAN EXHIBITS

APPENDIX B ..... PROJECT WATER MAP

APPENDIX C ..... MISCELLANEOUS DOCUMENTATION

APPENDIX D ..... WATER CALCULATIONS AND EPANET REPORT

## A. PROJECT LOCATION

The proposed residential grading, drainage, and utilities project is located east of the intersection of North Avenue and Rio Linda Boulevard, just south of Interstate 80 in the City of Sacramento, State of California, 95838. The approximate coordinates of the project site are latitude 38.640581° north and longitude -121.445747° west. The project property is about 1.41 acres and has APN 237-0200-092. Approximately 1.32 acres will be disturbed as part of this project, which includes off-site improvements encompassing the widening of North Avenue. The project's location is shown on the Vicinity Map in Appendix A.

## B. EXISTING SITE CONDITIONS

In its existing condition, the site is partially developed with a house on-site with driveway access to North Avenue. Additionally, there are two wooden sheds and one metal shed north of the existing house. There is an electrical transmission tower located at the northeast corner of the property which includes a 100-foot-wide easement that encumbers a portion of the eastern part of the site. The southern property line extends 20 feet beyond the existing right-of-way, and there is rolled curb, gutter, and sidewalk along the project frontage, between the City right-of-way and the southern property line. The remainder of the site is undeveloped and contains a fair number of trees and short, dead grass. The existing house has a residential water connection to the City main in North Avenue.

The City water main varies from 8" to 6" in North Avenue and runs west to east, south of the road centerline. There is an existing fire hydrant at the southwest corner of North Avenue and Cypress Street where a water supply test was performed by the City, and where the system flows and pressures are to be assumed. The water main is 8" in diameter for the majority of the frontage, and reduces to a 6" line at a tee near the southeast corner of the property. The Project Water Map, in Appendix B shows existing conditions on the project site.

Table 1 below summarizes the surrounding properties.

**Table 1: Site Description (Surrounding Areas)**

| | |
|---|---|
| North | City-owned concrete channel, beyond which is Interstate 80 |
| South | North Avenue, beyond which are residential properties |
| East | North Avenue Apartments |
| West | Residential property |

## C. PROPOSED PROJECT DESCRIPTION

This project proposes to improve the site by subdividing the property into 8 lots and constructing residential structures on each lot (except the lot with the existing house). Additionally, a private access drive, easement, and adjacent pedestrian sidewalk will be constructed to provide access and

fire protection to the landlocked lots. North avenue will be widened to the standard 35.5' half width right-of-way of a minor collector per City of Sacramento standards. This will include additional paving and rolled curb, gutter, and detached sidewalk within the expanded public right-of-way. The existing house lot and one other lot will have direct access to North Avenue, while the remaining 6 will connect to the private access drive, which will have driveway access to North Avenue at the southeast corner of the property. In addition to the aforementioned improvements, the project proposes landscaping and underground water, sanitary sewer, and drainage infrastructure.

The project's water improvements include a private 6" water main that will connect to the existing 6" water main in North Avenue. This main will be shared by 6 of the 8 proposed residential lots with private water services to each house. Additionally, the undeveloped lot fronting North Avenue will connect its own private service to the 8" portion of the public main in the street. The final lot, which already has a constructed house, currently has a water service connection installed. See section F for an in-depth discussion of the proposed water improvements. Other underground infrastructure will include sanitary sewer lines, as well as minimal storm drain piping to convey flows to the basin.

The total area to be disturbed will be approximately 1.32 acres. The Site Plan in Appendix A shows the proposed site and the Project Water Map in Appendix B shows proposed water system.

## D. PURPOSE OF REPORT

The purpose of this report is to present the design of the private water system and to demonstrate that the design complies with the City of Sacramento project conditions of approval dated July 9, 2020 regarding water system requirements.

The report is divided into four (4) main parts:

1. Description of the existing water system conditions.
2. Description of proposed water system, evaluation of post-construction water demand, and analysis of proposed water distribution system.
3. Conclusions based on water analysis.
4. Recommendations.

## E. EXISTING WATER CONDITIONS

CWE used topographic survey data from a survey performed by Michael Dequine and Associates, Inc. in April, 2018 as well as a water supply test performed by the City of Sacramento Department of Utilities on August 18, 2023. Using this data, CWE determined the existing sizes and layouts of the public water system along with existing flow and pressure conditions. The City of Sacramento tested City fire hydrant 402 as well as the fire service for the North Ave Apartments located at 999 North Ave to determine static and residual pressures and associated flows. The existing conditions can be seen on the Project Water Map in Appendix B. For the purposes of this study, the basis for

the water analysis will be the design water supply data, provided by the City. The public water map and water supply test results can be seen in Appendix C. A summary of these results can be seen in Table 1 below.

**Table 1: Water Supply Test Results (Baseline)**

| Hydrant Condition | Hydrant Number | Static Pressure (PSI) | Residual Pressure (PSI) |
|---|---|---|---|
| Residual | FS | 46 | 35 |

**Table 2: Water Supply Test Results (Flowed)**

| Hydrant Condition | Hydrant Number | Pitot Pressure (PSI) | Calc. Flow @ Pressure (GPM) | Flow @ 20 PSI (GPM) |
|---|---|---|---|---|
| Flowed | 402 | 17 | 1860 | 2119 |

**Table 3: Design Water Supply Data**

| Static Pressure (PSI) | Residual Pressure (PSI) | Total Flow @ Residual (GPM) | Total Flow @ 20 PSI (GPM) |
|---|---|---|---|
| 34 | 23 | 1900 | 2100 |

## F. POST-CONSTRUCTION WATER CONDITIONS

The post-construction water distribution system was designed to comply with the City of Sacramento project conditions of approval dated July 9, 2020. According to these conditions, the water system must satisfy the more critical of the following two conditions:

1. At maximum day peak hour demand, the operation or “residual” pressure at all water service connections shall be at least 30 pounds per square inch.

2. At average maximum day demand plus fire flow, the operation or “residual” pressure in the area of the fire shall not be less than 20 pounds per square inch.

In order to show the adequacy of the proposed system to meet these requirements, the existing and proposed water layouts were modeled in EPANET 2.2 and the specific demands were applied to points along the system. This was modeled by adding a “pump” to the system at the location of fire hydrant number 402 with a pump curve equivalent to the flows and pressures obtained by the water supply test in Table 3. From there, the existing and proposed water systems were laid out with nodes at each system junction. EPANET then automatically calculates friction losses using the Hazen-

Williams method during the analysis, and minor loss coefficients were added to the model for energy losses due to valves, bends, etc. The water demand assumptions are as outlined below for the two specific cases noted in the conditions of approval.

For the first case, the assumed maximum day peak hour demand for each residential water service is 3 gpm. The City of Sacramento Water Study Design Manual states that the peak hour demand (PHD) should be 2.6x the average daily demand (ADD). The ADD was assumed to be 1 gpm per household, so 2.6 gpm is the calculated PHD. To be conservative, 2.6 gpm was rounded up to 3 gpm. This value was placed on each node representing a water service connection and the model was run to determine the pressures at each node. The results of this analysis can be seen in Table 4 below as well as in Appendix D. Note that in both cases, the model only accounts for Lots 2-7 as Lot 1 is the existing house that already has a water service that ties into the 8-inch main within North Ave.

**Table 4: Case 1 Results**

| Service ID | Demand (GPM) | Residual Pressure (PSI) |
|---|---|---|
| LOT2 | 3 | 33.58 |
| LOT3 | 3 | 33.63 |
| LOT4 | 3 | 33.63 |
| LOT5 | 3 | 33.86 |
| LOT6 | 3 | 33.82 |
| LOT7 | 3 | 33.87 |
| LOT8 | 3 | 33.15 |

Based on these results, the water system meets the requirements for maintaining a minimum of 30 PSI for each water service connection at maximum peak hour demand.

For the second case, a demand of 26 gpm (see Fire Sprinkler Plans by Ellis Architects, Appendix C) was placed on each Lot node to represent the required flow for each fire sprinkler system and a fire flow of 500 gpm was placed on the most downstream node to represent a worst-case condition during a fire (see California Fire Code Table B105.1, Appendix C). The results of this analysis can be seen in Table 5 below as well as in Appendix D.

**Table 5: Case 2 Results**

| Service ID | Demand (GPM) | Residual Pressure (PSI) |
|---|---|---|
| LOT2 | 26 | 31.00 |
| LOT3 | 26 | 25.42 |
| LOT4 | 26 | 25.46 |
| LOT5 | 26 | 26.32 |
| LOT6 | 26 | 26.24 |
| LOT7 | 26 | 29.01 |
| LOT8 | 26 | 29.29 |
| Blow-Off Valve | 500 | 25.31 |

Based on these results, the water system meets the requirements for maintaining a minimum of 20 PSI in the area of fire.

## G. CONCLUSIONS

- The water distribution system will maintain the required pressures of the project conditions of approval for the two cases outlined by the City of Sacramento Department of Utilities.

## H. RECOMMENDATIONS

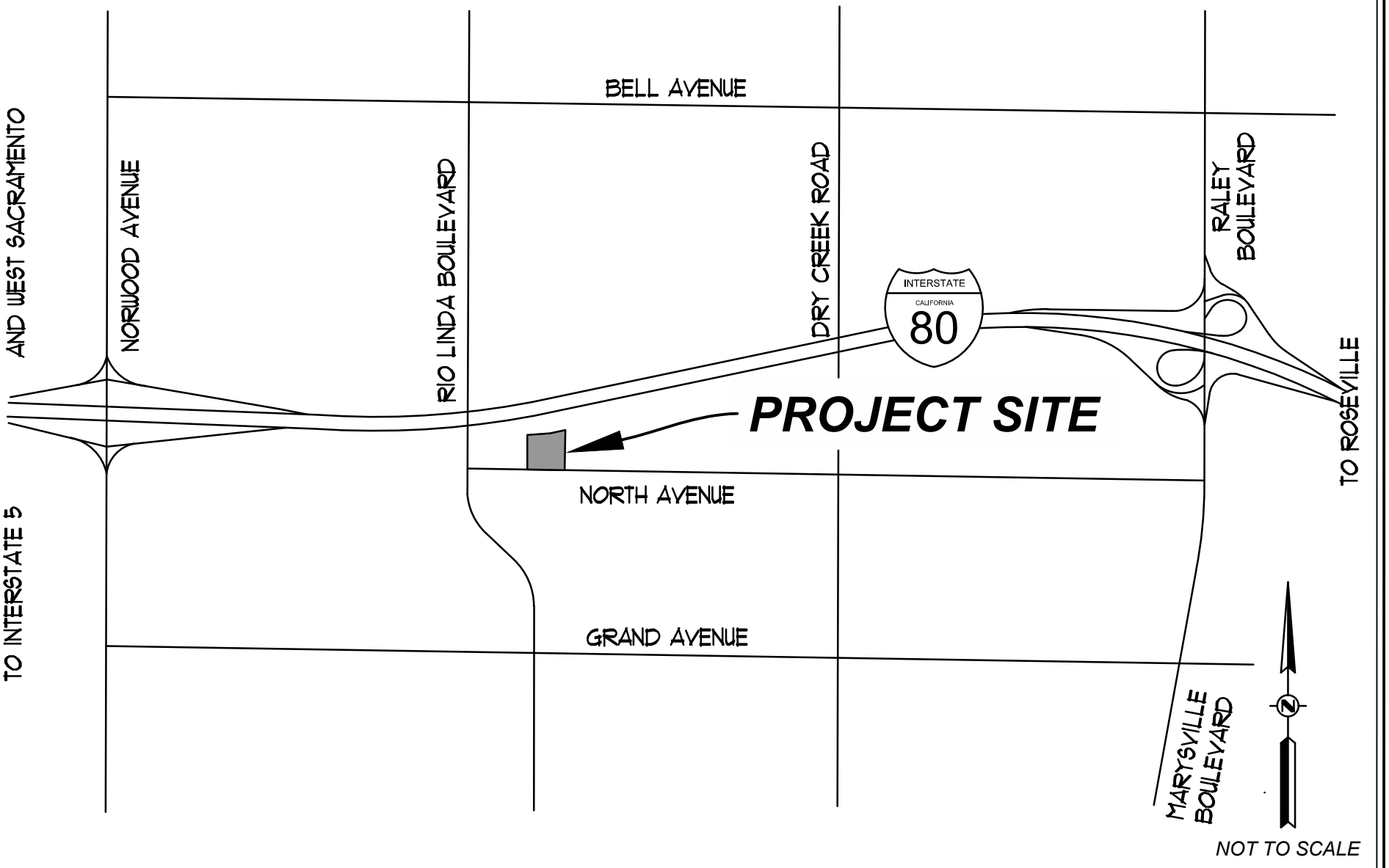
In order to sufficiently account for the performance of the proposed water distribution system, CWE recommends that the final design and construction include water improvements consistent with the 905 North Avenue Improvement Plans and the conclusions outlined in this water study.

## I. REFERENCES

- EPANET 2.2
- City of Sacramento Project Conditions of Approval for 905 North Avenue, dated July 9, 2020.
- California Fire Code 2018
- City of Sacramento Water Study Design Manual, January 2018

# APPENDIX A

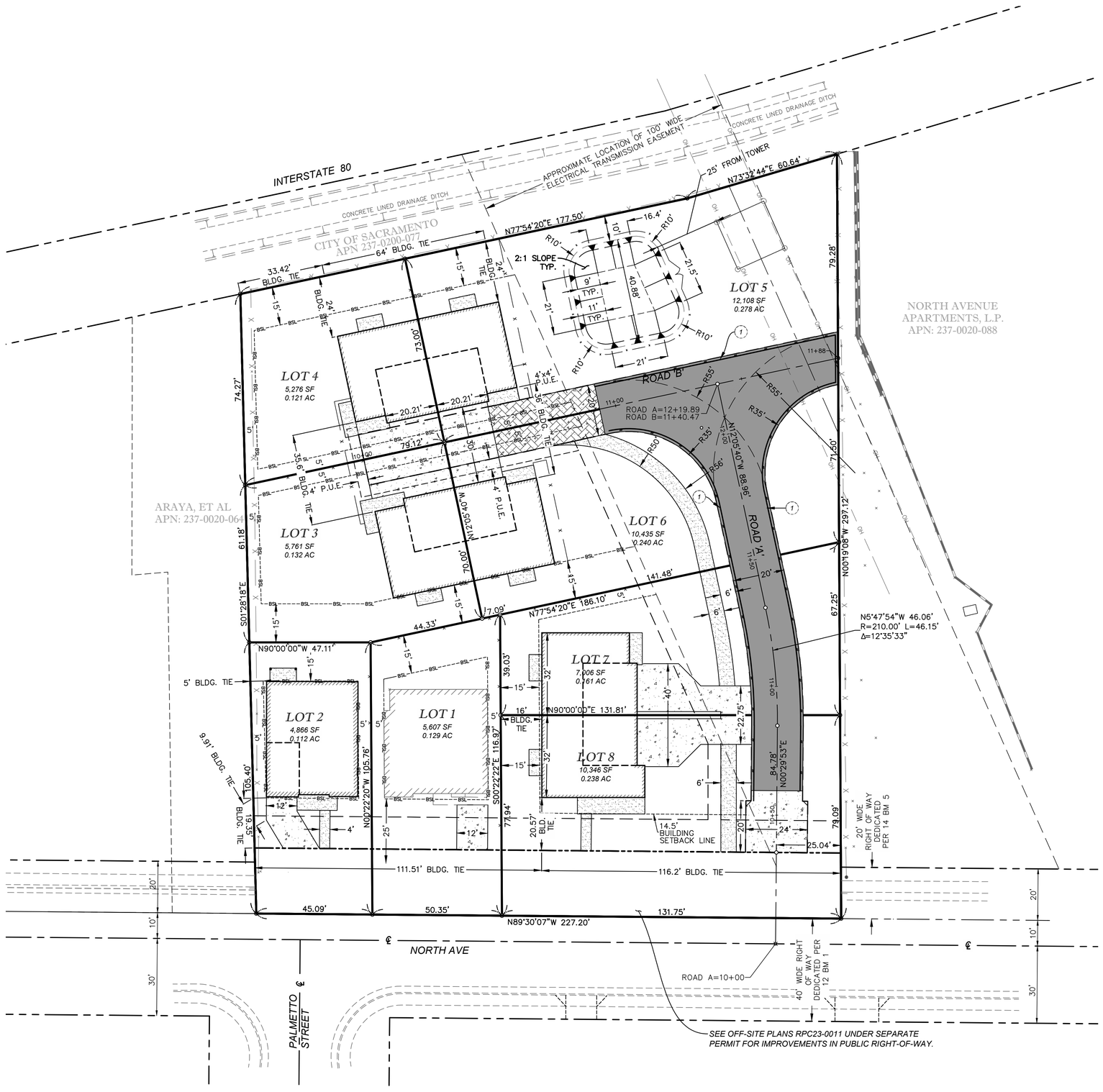
## VICINITY MAP AND SITE PLAN EXHIBITS




*NERRADSCALI SUBDIVISION*
*905 NORTH AVE*
*SACRAMENTO, CA 95838*

# *VICINITY MAP*

*2260 Douglas Blvd, Suite 160, Roseville, CA 95661*
*Ph: 916-772-7800 | www.cwecorp.com*




## NOTES:

*DIMENSIONS ARE TO BOTTOM FACE OF CURB UNLESS SPECIFIED OTHERWISE. BUILDING OUTLINE REPRESENT THE OUTER-MOST ELEMENT OF BUILDINGS. CONTRACTOR SHALL REFER TO FOUNDATION PLANS FOR CONSTRUCTION OF FOUNDATION AND BUILDING SLAB.*

## UNDERGROUND UTILITY NOTE:

*THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.*

## NOTICE TO CONTRACTOR - ORDER OF WORK:

*PRIOR TO THE START OF ANY CIVIL WORK, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES BY POTHOLING AT ALL POINTS OF POTENTIAL CONFLICT WITH PROPOSED UTILITIES OR PROPOSED POINTS OF CONNECTION WITH EXISTING UTILITIES. IF THE ACTUAL LOCATIONS OF THE EXISTING UTILITIES FOUND IN THE FIELD ARE DIFFERENT FROM WHAT IS SHOWN ON THESE PLANS, THE CONTRACTOR SHALL CONTACT RFE ENGINEERING IMMEDIATELY AND PROVIDE THE ACTUAL LOCATION INFORMATION. RFE ENGINEERING WILL VERIFY IF THERE ARE ANY CONFLICTS WITH THE IMPROVEMENTS AND WILL PROVIDE MODIFICATIONS TO THE DESIGN TO MITIGATE THE CONFLICTS IF ANY CONFLICTS EXIST.*

## LEGEND:

*BUILDING SETBACK* ——BSL——BSL——BSL——

*FIRE LANE STRIPING* ————————

## FIRE STRIPING KEY NOTE:

(1) *FIRE LANE DESIGNATION STRIPE AS DELINEATED ON THE DRAWINGS. CURBS SHALL BE PAINTED RED MARKED BY WHITE LETTERING "FIRE LANE - NO PARKING" A MINIMUM OF THREE INCHES TALL WITH A ½ INCH WIDE MINIMUM STROKE. THE INTERVAL BETWEEN STENCILED LETTERING SHALL BE ADEQUATE TO INFORM THE PUBLIC OF THE EXISTENCE OF THE FIRE LANE BUT IN NO EVENT SHALL THE INTERVAL EXCEED 50 FEET.*

| NO. | REVISION | DATE | BY | APPRV'D |
|---|---|---|---|---|
| | | | | |

| BY | CHECK |
|---|---|
| DESIGN MJW | RFE |
| DRAWN DCJ | RFE |
| QUANT. | |

ORIGINAL SCALE IS IN INCHES 0 1 2

REGISTERED PROFESSIONAL ENGINEER ROBERT F. ETNER No. C040666 Exp. 3-31-25 CIVIL STATE OF CALIFORNIA


CWE
2260 Douglas Blvd, Suite 160, Roseville, CA 95661
Ph: 916-772-1900 | www.cwecorp.com


**PROPERTY OWNER / DEVELOPER**
NERRADSCALI CORPORATION
3960 KINGSBARNS DRIVE
ROSEVILLE, CA 95747
CONTACT: DARREN BROWN
PH: (916) 300-7962
EMAIL: DARRENBBROWN@COMCAST.NET

ON-SITE IMPROVEMENT PLANS FOR
**NERRADSCALI SUBDIVISION**
SACRAMENTO, CA 95838
APN: 237-0200-092

# HORIZONTAL CONTROL PLAN

Sheet
**C5**
6 of 14
9/12/2023

1 INCH = 20 FEET

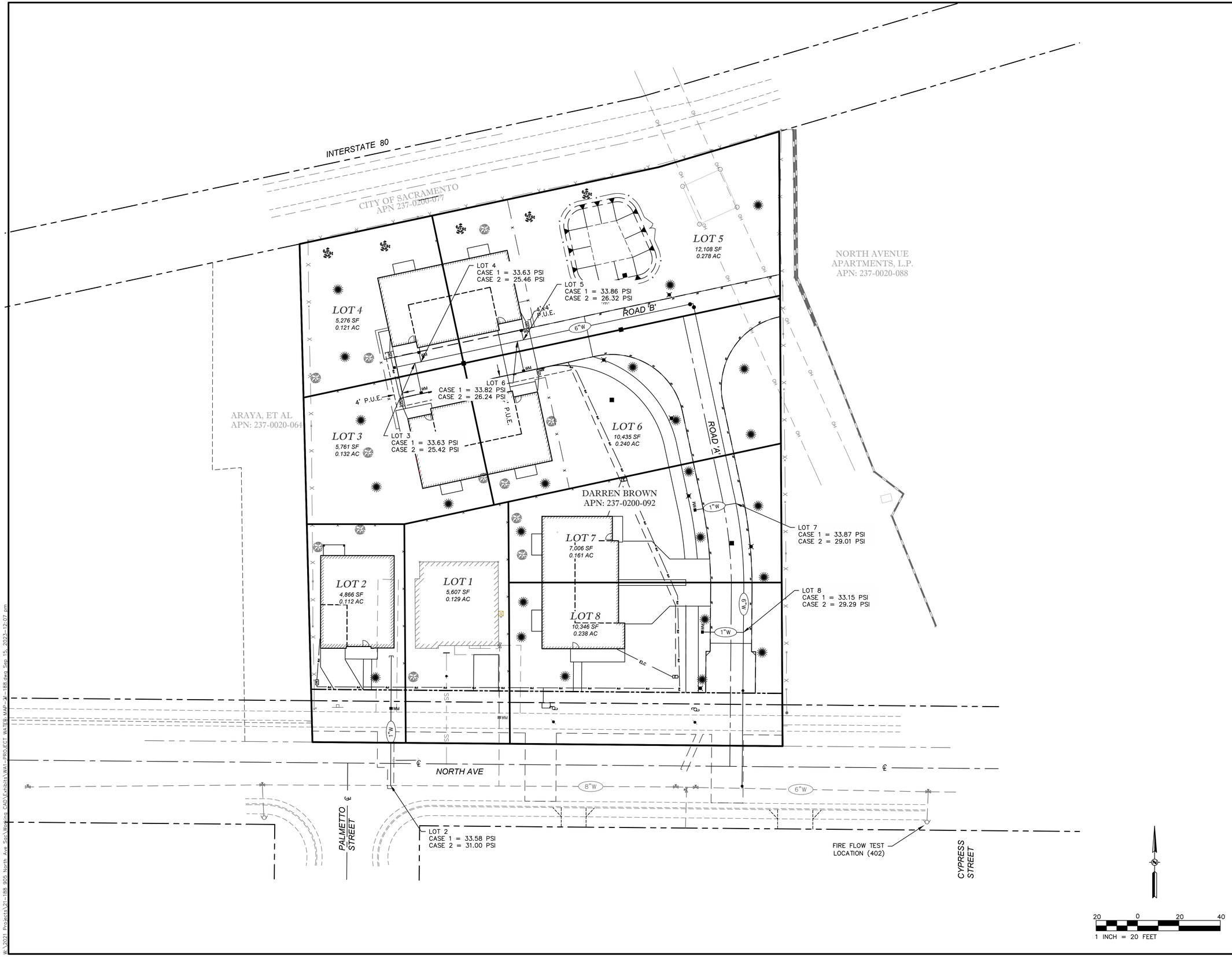
811 Know what's **below.** **Call** before you dig. or (800) 227-2600

CWE PROJECT NO. 21-188 – 905 NORTH AVENUE, SACRAMENTO, CA 95838

W:\2021 Projects\21-188 905 North Ave Sac\Working CAD\ONSITE C5 HORIZONTAL CNTL.dwg Sep 15, 2023-11:45 am

# APPENDIX B

## PROJECT WATER MAP




| NO. | REVISION | DATE | BY | APPR'D |
|---|---|---|---|---|
| | | | | |

| BY | CHECK |
|---|---|
| DESIGN MJW | RFE |
| DRAWN DCJ | RFE |
| QUANT. | |

ORIGINAL SCALE IS IN INCHES 0 1 2

REGISTERED PROFESSIONAL ENGINEER
ROBERT F. ETNOK
No. C040666
Exp. 3-31-25
CIVIL
STATE OF CALIFORNIA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Ph: 916-772-7800 | www.cwecorp.com


**PROPERTY OWNER / DEVELOPER**
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ROSEVILLE, CA 95747

CONTACT: DARREN BROWN
PH: (916) 300-7962
EMAIL: DARRENBBROWN@COMCAST.NET

ON-SITE IMPROVEMENT PLANS FOR
**NERRADSCALI SUBDIVISION**
SACRAMENTO, CA 95838
APN: 237-0200-092

# PROJECT WATER MAP

Sheet
1 of 1
9/12/2023

CWE PROJECT NO. 21-188 – 905 NORTH AVENUE, SACRAMENTO, CA 95838

W:\2021 Projects\21-188 905 North Ave Sac\Working CAD\Exhibits\WA1-PROJECT WATER MAP-21-188.dwg Sep 15, 2023-12:07 pm

# APPENDIX C

## MISCELLANEOUS DOCUMENTATION

# WATER SUPPLY TEST - DEPARTMENT OF UTILITIES

| | | |
|---|---|---|
| **City of Sacramento**<br>**Community Development Dept.**<br>**300 Richards Blvd., 3rd Floor**<br>**Sacramento, CA 95811** | WORK ORDER #: 587273 | WST NUMBER: 2316138 |
| | ANALYSIS FEE: $519.00 | DATE PAID: 8/2/2023 |
| | FIELD TEST FEE: $1,092.00 | DATE PAID: 8/2/2023 |
| | HYDRAULIC BOUNDARY CONDITION FEE: $615.00; optional see item (3) below. | DATE PAID: |
| CONTACT: Aaron Bernatchy | | TEST NUMBER: 1 of 1 |
| COMPANY: CWE | PHONE NUMBER: (916) 772-7800 | EMAIL: abernatchy@cwecorp.com |
| ADDRESS: 2260 Douglas Blvd, Ste 160, Roseville, CA 95661 | Site location 905 North Ave, Sacramento, CA 95838 | |
| | ASSESSOR'S PARCEL NUMBER: 237-0200-092-0000 | |

**The undersigned agrees to the following items and conditions:**

*(1) The street address and/or parcel number shown above is correct*

*(2) Water supply data is developed from several sources of information which may include water supply test data, computer models, and pressure recording stations. The water supply data given is to be used for design purposes.*

*(3) Based on hydrant locations, test results may not provide accurate flow information at the point of connection, for a fee the City can provide the hydraulic analysis necessary to transfer the results to a single point of connection.*

*(4) Although the water supply data reported herein is believed to be accurate, the City makes no warranty, guaranty, certification or other representation of any kind that such data is accurate or correct, or that the pressures and/or flow rates reported herein can or will be maintained. The undersigned agrees that the City, its officers and employees shall not be liable for any damages of any kind resulting from the use of or reliance upon the water supply data reported herein by the undersigned or by any third party.*

*(5) When more than one water supply test has been performed, the decision is left to the Fire Plan Checker as to which water supply test is to be used.*

*(6) If the undersigned desires to witness the water supply test performed by the City, please check the box below:*

☐ *I want to witness this water supply test, which will be scheduled at the convenience of the Department of Utilities.*

*(7) If the undersigned elects to hire a licensed engineer, at the undersigned's sole expense, to witness and certify the water supply test performed by the City, please check the box below:*

☐ *At my expense, I will arrange for a licensed engineer to witness and certify this water supply test, which will be scheduled at the convenience of the Department of Utilities.*

PRINT NAME: Aaron Bernatchy SIGNATURE: *Aaron Bernatchy*

DATE: 7/31/2023

DATE OF TEST: 8/18/2023 TIME OF TEST: 8am

WTR. MAIN SIZE: 6" TEST CONDUCTED BY: J.Ramirez

| | Hydrant Number | Map Page | Static Pres. (PSI) | Residual Pres. (PSI) | Pitot Pres. (PSI) | Outlet Dia. (Inches) | Coefficient $C_1$ | Coefficient $C_2$ | Calc. Flow @ Pres. (GPM) | Flow @ 20 PSI (G.P.M.) |
|---|---|---|---|---|---|---|---|---|---|---|
| Residual | FS | R19 | 46 | 35 | | | | | | |
| Flowed | 402 | R19 | | | 17 | 4.5 | 0.90 | 0.83 | 1860 | 2119 |
| Flowed | | | | | | | | | | |
| Flowed | | | | | | | | | | |
| Flowed | | | | | | | | | | |

* THE WATER SUPPLY TEST DATA IS NOT TO BE USED FOR THE DESIGN OF DOMESTIC WATER SYSTEMS.

* (STATIC PRES. - RESIDUAL PRES.) / (STATIC PRES. - 20 PSI) MUST NOT BE LESS THAN 25%. THEREFORE, THESE RESULTS ARE ONLY VALID FOR RESIDUAL PRESSURES LESS THAN 40 PSI

## *WATER SUPPLY DATA SUMMARY*

| | Design (1) |
|---|---|
| Static Pressure | 34 PSI |
| Residual Pressure | 23 PSI |
| Total Flow @ Residual | 1900 G.P.M. |
| Total Flow @ 20 PSI | 2100 G.P.M. |

(1) The Design Water Supply Data reflects fluctuations and future demands on the water distribution system. It is to be used for design purposes.

02/03/2023

# 905 North Ave


9/11/2023, 11:30:31 AM

DOU Map Book Grid

DOU Documents

Hold Harmless

Water Lateral Lines (City Owned)

Hydrant

Unknown

Water Mains (City Owned)

Distribution

Water Service Connections (Centroids) (City Owned)

Water Service Connections (New) (City Owned)

Domestic

Water Hydrants (City Owned)

Standard

Water System Valves (City Owned)

Gate

Water Fittings (City Owned)

Elbow

Tee

Parcel Boundary

1:1,128

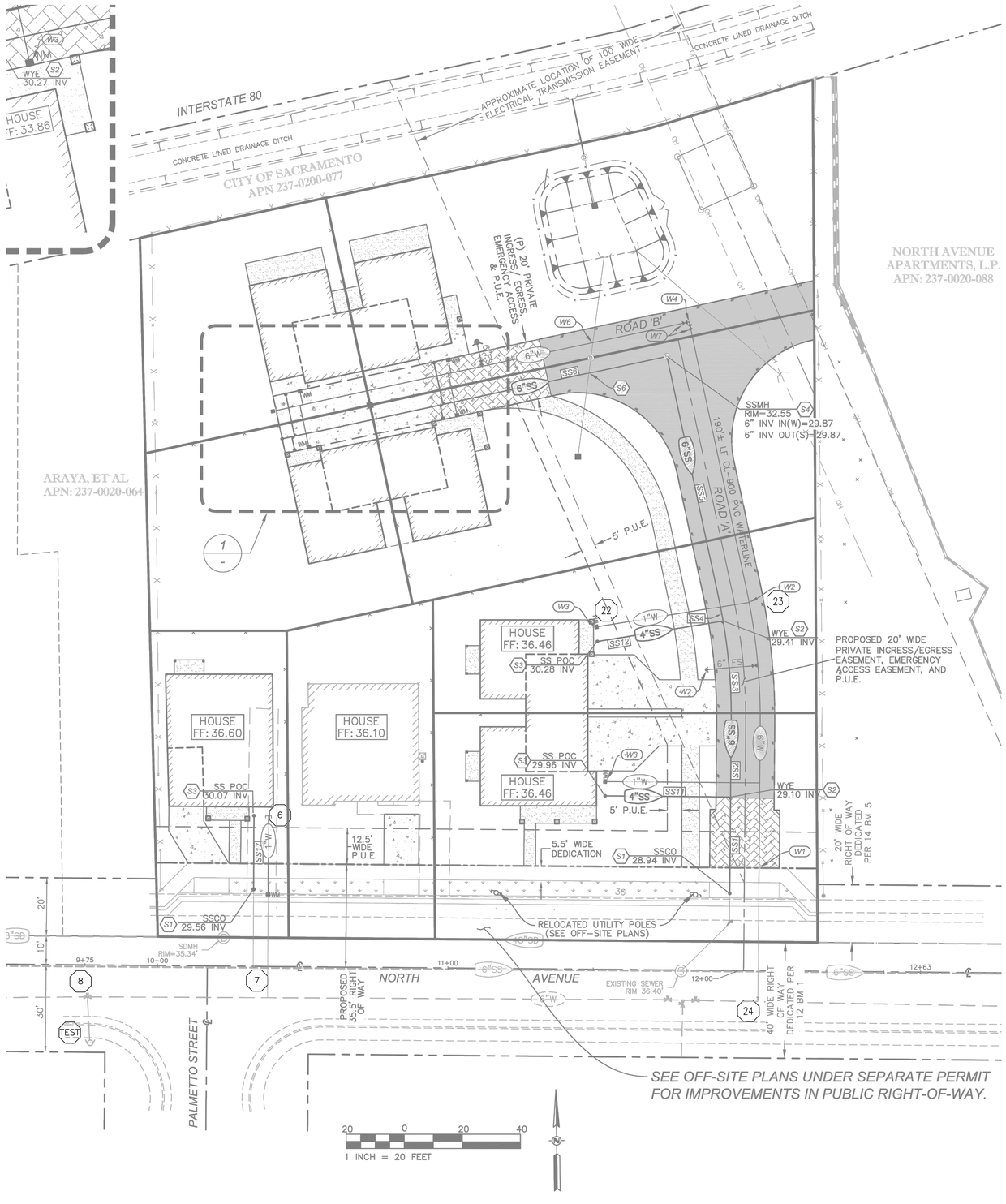
0 0.01 0.02 0.04 mi

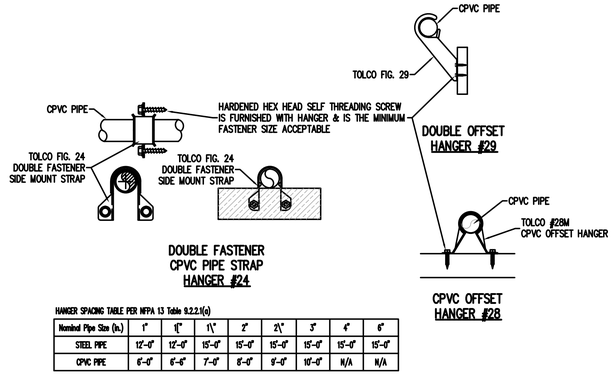
0 0.01 0.03 0.06 km

N. Jennings, County of Sacramento, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA

GIS/IT
City of Sacramento GIS/IT Department

IF THIS SHEET IS NOT 24 x 36, IT IS A REDUCED PRINT - SCALE ACCORDINGLY




HANGER SPACING TABLE PER NFPA 13 Table 9.2.2.1(a)

| Nominal Pipe Size (in.) | 1" | 1¼" | 1½" | 2" | 2½" | 3" | 4" | 6" |
|---|---|---|---|---|---|---|---|---|
| STEEL PIPE | 12'-0" | 12'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" |
| CPVC PIPE | 6'-0" | 6'-6" | 7'-0" | 8'-0" | 9'-0" | 10'-0" | N/A | N/A |

## NOTES

1. THE AUTOMATIC SPRINKLER SYSTEM SHALL CONFORM TO THE REQUIREMENTS OF THE 2016 EDITION OF NFPA 13D THE 2019 CALIFORNIA BUILDING CODE.
2. SPRINKLERS SHALL BE LOCATED AS REQUIRED BY NFPA 13D, CHAPTER 8.
3. PIPING SHALL BE ATTACHED TO THE CEILING FRAMING.
4. PIPING SHALL BE SCH. 40 STEEL IN EXPOSED AREAS, AND CPVC IN ABOVE CEILING SPACES.
5. ALL ELECTRICAL WORK TO BE PERFORMED BY OTHERS.

### SPRINKLER SPACING NOTES – NFPA 13D

1. 8.2.5.2.1 PENDENT SPRINKLER SHALL BE LOCATED AT LEAST 3 FT AWAY FROM OBSTRUCTIONS SUCH AS CEILING FANS AND LIGHT FIXTURES, MEASURED FROM THE CENTER OF THE SPRINKLER TO THE CENTER OF THE OBSTRUCTION.
2. 8.2.5.2.3 WHERE THE SPRINKLER CANNOT BE LOCATED 3 FT AWAY FROM THE OBSTRUCTION, AN ADDITIONAL SPRINKLER SHALL BE LOCATED ON THE OTHER SIDE OF THE OBSTRUCTION.
3. 8.2.5.7 SHADOW AREAS SHALL BE PERMITTED IN THE PROTECTION AREA OF A SPRINKLER AS LONG AS THE CUMULATIVE DRY AREAS DO NOT EXCEED 15 FT² PER SPRINKLER.
4. 8.3.2 SPRINKLERS AR NOT REQUIRED IN BATHROOMS OF 55 FT² AND LESS.
5. 8.3.3 SPRINKLERS ARE NOT REQUIRED IN CLOSETS THAT DO NOT EXCEED 24 FT².
6. 8.3.9 SPRINKLERS SHALL BE INSTALLED IN ANY CLOSET USED FOR HEATING OR AIR-CONDITIONING EQUIPMENT, WASHERS, DRYERS OR WATER HEATERS.
7. 8.3.8 SPRINKLERS ARE NOT REQUIRED IN CLOSETS IN GARAGES AND EXTERIOR CLOSETS, REGARDLESS OF SIZE, LOCATED ON EXTERIOR BALCONIES, EXTERIOR BREEZEWAYS/CORRIDORS OR ACCESSED FROM OUTDOORS WHERE THE CLOSET DOES NOT HAVE DOORS OR UNPROTECTED PENETRATIONS DIRECTLY INTO THE DWELLING UNIT.
8. 8.3.4 SPRINKLERS ARE NOT REQUIRED IN ANY PORCHES, BALCONIES, CORRIDORS, CARPORTS, AND SIMILAR STRUCTURES.
9. 8.3.5 SPRINKLER ARE NOT REQUIRED IN ATTICS, PENTHOUSE EQUIPMENT ROOMS, ELEVATOR MACHINE ROOMS, CONCEALED SPACES DEDICATED EXCLUSIVELY TO AND CONTAINING ONLY DWELLING UNIT VENTILATION EQUIPMENT, CRAWL SPACES, FLOOR/CEILING SPACES, ELEVATOR SHAFTS AND OTHER CONCEALED SPACES NOT INTENDED FOR LIVING PURPOSES OR STORAGE.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4132 C Street
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95819
Phone: 916.440.6765
ellis-architects.com


REGISTERED PROFESSIONAL ENGINEER – VINCENT C. HOWARD – No. FPE-1497 – EXP. 6-30-2023 – FIRE PROTECTION – STATE OF CALIFORNIA

Date Signed: June 1, 2022


SACRAMENTO ENGINEERING CONSULTANTS
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Sacramento, CA 95827-2503
Phone: (916) 368-4488
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REGISTERED IN ALL 50 STATES

Job No. 22274

# NORTH AVENUE HALF-PLEXES

**DARREN BROWN**

905 NORTH AVENUE, SACRAMENTO, CALIFORNIA

APN # 237-0020-092

PLAN CHECK SET

DATE:

06/02/2022

REVISIONS:

SHEET TITLE

FIRE SITE PLAN

SHEET NO.

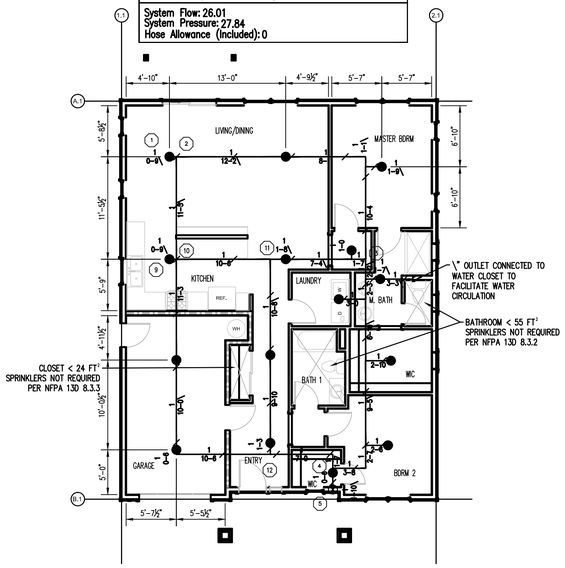
FP-1

File Path

01 January, 2000

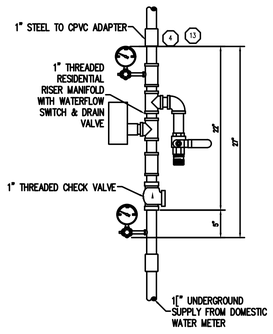
IF THIS SHEET IS NOT 24 x 36, IT IS A REDUCED PRINT - SCALE ACCORDINGLY

| Hydraulic Calculation Data |
|---|
| Design Area Number: Unit 1<br>Design Area Location: Unit 1<br>Hazard/Occupancy: Residential<br>Design Density: 0.05<br>Design Area: 2 heads<br>Number of Sprinklers in Design Area: 2 |
| System Flow: 26.01<br>System Pressure: 27.84<br>Hose Allowance (Included): 0 |



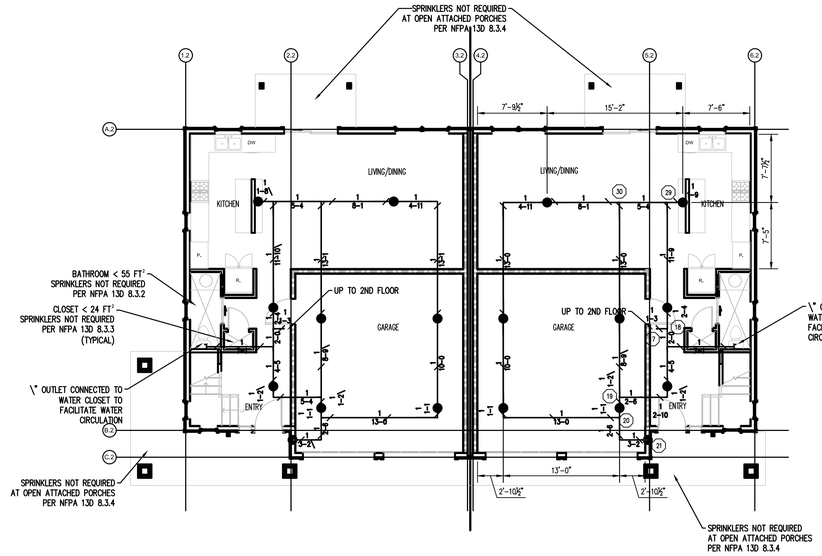

## UNIT 1

| Sprinkler Head Schedule | | | | | |
|---|---|---|---|---|---|
| Symbol | Count | Thread | K-Factor | Description | Note |
| ● | 15 | 1/2" | 4.9 | TY3596 7/16 FR 160 B CC | ON DROP |
| 15 = Total Number of Heads Unit 1 | | | | | |

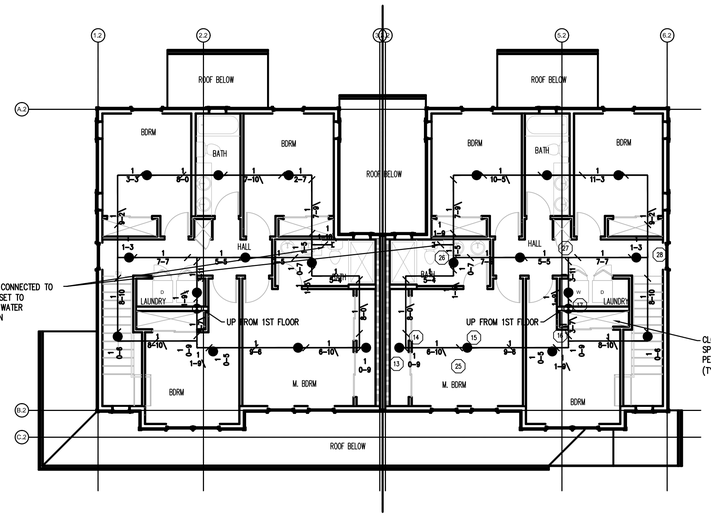



FIRE SPRINKLER RISER DETAIL
NTS

| Hydraulic Calculation Data |
|---|
| Design Area Number: Unit 2<br>Design Area Location: 2nd Floor<br>Hazard/Occupancy: Residential<br>Design Density: 0.05<br>Design Area: 2 heads<br>Number of Sprinklers in Design Area: 2 |
| System Flow: 26.02<br>System Pressure: 29.96<br>Hose Allowance (Included): 0 |

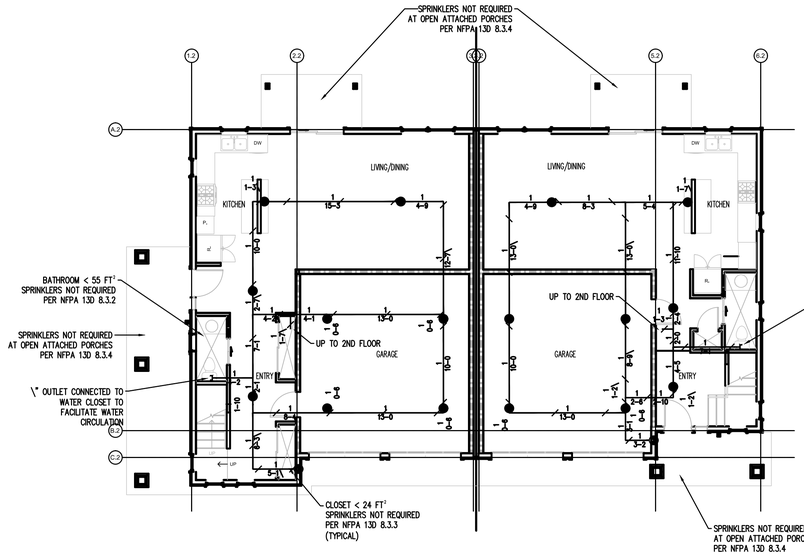



## UNIT 2A 1ST FLOOR

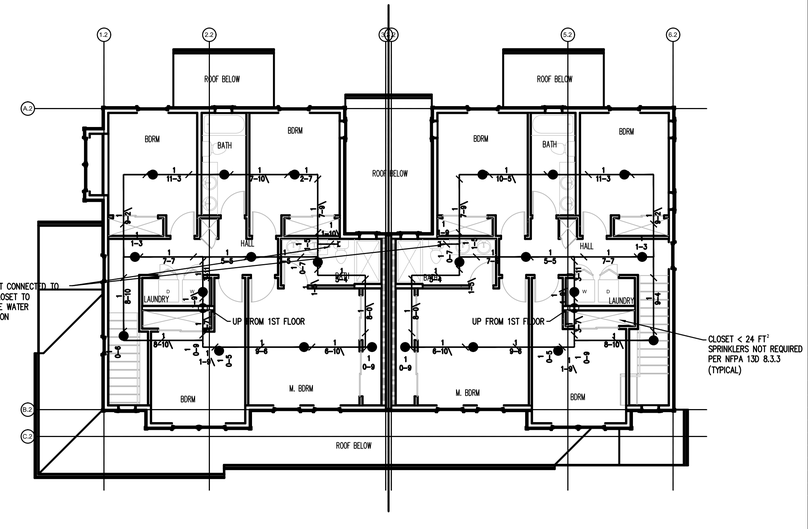



## UNIT 2A 2ND FLOOR

| Sprinkler Head Schedule | | | | | |
|---|---|---|---|---|---|
| Symbol | Count | Thread | K-Factor | Description | Note |
| ● | 38 | 1/2" | 4.9 | TY3596 7/16 FR 160 B CC | ON DROP |
| 38 = Total Number of Heads Unit 2A | | | | | |




## UNIT 2B 1ST FLOOR




## UNIT 2B 2ND FLOOR

| Sprinkler Head Schedule | | | | | |
|---|---|---|---|---|---|
| Symbol | Count | Thread | K-Factor | Description | Note |
| ● | 37 | 1/2" | 4.9 | TY3596 7/16 FR 160 B CC | ON DROP |
| 37 = Total Number of Heads Unit 2B | | | | | |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REGISTERED PROFESSIONAL ENGINEER
ROBERT C. HENRY
C.E. No. FPE-1497
EXP. 6-30-2023
FIRE PROTECTION
STATE OF CALIFORNIA

Date Signed: June 1, 2022


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REGISTERED IN ALL 50 STATES

Job No. 22274

# NORTH AVENUE HALF-PLEXES

**DARREN BROWN**

905 NORTH AVENUE, SACRAMENTO, CALIFORNIA

APN # 237-0020-092

PLAN CHECK SET

DATE:
06/02/2022

REVISIONS:

SHEET TITLE
FIRE SPRINKLER PLAN

SHEET NO.
FP-2

File Path

01 January, 2000

# SECTION B105
# FIRE-FLOW REQUIREMENTS FOR BUILDINGS

**B105.1 One- and two-family dwellings, Group R-3 and R-4 buildings and townhouses.**

The minimum fire-flow and flow duration requirements for one- and two-family dwellings, Group R-3 and R-4 buildings and townhouses shall be as specified in Tables B105.1(1) and B105.1(2).

## TABLE B105.1(1)
## REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

| FIRE-FLOW CALCULATION AREA (square feet) | AUTOMATIC SPRINKLER SYSTEM (Design Standard) | MINIMUM FIRE FLOW (gallons per minute) | FLOW DURATION (hours) |
|---|---|---|---|
| 0–3,600 | No automatic sprinkler system | 1,000 | 1 |
| 3,601 and greater | No automatic sprinkler system | Value in Table B105.1(2) | Duration in Table B105.1(2) at the required fire-flow rate |
| 0–3,600 | Section 903.3.1.3 of the *California Fire Code* or Section 313.3 of the *California Residential Code* | 500 | 1/2 |
| 3,601 and greater | Section 903.3.1.3 of the *California Fire Code* or Section 313.3 of the *California Residential Code* | 1/2 value in Table B105.1(2) | 1 |

For SI: 1 square foot = 0.0929 $m^2$, 1 gallon per minute = 3.785 L/m.

## TABLE B105.1(2) REFERENCE TABLE FOR TABLES B105.1(1) AND B105.2

| FIRE-FLOW CALCULATION AREA (square feet) | | | | | FIRE FLOW (gallons per minute)[b] | FLOW DURATION (hours) |
|---|---|---|---|---|---|---|
| Type IA and IB[a] | Type IIA and IIIA[a] | Type IV and V-A[a] | Type IIB and IIIB[a] | Type V-B[a] | | |
| 0-22,700 | 0-12,700 | 0-8,200 | 0-5,900 | 0-3,600 | 1,500 | 2 |

# APPENDIX D

## WATER CALCULATIONS AND EPANET REPORT

CASE 1

Network Table - Nodes

| Node ID | Demand GPM | Head ft | Pressure psi | Quality |
|---|---|---|---|---|
| Junc 1 | 0.00 | 112.54 | 32.80 | 0.00 |
| Junc 2 | 0.00 | 112.54 | 32.87 | 0.00 |
| Junc 3 | 0.00 | 112.53 | 33.15 | 0.00 |
| Junc LOT8 | 3.00 | 112.53 | 33.15 | 0.00 |
| Junc LOT7 | 3.00 | 112.53 | 33.87 | 0.00 |
| Junc 6 | 0.00 | 112.53 | 34.73 | 0.00 |
| Junc LOT5 | 3.00 | 112.52 | 33.86 | 0.00 |
| Junc LOT6 | 3.00 | 112.52 | 33.82 | 0.00 |
| Junc LOT4 | 3.00 | 112.52 | 33.63 | 0.00 |
| Junc LOT3 | 3.00 | 112.52 | 33.63 | 0.00 |
| Junc LOT2 | 3.00 | 112.53 | 33.58 | 0.00 |
| Junc BOV | 0.00 | 112.52 | 33.62 | 0.00 |
| Resvr FH | -21.00 | 34.00 | 0.00 | 0.00 |

CASE 1

Network Table - Links

| Link ID | Flow GPM | Velocity fps | Unit Headloss ft/Kft | Friction Factor | Reaction Rate mg/L/d | Quality | Status |
|---|---|---|---|---|---|---|---|
| Pipe 3 | 21.00 | 0.24 | 0.07 | 0.038 | 0.00 | 0.00 | Open |
| Pipe 4 | -18.00 | 0.20 | 0.05 | 0.039 | 0.00 | 0.00 | Open |
| Pipe 5 | 15.00 | 0.17 | 0.04 | 0.040 | 0.00 | 0.00 | Open |
| Pipe 6 | 12.00 | 0.14 | 0.02 | 0.041 | 0.00 | 0.00 | Open |
| Pipe 7 | 12.00 | 0.14 | 0.02 | 0.041 | 0.00 | 0.00 | Open |
| Pipe 8 | 9.00 | 0.10 | 0.01 | 0.039 | 0.00 | 0.00 | Open |
| Pipe 9 | 6.00 | 0.07 | 0.01 | 0.046 | 0.00 | 0.00 | Open |
| Pipe 10 | 3.00 | 0.03 | 0.00 | 0.071 | 0.00 | 0.00 | Open |
| Pipe 2 | -3.00 | 0.02 | 0.00 | 0.053 | 0.00 | 0.00 | Open |
| Pipe 11 | 0.00 | 0.00 | 0.00 | 0.000 | 0.00 | 0.00 | Open |
| Pump PUMP | 21.00 | 0.00 | -78.54 | 0.000 | 0.00 | 0.00 | Open |
| Valve 1 | 21.00 | 0.24 | 0.00 | 0.000 | 0.00 | 0.00 | Open |

CASE 2

Network Table - Nodes

| Node ID | Demand GPM | Head ft | Pressure psi | Quality |
|---|---|---|---|---|
| Junc 1 | 0.00 | 110.39 | 31.87 | 0.00 |
| Junc 2 | 0.00 | 110.39 | 31.93 | 0.00 |
| Junc 3 | 0.00 | 106.58 | 30.57 | 0.00 |
| Junc LOT8 | 26.00 | 103.62 | 29.29 | 0.00 |
| Junc LOT7 | 26.00 | 101.32 | 29.01 | 0.00 |
| Junc 6 | 0.00 | 97.97 | 28.42 | 0.00 |
| Junc LOT5 | 26.00 | 95.13 | 26.32 | 0.00 |
| Junc LOT6 | 26.00 | 95.04 | 26.24 | 0.00 |
| Junc LOT4 | 26.00 | 93.66 | 25.46 | 0.00 |
| Junc LOT3 | 26.00 | 93.59 | 25.42 | 0.00 |
| Junc LOT2 | 26.00 | 106.57 | 31.00 | 0.00 |
| Junc BOV | 500.00 | 93.35 | 25.31 | 0.00 |
| Resvr FH | -682.00 | 34.00 | 0.00 | 0.00 |

CASE 2

Network Table - Links

| Link ID | Flow GPM | Velocity fps | Unit Headloss ft/Kft | Friction Factor | Reaction Rate mg/L/d | Quality | Status |
|---|---|---|---|---|---|---|---|
| Pipe 3 | 682.00 | 7.74 | 42.34 | 0.023 | 0.00 | 0.00 | Open |
| Pipe 4 | -656.00 | 7.44 | 39.40 | 0.023 | 0.00 | 0.00 | Open |
| Pipe 5 | 630.00 | 7.15 | 36.56 | 0.023 | 0.00 | 0.00 | Open |
| Pipe 6 | 604.00 | 6.85 | 33.81 | 0.023 | 0.00 | 0.00 | Open |
| Pipe 7 | 604.00 | 6.85 | 33.81 | 0.023 | 0.00 | 0.00 | Open |
| Pipe 8 | 578.00 | 6.56 | 31.17 | 0.023 | 0.00 | 0.00 | Open |
| Pipe 9 | 552.00 | 6.26 | 28.62 | 0.023 | 0.00 | 0.00 | Open |
| Pipe 10 | 526.00 | 5.97 | 26.17 | 0.024 | 0.00 | 0.00 | Open |
| Pipe 2 | -26.00 | 0.17 | 0.02 | 0.038 | 0.00 | 0.00 | Open |
| Pipe 11 | -500.00 | 5.67 | 23.83 | 0.024 | 0.00 | 0.00 | Open |
| Pump PUMP | 682.00 | 0.00 | -76.39 | 0.000 | 0.00 | 0.00 | Open |
| Valve 1 | 682.00 | 7.74 | 0.00 | 0.000 | 0.00 | 0.00 | Open |

Curve Editor

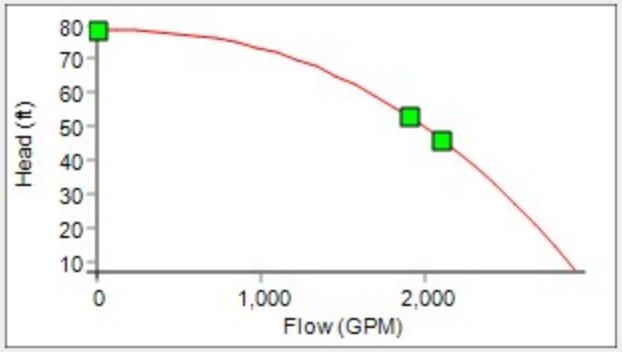
Curve ID: 1

Description: Fire Hydrant 402

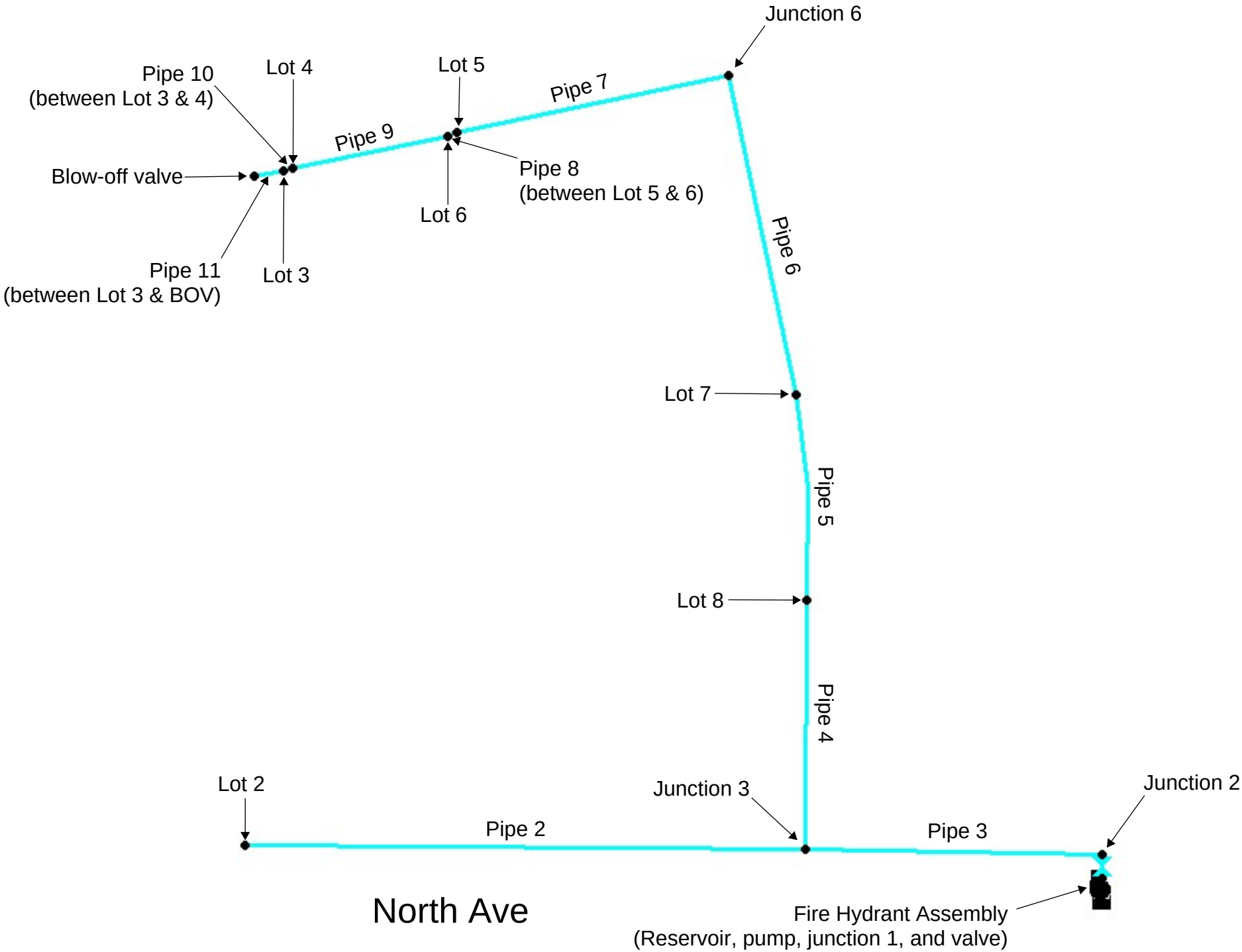
Curve Type: PUMP

Equation: Head = 78.54-3.195E-007(Flow)^2.41

| Flow | Head |
|---|---|
| 0 | 78.54 |
| 1900 | 53.13 |
| 2100 | 46.2 |




Load... Save... OK Cancel Help


Junction 6
Pipe 10
(between Lot 3 & 4)
Lot 4
Lot 5
Pipe 7
Pipe 9
Blow-off valve
Pipe 8
(between Lot 5 & 6)
Lot 6
Pipe 6
Pipe 11
(between Lot 3 & BOV)
Lot 3
Lot 7
Pipe 5
Lot 8
Pipe 4
Lot 2
Junction 3
Junction 2
Pipe 2
Pipe 3
North Ave
Fire Hydrant Assembly
(Reservoir, pump, junction 1, and valve)

**RECORDING REQUESTED BY, AND**
**WHEN RECORDED, MAIL TO:**

**SPROUL TROST LLP**
**Attn: Kyle C. Sproul, Esq.**
**3200 Douglas Blvd., Suite 300**
**Roseville, California 95661**

---

***(Space Above For Recorder's Use)***

# DECLARATION
# OF
# COVENANTS, CONDITIONS AND RESTRICTIONS
# FOR
# NERRADSCALI SUBDIVISION

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# DECLARATION
# OF
# COVENANTS, CONDITIONS AND RESTRICTIONS
# FOR
# NERRADSCALI SUBDIVISION

This Declaration is made by Nerradscali Corporation, a California corporation (the "**DECLARANT**").

## RECITALS

A. The Declarant is the owner of that certain real property located in the City of Sacramento, County of Sacramento, State of California, more particularly described in Exhibit "A" (the "**PROPERTY**"). The Declarant intends to develop the Property as a subdivision comprised of eight (8) Lots that are improved with residences of a detached design that are constructed by the Declarant (the "**SUBDIVISION**"). The Subdivision will be commonly known as "**NERRADSCALI SUBDIVISION**".

B. The Declarant hereby declares that all of the Property shall be held, sold and conveyed subject to the following easements, restrictions, reservations, covenants and conditions, all of which are for the purpose of enhancing and protecting the value, desirability and attractiveness of Nerradscali Subdivision as residential standard subdivision. These covenants, easements, restrictions, conditions, and reservations: (i) create a general plan and scheme for the Subdivision, sale and use of the Subdivision; (ii) are for the benefit and protection of the Subdivision and for the protection and enhancement of the desirability, value and attractiveness of all Lots located therein; (iii) run with the Subdivision and bind all parties having or acquiring any right, title or interest in the real property comprising any portion of the Subdivision; and (iv) inure to the benefit of the successors and assigns of each Owner of any real property constituting a portion of the Subdivision.

C. Notwithstanding the anticipated development of Nerradscali Subdivision in accordance with the plan of Subdivision contemplated by this Declaration and the Conditions of Approval, nothing in this Declaration shall be construed or interpreted to commit the Declarant to developing any portion of the Property in accordance with any present planning. Accordingly, nothing contained herein shall obligate either the Declarant to refrain from the further subdivision or re-subdivision of the lands comprising the Property owned by either entity, and the Declarant shall be free to so further subdivide or re-subdivide, so long as the modified plans and consistent with the Conditions of Approval.

D. This Declaration creates equitable servitudes and covenants running with the land in accordance with Civil Code section 1468 imposed upon the Subdivision as a standard subdivision and are binding upon all persons having any right, title, or interest in any portion of the Subdivision, and may be enforced by any Owner. **THE SUBDIVISION IS NOT A COMMON INTEREST DEVELOPMENT AS DEFINED IN CIVIL CODE SECTION 4100 AND THEREFORE NOT**

**SUBJECT TO THE DAVIS-STIRLING COMMON INTEREST DEVELOPMENT ACT (CALIFORNIA CIVIL CODE SECTION 4000 ET SEQ.).**

## ARTICLE I
## DEFINITIONS

Section 1.01. "**ADU**" and "**JADU**" shall mean and refer to an Accessory Dwelling Unit or Junior Accessory Dwelling Unit as defined in Civil Code section 4751 and Sections 65852.2 and 65852.22 of the California Government Code, respectively, and which meets the requirements of those Civil and Government Code sections and other applicable City or County ordinances.

Section 1.02. "**CONDITIONS OF APPROVAL**" shall mean and refer to that certain document entitled "Zoning Administrator & Design Director Record of Decision dated July 9, 2020 for Project Number P19-036, Exhibit "A" Conditions of Approval – Tentative Map."

Section 1.03. "**CITY**" means the City of Sacramento, State of California, and its various departments, divisions, employees and representatives.

Section 1.04. "**COUNTY**" means the County of Sacramento, State of California, and its various departments, divisions, employees and representatives.

Section 1.05. "**DECLARANT**" means Nerradscali Corporation, a California corporation. The term "Declarant" shall also refer to any successors and assigns of the named Declarant, if such successor or assign acquires any or all of any Declarant's interest in the Subdivision, and the transferor Declarant (with the prior consent of any other Declarant) has expressly transferred or assigned to such successors or assigns its rights and duties as a Declarant to any portion or all of the Subdivision. For any successor or assignee of the Declarant to be deemed a Declarant under the terms of this Declaration, the Declarant or the co-Declarant (as the case may be) shall Record in the County a certificate so designating the successor assignee as the Declarant or as a co-Declarant.

A successor Declarant shall also be deemed to include the beneficiary under any deed of trust securing an obligation from a then existing Declarant encumbering all or any portion of the Subdivision or any real property subsequently annexed thereto, if the beneficiary has acquired any such property by foreclosure, power of sale or deed in lieu of such foreclosure or sale.

Section 1.06. "**DECLARATION**" means this instrument, as it may be amended and supplemented from time to time.

Section 1.07. "**GOVERNING DOCUMENTS**" is a collective term that means and refers to this Declaration and to the Conditions of Approval.

Section 1.08. "**IMPROVEMENT**" as used herein includes, without limitation any improvement or project undertaken or contemplated by an Owner (other than the Declarant) within any portion of the Subdivision involving the construction, installation, alteration or remodeling of the interior of any Residence, garages, walls, fences, landscaping, landscape

structures, patio awnings, solar heating equipment, spas, antennas, television satellite reception equipment, utility lines or any other structure of any kind. Improvement projects may be subject to City design review and approval under Article III, below. In no event shall the term "Improvement" include any improvement, alteration or construction project located entirely within an existing Residence structure, unless the project will necessitate the storage or stockpiling of construction materials or debris on the Owner's Lot in areas that are visible from neighboring Lots or adjacent streets or periods in excess of six hours.

Section 1.09. "**LOT**" means any parcel of real property designated by a number on the Subdivision Map of the Subdivision. When appropriate within the context of this Declaration, the term "Lot" shall also include the Residence and other Improvements constructed or to be constructed on a Lot.

Section 1.10. "**MAINTENANCE MANUAL**" refers to the manual which may be prepared by the Declarant or its agents and provided to each Owner specifying obligations for maintenance of Lots and Residences by the Owners, as updated and amended from time to time.

Section 1.11. "**MAINTENANCE OBLIGATIONS**" means the obligations imposed by Civil Code Section 907 on each Owner to perform, which shall include: (i) all reasonable maintenance obligations and schedules identified in the Maintenance Manual that pertain to the Owner's property at the times and in a manner consistent with the terms, recommendations and requirements of the Maintenance Manual; (ii) any maintenance obligations and schedules contained in any warranty offered by the Declarant or any manufacturer of any products or components originally installed in a Residence; and (iii) any maintenance obligations and/or schedules otherwise provided, in writing, by the Declarant or a manufacturer to the Owners. "**MAINTENANCE OBLIGATIONS**" shall also include and refer to any commonly accepted maintenance practices to prolong the useful life of the materials and construction of the Residences within the Subdivision.

Section 1.12. "**MORTGAGE**" means any security device encumbering all or any portion of the Subdivision, including any deed of trust. "Mortgagee" shall refer to a beneficiary under a deed of trust as well as to a mortgagee in the conventional sense.

Section 1.13. "**OWNER**" means any person, firm, corporation or other entity which owns a fee simple interest in any Lot. The term "Owner" shall include the Declarant for so long as the Declarant possesses any Lot within the Subdivision, and, except where the context otherwise requires, the family, guests, tenants and invitees of an Owner. If a Lot is transferred or conveyed to a trust, the Owner is the trustee or the co-trustees of such trust.

Section 1.14. "**OWNER OF RECORD**" means any person, firm, corporation or other entity in which title to a Lot is vested as shown by the official records of the Office of the County Recorder.

Section 1.15. "**RECORD**" means, with respect to any document, the recordation or filing of such document in the Office of the County Recorder.

Section 1.16. "**RESIDENCE**" means a dwelling that is designed and intended for use and occupancy by a single family, constructed on an individual Lot in the Subdivision.

Section 1.17. "**SINGLE FAMILY RESIDENTIAL USE**" means occupation and use of a Residence for single family dwelling purposes in conformity with this Declaration and the requirements imposed by applicable zoning or other applicable laws or governmental regulations limiting the number of persons who may occupy single family residential dwellings.

Section 1.18. "**SUBDIVISION**" means and refers to the residential real estate Subdivision that is being constructed, marketed and sold by the Declarant on the Property. At times the Subdivision is referred to herein by its common name for identification and marketing purposes which is "**NERRADSCALI SUBDIVISION**".

Section 1.19. "**SUBDIVISION MAP**" means the final subdivision map for the Subdivision, recorded in the Official Records of Sacramento County, California, on _____, in Book ___ of Maps, at Page ___.

## ARTICLE II
## PROPERTY RIGHTS AND OBLIGATIONS OF OWNERS

Section 2.01. Declaration Regarding the Real Property Comprising the Nerradscali Subdivision.

(a) Declaration Regarding the Property. The Declarant is subjecting the Subdivision to this Declaration for the purposes identified in Recital "B", above. The Declaration binds: (i) the Association; (ii) present and future Members and Owners and their successors in interest; (iii) present and future tenants, lessees, invitees, and occupants of Lots and Residences; and (iv) the Declarant if the Declarant holds an interest in any portion of the Development.

(b) Binding Effect on Successors in Interest. Each conveyance, transfer, sale, assignment, lease or sublease made by the Declarant of any Lot in the Subdivision shall be deemed to incorporate by reference all of the provisions of this Declaration. All present and future Owners, tenants and occupants of Residences within the Subdivision shall be subject to, and shall comply with, each and every provision of the Governing Documents, as the same shall be amended from time to time unless a particular provision of the Governing Documents is specifically restricted to one or more classes of persons (i.e., Owners, tenants, invitees, etc.). The acceptance of a deed to any Lot, the execution of a lease, sublease or contract of sale with respect to any Lot or the entering into occupancy of any Residence shall make the provisions of this Declaration binding upon said persons and they shall thereafter be obligated to observe and comply with all Governing Documents.

Section 2.02. Delegation of Use of Residences and Lots..

(a) Delegation of Use and Leasing of Residences. Any Owner may delegate his or her rights to use and enjoy his or her Lot and Residence to his or her family members or tenants, lessees or contract purchasers who reside in the Owner's Residence.

(b) Requirements That Must Be Observed In All Residential Leases. The following specific limitations shall apply to all leases or tenancies of a Residence within the Subdivision: (i) the rental shall apply to not less than an entire Residence including its appurtenant rights; and (ii) any rental shall be evidenced by a written lease or rental agreement which shall provide that the tenancy is subject to the terms of the Governing Documents and that any failure of the tenant to comply with the terms of any Governing Document relating to residential leases or property use restrictions shall constitute a default under the lease or rental agreement and shall entitle the Owner to terminate the tenancy upon ninety (90) days written notice. The Owner-lessor's right to terminate a lease or rental agreement on account of the tenant's violation of the Governing Documents shall in no way restrict the right of the Declarant or any Owner to enforce the Governing Documents in accordance with Article X, below, when the Owner's tenant is violating the Governing Documents.

(c) Discipline of Lessees. Subject to subparagraph (d), below, in the event that any tenant or lessee fails to honor the provisions of any Governing Document, the Declarant for so long as the Declarant owns at least one Lot in the Subdivision shall be entitled to take such corrective action as it deems necessary or appropriate under the circumstances in order to preserve the quiet enjoyment of other Owners and residents within the Subdivision.

Section 2.03. Obligations of Owners. Owners of Lots within the Subdivision shall be subject to the following obligations:

(a) Notification to Owners of Their Obligation to Provide the Governing Documents to Prospective Purchasers Regarding the Subdivision. As soon as practicable before transfer of title or the execution of a real property sales contract with respect to any Lot, any Owner who is seeking to sell his or her Lot must give any prospective purchaser a copy of all the Governing Documents for Nerradscali Subdivision.

(b) Obligation to Provide Subsequent Purchasers with Information Relating to Declarant Repair Rights and Obligations and Residence Maintenance Standards. Civil Code section 912 requires home builders, such as the Declarant, to provide their initial home buyers with certain documents enumerated in that Code section, including (i) copies of all maintenance and preventative maintenance recommendations that pertain to the Owner's Lot; (ii) copies of all manufactured products maintenance, preventative maintenance, and limited warranty information relating to components of the Owner's Residence; (iii) copies of the builder's limited contractual warranties; (iv) a written copy of Civil Code sections 895 et seq.; and (iv) other documents provided by the builder to the initial buyer of a Lot in the Subdivision. Civil Code section 912(h) obligates the first purchaser of a Lot from the Declarant or a Merchant Builder to provide these documents to subsequent purchasers of the Lot.

(c) Joint Ownership of Lots. In the event of joint ownership of any Lot, the obligations and liabilities of the multiple Owners under the Governing Documents shall be joint and several. Without limiting the foregoing, this subparagraph (c) shall apply to all obligations, duties and responsibilities of Owners as set forth in this Declaration.

## ARTICLE III
## DESIGN REVIEW AND APPROVAL OF IMPROVEMENT PROJECTS

This Declaration does not provide for the formation of a private architectural or design review committee comprised of Lot Owners. Instead, the design and construction of Residences, ADUs and other Lot improvements shall conform to the local ordinances and regulations of the City of Sacramento, including, without limitation, any building permit process, design permit process, or any other governmental requirements. The responsibility for ensuring compliance with local governmental regulations shall lie solely with the Lot Owner who desires to construct, install, or modify any Lot improvement, and the Owner's architect and contractors. See particularly the City Permit Services which can be accessed at: http://www.cityofsacramento.org/Community-Subdivision/Building/Permit-Services.

## ARTICLE IV
## MINIMUM IMPROVEMENT STANDARDS

The following minimum construction standards shall apply to Improvement projects within the Subdivision undertaken or proposed by Owners other than the Declarant:

Section 4.01. Outdoor Lighting. Fluorescent, mercury vapor, sodium or amber vapor lights, or standard outdoor lights of the type used for security shall be prohibited. Wherever possible, downward oriented cut-off type outdoor fixtures and shielding shall be used in order to prevent light spillage and glare impacts beyond the target of illumination. Further, energy efficient light fixtures using photocell operation shall be utilized. No lighting will be permitted which causes unreasonable glare or nuisance to neighboring Owners or Residences, such as flickering or "flame" type bulbs.

Section 4.02. No Temporary Structures. No recreational vehicle, trailer, mobile home, camper, tent, shack, used structures, structures of a temporary character, or other outbuildings (other than ADUs and JADUs) shall be used on any Lot at any time as a Residence.

Section 4.03. Roofing Materials. When Owners replace their roofs, they shall use the same materials and colors as the Declarant used in the initial construction of residences unless the City approves use of a different roofing material or a different color.

Section 4.04. Antennas, Aerials and Satellite Dishes. In order to ensure adequate aesthetic controls and to maintain the general attractive appearance of the Subdivision, no Owner, resident or lessee shall place or maintain any objects, such as masts, towers, poles, or radio or television antennas on the exterior of any building within the Subdivision unless first approved by the Declarant, and by the City in accordance with Article III, above; provided, however, that:

(a) the Declarant shall have the right, without obligation, to erect, place or install and maintain any such apparatus for the benefit of all or a portion of the Subdivision;

(b) in accordance with Federal law, antennas or satellite dishes with a diameter or diagonal measurement not greater than thirty-six inches (36") which are designed to receive direct broadcast satellite services, video programming services via multi-point distribution services, or television broadcast signals (collectively "**PERMITTED DEVICES**") may be erected, placed or installed on a Lot, provided that: any such Permitted Device is placed on the rooftop of the Residence in a location at which an acceptable quality signal can be received and is either not visible from neighboring property or is screened from the view from streets or any neighboring Lot.

Furthermore, no activity shall be conducted on any Lot which causes an unreasonable broadcast interference with television or radio reception on any neighboring Lot.

Section 4.05. Permitted Window Coverings. The windows in the Residences include drapes or other coverings installed by the Declarant. Any alteration in those window coverings must consist of drapes, shades or interior shutters of a material, design and color compatible with the exterior design and color themes within the Subdivision.

Section 4.06. Fences Walls, and Landscape Dimensions.[1] Owners placing any walls, fences, signs and landscaping near intersections and driveways shall allow a stopping sight distance per Caltrans standards and comply with City Code Section 12.28.010 (25' sight triangle). Walls shall be set back three feet (3') behind the sight line needed for stopping sight distance to allow sufficient room for pilasters. Landscaping in the area required for adequate stopping sight distance shall be limited to 3.5' in height.

Section 4.07. Driveway Dimensions.[2] All driveways shall be at least five feet (5') away from the Lot line, and shall have a width of at least ten feet (10') and a depth of at least twenty feet (20') measured from the right of way line.

Section 4.08. SMUD Neighborhood SolarShares Program. The Declarant hereby elects to participate in Sacramento Municipal Utility District's ("**SMUD**") Neighborhood SolarShares program, as follows:

(a) Utilities – SolarShares.

(i) Obligation to Enroll. Each Owner and/or Tenant occupying a registered SolarShares home shall obtain electrical service by usual means of applying for SMUD service. The Owner and/or Tenant will automatically be enrolled in Neighborhood SolarShares with no additional effort on the Owner or Tenant's part. SMUD's Neighborhood SolarShares program shall be the exclusive provider of off-site electrical service for participating homes. Nothing in this Declaration shall be construed to effectively prohibit or unreasonably restrict the installation or use of a "behind-the-meter" solar energy system to serve the electricity demand of participating homes.

[1] *See* Condition of Approval No. A12.

[2] *See* Condition of Approval No. A53; City Municipal Code §§ 17.508.040.J & 17.508.050.A.

(ii) Term of Obligation. The Covenants, Conditions and Restrictions to enroll in SMUD's Neighborhood SolarShares program specified in subparagraph (i) shall be required for each participating home from the date electrical service is first established for that home. The Covenants, Conditions and Restrictions specified in subparagraph (i) shall be required for a period of twenty (20) years from the date electrical service is first established by a residential customer for each participating home and then automatically terminate.

(b) General Provisions.

(i) Enforcement. Any Owner or the Declarant shall have the rights to enforce, by any proceeding at law or in equity, all restrictions, conditions, covenants, reservations, liens and charges now and hereafter imposed by the provisions of this Declaration. The Declarant shall have a non-discretionary duty to enforce the restrictions and covenants contained in subparagraph (a), above. SMUD shall have the right to enforce, by any proceeding at law or in equity, the restrictions, conditions and covenants contained in subparagraph (a), above. Any failure to enforce any covenant or restriction herein contained shall in no event be deemed a waiver of the right to do so thereafter. The prevailing party in any legal action is entitled to recover legal fees as provided in current California law and elsewhere in the Declaration.

(ii) Term of this Section and Amendment. The Covenants, Conditions and Restrictions of this Section 4.08 shall run with and bind the land. This Section 4.10 may be amended by approval of at least fifty-one percent (51%) of the Lot Owners; provided that the restrictions and covenants contained in subparagraph (a), above, are irrevocable and may not be amended in any way. Any amendment must be properly Recorded to be effective.

## ARTICLE V
## MAINTENANCE RESPONSIBILITIES OF PROPERTY OWNERS

Section 5.01. Shared Private Access Road. The Owners of Lots 3, 4, 5, 6, 7, and 8 as shown on the Subdivision Map shall collectively share in the expense and responsibility for all maintenance, repair, upkeep and replacement within the shared areas of the Subdivision, including:[3]

(i) the interior private roadway providing access to those respective Lots in the Subdivision;

(ii) assuring unrestricted use and access to the interior private roadway;

(iii) posting and maintaining at the entrance to the Subdivision signs required by Vehicle Code Section 22658.2 to permit the towing of improperly parked vehicles as well as standard City "no parking" signs or designated as fire lanes and marked in accordance with the requirements of the Fire Department and the California Fire Code, enforceable by the Declarant, Owners or City;

[3] *See* Condition of Approval Nos. A11, A47.

(iv) the removal of vegetation overgrowing the private road and infringing on the roadway to clear vertical height of 13'6" or width of 20';

(v) assuring the legibility and permanent embossment of "NO PARKING – FIRE LANE" signage or striping;

(vi) all vehicular and pedestrian access gates and opening systems, including any and all electrical components therein;

(vii) all fire protection systems, including but not limited to hydrants, fire alarm systems and fire sprinklers.

The Declarant declares Lots 1 and 2 and their Owners are exempt from sharing in the maintenance and expense obligations of this Section 5.01 because the interior private roadway does not service either Lot. Instead, Owners of Lots 1 and 2 access their Lot off public street "North Avenue."

Section 5.02. Owner Maintenance and Repair Responsibilities.

(a) Each Owner shall be responsible for the maintenance and repair of his or her Residence and Lot in a first-class condition consistent with the maintenance standards prevailing in the Subdivision. Each Owner may receive a Maintenance Manual prepared by the Declarant which pertains to the maintenance and repair obligations of Owners under the Governing Documents. Without limiting the generality of the foregoing, each Owner's repair and maintenance obligations shall be in accordance with the Maintenance Obligations as set forth in the Maintenance Manual (see subparagraph (b), below) and shall extend to and include:

(i) Painting, repairing, replacing and caring for roofs, fences, exterior building surfaces, exterior glass surfaces, exterior doors, and to maintaining all yard areas;

(ii) Maintaining the portion of the Conc Walk located upon the Owner's Lot, if any.

(iii) Weekly mowing, trimming, edging of lawns and other ground cover, removal of dead or dying plants and weeds;

(iv) Maintaining all landscaping located within the Lot lines of the Owner's Lot as shown on the Subdivision Map, including any front- and rear-yard landscaping and all exterior landscape lighting;[4]

(v) Watering at intervals necessary to keep grass, shrubs and trees in an attractive condition; and

(vi) Maintenance of drainage facilities, utilities and improvements, if any, on the Owner's Lot.

[4] *See* Condition of Approval No. A11.

(b) Owner Maintenance Manuals. The Declarant shall maintain at its principal offices and provide to each Owner upon request a Maintenance Manual prepared by the Declarant which pertains to the Maintenance Obligations of Owners under the Governing Documents with respect to Lots and Residences. By accepting a deed to any Lot within the Subdivision, each Owner acknowledges and agrees that the Owner is required to comply with all of the recommended Maintenance Obligations and schedules set forth in the Maintenance Manual and each Owner is further obligated to provide a copy of the Maintenance Manual to any successor purchaser of the Owner's Lot.

(c) Good Neighbor Fencing. For any fence or wall existing along a common Lot line with another Owner in the Subdivision, each Owner shall share equally in the expense of maintaining the "good neighbor" wall or fence.[5]

(d) Enforcement. In the event that an Owner is not maintaining his or her Lot and Residence in a manner that is consistent with the prevailing standards in the neighborhood, the Declarant, City or other Owners may initiate dispute resolution procedures in accordance with Section 10.07, below.

Section 5.03. Drainage Structures, Ditches and Swales.[6]

(a) Each Owner is responsible for the maintenance, repair, replacement, upkeep and monitoring of all above-ground and underground water, sewer, and storm drainage facilities located within the Lot lines of the Owner's Lot as shown on the Subdivision Map. If an Owner is not maintaining his or her Lot in a manner that is consistent with this Section, the Declarant, City or other Owners may initiate dispute resolution procedures in accordance with Section 10.07, below.

(b) Each Owner shall keep drainage courses, ditches and swales on his or her Lot free and clear of all obstructions and shall, in cooperation with contiguous property Owners (including the Declarant as to any contiguous Lots owned by them), maintain all such drainage ditches, swales and culverts common to their Lots in good order, and without causing conditions that could lead to unnecessary soil erosion.

(c) No Owner or resident shall alter or obstruct a natural drainage course, cause water to drain or cross Lot lines, or materially add to the natural water volume of said drainage course, without making adequate provisions with respect to neighboring Lots.

(d) Public water, sewer and drainage mains are prohibited within and shall not be constructed within the interior private roadway.[7]

[5] *See* Civil Code § 841.
[6] *See* Condition of Approval No. A34.
[7] *See* Condition of Approval A28.

## ARTICLE VI
## USE OF PROPERTY WITHIN THE SUBDIVISION AND RESTRICTIONS

In addition to the restrictions established by law, the following restrictions are hereby imposed upon the use of Lots within the Subdivision:

Section 6.01. Use of Lots.

(a) All Residences within the Subdivision shall be occupied solely for Single Family Residential Use. In no event shall a Residence be occupied by more individuals than permitted by applicable law, zoning or other local governmental regulation.

(b) Notwithstanding the foregoing, Declarant and its successors or assigns shall be entitled to use Lots owned by Declarant, and the Residences located thereon, as models, sales offices or construction headquarters for the purpose of constructing Residences and marketing Lots within the Subdivision until all Lots owned by Declarant are sold.

(c) Each Lot shall be conveyed as a separately designated and legally described fee simple estate, subject to this Declaration. All Lots and the Residences and other Improvements erected or placed thereon (including, without limitation, landscaping) shall at all times be maintained in such a manner as to prevent their becoming unsightly.

(d) The vegetation and landscaping on any Lot shall be planted or maintained by the Owner or resident in such a manner as to reduce the risk of fire, prevent or retard shifting or erosion of soils, encourage the growth of indigenous ground cover and to cause the proper diversion of water into streets and natural drainage channels. Maintenance of Lots and residences shall be in accordance with Section 5.02, above.

Section 6.02. Business Activities. No business or commercial activities of any kind whatsoever shall be conducted in any Residence, garage or out building, or in any portion of any Lot; provided, however, the foregoing restriction shall not apply to the activities, signs or activities of the Declarant's activities in connection with the Subdivision, sale and marketing of Nerradscali Subdivision. Furthermore, no restrictions contained herein shall be construed in such a manner so as to prohibit any Owner from: (a) maintaining his or her personal library in his or her Residence; (b) keeping his or her personal business records or accounts therein; (c) handling his or her personal or professional telephone calls or correspondence therefrom; (d) engaging in other activities related to the resident's business profession that can be conducted from a Residence using computers and other technology so long as the home or business activities generate no traffic, noise, or involve other employees or contractors in the Residence; (e) leasing or renting his or her Residence in accordance with Section 2.02, above; or (f) conducting any other activities on the Owner's Lot otherwise compatible with residential use and the provisions of this Declaration which are permitted under applicable zoning laws or regulations without the necessity of first obtaining a special use permit or specific governmental authorization. The uses described in (a) through (f), above, are expressly declared to be customarily incidental to the principal residential use and not in violation of this Section 6.02.

Section 6.03. Parking and Vehicle Restrictions.

(a) All driveways and garages shall be maintained in a neat and orderly condition and garage doors shall be kept in a closed position except as necessary to permit ingress and egress of vehicles or to clean or work in the garage area. Garages are to be used for the parking of up to as many standard passenger vehicles as there are garage bays, including trucks not to exceed three-quarter tons in gross weight, boats or the storage of similar items of personal property. Furthermore, garages shall not be converted to living quarters or workshops which will preclude the parking of vehicles. Parking shall be permitted in any driveway servicing the Owner's Residence.

(b) No motor vehicle shall be constructed, reconstructed or repaired within the Subdivision and no dilapidated or inoperable vehicle, including vehicles without wheel(s) or an engine, shall be stored on any Lot within the Subdivision; provided, however, that the provisions of this subparagraph (b) shall not apply to emergency vehicle repairs. If a vehicle is being repaired in a garage, the garage door shall remain closed while the repairs are ongoing.

(c) Campers, boats, trailers, motorcycles, commercial vehicles and trucks in excess of three-quarter tons of gross carrying capacity are not to be parked in any garages or other parking areas within the Subdivision, except for the purpose of loading and unloading, unless the Owner has an appropriate location on his or her Lot where the type of vehicle or trailer listed in this subparagraph can be parked within the side- or rear-yard so as to be adequately screened from view from other neighboring Lots. For purposes of this restriction, a recreation vehicle shall include any van, bus, motor home or vehicle designed for off-road or recreational use which cannot be parked entirely within a garage so that the garage door can be returned to a fully-closed position or adequately screened from view at some other location on the Owner's Lot.

Section 6.04. Household Pets. The following restrictions regarding the care and maintenance of pets within the Subdivision shall be observed by each Owner and resident:

(a) A reasonable number of common household pets may be kept on each Lot so long as the same are not kept, bred or maintained for commercial purposes. No other animals, livestock, or poultry of any kind shall be kept, bred or raised on any Lot or in any Residence.

(b) Dogs shall only be allowed on the private street when they are leashed and otherwise under the supervision and restraint of their Owners.

(c) No household pet shall be left chained or otherwise tethered in front of a Lot or in the private street. Pet owners shall be responsible for the prompt removal and disposal of pet wastes deposited by their pets in the Subdivision.

(d) Each person bringing or keeping a pet within the Subdivision shall be solely responsible for the conduct of the owner’s pets.

Section 6.05. Garbage/Trash Maintenance and Disposal. No rubbish, trash, or garbage shall be allowed to accumulate on Lots. Any trash that is accumulated by an Owner outside the interior walls of a Residence shall be stored entirely within appropriate covered disposal

containers and facilities which shall be located in the residence or garage or at some other location on the resident's Lot that is screened from view from any street or neighboring Lot. Trash bins shall be taken to the street curb for collection no earlier than the evening prior to the scheduled trash collection day and shall be returned to the bin's storage area no later than the evening of the scheduled trash collection day. Any extraordinary accumulation of rubbish, trash, garbage or debris (such as debris generated upon vacating of premises or during the construction of modifications and Improvements) shall be removed from the Subdivision to a public dump or trash collection area by the Owner or tenant at his or her expense.

Section 6.06. Signs. No advertising signs or billboards shall be displayed on any Lot or posted within or upon any portion of the private street except that Owners may post on their Lots any signs required by legal proceedings and a single "For Rent," "For Lease" or "For Sale" sign of reasonable dimensions. Signs permitted hereunder shall not be nailed to the exterior of any Residence or staked in any lawn or green area in front of any Residence. This Section is not intended to restrict the right of the Declarant, its agents or designees to erect and maintain such signs and other advertising devices or structures as they deem necessary or proper in connection with the conduct of Declarant's operations for the Subdivision, improvement, subdivision and sale of Lots in the Subdivision.

Section 6.07. Prohibition of Noxious Activities. No illegal, noxious or offensive activities shall be carried out or conducted upon any Lot nor shall anything be done within the Subdivision which is or could become an unreasonable annoyance or nuisance to neighboring property Owners. Without limiting the foregoing, no Owner shall permit noise including, but not limited to, barking dogs, stereo amplifier systems, television systems, motor vehicles or power tools, to emanate from an Owner's Lot or from activities within the private street which would unreasonably disturb any other Owner's or tenant's enjoyment of his or her Lot or the private street.

Section 6.08. Storage. Storage of personal property on any Lot shall be entirely within enclosed storage areas on the Lot or areas that are screened from view from adjacent streets or neighboring Lots. There shall be no woodpiles or storage piles accumulated on top or outside of any enclosed storage area.

Section 6.09. Clotheslines. No exterior clothesline shall be erected or maintained and there shall be no drying or laundering of clothes on any Lot in a manner which is visible from any neighboring Lot or the private street.

Section 6.10. Burning. There shall be no exterior fires whatsoever except barbecue fires located only upon Lots and contained within receptacles designed for such purpose. No Owner or resident shall permit any condition to exist on his or her Lot including, without limitation, trash piles or weeds which create a fire hazard or is in violation of local fire regulations.

Section 6.11. Sports Apparatus. No basketball standards or fixed sports apparatus shall be attached to any Residence or garage or erected on any Lot or within the private street, unless the location of the standard or other sports fixture is in the rear yard area of the Lot. It is the intent that this screening restriction also apply to portable basketball standards. When such

standards are not in use, they shall either be stored out of view or, if located in the rear yard, retracted so as not to be visible over the rear yard fence.

Section 6.12. Machinery and Equipment. No power tools, machinery or equipment of any kind shall be placed, operated or maintained upon or adjacent to any Lot except such machinery or equipment as is usual or customary in connection with the use, maintenance or repair of a private Residence or appurtenant structures within the Subdivision.

Section 6.13. Diseases and Pests. No Owner shall permit any thing or condition to exist upon his or her Lot which shall induce, breed, or harbor infectious plant diseases, rodents or noxious insects.

Section 6.14. Restriction on Further Subdivision and Severability. No Lot shall be further subdivided nor shall less than all of any such Lot be conveyed by an Owner thereof. No Lot shall be combined with any other Lot.

Section 6.15. Enforcement of Property Use Restrictions. The objective of this Declaration shall be to promote and seek voluntary compliance by Owners and tenants with the environmental standards and property use restrictions contained herein. Accordingly, in the event that any Owner, the Declarant, or the City becomes aware of a property use infraction that does not necessitate immediate corrective action, the Owner or tenant responsible for the violation shall receive written notice thereof and shall be given a reasonable opportunity to comply voluntarily with the pertinent Governing Document provision(s) before either the Declarant, Owners or City institutes enforcement in accordance with Section 10.07, below.

## ARTICLE VII
## EASEMENTS

Section 7.01. Street Easements. Each Owner shall have and is hereby granted a nonexclusive easement for street, roadway and vehicular traffic purposes over and along the interior private roadway within the Subdivision, subject to termination of such easement and the rights and restrictions set forth in this Declaration. The nonexclusive easement granted hereby to each Owner is subject to the offer of dedication of such streets made upon the Subdivision Map and upon complete or partial acceptance of such offer by the City, said easement shall terminate and be of no further force or effect as to those streets or portions thereof accepted by the City.

Section 7.02. Blanket Utility Easement. There is hereby created a blanket easement upon, across, overhead and underground the shared areas for ingress, egress, installation, replacing, repairing and maintaining all utilities, including but not limited to water, sewers, gas, telephones, drainage and electricity and the master television antenna or cable television system.[8] By virtue of this easement, it shall be expressly permissible for the providing utility company (e.g. SMUD) to erect and maintain the necessary equipment and underground facilities within the Subdivision, including the electrical transmission tower erected on Lot 5.[9] Notwithstanding the foregoing, no sewer, electrical lines, water lines, or other utilities may be installed or

[8] *See* Condition of Approval Nos. A26 & A34.

[9] *See* Condition of Approval Nos. A22 & A23.

relocated within any portion of the Subdivision except as initially designed and approved by the Declarant. The easements provided for in this section shall in no way affect any other Recorded easement affecting any other portion of the Subdivision.

Section 7.03. Easements for Drainage. Easements for installation and maintenance of drainage facilities may be shown on the Subdivision Map for the Subdivision, and no buildings, obstructions or encroachments by landfills are allowed within any such drainage easements. Additional nonexclusive easements appurtenant to each Lot in the Subdivision are hereby created and reserved for drainage according to the patterns for drainage created by the approved grading plans for the Subdivision, as well as according to the actual, natural and existing patterns for drainage.

Section 7.04. Easements for Construction and Sales Activities of the Declarant and Merchant Builders. The Declarant hereby reserves for itself and for the benefit of those persons designated as Merchant Builders easements over the Subdivision for access, ingress and egress on and over the Subdivision as necessary to improve and develop the Subdivision, and for construction, display, maintenance, sales and exhibit purposes in connection with the improvement and sale of Lots within the residential areas of Nerradscali Subdivision, together with the right to grant and transfer the same to the Declarant's sales agents and representatives and prospective purchasers; provided, however, that such use by the Declarant and others shall not interfere with the reasonable use and enjoyment of a Residence by the Owner thereof, commencing at closing on his or her Lot.

Section 7.05. Other Easements. The Declarant, and each Lot and its Owner, is hereby declared to be subject to all the easements, dedications and rights-of-way granted or reserved in, on, over and under the Subdivision and each Lot as shown on the Subdivision Map for any portion of the Subdivision including, without limitation, roadway and ditch drainage easements.

Section 7.06. Priority of Easements. Wherever easements granted to the County, or to a political subdivision thereof are, in whole or in part, coterminous with any other easements, the easements of the County shall have and are hereby granted priority over said other easements in all respects.

## ARTICLE VIII
## INSURANCE

Section 8.01. Policies Obtained by the Declarant. It is contemplated that the Declarant may contract for the insurance coverage contemplated by this Article prior to or concurrently with obtaining financing for the Subdivision, and any such obligations or commitments for the payment of premiums or expenses with respect thereto remain obligations of the Declarant.

Section 8.02. Obligation of Owners to Insure Their Residences, Lots, and Personal Property. Each Owner of a Lot shall be responsible for obtaining his/her own policy of fire and casualty insurance with respect to such Lot and Residence. Further, in any event, each Owner shall be responsible for obtaining his/her own insurance to cover: (i) furnishings, fixtures and personal property within such Owner’s Residence; and (ii) such Owner’s personal liability for committing negligent or tortuous acts while within the Subdivision.

## ARTICLE IX
## DAMAGE OR DESTRUCTION OF RESIDENCES AND SPEARATE INTERESTS

Section 9.01. Obligation to Rebuild or Clear Damaged Structures. If all or any portion of any Lot is damaged or destroyed by fire or other casualty, it shall be the duty of the Owner of that Lot to rebuild, repair or reconstruct the Lot in a manner which will restore it substantially to its appearance and condition immediately prior to the casualty. If structural improvements other than a Residence, garage or fence are damaged or destroyed and the Owner prefers not to rebuild the improvement, the Owner shall clear his or her Lot of all damaged or destroyed materials and return the affected area to an attractive appearance.

Section 9.02. Time Limitation for Reconstruction or Removal. The Owner or Owners of any damaged Residence(s) shall be obligated to proceed with all due diligence hereunder to remove damaged structures (or portions thereof), prepare and process reconstruction plans and specifications and complete the repair and restoration work. At a minimum, reconstruction shall be completed within eighteen (18) months following the partially or destroyed residence.

## ARTICLE X
## BREACH AND DEFAULT

Section 10.01. Remedy at Law Inadequate. The remedy at law to recover damages for the breach, default or violation of any of the covenants, conditions, restrictions, limitations, reservations, grants of easements, rights, rights-of-way, liens, charges or equitable servitudes contained in this Declaration are inadequate and that the failure of any Owner, tenant, occupant or user of any Lot, to comply with any provision of the Governing Documents may be enjoined by appropriate legal proceedings instituted by Declarant, any Owner, the City, or by their respective successors in interest.

Section 10.02. Nuisance. Without limiting the generality of the foregoing Section 10.01, the result of every act or omission whereby any covenant contained in this Declaration is violated in whole or in part is hereby declared to be a nuisance, and every remedy against nuisance, either public or private, shall be applicable against every such act or omission.

Section 10.03. Attorneys' Fees. Reasonable attorneys' fees and costs shall be awarded to the prevailing party in any procedure to enforce the Governing Documents or a party's rights arising under the Governing Documents. Such enforcement procedure includes an action brought in any court having jurisdiction over any alternative dispute resolution procedure implemented pursuant to the Governing Documents. In any enforcement procedure, such as mediation or arbitration in which there is not an agreement between all of the parties that attorneys will represent them, recoverable costs are limited to attorneys' fees and costs incurred in providing the notices required under such statute.

Section 10.04. Cumulative Remedies; Adoption of Fine Schedule. The respective rights and remedies provided by this Declaration or by law shall be cumulative, and the exercise of any one or more of such rights or remedies shall not preclude or affect the exercise, at the same or at different times, of any other such rights or remedies for the same or any different default or breach or for the same or any different failure of any Owner or others to perform or observe any

provision of this Declaration. The Declarant may implement a schedule of reasonable fines and penalties for particular offenses that are common or recurring in nature and for which a uniform fine schedule is appropriate (such as fines for illegally parked vehicles).

Section 10.05. Failure Not a Waiver. The failure of Declarant, any other Owner, the City, or any of their officers or agents, to enforce any of the covenants, conditions, restrictions, limitations, reservations, grants or easements, rights, rights-of-way, liens, charges or equitable servitudes contained in this Declaration shall not constitute a waiver of the right to enforce the same thereafter, nor shall such failure result in or impose any liability upon the Declarant, City, or any of their officers or agents.

Section 10.06. Legal Principles Applicable to Enforcement. Although Nerradscali Subdivision is not subject to the Davis-Stirling Act, in any action to enforce this Declaration or any other Governing Documents, each Owner acknowledges and agrees to be bound by the legal principles and legal presumptions governing covenant enforcement in the context of common interest developments and the enforcement of equitable servitudes in such developments. As an example, and without limiting the foregoing, those legal principles and legal presumptions shall include the holdings and precedents of the following cases, unless and until any of the listed judicial decisions are overturned or modified by subsequent case law or statutory enactments:

(a) *Nahrstedt v. Lakeside Village Condominium Association* (1994) 8 Cal 4th 361. (CC&Rs are presumed reasonable; burden is on the party challenging provision to show that provision is unreasonable).

(b) *Villa De Las Palmas Homeowners Association v. Terifaj* (2004) 33 Cal 4th 73. (Amendments are as valid as the original Declaration, and duly adopted Rules are enforceable).

(c) *Rancho Santa Fe Association v. Dolan-King* (2004) 115 Cal. App. 4th 28. (Design Guidelines and review by board are subject to requirements that decisions be made in good faith good faith judgments have been made,, the courts will not second guess the decisions of the board).

(d) *La Jolla Shores Clubdominium Association v. Lamden* (1999) 21 Cal 4th 249. (Courts won't overrule board decisions, so long as decisions were made in good faith, in the best interest of the community, and based upon reasonable inquiry).

Section 10.07. Due Process Requirements for Disciplinary Proceedings. Disputes of the kind described in subparagraph (a), below, among the Declarant, City, Owners, or among Owners and other residents who are not Owners, shall be resolved as provided in this Section 10.07:

(a) Mediation or Other Informal Resolution of Disputes Among Owners. If an Owner believes that another Owner or resident of the Subdivision is in violation of any covenant or restriction contained in this Declaration or any of the other Governing Documents, the Owner shall provide written notice (a "***Notice of Violation***") of the alleged violation to the other party (Owner or resident). The Notice of Violation shall contain a general description of the condition,

action or activity that the noticing Owner believes to be in violation of the Declaration/Governing Document and the notice shall cite the Section of the Declaration that is allegedly being violated. The Owner or Owners who are alleging that a violation of the Declaration/Governing Documents has occurred and the noticed parties shall be referred to collectively as the "Disputing Parties" and the alleged violation shall be referred to as the "Dispute."

Disputing Parties are encouraged to resolve the Dispute through clear communication and neighborly courtesy, if at all possible. Disputing Parties who are unable to resolve the Dispute through communication or other informal means may also agree among themselves to retain the services of a third-party mediator, with the scheduling and cost of those proceedings being determined by agreement among the Disputing Parties.

(b) Arbitration of Owner Disputes. If a Dispute cannot be resolved through informal means or mediation in accordance with subparagraph (a), above, all Disputing Parties shall resolve such Dispute by arbitration in accordance with this subparagraph (b). The Dispute between the Disputing Parties shall be resolved by arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("AAA") before an arbitrator(s) selected from the panels of the arbitrators of the AAA. Any fees or costs in initiating arbitration which must be paid prior to such arbitration shall be borne equally by the Disputing Parties; provided, however, that all such costs or fees and all other costs of the arbitration, including without limitation, reasonable attorneys' fees, shall be borne by the Disputing Parties in such amounts and such proportions as shall be determined by the arbitrator(s).

(c) Remedies Available for Resolving Disputes. In any proceedings conducted pursuant to this Section 10.07, the arbitrator or arbitrators shall be empowered to do any one or more of the following: (i) issue a ruling or decision interpreting the meaning and intent of this Declaration, as applied to the Dispute in question; (ii) awarding injunctive or other equitable relief to the prevailing party; (iii) awarding actual damages (but not punitive damages), including reasonable attorneys' fees and costs, to the prevailing party; (iv) ordering a suspension of membership voting privileges with respect to any Owner who is a Disputing Party; (v) imposing a fine against any Disputing Party so long as the Declarant has adopted and distributed to its Owners a schedule of fines that can be imposed for enumerated categories of Governing Document violations (and the awarded fine is in accordance with the written fine schedule); and (vi) making a determination as to which Disputing Party is the prevailing party in the Dispute.

(d) Effect of Arbitration. The decision of the Arbitration Panel or AAA arbitrator(s), as applicable, shall be binding upon all Disputing Parties (except where the Arbitration Panel fails to act in good faith or acts arbitrarily or capriciously) and may, as long as not otherwise prohibited by applicable law, be entered as a judgment or order in any court of competent jurisdiction. The cost for the entry of such judgment shall be borne by the Disputing Party or Disputing Parties that do not prevail in the arbitration.

Section 10.08. Enforcement by the City. The City shall be a third-party beneficiary to the duties and covenants imposed in this Declaration and shall be entitled to, without obligation, take appropriate legal action to enforce this Declaration and these duties and covenants contained

herein. If an action is commenced, the City shall be entitled to recover costs including reasonable attorneys' fees. The provisions of this Section 10.08 may not be amended or rescinded without the prior written consent of the City.

## ARTICLE XI
## DECLARANT PRIVILEGES AND EXEMPTIONS

Section 11.01. Interest of the Declarant; Material Actions Requiring Declarant Approval. Each Owner of a Lot in the Subdivision acknowledges, by acceptance of a deed or other conveyance therefor, whether or not it shall be so expressed in any such deed or other instrument, that Declarant has a substantial interest to be protected with regard to assuring compliance with and enforcement of the covenants, conditions, restrictions and reservations contained in this Declaration and any amendments thereto.

Section 11.02. Exemptions from Restrictions Otherwise Applicable. Nothing in the Governing Documents shall limit and no Owner shall do anything to interfere with the right of the Declarant, either directly or through their respective agents and representatives, to subdivide, re-subdivide, sell, resell, rent or re-rent any portion of Subdivision, or to alter the foregoing and its construction plans and designs, or to construct such additional Improvements as the Declarant deems advisable in the course of developing the Property so long as any Lot within Nerradscali Subdivision is owned by the Declarant.

The rights reserved to the Declarant pursuant to this Section 11.02 shall include, but shall not be limited to, carrying on by the Declarant and their respective agents and representatives of such grading work as may be approved by the County's Department of Public Works or other agency having jurisdiction, and erecting, constructing and maintaining on Subdivision such structures (including, without limitation, temporary sales and construction offices or trailers, sales offices or model homes), signs and displays as may be reasonably necessary for the conduct of its business of completing the work and disposing of the same by sale, lease or otherwise.

Each Owner, by accepting a deed to a Lot, hereby acknowledges that any construction or installation by the Declarant may impair the view of such Owner, and hereby consents to such impairment.

Section 11.03. Amendment of Plans. Subject to approval, as necessary, by the County, Declarant may, from time to time as it deems fit, amend its plans for the Nerradscali Subdivision, combine or split Lots and apply for changes in the entitlements for the Subdivision, changes in zoning, use and use permits for any property within the Subdivision.

Section 11.04. Right to Enforce Design Review and Approval Requirements. For so long as the Declarant owns any Lot in the Subdivision, the Declarant shall have the right to initiate action to correct or prevent any activity, condition or Improvement that is not in substantial compliance with the City's approved plans and specifications if: (a) the City has issued a Notice of Noncompliance; and (b) the City, after having a reasonable opportunity to do so, is unable or unwilling to initiate enforcement action. In the event that such action is initiated by the Declarant and it is later determined by an arbitrator or a court of competent jurisdiction that the Owner of the subject Lot was, in fact, proceeding in violation of the approved plans and

specifications, any reasonable costs incurred by the Declarant in initiating enforcement action, including reasonable attorney's fees, which are not the subject of an award of fees and/or costs against the offending Owner, may be charged to the offending Owner.

Section 11.05. Termination of Any Responsibility of Declarant. In the event the Declarant conveys all of its rights, title and interest to any partnership, limited liability company, individual or individuals, corporation or corporations, in and to the Subdivision, and the acquiring person or entity is designated as a successor Declarant as to all the property conveyed, then and in such event, Declarant shall be relieved of the performance of any further duty or obligation hereunder, and such partnership, individual or individuals, corporation or corporations, shall be obligated to perform all such duties and obligations of Declarant. This Article shall not terminate any responsibility of the Declarant for acts or omissions occurring prior to the conveyance to such partnership, individual or individuals, corporation or corporations. However, this shall not limit Declarant's right to enter into a contract or agreement dealing with such acts or omissions, provided the contract or agreement is enforced by Declarant, if necessary.

Section 11.06. No Amendment or Repeal. So long as the Declarant owns any Lots within the Subdivision, the provisions of this Article may not be amended or repealed without the consent of the Declarant.

## ARTICLE XII
## NOTICES

Section 12.01. Mailing Addresses. Any communication or notice of any kind permitted or required herein shall be in writing and may be served, as an alternative to personal service, by mailing the same as follows:

| | |
|---|---|
| If to Declarant: | To Nerradscali Corporation, a California corporation at 3960 Kingsbarns Dr., Roseville, CA 95747; ATTN: Darren Brown. |
| If to any Owner: | To the street address of his or her Lot or to such other address as he or she may from time to time designate in writing to the Declarant for purposes of notice. |

Section 12.02. Personal Service Upon Co-Owners and Others. Personal service of a notice or demand to one of the Co-Owners of any Lot, to any general partner of a partnership which is the Owner of Record of the Lot, or to any officer or agent for service of process of a corporation which is the Owner of Record of the Lot, shall be deemed delivered to all such Co-Owners, to such partnership, or to such corporation, as the case may be.

Section 12.03. Deposit in United States Mails. All notices and demands served by mail shall be by first-class or certified mail, with postage prepaid, and shall be deemed delivered four (4) days after deposit in the United States mail in the County.

## ARTICLE XIII
## AMENDMENT OF THIS DECLARATION

Section 13.01. Amendment Before Close of First Sale. Before the close of escrow for the first sale of a Lot in the Subdivision to a purchaser other than Declarant, this Declaration may be amended or revoked in any respect by the execution of an instrument amending or revoking the Declaration signed by Declarant. The amending or revoking instrument shall make appropriate reference to this Declaration and shall be Recorded in the County.

Section 13.02. Amendment After Close of First Sale. After the close of escrow for the first sale of a Lot in the Subdivision to a purchaser other than Declarant, this Declaration may be amended or revoked in any respect upon compliance with the following provisions:

(a) Owner Approval Requirements. Any amendment shall be approved by the vote or assent by written ballot of the holders of not less than fifty-one percent (51%) of the Owners of Lots in the Subdivision. Notwithstanding the foregoing, the percentage of the voting power necessary to amend a specific clause or provision of this Declaration shall not be less than the percentage of affirmative votes prescribed for action to be taken under that clause.

(b) Additional Approvals for Amendments to Particular Provisions.

(i) Declarant Approvals. The following provisions may only be amended with the prior written consent of the Declarant(s) for so long as the Declarant owns any Lots in the Subdivision: Sections 1.04, 1.10, 7.04, 8.01, 10.06, 10.07, Article XI, and this subparagraph (b)(i).

(ii) Approval by the City of Sacramento. The following provisions of this Declaration reflect conditions of approval for the Subdivision imposed by the City and may only be amended with the prior written consent of the City: Sections 1.03, 4.06, 4.07, 4.08, 5.01, 5.02(d), 5.03, 6.15, 7.02, 10.08, and this subparagraph (b)(ii).

Section 13.03. Restatements. This Section describes the methods for restating the Declaration after an amendment or amendments are dully approved.

Section 13.04. Form of Restatement. The restatement shall restate the entire text of the original document, with these exceptions: (i) changes incorporating all amendments approved by the Owners; (ii) changes made to rearrange or delete the text for consistency with the approved amendments; (iii) changes made to delete material no longer legally effective or legally required, such as the provisions described in the section entitled "Amendment of Declarant Benefit Provisions;" (iv) changes made to delete any provision declared illegal by constitutional or statutory enactment, by regulation, or by controlling judicial opinion; and (v) changes needed to distinguish the restatement from the original document, such as title, section, or subsection numbering changes.

Section 13.05. Effective Date of Amendment. The amendment will be effective upon the Recording of a Certificate of Amendment, duly executed and certified by the Declarant setting forth in full the amendment so approved and that the approval requirements of subsection (a) or

(b), above, have been duly met. If the consent or approval of any governmental authority, Mortgagee, or other entity is required under this Declaration to amend or revoke any provision of this Declaration, no such amendment or revocation shall become effective unless such consent or approval is obtained.

Section 13.06. Reliance on Amendments. Any amendments made in accordance with the terms of this Declaration shall be presumed valid by anyone relying on them in good faith.

## ARTICLE XIV
## GENERAL PROVISIONS

Section 14.01. Term. The covenants, conditions, restrictions, limitations, reservations, grants of easement, rights, rights of way, liens, charges and equitable servitudes contained in this Declaration shall run with, and shall benefit and burden the Lots as herein provided, and shall inure to the benefit of and be binding upon the Owners, Declarant and its officers and agents, and their respective successors in interest, for the term of thirty (30) years from the date of the recording of this Declaration. After the expiration of the initial term, the same shall be automatically extended for successive periods of ten (10) years each unless, within six (6) months prior to the expiration of the initial thirty (30) year term or any such ten (10) year extension period, a written instrument, approved by a majority of the Lot Owners in the Subdivision terminating the effectiveness of this Declaration, is Recorded.

Section 14.02. Termination of Any Responsibility of the Declarant. In the event Declarant shall convey all of its rights, title and interest in and to the Subdivision to any partnership, individual or individuals, corporation or corporations, the Declarant shall be relieved of the performance of any further duty or obligation hereunder, and such partnership, individual or individuals, corporation or corporations shall be obligated to perform all such duties and obligations of the Declarant.

Section 14.03. Statutory References. In the event that any statute in this Declaration, whether stated by code and number, or named by body of law, is amended, repealed, renumbered, or renamed, all references to such statute or body of law shall refer to the amended, repealed, renumbered, or renamed statutory provisions.

Section 14.04. Construction.

(a) Restrictions Construed Together. All of the covenants, conditions and restrictions of this Declaration shall be liberally construed together to promote and effectuate the fundamental concepts of the development of Nerradscali Subdivision as set forth in the Recitals of this Declaration. Failure to enforce any provision hereof shall not constitute a waiver of the right to enforce that provision in a subsequent application or any other provision hereof.

(b) Restrictions Severable. Notwithstanding the provisions of subparagraph (a) above, the covenants, conditions and restrictions of this Declaration shall be deemed independent and severable, and the invalidity or partial invalidity of any provision or portion thereof shall not affect the validity or enforceability of any other provision.

(c) Singular Includes Plural. The singular shall include the plural and the plural the singular unless the context requires the contrary, and the masculine, feminine or neuter shall each include the masculine, feminine and neuter, as the context requires.

(d) Captions. All captions or titles used in this Declaration are intended solely for convenience of reference and shall not affect the interpretation or application of that which is set forth in any of the terms or provisions of the Declaration.

(e) Exhibits. All exhibits to which reference is made herein are deemed to be incorporated herein by reference, whether or not actually attached.

(f) Incorporation by Reference. The Recitals and any footnotes are incorporated into and made a part of this Declaration by reference.

(g) References to State Statutes. Any references in this Declaration to California Statutes shall be to the referenced statute as in effect on the date that this Declaration is Recorded in the Official Records of Sacramento County. In the event that any referenced statute is subsequently amended or superseded, all such references shall thereupon mean and refer to the referenced statute as so amended, modified or superseded, so long as the amended statute continues to regulate or pertain to the same subject matter.

Dated: _____, 2022

**NERRADSCALI CORPORATION,**
a California corporation

By: _____
Darren Brown, President

## ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not to the truthfulness, accuracy, or validity of that document.

State of California
County of _____)

On _____ before me, _____
(insert name and title of the officer)

personallyappeared_____,
who proved to me on the basis of satisfactory evidence to be the person(s) whose names(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacit(ies), and that by his/her their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ **(Seal)**

**EXHIBIT "A"**
**LEGAL DESCRIPTION OF THE PROPERTY**

All of the real property and improvements located in the County of Sacramento, more particularly described as follows:

Lots 1 through 8, inclusive, as shown on that certain final subdivision map for Nerradscali Subdivision, recorded in the Official Records of Sacramento County, California, on _____, in Book ___ of Maps, at Page ___.

FINAL MAP
OF

# NERRADSCALI SUBDIVISION

SUBDIVISION NO. P19-036

ALL THAT PORTION OF LOT 61 OF THE "PLAT OF SUBDIVISION OF SECTION 11 OF THE RANCHO DEL PASO" FILED IN BOOK 14 OF MAPS, MAP NO. 5, OFFICIAL RECORDS OF SACRAMENTO COUNTY, CITY OF SACRAMENTO, COUNTY OF SACRAMENTO, STATE OF CALIFORNIA
JUNE 2023
SHEET 1 OF 10 SHEETS

STANTEC CONSULTING SERVICES INC.

## OWNER'S STATEMENT

THE UNDERSIGNED HEREBY CONSENTS TO THE PREPARATION AND FILING OF THIS FINAL MAP OF "NERRADSCALI SUBDIVISION".

THE REAL PROPERTY DESCRIBED BELOW IS DEDICATED AS AN EASEMENT FOR PUBLIC PURPOSES.

THE UNDERSIGNED HEREBY OFFERS FOR DEDICATION AND DOES HEREBY DEDICATE TO SPECIFIC PURPOSES THE FOLLOWING:

1) EASEMENT FOR PLANTING AND MAINTAINING TREES, INSTALLATION AND MAINTENANCE OF ELECTROLIERS, TRAFFIC CONTROL DEVICES, WATER AND GAS PIPES, AND FOR UNDERGROUND AND OVERHEAD WIRES AND CONDUITS FOR ELECTRICAL, TELEVISION AND TELEPHONE SERVICES, TOGETHER WITH ANY AND ALL APPURTENANCES PERTAINING THERETO ON, OVER, UNDER AND ACROSS THOSE STRIPS OF LAND EIGHTEEN (18.00) FEET IN WIDTH AND CONTIGUOUS TO THE AVENUE SHOWN HEREON AND DESIGNATED 18.00' PUBLIC UTILITY EASEMENT (18.00' PUE)

2) PURSUANT TO THE PROVISIONS OF SECTION 66475 OF THE GOVERNMENT CODE, WE HEREBY IRREVOCABLY OFFER FOR DEDICATION TO THE CITY OF SACRAMENTO, AN EASEMENT FOR ANY PUBLIC ROAD PURPOSES, ON, OVER, UNDER, AND ACROSS THE STRIPS OF LAND SHOWN HEREON AND DESIGNATED "ROAD IRREVOCABLE OFFER OF DEDICATION" (R.I.O.D.).

3) AN EASEMENT FOR INSTALLATION AND MAINTENANCE OF GAS PIPES AND FOR POLES AND UNDERGROUND AND OVERHEAD WIRES AND CONDUITS FOR ELECTRICAL, TELEVISION AND TELEPHONE SERVICES TOGETHER WITH ANY AND ALL APPURTENANCES PERTAINING THERETO ON, OVER, UNDER AND ACROSS THE PRIVATE ROAD "NERRADS COURT" AND (10.00) FEET ADJACENT THERETO AND (4.00) FEET ADJACENT THERETO, AS SHOWN HEREON AND DESIGNATED "PUBLIC UTILITY EASEMENT" (P.U.E., 10' P.U.E., 4' P.U.E. AND 4' X 4' P.U.E.)

4) AN EASEMENT FOR INSTALLATION AND MAINTENANCE OF GAS PIPES AND FOR POLES AND UNDERGROUND AND OVERHEAD WIRES AND CONDUITS FOR ELECTRICAL, TELEVISION AND TELEPHONE SERVICES TOGETHER WITH ANY AND ALL APPURTENANCES PERTAINING THERETO ON, OVER, UNDER AND ACROSS THE FIVE (5.00) FEET ADJACENT TO THE 100' WIDE PG&E EASEMENT PER 270 DEEDS 498, AS SHOWN HEREON AND DESIGNATED "PUBLIC UTILITY EASEMENT" (5' P.U.E.)

5) AN EASEMENT FOR CONSTRUCTION AND MAINTAINING CENTRALIZED MAIL DELIVERY BOXES, PEDESTALS, AND SLABS, TOGETHER WITH ANY AND ALL APPURTENANCES PERTAINING THERETO, INCLUDING PEDESTRIAN ACCESS FOR DELIVERY AND RECEIPT OF MAIL ON, OVER, UNDER, AND ACROSS THOSE STRIPS OF LAND (5.00) FEET IN WIDTH, LYING CONTIGUOUS TO THE PUBLIC AVENUE SHOWN HEREON.

6) EASEMENT FOR EMERGENCY VEHICLES FOR INGRESS AND EGRESS BY POLICE, FIRE AND SIMILAR EMERGENCY PERSONNEL AND THEIR VEHICLES ON, OVER AND ACROSS THOSE STRIPS OF LAND SHOWN HEREON AND DESIGNATED "EMERGENCY VEHICLE ACCESS EASEMENT". (E.V.A.E.).

7) AN EASEMENT FOR ACCESS, INSTALLATION AND MAINTENANCE OF WATER METER FACILITIES, TOGETHER WITH ANY AND ALL APPURTENANCES PERTAINING THERETO, ON, OVER, UNDER AND ACROSS THE PRIVATE ROAD "NERRADS COURT" AND (3.00) FEET ADJACENT THERETO, AS SHOWN HEREON AND DESIGNATED "WATER METER EASEMENT (W.M.E. AND 3' W.M.E.).

BY DARREN B. BROWN AND YUHUI BROWN, HUSBAND AND WIFE AS JOINT TENANTS

DARREN B. BROWN

YUHUI BROWN

## NOTARY ACKNOWLEDGMENT

A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED, AND NOT THE TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT.

STATE OF California

COUNTY OF Placer

ON 4-27-2023 BEFORE ME, Trish Bunker-Eastland, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, PERSONALLY APPEARED Darren B Brown Yuhui Brown WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT ~~HE/SHE~~/THEY EXECUTED THE SAME IN ~~HIS/HER~~/THEIR AUTHORIZED CAPACITY(IES), AND THAT BY ~~HIS/HER~~/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON(S) ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND AND OFFICIAL SEAL

SIGNATURE:

PRINT NAME Trish Bunker-Eastland

MY COMMISSION NUMBER: 2429908

MY COMMISSION EXPIRES: December 9, 2026

MY PRINCIPAL PLACE OF BUSINESS IS THE COUNTY OF: Sacramento

## SURVEYOR'S STATEMENT

THIS MAP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED UPON A FIELD SURVEY IN CONFORMANCE WITH THE REQUIREMENTS OF THE SUBDIVISION MAP ACT AND LOCAL ORDINANCES AT THE REQUEST OF DARREN BROWN ON JANUARY 3, 2022. I HEREBY STATE THAT ALL THE MONUMENTS ARE OF THE CHARACTER AND OCCUPY THE POSITIONS INDICATED OR WERE OF THE CHARACTER AND OCCUPIED THOSE POSITIONS AT THE TIME OF FIELD SURVEYS IN APRIL, 2018; THAT THE MONUMENTS TO BE SET WILL BE SET IN THOSE POSITIONS BEFORE ISSUANCE OF NOTICE OF COMPLETION BY THE CITY FOR CONSTRUCTION AND THAT THE MONUMENTS WILL BE SUFFICIENT TO ENABLE THIS SURVEY TO BE RETRACED AND THAT THIS FINAL MAP SUBSTANTIALLY CONFORMS TO THE APPROVED OR CONDITIONALLY APPROVED TENTATIVE MAP.

KONRAD M. STINCHFIELD, L.S. 7873
LICENSE EXPIRES: 12/31/2024

5/9/2023
DATE

PROFESSIONAL LAND SURVEYOR
KONRAD M. STINCHFIELD
No. 7873
STATE OF CALIFORNIA

## CITY SURVEYOR'S STATEMENT

I HEREBY STATE THAT I HAVE EXAMINED THIS FINAL MAP OF "NERRADSCALI SUBDIVISION", AND FIND IT TO BE SUBSTANTIALLY THE SAME AS THE TENTATIVE MAP APPROVED BY CITY OF SACRAMENTO ZONING ADMINISTRATOR AND ANY APPROVED ALTERATIONS THEREOF, THAT ALL PROVISIONS OF THE SUBDIVISION MAP ACT AND ALL APPLICABLE CITY ORDINANCES HAVE BEEN COMPLIED WITH, AND THAT I AM SATISFIED THAT SAID MAP IS TECHNICALLY CORRECT.

I HEREBY APPROVE THIS FINAL MAP OF "NERRADSCALI SUBDIVISION", AND ACCEPT, ON BEHALF OF THE PUBLIC, THE EASEMENTS HEREON OFFERED FOR DEDICATION TOGETHER WITH ANY AND ALL APPURTENANCES THERETO, SUBJECT TO THE IMPROVEMENTS THEREOF, BUT REJECT AT THIS TIME THE IRREVOCABLE OFFERS FOR DEDICATION. SAID OFFERS MAY BE ACCEPTED BY THE CITY AT ANY TIME.

JIMMY L. BYRUM
L.S. 9275, EXP. 9/30/2024
CITY SURVEYOR
CITY OF SACRAMENTO

DATE

## CITY CLERK'S STATEMENT

I HEREBY ATTEST TO THE APPROVAL OF THIS FINAL MAP OF "NERRADSCALI SUBDIVISION".

CITY CLERK
CITY OF SACRAMENTO

DATE

## RECORDER'S STATEMENT:

FILED THIS _____ DAY OF _____, 2023, AT _____M. IN BOOK _____ OF MAPS, AT PAGE _____, AT THE REQUEST OF STANTEC CONSULTING SERVICES, INC. TITLE TO THE LAND INCLUDED IN THIS SUBDIVISION BEING VESTED AS PER CERTIFICATE NO._____ ON FILE IN THIS OFFICE.

DOCUMENT NO._____ Fee: $_____

RECORDER OF SACRAMENTO COUNTY
STATE OF CALIFORNIA

BY:_____
DEPUTY

FPM22-0037

ORANGE COAST TITLE COMPANY, AS TRUSTEE UNDER THAT CERTAIN DEED OF TRUST RECORDED JUNE 6, 2018 AS DOCUMENT NO. 201806061246, OFFICIAL RECORDS OF SACRAMENTO COUNTY, CALIFORNIA, HEREBY CONSENTS TO THE FILING OF THIS MAP.

ORANGE COAST TITLE COMPANY

BY: Brent Bailey

Brent Bailey
NAME

Sr VP / General Mngr. OCT
TITLE

# NERRADSCALI SUBDIVISION

## SUBDIVISION NO. P19-036

ALL THAT PORTION OF LOT 61 OF THE "PLAT OF SUBDIVISION OF SECTION 11 OF THE RANCHO DEL PASO" FILED IN BOOK 14 OF MAPS, MAP NO. 5, OFFICIAL RECORDS OF SACRAMENTO COUNTY, CITY OF SACRAMENTO, COUNTY OF SACRAMENTO, STATE OF CALIFORNIA
JUNE 2023
SHEET 2 OF 10 SHEETS

STANTEC CONSULTING SERVICES INC.

## NOTARY ACKNOWLEDGMENT

A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED, AND NOT THE TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT.

STATE OF CALIFORNIA

COUNTY OF SACRAMENTO

ON 4-28-2023 BEFORE ME CHRIS CLARK ,A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, PERSONALLY APPEARED BRENT BAILEY , WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE/THEY EXECUTED THE SAME IN HIS/HER/THEIR AUTHORIZED CAPACITY(IES), AND THAT BY HIS/HER/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON(S) ACTED, EXECUTED THE INSTRUMENT.

I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.

WITNESS MY HAND AND OFFICIAL SEAL

SIGNATURE: Chris Clark

PRINT NAME CHRIS CLARK

MY COMMISSION NUMBER: 2328382

MY COMMISSION EXPIRES: 6-3-2024

MY PRINCIPAL PLACE OF BUSINESS IS THE COUNTY OF: SACRAMENTO

FINAL MAP
OF
# NERRADSCALI SUBDIVISION
SUBDIVISION NO. P19-036
ALL THAT PORTION OF LOT 61 OF THE "PLAT OF SUBDIVISION OF SECTION 11 OF THE RANCHO DEL PASO" FILED IN BOOK 14 OF MAPS, MAP NO. 5, OFFICIAL RECORDS OF SACRAMENTO COUNTY, CITY OF SACRAMENTO, COUNTY OF SACRAMENTO, STATE OF CALIFORNIA
JUNE 2023

STANTEC CONSULTING SERVICES INC.

## LEGAL DESCRIPTION

ALL THAT PORTION OF LOT 61 OF THE “PLAT OF SUBDIVISION OF SECTION NO. 11 OF THE RANCHO DEL PASO” IN THE CITY OF SACRAMENTO, COUNTY OF SACRAMENTO, STATE OF CALIFORNIA, RECORDED IN THE OFFICE OF THE COUNTY RECORDER OF SACRAMENTO COUNTY ON APRIL 18, 1913, IN BOOK 14 OF MAPS, MAP NO. 5, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE EAST LINE OF SAID LOT 61, SAID POINT BEING ON THE NORTH LINE OF NORTH AVENUE AS SAID NORTH AVENUE IS SHOWN ON SAID MAP; THENCE FROM SAID POINT OF BEGINNING ALONG THE NORTH LINE OF SAID NORTH AVENUE NORTH 89°30'07" WEST 227.61 FEET TO THE EAST LINE OF THAT CERTAIN PARCEL OF LAND DESCRIBED IN DEED DATED SEPTEMBER 15, 1952, RECORDED SEPTEMBER 30, 1952, IN BOOK 2289 OF OFFICIAL RECORDS, PAGE 406, EXECUTED BY MATTIE MAY BUNDOCK TO OLIN WILLBOURN AND RUBY WILLBOURN, HIS WIFE; THENCE ALONG THE EAST LINE OF SAID WILLBOURN PARCEL NORTH 01°28'18" WEST 220.84' TO THE SOUTH LINE OF THAT CERTAIN PROPERTY DESCRIBED IN DEED RECORDED JANUARY 12, 1972, IN BOOK 720612 OF OFFICIAL RECORDS, PAGE 300, EXECUTED BY THE STATE OF CALIFORNIA TO THE CITY OF SACRAMENTO; THENCE ALONG SAID SOUTH LINE THE FOLLOWING TWO (2) COURSES:

1) NORTH 77°54'20" EAST 177.50 FEET AND
2) NORTH 73°32'44" EAST 60.65 FEET TO THE EAST LINE OF SAID LOT 61;

THENCE ALONG THE EAST LINE OF SAID LOT 61 SOUTH 00°19'09" EAST 277.12' TO THE POINT OF BEGINNING, CONTAINING 1.305 ACRES, MORE OR LESS.

FINAL MAP
OF

# NERRADSCALI SUBDIVISION

SUBDIVISION NO. P19-036

ALL THAT PORTION OF LOT 61 OF THE "PLAT OF SUBDIVISION OF SECTION 11 OF THE RANCHO DEL PASO" FILED IN BOOK 14 OF MAPS, MAP NO. 5, OFFICIAL RECORDS OF SACRAMENTO COUNTY, CITY OF SACRAMENTO, COUNTY OF SACRAMENTO, STATE OF CALIFORNIA

JUNE 2023

SHEET 4 OF 10 SHEETS

STANTEC CONSULTING SERVICES INC.

SCALE 1" = 200'

## RAILROAD NOTE:

THE 100' WIDE RAILROAD SHOWN HEREON HAS BEEN HAS BEEN ACQUIRED THROUGH EMINENT DOMAIN AS FEE TITLE IN FAVOR OF THE CITY OF SACRAMENTO PER DOCUMENT NO. 830915 O.R. 1057

## BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CENTERLINE OF JESSIE AVENUE AS SHOWN ON THAT CERTAIN MAP ENTITLED "PLAT OF SHERMAN OAKS ESTATES" FILED IN BOOK 223 OF MAPS, MAP NO. 4, RECORDS OF SACRAMENTO COUNTY THE BEARING OF WHICH IS SHOWN TO BE SOUTH 89°01'22" WEST AND FOR PURPOSES OF THIS SURVEY HAS BEEN ROTATED COUNTER-CLOCKWISE 01°26"34", THE BEARING OF WHICH IS DETERMINED TO BE AND SHOWN HEREON AS NORTH 89°32'04" WEST

## NOTES:

1. ALL DISTANCES AND DIMENSIONS SHOWN HEREON ARE IN FEET AND DECIMALS THEREOF.
2. THE SUM OF THE PARTS MAY NOT ADD UP TO THE WHOLE DUE TO ROUNDING.
3. THE AREA WITHIN THE DISTINCTIVE BORDER IS 1.305 ACRES, MORE OR LESS.
4. THE PRIVATE INGRESS-EGRESS ACCESS EASEMENTS SHOWN HEREON AND DESIGNATED "PRIVATE INGRESS/EGRESS ACCESS EASEMENT" (P.I.E.A.E.) SHOWN HEREON IS TO BE GRANTED AT THE TIME OF SALE OR CONVEYANCE OF LOTS 3, 4, 5, 6, 7, AND 8 SHOWN ON THIS MAP.
5. PER SACRAMENTO CITY CODE, SECTION 17.852.010 THIS MAP IS SUBJECT TO PUBLIC IMPROVEMENTS. REFERENCE RPC23-0011.
6. LOTS FRONTING NORTH AVENUE MAY OWN FEE TITLE TO THE SECTION LINE. VACATING NORTH AVENUE MAY RESULT IN THOSE PORTIONS OF NORTH AVENUE REVERTING TO THE UPLAND OWNERS.

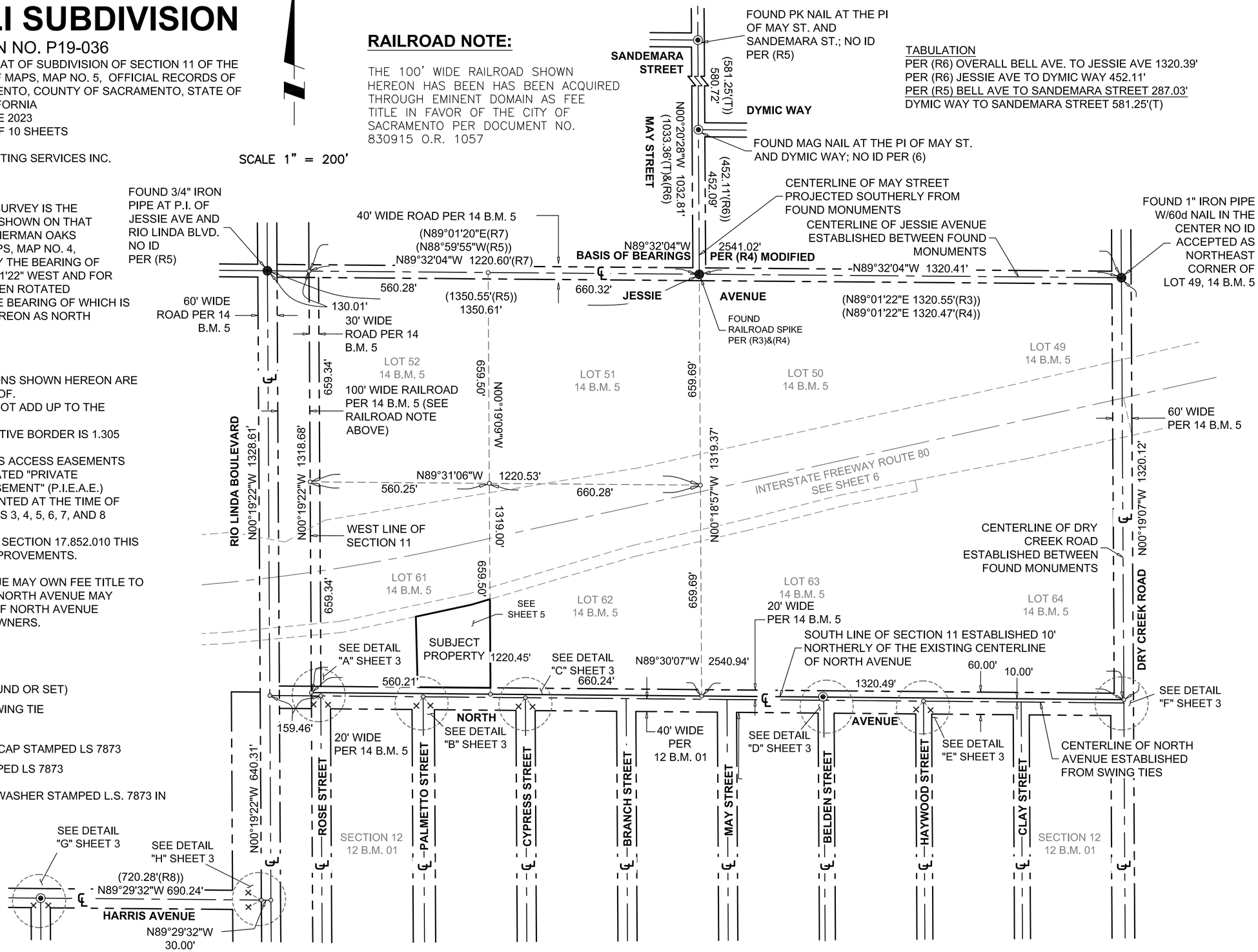
## LEGEND:

- ◦ DIMENSION POINT (NOTHING FOUND OR SET)
- ✕ FOUND "X" CUT IN CURB; CITY SWING TIE
- ◉ FOUND NAIL AS NOTED
- ⊗ SET 1" IPON PIPE WITH PLASTIC CAP STAMPED LS 7873
- ⌀ SET 5/8" REBAR WITH CAP STAMPED LS 7873
- ◎ SET 1/4" x 2-1/2" MAG NAIL WITH WASHER STAMPED L.S. 7873 IN PAVEMENT
- (T) INDICATES TOTAL DISTANCE BASE ON CALCULATIONS
- ● FOUND MONUMENT AS NOTED

## REFERENCES:

SEE SHEET 5

TABULATION
PER (R6) OVERALL BELL AVE. TO JESSIE AVE 1320.39'
PER (R6) JESSIE AVE TO DYMIC WAY 452.11'
PER (R5) BELL AVE TO SANDEMARA STREET 287.03'
DYMIC WAY TO SANDEMARA STREET 581.25'(T)



FINAL MAP
OF

# NERRADSCALI SUBDIVISION

SUBDIVISION NO. P19-036

ALL THAT PORTION OF LOT 61 OF THE "PLAT OF SUBDIVISION OF SECTION 11 OF THE RANCHO DEL PASO" FILED IN BOOK 14 OF MAPS, MAP NO. 5, OFFICIAL RECORDS OF SACRAMENTO COUNTY, CITY OF SACRAMENTO, COUNTY OF SACRAMENTO, STATE OF CALIFORNIA
JUNE 2023
SHEET 5 OF 10 SHEETS

STANTEC CONSULTING SERVICES INC.

## REFERENCES:

(R1) CITY TIES

(R2) CALTRANS RIGHT OF WAY AND MONUMENT MAPS, DISTRICT 3 RECORDS (INTERSTATE ROUTE 80) POST MILE 6.2 TO 7.4

(R3) 359 B.M. 4 PLAT OF DRY CREEK POINTE

(R4) 223 B.M. 4 PLAT OF SHERMAN OAKS ESTATES

(R5) 198 B.M. 12 PLAT OF SUNRIDGE

(R6) 189 B.M. 11 PLAT OF CINDY WOODS

(R7) 46 R.S. 5 RECORD OF SURVEY A PORTION OF LOT 45 14 B.M. 5

(R8) 148 B.M. 10 PLAT OF NORWOOD-80 BUSINESS PARK UNIT NO. 2B

(R9) 14 B.M. 5 PLAT OF SUBDIVISION OF SECTION NO. 11 OF THE RANCHO DEL PASO

(R10) 12 B.M. 01 DEL PASO HEIGHTS LOCATED IN SECTION 12, RANCHO DEL PASO

## MONUMENT TABLE:

(M1) FOUND PK NAIL S06°12'46"W 0.23' FROM PI ESTABLISHED FROM SWING TIES

(M2) FOUND PK NAIL S00°09'30"W 0.06 FROM PI ESTABLISHED FROM SWING TIES

(M3) FOUND PK NAIL S45°53'20"W 0.31' FROM PI ESTABLISHED FROM SWING TIES

(M4) FOUND PK NAIL 0.31' NORTHERLY OF ESTABLISHED EXISTING CENTERLINE

(M5) POSITION OF PI ESTABLISHED FROM SWING TIES IS 0.23' SOUTHERLY OF ESTABLISHED EXISTING CENTERLINE

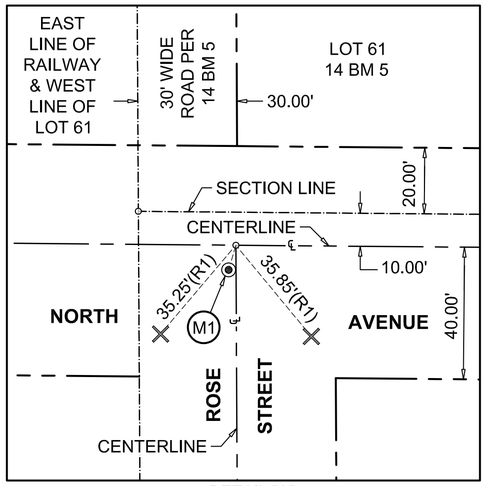
(M6) FOUND PK NAIL. HELD FOR POSITION OF THE CENTERLINE OF DRY CREEK ROAD

(M7) FOUND PK NAIL AND SWING TIES. ACCEPTED PK NAIL FOR PI OF HARRIS STREET AND KNIGHTLINGER STREET

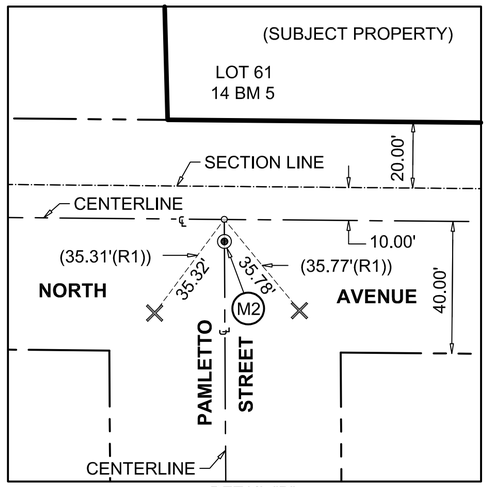
(M8) ESTABLISHED PI OF ALTOS AVENUE AND HARRIS STREET FROM SWING TIES. PROJECTED HARRIS AVENUE CENTERLINE 30' EASTERLY TO CENTERLINE OF RIO LINDA BOULEVARD.

## LEGEND:

SEE SHEET 4




DETAIL "A"
NOT TO SCALE

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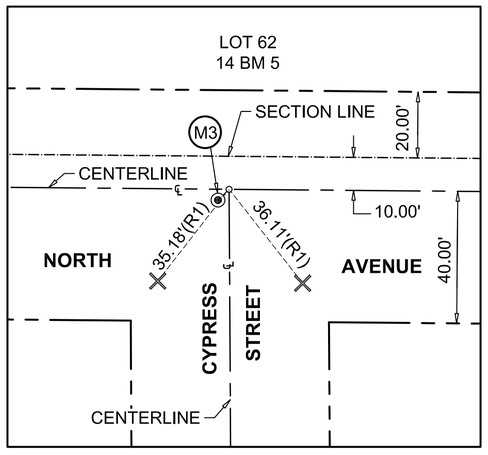


DETAIL "C"
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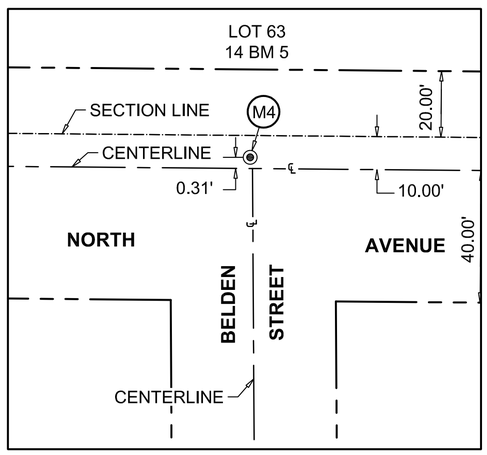


DETAIL "D"
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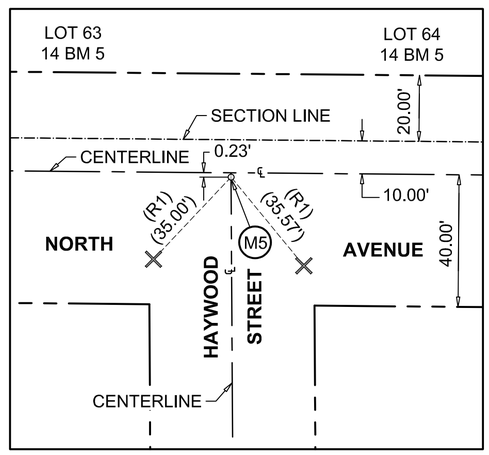


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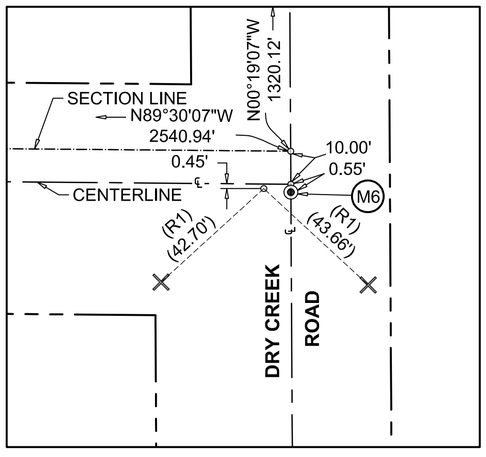


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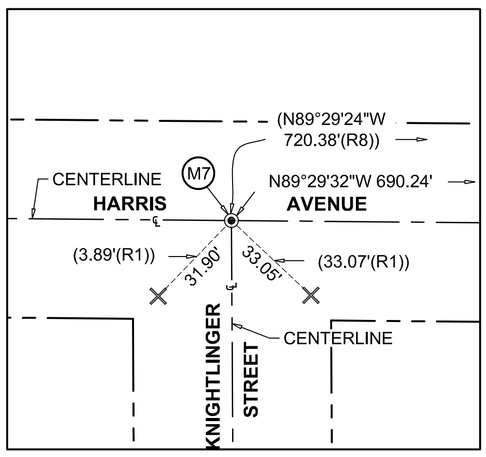


DETAIL "G"
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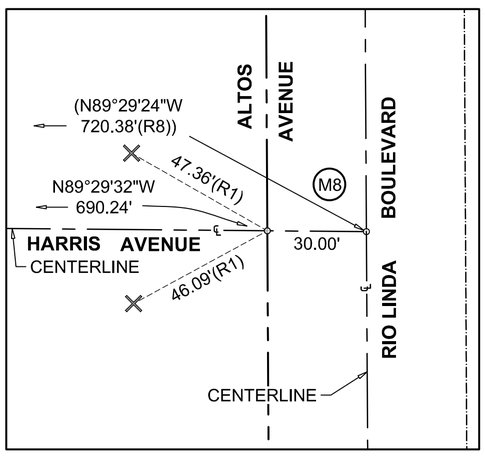


DETAIL "H"
NOT TO SCALE

FINAL MAP
OF

# NERRADSCALI SUBDIVISION

SUBDIVISION NO. P19-036

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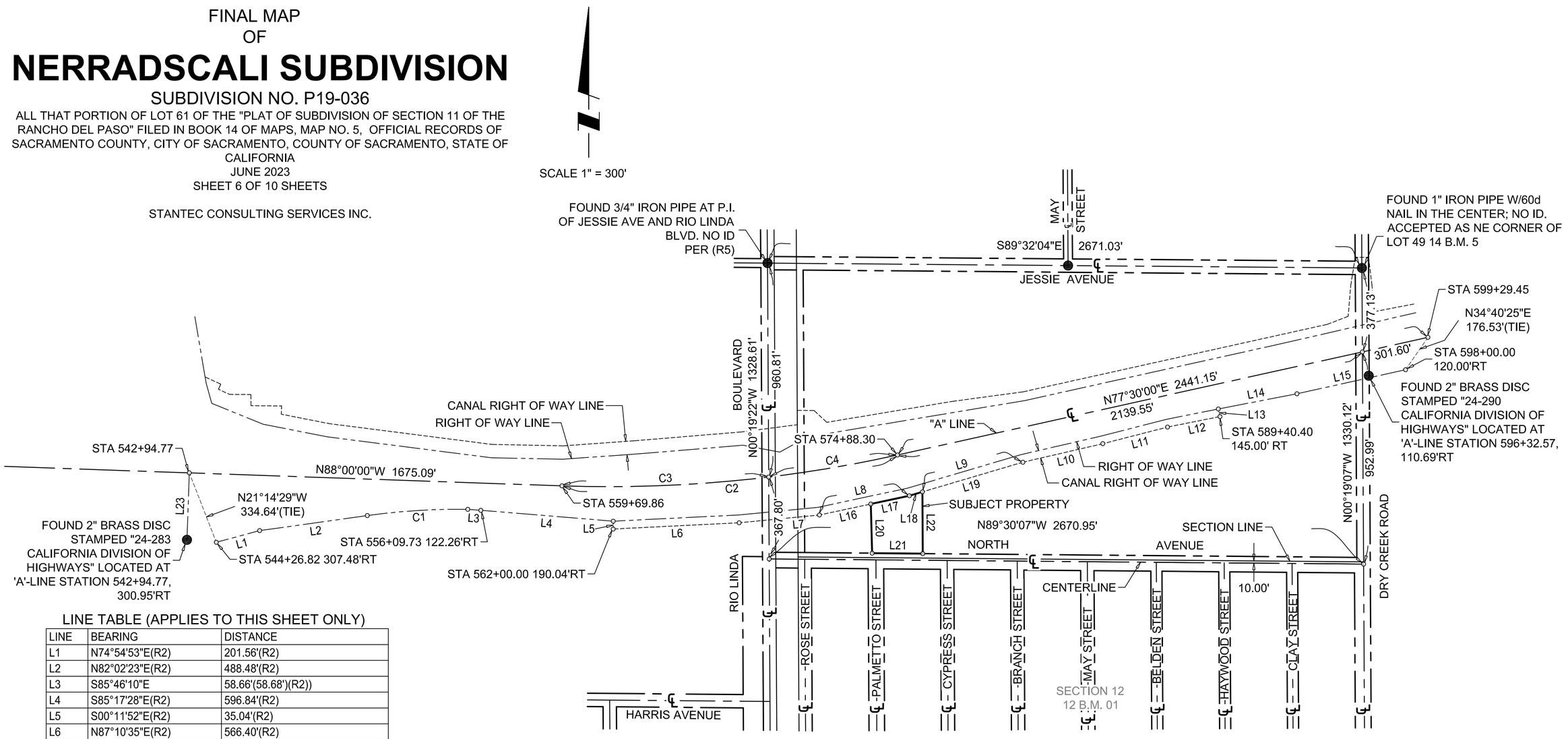
JUNE 2023



STANTEC CONSULTING SERVICES INC.

SCALE 1" = 300'




## LINE TABLE (APPLIES TO THIS SHEET ONLY)

| LINE | BEARING | DISTANCE |
|---|---|---|
| L1 | N74°54'53"E(R2) | 201.56'(R2) |
| L2 | N82°02'23"E(R2) | 488.48'(R2) |
| L3 | S85°46'10"E | 58.66'(58.68')(R2)) |
| L4 | S85°17'28"E(R2) | 596.84'(R2) |
| L5 | S00°11'52"E(R2) | 35.04'(R2) |
| L6 | N87°10'35"E(R2) | 566.40'(R2) |
| L7 | N84°28'23"E(R2) | 362.27'(R2) |
| L8 | N77°54'20"E(R2) | 413.77'(R2) |
| L9 | N73°32'44"E(R2) | 531.45'(R2) |
| L10 | N76°58'45"E(R2) | 368.73'(R2) |
| L11 | N75°35'27"E(R2) | 300.17'(R2) |
| L12 | N78°41'37"E(R2) | 240.05'(R2) |
| L13 | N12°30'03"W(R2) | 35.01'(R2) |
| L14 | N79°05'28"E(R2) | 360.14'(R2) |
| L15 | N77°30'00"E(R2) | 500.00'(R2) |
| L16 | N77°54'20"E | 236.27' |
| L17 | N77°54'20"E | 177.50' |
| L18 | N73°32'44"E | 60.65' |
| L19 | N73°32'44"E | 470.80' |
| L20 | N01°28'18"W | 220.84' |
| L21 | S89°30'07"E | 227.60' |
| L22 | N00°19'09"W | 277.12' |
| L23 | S02°00'00"W | 300.95' |

## CURVE TABLE (APPLIES TO THIS SHEET ONLY)

| CURVE | ARC LENGTH | RADIUS | DELTA ANGLE | CHORD BEARING | CHORD LENGTH |
|---|---|---|---|---|---|
| C1 | 453.06'(R2) | 2945.00'(R2) | 8°48'52"(R2) | S86°26'49"W(R2) | 452.62'(R2) |
| C2 | 1518.44'(R2) | 6000.00'(R2) | 14°30'00"(R2) | N84°45'00"E(R2) | 1514.39'(R2) |
| C3 | 931.03' | 6000.00' | 8°53'26" | N87°33'17"E | 930.09' |
| C4 | 587.42' | 6000.00' | 5°36'34" | N80°18'17"E | 587.19' |

## 'A'-LINE STATION OFFSET LIST

| STATION | OFFSET | DESCRIPTION |
|---|---|---|
| 542+94.77(R2) | 300.95'RT(R2) | FOUND CALTRANS MONUMENT 2" BRASS DISC STAMPED "24-283 CALIFORNIA DIVISION OF HIGHWAYS" |
| 544+26.82(R2) | 307.48'RT(R2) | RIGHT OF WAY |
| 556+09.73(R2) | 122.26'RT(R2) | RIGHT OF WAY |
| 559+69.86(R2) | 0.00' | CENTERLINE BEGIN CURVE |
| 562+00.00(R2) | 190.04'RT(R2) | RIGHT OF WAY |
| 574+88.30(R2) | 0.00' | CENTERLINE END CURVE |
| 589+40.00(R2) | 145.00'RT(R2) | RIGHT OF WAY |
| 596+32.57(R2) | 110.69'RT(R2) | FOUND CALTRANS MONUMENT 2" BRASS DISC STAMPED "24-290 CALIFORNIA DIVISION OF HIGHWAYS" |
| 598+00.00(R2) | 120.00'RT(R2) | RIGHT OF WAY |
| 599+29.45(R2) | 0.00' | CENTERLINE |

## LEGEND:

SEE SHEET 4

## REFERENCES:

SEE SHEET 5

FINAL MAP
OF

# NERRADSCALI SUBDIVISION

SUBDIVISION NO. P19-036

ALL THAT PORTION OF LOT 61 OF THE "PLAT OF SUBDIVISION OF SECTION 11 OF THE RANCHO DEL PASO" FILED IN BOOK 14 OF MAPS, MAP NO. 5, OFFICIAL RECORDS OF SACRAMENTO COUNTY, CITY OF SACRAMENTO, COUNTY OF SACRAMENTO, STATE OF CALIFORNIA

JUNE 2023

SHEET 7 OF 10 SHEETS

STANTEC CONSULTING SERVICES INC.

SCALE 1" = 20'

NOTE

SEE SHEET 4 FOR LEGEND

SEE SHEET 9 FOR LINE AND CURVE TABLES

CITY OF SACRAMENTO
720612 O.R. 300

WILLBOURN, ET UX
2289 O.R. 406

NORTH AVENUE APARTMENTS L.P.
20041223 O.R. 0326

100' WIDE PG&E EASEMENT PER 270 DEEDS 498

LOT 4
5,275±
SQUARE FEET

LOT 5
12,108±
SQUARE FEET

LOT 3
5,761±
SQUARE FEET

LOT 6
10,435±
SQUARE FEET

LOT 2
3,961±
SQUARE FEET

LOT 1
4,600±
SQUARE FEET

LOT 7
7,006±
SQUARE FEET

LOT 8
7,711±
SQUARE FEET

NERRADS COURT (PRIVATE)

SEE DETAIL SHEET 9

4'x4' P.U.E.

4' WIDE P.U.E.

5' WIDE P.U.E.

10' WIDE P.U.E.

18' WIDE P.U.E.

P.U.E. P.I.E.A.E. & E.V.A.E

E.V.A.E. P.U.E. W.M.E. P.I.E.A.E.

5.50' WIDE R.I.O.D.

TO SW COR. LOT 61
332.60' N89°30'07"W

TO SE COR. LOT 64
1980.73' N89°30'07"W

333.00' N89°30'07"W
463.22' N89°30'07"W

SOUTH LINE SECTION 11
N89°30'07"W 277.21'
N89°30'07"W 2540.94' (OVERALL)

N89°30'07"W 277.03'
N89°30'07"W 2670.95'(OVERALL)

CENTERLINE

PALMETTO STREET

NORTH AVENUE

## WATER METER EASEMENT

3' WIDE WATER METER EASEMENTS ADJACENT TO NERRADS COURT BEING DEDICATED PER THIS MAP ARE SHOWN ON SHEET 8.

FINAL MAP
OF

# NERRADSCALI SUBDIVISION

SUBDIVISION NO. P19-036

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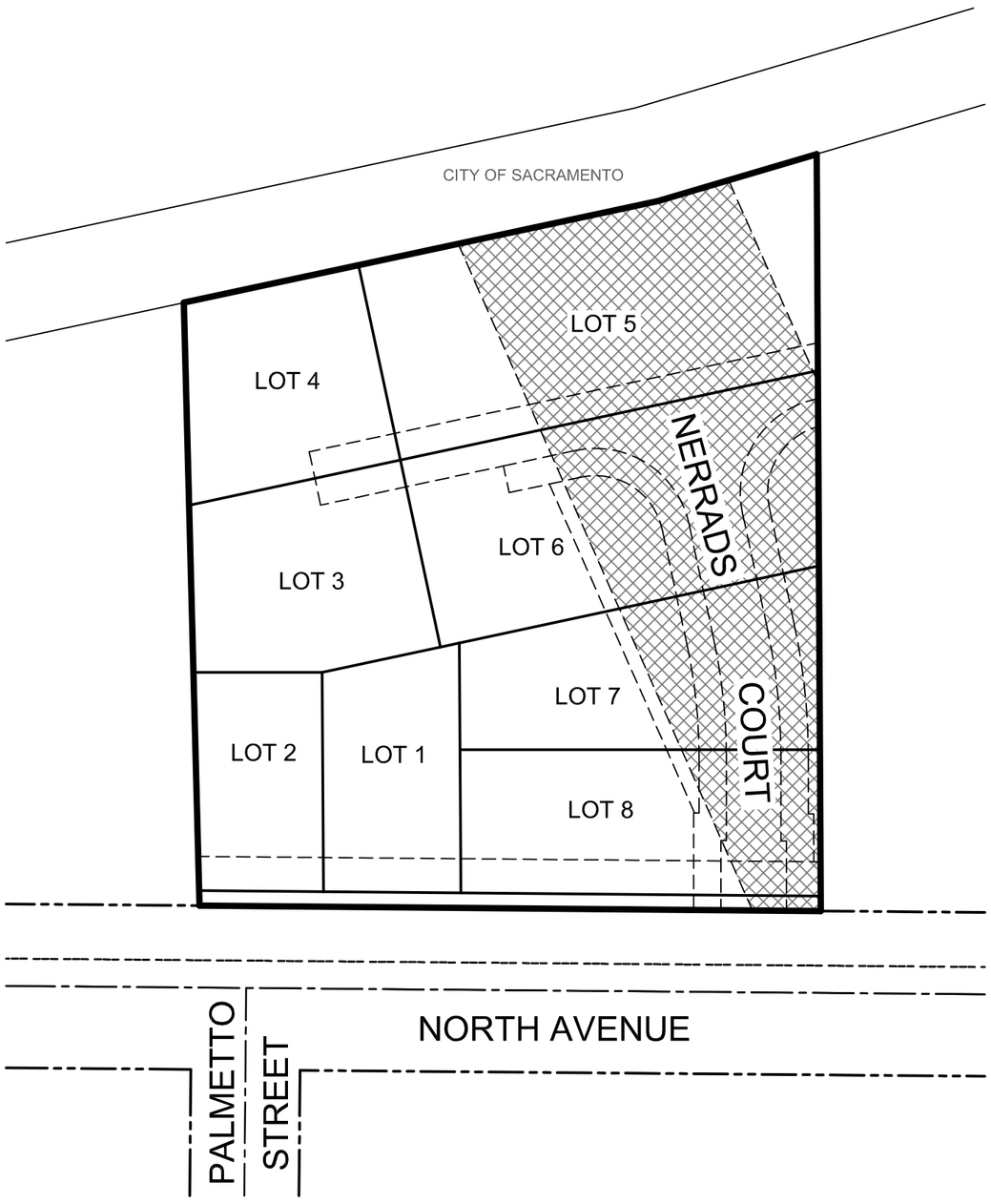
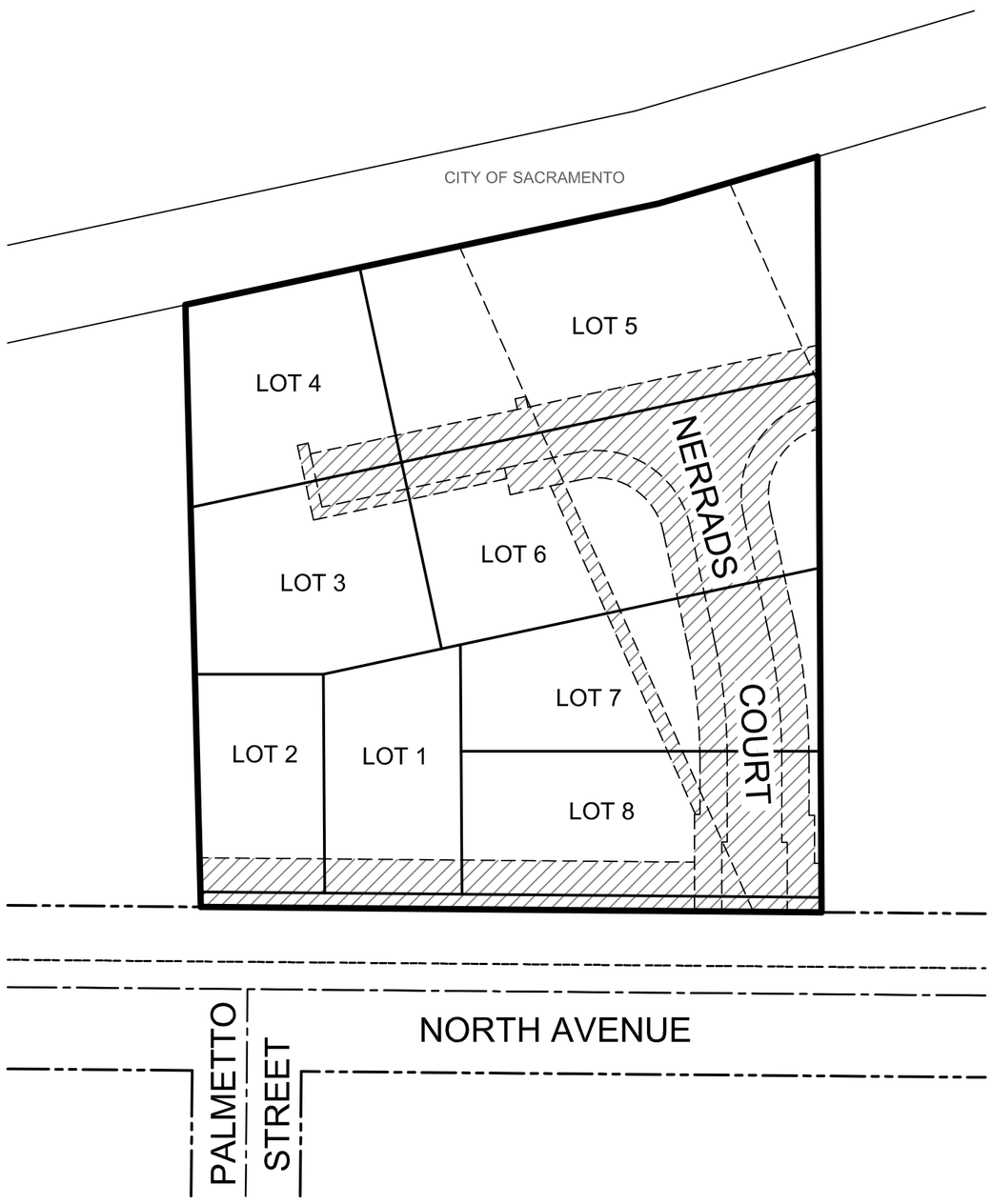
JUNE 2023



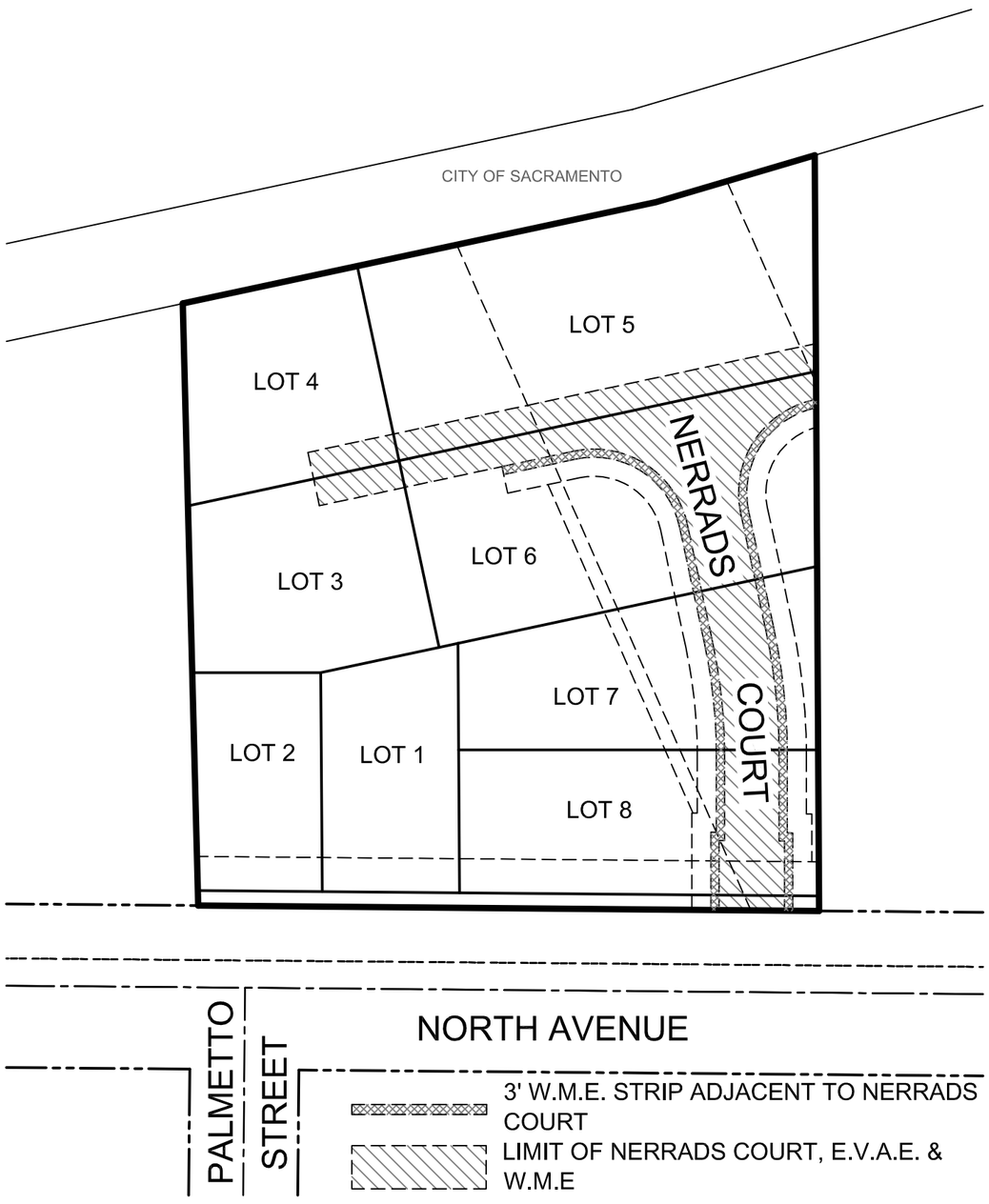
STANTEC CONSULTING SERVICES INC.



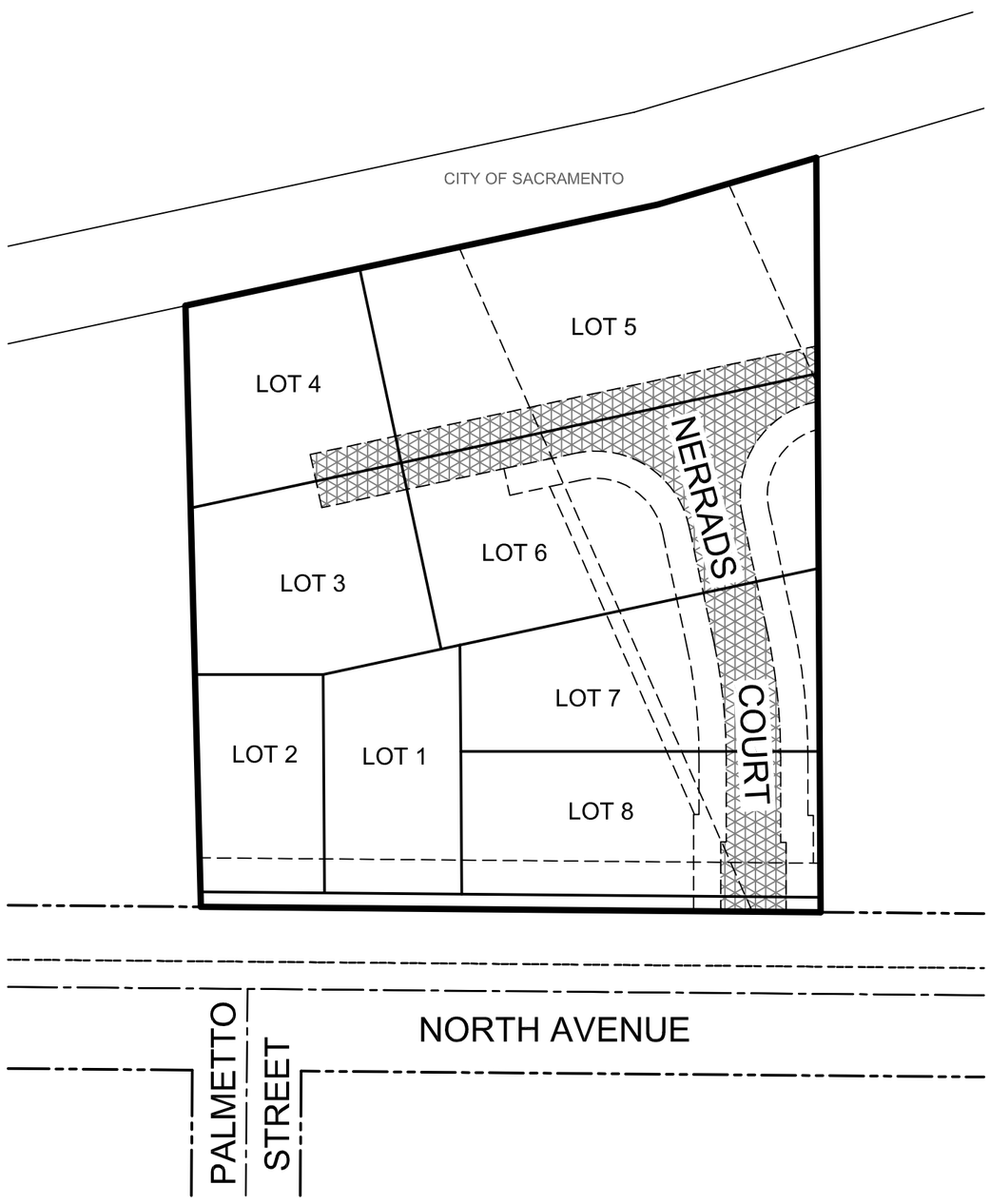

EXISTING PG&E TRANSMISSION MAIN EASEMENT AREA
SCALE 1"=50'




PUBLIC UTILITY EASEMENT AREA DEDICATED PER THIS MAP
SCALE 1"=50'




LIMITS OF NERRADS COURT,
EMERGENCY VEHICLE ACCESS EASEMENT AREA,
AND WATER METER EASEMENT - DEDICATED PER THIS MAP
SCALE 1"=50'




PRIVATE INGRESS-EGRESS ACCESS EASEMENT AREA
(SHOWN FOR REFERENCE ONLY)
SCALE 1"=50'

FINAL MAP
OF

# NERRADSCALI SUBDIVISION

SUBDIVISION NO. P19-036

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JUNE 2023



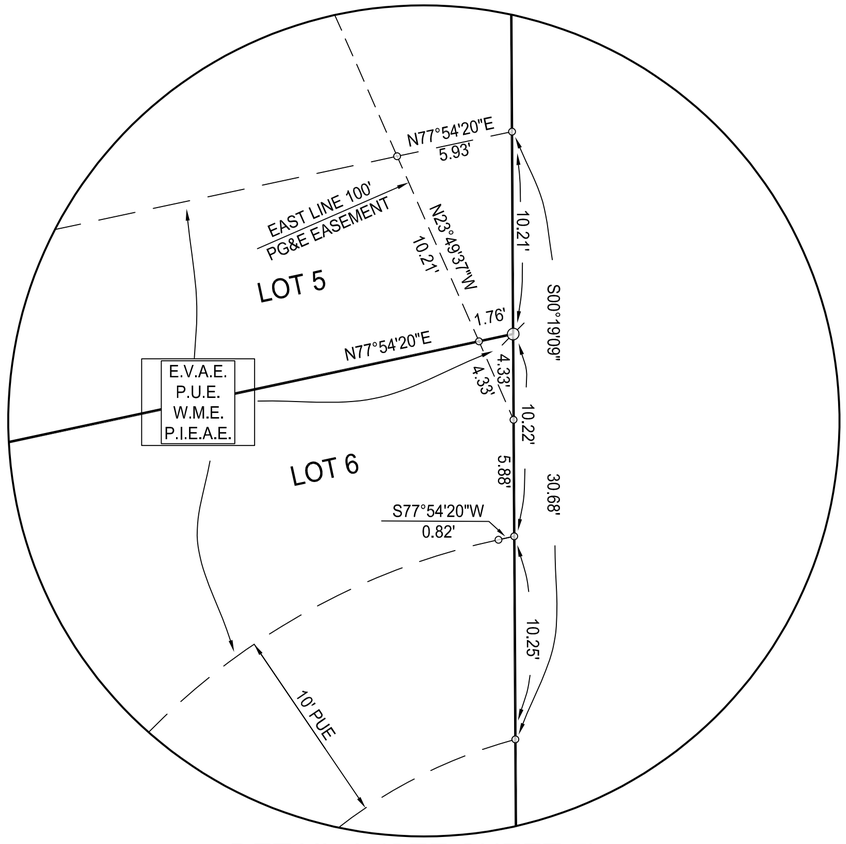
STANTEC CONSULTING SERVICES INC.

## CURVE TABLE
## APPLIES TO THIS SHEET AND SHEET 7

| CURVE | RADIUS | ARC LEN. | CHORD LENGTH | CHORD BEARING | DELTA ANGLE |
|---|---|---|---|---|---|
| C1 | 50.00' | 78.54' | 70.71' | N57°05'40"W | 90°00'00" |
| C2 | 25.00' | 39.27' | 35.36' | N57°05'40"W | 90°00'00" |
| C3 | 35.00' | 54.98' | 49.50' | N57°05'40"W | 90°00'00" |
| C4 | 35.00' | 54.98' | 49.50' | N57°05'40"W | 90°00'00" |
| C5 | 25.00' | 37.99' | 34.44' | S31°26'35"W | 87°04'29" |
| C6 | 188.00' | 39.68' | 39.61' | N06°02'50"W | 12°05'40" |
| C7 | 188.00' | 37.38' | 37.32' | N06°23'54"W | 11°23'32" |
| C8 | 188.00' | 2.30' | 2.30' | N00°21'04"W | 0°42'08" |
| C9 | 190.00' | 37.80' | 37.74' | N06°23'41"W | 11°23'59" |
| C10 | 190.00' | 2.30' | 2.30' | N00°20'51"W | 00°41'41" |
| C11 | 190.00' | 40.11' | 40.03' | N06°02'50"W | 12°05'40" |
| C12 | 200.00' | 39.91' | 39.85' | N06°22'38"W | 11°26'04" |
| C13 | 200.00' | 2.30' | 2.30' | N00°19'48"W | 0°39'36" |
| C14 | 200.00' | 42.22' | 42.14' | N06°02'50"W | 12°05'40" |
| C15 | 220.00' | 43.91' | 43.84' | N06°22'38"W | 11°26'04" |
| C16 | 220.00' | 2.53' | 2.53' | N00°19'48"W | 0°39'36" |
| C17 | 220.00' | 46.44' | 46.35' | N06°02'50"W | 12°05'40" |
| C18 | 230.00' | 45.90' | 45.82' | N06°22'38"W | 11°26'04" |
| C19 | 230.00' | 2.65' | 2.65' | N00°19'48"W | 0°39'36" |
| C20 | 230.00' | 48.55' | 48.46' | N06°02'50"W | 12°05'40" |

## LINE TABLE
## APPLIES TO THIS SHEET AND SHEET 7

| LINE | BEARING | DISTANCE |
|---|---|---|
| L24 | S89°30'07"E | 10.00' |
| L25 | N00°00'00"W | 31.15' |
| L26 | S89°30'07"E | 11.60' |
| L27 | S89°30'07"E | 12.63' |
| L28 | S89°30'07"E | 12.40' |
| L29 | N00°00'00"W | 56.37' |
| L30 | N00°00'00"W | 35.50' |
| L31 | S77°54'20"W | 0.82' |
| L32 | N12°05'40"W | 29.00' |
| L33 | N12°05'40"W | 19.00' |
| L34 | N12°05'40"W | 10.00' |
| L35 | S89°30'07"E | 2.00' |
| L36 | N00°00'00"E | 20.89' |
| L37 | N12°05'40"W | 44.00' |
| L38 | N12°05'40"W | 19.00' |
| L39 | N12°05'40"W | 25.00' |
| L40 | S77°54'20"W | 27.00' |
| L41 | N12°05'40"W | 10.00' |
| L42 | N00°00'00"E | 25.50' |
| L43 | N00°00'00"W | 21.24' |
| L44 | N00°00'00"W | 30.98' |
| L45 | REMOVED | |
| L46 | S77°54'20"W | 10.00' |
| L45 | S77°54'20"W | 20.00' |
| L47 | N90°00'00"E | 20.00' |




DETAIL A (SEE SHEET 7)

N.T.S.

FINAL MAP
OF

# NERRADSCALI SUBDIVISION

SUBDIVISION NO. P19-036

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JUNE 2023



STANTEC CONSULTING SERVICES INC.

## ADDITIONAL INFORMATION SHEET

ADDITIONAL INFORMATION SHOWN ON THIS SHEET IS FOR INFORMATIONAL PURPOSES AND NOT INTENDED TO AFFECT RECORD TITLE INTEREST PER STATE OF CALIFORNIA GOVERNMENT CODE SECTION 66434.2 (THE SUBDIVISION MAP ACT)

## NOTES

A. PRIVATE RECIPROCAL EASEMENTS FOR UTILITIES, DRAINAGE, WATER AND SANITARY SEWER FACILITIES, AND SURFACE STORM DRAINAGE SHALL BE GRANTED AND RESERVED, AS NECESSARY AND AT NO COST, AT THE TIME OF SALE OR CONVEYANCE OF ANY PARCELS SHOWN ON THIS MAP.

B. THIS MAP IS SUBJECT TO AN "AN AGREEMENT FOR CONVEYANCE OF EASEMENTS" RECORDED IN BOOK _____, AT PAGE _____, OFFICIAL RECORDS OF SACRAMENTO COUNTY

C. THIS MAP IS SUBJECT TO "DECLARATION OF COVENANTS, CONDITIONS, RESTRICTIONS, AND EASEMENTS" RECORDED IN BOOK _____ AT PAGE _____ OFFICIAL RECORDS OF SACRAMENTO COUNTY.

## Aaron Bernatchy (CWE)

**From:** Mohammed Khalid <mkhalid@allerionconsulting.com>
**Sent:** Monday, August 21, 2023 10:54 AM
**To:** DARREN BROWN; Bob Eynck (CWE)
**Cc:** Aaron Bernatchy (CWE); Ed Hendrick
**Subject:** Re: geotech studies request for 905 North Ave

***** CAUTION: THIS EMAIL IS FROM AN EXTERNAL (i.e. NON-CWE) SENDER. *****

Hi Brown and Bob,

I spoke to Ed Hendrick (our Principal Geotechnical Engineer).

We reviewed the grading plans by CWE "ON-SITE IMPROVEMENT PLANS FOR NERRADSCALI SUBDIVISION" (Sheet C6.1), dated June 12, 2023.

Based on the low infiltration rate (0.02 in/hr) indicated in our geotechnical report from our percolation test performed at a depth of approximately 6 feet below original grade, and based on our review of the referenced grading plans (Sheet C6.1) for the proposed detention basin, it is our opinion that the water seepage into to the soils will be very minimal to impact the structural integrity of the concrete canal.

Respectfully Submitted,

**Mohammed Khalid, MS, PE** | Senior Engineer
**Allerion Consulting Group, Inc.**

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Building Envelopes | Geotechnical & Geological Engineering | Consulting
Environmental Assessments | Quality Control Management |Code Compliance
Roseville | Redding | Yreka | San Leandro



On Aug 18, 2023, at 3:08 PM, Mohammed Khalid <mkhalid@allerionconsulting.com> wrote: