SOLANO

COMMUNITY COLLEGE

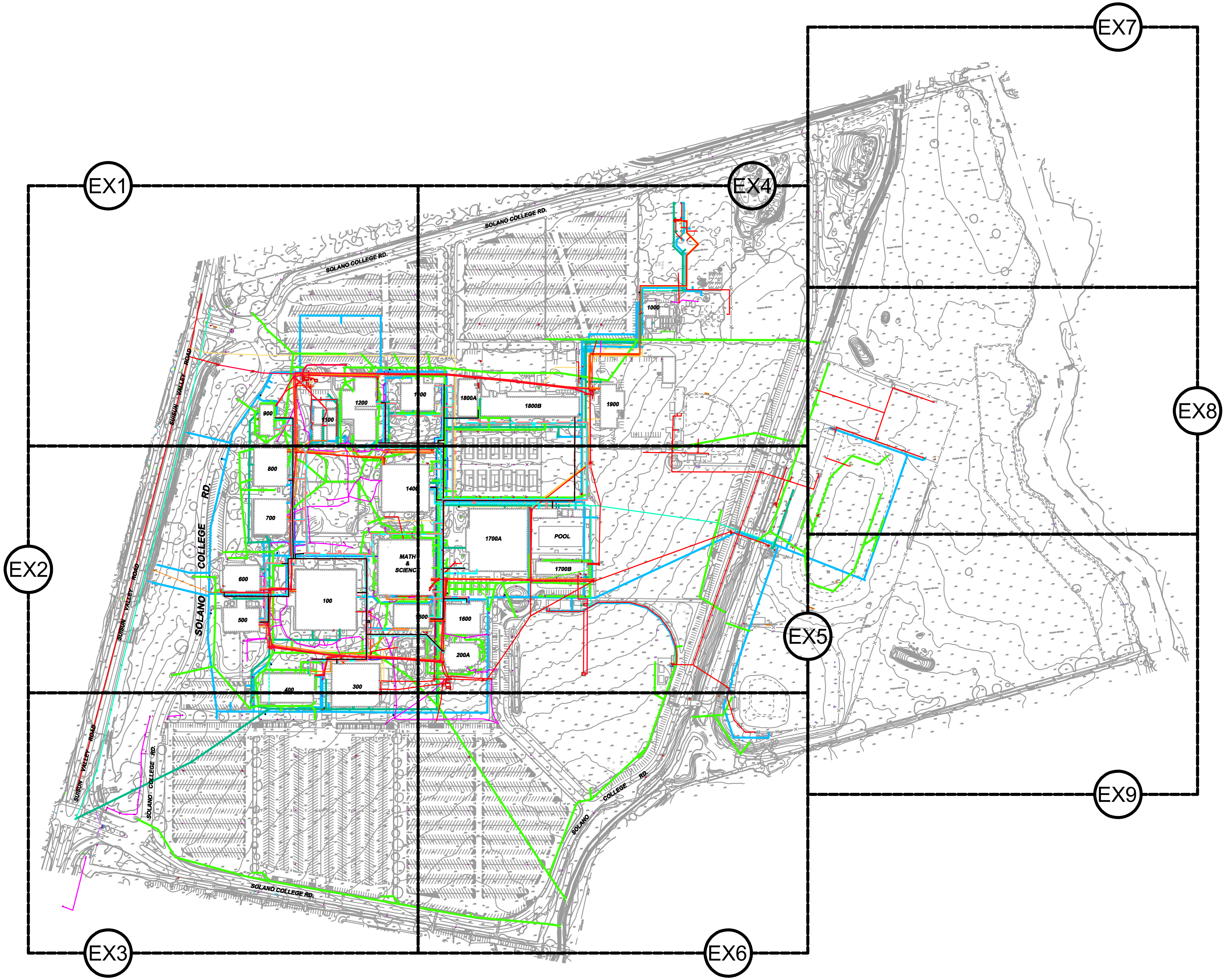
FAIRFIELD CAMPUS

POOL DECK REPLACEMENT PROJECT

PROJECT NUMBER: 23-006

REFERENCE DOCUMENTS

TABLE OF CONTENTS



LEGEND

- ABANDONED HYDRONIC
- AIR
- CHILLED WATER SUPPLY/RETURN
- COMMUNICATION
- HOT WATER RETURN
- HOT WATER SUPPLY/RETURN
- ELECTRICAL LINE
- FIRE WATER
- GAS LINE
- JOINT TRENCH
- LIGHTING
- SANITARY SEWER
- STORM DRAIN
- WATER

Date: 01/26/2020
Scale: 1" = 400'
Rev X
Job No. 4.1164.02

EX0

SHEET INDEX

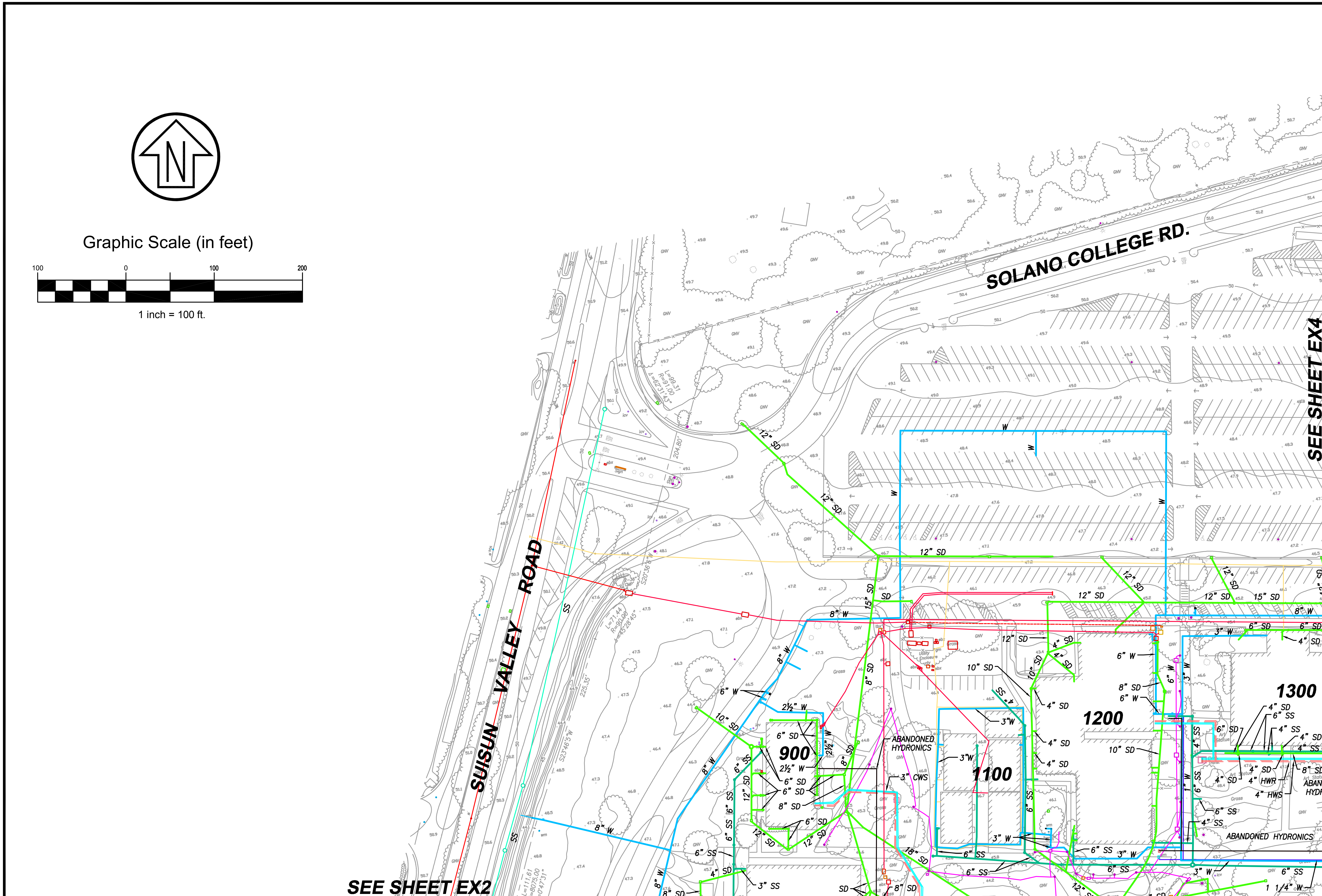
FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW | ST2 ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 01/26/2020
Scale: 1" = 100"
Rev X
Job No. 4.1164.02

EX1

EXISTING UTILITIES

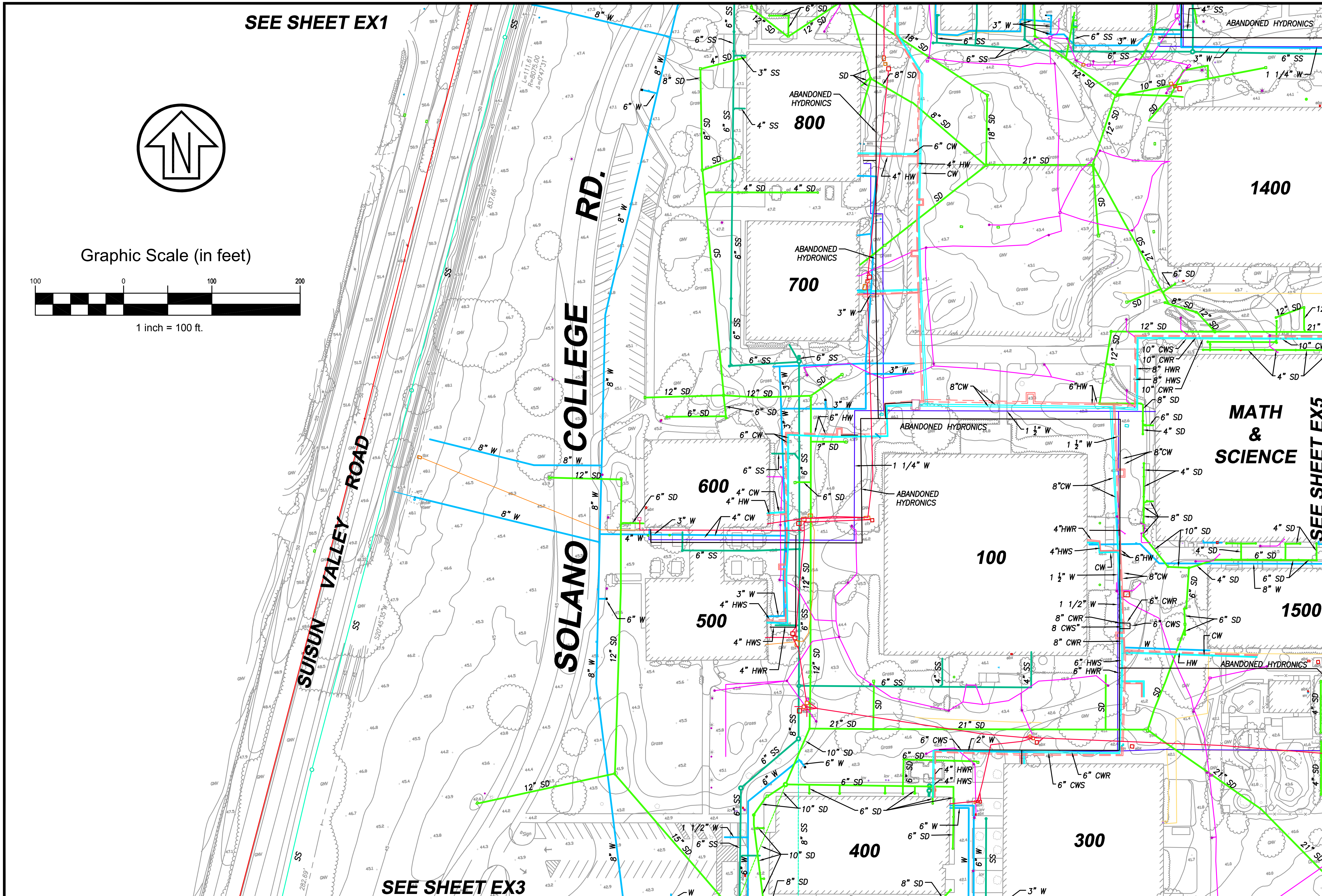
FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW ST2 ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 01/26/2020
Scale: 1" = 100'
Rev X
Job No. 4.1164.02

EX2

EXISTING UTILITIES

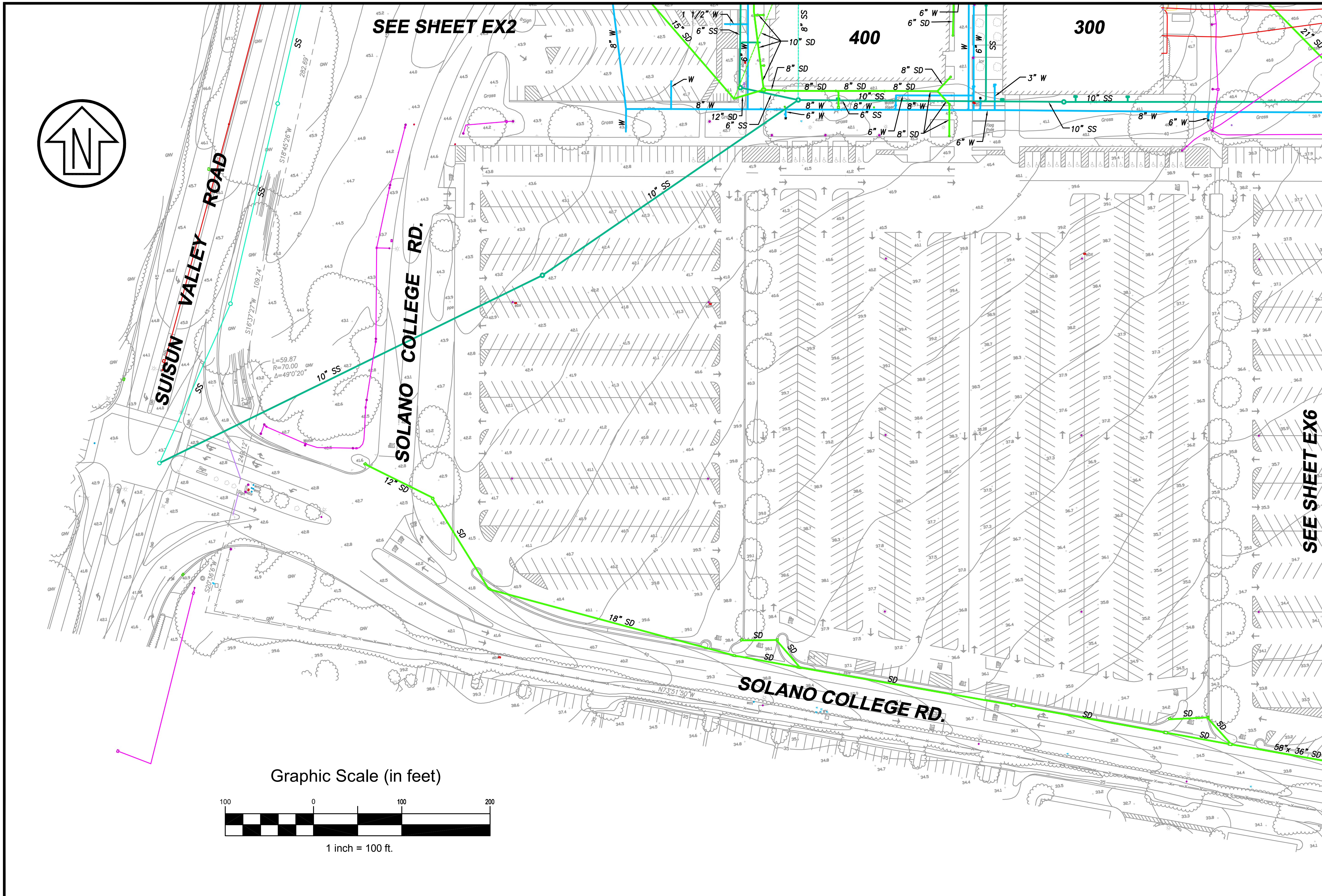
FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW | ST2
ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 01/26/2020
Scale: 1" = 100'
Rev X
Job No. 4.1164.02

EX3

EXISTING UTILITIES

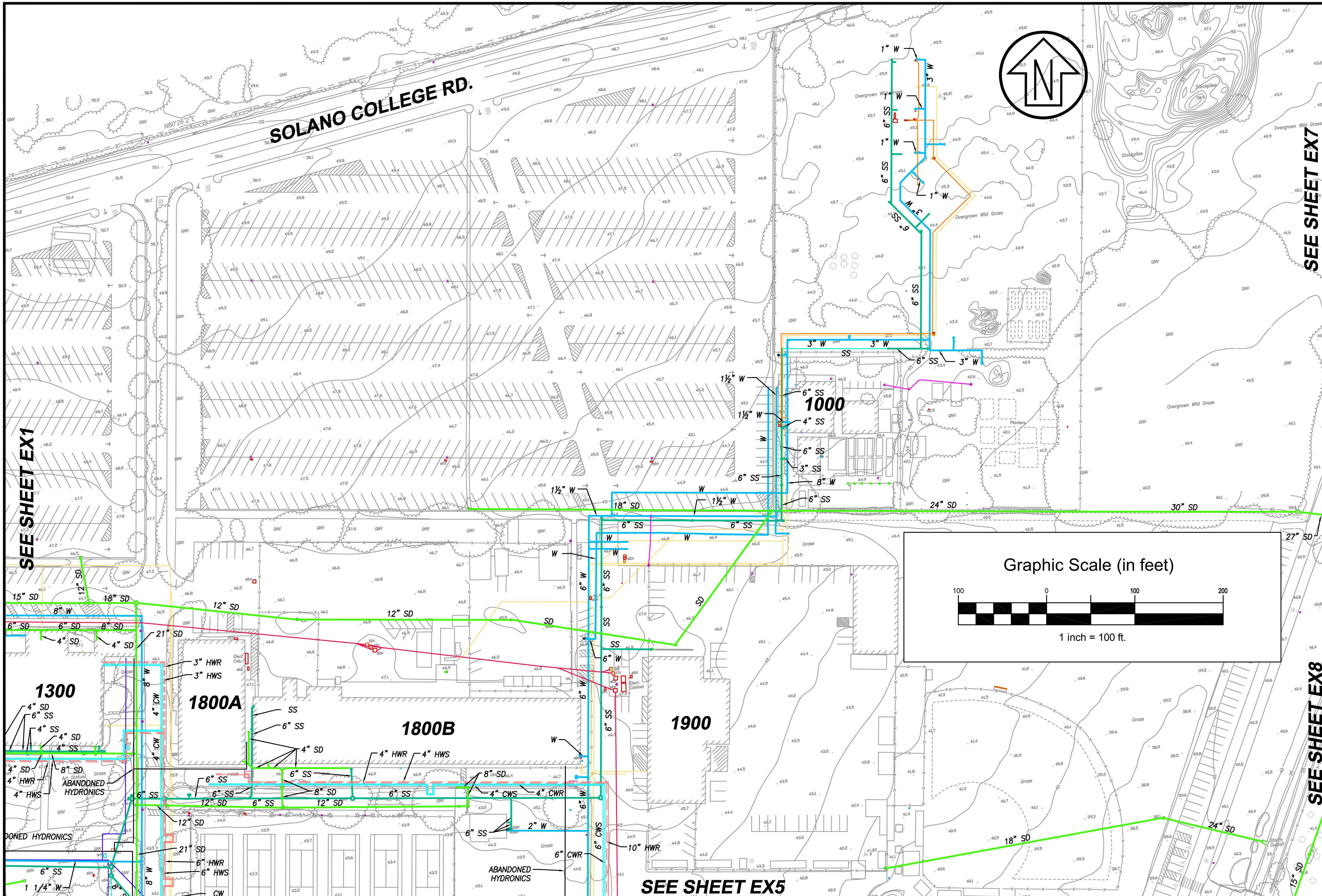
FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW ST2 ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 01/26/2020
Scale: 1" = 100'
Rev X
Job No. 4.1164.02

EX4

EXISTING UTILITIES

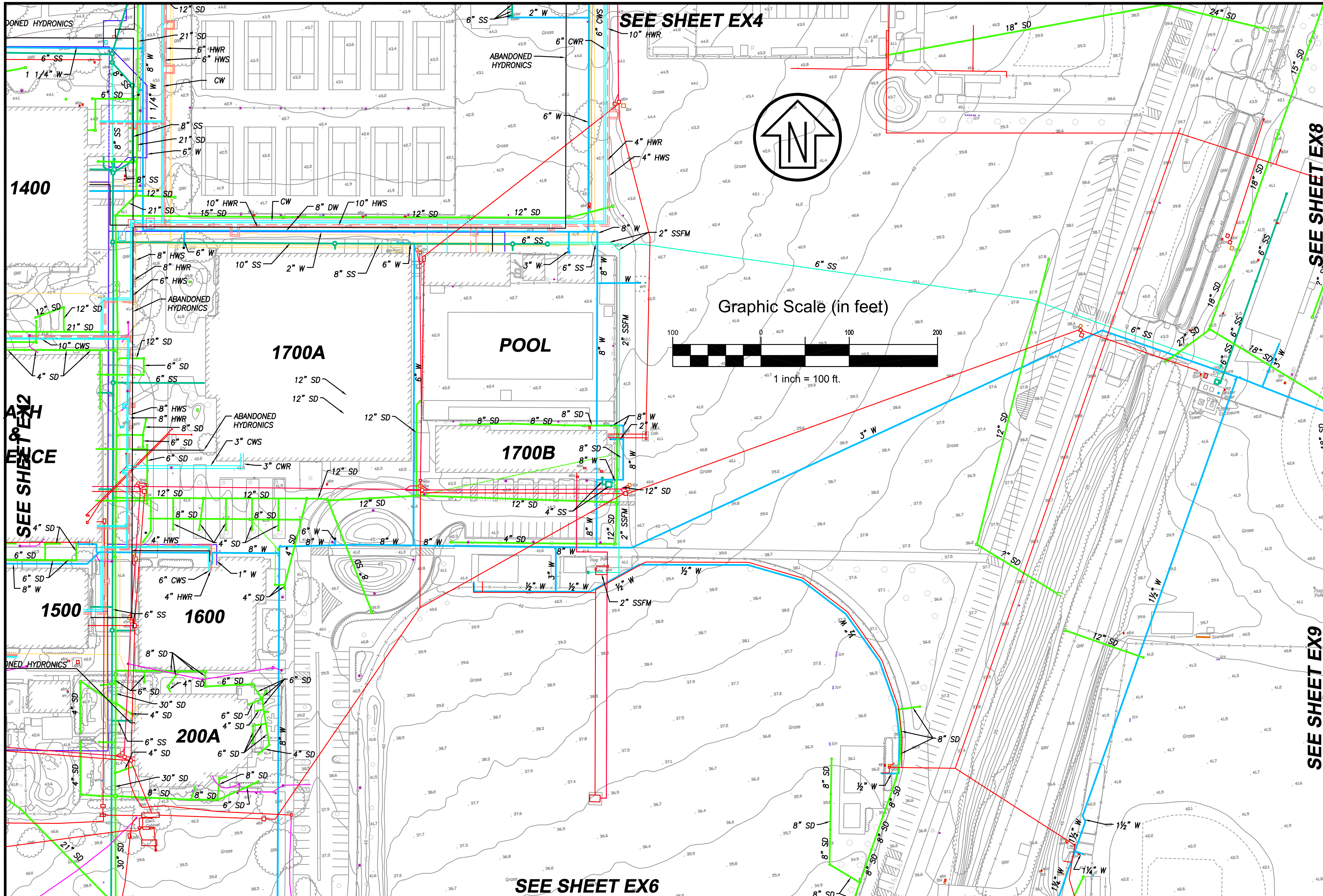
FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW ST2 ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 01/26/2020
Scale: 1" = 100'
Rev X
Job No. 4.1164.02

EX5

EXISTING UTILITIES

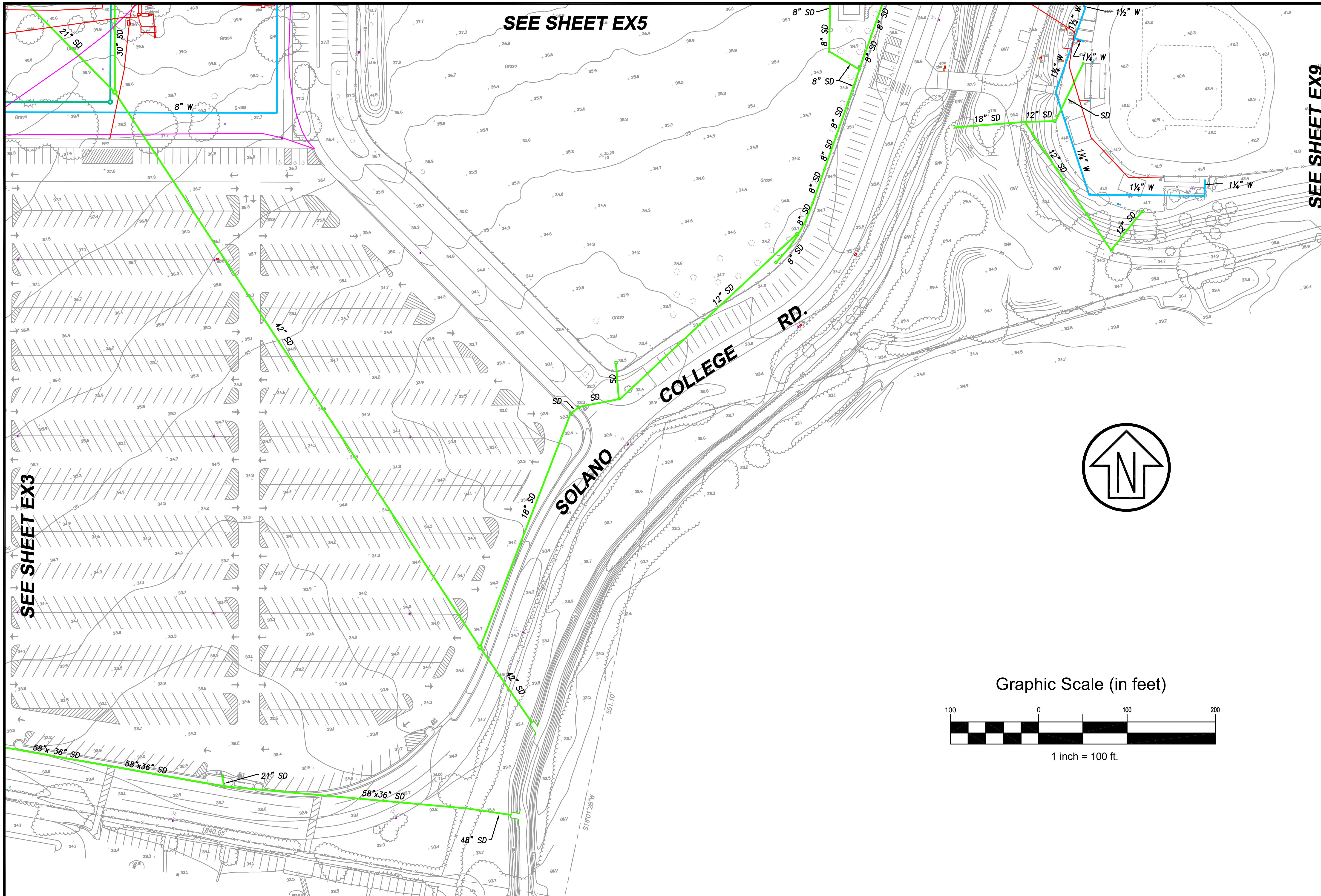
FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW ST2 ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 1/26/2020
Scale: 1" = 100"
Rev X
Job No. 4.1164.02

EX6

EXISTING UTILITIES

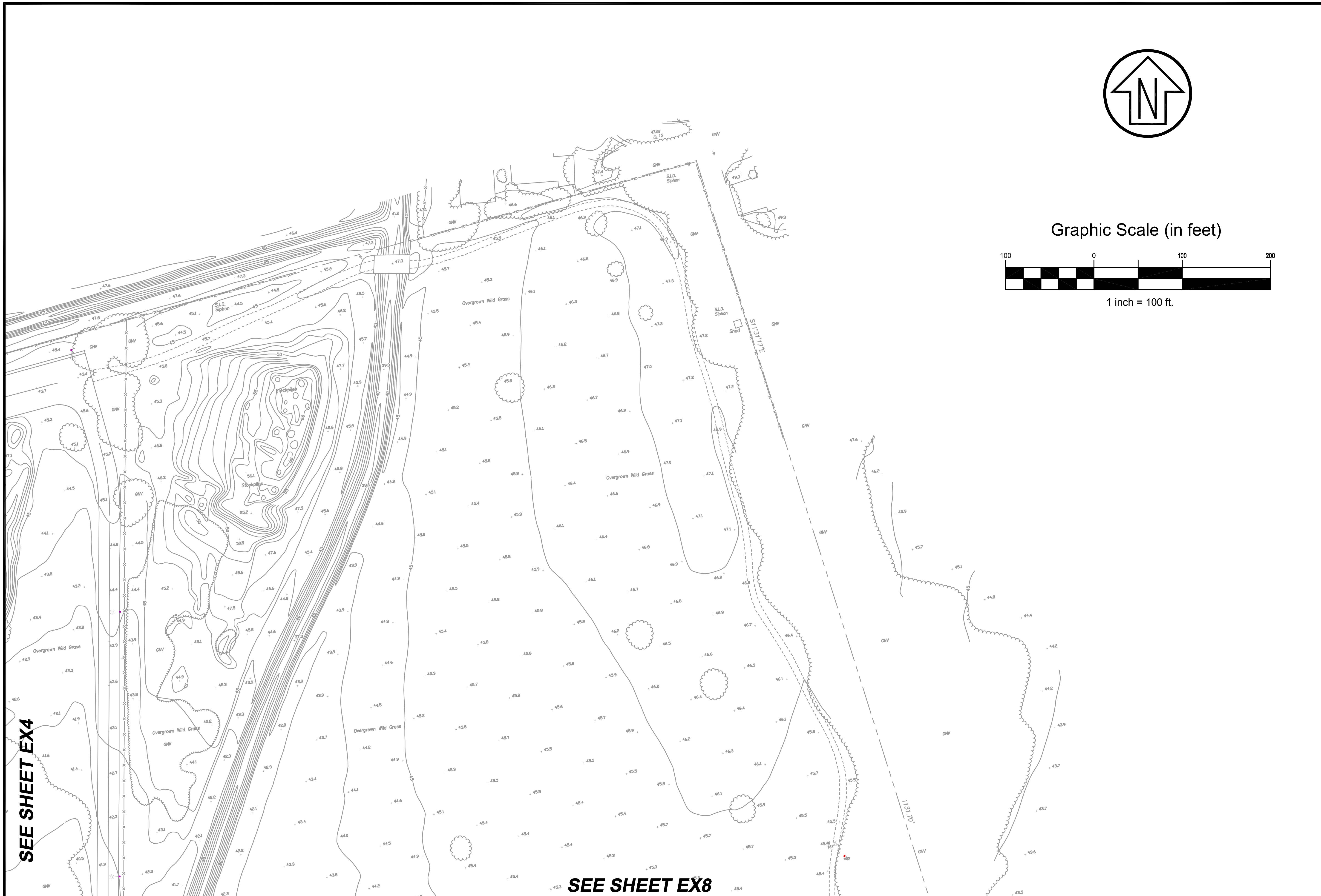
FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW | ST2 ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 01/26/2020
Scale: 1" = 100"
Rev X
Job No. 4.1164.02

EX7

EXISTING UTILITIES

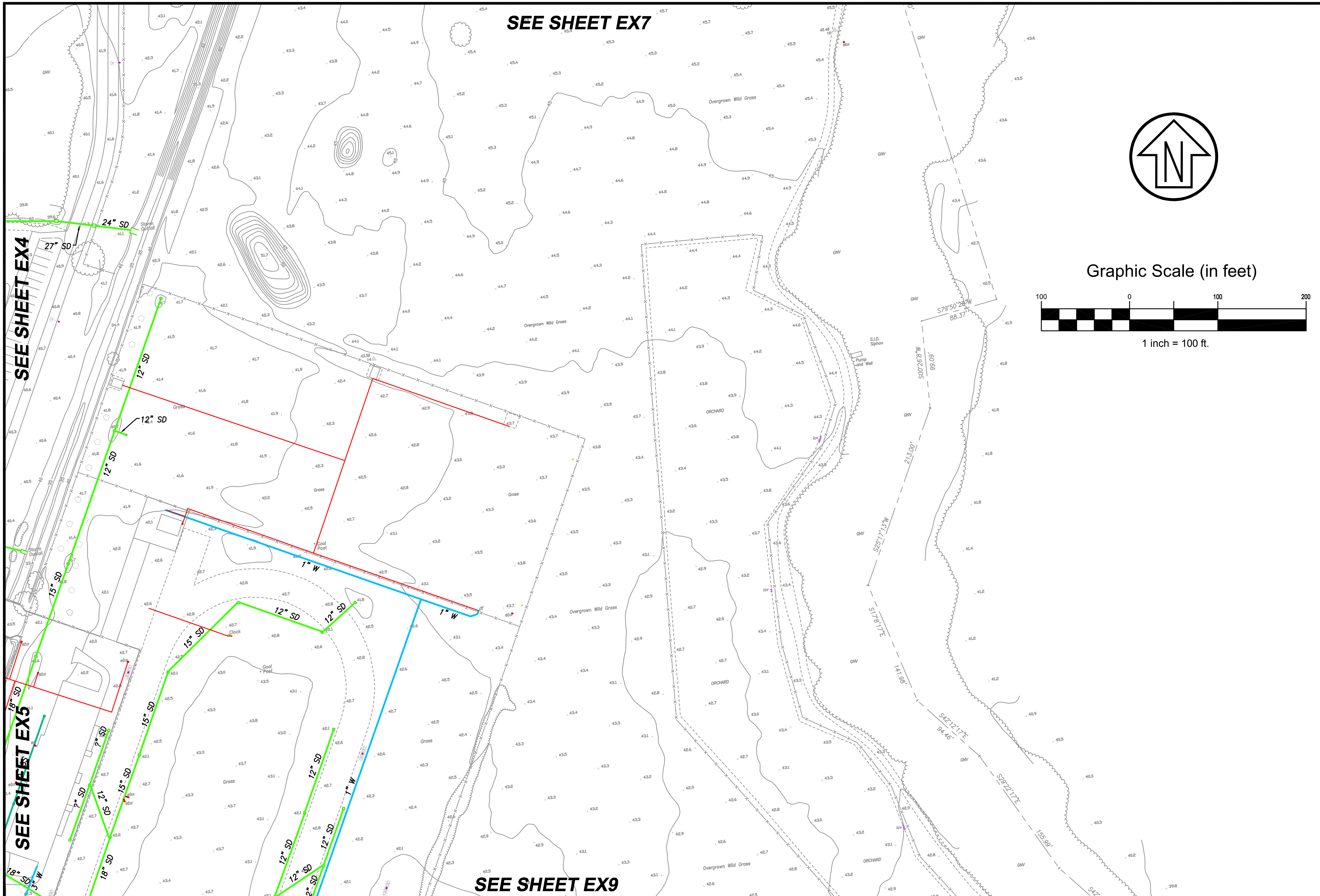
FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW | ST2 ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 01/26/2020

Scale: 1" = 100"

Rev X

Job No. 4.1164.02

EX8

EXISTING UTILITIES

FAIRFIELD

CALIFORNIA

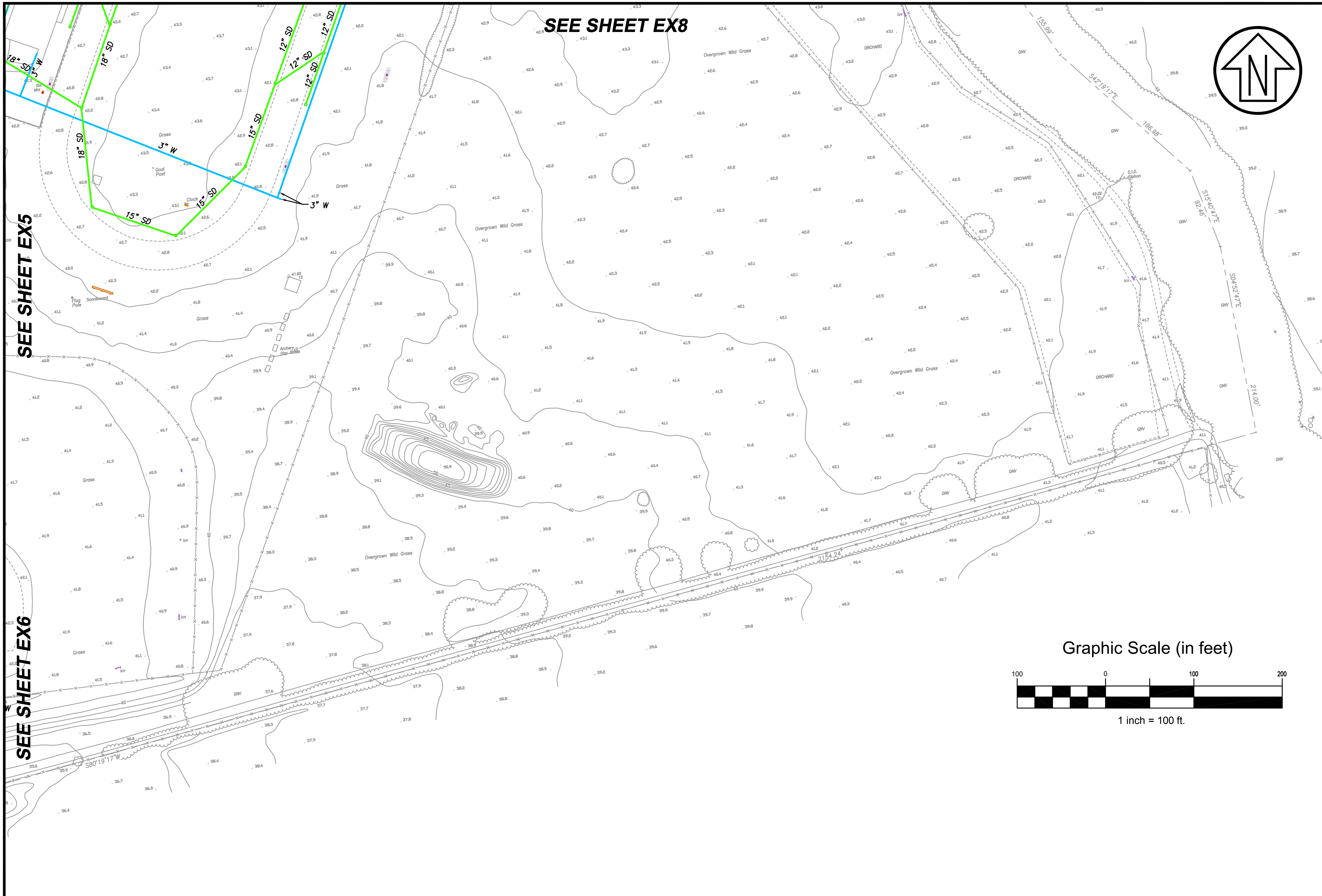
SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW | ST2

ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1



Date: 01/26/2020
Scale: 1" = 100'
Rev X
Job No. 4.1164.02

EX9

EXISTING UTILITIES

FAIRFIELD CALIFORNIA

SOLANO COMMUNITY COLLEGE DISTRICT MASTER PLAN

SOLANO COMMUNITY COLLEGE

CSW ST2 ENGINEERING GROUP

P:\Projects\1910107 SCCD Utility Mapping Updates\DWG\Sheets\Fairfield\Main Campus - Existing Utilities.dwg 01/27/2020 - 12:11 PM joseph 1:1

Geotechnical Evaluation and Geologic Hazards Assessment

Pool Deck

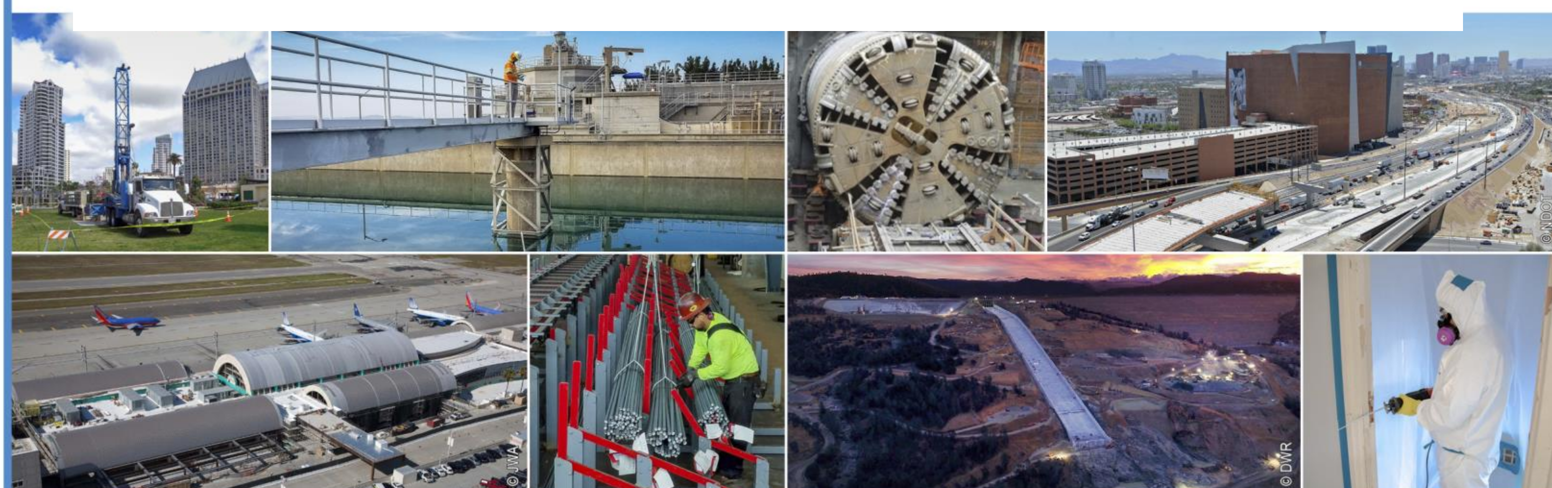
Solano Community College – Fairfield Campus
4000 Suisun Valley Road

Fairfield, California

Solano Community College District

4000 Suisun Valley Road | Fairfield, California 94534

September 9, 2022 | Project No. 404147002



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

CELEBRATING 35 YEARS

Geotechnical Evaluation and Geologic Hazards Assessment

Pool Deck Replacement
Solano Community College – Fairfield Campus
4000 Suisun Valley Road

Fairfield, California

Mr. Noe Ramos
Kitchell CEM
4000 Suisun Valley Road | Fairfield, California 94534

September 9, 2022 | Project No. 404147002

Anthony R. Dover, PE, GE
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER ANTHONY R. DOVER No. 2461 Exp. 06/30/2024 GEOTECHNICAL STATE OF CALIFORNIA

September 9, 2022

Chad Stellern, PG
Senior Staff Geologist

PROFESSIONAL GEOLOGIST CHAD STELLERN No. 9946 STATE OF CALIFORNIA

September 9, 2022

CDS/RH/rk

CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

In accordance with your authorization, we have conducted a geotechnical evaluation and geologic hazards assessment for the planned new pool deck at the Solano Community College District Fairfield Campus at 4000 Suisun Valley Road in Fairfield, California (Figure 1). The current pool deck, bleacher slab, and diving board supports, constructed in the 1970s, are currently in disrepair and scheduled to be fully removed and replaced. The pool itself will not be replaced. This report presents the findings and conclusions from our geotechnical and geologic hazards evaluation, and our geotechnical recommendations for the proposed improvements at the site.

2 SCOPE OF SERVICES

Our scope of services included the following:

- Review of readily available background materials, including geologic and fault maps, aerial photographs, topographic data, and seismic hazard maps.
- Review available information on the original deck design and construction.
- Site reconnaissance to observe the general site conditions and to mark the locations for our subsurface exploration.
- Review of existing utility plans provided by the owner, and coordination with Underground Service Alert (USA) to locate underground utilities in the vicinity of our subsurface exploration.
- Conducted subsurface exploration consisting of three (3) exploration borings advanced to a depth of up to 10 feet. A representative of Ninyo & Moore logged the subsurface conditions exposed in the borings and collected bulk and relatively undisturbed soil samples for laboratory tests. The borings were backfilled with cement grout in conformance with county permit requirements.
- Laboratory testing of selected soil samples was performed to evaluate the geotechnical properties of the subsurface materials including in-situ soil moisture content and density, Atterberg limits, expansion index, R-value, and soil corrosivity, as appropriate for the subsurface materials encountered.
- Data compilation and engineering analysis of the information obtained from our background review, subsurface evaluation, and laboratory testing.
- Preparation of this geologic hazards assessment and geotechnical evaluation report presenting our findings and conclusions regarding the current subsurface conditions, including stratigraphy and groundwater depth, potential geologic hazards and geotechnical conditions at the project site, and our geotechnical recommendations for the proposed improvements.

3 SITE DESCRIPTION

The campus is located at 4000 Suisun Valley Road in Fairfield, California (Figure 1). The campus is located south of Rockville Road between Suisun Valley Road to the west and Suisun Creek to the east (Figure 1). Existing campus improvements are generally encircled by Solano College Road (a loop road).

The subject site is located in the east-central portion of the campus at approximately 38.2352 degrees north latitude and 122.1204 degrees west longitude. The pool is part of a recreation area including the physical education building to the west, tennis courts to the north. The project site is surrounded by existing buildings to the west and south. Areas east and north of the project site are largely undeveloped and are currently rough-cut lawn. The project area is relatively flat with elevations of about 41 to 42 feet above mean sea level (Google, 2022).

Historical topographic maps and aerial photographs that we reviewed indicate that the site was used for agricultural/rangeland purposes prior to development of the community college in the early 1970's. We did not observe any tonal lineaments or other features suggestive of active faulting on the historical aerial photographs that we reviewed on Google Earth and the USGS historical aerial photograph website (https://earthexplorer.usgs.gov).

4 PROJECT DESCRIPTION

Based on the information provided, we understand that the proposed improvements will consist of the construction of a new pool deck and diving board mounts at the current pool area located in the east-central portion of the campus. The pool deck is approximately 165 by 215 feet of reinforced concrete. Client-provided original design/construction information that shows pool deck is a 4-inch thick reinforced concrete slab-on grade underlain with sand. Diving boards and associated supports are located on the eastern portion of the pool. A raised portion of the deck, south of the pool, underneath metal bleachers, may also be replaced during renovation.

5 BACKGROUND REVIEW

As part of our evaluation we reviewed in-house reports prepared for other projects located at the campus, including the New Modular Building (Ninyo and Moore, 2022); New Library and Learning Resource Center Building project (Ninyo & Moore, 2018); the solar photovoltaic arrays project (Ninyo & Moore, 2013a); the expansion of Building 600 project (Ninyo & Moore, 2013b); and the Building P2 and Building 1200 Theater Renovation project (Ninyo & Moore, 2014).

6 FIELD EXPLORATION AND LABORATORY TESTING

Our subsurface exploration at the site was conducted on August 16, 2022. The subsurface exploration consisted of three (3) geotechnical borings excavated to a depth of 10.0 feet. A representative of Ninyo & Moore logged the subsurface conditions exposed in the borings and collected bulk and relatively undisturbed soil samples from the borings. The samples were transported to our geotechnical laboratory for testing. The borings were backfilled with grout immediately after excavation. The boring logs are presented in Appendix A. Locations of the geotechnical borings are presented in Figure 2.

Laboratory testing of soil samples recovered from the borings included tests to evaluate in-situ soil moisture content and density, Atterberg limits, expansion index, and R-value. A soil sample was submitted to CERCO Analytical for a corrosivity evaluation. The results of the in-situ moisture content and dry density tests are presented on the boring logs in Appendix A. The results of the other laboratory tests are presented in Appendix B. The results of the corrosivity tests are shown in Appendix C.

7 GEOLOGIC AND SUBSURFACE CONDITIONS

Our findings regarding regional geologic setting, site geology, subsurface stratigraphy, and groundwater conditions at the subject site are provided in the following sections.

7.1 Regional Geologic Setting

The campus is located north of Suisun Bay in the Coast Ranges geomorphic province of California. The Coast Ranges are comprised of several mountain ranges and structural valleys formed by tectonic processes commonly found around the Circum-Pacific belt. Basement rocks have been sheared, faulted, metamorphosed, and uplifted, and are separated by thick blankets of Cretaceous and Cenozoic sediments that fill structural valleys and line continental margins. The San Francisco Bay Area has several ranges that trend northwest, parallel to major strike-slip faults such as the San Andreas, Hayward, and Calaveras (Figure 3). Major tectonic activity associated with these and other faults within this regional tectonic framework consists primarily of right-lateral, strike-slip movement.

7.2 Site Geology

Review of available geologic maps and reports indicates that the project area is underlain by Holocene age alluvial fan deposits (Figure 4). According to regional geologic studies by Bezore et al. (1998a and 1998b) and Graymer et al. (2002), the Holocene age alluvial fan deposits typically consist of silt and clay interbedded with layers of sand and gravel. The alluvial deposits are derived from the bedrock formations exposed in the nearby foothills and local mountains. The local bedrock formations are part of the Pliocene age Sonoma Volcanics and consist of layers of ash flow tuff, andesite, and basalt.

7.3 Subsurface Conditions

The following sections provide a generalized description of the geologic units encountered during our subsurface evaluation. More detailed descriptions are presented on the logs in Appendix A.

7.3.1 Alluvium

Alluvium was encountered in the borings from the ground surface to depths of up to 10 feet. The alluvium encountered generally consisted of brown, moist to wet, stiff to very stiff lean clay with minor sand.

7.4 Groundwater

During our visit on August 16, 2022, we conducted geotechnical borings and observed ground water present in Boring B-1 and 7 feet below present grade. Other borings did not show indications of groundwater; however, shallow groundwater was observed in previous reports (Ninyo and Moore, 2018; Ninyo and Moore, 2022). For planning purposes, we recommend assuming a design groundwater depth of about 6 feet below the ground surface based on previous site evaluations.

Fluctuations in the groundwater level across the site and over time may occur due to seasonal precipitation, variations in topography or subsurface hydrogeologic conditions, or as a result of changes to nearby irrigation practices or groundwater pumping. In addition, seeps may be encountered at elevations above the observed groundwater levels due to perched groundwater conditions, leaking pipes, preferential drainage, or other factors not evident at the time of our exploration.

8 GEOLOGIC HAZARDS AND CONSIDERATIONS

This study considered a number of issues relevant to the proposed construction, including seismic hazards, flood hazards, landsliding and slope stability, naturally occurring asbestos, settlement of compressible soil layers from static loading, unsuitable materials, excavation characteristics, soil corrosivity, and expansive soils. These issues are discussed in the following subsections.

8.1 Seismic Hazards

The seismic hazards considered in this study include the potential for ground rupture due to faulting, seismic ground shaking, liquefaction, dynamic settlement, seismic slope stability, and tsunamis and seiches. These potential hazards are discussed in the following subsections.

8.1.1 Historical Seismicity

The site is located in a seismically active region. Figure 3 presents the location of the site relative to the epicenters of historic earthquakes with magnitudes of 5.5 or more from 1800 to 2022. Records of historic ground effects related to seismic activity (e.g. liquefaction, sand boils, lateral spreading, ground cracking) compiled by Knudsen et al. (2000), indicate that no ground effects related to historic seismic activity have been reported for the site vicinity. In addition, no ground effects were reported at the site after the August 24, 2014 Mw 6.0 South Napa Earthquake as compiled by Ponti et al. (2019).

8.1.2 Faulting and Ground Surface Rupture

The site is not located within an Alquist-Priolo Fault Rupture Hazard Zone (AP Zone) established by the State Geologist (CGS, 2018) to delineate regions of potential ground surface rupture adjacent to active faults. As defined by the California Geological Survey (CGS), active faults are faults that have caused surface displacement within Holocene time, or within approximately the last 11,700 years (CGS, 2018). The closest fault rupture hazard zone is the one associated with the Cordelia Fault, which is located approximately ½ mile west of the site (CDMG, 1993a and b).

8.1.3 Strong Ground Motion

Based on historic activity, the potential for future strong ground motion at the site is considered significant. Seismic design criteria to address ground shaking are provided in Section 10.2. The peak ground acceleration (PGA) associated with the Maximum Considered Earthquake Geometric Mean (MCE_G) was calculated in accordance with the American Society of Civil Engineers (ASCE) 7-16 Standard and the 2019 California Building Code (CBC). The MCE_G peak ground acceleration with adjustment for site class effects (PGA_M) was calculated as 0.726g using the USGS seismic design maps (SEAOC/OSHPD, 2022) that yielded a mapped MCE_G peak ground acceleration of 0.599g for the site and a site coefficient (F_{PGA}) of 1.2 for Site Class D - default.

8.1.4 Liquefaction and Strain Softening

Liquefaction is a phenomenon in which soil loses its shear strength for short periods of time during an earthquake. The strong vibratory motions generated by earthquakes can trigger a rapid loss of shear strength in saturated, loose, granular soils of low plasticity (liquefaction) or in wet, sensitive, cohesive soils (strain softening). Ground shaking of sufficient duration results in the loss of grain-to-grain contact, due to a rapid increase in pore water pressure, causing the soil to behave as a fluid for short periods of time. The potential damaging effects of liquefaction include differential settlement, loss of foundation bearing capacity, ground cracking, heaving and cracking of structure slabs due to sand boiling, and buckling of deep foundations due to liquefaction-induced ground settlement. Subsidence from liquefaction at the ground surface and densification of sands may result in free-field (large area) site settlement. Liquefaction (or strain softening) is generally not a concern at depths more than 50 feet below ground surface.

The site is in an area where the California Geological Survey has not yet evaluated or established seismic hazard zones for liquefaction. The Association of Bay Area Governments (ABAG, 2021) notes that the campus is in area considered to have a moderate susceptibility to liquefaction based on regional studies by Knudsen et al., (2000) and Witter et al. (2006).

Previous studies found that alluvial deposits were primarily clay with some thin liquefiable layers of sand up to 50 feet below present grade. Quantitative assessments of subgrade conditions indicate that liquefication was not a design consideration for smaller projects on campus (Ninyo and Moore, 2022). Given the nature of the proposed project improvements and the negligible hazard to health and safety, a site-specific liquefaction analysis was not performed for this project. We expect that repairing or reconstructing the improvements following a significant earthquake causing liquefaction will be preferable to mitigating the potential for damage by ground improvement or deep foundations. As such, we do not regard seismically induced strain-softening behavior to be a design consideration or concern for this project.

The results of our previous analyses indicate that the total dynamic settlement at the site following the considered seismic event may be up to approximately ¾ inch (Ninyo and Moore, 2022). Differential dynamic settlement is estimated to be about ½ inch over a horizontal distance of approximately 40 feet (Ninyo and Moore, 2018; Ninyo and Moore, 2022).

8.1.5 Lateral Spreading

In addition to vertical displacements, seismic ground shaking can induce horizontal displacements as surficial deposits spread laterally by floating atop liquefied subsurface layers. Lateral spreading can occur on sloping ground or on flat ground adjacent to an exposed face. Lateral spreading will not occur unless a liquefiable layer of sufficient lateral continuity is present. There are no significant slopes or free face conditions at the site. As such, we do not regard lateral spreading as a design consideration for this project

8.1.6 Seismic Slope Stability

No significant slopes are present on the site, as such, we do not regard seismic slope stability as a design consideration for this project.

8.1.7 Tsunamis and Seiches

Tsunamis are long wavelength seismic sea waves (long compared to ocean depth) generated by the sudden movements of the ocean floor during submarine earthquakes, landslides, or volcanic activity. The project is not located within a tsunami evacuation area as shown on the tsunami evacuation planning maps for California.

Seiches are waves generated in a large enclosed body of water. Based on the inland location and the lack of large enclosed bodies of water near the site, the potential for damage due to tsunamis or seiches is not a design consideration.

8.2 Flood Hazards

Our review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FEMA, 2009) found that the community college lies, in part, within a 0.2% annual chance flood plain (500-year flood zone) for Suisun Creek. However, proposed development is outside of the flood zone.

8.3 Landsliding and Slope Stability

The site and surrounding area are relatively flat and the proposed improvements do not include construction of significant slopes. As such, we do not regard landsliding or slope stability a design consideration.

8.4 Naturally Occurring Asbestos

According to State of California guidelines established by the California Department of Toxic Substances and Control (2004 and 2005), a Preliminary Environmental Assessment (PEA) is recommended for school sites that are located within a 10-mile radius of any rock formation that may contain naturally occurring asbestos (NOA). The nearest mapped location of ultramafic rock from which NOA may be found is over 10 miles from the campus (Churchill and Hill, 2000; and Brabb et al., 1998). Based on these conditions, NOA is not a design consideration for this project.

8.5 Static Settlement

The proposed improvements will be relatively light and we anticipate that the grading operations will not increase site grades by more than a couple of feet. We estimate that the static settlement of the pavement and shallow foundations, will be approximately 1 inch or less presuming that the foundations and earthwork conform with the recommendations in this report.

8.6 Unsuitable Materials

Fill materials that were not placed and compacted under the observation of a geotechnical engineer, or fill materials lacking documentation of such observation, are considered undocumented fill. Undocumented fill is unsuitable as a bearing material below foundations due to the potential for differential settlement resulting from variable support characteristics or the potential inclusion of deleterious materials. Recommendations for subgrade preparation and foundation embedment recommendations are provided to mitigate the undocumented fill concerns if encountered during construction.

Soil containing roots or other organic matter are not suitable as fill or subgrade material below foundations, pavements, or engineered fill. Recommendations for clearing and grubbing to remove vegetative matter in soil during site preparation are provided.

8.7 Excavation Characteristics

We anticipate that the project may involve excavations of depths up to 5 feet for shallow foundations and new utility trenches. We anticipate that conventional earthmoving equipment in good working condition should be able to make the proposed excavations.

Excavations in fill may encounter obstructions consisting of debris, rubble, abandoned structures, or over-sized materials that may require special handling or demolition equipment for removal.

Near-vertical temporary cuts in the near surface deposits up to 4 feet in depth should remain stable for a limited period of time. However, sloughing of the materials exposed on the excavation sidewall may occur, particularly if the excavation extends near the groundwater level, encounters granular soil, is exposed to water, or if the sidewall is disturbed during construction operations. Excavation subgrade may become unstable if exposed to wet conditions. Recommendations for excavation stabilization are presented. Excavated materials may also be wet and need to be dried out before reuse as fill.

8.8 Corrosive/Deleterious Soil

Corrosivity analysis was performed by CERCO Analytical, Inc. of Concord, California on samples of the near-surface soil. As reported by CERCO Analytical, the samples were determined to be “moderately corrosive” based on resistivity test results. CERCO Analytical’ s report (see Appendix C) included the following recommendation: “All buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron should be properly protected against corrosion depending upon the critical nature of the structure. All buried metallic pressure piping such as ductile iron firewater pipelines should be protected against corrosion." Please refer to the CERCO Analytical report included in Appendix C for more information regarding their test results and brief evaluation.

8.9 Expansive Soils

Some clay minerals undergo volume changes upon wetting or drying. Unsaturated soils containing those minerals will shrink/swell with the removal/addition of water. The heaving pressures associated with this expansion can damage structures and flatwork. Laboratory testing was performed on a select sample of the near-surface soil to evaluate the expansion index. The test was performed in accordance with the American Society of Testing and Materials (ASTM) Standard D 4829 (Expansion Index). The results of our laboratory testing indicate that the expansion index of the near-surface soil is 73 which is consistent with a medium expansion characteristic.

9 CONCLUSIONS

Based on our review of the referenced background data, our site field reconnaissance, subsurface evaluation, and laboratory testing, it is our opinion that proposed construction is feasible from a geotechnical standpoint. Geotechnical considerations include the following:

- Our subsurface exploration encountered alluvium. Alluvium was encountered to depths of up to about 10 feet. The alluvium generally consisted of brown, moist to wet, stiff to very stiff, lean clay with few to little sand.

- Undocumented fill and soil containing roots, including root balls, or other organic matter are not suitable as subgrade below pavement and foundations. Recommendations for subgrade preparation and foundation embedment depth are provided.

- Near surface ground water was encountered in boring B-1 at a depth 7.0 feet BPG, respectively. Ninyo & Moore (2018) reported groundwater at depths ranging from 7 and 16½ feet below the existing ground surface at nearby locations. Variation and fluctuation in groundwater levels should be anticipated as discussed in Section 7.4. For planning purposes, we recommend assuming a design groundwater depth of about 6 feet below the ground surface. To further evaluate variations in groundwater levels over time with respect to the site, piezometers can be installed and monitored.

- The site could experience a relatively large degree of ground shaking during a significant earthquake on a nearby fault. Seismic design criteria are presented in Section 10.2.

- Based on previous studies and the proposed construction, we do not regard the potential for liquefaction-induced reduction in the bearing capacity of shallow foundations as a design consideration for the project.

- Tsunamis, seiches, ground surface rupture due to faulting, landslides, and slope stability are not design considerations based on the location, geologic, and surface conditions at the site.

- Excavations that remain unsupported and exposed to water, or encounter seepage, or granular soil may be unstable and prone to sloughing. Recommendations for excavation stabilization are provided.

- Excavations in fill may encounter debris, rubble, oversize material, buried objects, or other potential obstructions.

- The site is not in a flood hazard zone.

- High concentrations of naturally occurring asbestos (NOA) in the natural soils at the site are unlikely based on the nearest mapped location of ultramafic rock from which NOA may be found is over 10 miles from the school campus. NOA is not a design consideration for this project.

- Based on assumed light loads, static settlement is anticipated to be under 1 inch total and ½ inch differential over 40 feet.

- Based on the results of our limited soil corrosivity tests during this study and Caltrans corrosion guidelines (2021), the site does meet the definition of a moderately corrosive environment.

- Expansion index testing indicates that the near-surface soil on site has a medium expansion characteristic.

10 RECOMMENDATIONS

The following sections present our geotechnical recommendations for the design and construction of the proposed improvements. The project improvements should be designed and constructed in accordance with these recommendations, applicable codes, and appropriate construction practices.

10.1 Earthwork

The site of the proposed improvements should be prepared by clearing and grubbing to remove the existing concrete deck, debris, rubble, and vegetation, from excavation and fill areas. To establish a rough grade, the upper 8 inches of the existing sand and native soil should be removed. If existing utilities are to remain, they should be clearly marked out, and excavations over and around them should be done carefully, using hand methods. Utilities that will not be used in the future should be completely removed. The debris generated from clearing and grubbing operations should be hauled off site to a legal dump site.

After clearing, grubbing, and excavation to rough grade, where needed, the geotechnical engineer should check the exposed subgrade for unsuitable materials including debris, organic matter, deleterious fill, or dry, loose, soft, or wet soil and evaluate if additional excavation is needed. The exposed subgrade should then be scarified to a depth of 18 inches in areas to receive fill., Scarified subgrade should be moisture conditioned, as-needed, to achieve a moisture content about 2 percentage points above the optimum, before compaction, by mechanical means, to 95 percent, or more, of the reference density as evaluated by ASTM D1557. Utility trench subgrade that is loose or soft should be removed or compacted to achieve a firm condition.

Excavations, including trench excavations, should be stabilized in accordance with the Excavation Rules and Regulations (29 Code of Federal Regulations, Part 1926) stipulated by the Occupational Safety and Health Administration (OSHA). Stabilization may consist of shoring sidewalls or laying slopes back. Dewatering should be performed as needed to depress groundwater levels below the bottom of excavations. Site soil above groundwater may be considered an OSHA Type C material with an allowable temporary slope gradient of 1½:1 (horizontal to vertical). Alternatively, an internally-braced shoring system or trench shield conforming to the OSHA Excavation Rules and Regulations (29 CFR Part 1926) may be used to stabilize excavation sidewalls during construction.

Construction should be performed during the period between approximately April 15 and October 15 to avoid the rainy season. In the event that grading is performed during the rainy season, the plans for the project should be supplemented to include a stormwater management plan prepared in accordance with the requirements of the relevant agency having jurisdiction. Rainy weather may impact the stability of excavation subgrade and exposed ground.

In general, fill should not consist of pea gravel and should be free of rocks or lumps in excess of 3-inches in median dimension, hazardous materials, trash, debris, and vegetation or other deleterious material. In addition, import fill should be close graded with 35 percent or more by dry weight passing the No. 4 sieve and either: an expansion index of 50 or less, a plasticity index of 12 or less, or less than 10 percent by dry weight passing the No. 200 sieve.

The native clay soil at this site does NOT meet the criteria for suitable fill and should not be used as structural fill. The on-site native soil is generally suitable for reuse as general area (nonstructural) fill provided that it is processed, as-needed, to remove rocks or other deleterious materials described above.

Structural fill should be placed and compacted by hand tampers or mechanical means in lifts to 95 percent of the reference density as evaluated by American Society for Testing and Materials (ASTM) standard D1557. Fill should be moisture conditioned as needed to achieve a moisture content approximately 2 percentage points above the optimum before compaction. The allowable lift thickness is influenced by the type of compaction equipment utilized but generally should not exceed 6 inches in loose thickness. Finish subgrade under pedestrian flatwork should be compacted to 90 percent of ASTM D1557. The aggregate base section below flatwork or mat foundations should be compacted to 95 percent of ASTM D1557.

Subgrade, if exposed to wet conditions, may be subject to pumping under load. The contractor should be prepared to stabilize subgrade. In general, unstable subgrade conditions may be mitigated by scarification and aeration to dry the soil to the optimum moisture content or treating the soil with quicklime. Alternatively, unstable subgrade may be removed and replaced with aggregate base. Construction of a bridging layer consisting of geotextile or geogrid may be needed to support the aggregate base so that the specified compaction can be achieved. Appropriate mitigation measures will be influenced by the conditions encountered. The geotechnical consultant should be consulted for recommendations to stabilize the site as-needed.

The earthwork should be conducted in accordance with the relevant grading ordinances having jurisdiction and the following recommendations. The geotechnical engineer should observe earthwork operations. Evaluations performed by the geotechnical engineer during the course of field operations may result in new recommendations, which could supersede the recommendations in this section.

10.2 Seismic Design Criteria

Design of the proposed improvements should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 1 presents the Risk-Targeted, Maximum Considered Earthquake (MCER) spectral response accelerations consistent with the 2019 California Building Code and corresponding site-adjusted and design level spectral response accelerations based on the USGS seismic design maps (SEAOC/OSHPD, 2022).

Table 1 – 2019 California Building Code Seismic Design Criteria

Seismic Design Parameter Evaluated for 38.2352° North Latitude, 122.1204° West Longitude	Value
Site Class	D
Site Coefficient, Fa	1.2
Site Coefficient, Fv	1.7
Mapped Spectral Acceleration at 0.2-second period, S_S	1.524
Mapped Spectral Acceleration at 1.0-second period, S_1	0.6
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	1.828
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	1.02
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.219
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.68
Seismic Design Category for Risk Category I, II, or III	I

10.3 Foundation Recommendations

The minor structures such as diving board supports and bleacher supports may be supported on shallow spread footings, the pool deck slab, or drilled piers. Foundations should be designed in accordance with structural considerations and the following recommendations. In addition, requirements of the appropriate governing jurisdictions and applicable building codes should be considered in design of the structures.

10.3.1 Spread Footings

Footings bearing on alluvium or new engineered fill with subgrade prepared in accordance with the recommendations in Section 10.1 may be designed for a net allowable bearing capacity of 2,500 pounds per square foot (psf) for a minimum bearing depth of 24 inches below the adjacent grade and a minimum width of 24 inches. The allowable bearing capacity may be increased by 300 psf for each additional 6 inches of foundation depth, and by 150 psf for each additional 6 inches of foundation width. This allowable bearing capacity, which includes a safety factor of 3, may be increased by one-third for alternative basic load combinations with loads of short duration such as wind or seismic loads. Structures supported on footings consistent with these recommendations should be designed for a total static settlement of 1 inch with a differential static settlement of approximately 1/2 inch over a lateral distance of about 30 feet. The footings should be reinforced with deformed steel bars as detailed by the project structural engineer.

A lateral bearing resistance of 250 psf per foot of depth up to 2,500 psf may be used to evaluate the resistance of footings to lateral loads. The recommended lateral bearing resistance is for level and gently sloping ground conditions where the ground slope adjacent to the foundation is 5 percent or less. The lateral bearing resistance should be neglected to a depth of 12 inches where the ground adjacent to the foundation is not covered by flatwork or pavement. The lateral bearing pressure may be increased by one-third when considering loads of short duration such as wind or seismic forces. A friction coefficient of 0.35 may be assumed for evaluating frictional resistance to lateral loads. The weight of the material above a plane rising up and away from the bottom edges of the footings at 20 degrees off plumb may be considered, along with the weight of the footing and the material over the footing, when evaluating footing resistance to uplift. A unit weight of 120 pounds per cubic foot (pcf) for soil or aggregate and 150 pcf for normal weight concrete may be assumed for this evaluation.

Where footings are located adjacent to utility trenches or other excavations, the footing bearing surfaces should bear below an imaginary plane extending upward from the bottom edge of the adjacent trench/excavation at a 2:1 (horizontal to vertical) angle. Footings should be deepened or excavation depths reduced as needed. Footing bottoms should not be sloped more than 1 unit vertical to 10 units horizontal.

10.3.2 Pool Deck Slab

Pool deck should be constructed over 6 inches of aggregate base that conforms to the criteria for Class 2 aggregate base in Section 26-1.02 of the California Standard Specifications (Caltrans 2018) and is compacted to 95 percent of the reference density as evaluated by ASTM D1557. We understand that the pool deck is not expected to be subject to heavy vehicle loading. The concrete thickness should be increased to 6 inches at driveways. Appropriate jointing of concrete flatwork can encourage cracks to form at joints, reducing the potential for crack development between joints. Joints should be laid out in a square pattern at consistent intervals. Contraction and construction should be detailed and constructed in accordance with the guidelines of ACI Committee 302 (ACI, 2015). The lateral spacing between contraction joints should be 8 feet or less for a 4-inch thick slab.

Concrete pool deck should be designed by the project structural engineer based on the anticipated loading conditions. The slab should be reinforced with deformed steel bars. We recommend that masonry briquettes or plastic chairs be used to aid in the correct placement of slab reinforcement in the upper half of the slab. Refer to Section 10.4 for the recommended in areas where moisture-sensitive floor coverings or conditioned environments are anticipated. Joints consistent with ACI guidelines (ACI, 2021) maybe constructed at periodic intervals to reduce the potential for random cracking of the slab.

10.3.3 Drilled Pier

Drilled piers for minor structures embedded no less than 5 feet up to 25 feet below grade may be designed for an allowable axial side friction of 300 psf to evaluate resistance to downward axial loads and 200 psf per foot depth for upward axial loads. The allowable skin friction includes a factor of safety of 2 for downward loading and 3 for upward loading. The allowable side friction may be increased by one-third when considering loads of short duration such as wind or seismic loads. The spacing between adjacent piers should be equivalent to eight pier diameters, or more to mitigate reduction due to group effects.

A lateral bearing pressure of 250 pounds per square foot (psf) per foot depth up to 2,500 psf may be used to evaluate resistance to lateral loads and overturning moments in accordance with Section 1806 of the 2019 CBC. The allowable lateral bearing pressure may be increased by one-third for wind or seismic load combinations and by an additional factor of two for structures that can accommodate ½ inch of lateral deflection of the top of the pier foundation. Drilled pier excavations should be cleaned of loose material prior to pouring concrete. Drilled pier excavations that encounter groundwater or cohesionless soil may be unstable and may need to be stabilized by temporary casing or use of drilling mud. Standing water should be removed from the pier excavation or the concrete should be delivered to the bottom of the excavation, below the water surface, by tremie pipe. Casing should be removed from the excavation as the concrete is placed. Concrete should be placed in the piers in a manner that reduces the potential for segregation of the components

10.4 Concrete

Laboratory testing indicated that the concentration of sulfate and corresponding potential for sulfate attack on concrete is negligible for the soil tested. However, due to the variability in the on-site soil, we recommend that Type V cement be used for concrete structures. In addition, we recommend a water-to-cement ratio of no more than 0.45. A 3-inch thick, or thicker, concrete cover should be maintained over reinforcing steel where concrete is in contact with soil in accordance with recommendations of ACI Committee 318 (ACI, 2015).

In order to reduce the potential for shrinkage cracks in the concrete during curing, we recommend that the concrete for slabs and flatwork should not contain large quantities of water or accelerating admixtures containing calcium chloride. Higher compressive strengths may be achieved by using larger aggregates in lieu of increasing the cement content and corresponding water demand. Additional workability, if desired, may be obtained by including water-reducing or air-entraining admixtures. Concrete should be placed in accordance with the appropriate guidance in the ACI Manual of Concrete Practice (MCP) and project specifications. Particular attention should be given to curing techniques and curing duration. Slabs that do not receive adequate curing have a more pronounced tendency to develop random shrinkage cracks and other defects.

10.5 Surface Drainage and Site Maintenance

Surface drainage on the site should generally be provided so that water is diverted away from structures, including the pool, and is not permitted to pond. Positive drainage should be established adjacent to structures to divert surface water to an appropriate collector (graded swale, v-ditch, or area drain) with a suitable outlet. Drainage gradients should be 2 percent or more a distance of 5 feet or more from the structure for impervious surfaces and 5 percent or more a distance of 10 feet or more from the structure for pervious surfaces. Slopes may be reduced where required by ADA (Americans with Disabilities Act) standards. Slope, pad, and roof drainage (from adjacent structures) should be collected and diverted to suitable discharge areas away from structures or other slopes by non-erodible devices (e.g., gutters, downspouts, concrete swales, etc.). Graded swales, v-ditches, or curb and gutter should be provided at the site perimeter to restrict flow of surface water onto and off of the site. Slopes should be vegetated or otherwise armored to reduce potential for erosion of soil. Drainage structures should be periodically cleaned out and repaired, as-needed, to maintain appropriate site drainage patterns.

10.6 Review of Construction Plans

The recommendations provided in this report are based on preliminary design information for the proposed construction. We recommend that a copy of the plans be provided to Ninyo & Moore for review before bidding to check the interpretation of our recommendations and that the designed improvements are consistent with our assumptions. It should be noted that, upon review of these documents, some recommendations presented in this report might be revised or modified to meet the project requirements.

10.7 Construction Observation and Testing

The recommendations provided in this report are based on subsurface conditions encountered in relatively widely spaced exploratory borings. During construction, the geotechnical engineer or his representative in the field should be allowed to check the exposed subsurface conditions. During construction, the geotechnical engineer or his representative should be allowed to:

- Observe preparation and compaction of subgrade.
- Observe mitigation of unsuitable materials by excavation.
- Check and test imported materials prior to use as fill.
- Observe placement and compaction of fill.
- Perform field density tests to evaluate fill and subgrade compaction.
- Observe foundation excavations for bearing materials and cleaning prior to placement of reinforcing steel and concrete.

The recommendations provided in this report assume that Ninyo & Moore will be retained as the geotechnical consultant during the construction phase of the project. If another geotechnical consultant is selected, we request that the selected consultant provide a letter to the architect and the owner (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore's recommendations, and that they are in full agreement with the recommendations contained in this report.

11 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

12 REFERENCES

American Concrete Institute, 2014, Building Code Requirements for Structural Concrete and Commentary, 318-14.

American Concrete Institute, 2015, Guide to Concrete Floor and Slab Construction, 302.1R-15.

American Concrete Institute, 2021, ACI Manual of Concrete Practice.

American Society of Civil Engineer (ASCE), 2016, Minimum Design Loads for Buildings and Other Structures, Standard 7-16.

Association of Bay Area Governments (ABAG), 2021, Resilience Program Website: https://mtc.maps.arcgis.com/apps/mapviewer/index.html?layers=b88a7506b3054189b2cbd475371b1199

Bezore, S.P., Wagner, D.L.., and Sowers, J.M., 1998a, Geologic Map of the Cordelia 7.5' Quadrangle, Solano and Napa Counties, California: California Geological Survey Preliminary Geologic Map, Scale 1:24,000.

Bezore, S.P., Wagner, D.L.., and Sowers, J.M., 1998b, Geologic Map of the Fairfield 7.5' Quadrangle, Solano and Napa Counties, California: California Geological Survey Preliminary Geologic Map, Scale 1:24,000.

California Building Standards Commission (CBSC), 2019, California Building Code: California Code of Regulations, Title 24, Part 2, Volumes 1 and 2, based on the 2018 International Building Code.

California Department of Toxic Substances and Control (DTSC), 2005, Operation and Maintenance (O&M) Plan Template, Naturally Occurring Asbestos, Response Actions at Schools: State of California Department of Toxic Substances and Control, dated October 11, 2005.

California Department of Toxic Substances and Control (DTSC), 2004, Interim Guidelines, Naturally Occurring Asbestos (NOA) at School Sites: State of California Department of Toxic Substances and Control, dated September 24, 2004.

California Department of Transportation (Caltrans), 2021, Corrosion Guidelines, Version 3.2, Division of Engineering Services, Materials Engineering and Testing Services, Corrosion Technology Branch: dated May.

California Department of Transportation (Caltrans), 2018, Standard Specifications: dated May.

California Division of Mines and Geology (CDMG), 1993a, State of California Special Studies Zones, Cordelia Quadrangle: dated July 1: Scale 1:24,000.

California Division of Mines and Geology (CDMG), 1993b, State of California Special Studies Zones, Fairfield South Quadrangle: dated July 1: Scale 1:24,000.

California Geological Survey (CGS), 2002, Guidelines for Geologic Investigations of Naturally Occurring Asbestos in California: Special Publication 124.

California Geological Survey (CGS), 2007, Special Publication 42 - Fault Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act With Index to Earthquake Fault Zones Maps, by Bryant, W.A. and Hart, E.W.

California Geological Survey (CGS), 2008, Guidelines for Evaluation and Mitigating Seismic Hazards in California, Special Publication 117A.

California Geological Survey (CGS), 2018, Special Publication 42 – Earthquake Fault Zones, A Guide for Government Agencies, Property Owners / Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California.

California Geological Survey (CGS), 2019, Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings, Note 48, dated November.

Churchill, R.K., and Hill, R.L., 2000, A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos: California Division of Mines and Geology, Open-File Report 2000-19.

Federal Emergency Management Agency (FEMA), 2009, Flood Insurance Rate Map, Solano County, California and Incorporated Areas, Panel 451 of 730, Map Number 06095C0451E, dated May 4.

Google, 2022, Google Earth Pro 7.3.0.3832, http://earth.google.com/.

Graymer, R.W., Jones, D.L., and Brabb, E.E., 2002, Geologic Map and Map Database of Northeastern San Francisco Bay Region, Most of Solano County and Parts of Napa, Marin, Contra Costa, San Joaquin, Sacramento, and Yolo Counties, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2403, Scale 1:62,500.

Knudsen, K.L., Sowers, J.M., Witter, R.C., Wentworth, C.M., Helley, E.J., Nicholson, R.S., Wright, H.M., and Brown, K.H., 2000, Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California: a digital database: U.S. Geological Survey, Open-File Report OF-2000-444, Scale 1:275,000.

Ninyo & Moore, 2013a, Geotechnical Evaluation and Geologic Hazards Assessment, , Solano Community College Solar Project, Fairfield Campus, 4000 Suisun Valley Road, Fairfield, California, Project No. 402039001-1, dated April 29.

Ninyo & Moore, 2013b, Geotechnical Evaluation and Geologic Hazards Assessment, Modernization and Expansion of Building 600, Solano Community College District-Fairfield Campus, 4000 Suisun Valley Road, Fairfield, California, Project No. 402202001, dated September 18.

Ninyo & Moore, 2014, Geotechnical Evaluation and Geologic Hazards Assessment New Building P2 and Building 1200 Theater Renovation, Solano Community College District- Fairfield Campus, 4000 Suisun Valley Road, Fairfield, California, Project No. 402329001, dated May 28.

Ninyo & Moore, 2018, Geotechnical Evaluation and Geologic Hazard Assessment, New Library and Learning Resource Center Building, Solano Community College District – Fairfield Campus, 4000 Suisun Valley Road, Fairfield, Project No. 403147001, California, February 8.

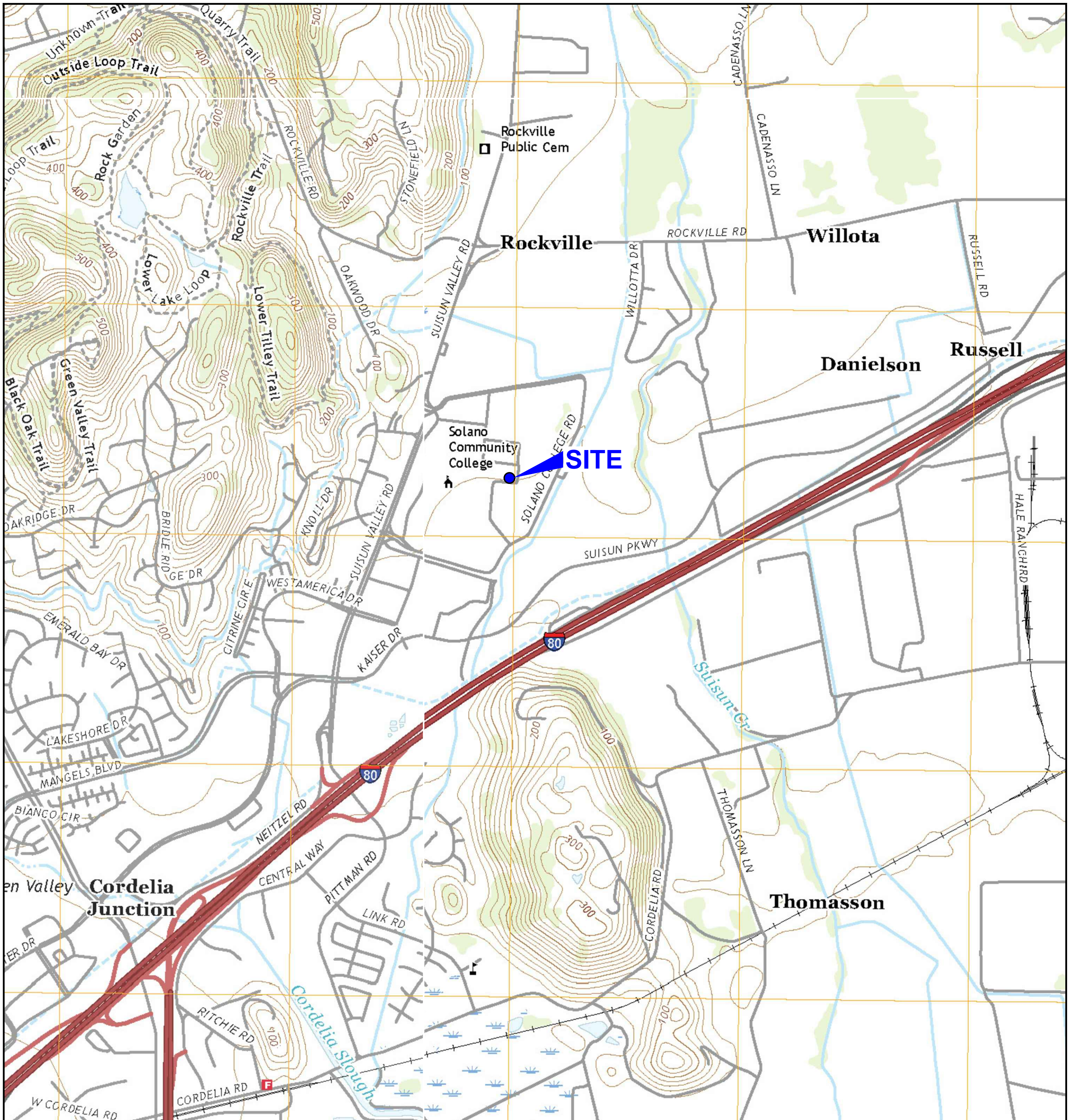
Ninyo & Moore, 2022, Geotechnical Evaluation and Geologic Hazard Assessment, New Modular Building, Solano Community College District – Fairfield Campus, 4000 Suisun Valley Road, Fairfield, Project No. 403147001, California, February 8.

Ponti, D.J., Rosa, C.M., and Blair, J.L, 2019, The Mw 6.0 South Napa Earthquake of August 24, 2014-Observations of Surface Faulting and Ground Deformation, with Recommendations for Improving Post-Earthquake Field Investigations: U.S. Geological Survey Open-File Report 2019-1018.

Structural Engineers Association of California/Office of Statewide Health Planning and Development (SEAOC/OSHPD), 2020, Seismic Design Maps, https://seismicmaps.org/.

Witter, R.C., Knudsen, K.L, Sowers, J.M., Wentworth, C.M., Koehler, R.D., and Randolph, C.E., 2006, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California: U.S. Geological Survey Open-File Report 2006-1037, Scale 1:200,000 (http://pubs.usgs.gov/of/2006/1037/).

FIGURES



NOTE: DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE I REFERENCE: USGS, 2018

N

SCALE (FEET)
0 2,000 4,000

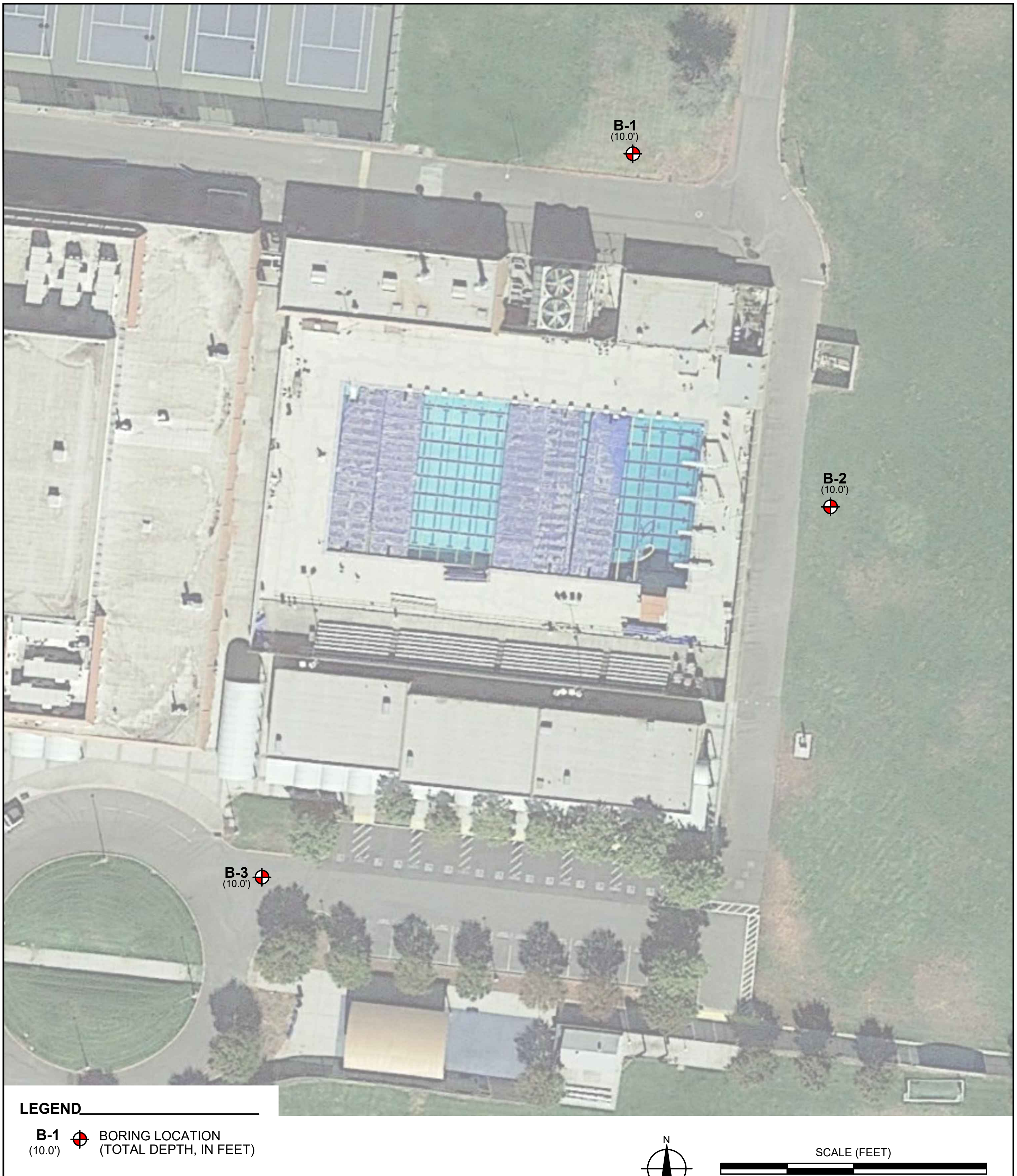
404147002.dwg 09/06/2022 AEK

FIGURE 1

SITE LOCATION

SOLANO COMMUNITY COLLEGE POOL DECK
4000 SUISUN VALLEY ROAD
FAIRFIELD, CALIFORNIA
404147002 I 09/22

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



NOTE: DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE I REFERENCE: GOOGLE EARTH, 2022

404147002.dwg 09/08/2022 AEK

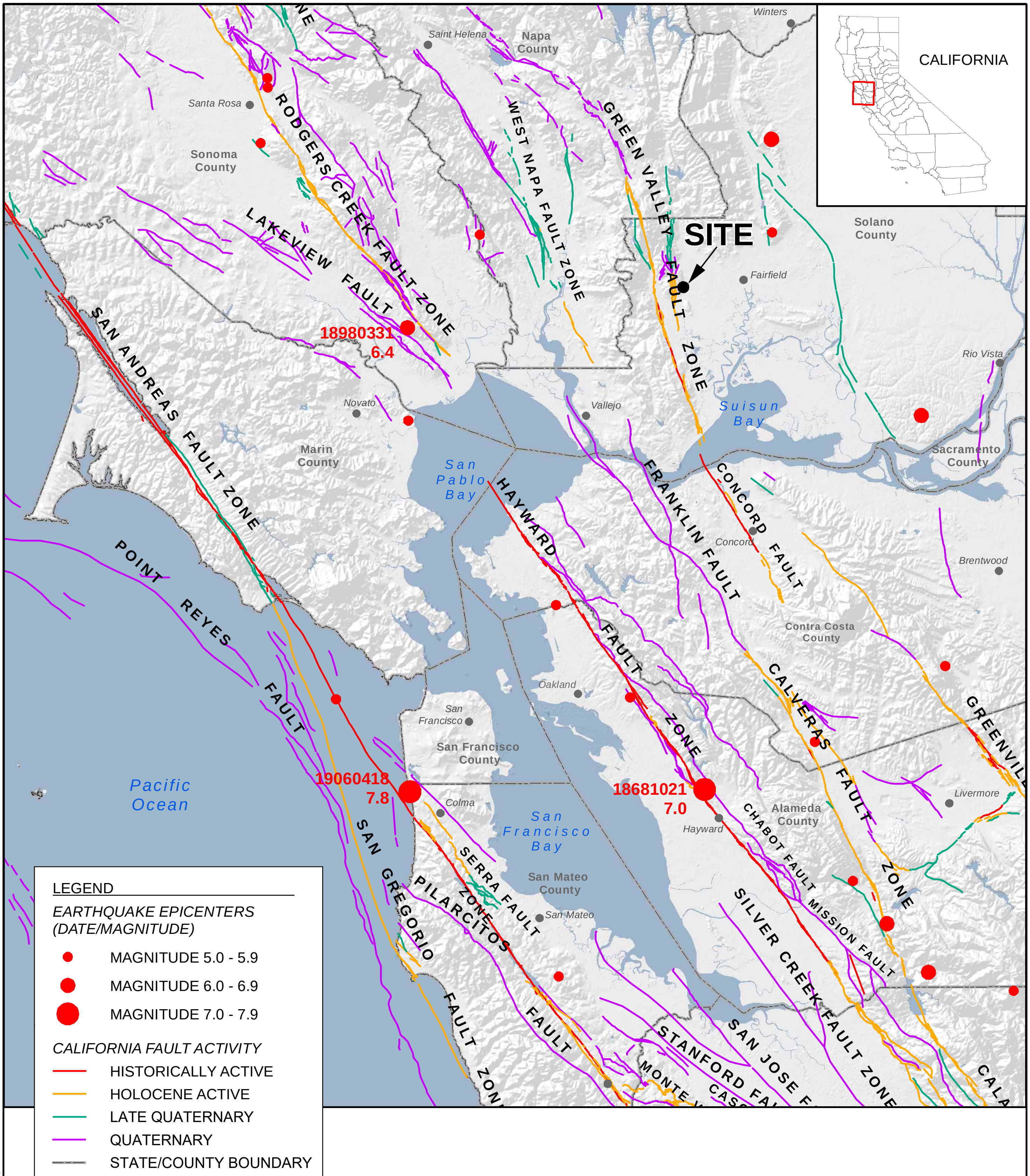
FIGURE 2

EXPLORATION LOCATIONS

SOLANO COMMUNITY COLLEGE POOL DECK
4000 SUISUN VALLEY ROAD
FAIRFIELD, CALIFORNIA

404147002 I 09/22

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



404147001-FL.pdf 09/06/2022 AEK

NOTE: DIRECTIONS, DIMENSIONS, AND LOCATIONS ARE APPROXIMATE

SOURCES: CALIFORNIA GEOLOGICAL SURVEY, 2010, FAULT ACTIVITY MAP OF CALIFORNIA; CALIFORNIA GEOLOGICAL SURVEY, 2000, MAP SHEET MS 49

N

SCALE (MILES)

0 10 20

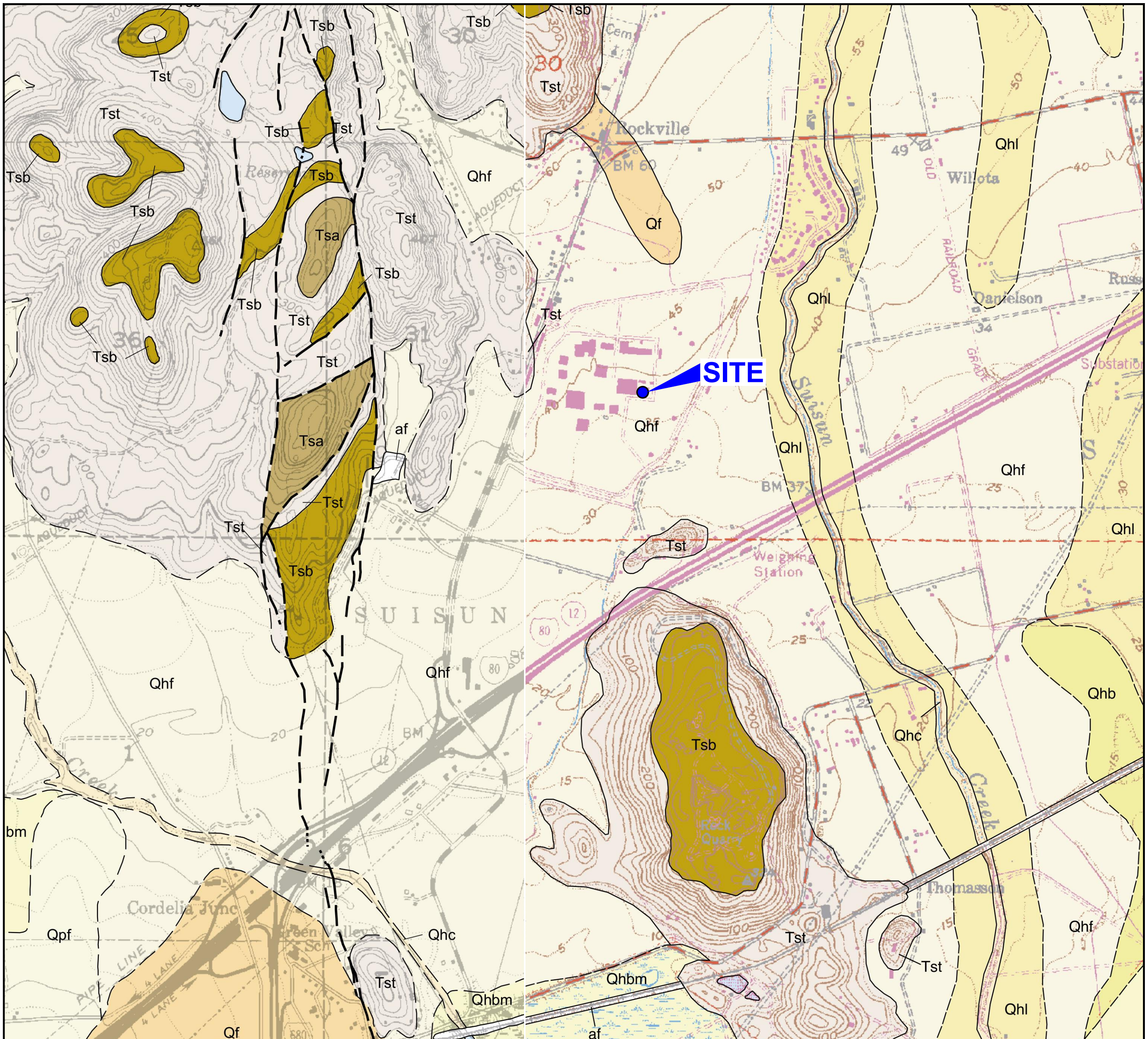
FIGURE 3

FAULT LOCATIONS AND EARTHQUAKE EPICENTERS

SOLANO COMMUNITY COLLEGE POOL DECK
4000 SUISUN VALLEY ROAD, FAIRFIELD, CALIFORNIA

404147002 | 09/22

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



LEGEND

af	ARTIFICIAL FILL (HOLOCENE)	Qhf	ALLUVIAL FAN DEPOSITS (HOLOCENE)	Tst	ASH-FLOW TUFF (PLIOCENE)
Qhbm	BAY MUD (HOLOCENE)	Qhl	FAN LEVEE DEPOSITS (HOLOCENE)	Tsa	ANDESITE (PLIOCENE)
Qhb	BASIN DEPOSITS (HOLOCENE)	Qf	ALLUVIAL FAN DEPOSITS (HOLOCENE/PLEISTOCENE)	Tsb	BASALT (PLIOCENE)
Qhc	MODERN STREAM CHANNEL DEPOSITS (HOLOCENE)	Qpf	ALLUVIAL FAN DEPOSITS (PLEISTOCENE)		

GEOLOGIC CONTACT
STRIKE AND DIP OF BEDDING
THRUST FAULT
FAULT

N

SCALE (FEET)
0 2,000 4,000

NOTE: DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE
REFERENCE: BEZORE, ET AL, CGS, 1998

404147002.dwg 09/06/2022 AEK

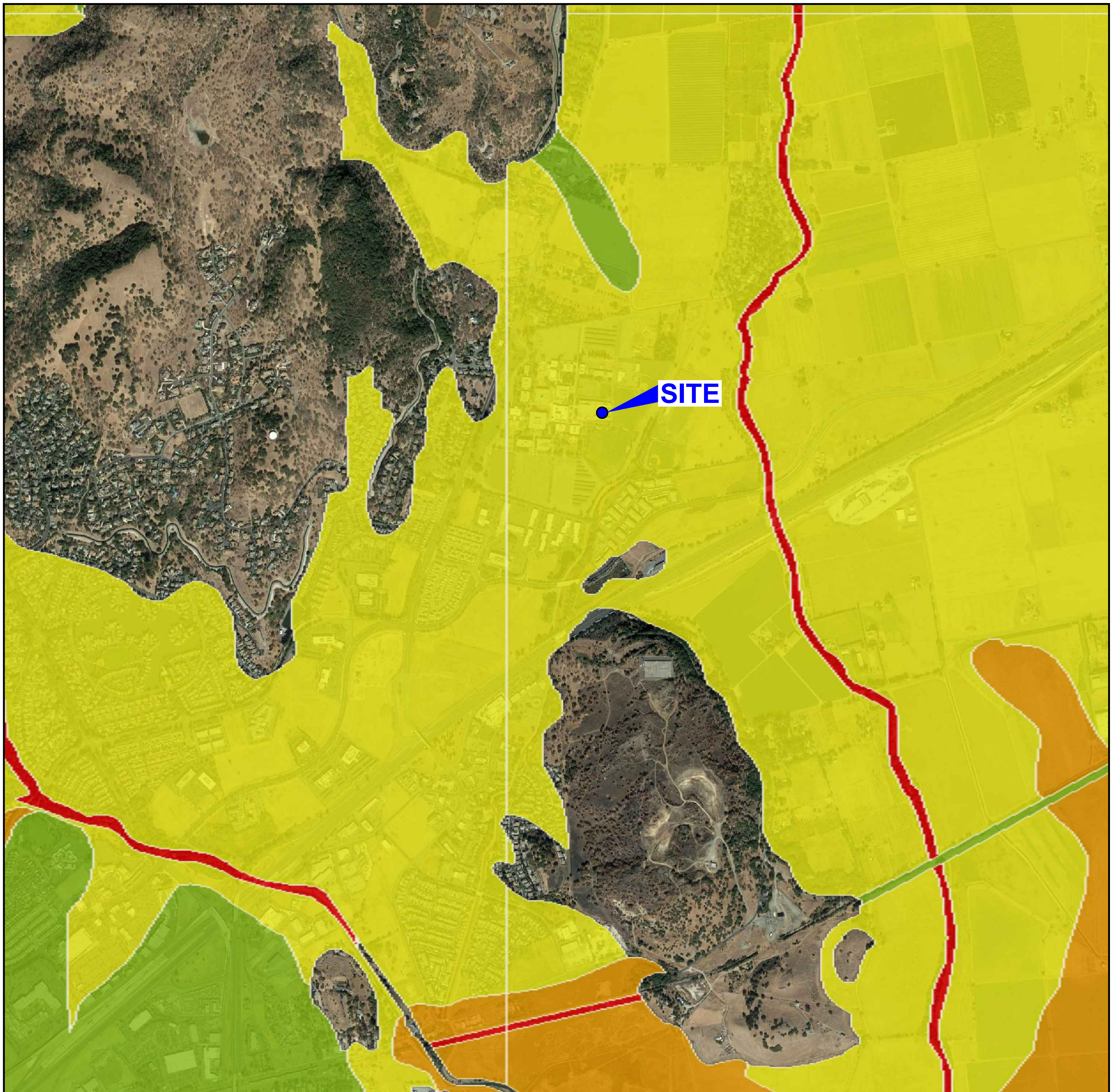
FIGURE 4

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

REGIONAL GEOLOGY

SOLANO COMMUNITY COLLEGE POOL DECK
4000 SUISUN VALLEY ROAD
FAIRFIELD, CALIFORNIA

404147002 | 09/22



LEGEND

LIQUEFACTION SUSCEPTIBILITY :

VERY HIGH
HIGH
MODERATE
LOW
VERY LOW

NOTE: DIMENSIONS, DIRECTIONS, AND LOCATIONS ARE APPROXIMATE
REFERENCE: WITTER ET AL, 2006; GOOGLE EARTH, 2022

N

SCALE (FEET)
0 2,000 4,000

404147002.dwg 09/06/2022 AEK

FIGURE 5

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

LIQUEFACTION SUSCEPTIBILITY

SOLANO COMMUNITY COLLEGE POOL DECK
4000 SUISUN VALLEY ROAD
FAIRFIELD, CALIFORNIA

404147002 I 09/22

APPENDIX A

Boring Logs

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples
Disturbed soil samples were obtained in the field using the following methods.

Bulk Sample
Bulk samples of representative earth materials were obtained from the borings. The samples were bagged and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples
Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler
The sampler, with an external diameter of 3.0 inches, was lined with a 6-inch long, thin brass liners with an inside diameter of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring log as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass liners, sealed, and transported to the laboratory for testing.

BORING LOG EXPLANATION SHEET

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0								Bulk sample.
								Modified split-barrel drive sampler.
								No recovery with modified split-barrel drive sampler.
								Sample retained by others.
								Standard Penetration Test (SPT).
5								No recovery with a SPT.
			XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
								No recovery with Shelby tube sampler.
								Continuous Push Sample.
								Seepage.
10								Groundwater encountered during drilling.
								Groundwater measured after drilling.
							SM	MAJOR MATERIAL TYPE (SOIL): Solid line denotes unit change.
							CL	Dashed line denotes material change.
15								Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface
20								The total depth line is a solid line that is drawn at the bottom of the boring.

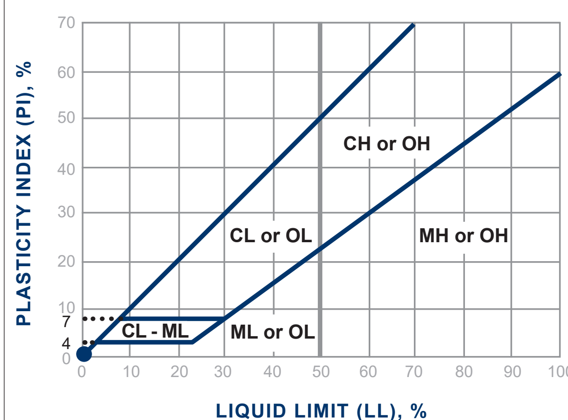
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions: Group Symbol	Secondary Divisions: Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead: SPT (blows/foot)	Spooling Cable or Cathead: Modified Split Barrel (blows/foot)	Automatic Trip Hammer: SPT (blows/foot)	Automatic Trip Hammer: Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consistency	Spooling Cable or Cathead: SPT (blows/foot)	Spooling Cable or Cathead: Modified Split Barrel (blows/foot)	Automatic Trip Hammer: SPT (blows/foot)	Automatic Trip Hammer: Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

USCS METHOD OF SOIL CLASSIFICATION

DATE DRILLED 8/16/22 BORING NO. B-1

GROUND ELEVATION 41.8' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted Drill Rig (Cal Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY JW LOGGED BY JW REVIEWED BY CDS

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							CL	ALLUVIUM: Brown, moist, very stiff, lean CLAY; few to little sand.
			35	12.3	108.5			
			16					Stiff.
				▽				
			14	27.5	97.2			Wet.
10								Total Depth = 10.0 feet.
20								
30								
40								

Total Depth = 10.0 feet.

Boring was backfilled with cement grout.

Notes: Groundwater, was encountered 7 feet below ground surface at time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents (CSW, 2020).

DATE DRILLED 8/16/22 BORING NO. B-2

GROUND ELEVATION 42.1' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted Drill Rig (Cal Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY JW LOGGED BY JW REVIEWED BY CDS

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							CL	ALLUVIUM: Brown to dark brown, moist, very stiff, lean CLAY.
			26	12.5	102.6			
			21					
			11					Wet; stiff.
10								Total Depth = 10.0 feet.
								Boring was backfilled with cement grout.
								Notes: Groundwater, though not encountered at time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
								The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents (CSW, 2020).
20								
30								
40								

DATE DRILLED 8/16/22 BORING NO. B-3

GROUND ELEVATION 41.5' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 4" SSA, B-24 Truck Mounted Drill Rig (Cal Geo.)

DRIVE WEIGHT 140 lbs (cathead) DROP 30 inches

SAMPLED BY JW LOGGED BY JW REVIEWED BY CDS

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								ASPHALT CONCRETE: Approximately 3 inches thick.
							CL	AGGREGATE BASE: Approximately 6 inches thick.
			21	21.8	104.7			ALLUVIUM: Brown to dark brown, moist, very stiff, lean CLAY; few to little sand.
			21					
			22					
10								Total Depth = 10.0 feet. Boring was backfilled with cement grout. Notes: Groundwater, though not encountered at time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents (CSW, 2020).
20								
30								
40								

APPENDIX B

Laboratory Testing

APPENDIX B

LABORATORY TESTING

Classification
Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488-00. Soil classifications are indicated on the boring logs in Appendix A.

Moisture Content
The moisture content of samples obtained from the exploratory borings was evaluated in accordance with ASTM D 2216. The test results are presented on the boring logs in Appendix A.

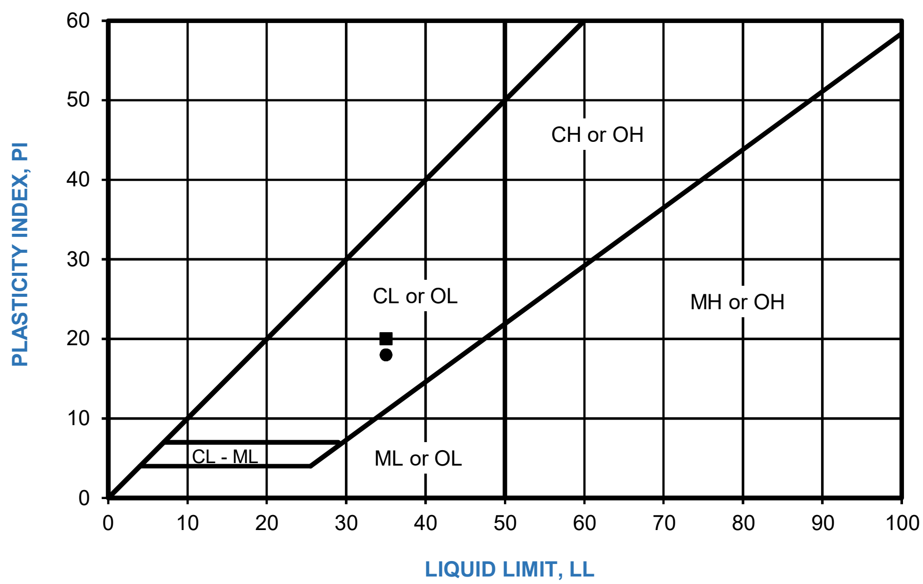
In-Place Density Tests
The dry density of relatively undisturbed samples obtained from the exploratory borings was evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix A.

Atterberg Limits
Tests were performed on selected representative soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the Unified Soil Classification System (USCS). The test results and classifications are shown on Figure B-1.

Expansion Index Test
The expansion index of a selected material was evaluated in general accordance with ASTM D 4829. The specimen was molded under a specified compactive energy at approximately 50 percent saturation (plus or minus 1 percent). The prepared 1-inch thick by 4-inch diameter specimen was loaded with a surcharge of 144 pounds per square foot and inundated with tap water. Readings of volumetric swell were made for a period of 24 hours. The test results are presented on Figure B-2.

R-Value
The resistance value, or R-value, for site soils was evaluated in general accordance with California Test (CT) 301. Samples were prepared and evaluated for exudation pressure and expansion pressure. The equilibrium R-value is reported as the lesser or more conservative of the two calculated results. The test results are shown on Figure B-3.

SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-1	5.5-6.0	35	17	18	CL	CL
■	B-2	3.0-3.5	35	15	20	CL	CL



PERFORMED IN ACCORDANCE WITH ASTM D 4318

SAMPLE LOCATION	SAMPLE DEPTH (ft)	INITIAL MOISTURE (percent)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (percent)	VOLUMETRIC SWELL (in)	EXPANSION INDEX	POTENTIAL EXPANSION
B-1	3.0-3.5	11.8	101.9	26.9	0.073	73	Medium

PERFORMED IN ACCORDANCE WITH UBC STANDARD 18-2 AND ASTM D 4829

SAMPLE LOCATION	SAMPLE DEPTH (ft)	SOIL TYPE	R-VALUE
B-1	0-5'	CL	17

PERFORMED IN ACCORDANCE WITH ASTM D 2844/CT 301

R-VALUE TEST RESULTS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SOLANO COMMUNITY COLLEGE POOL DECK
4000 SUISUN VALLEY ROAD, FAIRFILED, CALIFORNIA

APPENDIX C

Corrosivity Testing
(CERCO Analytical)

CERCO
analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 **462 2771** Fax. 925 **462 2775**
www.cercoanalytical.com

24 August, 2022

Job No. 2208036
Cust. No.13270

Mr. Chad Stellen
Ninyo & Moore
2149 O'Toole Avenue, Suite 30
San Jose, CA 95131

Subject: Project No.: 404147002
Project Name: Solano Community College-Pool, 4000 Suisun Valley Rd., Fairfield, CA
Corrosivity Analysis – ASTM Test Methods

Dear Mr. Stellen:

Pursuant to your request, CERCO Analytical has analyzed the soil sample submitted on August 19, 2022. Based on the analytical results, this brief corrosivity evaluation is enclosed for your consideration.

Based upon the resistivity measurement, this sample is classified as "moderately corrosive". All buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron should be properly protected against corrosion depending upon the critical nature of the structure. All buried metallic pressure piping such as ductile iron firewater pipelines should be protected against corrosion.

The chloride ion concentration reflects none detected with a reporting limit of 15 mg/kg.

The sulfate ion concentration is 20 mg/kg and is determined to be insufficient to damage reinforced concrete structures and cement mortar-coated steel at this location.

The pH of the soil is 7.48, which does not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.

The redox potential is 270-mV and is indicative of potentially "slightly corrosive" soils resulting from anaerobic soil conditions.

This corrosivity evaluation is based on general corrosion engineering standards and is non-specific in nature. For specific long-term corrosion control design recommendations or consultation, please call *JDH Corrosion Consultants, Inc. at (925) 927-6630.*

We appreciate the opportunity of working with you on this project. If you have any questions, or if you require further information, please do not hesitate to contact us.

Very truly yours,
CERCO ANALYTICAL, INC.

Sherri Moore
for J. Darby Howard, Jr., P.E.
President

JDH/jdl
Enclosure

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Client: Ninyo & Moore
Client's Project No.: 404147002
Client's Project Name: Solano Community College-Pool, 4000 Suisun Valley Road, Fairfield, CA
Date Sampled: 16-Aug-22
Date Received: 19-Aug-22
Matrix: Soil
Authorization: Signed Chain of Custody

Date of Report: 24-Aug-2022

Job/Sample No.	Sample I.D.	Redox (mV)	pH	Conductivity (umhos/cm)*	Resistivity (100% Saturation) (ohms-cm)	Sulfide (mg/kg)*	Chloride (mg/kg)*	Sulfate (mg/kg)*
2208036-001	B-2/0.0-5.0'	270	7.48	-	3,300	-	N.D.	20

Method:	ASTM D1498	ASTM D4972	ASTM D1125M	ASTM G57	ASTM D4658M	ASTM D4327	ASTM D4327
Reporting Limit:	-	-	10	-	50	15	15
Date Analyzed:	23-Aug-2022	23-Aug-2022	-	22-Aug-2022	-	23-Aug-2022	23-Aug-2022

* Results Reported on "As Received" Basis

N.D. - None Detected

Sherri Moore
Chemist

Quality Control Summary - All laboratory quality control parameters were found to be within established limits

Chain of Custody

2208036

1100 Willow Pass Court
Concord, CA 94520-1006
925 462 2771
Fax: 925 462 2775
CERCO analytical

Job No.	CU#	Client Project I.D.	Schedule / Analyte	Date Sampled	Date Due
404147002	13276			8/16/22	

Full Name Chad Stellen

Phone 4084359000 x 15205

Fax -

Company and/or Mailing Address Ninyo & Moore 2149 O'Toole Avenue Suite 30 San Jose CA

Cell ☒

Sample Source Solano Community College-Pool, 4000 Suisun Valley Road, Fairfield, CA

ANALYSIS — ASTM

Lab No.	Sample I.D.	Date	Time	Matrix	Contain.	Size	Preserv.	Qty.	Redox Potential	pH	Sulfate	Chloride	Resistivity-100% Saturated			Brief Evaluation						
	B-2/0.0-5.0'	8/16/22		S					X	X	X	X	X			X						

MATRIX
DW - Drinking Water
GW - Ground Water
SW - Surface Water
WW - Waste Water
Water
SL - Sludge
S - Soil
Product

ABBREVIATIONS
HB - Hosebib
PV - Petcock Valve
PT - Pressure Tank
PH - Pump House
RR - Restroom
GL - Glass
PL - Plastic
ST - Sterile

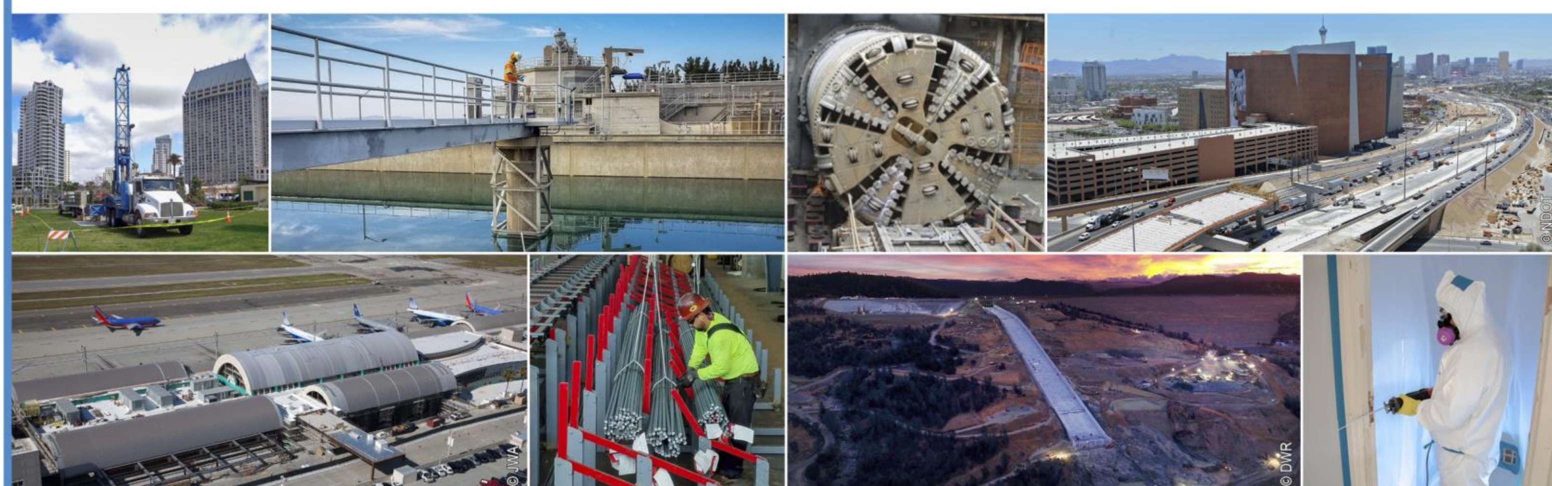
SAMPLE RECEIPT
Total No. of Containers
Rec'd Good Cond/Cold
Conforms to Record
Temp. a t Lab -°C
Sampler

		Date	Time
Relinquished By:	[signature]	8-17-22	11:00am
Received By:	[signature]	8/19/22	0945
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			

Comments:

THERE IS AN ADDITIONAL CHARGE FOR EXTRUDING SOIL FROM METAL TUBES

Email Address cstellen@ninyoandmoore.com



2149 O'Toole Avenue | San Jose, California 95131 | p. 408.435.9000

ARIZONA | CALIFORNIA | COLORADO | NEVADA | TEXAS | UTAH

ninyoandmoore.com

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

35+ YEARS

November 15, 2022
Project No. 404147002

Mr. Noe Ramos
Kitchell CEM
4000 Suisun Valley Road,
Fairfield, California 94534

Subject: Addendum to our Geotechnical Report Titled "Geotechnical Evaluation and Geologic Hazards Assessment Pool Deck, Solano Community College – Fairfield Campus, 4000 Suisun Valley Road, Fairfield, California"

Dear Mr. Ramos:

At the request of the Division of the State Architect's (DSA) office we have prepared this Addendum to our Geotechnical Report titled "Geotechnical Evaluation and Geologic Hazards Assessment Pool Deck, Solano Community College – Fairfield Campus, 4000 Suisun Valley Road, Fairfield, California"

The following are provided to address the comments from DSA:

- 10.1 Earthwork. The recommendations in this section, including subgrade preparation, apply to the new pool deck.
- 10.1 Earthwork. During subgrade preparation, fill placement, and compaction on the outside of the pool's existing walls, the pressure applied to the wall should be taken as 300 psf applied to the uppermost 3 feet of the wall. This applies for compaction conducted using hand tampers within 3 feet of the wall. Heavy mechanical equipment such as rollers should not be used within this 3-foot wide zone.
- 10.3.2 Pool Deck Slab. The net allowable bearing capacity for the pool deck slab is 2,000 psf.

We trust that our responses fully address the comments. Please let us know if you need additional information.

Ninyo & Moore appreciates the opportunity to be of service to you on this project.

Respectfully submitted,
NINYO & MOORE

REGISTERED PROFESSIONAL ENGINEER
ANTHONY R. DOVER
No. 2461
Exp. 06/30/22
GEOTECHNICAL
STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
CHAD STELLERN
No. 9946
STATE OF CALIFORNIA

Anthony Dover, PE, GE
Principal Engineer

November 15, 2022

Chad Stellern, PG
Senior Staff Geologist

ARD/rk

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

35+ YEARS

December 21, 2022
Project No. 404147002

Mr. Noe Ramos
Kitchell CEM
4000 Suisun Valley Road,
Fairfield, California 94534

Subject: Addendum No. 2 to our Geotechnical Report Titled "Geotechnical Evaluation and Geologic Hazards Assessment Pool Deck, Solano Community College – Fairfield Campus
4000 Suisun Valley Road,
Fairfield, California 94534

Dear Mr. Ramos:

At the request of the Aquatic Design Group, Aedis Architects, Division of the State Architect's (DSA) office we have prepared this Addendum No. 2 to our Geotechnical Report titled "Geotechnical Evaluation and Geologic Hazards Assessment Pool Deck, Solano Community College – Fairfield Campus, 4000 Suisun Valley Road, Fairfield, California"

The following are provided to address the comments:

- 10.1 Earthwork, Paragraph 2. The recommendation regarding scarifying the subgrade: "The exposed subgrade should then be scarified to a depth of 18 inches in areas to receive fill" does not apply to the new pool deck.

- The recommendations that compaction within 3 feet of the wall should be done with hand tampers, and that heavy mechanical equipment such as rollers should not be used within this 3-foot wide zone, still apply.

Please let us know if you need additional information.

Ninyo & Moore appreciates the opportunity to be of service to you on this project.

Respectfully submitted,
NINYO & MOORE

REGISTERED PROFESSIONAL ENGINEER
ANTHONY R. DOVER
No. 2461
Exp. 06/30/22
GEOTECHNICAL
STATE OF CALIFORNIA

Anthony Dover, PE, GE
Principal Engineer

December 21, 2022

ARD/rk