July 22, 2020
Revised March 1, 2022
Kleinfelder Project No. 20210563.001A

Mr. Dylan Williams
Scripps Health
10140 Campus Point Drive, Suite 210
San Diego, California 92121

SUBJECT: Geotechnical Services for Master Plan Update and CUP Amendment
Scripps Mercy Hospital
4077 Fifth Avenue
San Diego, California

Dear Mr. Williams:

In accordance with our proposal dated May 6, 2020 and project updates provided in January 2022, this report presents Kleinfelder's geotechnical feasibility evaluation of the Master Plan Update and amendment to the Conditional Use Permit (CUP) for Scripps Mercy campus located on 4077 5th Avenue in San Diego, California. The location of the campus is shown on Figure 1, Site Vicinity Map.

We appreciate this opportunity to be of service and look forward to continuing to work with you on this project. If you have any questions about this submittal, please contact us at 619.831.4600.

Respectfully,

KLEINFELDER

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GEOTECHNICAL SERVICES FOR
MASTER PLAN UPDATE AND CUP AMENDMENT
SCRIPPS MERCY HOSPITAL
4077 FIFTH AVENUE
SAN DIEGO, CALIFORNIA
KLEINFELDER PROJECT NO. 20210563.001A

JULY 22, 2020
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A Report Prepared for:

Mr. Dylan Williams
Scripps Health
10140 Campus Point Drive, Suite 210
San Diego, California 92121

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SCRIPPS MERCY HOSPITAL
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Prepared by:

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1 PROJECT DESCRIPTION

To assist in our study, we have discussed the project with you and have reviewed the Conditional Use Permit (CUP) #304755 Amendment plans prepared by CO Architects, dated March 4, 2022. Based on our review of Sheet CUP-04 of the CUP Amendment, up to five (5) building projects and two (2) exterior utility yards have been identified for future construction, nine (9) existing structures are scheduled for demolition and seven (7) existing structures are planned to remain. The new construction projects are the subject of this report and are summarized in the following table: The building numbers and proposed construction was obtained from the referenced plans.

Building Number	Building Name	Proposed Construction	New Square Footage (sf)
9	Medical Office Building	7-story office building on south and 3-level parking on north, both underlain by 2 levels of underground parking	200,000 office building, 76,000 parking structure
10	Hospital Support Building	3-stories with 2 underground levels	67,000
11	Hospital I	15-stories	631,000
12	Hospital II	15-stories	380,000
13	Western Utility Yard	Exterior yard	8,078
14	Eastern Utility Yard	Exterior yard	11,521
15	Central Energy Plant Expansion	Addition with 17-ft deep excavation	2,400

The locations of the existing buildings and their proposed status is shown on Figure 2, Existing Campus Site Conditions. The locations of the proposed projects are shown on Figure 3, Proposed Campus Improvements and Geologic Map. Based on our understanding of the proposed improvements, proposed grades within the new construction areas will have little change to existing elevations to facilitate surface drainage and create building pads; however, the buildings will have variable depths of excavation for subterranean levels. The general campus site conditions are summarized in the following Site Condition section of this report, with more detailed information on each site presented later in this report within the Project Description section.

1.1 SITE CONDITIONS

The 21-acre Scripps Mercy Hospital campus is generally located north of Washington Street, south of Montecito Way, west of 6th Avenue and east of 4th Avenue, as shown on the Vicinity Map, Figure 1. As shown on Sheet CUP-03, Existing Site Plan, the hospital campus is fully developed with numerous buildings, parking lots and access roads. The majority of the campus is situated on a relatively flat lying mesa with surface elevations on the order of +290 to +295 feet above mean sea level (MSL). The south-central portion of the campus was developed within an east-west trending drainage feature which was partially infilled and has surface elevations on the order of 235 to 240 feet MSL. Another roughly east-west trending drainage feature is located along the northern properly boundary with slopes descending approximately 100 feet from existing buildings at an approximate inclination of 1.5:1 (horizontal:vertical). The canyon slopes and bottom are generally vegetated with grass, brush and trees. An east-facing cut slope descends to the 6th Avenue access to SR 163. The campus is sparsely landscaped and has generally been graded to provide sufficient surface drainage.

There are three access entrances to the campus. The main entrance is from 5th Avenue along the west. The other two are from, Lewis Street through the northern side and 6th Avenue along the east and then up an internal emergency access road from 6th Avenue to Lewis Street in the northeastern portion of campus. Several parking structures and surface parking lots are located around the campus. A landscaped area with a foundation and walking paths is located at the southeast corner of 4th Avenue and Lewis Street and adjacent to the main hospital drop-off and entrance.

A brief description of the existing site conditions and locations (with existing building designation in parenthesis) is summarized below with more detailed information on each site presented later in this report within the Project Description section.

- Hospital I
    - Replaces existing behavioral health building (C) in south-central portion of campus
- Hospital II
    - Replaces existing hospital building (D) in central portion of campus

- Hospital Support Building
    - Replaces existing parking structure and building (E and F) in southern portion of campus
- Medical Office Building with Parking Structure
    - Replaces existing parking structure 4.1 (H) at northwest corner of campus
- Eastern Utility Yard
    - Replaces existing facility building (A) and generator building (B) at northeastern corner of campus
- Western Utility Yard
    - Replaces existing Mercy Manor building (G) at north-central side of campus
- Central Energy Plant Expansion
    - Small expansion in existing hardscape area on western side of existing central energy plant (4) in east-central portion of campus

1.2 PURPOSE

The purpose of this study is to provide a preliminarily geotechnical evaluation of each proposed building site based on review of applicable documents, maps, and a geologic reconnaissance performed by our Certified Engineering Geologist (CEG). We understand that this report will be reviewed by the City of San Diego for application of a Conditional Use Permit (CUP) amendment and will ultimately be utilized by others for development of an EIR. The proposed geotechnical scope of work primarily addresses the seven projects designated as “proposed” in the CUP Amendment.

1.3 SCOPE OF SERVICES

Our scope of services specifically addresses the structures designated as “proposed” in Table 1.b on Sheet CUP-02 of the provided plans and also addresses the entire campus in general. Kleinfelder scope of services included the following:

- Review of the proposed CUP master plan and related information provided by the project architect.

- Review of previous geotechnical and geologic reports prepared by Kleinfelder and review of other consultant reports provided by Scripps.
- Review of available geologic maps, topographic maps and historical aerial photography pertinent to the site.
- A site reconnaissance of the proposed development areas shown on the master plan.
- Preparation of this geotechnical/geologic feasibility report addressing potential site conditions and geologic hazards which may or may not impact the CUP master plan development areas. The report includes the following:
    - Vicinity map and site plan showing proposed CUP master plan;
    - Regional Site Geologic Map;
    - Campus Geologic Map;
    - Regional Fault and Epicenter Map;
    - Discussion of the anticipated site and subsurface conditions at each proposed development area;
    - Discussion of potential geologic hazards and reference to City hazard category;
    - Qualitative analysis of slope stability;
    - Discussion of general faulting and seismicity in the region;
    - Discussion of potential groundwater conditions;
    - Discussion of anticipated earthwork operations for site development;
    - Discussion of preliminary foundation options; and
    - Discussion of significant geologic site constraints or mitigation measures, if any.

It should be noted that this is a feasibility level report which addresses anticipated geotechnical/geologic conditions based on review of existing available data and a reconnaissance level site review. Supplemental subsurface work, laboratory testing, or engineering design-level work was not specifically performed for this report. A detailed geotechnical/geologic investigation and engineering analysis should be performed during the design phase of each project.

2 REVIEW OF EXISTING SUBSURFACE INFORMATION

We have reviewed numerous unpublished geotechnical reports in our files pertinent to the subject site along with published geologic maps and aerial photography. Kleinfelder has performed extensive geotechnical work on the Scripps Mercy campus and has accumulated subsurface data throughout the campus. These references are listed in Appendix A, References.

2.1 SITE GEOLOGY

The hospital campus is situated on a relatively level landform surface (terrace) which was beveled by near-shore (paralic) marine wave action processes during the Early to Middle Pleistocene period. This terrace was a relatively uniform and continuous planar surface which stretched from Mexico to northern San Diego County and extended inland up to 14 miles. During the Late Pleistocene, two processes were in operation that lead to the dissection of the current terrace surface. These included regional tectonic uplift of the coastal area and eustatic sea-level changes. During this time the major east to west drainages, such as Mission Valley, were cut, which was followed by erosion of the secondary and tertiary drainages to the north and south of Mission Valley. Remnants of the subsequent drainages are represented by the canyons features on the east side of the hospital campus. The surfaces of the various mesas are typically characterized by gently rolling, low relief topography. Our review of historical aerial photography and geotechnical reports shows that the original land surface of the site exhibited this pattern of low topographic relief. Grading to develop the campus and various building pads primarily consisted of shallow cut and fill on the mesa surfaces with deeper fills required within several drainage features and adjacent to slopes around the perimeter of the property. The fill areas are further discussed later in this report.

Numerous geotechnical/geologic studies have been performed during the development of the hospital campus. The studies reviewed for this report are listed in Appendix A. The regional geologic map (Kennedy and Tan, 2008) is depicted on Figure 4. These documents describe geologic and subsurface condition across most of the campus property. The oldest (lower lying) geologic materials at the site consist of Eocene-age Mission Valley Formation and Pomerado Conglomerate. These units are overlain by the Pliocene-age San Diego Formation exposed on most of the slopes. These units were subsequently beveled by a marine incursion during the

Early to Middle Pleistocene during which the very old paralic deposits were deposited as sea-level regressed. The very old paralic deposits were previously designated as the Lindavista Formation on the geologic map by Kennedy (1975). The unit caps the surface of the various mesas at the site and surrounding area. Shallow artificial fill was placed at numerous locations across the campus to create the various building pads. The deepest fill occurs in the larger drainages on the western portion of the campus below the existing Emergency Department and Parking Structure 4.1. Detailed description of the soil and geologic units are described below.

2.1.1 Artificially Placed Fill Soils (af)

Artificial fill soils are derived from the mechanical compaction of soils placed during earthwork grading operations. Most of the fill on the campus was generated from on-site cuts made into the very old paralic deposits and San Diego Formation. These units are typically composed of silty sand and clayey sand with a variable amount of gravel and cobble. Much of the fill across the campus is relatively shallow (less than five feet). However, several sites are underlain by previous drainage features or steep hillsides which required placement of deeper fill to create building pads. These deeper fill areas are typically on the order of 15 to 30 feet thick with local areas up to 40 to 50 feet in thickness and mostly occur within the previously discussed drainage features. Documentation of placement of the fill has been identified for some areas. However, documentation of much of the fill placed during previous phases of the campus development may not exist or be available, and thus this fill is considered undocumented.

2.1.2 Recent Alluvial Deposits (Qa)

Holocene-age recent alluvial deposits occur within the bottom of the canyon drainage north of the campus. This material is anticipated to be comprised of loose clayey sand material and is unsuitable to building support. This area is well outside of the proposed development and therefore does not pose an impact to the proposed project.

2.1.3 Very Old Paralic Deposits ($Qvop_9$)

The Early to Middle Pleistocene-age very old paralic deposits is a marine terrace unit and consists of a very dense, brown to reddish brown, silty to clayey sandstone. It is typically moderately cemented and contains intermittent beds and lenses of gravel and cobble sized clasts derived from erosion of older geologic units. This material is typically very difficult to drill

due to the cobble content with a hollow stem auger, with near-refusal at most locations. This unit caps the majority of the hospital campus west of the drainage canyon features. It is typically less than 15 feet thick with a basal elevation ranging between 280 to 285 feet MSL.

2.1.4 San Diego Formation (Tsd)

The Pliocene-age San Diego Formation underlies the majority of the site below the very old paralic deposits. It is prominently exposed on the slopes within and adjacent to the campus and consists of a yellow to olive brown, silty fine sand with some fine sandy silt. It also contains some scattered gravel and cobble layers. The unit is primarily in a very dense and weakly to moderately cemented condition. The contact between the San Diego Formation and the underlying Pomerado Conglomerate has a mild structural dip (less than 5 degrees) to the southwest. This unit is not typically prone to landsliding.

2.1.5 Pomerado Conglomerate (Tp)

The Pomerado Conglomerate occurs directly below the San Diego Formation at an elevation that is likely below the proposed construction depths, with the exception of drilled piers for the northwestern MOB. The unit was encountered in borings in the central portion of campus for the proposed Hospital II site and a study for Mercy Gardens slope repair. Observations of the slope exposures along 6th Avenue on the eastern end of campus indicate the unit consists of a brown to yellowish brown, cemented cobble conglomerate. The cobbles are typically 3 to 6 inches in size, but larger cobbles and boulders greater than 12 inches in size are occasionally present on the slope outcrops. The formation exposed on the slope outcrops typically contains between 20 to 50 percent cobbles. This geologic unit is estimated to be up to about 60 feet thick. Geologic mapping reveals that the Pomerado Conglomerate underlies the San Diego Formation at top elevations of approximately 230 to 240 feet above mean sea level (MSL) and bottom elevations of between 180 to 190 feet MSL. In general, the Pomerado Conglomerate has mild structural dips (less than 5 degrees) to the southwest.

2.1.6 Mission Valley Formation (Tmv)

The Eocene-age Mission Valley Formation underlies the Pomerado Conglomerate but is only exposed off campus on the slopes that descend northeast toward Mission Valley. This unit was encountered in two borings performed by Kleinfelder (2007a) at the toe of the slope north of

campus. It typically consists of a light gray, moist, dense, weakly cemented, fine to medium grained, silty sand with trace amounts of fine gravel. The thickness of this unit in the project area is estimated at over 100 feet.

2.1.7 Groundwater

Our review indicates that static groundwater was not encountered in any of the reviewed borings throughout the campus but that minor perched groundwater was encountered at geologic interfaces in a few borings. Local perched groundwater may develop along the interface of more permeable soils and less permeable formational materials, particularly within infilled drainages. This was observed in borings near the contact of the San Diego Formation and underlying Pomerado Conglomerate.

3 GEOLOGIC STRUCTURE

The geologic map by Kennedy and Tan (2008) indicates that the Eocene-age geologic units (San Diego Formation and Pomerado Conglomerate) have mild structural dips ranging up to 5 degrees to the southwest. The overlying very old paralic deposits are generally flat-lying and separated from the underlying San Diego Formation by an erosional unconformity.

3.1 REGIONAL FAULTING AND SEISMICITY

The seismicity and active faulting within Southern California is controlled by strain release associated with the San Andreas Fault Zone (SAFZ). The SAFZ is a 150-mile wide belt of numerous subsidiary active fault zones stretching from the main San Andreas fault in the Imperial Valley to well offshore of San Diego. The main San Andreas fault to the east of San Diego County, delineates the boundary between two global tectonic plates consisting of the North American Plate on the east and the Pacific Plate on the west and dominates the seismicity of the Southern California region (Wallace, 1990; Weldon and Sieh, 1985). It stretches from the Gulf of California in Mexico along a northwest alignment through the desert region of Southern California up to Northern California, where it eventually trends offshore north of San Francisco.

The major faults east of San Diego (from east to west) include the San Andreas fault, the San Jacinto fault, and the Elsinore fault (see Regional Fault Map, Figure 5). Major faults west of San Diego include the Palos Verdes-Coronado Bank fault, the San Diego Trough fault, and the San Clemente fault. The most dominant zone of faulting within the San Diego region are several faults associated with the Rose Canyon Fault Zone (RCFZ).

Most of the seismic energy and associated fault displacement occurs along the fault structures closest to the plate boundary on the Elsinore, San Jacinto, and San Andreas Faults. Approximately 49 mm/yr (1.9 inches/yr) of overall lateral displacement has been measured geodetically as fault slip across the plate boundary. The Elsinore, San Jacinto, and San Andreas Faults combined account for up to 41 mm/yr (1.6 inches/yr) of the total plate displacement (84%), meaning that the remaining 8 mm/yr (0.3 inches/yr) is accommodated across the faults to the west and east (Bennett, et al, 1996). Recent GPS measurements from

the offshore islands to the peninsular ranges indicate about 5 to 7 mm/yr of plate movement is accommodated by the coastal and offshore system of faults, including the Rose Canyon.

Historically, San Diego County has long been considered as a region of negligible seismic hazard. Except for a probable local event in 1862 (Legg and Agnew, 1979), there has been a lack of significant seismic activity within the recorded human history of San Diego County. More recent studies have recognized that the potential for significant seismic events is much greater than earlier believed. This potential has been recognized by the discovery of many active fault traces associated with structures within the RCFZ. Studies within Rose Canyon (east of Mt. Soledad) have revealed fault strands that have clearly displaced Holocene soil horizons with slip rates from 1 to 2 mm/yr (Lindvall and Rockwell, 1995).

These results indicated that at least the northern onshore portion of the RCFZ is active. Additional studies (Testing Engineers and other, 1985; Patterson and others, 1986; and Kleinfelder, 1998) within downtown San Diego revealed additional fault structures offsetting Holocene soil horizons, suggesting the possibility that the entire mapped onshore alignment of the RCFZ may be active.

More regionally, data has been presented that indicates that the RCFZ may be structurally connected to the Newport-Inglewood Fault Zone (Grant and Rockwell, 2002; Grant and Shearer, 2004) on the north and the San Miguel-Vallecitos fault or the offshore Descanso fault on the south, all of which are active faults. Sahakein, et. al. (2017) processed previously collected seismic reflection and bathymetric data, which indicated relatively narrow (2 kilometer) step-overs fault segments in offshore strands between the two major fault systems. This not only provides additional support of the structural connectively between the two fault systems but also indicates the possibility that they could erupt together with greater magnitude events of up to 7.5M. This larger fault system is thus over 150 miles in length.

3.2 GEOLOGIC HAZARDS

We have performed a preliminary review of the site with respect to potential geologic and/or seismic hazards. These hazards include landslides, expansive soils, liquefaction, seismic compression, fault surface rupture, tsunami and flooding. The following sections discuss these hazards and their potential impact at this site.

3.2.1 City of San Diego Geologic Hazard Maps

Review of the City of San Diego Seismic Safety Study (2008) shows the campus is mapped within hazard zone 53 with hazard zone 52 located immediately south of Washington Street and west of 4th and 5th Avenues.

Hazard zone 53 is described as level or sloping terrain, unfavorable geologic structure, with low to moderate geologic risk. Hazard zone 52 is described as a low geologic risk area consisting of other level areas of gently sloping to steep terrain and favorable geologic structure in respects to slope stability. Based on our review and evaluation, it is our opinion that unfavorable geologic structure does not exist at the site.

3.2.2 Expansive soils

Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from precipitation, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may result in unacceptable settlement or heave of structures or concrete slabs supported on grade.

Based on our review of the soil conditions depicted on the test borings logs and on the results of expansion index tests from previous geotechnical reports, the majority of soil typically has a very low to low expansion potential according to the 2019 CBC. Some soils with moderate expansion potential may be present near the surface where the Very Old Paralic Deposits are highly weathered. No special mitigation measures for expansive soils are recommended for the sites other than removal and segregation if exposed near finish surface in structural areas.

3.2.3 Seismic Ground Shaking

The project site, like all Southern California, is a seismically active area and is likely to experience ground shaking as a result of earthquakes on nearby or more distant faults. The Rose Canyon fault zone and Elsinore fault zones dominate the seismicity of the area. The closest active fault to the site is the Rose Canyon fault, which is located approximately 1.5 miles to the southwest.

Based on our understanding of the proposed site development and on definitions provided in the current 2019 CBC, the vast majority of campus is underlain by shallow fill over dense formational soils and is classified as CBC Site Class C. Areas underlain by fills deeper than about 10 to 20 feet will likely be classified as Site Class D.

3.2.4 Liquefaction

Earthquake-induced soil liquefaction can be described as a significant loss of soil strength and stiffness caused by an increase in pore water pressure resulting from cyclic loading during shaking. Liquefaction is most prevalent in loose to medium dense, sandy and gravely soils below the groundwater table. The potential consequences of liquefaction to engineered structures include loss of bearing capacity, buoyancy forces on underground structures, ground oscillations or “cyclic mobility”, increased lateral earth pressures on retaining walls, post liquefaction settlement, lateral spreading and “flow failures” in slopes.

Liquefaction is not considered a significant risk to the proposed project due to predominant presence of dense to very dense formational soil and the lack of groundwater at the site.

3.2.5 Seismic Compression

Seismic compression results from the accumulation of contractive volumetric strains in unsaturated soil during earthquake shaking. Loose to medium dense granular material with no fines or with low plasticity fines are most susceptible to seismic compression.

Based on the anticipated depth of fill over very dense formational soil and the character of the fill, total seismic compression settlement of is anticipated on the order of ¼ to ½-inch. This value should be evaluated in design level investigations for areas of deeper fill.

3.2.6 Fault Surface Rupture

The City of San Diego occupies a region within a complex zone of faulting dominated by numerous, typically northwest trending faults. The faulting is related to tectonic forces created by movement between two large earth plates known as the Pacific and North America Plates. The most dominant fault structure in this system is known as the San Andreas fault. The most

notable fault feature within the City of San Diego is known as the Rose Canyon Fault Zone (RCFZ). This fault zone is comprised of a system of numerous fault structures and consists of both onshore and offshore fault branches. The main onshore branch of the fault extends from near the La Jolla Beach and Tennis Club over Mt Soledad and south generally following Interstate 5 into downtown San Diego. North of the Tennis Club it extends offshore to the north and is probably part of the Newport-Inglewood Fault further to the north. Numerous studies over the past 35years have conclusively shown that many of the faults within the RCFZ are active. The RCFZ is an active fault system with only portions of the known fault trace currently designated by the State of California as active. The closest active fault branch to the site designated by the State of California is located approximately 1.5 miles to the southwest. The campus is not within an active Alquist-Priolo Earthquake Fault Zone. Our review of predevelopment aerial photographs do not show geomorphic features or lineaments indicative of faulting across the site. Based on this information, the geologic hazard with respect to fault rupture is considered negligible.

3.2.7 Landslides

Landslides are deep-seated ground failures (tens to hundreds of feet deep) in which a large section of a slope slides downhill. Landslides are not to be confused with smaller slope failures such as surficial slumps which are usually limited to the upper several feet of the slope surface or rotational or block slope failures in the upper roughly 5 to 30 feet of the surface. Landslides can cause damage to structures both above and below the slide mass. Undermining of foundations can damage structures above the slide area. Areas below a slide can be damaged by being overridden and crushed by the failed slope material.

The seven proposed improvements are located on previously graded or relatively level ground surfaces at variable distances to existing slopes. Evidence of previous landslides was not identified during our review of geologic maps, aerial photographs, or geologic reconnaissance. Landsliding was evaluated in all of the referenced geotechnical reports and landslides were not identified in any of the reports.

Slope stability was previously evaluated for the referenced projects which are adjacent to existing or proposed slopes. Shallow slope creep or slumping was observed at two locations. A shallow slope slump occurred on the slope north of the existing Scripps Mercy Gardens building in 2005 and was subsequently remediated under the observation of Kleinfelder.

Based on the relatively level ground over most of the campus for proposed structures, setback distances to slopes, presence of very dense formational materials, favorable geologic structure, proposed construction and professional judgment, it is our opinion that the hazard to the proposed improvements by landslides is considered low. Slope stability is further discussed in Section 5.2 of this report.

3.2.8 Tsunamis and Seiches

A tsunami is a giant sea wave (which can reach over 50 feet in height) usually generated by rapid displacement on a submarine fault or submarine landslide. Tsunamis can travel at speeds of hundreds of miles per hour over distances of thousands of miles. In the open ocean, tsunamis have large wavelengths and are difficult to detect. As the sea wave approaches shore, the wave decreases in wavelength and increases in amplitude (height). Large tsunamis can travel well beyond the normal wave break of the shoreline and cause damage to near shore structures.

A seiche is an oscillation (wave) of a body of water in an enclosed or semi-enclosed basin that varies in period, depending on the physical dimensions of the basin, from a few minutes to several hours, and in height from several inches to several feet. A seiche is caused chiefly by local changes in atmospheric pressure, aided by winds, tidal currents, and occasionally earthquakes.

The project site is located about 5 ½ miles from the Pacific Ocean and is located at an elevation of approximately 235 to 290 feet MSL. Additionally, the site is not located adjacent to any large bodies of water that could adversely affect the site in the event of earthquake-induced failures or seiches. Therefore, the hazard with respect to a tsunami or seiche is considered low.

3.2.9 Flooding

The Federal Emergency Management Administration (FEMA) maintains a collection of Flood Insurance Rate Maps (FIRM), which covers the entire United States. These maps identify those areas, which may be subjected to 100-year and 500-year cycle floods. A set of these maps for the County of San Diego are available for viewing on the FEMA website (https://msc.fema.gov/portal). Based on our review of FEMA map panel 06073C1618G, the site is not within any designated flood zones and therefore the potential for flooding of the proposed development is considered low.

4 PROJECT AND SITE DESCRIPTIONS AND ANTICIPATED GEOTECHNICAL CONDITIONS

Our review indicates that a significant amount of grading and earthwork has been performed at various times during the development history of the hospital campus to create suitable areas for construction of buildings, roadways, and parking areas. Most of the structures appear to have been constructed on relatively level natural ground surfaces. However, some the projects have been constructed adjacent to slopes or on infilled drainages. For structures completed prior to Kleinfelder's engineering support, the earthwork likely consisted of cutting into the native materials and placement of the excavated soils to achieve design grade. Since Kleinfelder began performing field explorations at the site in 2006, various conditions have been encountered with respect to fill depths and other geologic conditions.

Our review of previous geotechnical reports, geologic maps, historical aerial photos, and observations during site our geologic reconnaissance were utilized to perform a preliminary characterization of anticipated subsurface conditions and geologic hazards at each proposed development site. For example, our review indicates that fill placement within previous drainage features was performed at the proposed MOB and Hospital I building locations. These areas were previously described in this report within the discussion of fill soils. The anticipated geotechnical conditions at each of the proposed project sites are discussed below.

The locations of the proposed project sites are shown on Figure 3 along with the geologic contacts. Geologic cross sections for each building are based on available information and presented on Figures 6a through 6i.

4.1 HOSPITAL I

The proposed 625,960 sf Hospital I building is located in the south-central portion of campus and generally replaces the existing Behavioral Health Unit building. The proposed structure will be 15 stories above the existing lower parking lot elevation with the lower 3 levels partially retaining the western and northern slopes. The building will have a one-story projection on the 4th story (Level 1) which will connect to the emergency department on the west. The below-grade footprint has approximate plan dimensions of 150 feet by 375 feet. The depth of subterranean levels will be up to 50 feet on the western end and decrease across the northern

side due to variable topography. A corridor bridge will connect to the proposed Hospital II building to the north and the support building to the south.

The majority of the proposed replacement hospital site is located on a lower pad area on the southeastern portion of campus with an average elevation of approximately 233 feet MSL. This area contains the existing Scripps Behavior Health Unit (Clinic Building #14) footprint and existing parking lot south of the building. The western-most side of the replacement building site is occupied by a west-ascending slope that is completely covered with shotcrete and rises up to an elevation of approximately 290 feet MSL at the pad currently occupied by the Emergency Department (Building 24). The western portion of the southern side of the building will be constructed adjacent to an existing 4-story subterranean parking structure. Portions of the northern-most side of the site is occupied by a north-ascending slope that rises up to an elevation of approximately 290 feet MSL to a pad currently occupied by the main hospital tower and ambulatory addition (Buildings 4 and 9B).

Kleinfelder's previous field exploration for site (Kleinfelder, 2019a) consisted of advancing seven hollow stem auger borings, infiltration testing and a geophysical survey. The results of our field exploration indicate that fill ranging up to approximately 10 feet in depth is present within the proposed lower pad building area and up to 25 feet at the top on the western end of the building. The very old paralic deposits and San Diego Formation are present underlying the fill. The Pomerado Conglomerate is below the San Diego Formation at depth. These formational units are weakly to strongly cemented and competent. Refusal of advancing the drilling augers was encountered in all of the borings at or near the top of the Pomerado Conglomerate.

The lower level of the building will have a finish floor elevation of 242 feet MSL and likely be supported on a mat foundation system. The one-story western portion of the building at Level 1 will have a finish floor elevation of about 291 feet MSL and likely be supported on drilled pier foundations due to the thickness of undocumented fill in this area.

4.2 HOSPITAL II

The proposed 380,000 square foot (sf) Hospital II Building is located in the central portion of campus and will replace the existing main Hospital Building after demolition. The site is bordered by Lewis Street to the north, the existing central energy plant (CEP) to the east, the

existing Behavioral Health Unit building to the south and the existing hospital drop-off and to the west. Existing surface elevations vary from about 291 to 293 feet MSL. The building will have up to 15 above-grade levels and 1 to 3 subterranean levels. Anticipated ground level finish floor elevations are approximately 291 feet MSL. A corridor bridge will connect to the proposed Hospital I building to the south.

We have reviewed geotechnical reports by URS for a seismic retrofit of the existing hospital structures (URS, 2007 and 2008), the proposed MOB I to the west (Kleinfelder, 2019b), the existing CEP to the east (Kleinfelder, 2006a) and the proposed Hospital I to the south (Kleinfelder, 2019a). Based on our geologic interpretation of the subsurface information, we anticipate that the existing structure is underlain by less than 5 feet of fill, dense and very dense soils of the very old paralic deposits to depths of 8 to 10 feet, and the very dense San Diego Formation. Although we have not been provided reports on the placement of the fill, it is our opinion that it was observed and tested given the fact that is below a critical hospital building structure. The new building will be supported by either shallow spread footings or a mat foundation. Remedial grading is anticipated to be shallow and limited to the depth of disturbed soils from demolition.

4.3 HOSPITAL SUPPORT BUILDING

The proposed Hospital Support Building is located on the southwestern portion of campus east of 5th Avenue, north of Washington Street, west of the 5-story residential Warwick building, southeast of the emergency building and southwest of a parking lot at a lower elevation. The proposed structure will be located within an approximate 65,000 sf area that currently contains an existing at-grade parking lot in the northwest corner, the Scripps O'Toole Breast Care Center and Surgery Pavilion on the south, and a 4-level subterranean parking structure on the northeast. An approximate 5-foot high concrete retaining wall is present above the lower parking lot and below the exposed portion of the parking structure. A stairway along the northern side descends about 50 feet to the lower parking lot. The site also includes small landscape areas adjacent to the sidewalk along Washington Street. Existing surface elevations vary from about 288 feet on the southeast to 291 feet MSL on the northwest. The lower parking lot on the northeast is approximately 50 feet lower at an elevation of about 240 feet MSL.

The 65,000 sf building will have three to four subterranean levels over the entire site with the overlying three-story hospital support building in the eastern portion of the site. Vehicle access will be from Washington Street and the western at-grade portion of the building will have a vehicular drop-off for patients and the entrance to the lower level parking. Proposed finish floor elevations are approximately 291 feet MSL for the surface elevation and 243 feet for the lowest level. A corridor bridge will overly the lower levels and connect the support building to the future Hospital II building to the north. Rather than having any descending slopes on the northeast, the northeastern portion of the building will daylight to a parking lot which is approximately 50 feet lower in elevation.

Based on our review of a draft geotechnical report (Kleinfelder, 2019) for the project, the field investigation consisted of six geotechnical borings to depths up to 71 ½ feet and two borings for infiltration testing to a depth of 5 feet. The majority of the footprint is underlain by approximately 3 to 8 feet of undocumented fill, dense and very dense soils of the very old paralic deposits to depths of 11 to 12 feet, and San Diego Formation to the maximum depth explored. The shallow fill is undocumented and related to previous earthwork operations to construct site grades. Based on the proposed depth of subterranean levels, very dense soils of the San Diego Formation are anticipated to be present at foundation elevations and remedial grading is not anticipated. The building will be supported by either shallow spread footings or a mat foundation. Temporary shoring will be utilized around the majority of the project perimeter to protect existing improvements, with the exception of where the building daylights on the northeast.

4.4 MEDICAL OFFICE BUILDING

The proposed Medical Office Building (MOB) is located on the northwestern portion of campus adjacent to the northeastern corner of 4th Avenue and Lewis Street and immediately west of College Building and Mercy Manor. The southern 200,000 sf office building portion will be approximately 105 feet in height and will have up to 7-stories above grade with 2 levels of underground parking. The northern 76,000 sf parking structure portion will be approximately 25 feet in height and will have up to 3-stories above grade with 2 levels of underground parking. The site is currently occupied by a 3-level Parking Structure 4.1 with two additional subterranean levels and has plan dimensions of approximately 240 feet by 220 feet. Proposed finish floor elevation for the ground level is 286 feet with the bottom level anticipated to be about

266 feet MSL. The project will also include relocation of a public storm drain further west in 4th Avenue.

Existing surface elevations vary from approximately +285 to +290 feet MSL from south to north. A fill slope up to approximately 70 feet in height descends east from the northeastern portion of the structure with an approximate inclination of 2:1 horizontal to vertical units. The slope was likely constructed in the late 1970s and does not exhibit visible signs of instability. The existing building perimeter is occupied by landscaped areas, concrete sidewalks, and several above ground electrical boxes. The parking structure was reportedly constructed in 1979, previous geotechnical reports have not been located.

Based on our review of previous geotechnical reports for the adjacent parking structure to the north (Kleinfelder, 2006c and 2006d), a draft geotechnical report for the proposed MOB North (Christian Wheeler Engineering, 2021), geologic maps and aerial photographs, the upper reach of the adjacent existing drainage extended below the north portion of the structure. It appears that up to approximately 60 feet of fill was placed in the northern portion of the structure. A cut / fill transition is present below the structure with the southern end of the building underlain directly by San Diego Formation or shallow compacted fill if remedial grading was performed to address the cut / fill transition. The existing building is supported on drilled pier foundations which extend through the fill to depths up to about 52 feet.

Temporary shoring would likely be required to protect existing improvements during demolition and construction of the subterranean levels. Portions of the building underlain by fill will likely be supported by drilled pier foundations embedded within the very dense and cemented San Diego Formation or Pomerado Formation. The southern portion of the building underlain by formational soils may be supported by either shallow foundations or drilled piers. As an alternative, ground improvement methods may be considered within the fill and support shallow foundations.

4.5 CENTRAL ENERGY PLANT EXPANSION

The proposed CEP expansion will be a relatively small 2,400 sf enlargement to the western side of the existing structure located on the east-central portion of the campus. The area is currently a concrete walkway between the existing CEP and hospital building to the west. The structure

is anticipated to have a finish floor elevation that is about 17 feet below existing surface elevation of 293 feet MSL.

Based on a review of a previous geotechnical investigation for the existing CEP (Kleinfelder, 2006b) the expansion area is anticipated to be underlain by very old paralic deposits to a depth of about 8 feet and the underlying San Diego Formation at the foundation elevations. Therefore, remedial grading is not anticipated. Temporary shoring would be utilized around the three sides to protect existing site improvements, with the existing subterranean CEP walls exposed on the eastern side. Western Utility Yard

4.6 EASTERN UTILITY YARD

Two potential utility yards are located on the north side of campus. There are currently no details on how the open exterior yards may be utilized in future. The proposed eastern utility yard will be constructed at the location of the existing facility building (A) and generator building and cooling tower (B) at northeastern corner of campus. The site is located east of the exiting chapel building, north of the emergency access road, west of a slope that descends to the 6th Avenue exit from SR 163, and south of a natural slope that descends approximately 110 feet to an east-west trending drainage. The generator building is located on the north slope at a lower elevation with retaining walls utilized to develop the level pad. Site elevations range from approximately 292 feet on the south to 275 feet MSL at the generator building.

The western utility yard will be constructed at the location of the existing Mercy Manor Building (G) on north-central side of campus. The building is located on a slope with the college building located upslope to the south, parking structure 4.1 to the west and a natural slope which descends up to approximately 60 feet on the north. The structure is approximately 215 feet in length on the slope and about 35 feet in width. The building is cut into the hillside with a pad elevation of approximately 260 feet MSL and retains 10 to feet of soil on the south side. Based on our review, the site is directly underlain by very dense and cemented materials of the San Diego Formation.

5 PRELIMINARY DISCUSSION AND CONCLUSIONS

The proposed development discussed in this report for the master plan update appears feasible from a geotechnical standpoint based on the information currently available. Most of the hospital campus appears to have been developed on a relatively level ground surface with grading performed to fill portions of two historic drainage features. The proposed development will consist of demolition of existing buildings and new buildings within previously developed areas. Design-level geotechnical investigations will need to be performed to support design and permitting of each of the projects. The primary geotechnical/geologic concerns are seismic effects from ground shaking and addressing potential undocumented fills of variable depth below some of the proposed building sites.

Based on our review and evaluation, it is our opinion that unfavorable geologic structure does not exist at the site. Properly designed and constructed site developments will not measurably destabilize neighboring properties or induce settlement of adjacent structures. Temporary excavations for subterranean levels near existing improvements will utilize conventional shoring methods to mitigate for potential settlement.

5.1 SEISMICITY AND FAULTING

The site, like all of Southern California, is a seismically active area and is likely to experience ground shaking as a result of earthquakes on nearby or more distant faults. Damages to both architectural and structural elements of buildings could result due to the direct effects of seismic shaking. Seismic shaking could also result in lurching of the ground surface in the areas immediately adjacent to slopes; however, the proposed site improvements are located away from slopes and the slopes generally consist of very dense formational soils. It should be noted that the hazard with respect of seismic forces is not particular to the site and would be similarly expected on other properties in this region.

Based on review of prior studies and published geologic maps, there is no indication of active faulting across the campus property. The current closest mapped active fault is located 1.5 miles to the southwest.

5.2 SLOPE STABILITY

The seven proposed improvements are located on previously developed relatively level ground surfaces at variable distances to existing slopes. New slopes are not proposed. Slope stability was previously evaluated for the referenced projects which are adjacent to existing or proposed slopes and verified that static and pseudo static factors of safety are in excess of 1.5 and 1.1, respectively. Two locations of observed shallow surficial slope creep or slumping are discussed below, these areas were remediated under the observation of Kleinfelder and are not in the vicinity of proposed improvements.

A shallow slope slump occurred on the slope north of the existing Scripps Mercy Gardens (MG) building sometime in late 2005. This area is located approximately 300 feet east of the proposed MOB II building and 30 feet east of the proposed western utility yard. However, the subsurface conditions are different between those locations and the slump area. Since the earth slump threatened the stability of utilities that run along the top of the slope, Kleinfelder (2007a) performed a geotechnical investigation to develop a design for repair of the slope. The field exploration consisted of drilling and sampling 12 borings. Overall, the field data and analyses indicated that the earth slump was confined within a sliver fill that was placed on the slope as part of the construction of the MG building circa 1926 and was not a deep-seated failure. Conditions observed within the fill mass show that it was underlain by loose topsoil containing organic material that was not removed prior to placing the fill, it lacked being benched into the native slope, and it was poorly compacted. We concluded that the failure was likely the result of the poor as-built condition of the fill combined with surficial saturation possibly from a leaky irrigation line or other water source. The selected repair option consisted of rebuilding the slope using geogrid reinforced fill and constructing a mechanically stabilized earth (MSE) retaining wall at the top of the slope. Kleinfelder developed repair plans, facilitated permitting with various agencies including the City of San Diego, and performed construction observation and testing in 2009. The slope has performed exceptionally well since the repair.

Shallow slope creep occurred along the east descending slope down from the emergency access road to 6th Avenue between 2010 to 2016. This was displayed by separations between the eastern curb and adjacent pavement along with several inches curb settlement in localized areas. Kleinfelder completed a geotechnical investigation (Kleinfelder, 2017) that attributed the shallow slope creep to yielding and settlement of the undocumented fill that was constructed without benching on a steep 1½:1 slope. The selected repair option consisted of reconstructing

with a deepened curb wall that was to be either extended to dense formation or below the anticipated depth of potential slope creep. Kleinfelder developed repair plans and performed construction observation and testing in 2018.

An approximate 500-foot length of slope is located along the western side of 6th Avenue between the two drainages feature drops downward from the existing facility building in the area of the proposed eastern utility yard and existing emergency access road which will remain in place. The slope has a maximum height of about 70 feet below the facility building on the northern side which decreases toward either end. The majority of the slope is cut into San Diego Formation and Pomerado Formation, with some very old paralic deposits capping the northern central portion. Some shallow fills are present on the southern end below the access road. The cut slopes were constructed by excavations for the 6th Avenue exit toward SR163. Surficial erosion of the cut slopes is apparent by accumulation of cobbley debris at the toe of slope. However, surface slumping instability has not been observed.

Based on our review of previous geotechnical reports for various sites throughout the campus along with geologic maps and a geologic reconnaissance, it is our opinion that the proposed developments will not impact stability of the existing slopes and the potential for slope instability impacting the project sites is low. Shallow slope creep and a localized slump were observed at two areas in the northern and northeastern portions of campus and were generally attributed to undocumented fill placed without benching, steep slope inclinations and leaking water lines. These sites were repaired. Site specific slope stability analyses will be performed for each project to demonstrate that proposed slope inclinations on Scripps property will have static and pseudo static factors of safety in excess of 1.5 and 1.1, respectively at the completion of the project. This should be achieved with slope inclinations of 2:1, the presence of formational soils with favorable geologic structure or mitigation measures if required by analysis.

5.3 EARTHWORK AND GRADING

The campus is densely developed, and the proposed projects are located within previously developed areas. Remedial grading will primarily consist of removal and recompaction of undocumented fills where practical and disturbed soils following demolition of existing improvements. The majority of foundations for proposed buildings will be embedded into dense formational soils where remedial grading would not be required. Excavations for construction of

subterranean levels will likely require temporary shoring to protect existing improvements, with temporary construction slopes utilized where feasible. Excavations into the Pomerado Conglomerate would encounter oversize cobbles which would likely require screening for use as structural backfill or disposal offsite.

5.4 FOUNDATION CONSIDERATIONS

The magnitude of estimated total and differential settlement can dictate the foundation type and is a function of fill depth, soil type, age of fill, documentation of compaction; density of natural geologic formations, and height of the proposed structure. The potential foundation types for the proposed improvements are included in the preceding sections of this report for each proposed improvement and will predominantly consist of shallow foundations within formational soils. Depending on the bottom level elevation and extend of fill, a cut/fill transition may be located below the MOB II building and may include a combination of the options below.

For shallow to intermediate fill depths, remedial grading is the most common and economical alternative. In areas of deeper fill or proximity to existing structures, structures with higher estimated settlements are typically constructed on deep foundations consisting of drilled piers. These have successfully been utilized on numerous projects on campus. Due to the cementation of the underlying formational units and the noise implications, driven piles are likely not feasible for the campus. Rammed aggregate piers in combination with shallow foundations are an intermediate foundation alternative where the depth of undocumented fill is less than about 25 to 30 feet.

5.5 STORMWATER INFILTRATION CONSIDERATIONS

Stormwater infiltration should be evaluated in conformance with the City of San Diego BMP Design Manual. Infiltration is defined as the flow of water through the ground surface and percolation is defined as the downward flow of water through the subsurface soil layers. Infiltration may be controlled primarily by factors such as the type and porosity of the surface filtering media, maintenance of these media, surface slope, surface vegetation, and intensity, duration, and type of precipitation. Percolation may be controlled primarily by the soil types and properties such as grain size and density, soil layering, porosity, hydraulic head, and the proximity to groundwater. Surface drainage and maintenance will largely determine the site's

infiltration rate and the amount of water that will infiltrate for any given storm. The percolation rate will depend locally on the soil layering and will be controlled by the finer grained soil layers and very dense formational units. Based on our review of previous borehole percolation testing on the campus and experience with the near-surface geologic units, and we suspect that low infiltration rates are likely and the site may be classified as either partial infiltration or no infiltration. The depth of fill in some areas may also result in a no infiltration condition. An NPDES permit may be required by the regional Water Quality Control Board for ground water discharged through basement wall drains and pumped to a storm water conveyance system.

The following bullets present typical considerations (geotechnical and other) for implementation of infiltration systems, along with potential site-specific conditions.

- Presence of fill soils below building footprint. Some buildings may have excessive fill depths.
- Presence of shallow formational material. Shallow depths to formation would likely result in perched water on the less permeable formation materials and move laterally to the more permeable material in utility trenches or wall backfill.
- Building sites located adjacent to or within landslide hazard areas or hillside grading areas. The sites are not located near landslide hazard areas; however, MOB II and the hospital support building are located adjacent to descending slopes.
- Sites with initial seasonal high groundwater elevation within 10 feet of the invert of a proposed basin. The sites are not within 10 feet of high groundwater table.
- Site soils with a moderate or high potential for liquefaction. The sites have a low potential for liquefaction.
- Site soils with a moderate or high expansion potential. The majority of soils on campus appear to have low expansion potential.
- Sloping sites. The majority of slopes are flat, but some sites are adjacent to slopes.
- Sites with soil and/or groundwater contamination. According to the California State Water Resources Control Board Geo Tracker Database, the closest site cleanup is located over 0.15 miles to the south at 330 Washington St, San Diego.

6 LIMITATIONS

Recommendations contained in this feasibility report are preliminary and based on our field reconnaissance, research, and our present knowledge of the proposed construction. This is a preliminary report for master planning purposes and individual geotechnical investigations will be required prior to design and construction of the various projects.

We have strived to prepare the findings, opinions, and recommendations in this report in a manner consistent with the standards of care and skill ordinarily exercised by members of this profession practicing under similar conditions in the geographic vicinity and at the time the services were performed. No warranty or guarantee, express or implied is made. Information and recommendations presented in this report should not be extrapolated to other areas or be used for other projects without our prior review and response.

This report may be used only by Scripps Health and their consultants and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client and site owner who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

The scope of our geotechnical services did not include any environmental site assessment for the presence or absence of hazardous/toxic materials. Kleinfelder will assume no responsibility or liability whatsoever for any claim, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

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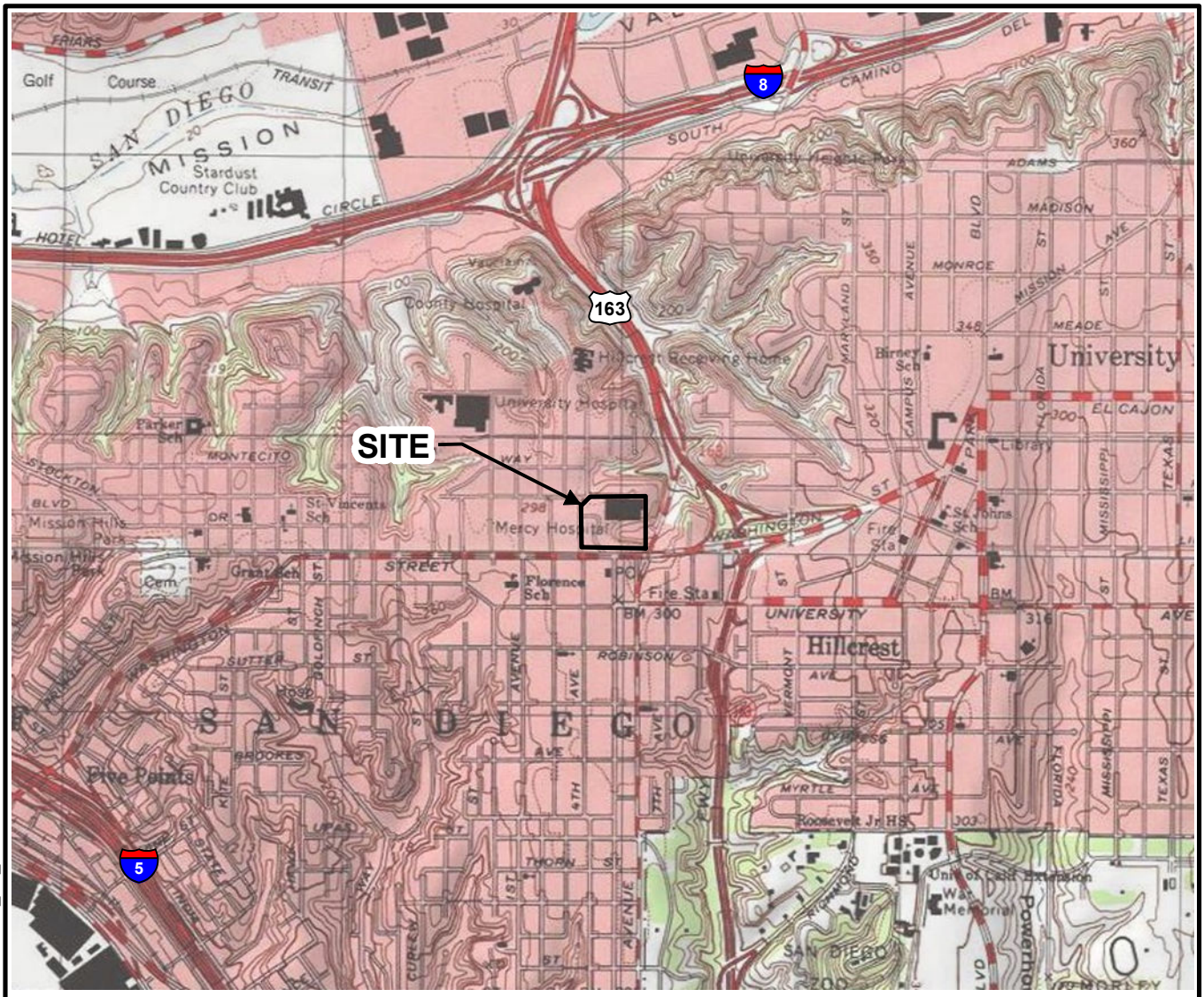
FIGURES



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Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

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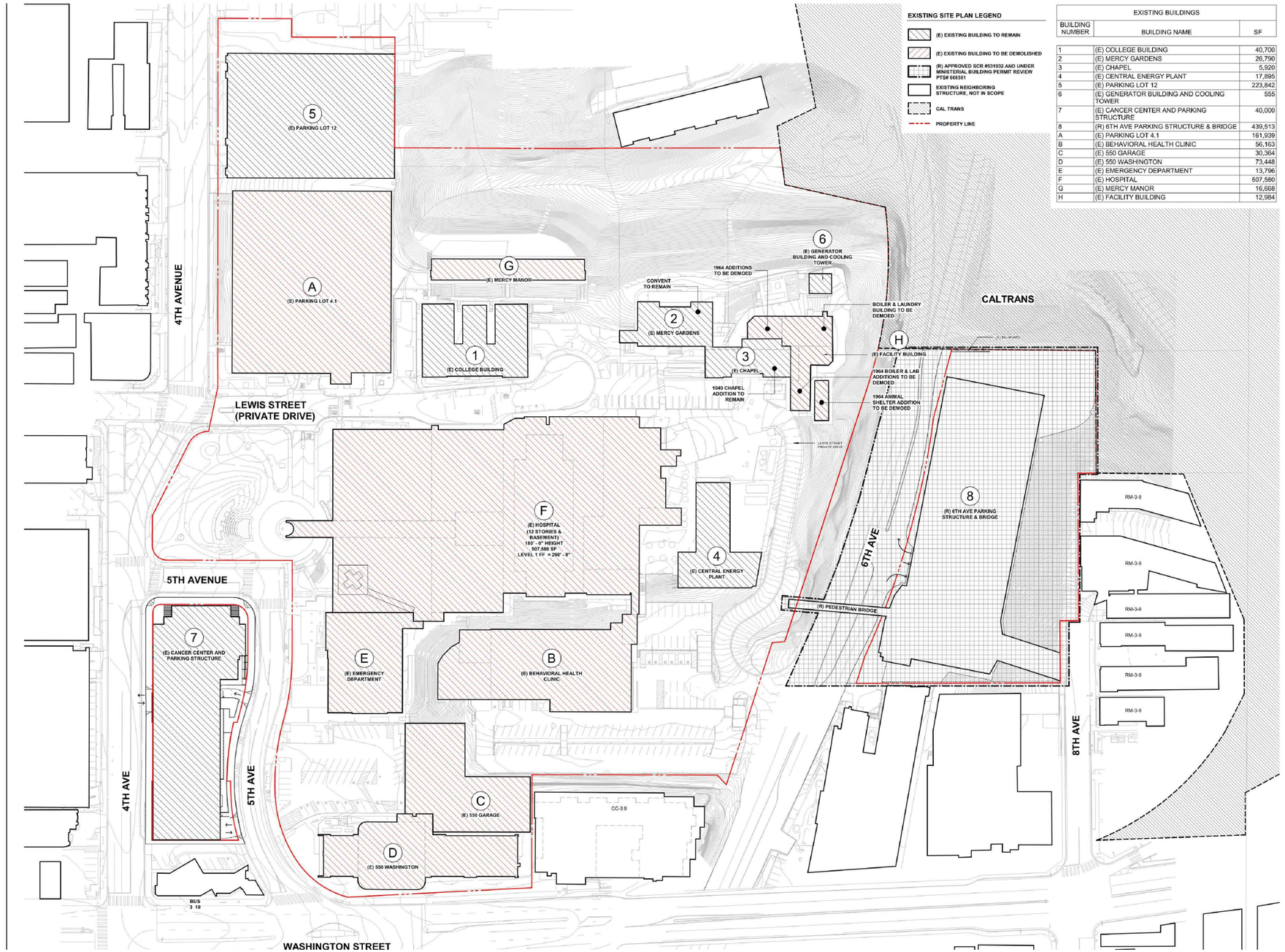
DRAWN BY:	JP
CHECKED BY:	KC
FILE NAME:	20210563_Vic_Merc.mxd

VICINITY MAP

GEOTECHNICAL MASTER PLAN UPDATE AND CUP AMENDMENT
SCRIPPS MERCY HOSPITAL
4407 5TH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE

1



BASEMAP SOURCE:
PDF ENTITLED: EXISTING SITE PLAN, CUP-03, BY CO ARCHITECTS, DATED 3/4/2022.

150 75 0 150
APPROXIMATE SCALE (feet)

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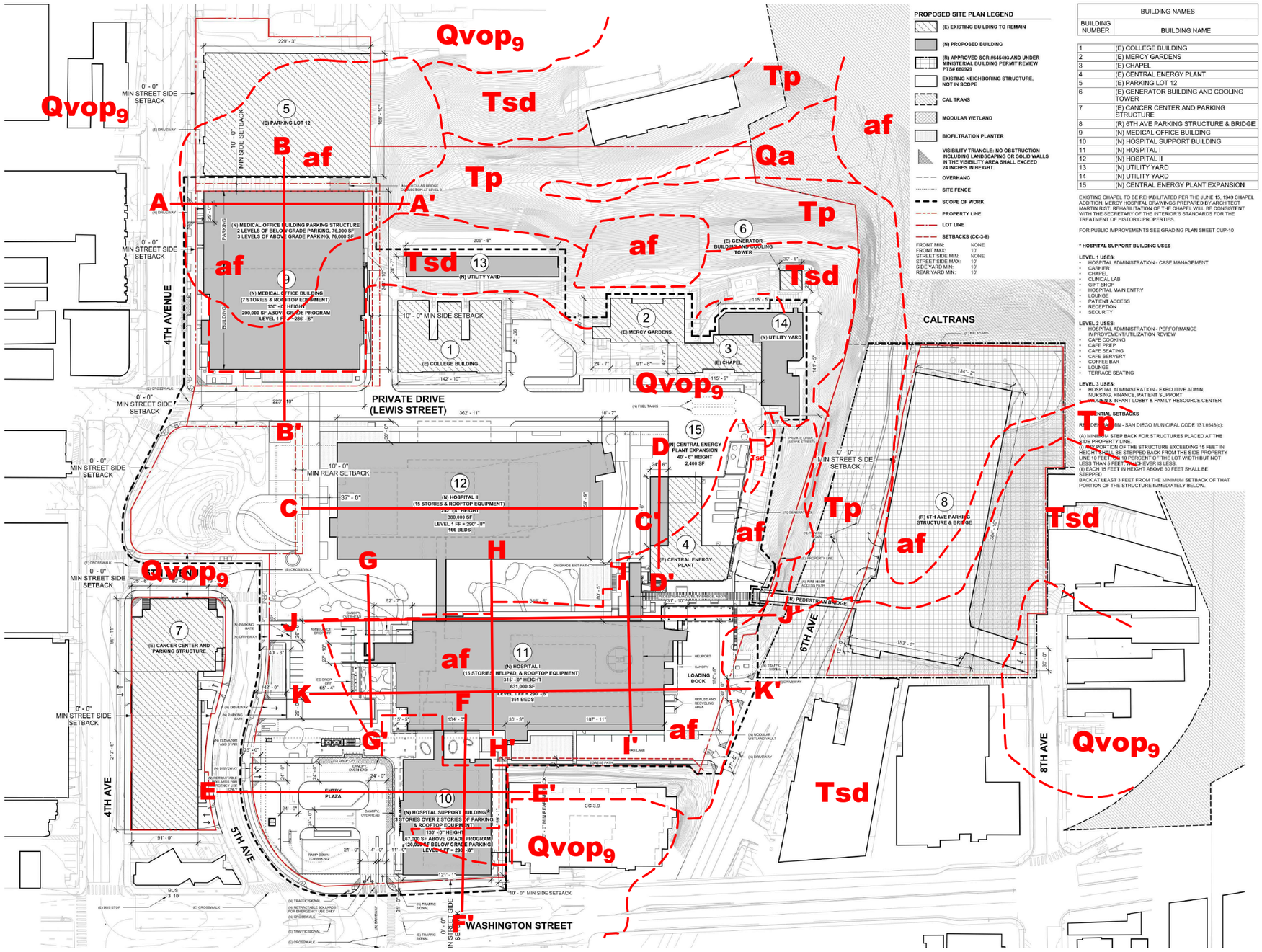
FILE NAME:	20210563_ExSite2.dwg

EXISTING CAMPUS SITE CONDITIONS

GEOTECHNICAL MASTER PLAN UPDATE
AND CUP AMENDMENT
SCRIPPS MERCY HOSPITAL
4407 5TH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
2



BASEMAP SOURCE:
PDF FILE ENTITLED: PROPOSED SITE PLAN, CUP-04, BY CO ARCHITECTS, DATED 3/4/2022.

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FILE NAME:	20210563_PropSite2.dwg

PROPOSED CAMPUS IMPROVEMENTS AND GEOLOGIC MAP

GEOTECHNICAL MASTER PLAN UPDATE
AND CUP AMENDMENT
SCRIPPS MERCY HOSPITAL
4407 5TH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
3

ATTACHED IMAGES: Images: CUP04_PROPOSED_SITE_PLAN.jpg
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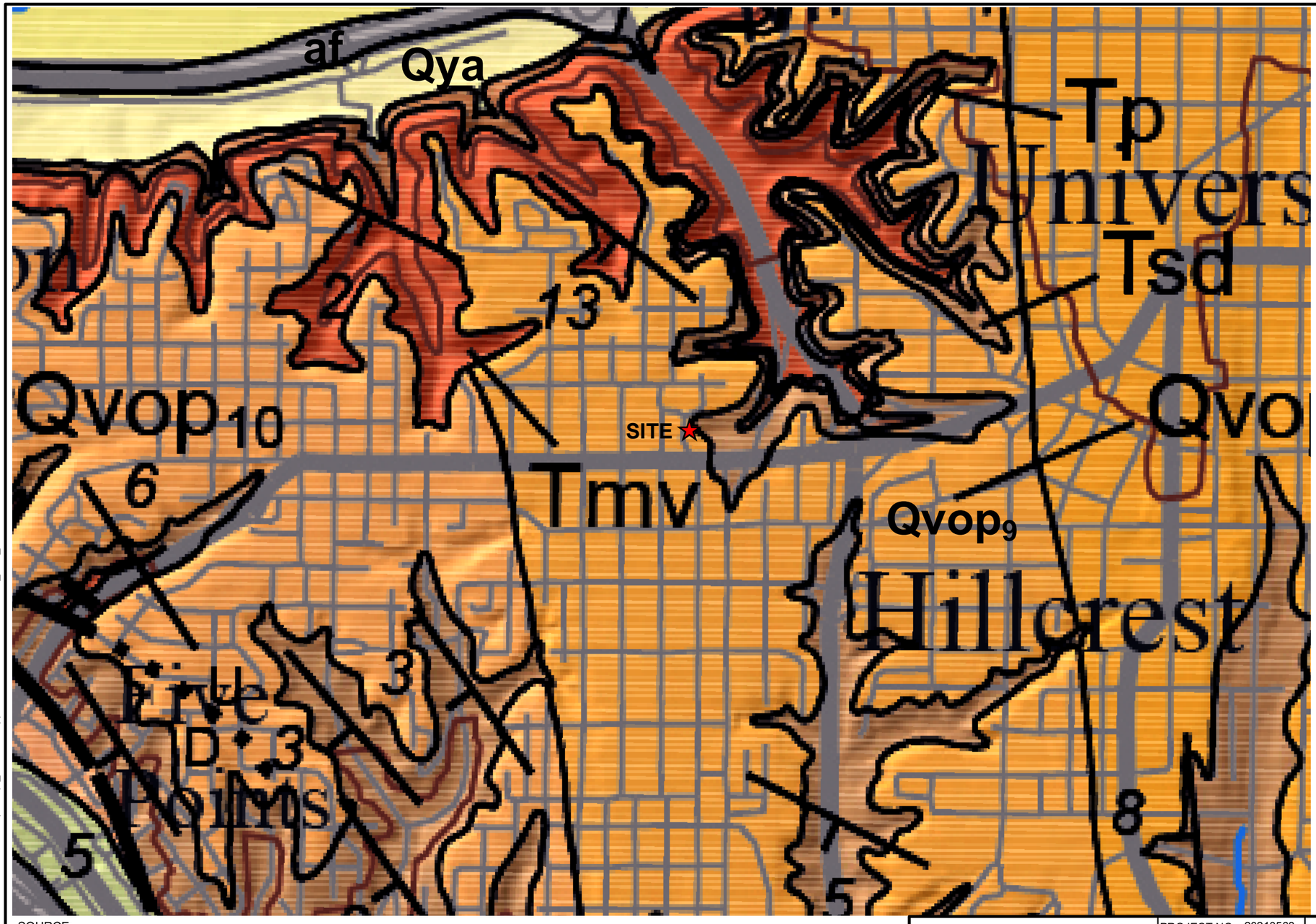

LEGEND

- af - ARTIFICIAL FILL
- Qya - YOUNG ALLUVIAL FAN DEPOSITS
- Qvop - VERY OLD PARALIC DEPOSITS, UNITS 6, 8, 9, AND 10
- Tsd - SAN DIEGO FORMATION
- Tmv - MISSION VALLEY FORMATION
- Tp - POMERADO CONGLOMERATE

N

0 1,000 2,000 Feet

SOURCE:
GEOLOGIC MAP OF THE SAN DIEGO 30'X60' QUADRANGLE, CALIFORNIA, KENNEDY AND TAN 2008.

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PROJECT NO.	20210563
DRAWN:	6/24/2020
DRAWN BY:	JP
CHECKED BY:	KC
FILE NAME:	20210563_Geo_Merc.mxd

REGIONAL GEOLOGIC MAP

GEOTECHNICAL MASTER PLAN UPDATE AND CUP AMENDMENT
SCRIPPS MERCY HOSPITAL
4407 5TH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
4

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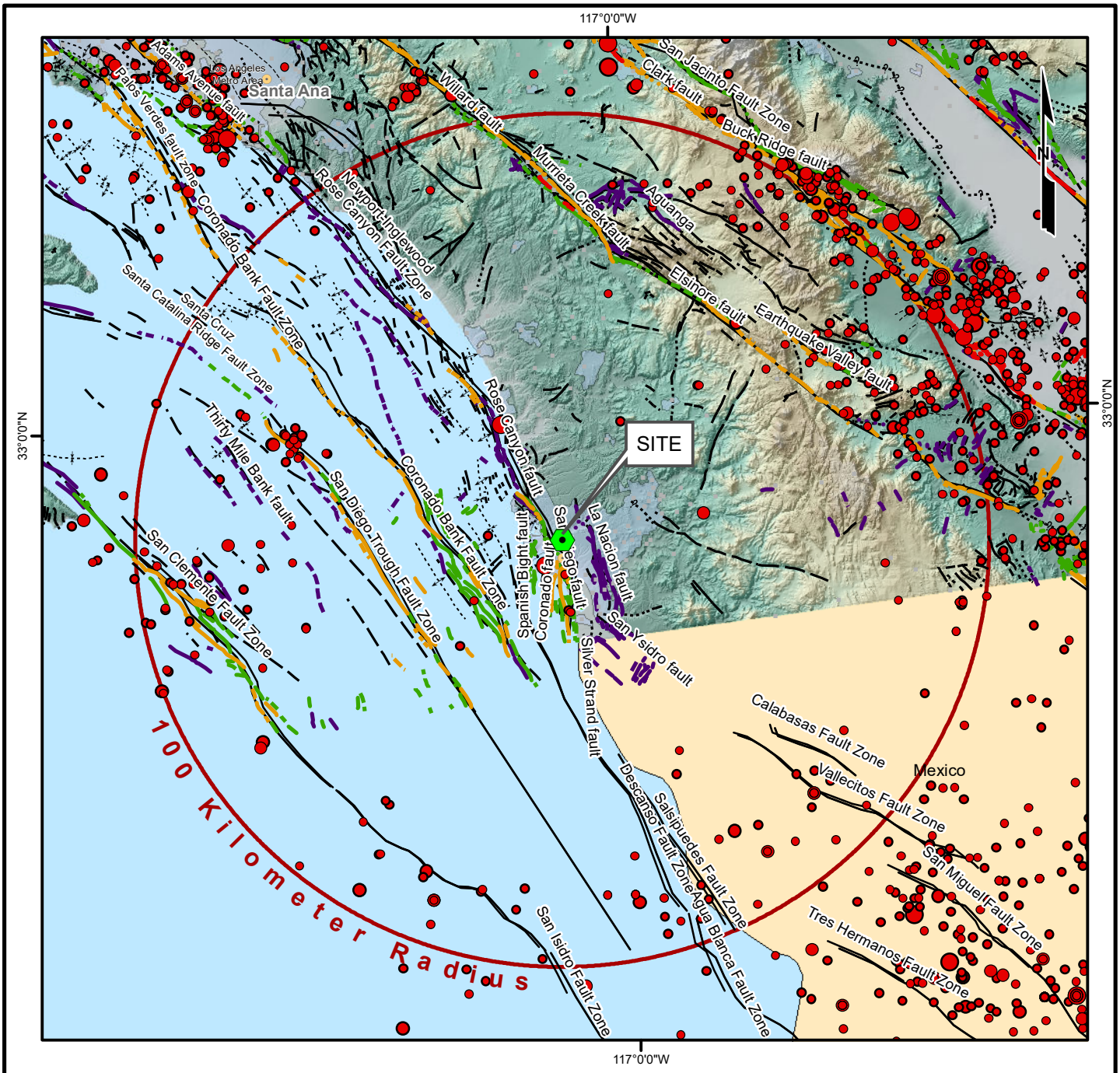

Faulting Legend

Quaternary Faults (Bryant, 2005; USGS, 2009)

Historic displacement (< 200 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Late Quaternary displacement (< 750,000 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Holocene displacement (< 11,000 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Quaternary displacement (< 1,600,000 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Pre-Quaternary Geologic Structures (CGS, 2000)
- fault, approx. located
- fault, approx. located, queried
- fault, certain
- fault, concealed
- fault, concealed, queried
- fault, inferred, queried

ANSS Earthquakes

Magnitude
- 4.0 - 4.9
- 5.0 - 5.9
- 6.0 - 6.9
- 7.0 - 7.9
- 8.0 - 8.9

35 17.5 0 35 Kilometers

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PROJECT NO.	20183768
DRAWN:	6/24/2020
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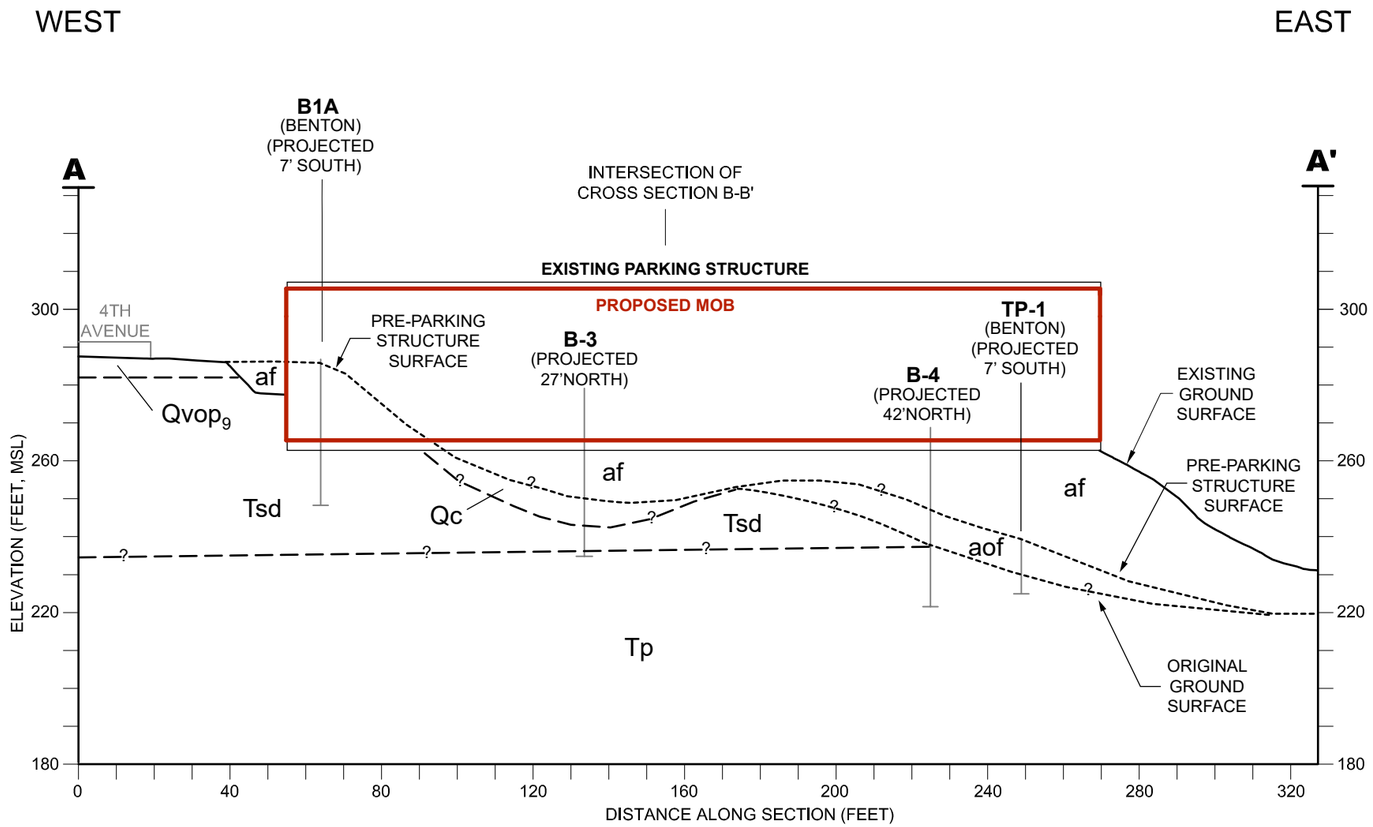
CHECKED BY:	ST
FILE NAME:	20210563_EQ_Merc.MXD

REGIONAL FAULT MAP AND EARTHQUAKE EPICENTERS (1800 - MAY 2020)

GEOTECHNICAL MASTER PLAN UPDATE AND CUP AMENDMENT
SCRIPPS MERCY HOSPITAL
4407 5TH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
5

C:\Users\JPataky\OneDrive - Kleinfelder\Desktop\temp_clients\Scripps\20210563\MXD\20210563_EQ_Merc.mxd



LEGEND

af	ARTIFICIAL FILL
aof	OLD ARTIFICIAL FILL
Qc	COLLUVIAL DEPOSITS
$Qvop_9$	VERY OLD PARALIC DEPOSITS
Tsd	SAN DIEGO FORMATION
Tp	POMERADO CONGLOMERATE

GEOLOGIC CONTACT

B-2
(PROJECTED
5' EAST)
TD = 26.5'

APPROXIMATE LOCATION OF
BORING, SHOWING ID,
PROJECTION AND TOTAL DEPTH

40 20 0 40
APPROXIMATE HORIZONTAL AND VERTICAL SCALE (feet)

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DRAWN:	3/1/2022
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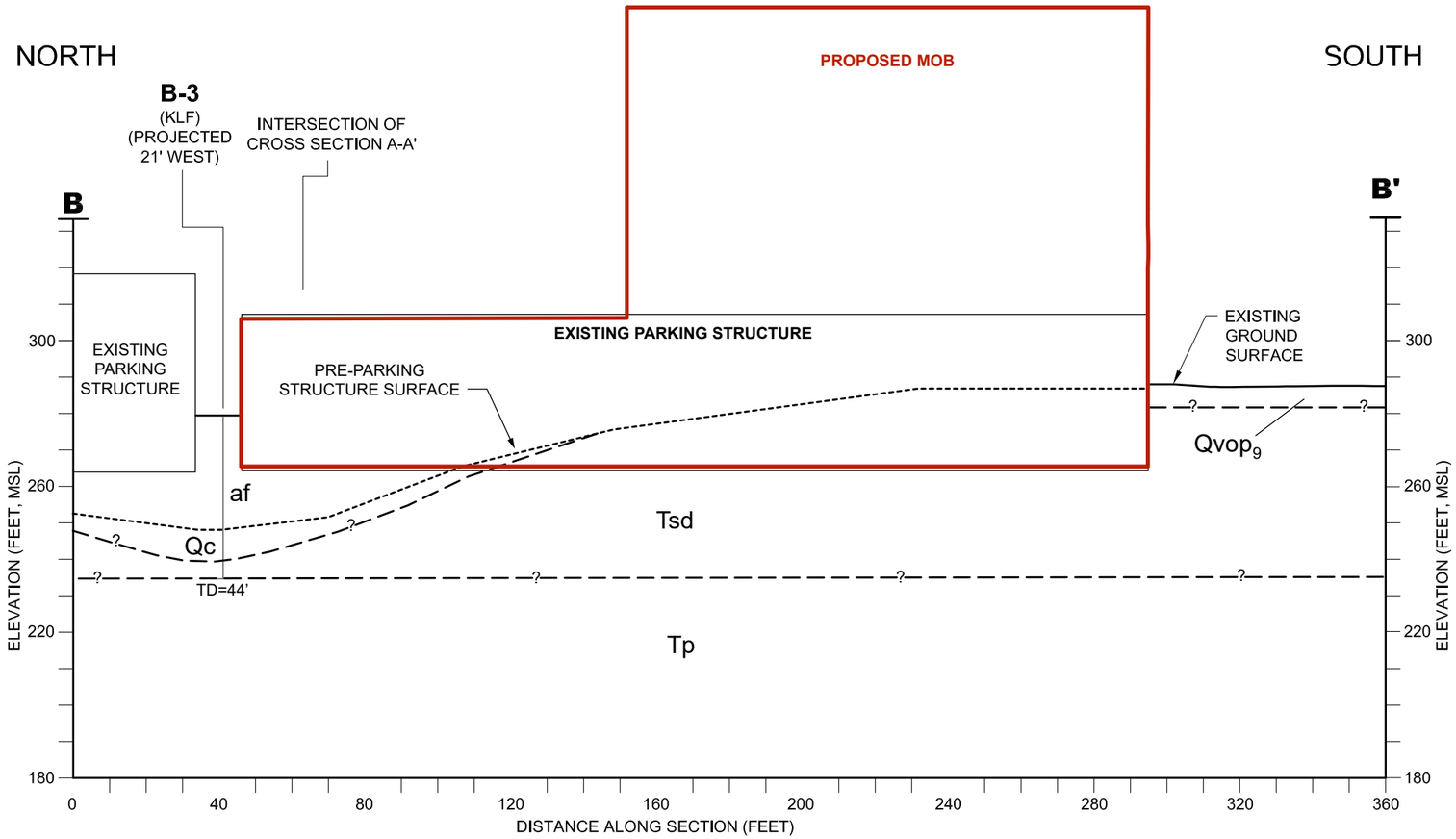
CHECKED BY:	SR
FILE NAME:	20210563_SectMer. PDF

GEOLOGIC CROSS SECTION A-A'
PROPOSED MOB

GEOTECHNICAL MASTER PLAN UPDATE
AND CUP AMENDMENT, SCRIPPS MERCY HOSPITAL
4077 FIFTH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
6A



LEGEND

af	ARTIFICIAL FILL
Qc	COLLUVIAL DEPOSITS
$Qvop_9$	VERY OLD PARALIC DEPOSITS
Tsd	SAN DIEGO FORMATION
Tp	POMERADO CONGLOMERATE

GEOLOGIC CONTACT

B-2
(PROJECTED
5' EAST)
TD = 26.5'

APPROXIMATE LOCATION OF BORING, SHOWING ID, PROJECTION AND TOTAL DEPTH

40 20 0 40
APPROXIMATE HORIZONTAL AND VERTICAL SCALE (feet)

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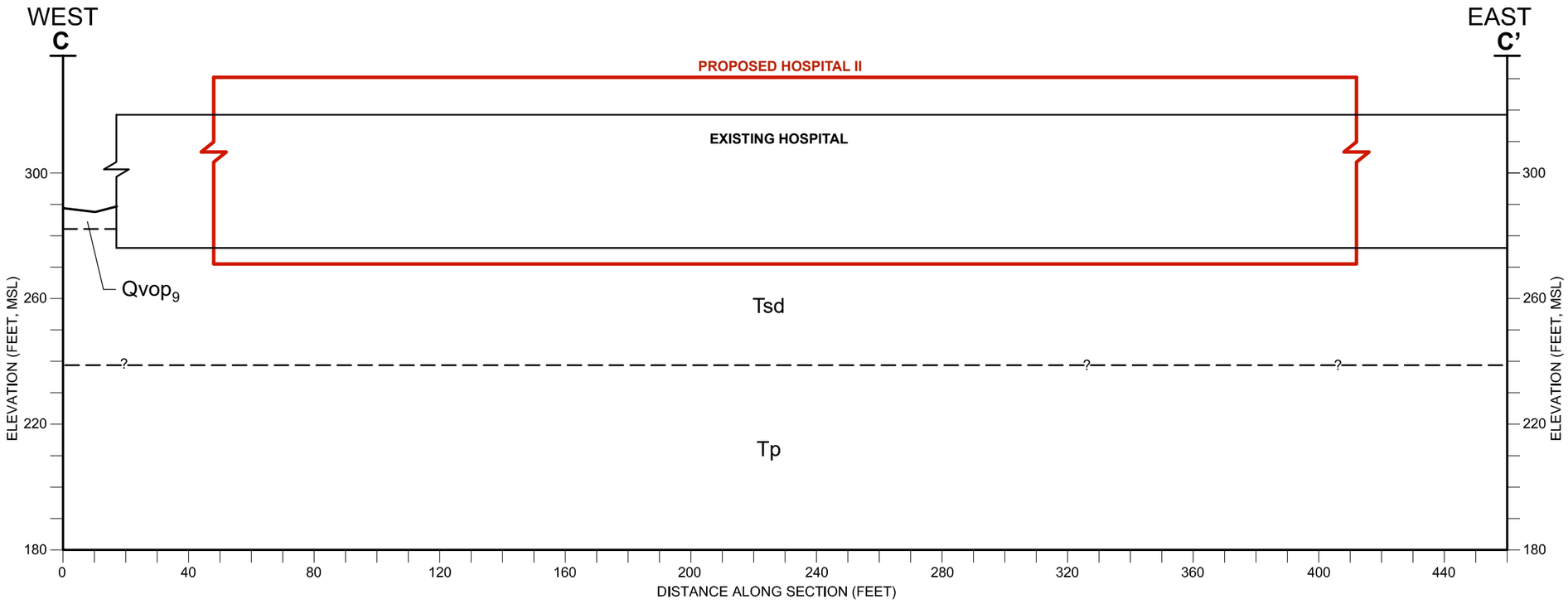
GEOLOGIC CROSS SECTION B-B'
PROPOSED MOB

GEOTECHNICAL MASTER PLAN UPDATE
AND CUP AMENDMENT, SCRIPPS MERCY HOSPITAL
4077 FIFTH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
6B



LEGEND

$Qvop_9$	VERY OLD PARALIC DEPOSITS
Tsd	SAN DIEGO FORMATION
Tp	POMERADO CONGLOMERATE

GEOLOGIC CONTACT

CAD FILE: C:\Users\JPatay\OneDrive - Kleinfelder\Desktop\temp_clients\Scripps\20210563\MXD\ LAYOUTS\GEOLOGIC CROSS-SECTION C-C' 2021 Jun 2020, 10:36am, JPatay

ATTACHED IMAGES:
ATTACHED XREFS:

40 20 0 40
APPROXIMATE HORIZONTAL AND VERTICAL SCALE (feet)

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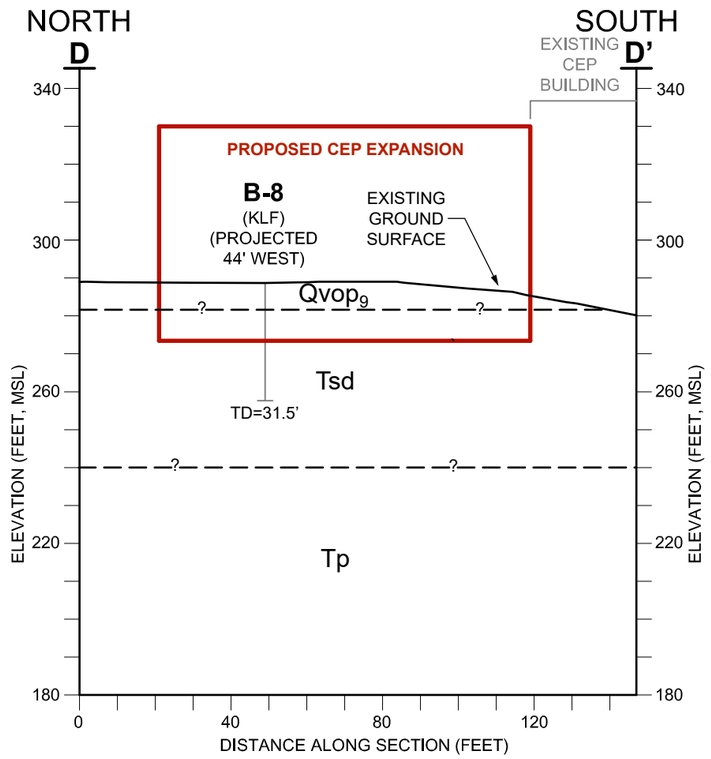
GEOLOGIC CROSS-SECTION C-C'
PROPOSED HOSPITAL I

GEOTECHNICAL MASTER PLAN UPDATE
AND CUP AMENDMENT, SCRIPPS MERCY HOSPITAL
4077 FIFTH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
6C



LEGEND

$Qvop_9$	VERY OLD PARALIC DEPOSITS
Tsd	SAN DIEGO FORMATION
Tp	POMERADO CONGLOMERATE

GEOLOGIC CONTACT

B-2
(PROJECTED 5' EAST)
TD = 26.5'

APPROXIMATE LOCATION OF BORING, SHOWING ID, PROJECTION AND TOTAL DEPTH

40 20 0 40
APPROXIMATE HORIZONTAL AND VERTICAL SCALE (feet)

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GEOLOGIC CROSS-SECTION D-D'
PROPOSED CEP EXPANSION

GEOTECHNICAL MASTER PLAN UPDATE
AND CUP AMENDMENT, SCRIPPS MERCY HOSPITAL
4077 FIFTH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
6D

ATTACHED IMAGES:
ATTACHED XREFS:

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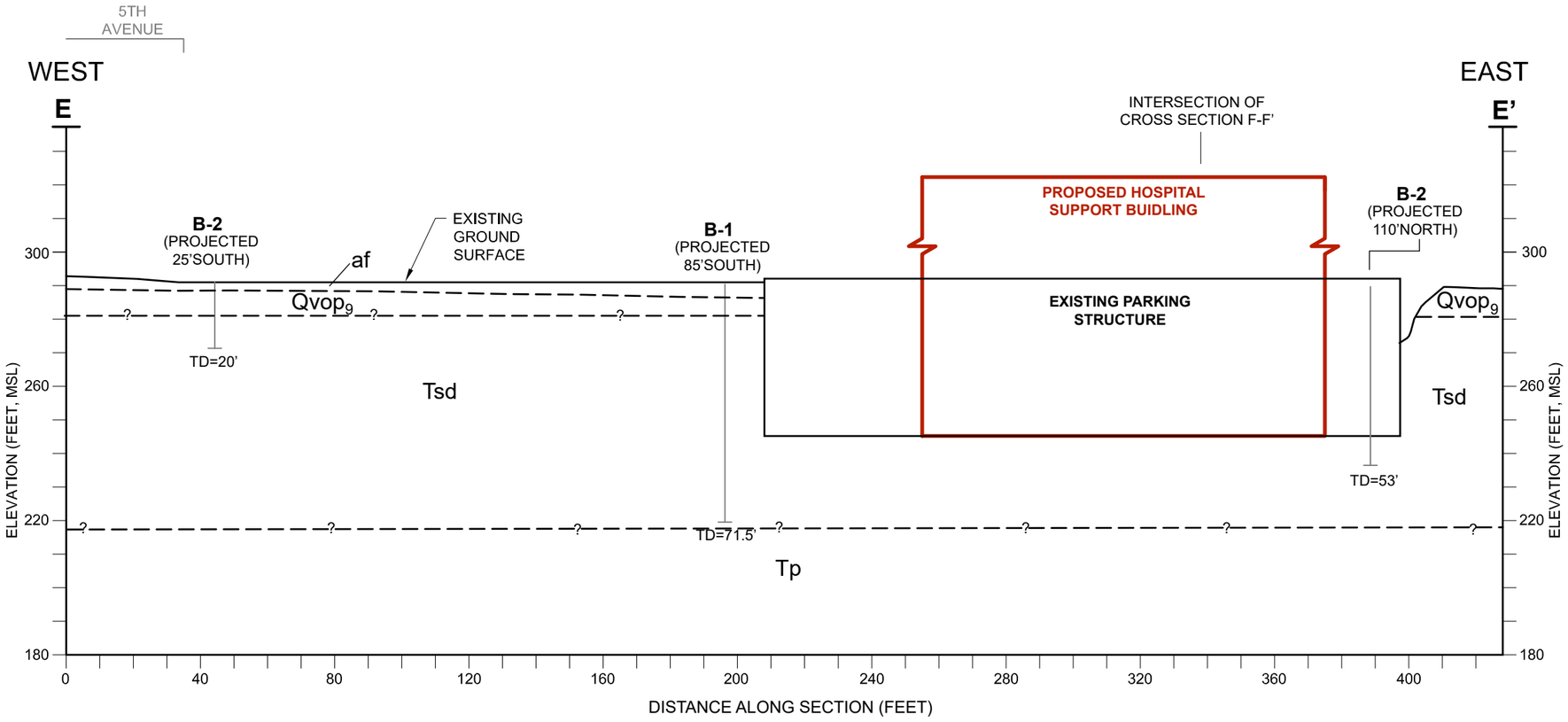

LEGEND

af	ARTIFICIAL FILL
$Qvop_9$	VERY OLD PARALIC DEPOSITS
Tsd	SAN DIEGO FORMATION
Tp	POMERADO CONGLOMERATE

GEOLOGIC CONTACT

B-2
(PROJECTED 5' EAST)
TD = 26.5'

APPROXIMATE LOCATION OF BORING, SHOWING ID, PROJECTION AND TOTAL DEPTH

40 20 0 40
APPROXIMATE HORIZONTAL AND VERTICAL SCALE (feet)

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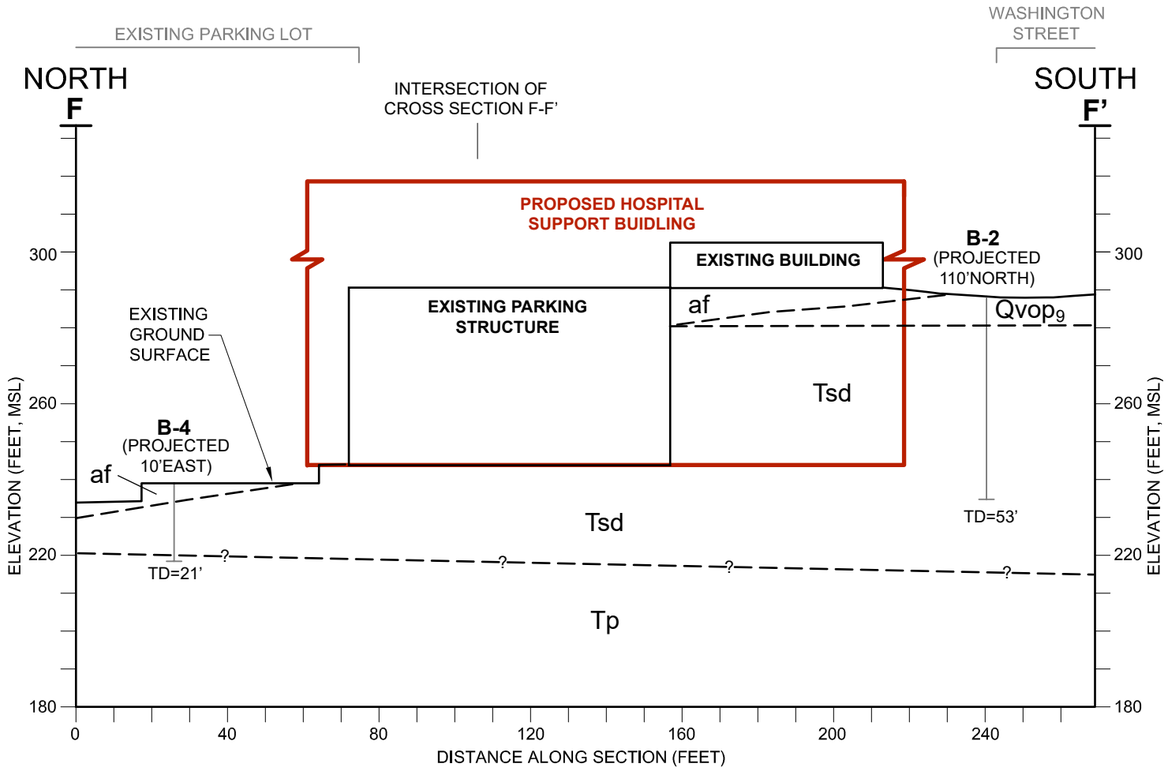
GEOLOGIC CROSS-SECTION E-E' HOSPITAL SUPPORT BUILDING

GEOTECHNICAL MASTER PLAN UPDATE
AND CUP AMENDMENT, SCRIPPS MERCY HOSPITAL
4077 FIFTH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
6E

ATTACHED IMAGES:
ATTACHED XREFS:



LEGEND

af	ARTIFICIAL FILL
$Qvop_9$	VERY OLD PARALIC DEPOSITS
Tsd	SAN DIEGO FORMATION
Tp	POMERADO CONGLOMERATE

GEOLOGIC CONTACT

B-2
(PROJECTED 5' EAST)
TD = 26.5'

APPROXIMATE LOCATION OF BORING, SHOWING ID, PROJECTION AND TOTAL DEPTH

40 20 0 40
APPROXIMATE HORIZONTAL AND VERTICAL SCALE (feet)

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GEOLOGIC CROSS-SECTION F-F'
PROPOSED HOSPITAL SUPPORT BUILDING

GEOTECHNICAL MASTER PLAN UPDATE
AND CUP AMENDMENT, SCRIPPS MERCY HOSPITAL
4077 FIFTH AVENUE, SAN DIEGO, CALIFORNIA

FIGURE
6F

CAD FILE: C:\Users\JPatay\OneDrive - Kleinfelder\Desktop\temp_clients\Scripps\20210563\MXD\ LAYOUT TITLE: 22 Jun 2020, 10:37am, JPatay

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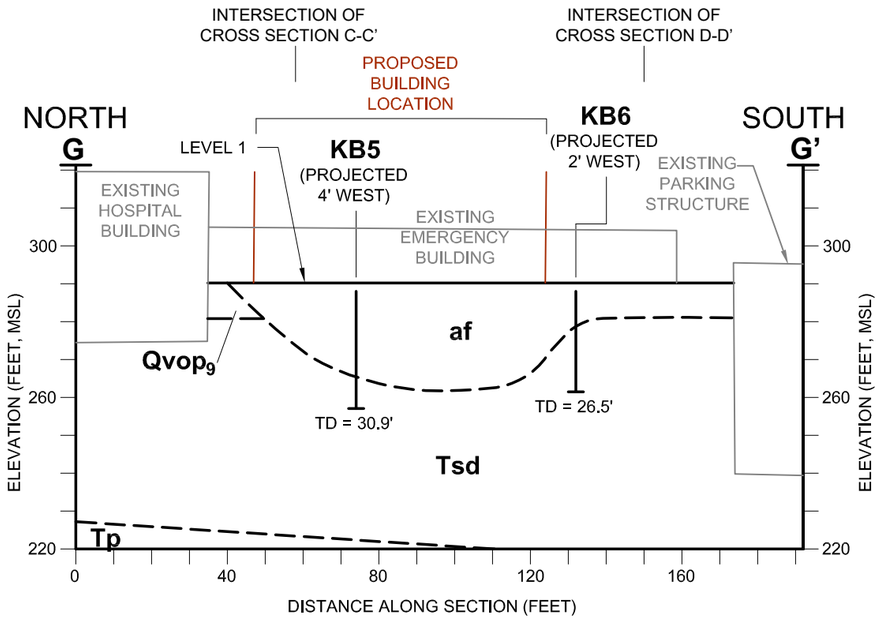

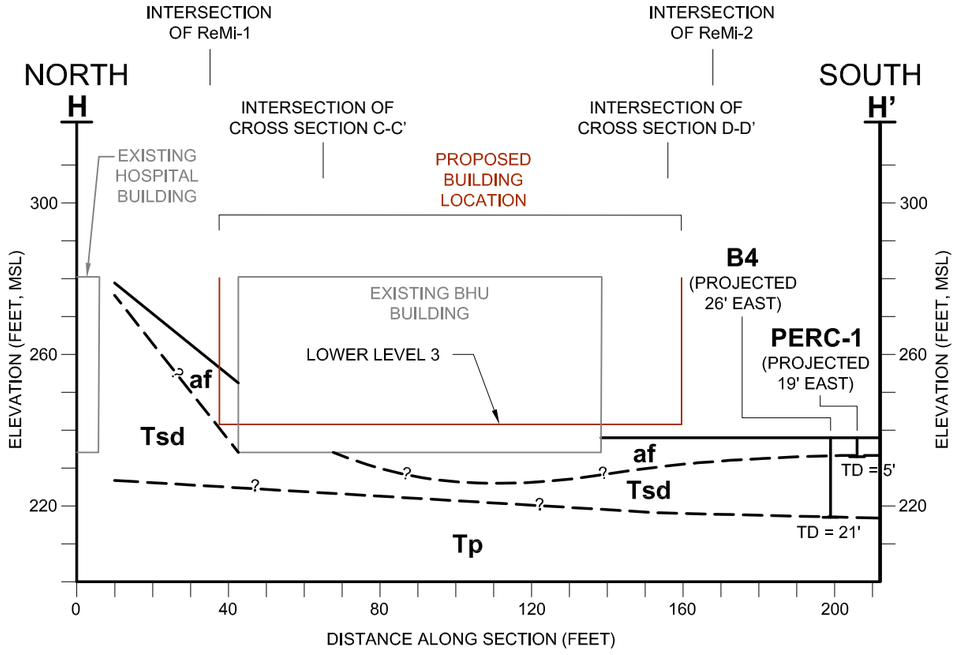

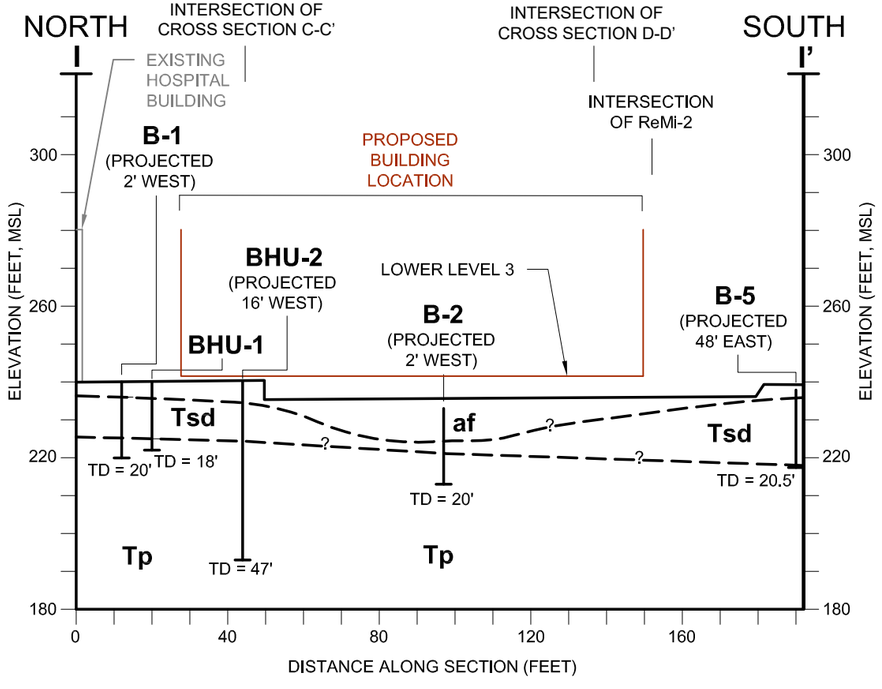

LEGEND

af	ARTIFICIAL FILL
$Qvop_9$	VERY OLD PARALIC DEPOSITS
Tsd	SANTIAGO FORMATION
Tp	POMERADO CONGLOMERATE
— — —	GEOLOGIC CONTACT

B-2 (PROJECTED 5' EAST) — TD = 26.5'

APPROXIMATE LOCATION OF BORING, SHOWING ID, PROJECTION AND TOTAL DEPTH

40 20 0 40

APPROXIMATE HORIZONTAL AND VERTICAL SCALE (feet)

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PROJECT NO.	20210563
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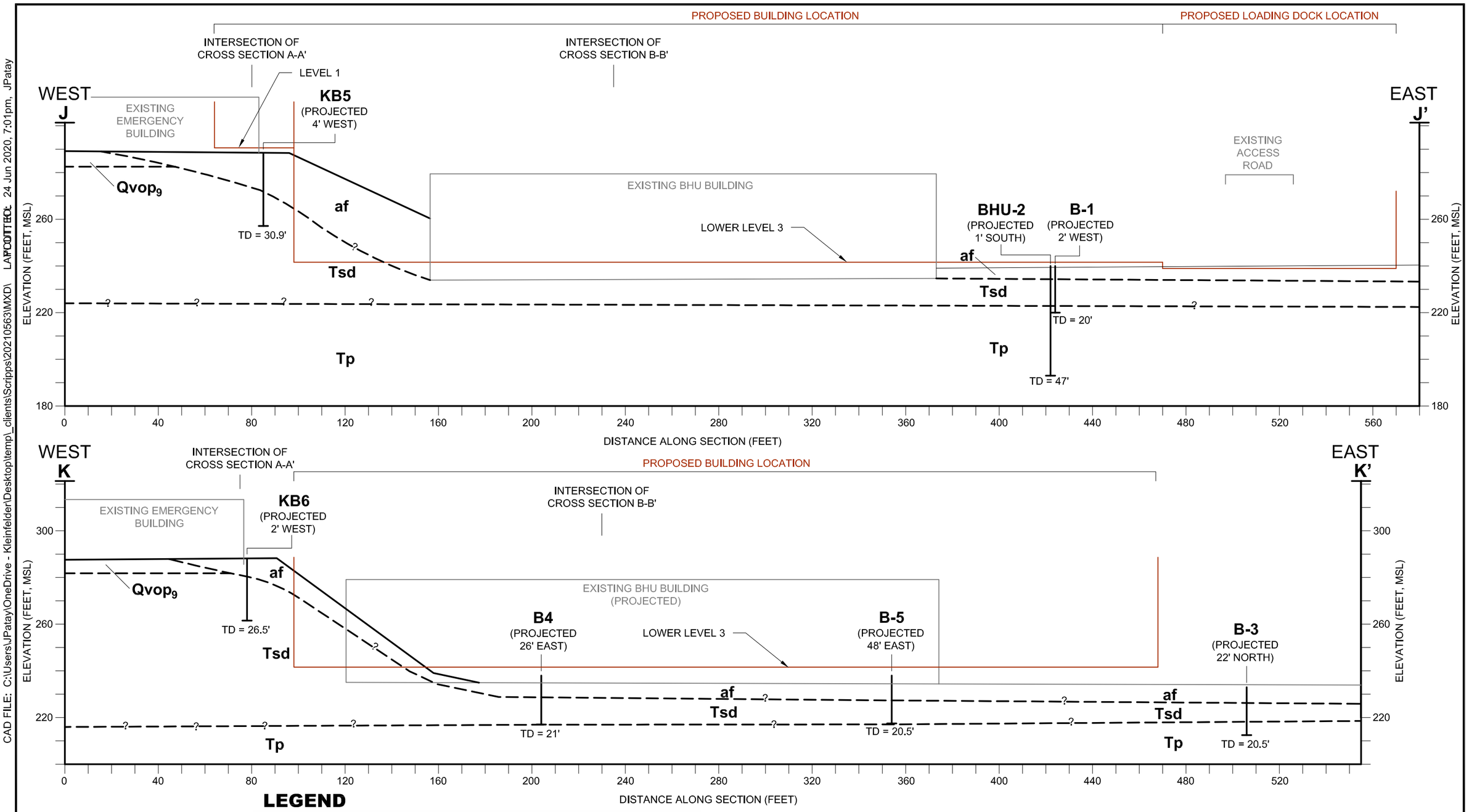
GEOLOGIC CROSS SECTIONS G-G', H-H', AND I-I'

REPLACEMENT HOSPITAL
SCRIPPS MERCY HOSPITAL
4407 5TH AVENUE
SAN DIEGO, CALIFORNIA

FIGURE **6G**



LEGEND

40 20 0 40

APPROXIMATE HORIZONTAL AND VERTICAL SCALE (feet)

af	ARTIFICIAL FILL
Tsd	SANTIAGO FORMATION
Tp	POMERADO CONGLOMERATE

B-2 (PROJECTED 5' EAST) TD = 26.5' — APPROXIMATE LOCATION OF BORING, SHOWING ID, PROJECTION AND TOTAL DEPTH

GEOLOGIC CONTACT

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DRAWN:	3/1/2022
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FILE NAME:	20210563_SectMer1. PDF

GEOLOGIC CROSS SECTIONS J-J' AND K-K'

REPLACEMENT HOSPITAL
SCRIPPS MERCY HOSPITAL
4407 5TH AVENUE
SAN DIEGO, CALIFORNIA

FIGURE
6H

ATTACHED IMAGES:
ATTACHED XREFS: