CULTURAL RESOURCE TESTING
FOR THE
ECO-BLÖK RESIDENCES PROJECT
AT 3977 SHASTA STREET
CITY OF SAN DIEGO, CALIFORNIA
(Project No. 530514)

Prepared for:

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National Archaeological Data Base Information
Type of Study: Cultural Resource Test and Evaluation
Sites: CA-SDI-11571 (SDM-W-166)
USGS Quadrangle: La Jolla 7.5'
Area: 1.7 acres
Key Words: City of San Diego, Crown Point, 3977 Shasta Street, Shell, CA-SDI-11571, Survey and Test Program

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ABSTRACT

Laguna Mountain Environmental, Inc. (Laguna Mountain) conducted an archaeological survey and test at a 1.7-acre parcel located at 3977 Shasta Street. This property has been previously mapped within prehistoric archaeological site CA-SDI-11571 in the Crown Point area of the City of San Diego. The proposed project involves demolishing the existing residential structures and community garden to construct 31 new single-family residences. The archaeological investigation included a records search, literature review, examination of historic maps, field inventory of the property, and subsequent testing.

The goal of the testing effort was to determine if significant portions of prehistoric site CA-SDI-11571 extended within the project area that would be impacted by the project. The current testing and evaluation program was conducted in accordance with the California Environmental Quality Act (CEQA) and the City of San Diego Land Development Code and Historical Resources Guidelines. The City of San Diego will serve as lead agency for the project and CEQA compliance.

A records search was conducted at the South Coastal Information Center at San Diego State University. The record search concluded that the project area had not been previously surveyed, but that at least 12 cultural resource investigations have been conducted within one-quarter mile of the project area. Only one prehistoric cultural resource has been identified through previous research within the one-quarter mile radius of the project. The project area is located within the northern end of the previously recorded boundary of site CA-SDI-11571 (SDM-W-166). The site boundary encompasses a large area, including most of Crown Point, and consists of activity areas within a large sparse marine shell scatter. Two historic structures are also previously recorded within one-quarter mile of the project area. One of the structures is a 1930-built residence at 3776 Shasta Street (P-37-017087); another residence, located at 3976 Lamont Street (P-37-018885), was built in 1942.

The survey and test was conducted by Andrew R. Pigniolo, MA, on February 7 and 8, 2017. Mr. Gabe Kitchen, of Red Tail Monitoring and Research, Inc., served as Native American monitor. The entire project area was surveyed in less than 5-meter transect intervals. Approximately 40 percent of the property was covered by the existing residential structures and hardscape. Within the lawn area and unlandscaped areas of the property, surface visibility was fair to moderate, averaging approximately 40 percent. The testing program included the excavation of 20 Shovel Test Pits (STPs) distributed over the entire project area.

The results of this survey indicated that no significant prehistoric cultural material was present on the surface of the property. Very small quantities (less than 10 pieces) of sparse shell was observed along the eastern side of the property. No associated prehistoric artifacts were observed. The southern portion of the project area includes a concrete slab foundation of a historic-age structure (EBR-H-1). This slab foundation has few features and appears to represent the base of a World War II era multi-family housing unit.

Testing resulted in the recovery of several pieces of weathered marine shell totaling 5 grams (g) that may be cultural in origin. The remainder of the material recovered during testing appears to be modern in age. It includes composted faunal bone, concrete, asphalt, flooring tiles, terra cotta fragments, plastic items, and bottle and window glass fragments. The near absence of cultural material suggests that the project area does not include significant portions of site CA-SDI-11571.

No significant impacts to cultural resources are anticipated to result from the proposed development. Significant portions of site CA-SDI-11571 were not identified within the project area during the survey and testing program. The historic-age slab foundation (EBR-H-1) does not contain additional information potential and does not qualify as a significant cultural resource based on CEQA and City of San Diego Land Development Code criteria. No further treatment is recommended for EBR-H-1.

Because the testing was limited in depth and the project is within the mapped boundary of CA-SDI-11571, monitoring by an archaeological and a Native American monitor is recommended during construction excavation and grading to ensure unidentified sensitive resources are not present or impacted by the project.

I. INTRODUCTION

A. Project Description

The 1.7-acre project area is located in the southwestern portion San Diego County within the Crown Point area in the City of San Diego (Figure 1). It is located west of Interstate 5, east of Ingraham Street, and south of Grand Avenue on the eastern side of Crown Point. The project consists of the residential lots at 3977 Shasta Street (APNs 424-482-14-00 and 424-532-25-00). The project is located in an unsectioned portion of Pueblo Lands in Township 16 South, Range 3 West. The project area is shown on the La Jolla USGS 7.5' Quadrangle (Figure 2) and on the City of San Diego 1:800 scale maps (Figure 3).

The proposed project includes the demolition of existing residential structures and construction of 31 houses on individual lots (Figure 4). As part of the project demolition and construction, removal of existing foundations and grading and excavation for new foundations and utilities will occur.

Cultural resource work was conducted in accordance with the California Environmental Quality Act (CEQA), and the City of San Diego Land Development Code and Historical Resources Guidelines. The City of San Diego will serve as lead agency for the project and CEQA compliance. The survey and testing program was conducted to determine if the project was within as portion of site CA-SDI-11571 that might be eligible for inclusion in the California Register of Historic Resources (California Register) or significant under CEQA.

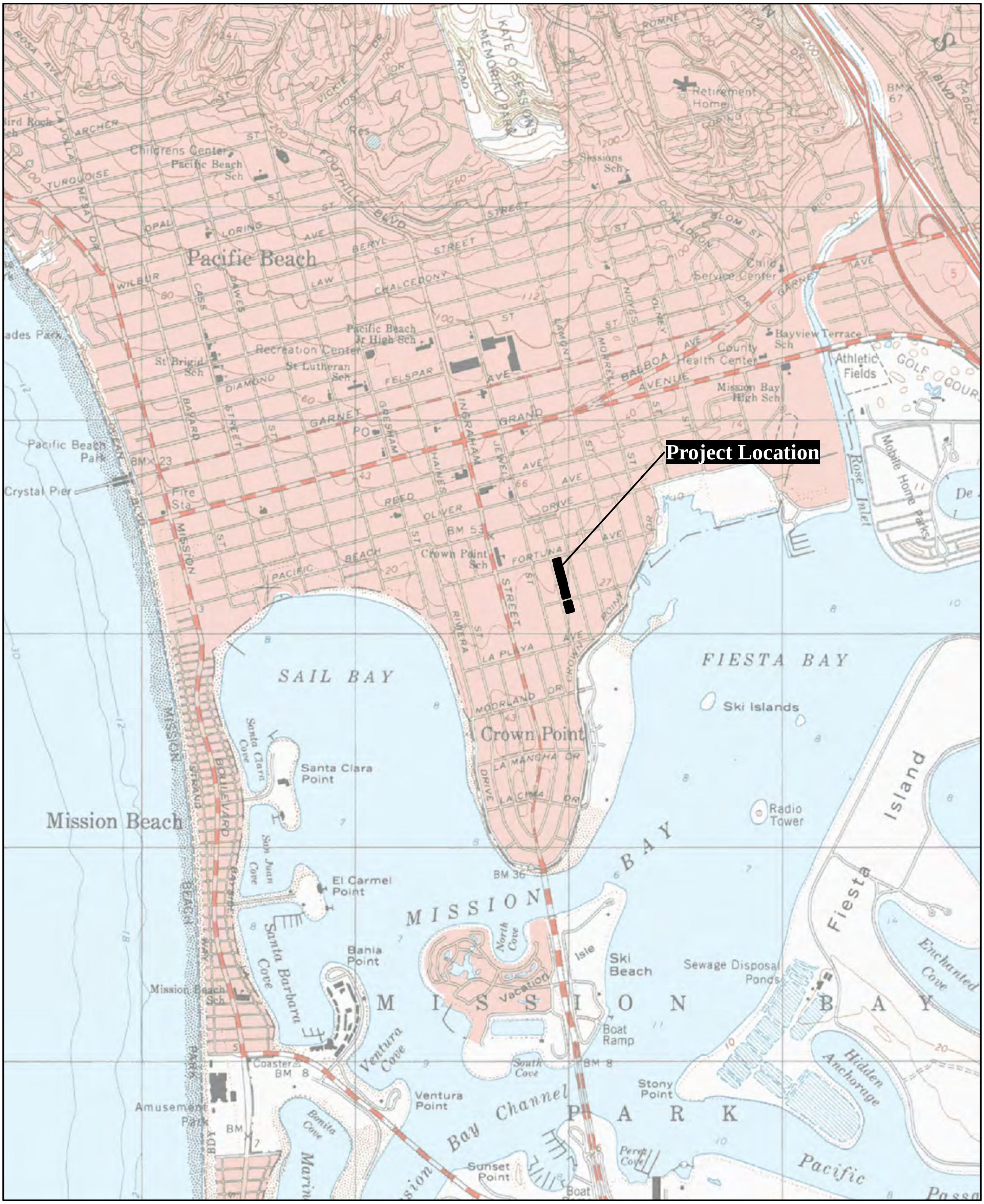
B. Project Personnel

The cultural resource testing and evaluation program was conducted by Laguna Mountain Environmental, Inc. (Laguna Mountain), whose cultural resources personnel meet state and local requirements. Mr. Andrew Pigniolo served as Principal Investigator for the project in addition to field surveyor and report author. Mr. Pigniolo is a member of the Register of Professional Archaeologists (RPA), and meets the Secretary of the Interior's standards for qualified archaeologists. He is also a qualified archaeologist within the City of San Diego. Mr. Pigniolo has a M.A. degree in Anthropology from San Diego State University, along with 36 years experience in southern California archaeology. His resume is included in Appendix A.

Ms. Carol Serr conducted the records search, prepared the report graphics, catalogued the recovered material, and formatted the report. She has a B.A. in Anthropology from San Diego State University and more than 36 years of experience in San Diego archaeology. Mr. Gabe Kitchen, representative of Red Tail Monitoring and Research, Inc. (Red Tail), served the project as Native American Monitor and has more than five years of experience.

Figure 1
Regional Location Map

Laguna Mountain Environmental, Inc.

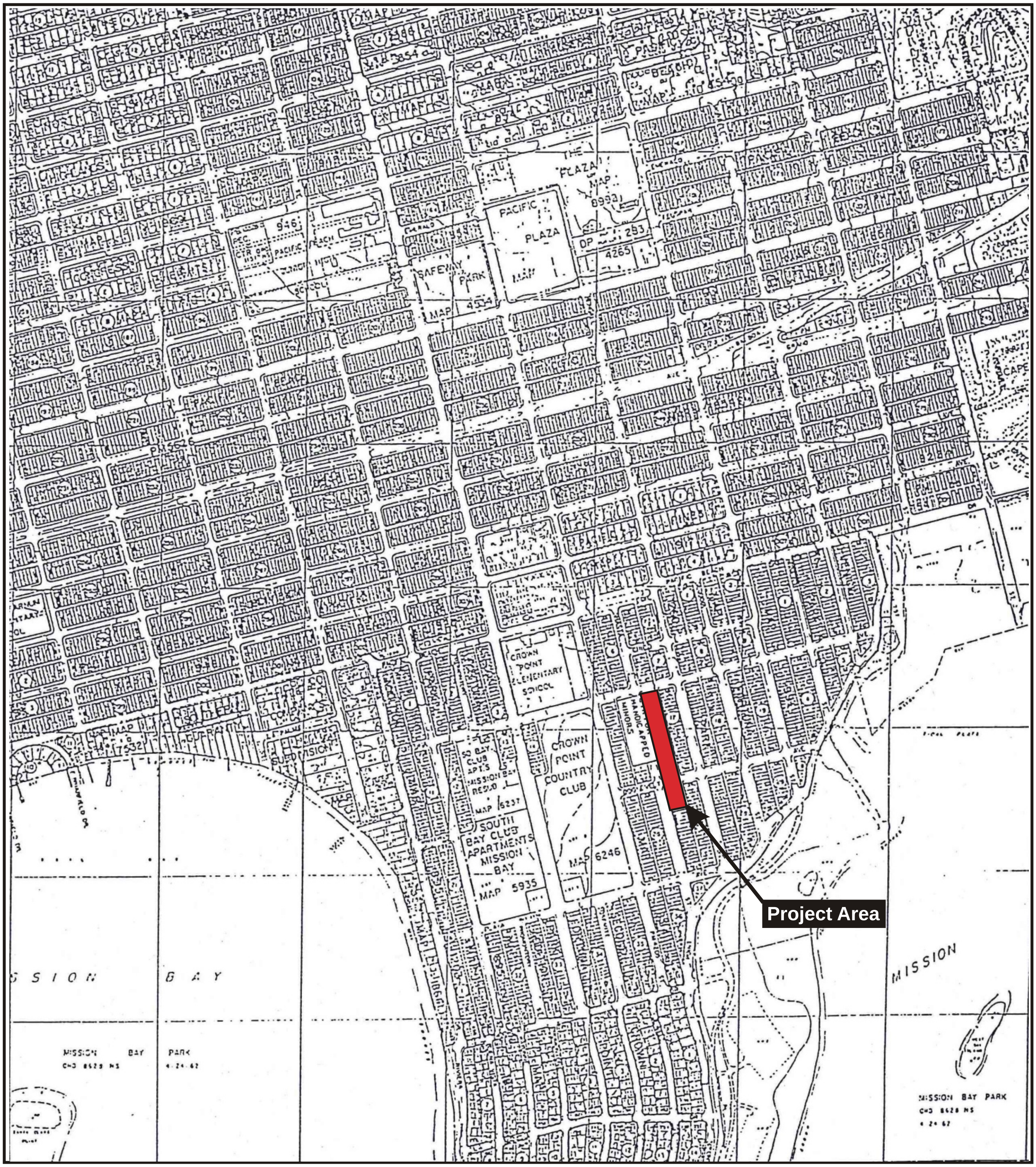


Source: USGS 7.5' La Jolla Quadrangle

Figure 2
Project Location

0 1,000 2,000 Feet

Laguna Mountain Environmental, Inc.



SOURCE: City of San Diego Engineering and Development Map Book 1989: Sheets 226-1689

N

0 400 800
F E E T

Figure 3
Project Location as Shown on
City of San Diego 1:800 Scale Map

Laguna Mountain Environmental, Inc.

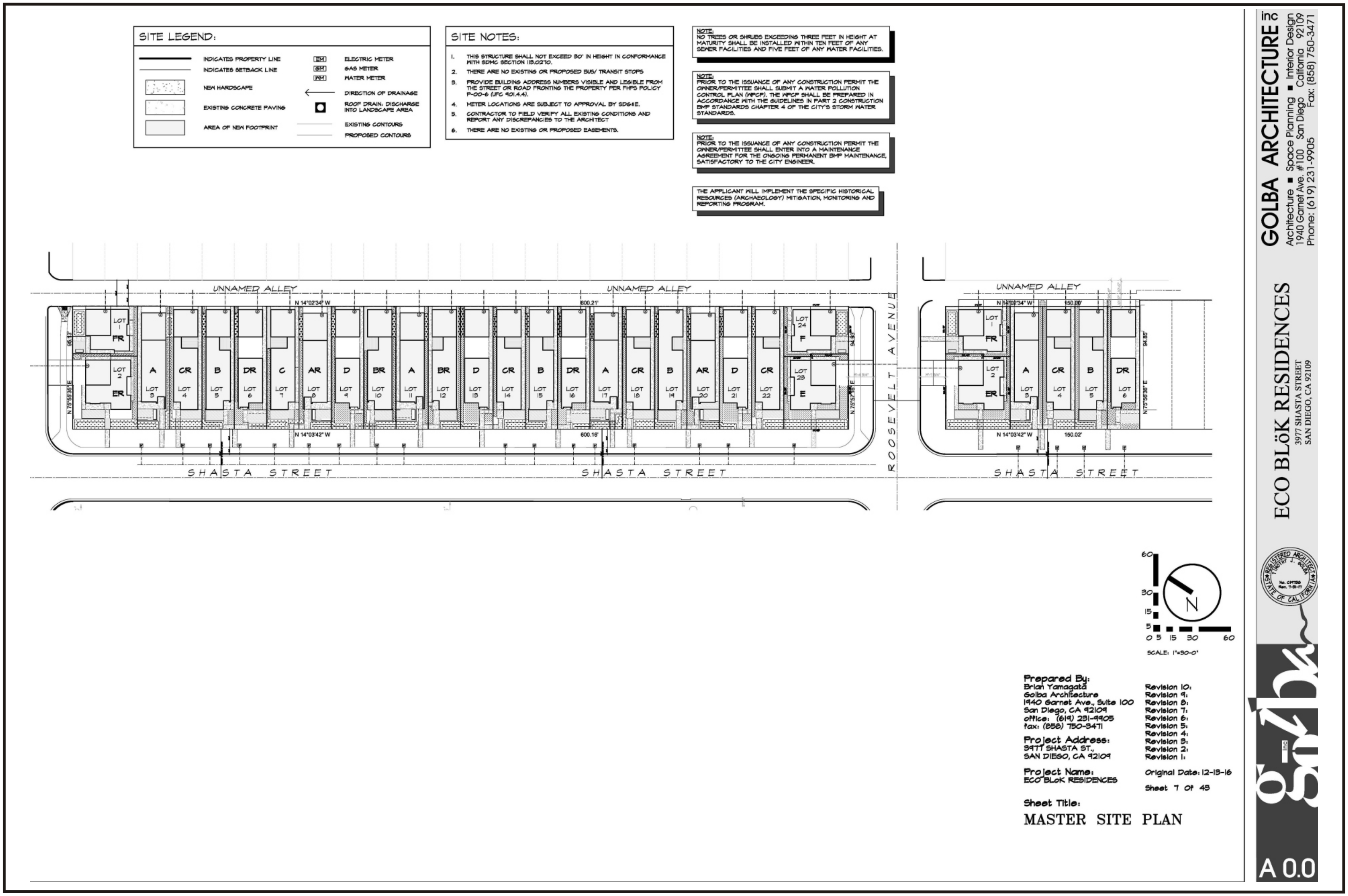


Figure 4
Project Plan

C. Structure of the Report

This report follows the State Historic Preservation Office's guidelines for Archaeological Resource Management Reports (ARMR). The report introduction provides a description of the project and associated personnel. Section II provides background on the project area and previous research. Section III describes the research design and field methods, while Section IV describes the results of the survey and testing program. Section V provides a summary and recommendations, and Section VI includes the references cited.

II. NATURAL AND CULTURAL SETTING

The following environmental and cultural background provides a context for the cultural resource inventory.

A. Natural Setting

The project area is located in the western portion of San Diego County on Crown Point adjacent to Mission Bay. The property is situated on a relatively flat and low marine terrace on the east side of Crown Point, with the bluff overlooking Mission Bay less than 100 m southeast. The property is developed with a multi-family residential facility in the northern parcel and a community garden space in the southern parcel. Elevation is approximately 40 feet above mean sea level.

The geomorphology of the project area is largely a product of the region's geologic history. During the Jurassic and late Cretaceous (>100 million years ago) a series of volcanic islands paralleled the current coastline in the San Diego region. The remnants of these islands stand as Mount Helix, Black Mountain, and the Jamul Mountains among others. This island arc of volcanoes spewed out vast layers of tuff (volcanic ash) and breccia that have since been metamorphosed into hard rock of the Santiago Peak Volcanic formation. These fine-grained rocks provided a regionally important resource for Native American flaked stone tools.

At about the same time, a granitic and gabbroic batholith was being formed under and east of these volcanoes. This batholith was uplifted and forms the granitic rocks and outcrops of the Peninsular Range and the foothills to the west. In San Diego County the large and varied crystals of these granitic rocks provided particularly good abrasive surfaces for Native American seed processing. These outcrops were frequently used for bedrock milling of seeds. The batholith contains numerous pegmatite dikes. This was a good source of quartz, a material used by Native Americans for flaked stone tools and ceremonial purposes.

As the Peninsular Batholith rose, it warped and metamorphosed the overlying sediments, forming the Julian Schist (Remeika and Lindsay 1992). This formation contains quartzite, a material also used for Native American flaked stone tools. Its relatively poor flaking qualities made this quartzite less popular for tool making than the quartz and Santiago Peak materials.

During the Eocene, a series of marine transgressions and regressions along with sediment and rock deposition from major river systems to the east left behind a series of sandstone, shale, and conglomerate formations. These sedimentary rocks were later flattened by marine erosion to form the current coastal plain and mesas in the San Diego region.

The Bay Point Formation immediately underlies the project area (Kennedy 1975). It is composed of marine and non-marine, poorly consolidated, fine to medium grained, pale brown, fossiliferous sandstone, siltstone, and conglomerate. The Bay Point Formation was laid down on the marine cut Nestor Terrace during the late Pleistocene Sangamon interglacial high sea stand dating to 120,000±10,000 years ago (Kennedy and Tan 1977). Portions of this formation include conglomerate of reworked porphyritic volcanic and quartzite cobble clasts from other nearby Eocene strata that that would be useful for Native Americans.

Soil types in the project area are mapped as Urban Lands where soil classification was not possible due to development. The Huerhuero-urban land complex is mapped to the northeast of the project (Bowman 1973). The Huerhuero series soils consist of moderately well drained loams that have clay subsoil Bowman 1973). These soils developed in sandy marine sediments. In a representative profile the surface layer is brown and pale-brown, strongly acid and medium acid loam about 12 inches thick. The upper part of the subsoil is brown, moderately alkaline clay. It extends to a depth of about 41 inches. Below this, and extending to a depth of more than 60 inches, is brown, mildly alkaline clay loam and sandy loam (Bowman 1973).

The climate of western San Diego County can generally be described as Mediterranean, with cool wet winters and hot dry summers. The coastal plain itself qualifies as a semiarid steppe because it receives only an average of 10 inches (25 cm) of rainfall a year (Pryde 1976). This limits vegetation growth to seasonal or drought tolerant species. The project area was probably dominated in the past by coastal sage scrub vegetation including such species as buckwheat, and various shrubs. Components of this community provided important resources to Native Americans in the region. Sage seed, yucca, buckwheat, acorns, and native grasses formed important food resources to Late Prehistoric Native Americans.

Prior to development, this area would have been rich in natural resources. Animal resources in the region included deer, fox, raccoon, skunk, bobcats, coyotes, rabbits, and various rodent, reptile, and bird species. Small game, dominated by rabbits, was relatively abundant. The various estuaries located along the bay would have provided a variety of plant and animal resources to the region. The close proximity of the bay would have made the location ideal for procuring fish, shellfish, and sea mammals. Rose Creek, which historically flowed west of its current channel, would have provided a seasonal water supply to the area in prehistoric times.

B. Cultural Setting

Paleoindian Period

The earliest well documented prehistoric sites in southern California are identified as belonging to the Paleoindian period, which has locally been termed the San Dieguito complex/tradition. The Paleoindian period is thought to have occurred between 9,000 years ago, or earlier, and 8,000 years ago in this region. Although varying from the well-defined fluted point complexes such as Clovis, the San Dieguito complex is still seen as a hunting-focused economy with limited use of seed grinding technology. The economy is generally seen to focus on highly ranked resources such as large mammals and relatively high mobility, which may be related to following large game. Archaeological evidence associated with this period has been found around inland dry lakes, on old terrace deposits of the California desert, and also near the coast where it was first documented at the Harris Site.

Early Archaic Period

Native Americans during the Archaic period had a generalized economy that focused on hunting and gathering. In many parts of North America, Native Americans chose to replace this economy with types based on horticulture and agriculture. Coastal southern California economies remained largely based on wild resource use until European contact (Willey and Phillips 1958). Changes in hunting technology and other important elements of material culture have created two distinct subdivisions within the Archaic period in southern California.

The Early Archaic period is differentiated from the earlier Paleoindian period by a shift to a more generalized economy and an increased focus on the use of grinding and seed processing technology. At sites dated between approximately 8,000 and 1,500 years before present (B.P.), the increased use of groundstone artifacts and atlatl dart points, along with a mixed core-based tool assemblage, identify a range of adaptations to a more diversified set of plant and animal resources. Variations of the Pinto and Elko series projectile points, large bifaces, manos and portable metates, core tools, and heavy use of marine invertebrates in coastal areas are characteristic of this period, but many coastal sites show limited use of diagnostic atlatl points. Major changes in technology within this relatively long chronological unit appear limited. Several scientists have considered changes in projectile point styles and artifact frequencies within the Early Archaic period to be indicative of population movements or units of cultural change (Moratto 1984), but these units are poorly defined locally due to poor site preservation.

Late Archaic or Late Prehistoric Period

Around 2,000 B.P., Yuman-speaking people from the eastern Colorado River region began migrating into southern California, representing what is called the Late Prehistoric Period. The Late Prehistoric Period in San Diego County is recognized archaeologically by smaller projectile points, the replacement of flexed inhumations with cremation, the introduction of ceramics, and an emphasis on inland plant food collection and processing, especially acorns (True 1966). Inland semi-sedentary villages were established along major watercourses, and montane areas were seasonally occupied to exploit acorns and piñon nuts, resulting in permanent milling features on bedrock outcrops. Mortars for acorn processing increased in frequency relative to seed grinding basins. This period is known archaeologically in southern San Diego County as the Yuman (Rogers 1945) or the Cuyamaca Complex (True 1970).

The Kumeyaay (formerly referred to as Diegueño) who inhabited the southern region of San Diego County, western and central Imperial County, and northern Baja California (Almstedt 1982; Gifford 1931; Hedges 1975; Luomala 1976; Shipek 1982; Spier 1923) are the direct descendants of the early Yuman hunter-gatherers. Kumeyaay territory encompassed a large and diverse environment, which included marine, foothill, mountain, and desert resource zones. Their language is a dialect of the Yuman language, which is related to the large Hokan super family.

There seems to have been considerable variability in the level of social organization and settlement variance. The Kumeyaay were organized by patrilineal, patrilocal lineages that claimed prescribed territories, but did not own the resources except for some minor plants and eagle aeries (Luomala 1976; Spier 1923). Some lineages occupied procurement ranges that required considerable residential mobility, such as those in the deserts (Hicks 1963). In the mountains, some of the larger groups occupied a few large residential bases that would be occupied biannually, such as those occupied in Cuyamaca in the summer and fall, and in Guatay or Descanso during the rest of the year (Almstedt 1982; Rensch 1975). According to Spier (1923), many Eastern Kumeyaay spent the period of time from spring through autumn in larger residential bases in the upland procurement ranges, and wintered in mixed groups in residential bases along the eastern foothills on the edge of the desert (i.e., Jacumba and Mountain Springs). This variability in settlement mobility and organization reflects the great range of environments in the territory.

Acorns were the single most important food source used by the Kumeyaay. Their villages were usually located near water, which was necessary for leaching acorn meal. Other storable resources such as mesquite or agave were equally valuable to groups inhabiting desert areas, at least during certain seasons (Hicks 1963; Shackley 1984). Seeds from grasses, manzanita, sage, sunflowers, lemonade berry, chia, and other plants were also used along with various wild greens and fruits. Deer, small game, and birds were hunted and fish and marine foods were eaten. Houses were arranged in the village without apparent pattern. The houses in primary villages were conical structures covered with tule bundles, having excavated floors and central hearths. Houses constructed at the mountain camps generally lacked any excavation, probably due to the summer occupation. Other structures included sweathouses, ceremonial enclosures, armadas, and acorn granaries. The material culture included ceramic cooking and storage vessels, baskets, flaked lithic and ground stone tools, arrow shaft straighteners, stone, bone, and shell ornaments.

Hunting implements included the bow and arrow, curved throwing sticks, nets and snares. Shell and bone fishhooks, as well as nets, were used for fishing. Lithic materials including quartz and metavolcanics were commonly available throughout much of the Kumeyaay territory. Other lithic resources, such as obsidian, chert, chalcedony, and steatite, occur in more localized areas and were acquired through direct procurement or exchange. Projectile points including the Cottonwood Series points and Desert Side-notched points were commonly produced.

Kumeyaay culture and society remained stable until the advent of missionization and displacement by Hispanic populations during the eighteenth century. The effects of missionization, along with the introduction of European diseases, greatly reduced the native population of southern California. By the early 1820s, California was under Mexico's rule. The establishment of ranchos under the Mexican land grant program further disrupted the way of life of the native inhabitants.

Ethnohistoric Period

The Ethnohistoric period refers to a brief period when Native American culture was initially being affected by Euroamerican culture and historical records on Native American activities were limited. When the Spanish colonists began to settle California, the project area was within the territory of a loosely integrated cultural group historically known as the Kumeyaay or Northern and Southern Diegueño because of their association with the San Diego Mission. The Kumeyaay as a whole speak a Yuman language, which differentiates them from the Luiseño, who speak a Takic language to the north (Kroeber 1976). Both of these groups were hunter-gatherers with highly developed social systems. European contact introduced diseases that dramatically reduced the Native American population and helped to break down cultural institutions. The transition to a largely Euroamerican lifestyle occurred relatively rapidly in the nineteenth century.

Historic Period

Cultural activities within San Diego County between the late 1700s and the present provide a record of Native American, Spanish, Mexican, and American control, occupation, and land use. An abbreviated history of San Diego County is presented for the purpose of providing a background on the presence, chronological significance, and historical relationship of cultural resources within the county.

Native American control of the southern California region ended in the political views of western nations with Spanish colonization of the area beginning in 1769. De facto Native American control of the majority of the population of California did not end until several decades later. In southern California, Euroamerican control was firmly established by the end of the Garra uprising in the early 1850s (Phillips 1975).

The Spanish Period (1769-1821) represents a period of Euroamerican exploration and settlement. Dual military and religious contingents established the San Diego Presidio and the San Diego and San Luis Rey Missions. The Mission system used Native Americans to build a footing for greater European settlement. The Mission system also introduced horses, cattle, other agricultural goods and implements; and provided construction methods and new architectural styles. The cultural and institutional systems established by the Spanish continued beyond the year 1821, when California came under Mexican rule.

The Mexican Period (1821-1848) includes the retention of many Spanish institutions and laws. The mission system was secularized in 1834, which dispossessed many Native Americans and increased Mexican settlement. After secularization, large tracts of land were granted to individuals and families and the rancho system was established. Cattle ranching dominated other agricultural activities and the development of the hide and tallow trade with the United States increased during the early part of this period. The Pueblo of San Diego was established during this period and Native American influence and control greatly declined. The Mexican Period ended when Mexico ceded California to the United States after the Mexican-American War of 1846-48.

Soon after American control was established (1848-present), gold was discovered in California. The tremendous influx of American and Europeans that resulted quickly drowned out much of the Spanish and Mexican cultural influences and eliminated the last vestiges of de facto Native American control. Few Mexican ranchos remained intact because of land claim disputes and the homestead system increased American settlement beyond the coastal plain.

C. Prior Research

The investigation included archival research and other background studies prior to completing the field survey of the project area. The archival research consisted of conducting a literature and record search at the local archaeological repository, in addition to examining historic maps, and historic site inventories. This information was used to identify previously recorded resources and determine the types of resources that might occur in the survey area.

The records and literature search was conducted at the South Coastal Information Center (SCIC) at San Diego State University (Appendix B). The records search included a one-quarter mile radius of the project area to provide background on the types of sites that would be expected in the region. Access to historic maps and a historic address database was also provided by the SCIC.

At least 12 archaeological investigations have been documented in the vicinity of the project (Table 1). Most of these are surveys or monitoring projects for utility implementation and infrastructures associated with the growth and development of this area over the last 20 years.

Table 1. Archaeological Investigations within One-quarter Mile of the Project Area

Author	Report Title	Year
Bissel	Cultural Resources Monitoring of the Mission Bay Sewage Inceptor System Phase 1 Project	1992
Case and Walker	Cultural Resources Monitoring Report for the Ortiz Water Group 501 Project (LDR. No.98-0928/W.O. No. 181501), Community of Pacific Beach, City of San Diego	2003
Cooley	Report of Results of a Cultural Resource Testing Program for the Mission Bay Sewage Interceptor System, Phase V, City of San Diego	1992
Cooley	Report of Test Results of a Cultural Resource Testing Program for the Crown Point and Rose Creek Area of the Mission Bay Sewage Interceptor System, Phase V, City of San Diego, California, Dep. No. 90-0540	1992
Duke	Cultural Resource Assessment Cingular Wireless Facility No. SD 471-02, San Diego County	2001
Gardner	Archaeological Monitoring of SDG&E Gas Residential Extension Project in Pacific Beach, 1811 Oliver Street, San Diego County, California	2009
Kyle	Cultural Resource Survey of a Parcel Located at 4014 Honeycutt Street, City of San Diego, California	2008
Olson, Gonzalez, Goodwin & Berryman	Archaeological Monitoring Results Report for Construction of Mission Bay Sewage Interceptor System, Phase 5, City of San Diego	1994
Pigniolo	Cultural Resource Survey for the Kendall Street Residences Project at 3811 Kendall Street, City of San Diego, California	2013
Pigniolo	Cultural Resource Testing at a Portion of CA-SDI-11571 for the Kendall Street Residence Project at 3811 Kendall Street, City of San Diego, California	2013
Smith	Results of an Archaeological Survey of Portions of the Phase 1 Locations for the Mission Bay Sewage Interceptor System	1989
Smith	Enhanced Cultural Resources Survey and Evaluation for the Lamont 5 Project, Pacific Beach, San Diego	2000

The three cultural resources identified by the previous investigations within the one-quarter mile radius include a large prehistoric site area (CA-SDI-11571/SDM-W-166) and two historic structures. One of the structures is a 1930-built residence at 3776 Shasta Street (P-37-017087); another residence, located at 3976 Lamont Street (P-37-018885), was built in 1942.

The site boundary for CA-SDI-11571 encompasses an expansive area including most of Crown Point that consists of activity areas within a large sparse marine shell scatter. CA-SDI-11571 was initially recorded in the 1920s by Malcolm Rogers of the San Diego Museum of Man. The dimensions of the site area were described as being 1 mile north/south by ½ mile east/west (Rogers n.d.). The site was described as intermittent camping along the estuary margin with scattered and discontinuous occupation.

Rogers noted:

> Although scattered shell, spawls [sic] and a few artifacts occur all over this area under a veneer of Aeolian sands, the occupation is only condensed on the point and around the east side for a distance of 1/2 mile. The shell and charcoal content here even is low to medium in patches. The greatest midden depth found in trenches is 3' wide 8" [sic] of surface sand. One large acorn mortar was found here and a few metates; manos are more common. W. Dieguenos [Kumeyaay] carried water over here from Rose Canyon as late as 1890 to fish yet no sherds were found (Rogers n.d.).

Carter describes the soils and stratigraphy of the Crown Point site in detail (Carter 1957). He again noted the diffuse nature of cultural material at the site. He also described a heath feature, isolated artifacts, and a burial within the site area. The burial location appears to be in the vicinity of Roosevelt Street and the bay edge. It was marked with two sandstone metates (Carter 1957).

The site was updated at the SCIC by Pigniolo in 1990, who observed a core tool and flakes associated with shell in the cliff face along the west side of Crown Point to a depth of at least 70 cm (Pigniolo 1990). Trenching in the Crown Point area identified shell, but not intact features (Cooley and Mitchell 1992). Shell and one flake, but no features were observed in monitoring at 3553 Bayonne Drive (Beddow 2001). Testing at 3315 Jewell Street identified shell and debitage in a disturbed context and no further excavation was recommended (Clowery-Moreno 2008). Testing at 3811 Kendall Street in the northeast portion of this large site recovered a minimal amount of debitage and two mano fragments along with faunal shell and bone within a disturbed context (Pigniolo 2013).

Historic research included an examination of a variety of resources. The current listings of the National Register of Historic Places were checked through the National Register of Historic Places website. The California Inventory of Historic Resources (State of California 1976) and the California Historical Landmarks (State of California 1992) were also checked for historic resources. The historic residences in the historic database, located on Shasta Street and Lamont Street, were both determined not significant. The existing project area was initially developed as military housing during the 1940s. The 1953 aerial photograph of the project area shows five multi-family housing structures within the project area (NETR 1953). These structures were removed before 1980 (NETR 1980). A single foundation slab from one of these structures remains in the southern portion of the project area.

D. Native American Consultation/Participation

Native American consultation and participation is an important aspect of the cultural resource evaluation process. To address the potential for Native American concerns, a Sacred Lands Search was conducted. A current Sacred Lands Search response from the California Native American Heritage Commission (NAHC) was received on February 6, 2017 (Appendix C). The results of the Sacred Lands Search were negative in that no resources have been previously identified in the immediate project area. Native American participation in the field survey and testing included the presence of Mr. Gabe Kitchen, of Red Tail, who served as Native American monitor.

III. RESEARCH DESIGN AND METHODS

A. Research Design

The goal of this study was to identify any cultural resources located within the project area so that the effects of the project on these resources can be assessed and minimized. To accomplish this goal, background information was examined and assessed, and a field survey was conducted to identify cultural remains. Additionally, a Sacred Lands record search was requested from the Native American Heritage Commission.

Based on the records search and historic map check, most of the cultural resources that might occur within the project were likely to be prehistoric resources. Historic structures appear within one-quarter mile of the project area on early maps of the area, but are unlikely to occur within the project itself based on early maps. Prehistoric cultural resources such as CA-SDI-11571 could include midden soils, shell and lithic scatters, and hearth features associated with marine and estuary utilization in the area. Special attention was given to naturally exposed soil deposits. Because the project area is developed and located on the margin of the mapped boundary of CA-SDI-11571, testing was required to establish whether archaeological deposits extend into the project area. Both phases of investigation are described in more detail below.

B. Survey Methods

The survey and test was conducted by Andrew R. Pigniolo, MA, on February 7 and 8, 2017. Mr. Gabe Kitchen, of Red Tail, served as Native American monitor. The entire project area was surveyed in less than 5-meter transect intervals. Approximately 40 percent of the property was covered by the existing residential structures and hardscape. Within the lawn area and unlandscaped areas of the property, surface visibility was fair to moderate, averaging approximately 40 percent.

Photographs taken and project records for this inventory will be temporarily curated at Laguna Mountain until final curation arrangements can be made at the San Diego Archaeological Center or another appropriate regional repository.

C. Test Methods

Subsurface testing was conducted in the project area in order to determine if portions of site CA-SDI-11571, or any other previously unrecorded site, were present within the project area. The subsurface testing included the excavation of twenty 30 m by 50 cm shovel test pits (STPs) in order to assess the presence of any subsurface deposits. Testing was conducted subsequent to the survey. Mr. Andrew Pigniolo served as Principal Investigator and Mr. Gabe Kitchen of Red Tail served the project as Native American monitor.

STPs are normally placed in the cardinal directions along a Cartesian grid pattern, but due to the amount of developed area on the property and the limited landscaped areas where soil was exposed, STPs were intuitively placed in open areas distributed across the proposed area of direct impacts. The long axis of each STP was oriented north/south.

STPs were excavated in 10-cm arbitrary levels. All excavated soil was passed through 1/8-inch mesh hardware cloth and dry-screened in the field. Any cultural material was removed from the screens and bagged by level. STP forms noting the recovery and observations were completed following the excavation of each 10-cm level. The information gathered included the type of cultural material recovered, soil types and conditions, and any noted disturbance. Recovered material was taken to the laboratory for processing. All items were weighed on a digital scale. The recovered material was sorted by material class and entered into an Excel spreadsheet that serves as the recovery catalog (Appendix D).

A photographic record was kept to document the testing program (Appendix E). A photographic log was kept to record orientation and subject matter.

IV. SURVEY AND TEST RESULTS

The northern portion of the project area is currently developed with a multi-unit residential facility and related landscaping with a large amount of hardscape and landscape. The southern parcel that makes up the project area previously served as a community garden. Figure 5 provides views of the site conditions.

A. Survey Results

The results of this survey indicated that no significant prehistoric cultural material was present on the surface of the property. A very small amount (less than 10 pieces) of sparse shell was observed along the eastern side of the property. These shell fragments were dominated by *Chione*, but *Argopecten* was also present. A single fragment of *Saxidomus* shell was also noted. All of the surface shell was observed in disturbed landscaping planters along the eastern side of the project area adjacent to the alley. No associated prehistoric artifacts were observed. The shell may or may not be associated with prehistoric activity in the area. It did appear weathered, but fill soil was also noted in the area. The near absence of cultural material suggests that the project area is not within the boundaries of site CA-SDI-11571 or that the site deposit was previously graded away or covered by fill in this area.

The southern portion of the project area includes a concrete slab foundation of a historic-age structure (EBR-H-1). This slab foundation has few features and appears to represent the base of a World War II era multi-family housing unit (Figure 6). Some associated hardscape concrete paths are also present. A rectangular open space within the north end of the slab, may also represent an opening for landscaping. The slab foundation is otherwise generally featureless, but includes some associated steps and has a few previously cut metal upright pieces embedded in the concrete.

The project area is approximately 40 percent covered by development and hardscape. While much of the area was open, lawns and dense weed growth reduced the visibility in undeveloped areas to less than 40 percent. Because the project area is highly developed and visibility was poor, the survey did not adequately serve to determine if cultural resources were present, therefore a testing program was subsequently implemented to identify whether there are any subsurface cultural deposits within the project area.

B. Testing Results

Because survey visibility was limited, and the project is located within the recorded boundaries of site CA-SDI-11571, 20 hand-excavated STPs were excavated within the project area in order to determine if CA-SDI-11571 deposits were present in the project area. Figure 7 shows the STP locations.

Testing indicated a relatively consistent pattern of fill material with pea gravel in the northern and northwestern portions of the project. This fill was underlain in many areas by what appears to be a native light orange-brown loamy sand. STPs were excavated in existing lawn areas and in the former community garden. Varying amounts of modern intrusive material were recovered from all of the STPs, from 0-40 cm, due to previous disturbance.

a. Existing Facilities, Looking Southeast (PR-05719-005)

b. Overgrown Community Garden, Looking South (PR-05720-032)

Figure 5
Site Overviews

Laguna Mountain Environmental, Inc.

a. Foundation Slab, Looking South (PR-05720-041)

b. Foundation Slab and Walkway, Looking West (PR-05720-042)

Figure 6
Concrete Slab

Figure 7
STP Locations

Laguna Mountain Environmental, Inc.

Soils and Stratigraphy

Soil in the STPs showed great variability, but also some patterns. STPs 6, 7, 9, 10, 11, 13, 17, 18, 19, and 20 showed the presence of fill over much of the northern portion of the project area. This fill was thicker in the northwestern portion of the project and often included pea gravel. It was thinner in the southern portions of the project and native soils were reached in most of the STPs, under the fill. Although the lawns may have been associated with a thin layer of imported topsoil, they did not appear to represent imported sod, but material grown on site. STPs 1, 2, 3, 4, 5, and 14 were dominated by native orange brown loam sand. Those STPs in the southern parcel (STPs 1 through 5), showed the addition of organic compost to the upper levels of soil. In addition to disturbance related to garden tilling, the five STPs in the southern parcel all showed evidence of significant bioturbation due to rodents. STPs 8, 12, 15, and 16 had a light brown loamy sand fill that often over laid the native loamy sand.

Most of the STPs were underlain or included native light orange-brown hued loamy sand below the upper fill layers. The sand included less organic material than the upper soil. Portions of the orange-brown sand suggested previous rodent and root disturbance. This light orange-brown sand was found from 5 to 40 cm in depth and probably extends much deeper than the test termination depth. The overall stratigraphic pattern suggests that imported fill was placed directly over native sandy soil.

STP Recovery

The excavation of 20 STPs resulted in the recovery of 5 grams (g) of faunal shell, 7.7 g of faunal bone, which appears to be intrusive, and 1,692.8 g of modern intrusive refuse (Table 2). Additionally, 2.7 g of terrestrial snail shell and 8.7 g of fossil shell were recovered.

The faunal shell came from five STPs, but primarily STP 2 (4.1 g). Types consist of mostly weathered pieces of *Argopecten* (scallop) and one fragment of *Chione* (clam), along with bits of barnacle and tube worm which would have been attached to the exterior of a larger shell. All but 0.3 g of this marine shell came from STPs located in the community garden area in the southernmost portion of the project. The presence of weathered *Argopecten* in STPs 14 and 16 indicates minimal activity in the northern portion of the project.

All of the recovered faunal bone came from the five STPs located within the garden area. While a few fish remains were found, the bone primarily is avian – probably chicken bone, both indicating modern deposition in the garden compost. The few pieces of whole small mammal bones most likely are from natural rodent death. No faunal bone was found in the tested portion of the project north of Roosevelt Avenue. The bone assemblage recovered during testing appears to represent a combination of activity from natural rodents and composting. None of the faunal bone is likely to be associated with prehistoric activity in the area.

The terrestrial snail remains consist of the European brown garden snail (*Cornu aspersum*, formerly *Helix aspersa*) and a predatory decollate snail (*Rumina decollate*). These snails are not burrowing animals but can find shelter in existing burrows or cracks in the soil, resulting in their presence to depths over 30 cm in excavations. Not surprisingly, snails were only found in the five STPs excavated in the community garden area.

Table 2. STP Recovery Summary by Provenience

STP No.	Material Class: Marine Shell	Faunal Bone*	Modern Refuse	Terrestrial Snail	Fossil Shell	Total	Percent
1	—	0.2	7.1	0.5	—	7.8	0.5
2	4.1	4.0	6.0	0.6	—	14.7	0.9
3	0.5	2.0	58.9	0.4	—	61.8	3.6
4	—	1.3	5.1	0.9	—	7.3	0.4
5	0.1	0.2	82.0	0.3	—	82.6	4.8
6	—	—	280.6	—	—	280.6	16.3
7	—	—	122.6	—	—	122.6	7.1
8	—	—	50.2	—	—	50.2	2.9
9	—	—	30.4	—	—	30.4	1.8
10	—	—	16.9	—	—	16.9	1.0
11	—	—	0.7	—	8.7	9.4	0.5
12	—	—	50.0	—	—	50.0	2.9
13	—	—	151.5	—	—	151.5	8.8
14	0.1	—	185.3	—	—	185.4	10.8
15	—	—	42.2	—	—	42.2	2.5
16	0.2	—	72.1	—	—	72.3	4.2
17	—	—	78.2	—	—	78.2	4.6
18	—	—	2.4	—	—	2.4	0.1
19	—	—	412.5	—	—	412.5	24.0
20	—	—	38.1	—	—	38.1	2.2
Total Wt. (g)	**5.0**	**7.7**	**1,692.8**	**2.7**	**8.7**	**1,716.9**	**100.0**
Percent	**0.3**	**0.4**	**98.6**	**0.2**	**0.5**	**100.0**	

* From garden compost

The 8.7 g of fossil Pecten shell fragments were only recovered in all three levels of STP 11. This fossil material was associated with imported fill at this location and was probably imported to the site in soil derived elsewhere from the Pliocene-age San Diego Formation.

The modern intrusive material consists of building refuse of primarily asphalt floor tiles, concrete chunks, terra cotta roof tiles or paving tiles, window glass, nails (badly corroded), asphalt bits, as well as miscellaneous plastic item fragments or food wrappers, bottle glass, and Styrofoam. One saw-cut large mammal bone and pieces of chicken egg shell were also found, only in the garden area STPs.

By weight, STP 19 produced the most intrusive material with a total of 412.5 g (24%), due to concrete chunks. Four other STPs produced over 100 g of refuse each: 6 (280.6 g), 14 (185.3 g), 13 (151.5 g), and 7 (122.6 g). Six STPs (1, 2, 4, 10, 11, and 18) yielded less than 20 g of material each. STP 11, in the middle of the project area, contributed only 0.7 g (flooring and plastic flagging tape) of the refuse. This STP also produced the only fossil shell.

By depth, the trash material was distributed from 0 to 40 cm, but only STPs 2 and 3 produced refuse below 30 cm – most likely due to soil tilling for the garden area. Intrusive material was only found in the upper 20 cm in STPs 10, 11, 15, and 16; the remaining STPs yielded intrusive material from 0-30 cm.

Summary

The survey and testing program indicates that the project area has been disturbed by previous construction and landscaping for the existing structures. The southern portion of the project has been significantly impacted by rodent bioturbation and garden tilling. The lack of any artifacts and minimal shell that could represent cultural material indicates that significant portions of site CA-SDI-11571 are not present within the project area.

V. SUMMARY AND RECOMMENDATIONS

The goal of the project was to identify resources that may be impacted by the project. The limited surface and subsurface shell that may be cultural in nature and absence of any prehistoric artifacts suggest that the project area is not within a significant portion of site CA-SDI-11571.

No significant impacts to cultural resources are anticipated to result from the proposed development. Significant portions of site CA-SDI-11571 were not identified within the project area during the survey and testing program. The historic-age slab foundation (EBR-H-1) does not contain additional information potential and does not qualify as a significant cultural resource based on CEQA and City of San Diego Land Development Code criteria. No further treatment is recommended for EBR-H-1.

Because the testing was limited in depth and the project is within the mapped boundary of CA-SDI-11571, monitoring by an archaeological and a Native American monitor is recommended during construction excavation and grading to ensure unidentified sensitive resources are not present or impacted by the project.

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APPENDICES

A. Resume of Principal Investigator
B. Records Search Confirmation
C. Native American Correspondence
D. Catalogue
E. Photographs and Photo Logs

APPENDIX A

RESUME OF PRINCIPAL INVESTIGATOR

ANDREW R. PIGNIOLO, M.A., RPA
Principal Archaeologist
Laguna Mountain Environmental, Inc.

Education
San Diego State University, Master of Arts, Anthropology, 1992
San Diego State University, Bachelor of Arts, Anthropology, 1985

Professional Experience

2002-Present	Principal Archaeologist/President, Laguna Mountain Environmental, Inc., San Diego
1997-2002	Senior Archaeologist, Tierra Environmental Services, San Diego
1994-1997	Senior Archaeologist, KEA Environmental, Inc., San Diego
1985-1994	Project Archaeologist/Senior Archaeologist, Ogden Environmental and Energy Services, San Diego
1982-1985	Reports Archivist, Cultural Resource Management Center (now the South Coastal Information Center), San Diego State University
1980-1985	Archaeological Consultant, San Diego, California

Professional Affiliations
Register of Professional Archaeologists (RPA), 1992-present
Qualified Archaeology Consultant, San Diego County
Qualified Archaeology Consultant, City of San Diego
Qualified Archaeology Consultant, City of Chula Vista
Qualified Archaeology Consultant, Riverside County
Society for American Archaeology
Society for California Archaeology
Pacific Coast Archaeological Society
San Diego County Archaeological Society

Qualifications
Mr. Andrew Pigniolo is a certified archaeology consultant for the County and City of San Diego. Mr. Pigniolo has more than 36 years of experience as an archaeologist, and has conducted more than 800 projects throughout southern California and western Arizona. His archaeological investigations have been conducted for a wide variety of development and resource management projects including water resource facilities, energy utilities, commercial and residential developments, military installations, transportation projects, and projects involving Indian Reservation lands. Mr. Pigniolo has conducted the complete range of technical studies including archaeological overviews and management plans, ethnographic studies, archaeological surveys, test excavations, historical research, evaluations of significance under CEQA and Section 106, data recovery programs, and monitoring projects. He has received 40 hour HAZWOPPER training and holds an active card for hazardous material work.

REPRESENTATIVE PROJECTS

Proposed SDG&E Sunrise Powerlink Project, San Diego to Imperial Valley, California *(San Diego Gas and Electric).* Mr. Pigniolo served as the Principal Investigator and archaeological monitor for this project whose purpose is the installation of a new transmission line corridor running from San Diego to Imperial Valley. This phase of the project included the preliminary reporting of any cultural resources observed during field visits to the proposed impact areas. Mr. Pigniolo recorded sites encountered during monitoring, and collected GPS points and photographs of the sites for future review. Mr. Pigniolo also conducted the cultural resources portion of the environmental training for this project.

Princess Street Monitoring and Data Recovery Project at the Spindrift Site *(City of San Diego).* Mr. Pigniolo served as a Principal Investigator of an archaeological monitoring and data recovery program at the Spindrift Site in the community of La Jolla. The effort was initially to provide archaeological monitoring of a utility undergrounding project. The presence of the major prehistoric village site within the project alignment quickly became evident prior to construction monitoring and a data recovery plan was prepared prior to the start of work. Data recovery included the excavation of 25 controlled units and the water screening of 100 percent of the archaeological site material impacted during trenching. More than 40 fragmented human burials were encountered. Working with Native American monitors and representatives, the remains were repatriated.

Cultural Resource Survey, Geotechnical Monitoring, and Testing for the La Jolla View Reservoir Project, La Jolla, City of San Diego, California (*IEC*). Mr. Pigniolo served as Principal Investigator and conducted an archaeological survey on an approximately 15-acre study area, in the La Jolla Natural Park area on Mount Soledad above La. In addition to the field survey, geotechnical work was monitored by an archaeologist and Native American monitor. One small prehistoric cobble procurement site (CA-SDI-20843) was tested to determine site significance. Due to surface visibility constraints from dense vegetation, monitoring by an archaeological and a Native American monitor during construction excavation and grading was recommended to ensure sensitive features not identified during the survey are not present or impacted by the project.

City of San Diego Sever Group 783 Project, San Diego, California *(Orion Construction Company.)* Mr. Pigniolo was the Principal Investigator for an archaeological monitoring project for a sewer line replacement in the eastern portion of the City of San Diego. The project included archaeological construction monitoring in an urban environment.

Cultural Resource Monitoring and Treatment of CA-SDI-20861 for the 1941-1945 Columbia Street Project, City of San Diego, California (*Jeff Svitak Inc.*) Mr. Pigniolo served as Principal Investigator of an archival research and an archaeological and Native American monitoring program of building demolition and construction excavation for a multi-family dwelling in the Little Italy community of the City of San Diego. The project consisted of archaeological and historical research prior to fieldwork, archaeological monitoring of foundation removal and construction excavation, and the recovery and analysis of historic artifacts discovered during monitoring. Site CA-SDI-20861 was treated as a significant cultural resource and the recovery and analysis of the cultural material served as mitigation for the project impacts to the site.

Cultural Resource Salvage and Monitoring within a Portion of CA-SDI-39/17372 at 1891 Viking Way, La Jolla, City of San Diego, California (*Ayers General Contracting, Inc.*) Mr. Pigniolo served as Principal Investigator of an archaeological salvage and documentation program in addition to construction monitoring for the residence located at 1891 Viking Way, in the La Jolla. The project included the demolition and replacement of an existing retaining wall, and the replacement of additional yard hardscape. The City of San Diego archaeologist determined that construction work was occurring within site CA-SDI-39 and required work to stop and a treatment plan to partially mitigate impacts to the site be prepared. The project included a salvage effort to partially mitigate impacts to this portion of the site, through documentation and artifact recovery and to recover any impacted human remains as part of mitigation. Three phases of treatment were conducted including a 100 percent recovery program for human remains and associated grave goods and monitoring of final construction disturbance and backfilling.

Muller Residence Archaeological Survey, Testing, and Evaluation, Carmel Valley, City of San Diego, California (*Mr. Rolf Muller*) Mr. Pigniolo served as Principal Investigator and Project Manager of a cultural resource survey and testing and evaluation program of a residential parcel proposed for development. The survey indicated the presence of a portion of a prehistoric shell midden within the project area. The testing program indicated a deeply buried archaeological deposit with a high level of integrity. Impact avoidance through redesign was recommended under City of San Diego Historical Resources Guidelines.

Cultural Resource Monitoring for The San Diego County Administration Center Waterfront Park Project, San Diego, California (*McCarthy Building Companies, Inc.*) Mr. Pigniolo served as Principal Investigator of a cultural resource monitoring program for the Water Front Park Project at the San Diego County Administration Building in the City of San Diego. The monitoring program included excavation near the dredge fill/native ground contact. Historic maps indicated that the entire project area was located on man-made land created from bay dredge spoils. The monitoring program identified a small historic-age boat that probably sank in the bayfront prior to filling of the area. Based on the current County guidelines, this resource qualifies as significant for its information potential and has been treated as such. The boat was documented and avoided, and left in place.

13th and C Streets Evaluation Project, City of San Diego, California (*WM Builders*) Mr. Pigniolo served as Principal Investigator of a archaeological/historical resource assessment for a commercial development project in the City of San Diego. The project area is in the downtown portion of San Diego. A records search, literature review, examination of historic maps, records, and city directories was used to assess the potential for buried historic resources within the project area. Potential buried historic resource locations were identified and a testing plan was developed.

U. S. Army Yuma Proving Ground (YPG) Native American Consultation Plan, Yuma, Arizona (*Yuma Proving Ground*). Mr. Pigniolo served as principal author of a Native American consultation plan for YPG to provide guidance and information to U.S. Army commanders and Army resource managers at YPG for consultation with Native American groups. Consultation was conducted in a manner that is consistent with federal laws and regulations that mandate consultation and the consultation plan was designed to ensure the participation of Native American groups early in the planning process.

All American 105 Race Project, West Mesa, Imperial County, California (*Legacy 106, Inc*.). Mr. Pigniolo served as Principal Investigator, report author, and crew chief for an archaeological survey for a proposed off-road vehicle race course in the West Mesa area of Imperial County. The survey covered Bureau of Land Management (BLM) lands and included close coordination with BLM staff. The survey included a proposed 7.5 mile course with a very short time-frame. The goal was project alignment adjustment and realignment to avoid resource impacts where possible. A variety of prehistoric cultural resources including 10 sites and seven isolates were encountered. Human remains were identified and avoided. The race route was realigned to avoid significant resource impacts allowing the race to proceed on schedule.

Alpine Fire Safe Council Brush Management Monitoring Project, Alpine Region, San Diego County, California (*Alpine Fire Safe Council*) Mr. Pigniolo served as Principal Investigator for a cultural resources monitoring and protection program on four project areas surrounding Alpine. Cultural resources identified during previous surveys within the vegetation treatment areas were flagged for avoidance. The project included hand clearing and chaparral mastication near residential structures to create a fire buffer zone. Vegetation removal was monitored to ensure cultural resources obscured by heavy vegetation were not impacted by the project and that all recorded cultural resources were avoided. The Bureau of Land Management served as Lead Agency for the project.

APPENDIX B

RECORDS SEARCH CONFIRMATION

South Coastal Information Center
San Diego State University
5500 Campanile Drive
San Diego, CA 92182-5320
Office: (619) 594-5682
www.scic.org
scic@mail.sdsu.edu

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM
CLIENT IN-HOUSE RECORDS SEARCH

Company: Laguna Mountain Enviro

Company Representative: Carol Serr

Date: 11/28/2016

Project Identification: Shasta Street Home Survey and Testing #1644

Search Radius: 1/4 mile

Historical Resources: SELF

Trinomial and Primary site maps have been reviewed. All sites within the project boundaries and the specified radius of the project area have been plotted. Copies of the site record forms have been included for all recorded sites.

Previous Survey Report Boundaries: SELF

Project boundary maps have been reviewed. National Archaeological Database (NADB) citations for reports within the project boundaries and within the specified radius of the project area have been included.

Historic Addresses: SELF

A map and database of historic properties (formerly Geofinder) has been included.

Historic Maps: SELF

The historic maps on file at the South Coastal Information Center have been reviewed, and copies have been included.

Copies: 4

Hours: 1

Carol Serr

This is not an invoice. Please pay from the monthly billing statement

APPENDIX C

NATIVE AMERICAN CORRESPONDENCE

Laguna Mountain Environmental, Inc.

February 2, 2017

Native American Heritage Commission
c/o Kathy Sanchez
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691

Subject: EcoBlok Residences Survey & Testing Project (San Diego), California (#1704)

Dear Ms. Sanchez,

Laguna Mountain Environmental is conducting an archaeological investigation in the Pacific Beach area of the City of San Diego for survey and testing at 3977 Shasta Street for the EcoBlok Residences project. The proposed project includes the demolition of existing residential structures and construction of 31 houses on individual lots. As part of the project demolition and construction, removal of existing foundations and grading and excavation for new foundations and utilities will occur.

The project area (APNs 424-482-14 and 424-532-25) is approximately 1.7 acres, located west of Interstate 5, east of Ingraham Street, and south of Grand Avenue on the eastern side of Crown Point. The project area is shown on the La Jolla 7.5' USGS quadrangle, in Township 16 South, Range 3 West, within an unsectioned portion of Pueblo Lands (see attached figure).

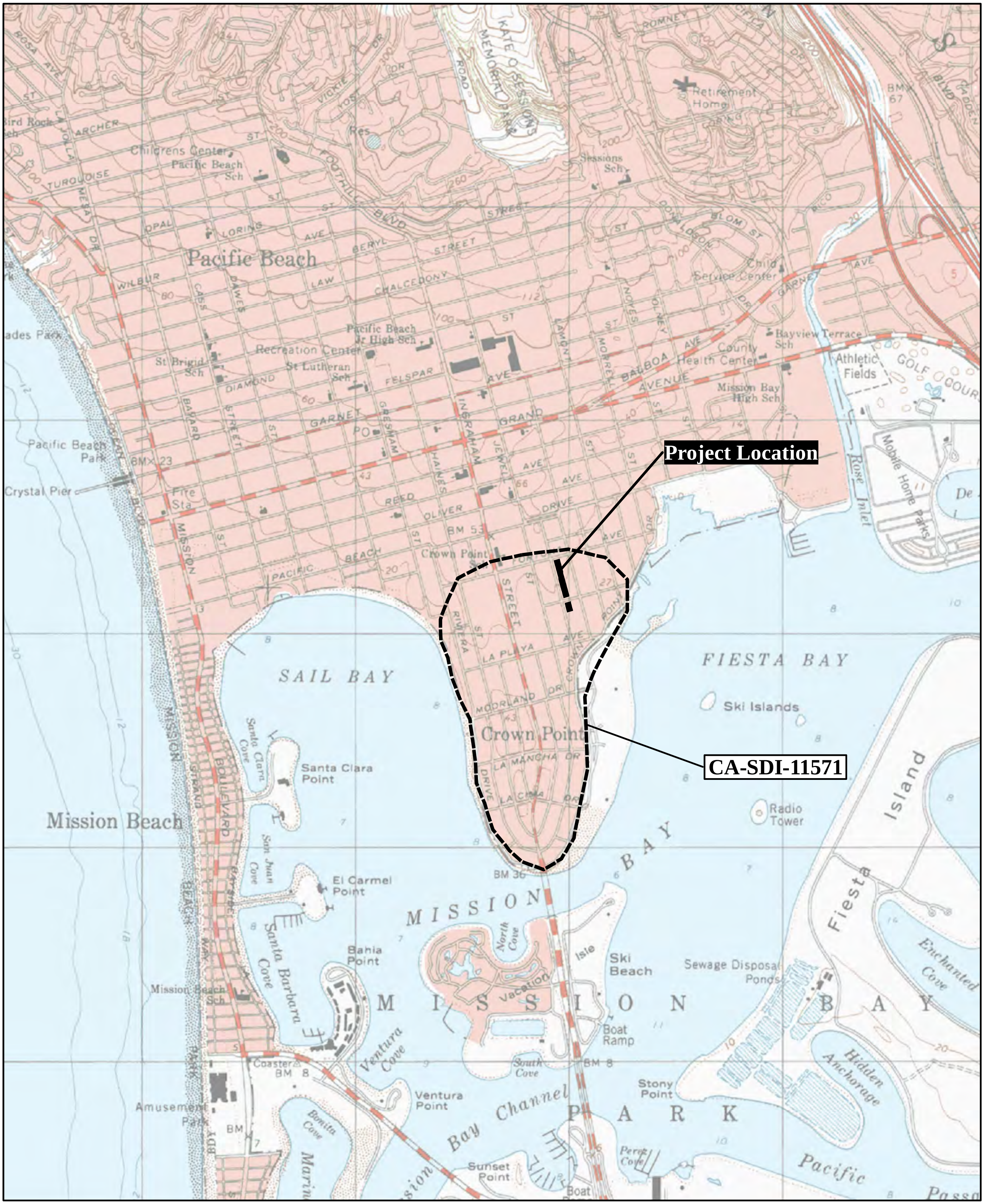
We respectfully request any information and input that you may have regarding Native American concerns either directly or indirectly associated with this project area. We would also appreciate a current list of appropriate Native American contacts for the area in order to elicit local concerns. If you or your files have any information about cultural resources or traditional cultural properties located on or near the project site, please contact me. If I can provide any additional information, please contact me immediately at (858) 505-8164. Thank you for your assistance.

Sincerely,

Andrew R. Pigniolo

Andrew Pigniolo, M.A., RPA
Principal Archaeologist

Attachments:
Project Location map
Sacred Lands File & Native American Contacts List Request Form



Source: USGS 7.5' La Jolla Quadrangle

Project Location and Associated Cultural Resource

0 1,000 2,000 Feet

Laguna Mountain Environmental, Inc.

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: EcoBlok Residences Survey and Testing

County: San Diego

USGS Quadrangle
Name: La Jolla

Township: 16 S Range: 3 W Section(s): -

Company/Firm/Agency:
Laguna Mountain Environmental

Contact Person: Andrew Pigniolo

Street Address: 7969 Engineer Road, Suite 208

City: San Diego Zip: 92111

Phone: (858) 505-8164 Extension: 109

Fax: (858) 505-9658

Email: Laguna@LagunaEnv.com

Project Description:
The proposed project includes the demolition of existing residential structures and construction of 31 houses on individual lots. As part of the project demolition and construction, removal of existing foundations and grading and excavation for new foundations and utilities will occur.

☑ Project Location Map is attached

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

February 6, 2017

Andrew Pigniolo
Laguna Mountain Environmental

Sent by E-mail: laguna@lagunaenv.com

RE: Proposed EcoBlok Residences Survey and Testing Project, City of San Diego; La Jolla USGS Quadrangle, San Diego County, California

Dear Mr. Pigniolo:

Attached is a contact list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. A search of the SFL was completed for the USGS quadrangle information provided with negative results.

Our records indicate that the lead agency for this project has not requested a Native American Consultation List for the purposes of formal consultation. Lists for cultural resource assessments are different than consultation lists. Please note that the intent of the referenced codes below is to avoid or mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects under AB-52.

As of July 1, 2015, Public Resources Code Sections 21080.3.1 and 21080.3.2 **require public agencies** to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> **Within 14 days** of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.3.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.3.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and

- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.
   - All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

The results of these searches and surveys should be included in the "Tribal Cultural Resources" section or in a separate subsection of the Cultural Resources section of the environmental document submitted for review. Please reference California Natural Resources Agency (2016) "Final Text for tribal cultural resources update to Appendix G: Environmental Checklist Form," http://resources.ca.gov/ceqa/docs/ab52/Clean-final-AB-52-App-G-text-Submitted.pdf.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

Native American Heritage Commission
Tribal Contact List
San Diego County
2/6/2017

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La Posta Band of Mission Indians
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This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed EcoBlok Residences Survey and Testing Project, San Diego County.

Native American Heritage Commission
Tribal Contact List
San Diego County
2/6/2017

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This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed EcoBlok Residences Survey and Testing Project, San Diego County.

APPENDIX D

CATALOGUE

2017 Testing Recovery for EcoBlok Residences Project - 3977 Shasta St.

Cat#	Prov.	Level (cm)	Class	Item	Type	Condition	Material/Species	Wt (g)	Comments
1	STP 1	0-10	Faunal Bone	Bone	Sm. Mammal	Burned	Undiff.	0.1	
2	STP 1	0-10	Intrusive	Modern Item	Various	-	Mixed	0.4	thin cup porcelain; thin plastic items
3	STP 1	0-10	Intrusive Faunal	Shell	Gastropod	-	Rumina decollata	0.4	thin-shelled, spiral "cone" type
4	STP 1	10-20	Faunal Bone	Bone	Bird	Unburned	Undiff.	0.1	long bone
5	STP 1	10-20	Intrusive	Modern Item	Various	-	Mixed	0.6	thin plastic; chicken egg shell
5	STP 1	10-20	Intrusive	Nesting Material	Various	-	Mixed	0.4	chewed up carpet fiber, plastic wrapper & bandaid
6	STP 1	10-20	Intrusive Faunal	Shell	Gastropod	-	Rumina decollata	0.1	
7	STP 1	20-30	Intrusive	Modern Item	Various	-	Mixed	5.5	dark red-brown flooring tile with black mastic, yellow hard plastic; window
7	STP 1	20-30	Intrusive	Nesting Material	Various	-	Mixed	0.2	chewed thin wrapper & foil
8	STP 2	0-10	Faunal Bone	Bone	Sm. Mammal	Burned	Undiff.	0.1	
8	STP 2	0-10	Faunal Bone	Bone	Bird	Unburned	Undiff.	1.0	
9	STP 2	0-10	Faunal Shell	Shell	Barnacle	Unburned	Undiff.	0.1	
10	STP 2	0-10	Intrusive	Modern Item	Various	-	Mixed	1.9	same flooring, thin white plastic; clear bottle glass
11	STP 2	0-10	Intrusive Faunal	Shell	Gastropod	-	Undiff.	0.5	Rumina & Helix
12	STP 2	10-20	Faunal Bone	Bone	Sm. Mammal	Burned	Undiff.	0.1	
12	STP 2	10-20	Faunal Bone	Bone	Bird	Unburned	Undiff.	0.1	
12	STP 2	10-20	Faunal Bone	Bone	Bird	Burned	Undiff.	2.5	long bone; in 2 pcs; filled with dirt
13	STP 2	10-20	Faunal Shell	Shell	Undiff.	Unburned	Undiff.	0.1	worm tube, probably off larger pc in next level
14	STP 2	10-20	Intrusive	Modern Item	Various	-	Mixed	2.3	flooring, thin white semi-melted glass
15	STP 2	20-30	Faunal Bone	Bone	Bird	Unburned	Undiff.	0.2	
16	STP 2	20-30	Faunal Shell	Shell	Bivalve	Unburned	Chione	0.9	
16	STP 2	20-30	Faunal Shell	Shell	Gastropod	Unburned	Undiff.	0.1	kelp snail
16	STP 2	20-30	Faunal Shell	Shell	Undiff.	Unburned	Undiff.	2.9	worm tubes on unknown bivalve substrate
17	STP 2	20-30	Intrusive	Modern Item	Various	-	Mixed	1.7	flooring, green bottle glass; black plastic bits
18	STP 2	20-30	Intrusive Faunal	Shell	Gastropod	-	Helix	0.1	
19	STP 2	30-40	Intrusive	Modern Item	Unknown	-	Plastic	0.1	white plastic with black lettering "MIXED"; probably a plant tag
20	STP 3	0-10	Intrusive	Modern Item	Various	-	Mixed	4.8	window glass (pale aqua); plastic "cap"; plant tags; wooden stake frag
21	STP 3	0-10	Intrusive Faunal	Shell	Gastropod	-	Helix	0.1	
22	STP 3	10-20	Faunal Bone	Bone	Bird	Unburned	Undiff.	0.5	
22	STP 3	10-20	Faunal Bone	Bone	Bird	Burned	Undiff.	0.1	
23	STP 3	10-20	Intrusive	Modern Item	Various	-	Mixed	29.6	lower portion of zucchin tag; beige flooring; black ziptie; orange yarn; terra cotta sewer pipe (glazed interior)
24	STP 3	10-20	Intrusive Faunal	Shell	Gastropod	-	Helix	0.1	
25	STP 3	20-30	Faunal Bone	Bone	Sm. Mammal	Burned	Undiff.	0.1	
25	STP 3	20-30	Faunal Bone	Bone	Sm. Mammal	Unburned	Undiff.	0.1	
25	STP 3	20-30	Faunal Bone	Bone	Bird	Unburned	Undiff.	0.5	
26	STP 3	20-30	Faunal Shell	Shell	Bivalve	Unburned	Argopecten	0.2	
27	STP 3	20-30	Intrusive	Modern Item	Various	-	Mixed	3.3	concrete chunk; flooring; plastic bits; thin, flat glass with ACL label (white speckled; All R[ights Reserved]
28	STP 3	20-30	Intrusive Faunal	Shell	Gastropod	-	Helix	0.1	
29	STP 3	30-40	Faunal Bone	Bone	Bird	Unburned	Undiff.	0.7	
30	STP 3	30-40	Faunal Shell	Shell	Barnacle	Unburned	Undiff.	0.2	
30	STP 3	30-40	Faunal Shell	Shell	Bivalve	Unburned	Undiff.	0.1	
31	STP 3	30-40	Intrusive	Modern Item	Various	-	Mixed	20.8	flooring; concrete; saw-cut bone; amber bottle glass; window glass; plastic plant tag pcs;
32	STP 3	30-40	Intrusive	Nesting Material	Various	-	Mixed	0.4	chewed plastic wrappers
33	STP 3	30-40	Intrusive Faunal	Shell	Gastropod	-	Helix	0.1	
34	STP 4	0-10	Intrusive	Nesting Material	Wrapper	-	Plastic	0.1	chewed wrapper
35	STP 4	0-10	Intrusive Faunal	Shell	Gastropod	-	Rumina decollata	0.8	
36	STP 4	0-10	Intrusive	Modern Item	Shell	-	Egg	0.1	chicken egg shell from compost

2017 Testing Recovery for EcoBlok Residences Project - 3977 Shasta St.

Cat#	Prov.	Level (cm)	Class	Item	Type	Condition	Material/Species	Wt (g)	Comments
37	STP 4	10-20	Faunal Bone	Bone	Fish	Unburned	Undiff.	1.0	bony; vert & parts
37	STP 4	10-20	Faunal Bone	Bone	Undiff.	Unburned	Undiff.	0.1	
38	STP 4	10-20	Intrusive	Modern Item	Various	-	Mixed	3.0	flooring; thin plastic pcs (pc of grocery bag handle)
39	STP 4	20-30	Faunal Bone	Bone	Fish	Unburned	Undiff.	0.1	bony
39	STP 4	20-30	Faunal Bone	Bone	Bird	Unburned	Undiff.	0.1	
40	STP 4	20-30	Intrusive	Modern Item	Various	-	Mixed	1.9	concrete blob; styrofoam; thin hard plastic pcs
41	STP 4	20-30	Intrusive Faunal	Shell	Gastropod	-	Helix	0.1	
42	STP 5	0-10	Intrusive	Modern Item	Various	-	Mixed	36.6	concrete blob (32.5 g); flooring
43	STP 5	0-10	Intrusive Faunal	Shell	Gastropod	-	Rumina decollata	0.2	
44	STP 5	10-20	Faunal Shell	Shell	Bivalve	Unburned	Argopecten	0.1	
45	STP 5	10-20	Intrusive	Modern Item	Various	-	Mixed	34.2	concrete chunk; flooring; plastic bits; plastic hose washer; window glass; old aqua bottle glass; green bottle glass; foam sheeting
46	STP 5	10-20	Intrusive Faunal	Shell	Gastropod	-	Helix	0.1	
47	STP 5	20-30	Faunal Bone	Bone	Bird	Burned	Undiff.	0.2	
48	STP 5	20-30	Intrusive	Modern Item	Various	-	Mixed	11.2	concrete chunk; flooring; misc plastic; amber bottle glass (beer)
49	STP 6	0-10	Intrusive	Modern Item	Bldg Mat	-	Concrete	274.3	1 with finished edge and large gravel; other is homogeneous and interior; Discarded
50	STP 6	10-20	Intrusive	Modern Item	Various	-	Mixed	5.9	flooring; asphalt chunks
51	STP 6	20-30	Intrusive	Modern Item	Window	-	Glass	0.4	clear
52	STP 7	0-10	Intrusive	Modern Item	Various	-	Mixed	21.4	concrete chunk with large gravel; green plastic sprinkler head frags; black "ribbed" (on interior) plastic "pipe" cutting
53	STP 7	10-20	Intrusive	Modern Item	Various	-	Mixed	61.3	flooring; asphalt; green plastic pcs; terra cotta roof tile?; bottle glass (1 amber; 2 clear)
54	STP 7	20-30	Intrusive	Modern Item	Various	-	Mixed	39.9	asphalt chunk; kelly green bottle glass
55	STP 8	0-10	Intrusive	Modern Item	Various	-	Mixed	19.9	thin concrete; 2-ply hard plastic (pink ext/white int); aqua bottle glass (old/thk wall)
56	STP 8	10-20	Intrusive	Modern Item	Various	-	Mixed	26.6	concrete with large gravel; clear bottle glass (2); flooring; painted pale pink thin plastic (bent)
57	STP 8	20-30	Intrusive	Modern Item	Flooring	-	Other	3.7	flooring tile - different color than last level
58	STP 9	0-10	Intrusive	Modern Item	Flooring	-	Other	4.8	2 diff. beiges (& diff. mastic)
59	STP 9	10-20	Intrusive	Modern Item	Various	-	Mixed	10.6	flooring (brown & beige tiles); asphalt roof shingle; bottle glass (amber; clear)
60	STP 9	20-30	Intrusive	Modern Item	Various	-	Mixed	15.0	lrg pc of brown flooring tile; bottle glass (clear; aqua - old, non-round)
61	STP 10	0-10	Intrusive	Modern Item	Various	-	Mixed	0.1	white, hard plastic; styrofoam
62	STP 10	10-20	Intrusive	Modern Item	Various	-	Mixed	16.8	asphalt chunks (and asphalt covered gravel); concrete; styrofoam
63	STP 11	0-10	Intrusive	Modern Item	Other	-	Plastic	0.1	flaggiing tape?
64	STP 11	0-10	Fossil	Faunal Shell	Bivalve	-	Shell	4.7	pcs of Pecten
65	STP 11	10-20	Intrusive	Modern Item	Flooring	-	Other	0.6	
66	STP 11	10-20	Fossil	Faunal Shell	Bivalve	-	Shell	3.9	
67	STP 11	20-30	Fossil	Faunal Shell	Bivalve	-	Shell	0.1	
68	STP 12	0-10	Intrusive	Modern Item	Various	-	Mixed	30.9	terra cotta floor tile; asbestos flooring tile
69	STP 12	10-20	Intrusive	Modern Item	Various	-	Mixed	1.4	terra cotta chunk; flooring tile
70	STP 12	20-30	Intrusive	Modern Item	Stake	-	Wood	17.7	
71	STP 13	0-10	Intrusive	Modern Item	Various	-	Mixed	76.0	concrete pcs (72.6 g; discarded); bottle glass (amber & aqua)
72	STP 13	10-20	Intrusive	Modern Item	Various	-	Mixed	73.6	concrete pcs (71.8 g; discarded); flooring tile
73	STP 13	20-30	Intrusive	Modern Item	Various	-	Mixed	1.9	floor tile; chunk of tar
74	STP 14	0-10	Intrusive	Modern Item	Other	-	Asphalt	13.7	
75	STP 14	10-20	Intrusive	Modern Item	Various	-	Mixed	72.3	concrete with large gravel; green bottle glass; window glass; flooring; corroded metal (nail, etc.); plastic coffe cup lid (very modern!)
76	STP 14	10-20	Faunal Shell	Shell	Bivalve	Unburned	Argopecten	0.1	weathered

2017 Testing Recovery for EcoBlok Residences Project - 3977 Shasta St.

Cat#	Prov.	Level (cm)	Class	Item	Type	Condition	Material/Species	Wt (g)	Comments
77	STP 14	20-30	Intrusive	Modern Item	Various	-	Mixed	99.3	concrete with large gravel (84.5 g; discarded); flooring; bottle glass (amber, green, clear); corroded metal; styrofoam
78	STP 15	0-10	Intrusive	Modern Item	Various	-	Mixed	12.9	flooring; bottle glass (clear); thin plastic wrapper; thin brittle plastic
79	STP 15	10-20	Intrusive	Modern Item	Various	-	Mixed	29.3	concrete; bottle glass (clear - stippled shoulder; amber)
80	STP 16	0-10	Intrusive	Modern Item	Various	-	Mixed	8.9	concrete; flooring
81	STP 16	0-10	Faunal Shell	Shell	Bivalve	Unburned	Argopecten	0.1	weathered
82	STP 16	10-20	Intrusive	Modern Item	Various	-	Mixed	63.2	concrete; flooring; terra cotta roof tile & other frag; black rubber "plug"
83	STP 16	10-20	Faunal Shell	Shell	Bivalve	Unburned	Argopecten	0.1	super weathered
84	STP 17	0-10	Intrusive	Modern Item	Various	-	Mixed	16.3	flooring; super corroded metal (nail?); fleck of black paint
85	STP 17	10-20	Intrusive	Modern Item	Various	-	Mixed	61.1	heavily corroded metal pcs (nails?)
86	STP 17	20-30	Intrusive	Modern Item	Various	-	Mixed	0.8	flooring
87	STP 18	10-20	Intrusive	Modern Item	Other	-	Plastic	0.1	yellow flagging tape
88	STP 18	20-30	Intrusive	Modern Item	Bottle	-	Glass	2.3	clear; modern with crescent ribs around base perimeter
89	STP 19	0-10	Intrusive	Modern Item	Other	-	Plastic	0.1	Heinz mustard packet fragment
90	STP 19	10-20	Intrusive	Modern Item	Various	-	Mixed	211.1	terra cotta pipe frag & other frag; concrete chunk; asphalt chunks; flooring; bent segment of 1/8" dia wire
91	STP 19	20-30	Intrusive	Modern Item	Various	-	Mixed	201.3	terra cotta frags; concrete chunk (165.2g; discarded); window glass
92	STP 20	0-10	Intrusive	Modern Item	Various	-	Mixed	11.6	multiply wire coated in red plastic; flooring; bright red plastic "loop"
93	STP 20	10-20	Intrusive	Modern Item	Various	-	Mixed	10.4	flooring; terra cotta bit; corroded metal (nail?); styrofoam; blue flagging tape
94	STP 20	20-30	Intrusive	Modern Item	Various	-	Mixed	16.1	concrete; terra cotta bit; styrofoam; paint chip

APPENDIX E

PHOTOGRAPHS AND PHOTO LOGS

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH RECORD

Page 1 **of** 2 **Project Name (No.):** Eco Blok Residences Survey & Test (1704) **Year 2017**

Camera Format: FujiChrome
Film Type and Speed: Digital Images Kept at: Laguna Mountain Environmental, Inc.

Mo.	Day	Time	Exp.	Subject/Description	View Toward	Accession #
2	7	8:00	01	Overview of Western Central Portion of the Project	SE	PR-05719-001
2	7	8:00	02	Overview of the Northern Portion of the Project	E	PR-05719-002
2	7	8:00	03	Overview of the Northern Portion of the Project	SE	PR-05719-003
2	7	8:00	04	Overview of the Northern Portion of the Project	SE	PR-05719-004
2	7	8:00	05	Overview of Western Central Portion of the Project	SE	PR-05719-005
2	7	8:00	06	Overview of Western Central Portion of the Project	SE	PR-05719-006
2	7	8:00	07	Overview of the Central Building on the Project	SE	PR-05719-007
2	7	8:00	08	Overview of Western Central and Southern Portion of the Project	SE	PR-05719-008
2	7	8:00	09	Overview of the Southern Building on the Project	ESE	PR-05719-009
2	7	8:00	10	Overview of the Southern Portion of the Project	S	PR-05719-010
2	7	8:00	11	Overview of the Southern Portion of the Project	SE	PR-05719-011
2	7	8:00	12	Overview of the Southern Building on the Project	SE	PR-05719-012
2	7	8:00	13	Overview of the Southern Building on the Project	E	PR-05719-013
2	7	10:00	14	STP 19 30 cm Floor	N	PR-05719-014
2	7	10:00	15	STP 19 30 cm Floor and Sidewall	N	PR-05719-015
2	7	10:00	16	STP 19 30 cm Floor and Sidewall	E	PR-05719-016
2	7	10:00	17	STP 19 30 cm Floor and Sidewall	S	PR-05719-017
2	7	10:00	18	STP 19 30 cm Floor and Sidewall	W	PR-05719-018
2	7	10:00	19	STP 19 30 cm Floor	-	PR-05719-019
2	7	10:30	20	STP 20 30 cm Floor	N	PR-05719-020
2	7	10:30	21	STP 20 30 cm Floor and Sidewall	N	PR-05719-021
2	7	10:30	22	STP 20 30 cm Floor and Sidewall	E	PR-05719-022
2	7	10:30	23	STP 20 30 cm Floor and Sidewall	S	PR-05719-023
2	7	10:30	24	STP 20 30 cm Floor and Sidewall	W	PR-05719-024
2	7	10:30	25	STP 20 30 cm Floor	-	PR-05719-025
2	7	10:30	26	Overview of STP 20 Location	NW	PR-05719-026
2	7	10:30	27	Overview of STP 19 Location	NE	PR-05719-027
2	7	11:00	28	STP 18 30 cm Floor	N	PR-05719-028
2	7	11:00	29	STP 18 30 cm Floor and Sidewall	N	PR-05719-029
2	7	11:00	30	STP 18 30 cm Floor and Sidewall	E-	PR-05719-030
2	7	11:00	31	STP 18 30 cm Floor and Sidewall	S	PR-05719-031
2	7	11:00	32	STP 18 30 cm Floor and Sidewall	W	PR-05719-032
2	7	11:00	33	STP 18 30 cm Floor	-	PR-05719-033
2	7	12:30	34	STP 16 40 cm Floor	N	PR-05719-034
2	7	12:30	35	STP 16 40 cm Floor and Sidewall	N	PR-05719-035
2	7	12:30	36	STP 16 40 cm Floor and Sidewall	E	PR-05719-036
2	7	12:30	37	STP 16 40 cm Floor and Sidewall	S	PR-05719-037
2	7	12:30	38	STP 16 40 cm Floor and Sidewall	W	PR-05719-038
2	7	12:30	39	STP 16 40 cm Floor	-	PR-05719-039
2	7	12:30	40	Overview of STP 16 Location	N	PR-05719-040
2	7	2:00	41	STP 15 30 cm Floor	N	PR-05719-041
2	7	2:00	42	STP 15 30 cm Floor and Sidewall	N	PR-05719-042
2	7	2:00	43	STP 15 30 cm Floor and Sidewall	E	PR-05719-043
2	7	2:00	44	STP 15 30 cm Floor and Sidewall	S	PR-05719-044
2	7	2:00	45	STP 15 30 cm Floor and Sidewall	W	PR-05719-045
2	7	2:00	46	STP 15 30 cm Floor	-	PR-05719-046
2	7	2:00	47	Overview of STP 15 Location	NE	PR-05719-047

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH RECORD

Project Name (No.): Eco Blok Residences Survey & Test (1704) **Year 2017**

Camera Format: FujiChrome
Film Type and Speed: Digital

Images Kept at: Laguna Mountain Environmental, Inc.

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2	7	2:30	48	STP 14 40 cm Floor	N	PR-05719-048
2	7	2:30	49	STP 14 40 cm Floor and Sidewall	N	PR-05719-049
2	7	2:30	50	STP 14 40 cm Floor and Sidewall	E	PR-05719-050
2	7	2:30	51	STP 14 40 cm Floor and Sidewall	S	PR-05719-051
2	7	2:30	52	STP 14 40 cm Floor and Sidewall	W	PR-05719-052
2	7	2:30	53	STP 14 40 cm Floor	-	PR-05719-053
2	7	2:30	54	Overview of STP 14 Location	NE	PR-05719-054
2	7	3:00	55	STP 11 30 cm Floor	N	PR-05719-055
2	7	3:00	56	STP 11 30 cm Floor and Sidewall	N	PR-05719-056
2	7	3:00	57	STP 11 30 cm Floor and Sidewall	E	PR-05719-057
2	7	3:00	58	STP 11 30 cm Floor and Sidewall	S	PR-05719-058
2	7	3:00	59	STP 11 30 cm Floor and Sidewall	W	PR-05719-059
2	7	3:00	60	STP 11 30 cm Floor	-	PR-05719-060
2	7	3:00	61	Overview of STP 11 Location	NE	PR-05719-061
2	7	3:30	62	STP 10 30 cm Floor	N	PR-05719-062
2	7	3:30	63	STP 10 30 cm Floor and Sidewall	N	PR-05719-063
2	7	3:30	64	STP 10 30 cm Floor and Sidewall	E	PR-05719-064
2	7	3:30	65	STP 10 30 cm Floor and Sidewall	S	PR-05719-065
2	7	3:30	66	STP 10 30 cm Floor and Sidewall	W	PR-05719-066
2	7	3:30	67	STP 10 30 cm Floor	-	PR-05719-067
2	7	4:00	68	STP 8 30 cm Floor	N	PR-05719-068
2	7	4:00	69	STP 8 30 cm Floor and Sidewall	N	PR-05719-069
2	7	4:00	70	STP 8 30 cm Floor and Sidewall	E	PR-05719-070
2	7	4:00	71	STP 8 30 cm Floor and Sidewall	S	PR-05719-071
2	7	4:00	72	STP 8 30 cm Floor and Sidewall	W	PR-05719-072
2	7	4:00	73	STP 8 30 cm Floor	-	PR-05719-073
2	7	4:00	74	Overview of STP 8 Location	NE	PR-05719-074
2	7	4:30	75	STP 7 30 cm Floor	N	PR-05719-075
2	7	4:30	76	STP 7 30 cm Floor and Sidewall	N	PR-05719-076
2	7	4:30	77	STP 7 30 cm Floor and Sidewall	E	PR-05719-077
2	7	4:30	78	STP 7 30 cm Floor and Sidewall	S	PR-05719-078
2	7	4:30	79	STP 7 30 cm Floor and Sidewall	W	PR-05719-079
2	7	4:30	80	STP 7 30 cm Floor	-	PR-05719-080
2	7	4:30	81	Overview of STP 7 Location	NE	PR-05719-081
2	7	5:00	82	STP 6 30 cm Floor	N	PR-05719-082
2	7	5:00	83	STP 6 30 cm Floor and Sidewall	N	PR-05719-083
2	7	5:00	84	STP 6 30 cm Floor and Sidewall	E	PR-05719-084
2	7	5:00	85	STP 6 30 cm Floor and Sidewall	S	PR-05719-085
2	7	5:00	86	STP 6 30 cm Floor and Sidewall	W	PR-05719-086
2	7	5:00	87	STP 6 30 cm Floor	-	PR-05719-087
2	7	5:00	88	Overview of STP 6 Location	NE	PR-05719-088


PR-05719-001


PR-05719-002


PR-05719-003


PR-05719-004


PR-05719-005


PR-05719-006


PR-05719-007


PR-05719-008


PR-05719-009


PR-05719-010


PR-05719-011


PR-05719-012


PR-05719-013


PR-05719-014


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PR-05719-017


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PR-05719-019


PR-05719-020


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PR-05719-027


PR-05719-028


PR-05719-029


PR-05719-030


PR-05719-031


PR-05719-032


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PR-05719-034


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PR-05719-036


PR-05719-037


PR-05719-038


PR-05719-039


PR-05719-040


PR-05719-041


PR-05719-042


PR-05719-043


PR-05719-044


PR-05719-045


PR-05719-046


PR-05719-047


PR-05719-048


PR-05719-049


PR-05719-050


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PR-05719-065


PR-05719-066


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PR-05719-072


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PR-05719-075


PR-05719-076


PR-05719-077


PR-05719-078


PR-05719-079


PR-05719-080


PR-05719-081


PR-05719-082


PR-05719-083


PR-05719-084


PR-05719-085


PR-05719-086


PR-05719-087


PR-05719-088

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DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH RECORD

 Project Name (No.): Eco Blok Residences Survey & Test (1704) **Year 2017**

Camera Format: FujiChrome
Film Type and Speed: Digital Images Kept at: Laguna Mountain Environmental, Inc.

Mo.	Day	Time	Exp.	Subject/Description	View Toward	Accession #
2	8	9:00	01	STP 9 30 cm Floor	N	PR-05720-001
2	8	9:00	02	STP 9 30 cm Floor	N	PR-05720-002
2	8	9:00	03	STP 9 30 cm Floor and Sidewall	N	PR-05720-003
2	8	9:00	04	STP 9 30 cm Floor and Sidewall	E	PR-05720-004
2	8	9:00	05	STP 9 30 cm Floor and Sidewall	S	PR-05720-005
2	8	9:00	06	STP 9 30 cm Floor and Sidewall	W	PR-05720-006
2	8	9:00	07	STP 9 30 cm Floor	-	PR-05720-007
2	8	9:00	08	Overview of STP 9 Location	NE	PR-05720-008
2	8	9:30	09	STP 12 30 cm Floor	N	PR-05720-009
2	8	9:30	10	STP 12 30 cm Floor and Sidewall	N	PR-05720-010
2	8	9:30	11	STP 12 30 cm Floor and Sidewall	E	PR-05720-011
2	8	9:30	12	STP 12 30 cm Floor and Sidewall	S	PR-05720-012
2	8	9:30	13	STP 12 30 cm Floor and Sidewall	W	PR-05720-013
2	8	9:30	14	STP 12 30 cm Floor	-	PR-05720-014
2	8	9:30	15	Overview of STP 12 Location	NE	PR-05720-015
2	8	10:30	16	STP 13 30 cm Floor	N	PR-05720-016
2	8	10:30	17	STP 13 30 cm Floor and Sidewall	N	PR-05720-017
2	8	10:30	18	STP 13 30 cm Floor and Sidewall	E	PR-05720-018
2	8	10:30	19	STP 13 30 cm Floor and Sidewall	S	PR-05720-019
2	8	10:30	20	STP 13 30 cm Floor and Sidewall	W	PR-05720-020
2	8	10:30	21	STP 13 30 cm Floor	-	PR-05720-021
2	8	10:30	22	Overview of STP 13 Location	NE	PR-05720-022
2	8	11:00	23	STP 17 30 cm Floor	N	PR-05720-023
2	8	11:00	24	STP 17 30 cm Floor and Sidewall	N	PR-05720-024
2	8	11:00	25	STP 17 30 cm Floor and Sidewall	E	PR-05720-025
2	8	11:00	26	STP 17 30 cm Floor and Sidewall	S	PR-05720-026
2	8	11:00	27	STP 17 30 cm Floor and Sidewall	W	PR-05720-027
2	8	11:00	28	STP 17 30 cm Floor	-	PR-05720-028
2	8	11:00	29	Overview of STP 17 Location	NE	PR-05720-029
2	8	11:30	30	Overview of Vegetation Cover in Community Garden	S-	PR-05720-030
2	8	11:30	31	Overview of Vegetation Cover in Community Garden	SE	PR-05720-031
2	8	11:30	32	Overview of Vegetation Cover in Community Garden	S-	PR-05720-032
2	8	12:00	33	STP 3 40 cm Floor	N	PR-05720-033
2	8	12:00	34	STP 3 40 cm Floor and Sidewall	N	PR-05720-034
2	8	12:00	35	STP 3 40 cm Floor and Sidewall	E	PR-05720-035
2	8	12:00	36	STP 3 40 cm Floor and Sidewall	S	PR-05720-036
2	8	12:00	37	STP 3 40 cm Floor and Sidewall	W	PR-05720-037
2	8	12:00	38	STP 3 40 cm Floor	-	PR-05720-038
2	8	12:00	39	Overview of STP 3 Location	SW	PR-05720-039
2	8	12:00	40	Concrete Slab Foundation	S	PR-05720-040
2	8	12:00	41	Concrete Slab Foundation	SSW	PR-05720-041
2	8	12:00	42	Concrete Slab Foundation	W	PR-05720-042
2	8	1:00	43	STP 1 30 cm Floor	N	PR-05720-043
2	8	1:00	44	STP 1 30 cm Floor and Sidewall	N	PR-05720-044
2	8	1:00	45	STP 1 30 cm Floor and Sidewall	E	PR-05720-045
2	8	1:00	46	STP 1 30 cm Floor and Sidewall	S	PR-05720-046
2	8	1:00	47	STP 1 30 cm Floor and Sidewall	W	PR-05720-047

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH RECORD

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Camera Format: FujiChrome
Film Type and Speed: Digital
Images Kept at: Laguna Mountain Environmental, Inc.

Mo.	Day	Time	Exp.	Subject/Description	View Toward	Accession #
2	8	1:00	48	STP 1 30 cm Floor	-	PR-05720-048
2	8	1:00	49	Overview of STP 1 Location	NW	PR-05720-049
2	8	1:30	50	STP 2 40 cm Floor	N	PR-05720-050
2	8	1:30	51	STP 2 40 cm Floor and Sidewall	N	PR-05720-051
2	8	1:30	52	STP 2 40 cm Floor and Sidewall	E	PR-05720-052
2	8	1:30	53	STP 2 40 cm Floor and Sidewall	S	PR-05720-053
2	8	1:30	54	STP 2 40 cm Floor and Sidewall	W	PR-05720-054
2	8	1:30	55	STP 2 40 cm Floor	-	PR-05720-055
2	8	1:30	56	Overview of STP 2 Location	SW	PR-05720-056
2	8	2:00	57	STP 4 30 cm Floor	N	PR-05720-057
2	8	2:00	58	STP 4 30 cm Floor and Sidewall	N	PR-05720-058
2	8	2:00	59	STP 4 30 cm Floor and Sidewall	E	PR-05720-059
2	8	2:00	60	STP 4 30 cm Floor and Sidewall	S	PR-05720-060
2	8	2:00	61	STP 4 30 cm Floor and Sidewall	W	PR-05720-061
2	8	2:00	62	STP 4 30 cm Floor	-	PR-05720-062
2	8	2:00	63	STP 4 30 cm Floor Closeup	-	PR-05720-063
2	8	2:00	64	Overview of STP 4 Location	NW	PR-05720-064
2	8	2:30	65	STP 5 30 cm Floor	N	PR-05720-065
2	8	2:30	66	STP 5 30 cm Floor and Sidewall	N	PR-05720-066
2	8	2:30	67	STP 5 30 cm Floor and Sidewall	E	PR-05720-067
2	8	2:30	68	STP 5 30 cm Floor and Sidewall	S	PR-05720-068
2	8	2:30	69	STP 5 30 cm Floor and Sidewall	W	PR-05720-069
2	8	2:30	70	STP 5 30 cm Floor	-	PR-05720-070
2	8	2:30	71	Overview of STP 5 Location	NE	PR-05720-071


PR-05720-001


PR-05720-002


PR-05720-003


PR-05720-004


PR-05720-005


PR-05720-006


PR-05720-007


PR-05720-008


PR-05720-009


PR-05720-010


PR-05720-011


PR-05720-012


PR-05720-013


PR-05720-014


PR-05720-015


PR-05720-016


PR-05720-017


PR-05720-018


PR-05720-019


PR-05720-020


PR-05720-021


PR-05720-022


PR-05720-023


PR-05720-024


PR-05720-025


PR-05720-026


PR-05720-027


PR-05720-028


PR-05720-029


PR-05720-030


PR-05720-031


PR-05720-032


PR-05720-033


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PR-05720-040


PR-05720-041


PR-05720-042


PR-05720-043


PR-05720-044


PR-05720-045


PR-05720-046


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PR-05720-050


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PR-05720-064


PR-05720-065


PR-05720-066


PR-05720-067


PR-05720-068


PR-05720-069


PR-05720-070

PR-05720-071

GEOTECHNICAL INVESTIGATION

ECO BLOK EAST
SHASTA STREET
SAN DIEGO, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

PFP COASTAL HOLDINGS, LLC
SAN DIEGO, CALIFORNIA

DECEMBER 19, 2016
PROJECT NO. G1832-42-03

REGISTERED PROFESSIONAL ENGINEER
RODNEY C. MIKESELL
No. 2533
GEOTECHNICAL
STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
GARRY WELLS CANNON
No. 2201
CERTIFIED ENGINEERING GEOLOGIST
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REGISTERED PROFESSIONAL ENGINEER
GARRY WELLS CANNON
No. C 056468
CIVIL
STATE OF CALIFORNIA

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1. PURPOSE AND SCOPE

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2. SITE AND PROJECT DESCRIPTION

3. SOIL AND GEOLOGIC CONDITIONS

3.1 Undocumented Fill (Qudf)

3.2 Old Terrace Deposits (Qt)

4. GROUNDWATER

[illegible]

5. GEOLOGIC HAZARDS

5.1 Faulting and Seismicity

[illegible] *EZ-FRISK* [illegible]

TABLE 5.1.1
DETERMINISTIC SPECTRA SITE PARAMETERS

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Peak Ground Acceleration: Boore-Atkinson (2008) NGA USGS 2008 (g)	Peak Ground Acceleration: Campbell-Bozorgnia (2008) NGA USGS 2008 (g)	Peak Ground Acceleration: Chiou-Youngs (2007) NGA USGS 2008 (g)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] *EZ-FRISK* [illegible] *EZ-FRISK* [illegible]

[illegible]

TABLE 5.1.2
PROBABILISTIC SEISMIC HAZARD PARAMETERS

Probability of Exceedence	Peak Ground Acceleration		
	Boore-Atkinson NGA USGS 2008 (g)	Campbell-Bozorgnia NGA USGS 2008 (g)	Chiou-Youngs (2007) NGA USGS 2008 (g)
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

5.2 Ground Rupture

[illegible]

5.3 Liquefaction and Seismically Induced Settlement

[illegible]

5.4 Landslides

[illegible]

5.5 Tsunami and Seiche

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

6.2 Excavation and Soil Characteristics

TABLE 6.2.1
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	Expansion Classification	2013 CBC Expansion Classification
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	

[illegible]

TABLE 6.2.2
REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Sulfate Exposure	Exposure Class	Water-Soluble Sulfate Percent by Weight	Cement Type	Maximum Water to Cement Ratio by Weight	Minimum Compressive Strength (psi)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

6.3 Grading

[illegible] *Recommended Grading Specifications* [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

6.4 Seismic Design Criteria

[illegible] *U.S. Seismic Design Maps* [illegible]

TABLE 6.4.1
2016 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2013 CBC Reference
[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

TABLE 6.4.2
2016 CBC SITE ACCELERATION DESIGN PARAMETERS

Parameter	Value	ASCE 7-10 Reference
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

6.5 Foundation and Concrete Slabs-On-Grade Recommendations

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] *American Concrete Institute’s (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials* [illegible]

[illegible]

[illegible]

TABLE 6.5.1
POST-TENSIONED FOUNDATION SYSTEM DESIGN PARAMETERS

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[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

- F[illegible]
- [illegible]

[illegible]

- [illegible]

- [illegible]

- [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

6.6 Retaining Walls and Lateral Loads

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

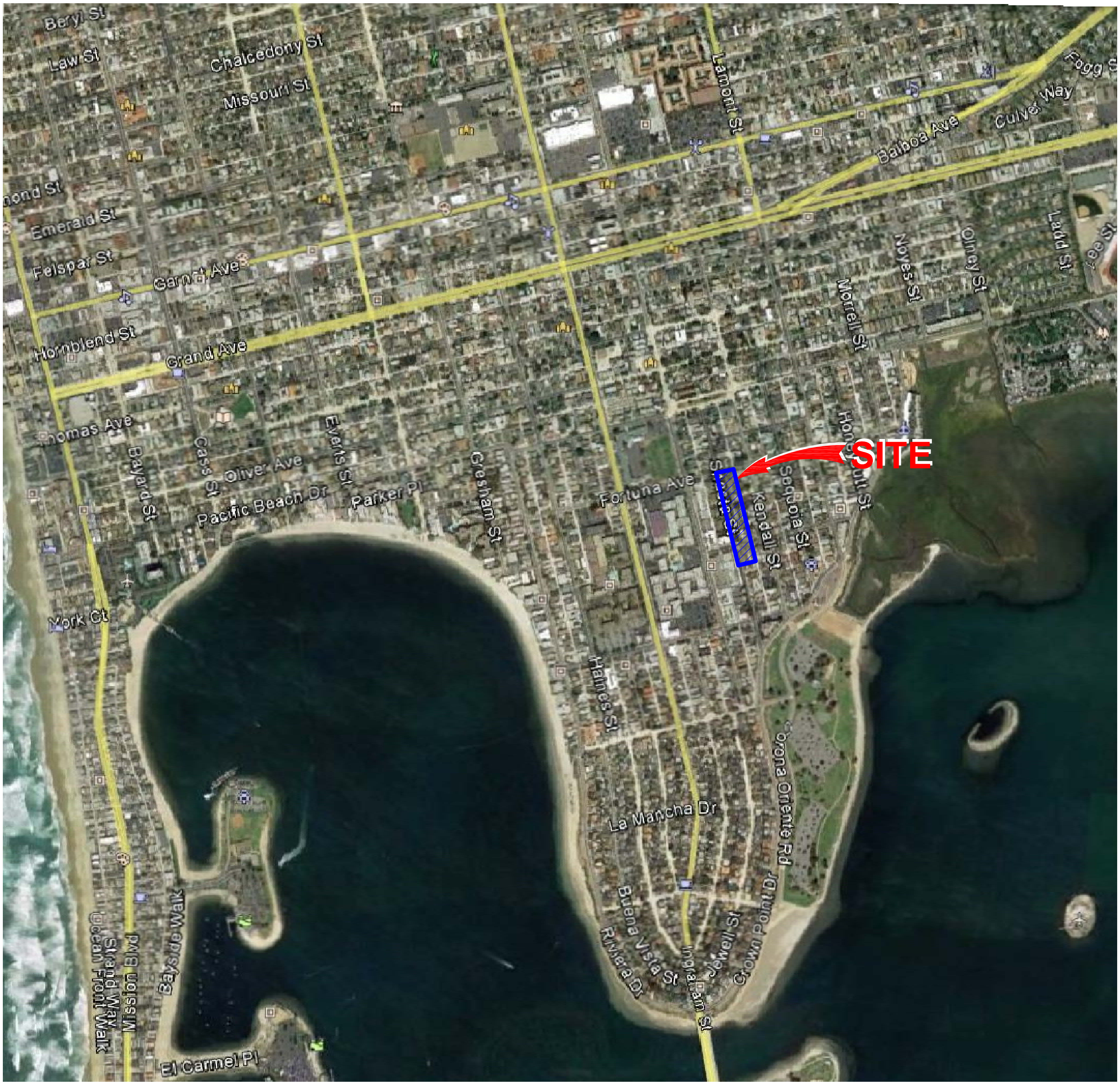
6.7 Slope Maintenance

6.8 Storm Water Management

6.9 Site Drainage and Moisture Protection

6.10 Grading and Foundation Plan Review

LIMITATIONS AND UNIFORMITY OF CONDITIONS



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N

NO SCALE

VICINITY MAP

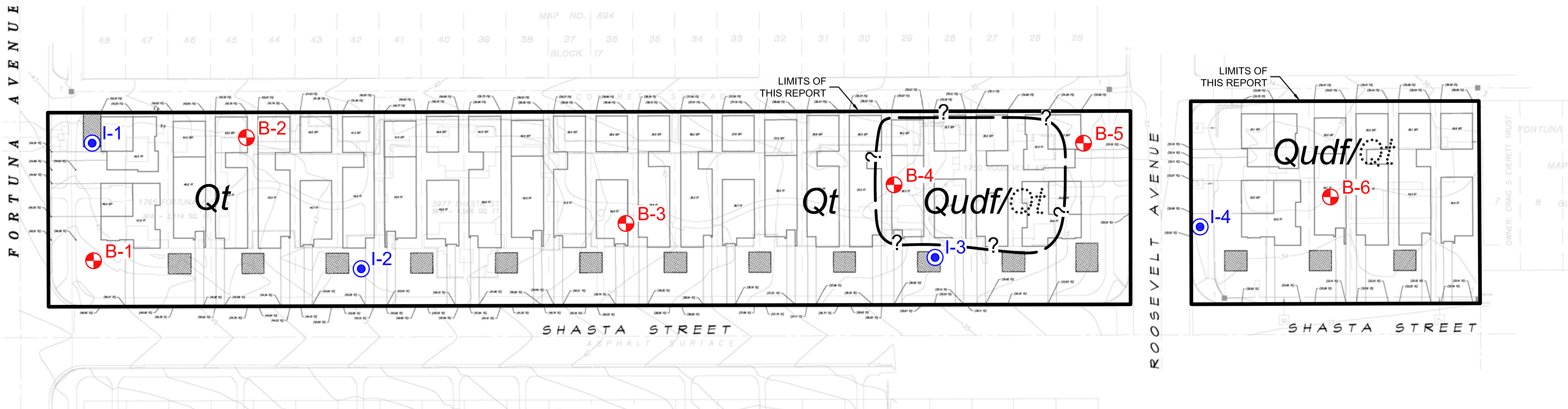
GEOCON INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

ECO BLOK EAST
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 12 - 19 - 2016	PROJECT NO. G1832 - 42 - 03	FIG. 1

Plotted:12/19/2016 2:06PM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G1832-42-03 (Shasta East)\DETAILS\G1832-42-03 Vic Map.dwg

ECO BLOK EAST
SAN DIEGO, CALIFORNIA



GEOCON LEGEND

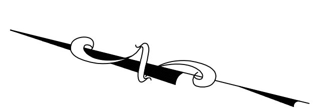
Qudf ........UNDOCUMENTED FILL

Qt ....TERRACE DEPOSITS
(Dotted Where Buried)

........APPROX. LOCATION OF GEOLOGIC CONTACT
(Queried Where Uncertain)

B-6 ....APPROX. LOCATION OF BORING

I-4 ....APPROX. LOCATION OF INFILTRATION TEST



NOT TO SCALE

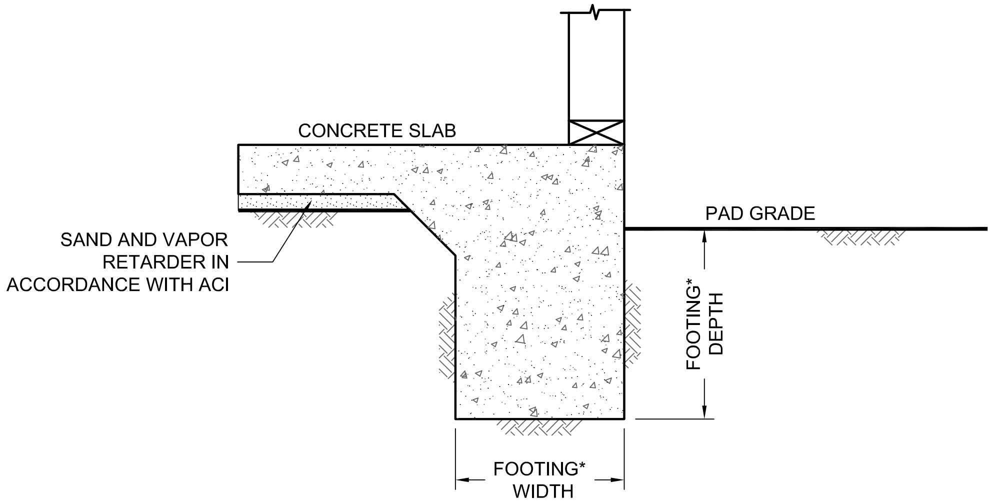
GEOLOGIC MAP

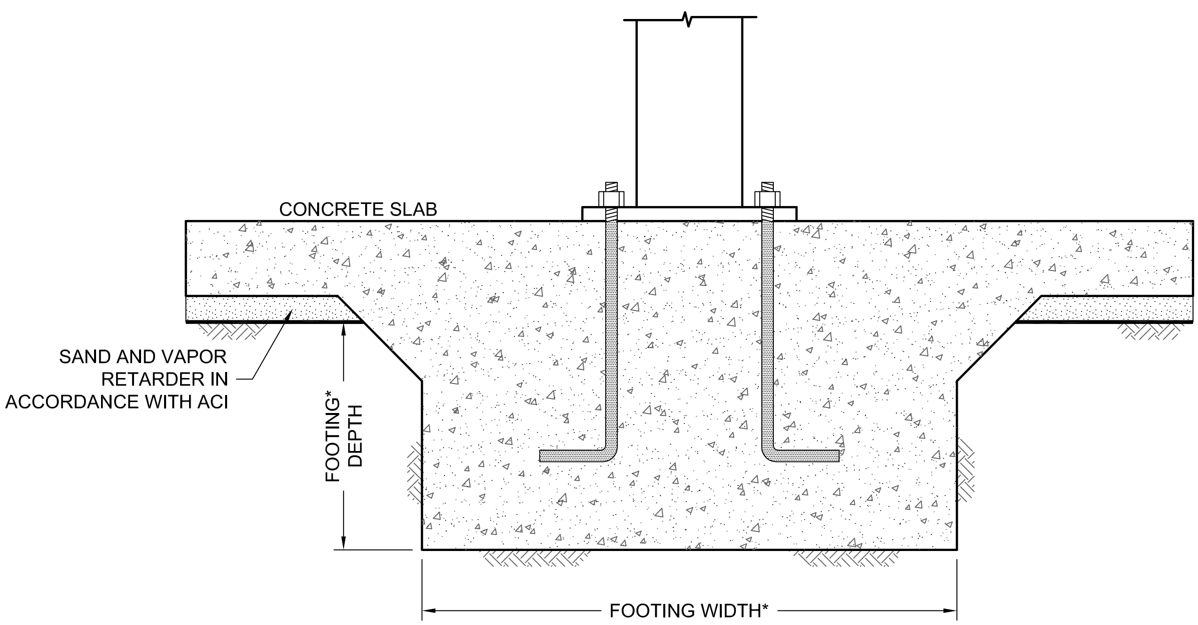
GEOCON INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

PROJECT NO. G1832 - 42 - 03
FIGURE 2
DATE 12 - 19 - 2016

Ladrillono

Plotted:12/19/2016 2:09PM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G1832-42-03 (Shasta East)\SHEETS\G1832-42-03 Site Plan.dwg





*....SEE REPORT FOR FOUNDATION WIDTH AND DEPTH RECOMMENDATION

NO SCALE

WALL / COLUMN FOOTING DIMENSION DETAIL

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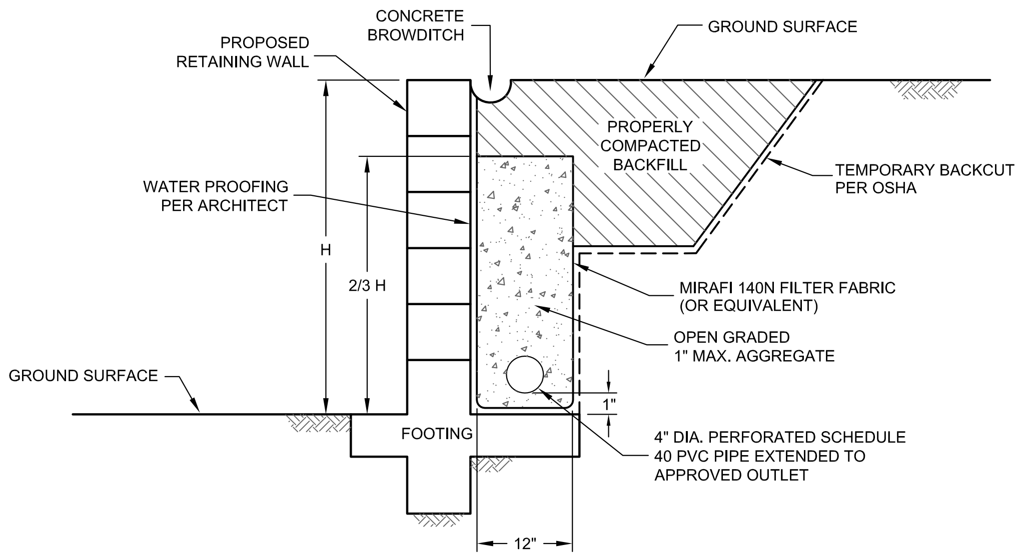
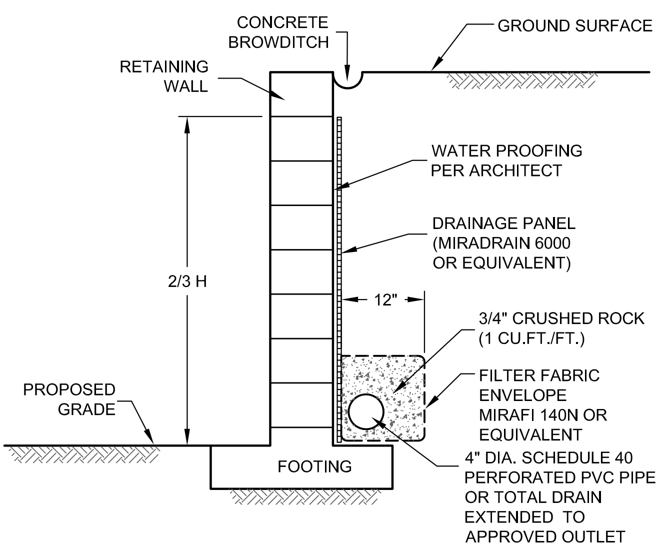
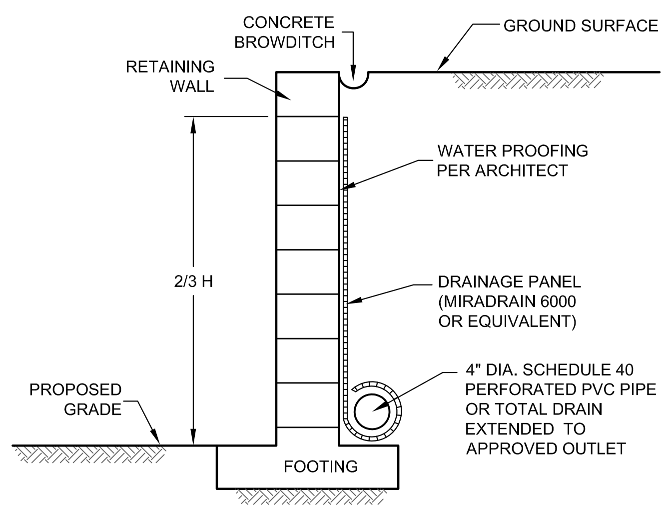
ECO BLOK EAST
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 12 - 19 - 2016	PROJECT NO. G1832 - 42 - 03	FIG. 3

Plotted:12/19/2016 2:09PM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G1832-42-03 (Shasta East)\DETAILS\Wall-Column Footing Dimension Detail (COLFOOT2).dwg







NOTE :

DRAIN SHOULD BE UNIFORMLY SLOPED TO GRAVITY OUTLET
OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPING

NO SCALE

TYPICAL RETAINING WALL DRAIN DETAIL

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PHONE 858 558-6900 - FAX 858 558-6159

ECO BLOK EAST
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 12 - 19 - 2016	PROJECT NO. G1832 - 42 - 03	FIG. 4

Plotted:12/19/2016 2:08PM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G1832-42-03 (Shasta East)\DETAILS\Typical Retaining Wall Drainage Detail (RWDD7A).dwg

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

PROJECT NO. G1832-42-03

BORING B 1

ELEV. (MSL.) 49' DATE COMPLETED 11-08-2016

EQUIPMENT FRASTE BY: J. LAYOG

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B1-1			SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, moist, light brown to brown, fine grained SAND with silt to Silty SAND; 2-4" sod at surface			
2								
	B1-2					7		
4								
	B1-3					10		
6								
					-Becomes medium dense			
8								
10	B1-4					15		
12					-Layer of gravel approx. 6" thick			
14								
	B1-5					25		
16					BORING TERMINATED AT 16 FEET Groundwater not encountered Backfilled with cuttings on 11-08-2016			

Figure A-1,
Log of Boring B 1, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1832-42-03

BORING B 2

ELEV. (MSL.) **45'** DATE COMPLETED **11-08-2016**

EQUIPMENT **FRASTE** BY: **J. LAYOG**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B2-1				2" **ASPHALT** Over 3" **BASE**			
				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Medium dense, damp to moist, light brown to brown, fine SAND with silt to Silty SAND			
2								
	B2-2					18		
4								
	B2-3					27		
6					-Becomes moist			
8								
10	B2-4				-Becomes light brown	38		
12								
					-Layer of gravel approx. 6" thick			
14					-Becomes dense			
	B2-5					50		
16					BORING TERMINATED AT 16 FEET Groundwater not encountered Backfilled with cuttings on 11-08-2016			

Figure A-2,
Log of Boring B 2, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1832-42-03

BORING B 3

ELEV. (MSL.) 43' DATE COMPLETED 11-08-2016

EQUIPMENT FRASTE BY: J. LAYOG

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, damp to moist, light brown to brown, fine SAND with silt to Silty SAND; 3-4" sod at surface			
2	B3-1					14		
4	B3-2				-Becomes moist	13		
6								
8								
10	B3-3					26		
12								
14					-Layer of gravel approx. 6" thick			
	B3-4				-Becomes dense -No sample; gravel in shoe	64		
16					BORING TERMINATED AT 16FEET Groundwater not encountered Backfilled with cuttings on 11-08-2016			

Figure A-3,
Log of Boring B 3, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 4

ELEV. (MSL.) **39'** DATE COMPLETED **11-08-2016**

EQUIPMENT **FRASTE** BY: **J. LAYOG**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B4-1			SM	**UNDOCUMENTED FILL (Qudf)** Loose, moist, dark brown to brown, Silty, fine SAND; 3-4" of sod at surface			
				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, moist, light brown to brown, fine SAND with silt to Silty SAND			
2								
	B4-2					14		
4								
	B4-3					7		
6								
8					-Becomes medium dense			
10	B4-4					34		
					-Gravel in shoe			

BORING TERMINATED AT 11 FEET
Groundwater not encountered
Backfilled with cuttings on 11-08-2016

Figure A-4,
Log of Boring B 4, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1832-42-03

BORING B 5

ELEV. (MSL.) 37' DATE COMPLETED 11-08-2016

EQUIPMENT FRASTE BY: J. LAYOG

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, damp to moist, light brown to brown, fine SAND with silt to Silty SAND; 3-4" of sod at surface			
2								
	B5-1					13		
4								
	B5-2					12		
6								
8								
10					-Layer of gravel approx. 6-12" thick			
12								
14								
	B5-3				-Becomes medium dense	15		
16					BORING TERMINATED AT 16 FEET Groundwater not encountered Backfilled with cuttings on 11-08-2016			

Figure A-5,
Log of Boring B 5, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 6

ELEV. (MSL.) **38'** DATE COMPLETED **11-08-2016**

EQUIPMENT **FRASTE** BY: **J. LAYOG**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B6-1			SM	**UNDOCUMENTED FILL (Qudf)** Loose, damp, dark brown, Silty, fine SAND			
2				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, damp to moist, light brown to brown, fine SAND with silt to Silty SAND			
	B6-2					6		
4								
	B6-3					11		
6								
8					-Becomes medium dense			
10	B6-4					19		
12								
14								
	B6-5				-Becomes medium grained, yellowish brown	29		
16					-Gravel in shoe			

BORING TERMINATED AT 16 FEET
Groundwater not encountered
Backfilled with cuttings on 11-08-2016

Figure A-6,
Log of Boring B 6, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

APPENDIX B

APPENDIX B

LABORATORY TESTING

[illegible]

TABLE B-I
SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS
ASTM D 1557

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry wt.)
[illegible]	[illegible]	[illegible]	[illegible]

TABLE B-II
SUMMARY OF LABORATORY REMOLDED DIRECT SHEAR TEST RESULTS
ASTM D 3080

Sample No.	Dry Density (pcf)	Moisture Content (%)	Peak Unit Cohesion (psf)	Peak Angle of Shear Resistance (degrees)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE B-III
SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
ASTM D 4829

Sample No.	Moisture Content		Dry Density (pcf)	Expansion Index
	Before Test (%)	After Test (%)		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

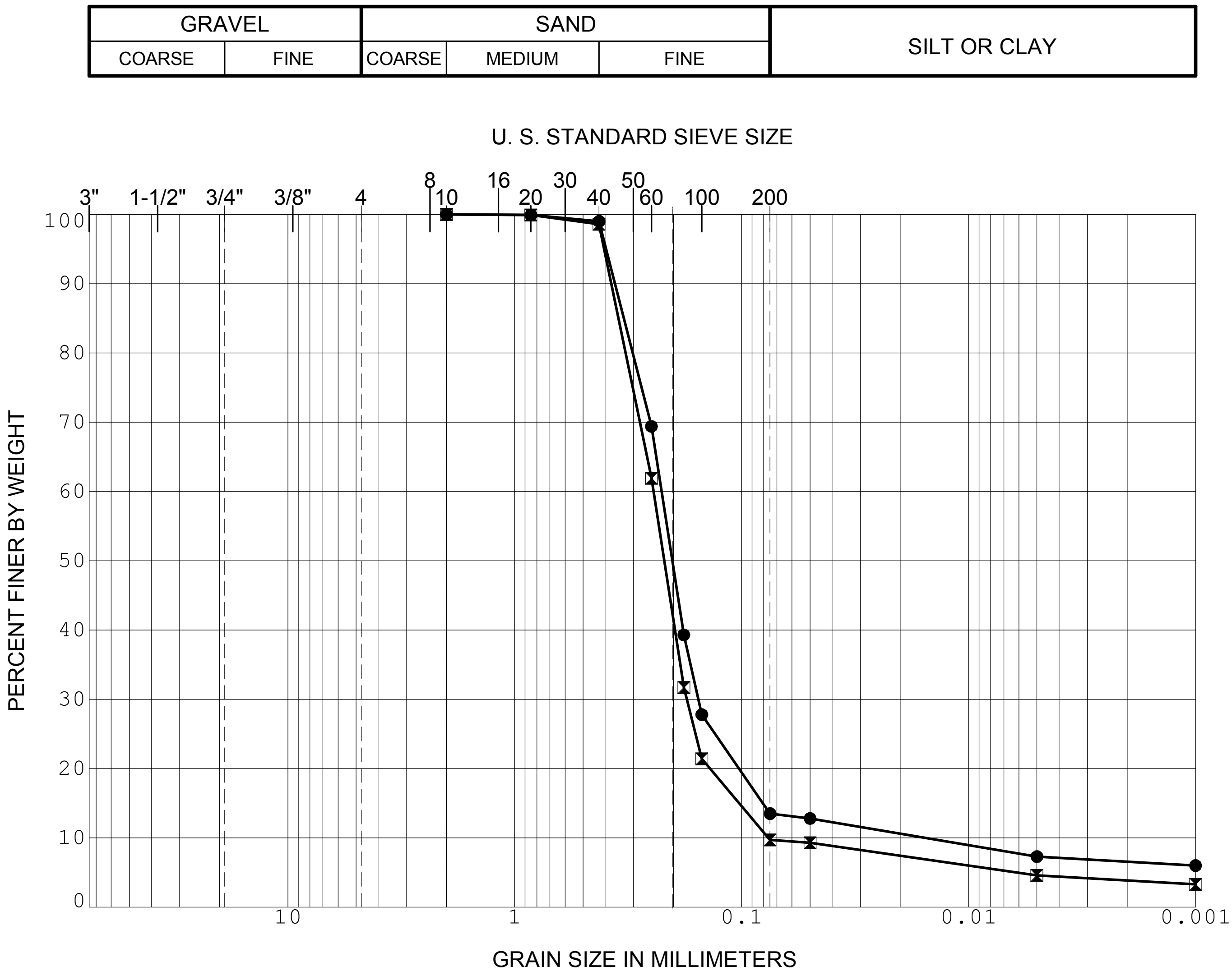
TABLE B-IV
SUMMARY OF LABORATORY WATER-SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water-Soluble Sulfate (%)	Classification
[illegible]	[illegible]	[illegible]

TABLE B-V
SUMMARY OF LABORATORY R-VALUE AND SAND EQUIVALENT TEST RESULTS
ASTM D 2844

Sample No.	R-Value
[illegible]	[illegible]

PROJECT NO. G1832-42-03



SAMPLE	DEPTH (ft)	CLASSIFICATION	NAT WC	LL	PL	PI
● I-2	0.0	(SM) Silty SAND				
⧗ I-4	0.0	(SP-SM) Poorly graded SAND with silt				
▲						

GRADATION CURVE

ECO BLOK EAST

SAN DIEGO, CALIFORNIA

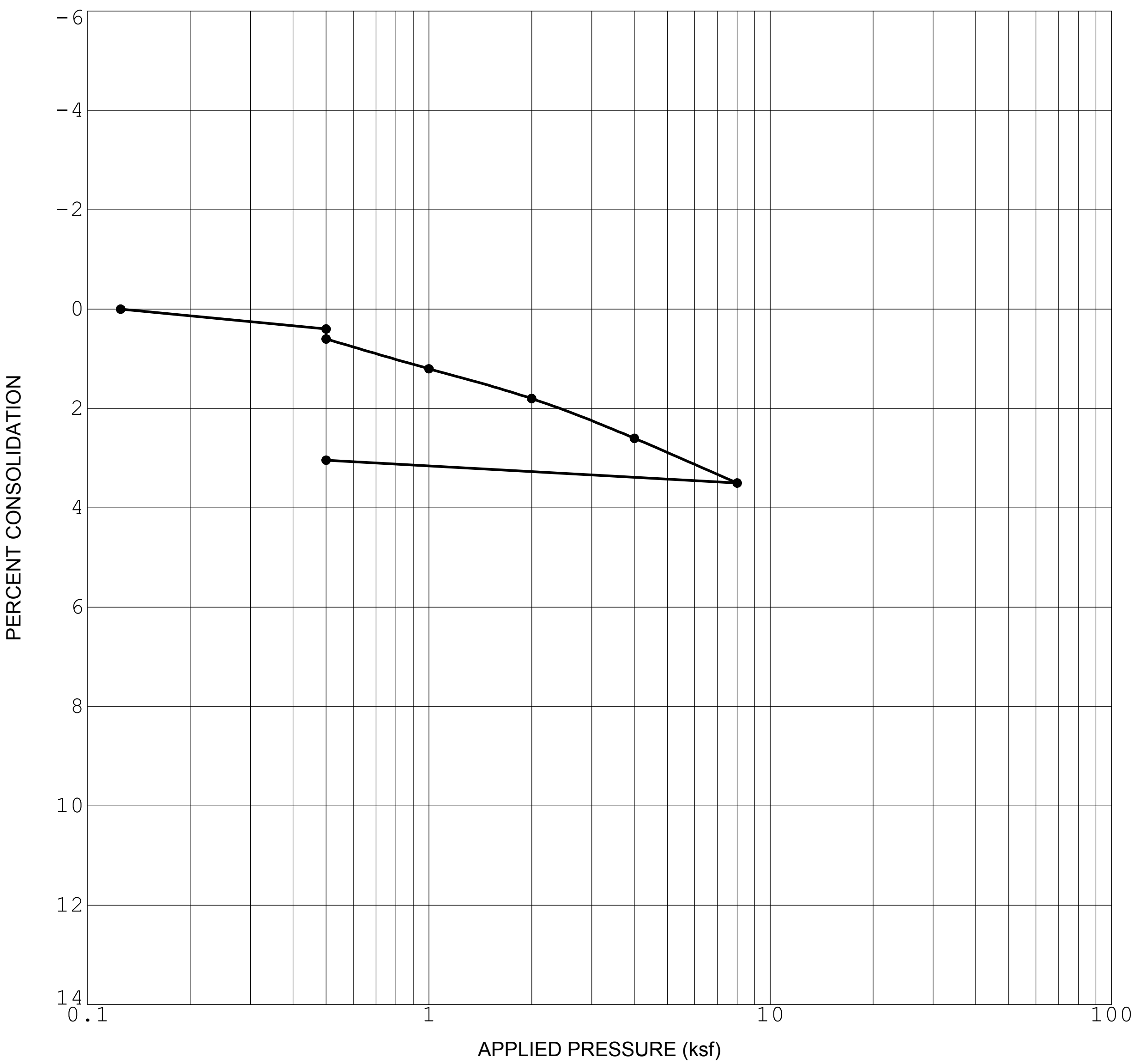
G1832-42-03.GPJ

Figure B-1

GEOCON

PROJECT NO. G1832-42-03

SAMPLE NO. B1-1



Initial Dry Density (pcf)	98.3	**Initial Saturation (%)**	24.7
Initial Water Content (%)	5.8	**Sample Saturated at (ksf)**	.5

CONSOLIDATION CURVE

ECO BLOK EAST

SAN DIEGO, CALIFORNIA

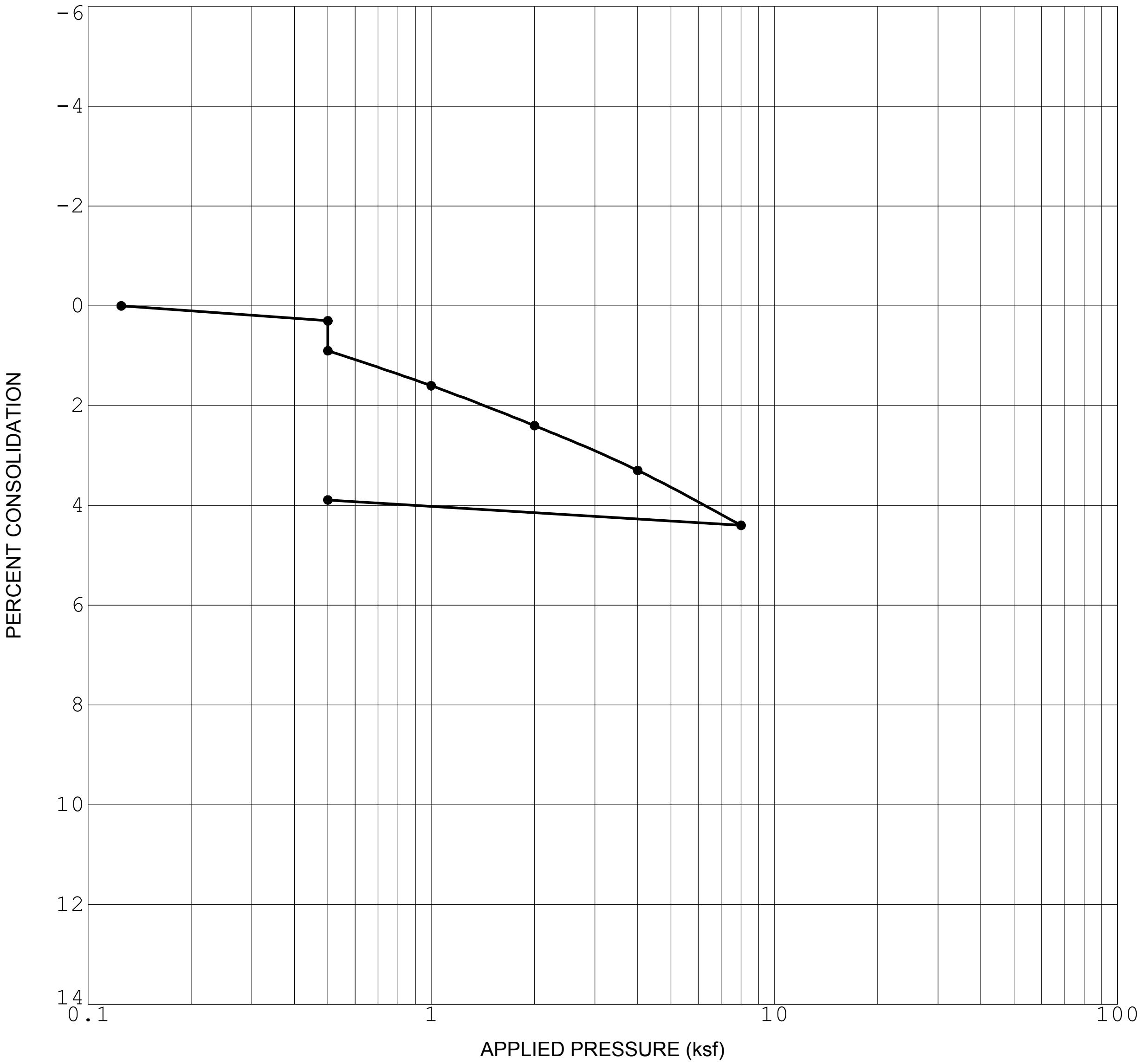
G1832-42-03.GPJ

Figure B-2

GEOCON

PROJECT NO. G1832-42-03

SAMPLE NO. B1-2



Initial Dry Density (pcf)	99.3
Initial Water Content (%)	9.3

Initial Saturation (%)	36.8
Sample Saturated at (ksf)	.5

CONSOLIDATION CURVE

ECO BLOK EAST

SAN DIEGO, CALIFORNIA

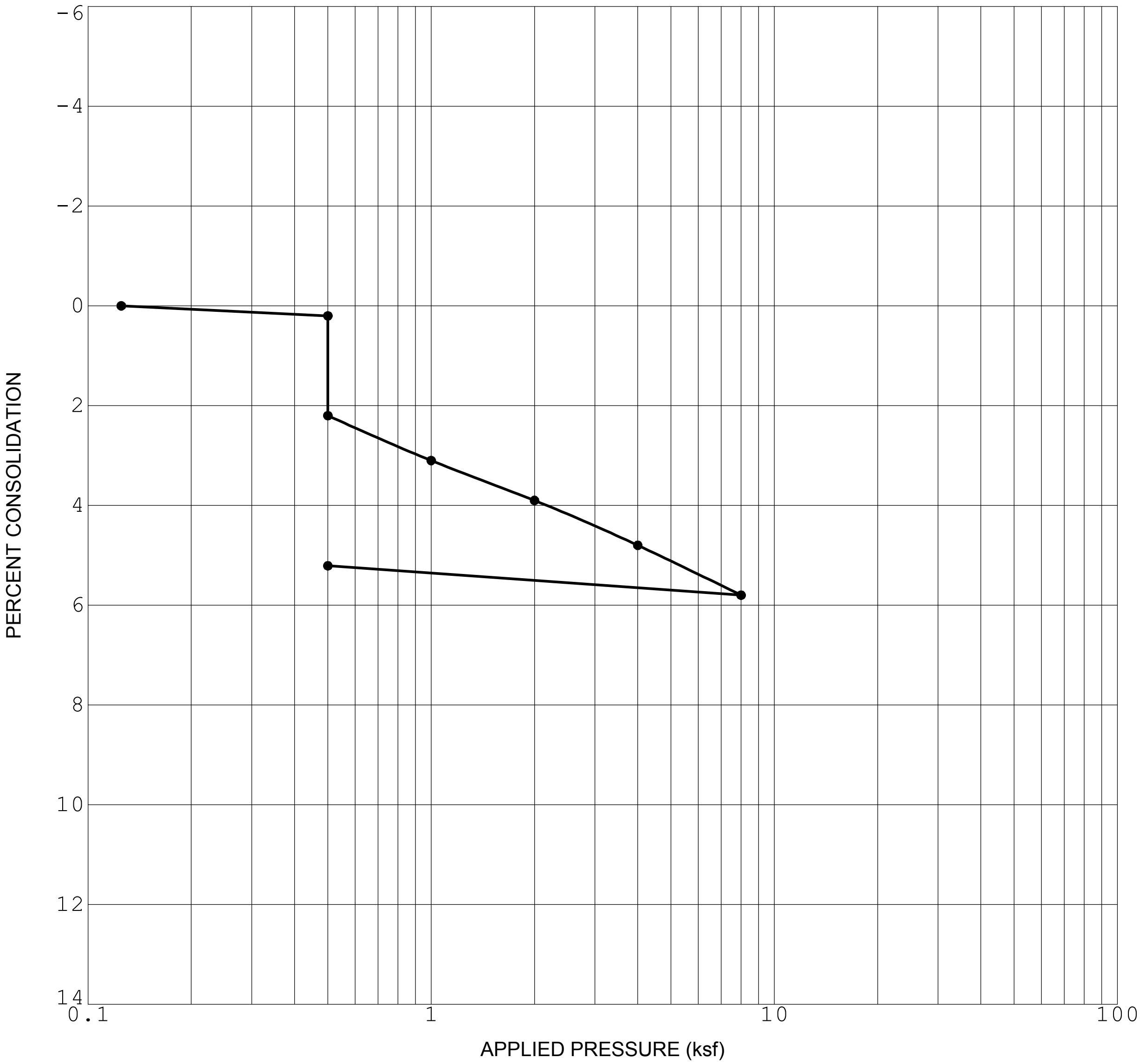
G1832-42-03.GPJ

Figure B-3

GEOCON

PROJECT NO. G1832-42-03

SAMPLE NO. B1-3



Initial Dry Density (pcf)	95.9	**Initial Saturation (%)**	27.8
Initial Water Content (%)	7.6	**Sample Saturated at (ksf)**	.5

CONSOLIDATION CURVE

ECO BLOK EAST

SAN DIEGO, CALIFORNIA

G1832-42-03.GPJ

Figure B-4

GEOCON

APPENDIX C

APPENDIX C

STORM WATER MANAGEMENT

[illegible]

Hydrologic Soil Group

[illegible]

TABLE C-1
HYDROLOGIC SOIL GROUP DEFINITIONS

Soil Group	Soil Group Definition
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

TABLE C-2
USDA WEB SOIL SURVEY – HYDROLOGIC SOIL GROUP

Map Unit Name	Map Unit Symbol	Approximate Percentage of Property	Hydrologic Soil Group	k_{SAT} of Most Limiting Layer (inches/hour)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Infiltration Testing

[illegible]

[illegible]

TABLE C-3
UNFACTORED HYDRAULIC CONDUCTIVITY TEST RESULTS

Test No.	Geologic Unit	Test Elevation (feet, MSL)	Field Infiltration Rate, I (inches/hour)
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

STORM WATER MANAGEMENT CONCLUSIONS

Soil Types

Undocumented Fill (Qudf) – [illegible]

Old Terrace Deposits (Qt) – [illegible]

Groundwater Elevation

[illegible]

Existing Utilities

[illegible]

Existing and Proposed Foundations

[illegible]

Soil or Groundwater Contamination

[illegible]

Slopes

[illegible]

Infiltration Rates

[illegible]

Storm Water Management Devices

[illegible]

Storm Water Standard Worksheets

[illegible] *Categorization of Infiltration Feasibility Condition* [illegible]

[illegible]

TABLE C-4
SUITABILITY ASSESSMENT RELATED CONSIDERATIONS FOR INFILTRATION FACILITY SAFETY FACTORS

Consideration	High Concern – 3 Points	Medium Concern – 2 Points	Low Concern – 1 Point
[illegible]	[illegible]	[illegible]	[illegible]

TABLE C-4 (Concluded)
SUITABILITY ASSESSMENT RELATED CONSIDERATIONS FOR INFILTRATION FACILITY SAFETY FACTORS

Consideration	High Concern – 3 Points	Medium Concern – 2 Points	Low Concern – 1 Point
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

TABLE C-5
FACTOR OF SAFETY WORKSHEET D.5-1 DESIGN VALUES[1]

Suitability Assessment Factor Category	Assigned Weight (w)	Factor Value (v)	Product (p = w x v)
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			[illegible]

[1] [illegible]

CONCLUSIONS

[illegible]

[illegible]

GEOCON

Aardvark Permeameter Data Analysis

Project Name: Eco Blok East
Date: 11/7/2016
Project Number: G1832-42-03
By: JTL
Borehole Location: I-1
Ref. EL (feet, MSL): 44.0
Bottom EL (feet, MSL): 41.8

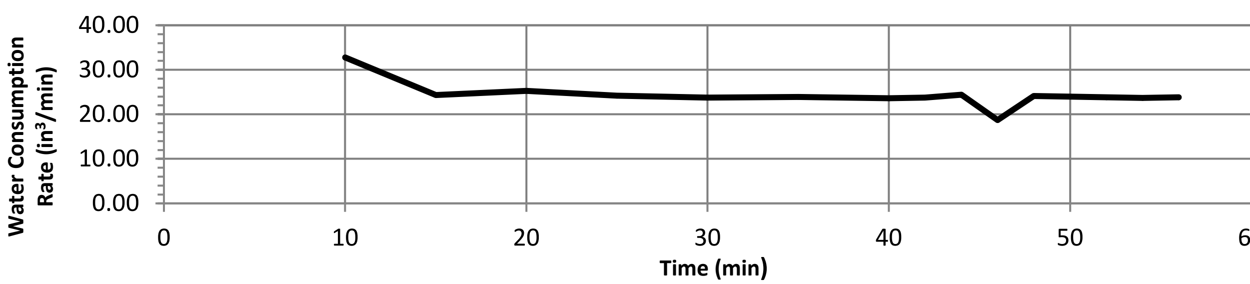
Borehole Diameter (inches): 4.00
Borehole Depth, **H** (inches): 27.00
Distance Between Reservoir & Top of Borehole (inches): 29.00
Depth to Water Table, **s** (feet): 100
Height APM Raised from Bottom (inches): 2.00

Wetted Area, **A** (in^2): 83.64

Distance Between Resevoir and APM, **D** (inches): 46.75
Head Height Calculated, **h** (inches): 5.66
Head Height Recorded, **h** (inches): 4.50
Distance Between Constant Head and Water Table, **L** (inches): 1179

Reading	Time (min)	Time Elapsed (min)	Reservoir Water Weight (g)	Resevoir Water Weight (lbs)	Interval Water Consumption (lbs)	Total Water Consumption (lbs)	*Water Consumption Rate (in^3/min)
1	0.00			64.345			
2	10.00	10.00		52.520	11.825	11.825	32.778
3	15.00	5.00		48.135	4.385	16.210	24.310
4	20.00	5.00		43.580	4.555	20.765	25.252
5	25.00	5.00		39.220	4.360	25.125	24.171
6	30.00	5.00		34.935	4.285	29.410	23.755
7	35.00	5.00		30.620	4.315	33.725	23.921
8	40.00	5.00		26.360	4.260	37.985	23.617
9	42.00	2.00		24.645	1.715	39.700	23.769
10	44.00	2.00		22.885	1.760	41.460	24.393
11	46.00	2.00		21.535	1.350	42.810	18.710
12	48.00	2.00		19.795	1.740	44.550	24.115
13	50.00	2.00		18.065	1.730	46.280	23.977
14	52.00	2.00		16.345	1.720	48.000	23.838
15	54.00	2.00		14.635	1.710	49.710	23.700
16	56.00	2.00		12.915	1.720	51.430	23.838
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							

Steady Flow Rate, Q (in^3/min): 23.792



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

Case 1: L/h > 3 K_{sat} = 1.25E-01 in/min 7.501 in/hr

Aardvark Permeameter Data Analysis

Project Name: Eco Blok East
Date: 11/7/2016
Project Number: G1832-42-03
By: JTL
Borehole Location: I-2
Ref. EL (feet, MSL): 43.0
Bottom EL (feet, MSL): 40.1

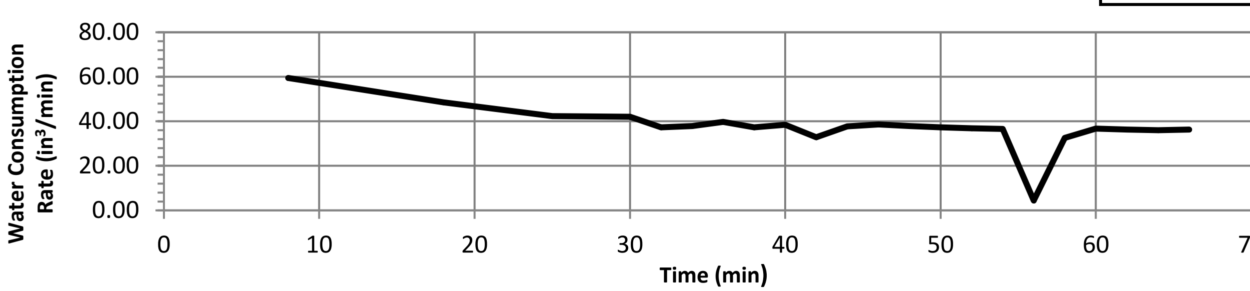
Borehole Diameter (inches): 4.00
Borehole Depth, **H** (inches): 35.00
Distance Between Reservoir & Top of Borehole (inches): 29.00
Depth to Water Table, **s** (feet): 100
Height APM Raised from Bottom (inches): 2.00

Wetted Area, **A** (in^2): 83.97

Distance Between Resevoir and APM, **D** (inches): 54.75
Head Height Calculated, **h** (inches): 5.68
Head Height Recorded, **h** (inches): 5.00
Distance Between Constant Head and Water Table, **L** (inches): 1171

Reading	Time (min)	Time Elapsed (min)	Reservoir Water Weight (g)	Resevoir Water Weight (lbs)	Interval Water Consumption (lbs)	Total Water Consumption (lbs)	*Water Consumption Rate (in^3/min)
1	0.00			109.840			
2	8.00	8.00		92.675	17.165	17.165	59.474
3	18.00	10.00		75.160	17.515	34.680	48.550
4	25.00	7.00		64.455	10.705	45.385	42.390
5	30.00	5.00		56.870	7.585	52.970	42.050
6	32.00	2.00		54.180	2.690	55.660	37.282
7	34.00	2.00		51.445	2.735	58.395	37.906
8	36.00	2.00		48.575	2.870	61.265	39.777
9	38.00	2.00		45.880	2.695	63.960	37.351
10	40.00	2.00		43.110	2.770	66.730	38.391
11	42.00	2.00		40.735	2.375	69.105	32.916
12	44.00	2.00		38.015	2.720	71.825	37.698
13	46.00	2.00		35.230	2.785	74.610	38.599
14	48.00	2.00		32.495	2.735	77.345	37.906
15	50.00	2.00		29.800	2.695	80.040	37.351
16	52.00	2.00		27.135	2.665	82.705	36.936
17	54.00	2.00		24.500	2.635	85.340	36.520
18	56.00	2.00		24.180	0.320	85.660	4.435
19	58.00	2.00		21.830	2.350	88.010	32.570
20	60.00	2.00		19.175	2.655	90.665	36.797
21	62.00	2.00		16.555	2.620	93.285	36.312
22	64.00	2.00		13.955	2.600	95.885	36.035
23	66.00	2.00		11.335	2.620	98.505	36.312
24							
25							
26							
27							
28							

Steady Flow Rate, Q (in^3/min): 36.219



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

Case 1: L/h > 3 K_{sat} = 1.89E-01 in/min 11.347 in/hr

Aardvark Permeameter Data Analysis

Project Name:	Eco Blok East	Date:	11/7/2016
Project Number:	G1832-42-03	By:	JTL
Borehole Location:	I-3	Ref. EL (feet, MSL):	37.0
		Bottom EL (feet, MSL):	33.8

Borehole Diameter (inches):	4.00
Borehole Depth, **H** (inches):	39.00
Distance Between Reservoir & Top of Borehole (inches):	28.50
Depth to Water Table, **s** (feet):	100
Height APM Raised from Bottom (inches):	2.00

Wetted Area, **A** (in^2): 84.12

Distance Between Resevoir and APM, **D** (inches):	58.25
Head Height Calculated, **h** (inches):	5.69
Head Height Recorded, **h** (inches):	4.25
Distance Between Constant Head and Water Table, **L** (inches):	1167

Reading	Time (min)	Time Elapsed (min)	Reservoir Water Weight (g)	Resevoir Water Weight (lbs)	Interval Water Consumption (lbs)	Total Water Consumption (lbs)	*Water Consumption Rate (in^3/min)
1	0.00			80.795			
2	5.00	5.00		68.975	11.820	11.820	65.528
3	10.00	5.00		60.295	8.680	20.500	48.120
4	15.00	5.00		52.840	7.455	27.955	41.329
5	20.00	5.00		45.270	7.570	35.525	41.967
6	25.00	5.00		38.600	6.670	42.195	36.977
7	30.00	5.00		31.610	6.990	49.185	38.751
8	35.00	5.00		24.660	6.950	56.135	38.529
9	40.00	5.00		17.805	6.855	62.990	38.003
10	45.00	5.00		10.880	6.925	69.915	38.391
11	47.00	2.00		8.105	2.775	72.690	38.460
12	49.00	2.00		5.330	2.775	75.465	38.460
13							
14							
15							
16							
17							
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25							
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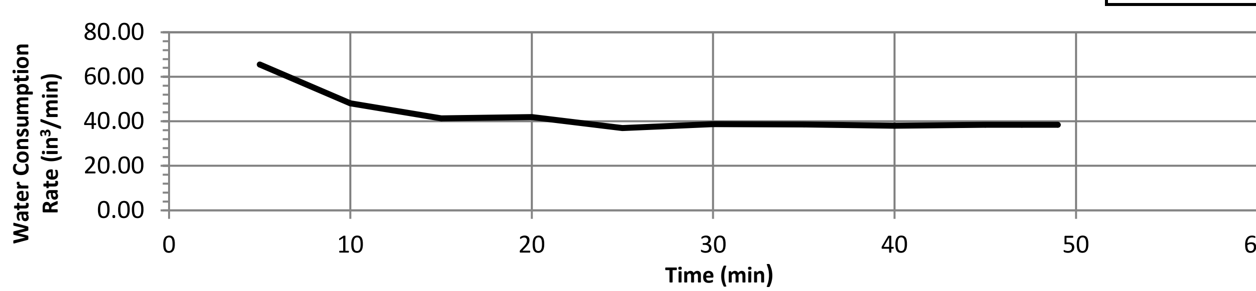
27							
28							

Steady Flow Rate, Q (in^3/min): 38.437



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

Case 1: L/h > 3 K_{sat} = 2.00E-01 in/min 12.009 in/hr

GEOCON

Aardvark Permeameter Data Analysis

Project Name:	Eco Blok East	Date:	11/7/2016
Project Number:	G1832-42-03	By:	JTL
Borehole Location:	I-4	Ref. EL (feet, MSL):	33.0
		Bottom EL (feet, MSL):	29.4

Borehole Diameter (inches):	4.00
Borehole Depth, **H** (inches):	43.00
Distance Between Reservoir & Top of Borehole (inches):	28.50
Depth to Water Table, **s** (feet):	100
Height APM Raised from Bottom (inches):	2.00

Wetted Area, **A** (in^2): 84.29

Distance Between Resevoir and APM, **D** (inches):	62.25
Head Height Calculated, **h** (inches):	5.71
Head Height Recorded, **h** (inches):	4.25
Distance Between Constant Head and Water Table, **L** (inches):	1163

Reading	Time (min)	Time Elapsed (min)	Reservoir Water Weight (g)	Resevoir Water Weight (lbs)	Interval Water Consumption (lbs)	Total Water Consumption (lbs)	*Water Consumption Rate (in^3/min)
1	0.00			114.400			
2	5.00	5.00		102.620	11.780	11.780	65.306
3	10.00	5.00		92.600	10.020	21.800	55.549
4	15.00	5.00		82.845	9.755	31.555	54.080
5	20.00	5.00		73.910	8.935	40.490	49.534
6	25.00	5.00		64.800	9.110	49.600	50.504
7	30.00	5.00		56.615	8.185	57.785	45.376
8	35.00	5.00		48.015	8.600	66.385	47.677
9	40.00	5.00		40.045	7.970	74.355	44.184
10	45.00	5.00		32.410	7.635	81.990	42.327
11	50.00	5.00		24.170	8.240	90.230	45.681
12	52.00	2.00		21.760	2.410	92.640	33.401
13	54.00	2.00		18.545	3.215	95.855	44.558
14	56.00	2.00		15.300	3.245	99.100	44.974
15	58.00	2.00		12.115	3.185	102.285	44.142
16	60.00	2.00		8.955	3.160	105.445	43.796
17	62.00	2.00		5.805	3.150	108.595	43.657
18							
19							
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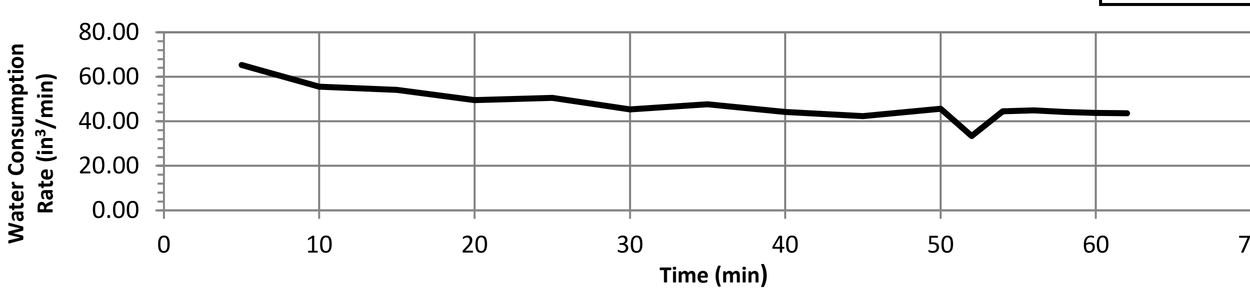
26							
27							
28							

Steady Flow Rate, Q (in^3/min): 43.865



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

Case 1: L/h > 3 K_{sat} = 2.28E-01 in/min 13.662 in/hr

Categorization of Infiltration Feasibility Condition			Form I-8
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?**			
Criteria	Screening Question	Yes	No
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	
Provide basis: [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide basis: [illegible]			

Form I-8 Page 2 of 4			
Criteria	Screening Question	Yes	No
3	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: [illegible]			
4	**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: [illegible]			
Part 1 Result*	If all answers to rows 1 - 4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration** If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2	Full Infiltration not feasible	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

Form I-8 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	

Provide basis:

[illegible]

[illegible]
[illegible]
[illegible]
[illegible]

[illegible]

Criteria	Screening Question	Yes	No
6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis:

[illegible]

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	Yes	No
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: [illegible]			
8	**Can infiltration be allowed without violating downstream water rights?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: [illegible]			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**		[illegible]

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

APPENDIX D

APPENDIX D

RECOMMENDED GRADING SPECIFICATIONS

FOR

ECO BLOK EAST
SHASTA STREET
SAN DIEGO, CALIFORNIA

PROJECT NO. G1832-42-03

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9 and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition.

4. CLEARING AND PREPARING AREAS TO BE FILLED

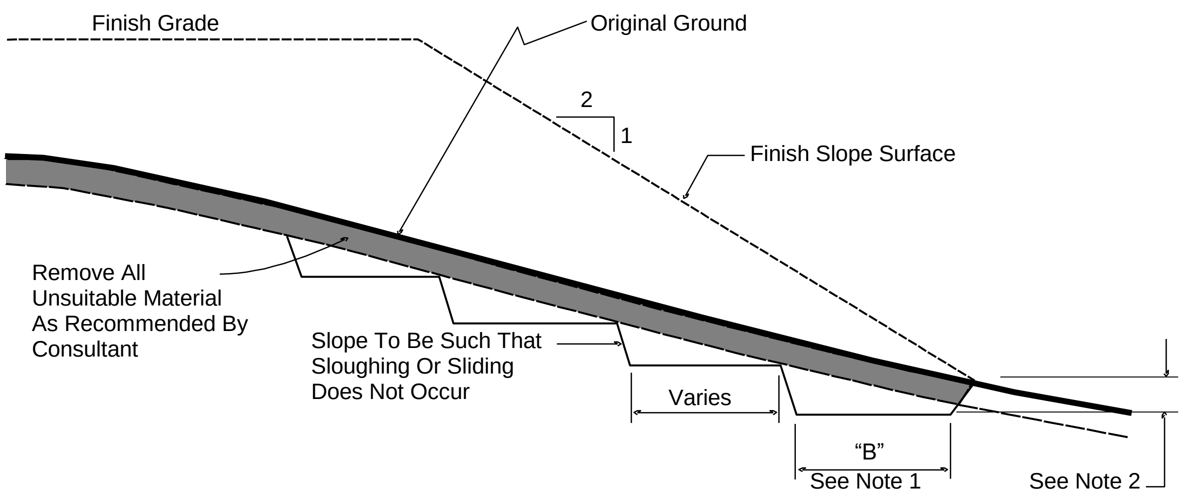
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

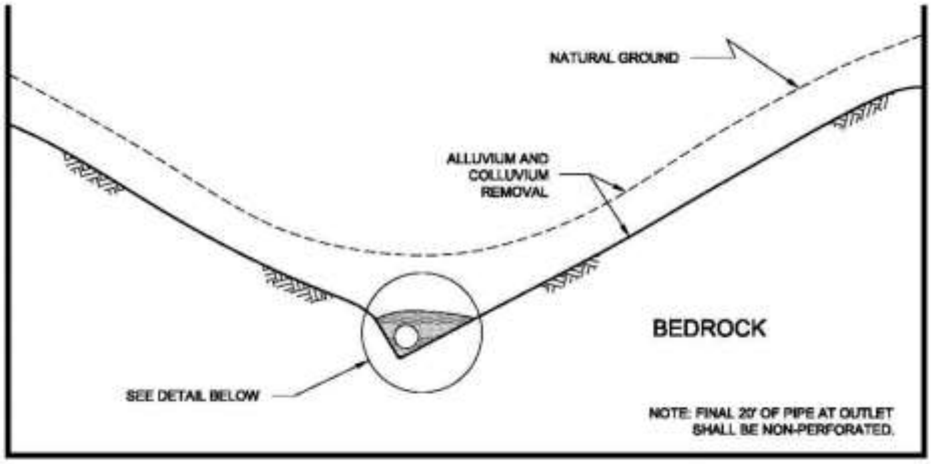
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

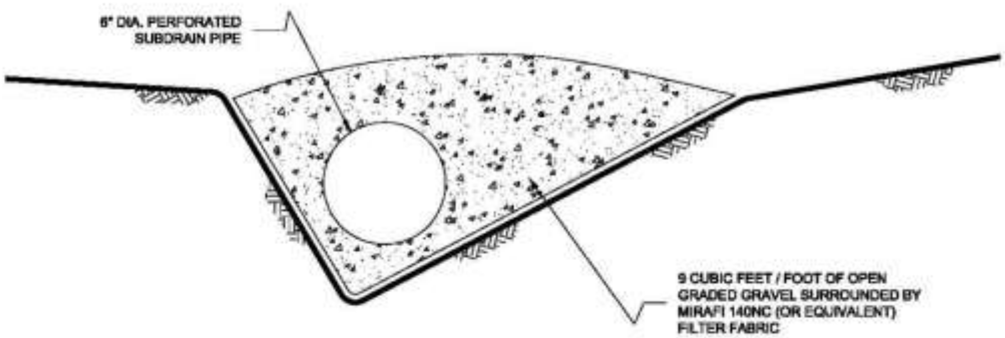
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

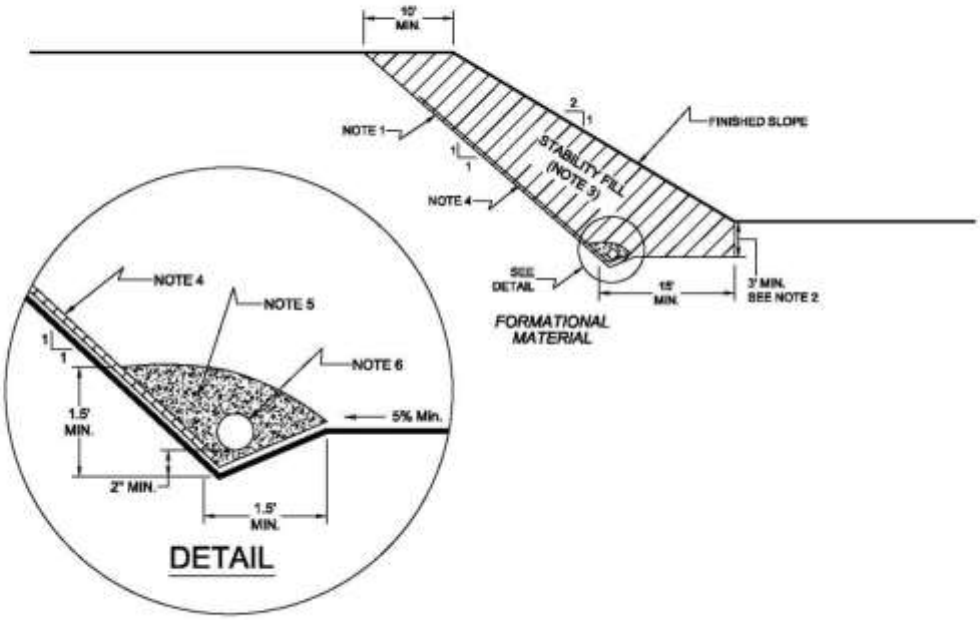
1......8-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2......6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

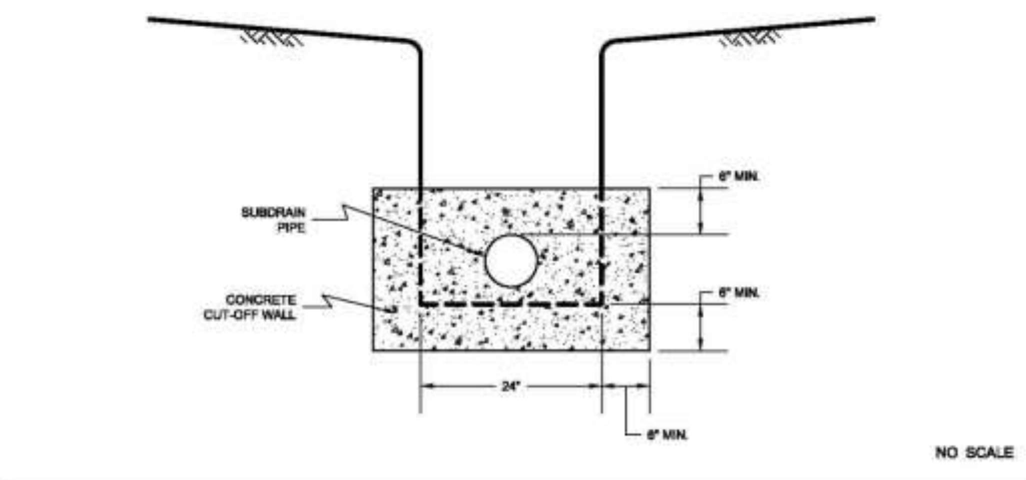
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

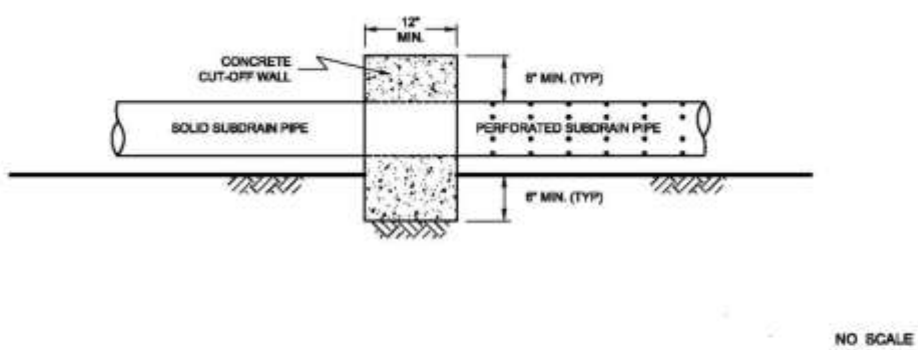
7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW

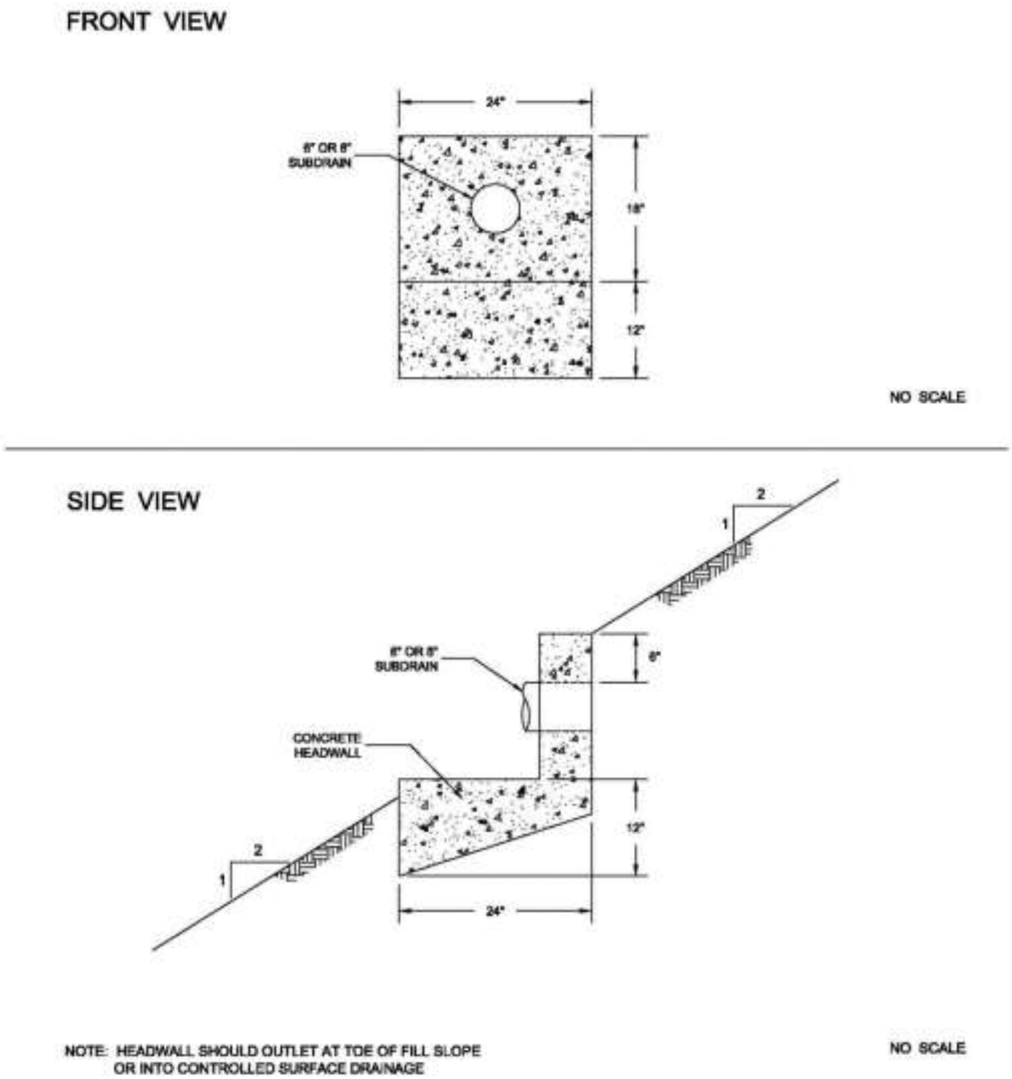


SIDE VIEW



7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

TYPICAL HEADWALL DETAIL



7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner’s representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

LIST OF REFERENCES

d M d *Geologic Map of the San Diego 30' x 60' Quadrangle, California* M r M

r *EZ-FRISK (Version 7.65)*

r r r *U.S. Seismic Design Maps,*

Reference: Cycle Issues, Preliminary Review, Project No. 530514 [illegible]

Geotechnical Investigation, Eco Blok East, Shasta Street, San Diego, California, [illegible]

Issue 3: *The geotechnical consultant should consider revising their description of geologic units in accordance with the recent Geologic Map of the San Diego Quadrangle (2008).*

Response: [illegible] *Soil and Geologic Conditions* [illegible]

Issue 4: *The boring log for Sample B1-1 indicates a disturbed or bag sample. Clarify if the consolidation testing as depicted n Figure B-2 was performed on this sample.*

Response: [illegible]

Issue 5: *The geotechnical consultant must indicate if in their professional opinion the consolidation testing results are representative of the sedimentary old surficial deposits onsite.*

Response: [illegible]

Issue 6: *Based on ASTM D5333 the consolidation test results are considered to have a slight potential for hydro consolidation. Clarify if differential settlement due to hydro consolidation is considered to be a significant effect on the proposed development. Clarify if the effect can be mitigated to an acceptable level (e.g. foundation design).*

Response: [illegible]

[illegible]

Issue 7: *A geotechnical condition created by the proposed development may not be considered a valid geotechnical hazard or constraint as the constraint is proposed by the project.*

Response: [illegible]

Issue 8: *Based on the responses to the review cycle issues, revise Worksheet C.4-1 as necessary.*

Response: [illegible]

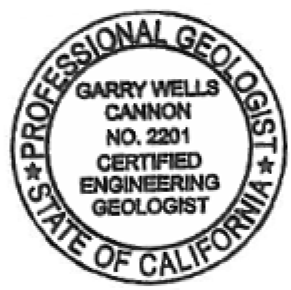
[illegible]

[illegible]

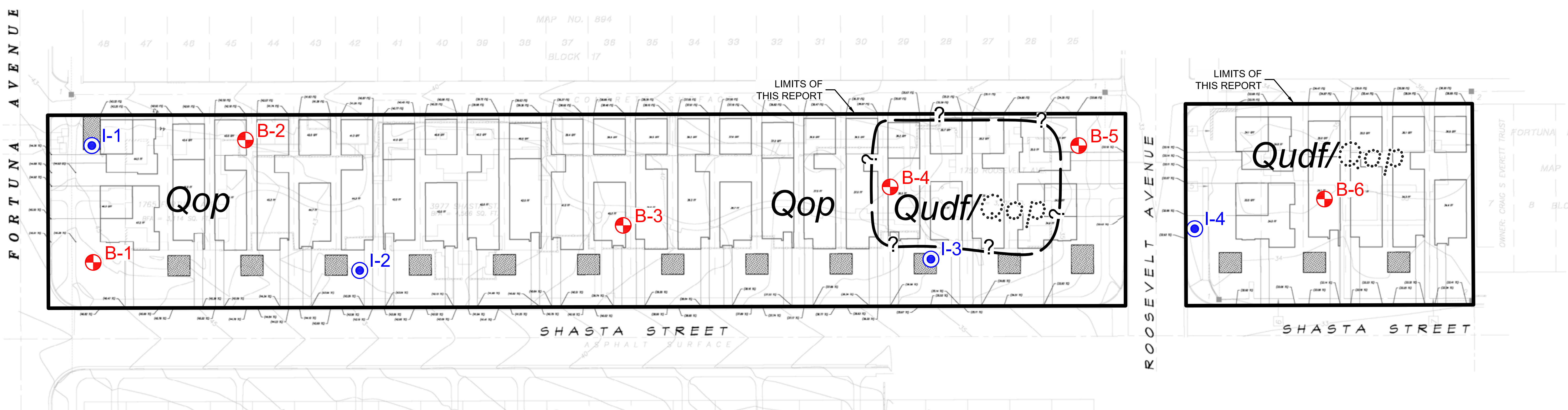
[illegible]

[illegible]

[illegible]



ECO BLOK EAST
SAN DIEGO, CALIFORNIA



GEOCON LEGEND

Qudf ........UNDOCUMENTED FILL

Qop ....OLD PARALIC DEPOSITS (Dotted Where Buried)

........APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)

B-6 ....APPROX. LOCATION OF BORING

I-4 ....APPROX. LOCATION OF INFILTRATION TEST

NOT TO SCALE

GEOLOGIC MAP

GEOCON INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159
PROJECT NO. G1832 - 42 - 03
FIGURE 1
DATE 03 - 02 - 2017

Ladrillono

Plotted:03/02/2017 12:10PM | By:RUBEN AGUILAR | File Location:Y:\PROJECTS\G1832-42-03 ECO BLOK EAST\G1832-42-03 Site Plan.dwg

Geotechnical Investigation, Eco Blok East, Shasta Street, San Diego, California,

Cycle Issues, Preliminary Review, Project No. 530514

Response to City of San Diego Review Comments, Eco Blok East, Shasta Street, San Diego

& Drainage Plans for: Eco Blok East, 1765 Fortuna Avenue, 3977 Shasta Street, 1750 Roosevelt Avenue, San Diego, California

TERMS OF REFERENCE

OBJECTIVE, SCOPE, USE AND LIMITATIONS OF THIS WORK

Objective

NOVA

Scope

General

[illegible]

- [illegible]
- [illegible]
- [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
- [illegible]
- [illegible]

[illegible]

Understood Use

[illegible]

Limitations

[illegible]

[illegible]

SITE DESCRIPTION

Location

[illegible]

PLANNED DEVELOPMENT

General

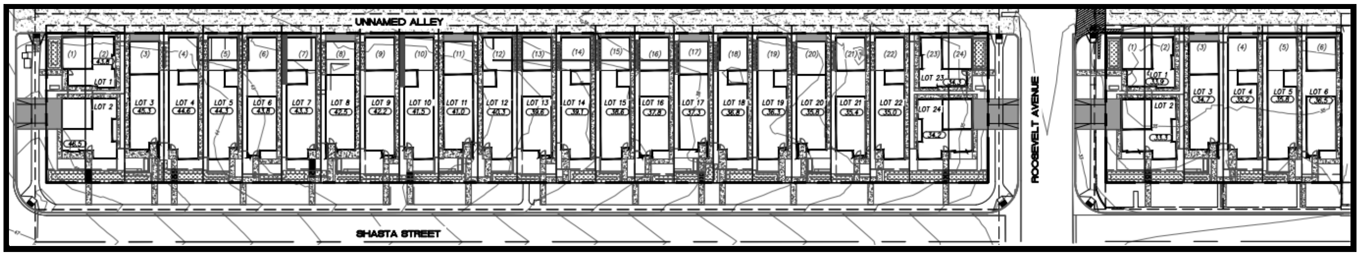


Figure 1. Conceptual Development Plan

Stormwater BMPs

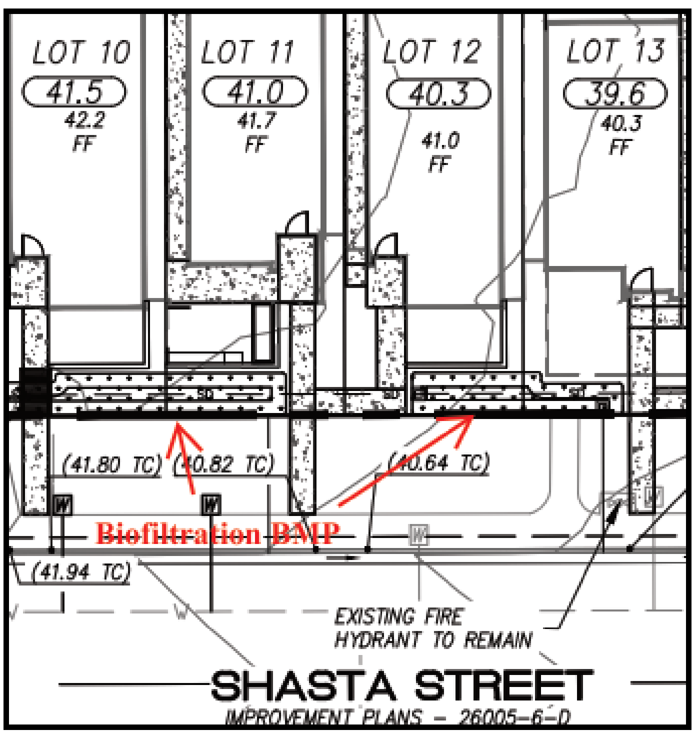


Figure 3. Typical Location of Biofiltration BMPs

ENGINEERING BORINGS

Engineering Borings

General

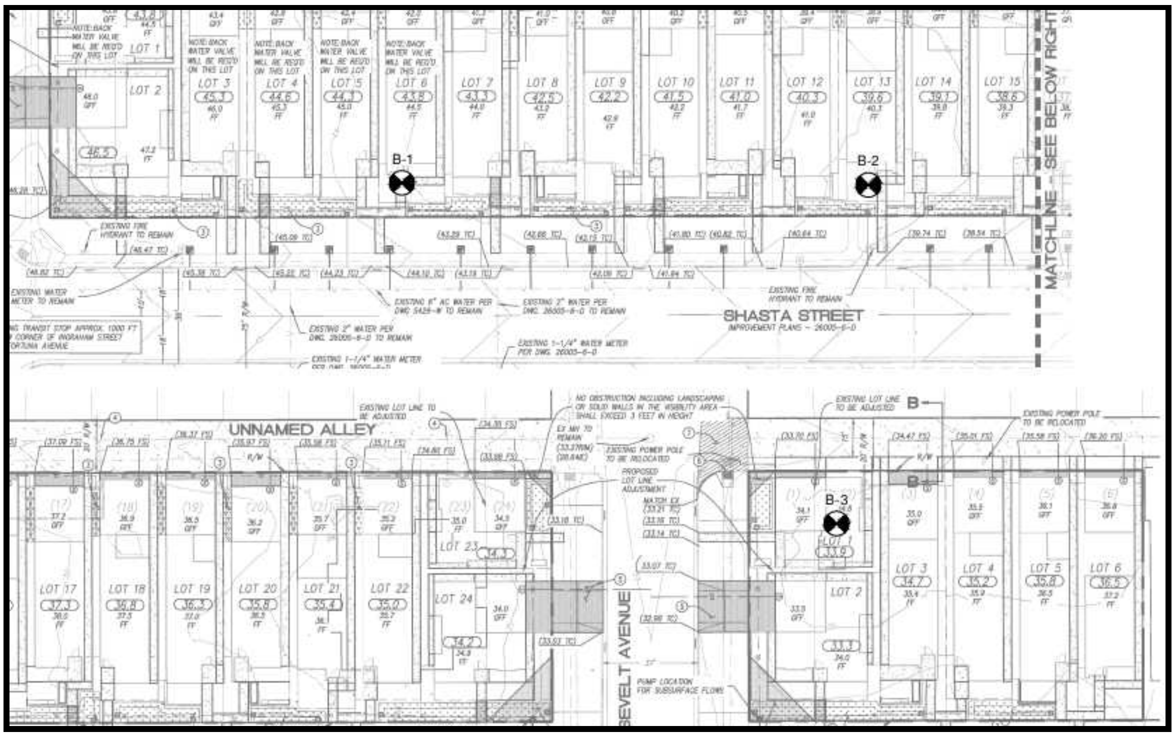


Figure 3. Boring Location Plan

Drilling and Sampling

Closure

[illegible]

LABORATORY TESTING

General

[illegible]

[illegible]

[illegible]

Index Testing

[illegible]

[illegible]

Table 1. Abstract of the Soil Index Testing by NOVA

Sample Ref		As Sampled		Gradation		Classification after ASTM D2488
Boring	Depth (feet)	Natural Moisture (%)	Dry Unit Weight (pcf)	Passing #200	C_u	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Compressibility Testing

NOVA

Table 2. Abstract of the Compressibility Testing by NOVA

Sample Ref		As Sampled		Strain on Saturation		Soil Classification
Boring	Depth (feet)	Natural Moisture (%)	Dry Unit Weight (pcf)	Saturation Pressure (psf)	Strain on Saturation (%)	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Geocon 2016

Table 3. Abstract of the Indications of the Effects of Saturation on Strain Reported in Geocon 2017

Sample Reference	Depth (feet)	Dry Unit Weight (lb/ft^3)	Strain (%) on Saturation	Soil Classification
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

DISCUSSION

Review of Geocon 2016

Subsurface Conditions

Foundations

Stormwater Infiltration

Testing by NOVA

Objectives

Concern.

Solution.

Concern.

Solution.

Concern.

(γ … rder of γ …

Solution.

Indications

The dry unit weight (γ) of the sands tested by and Geocon average NOVA γ

concern when γ

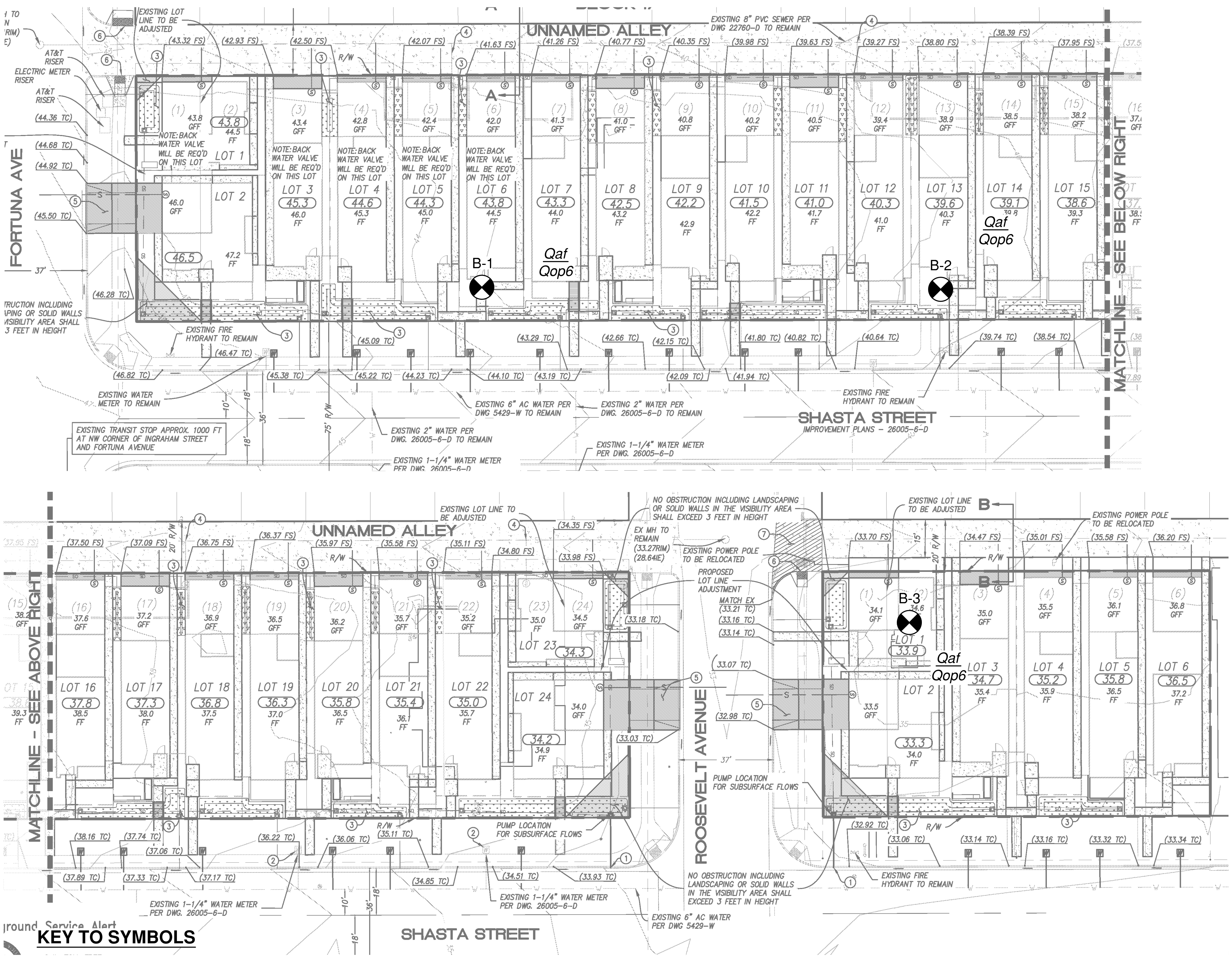
RECOMMENDATION

CLOSURE

NOVA Services, Inc.

John F. O'Brien

REGISTERED PROFESSIONAL ENGINEER
JOHN F. O'BRIEN
651
expires 3-31-2019
GEOTECHNICAL
STATE OF CALIFORNIA



KEY TO SYMBOLS

Qaf	ARTIFICIAL FILL
Qop6	OLD PARALIC DEPOSITS, UNIT 6
B-3	APPROXIMATE LOCATION OF GEOTECHNICAL BORING

SHEET C-4

latitude 33 PLANNING & ENGINEERING

NOVA
4373 VIEWRIDGE AVENUE, SUITE B
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858-292-7575
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ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST.,
1750 ROOSEVELT AVE.,
SAN DIEGO, CALIFORNIA

PROJECT NO:	2017701
DATE:	MAY 2017
DESIGN BY:	AJS
DRAWN BY:	AJS
CHECKED BY:	WM
REVIEWED BY:	JDB

SUBSURFACE INVESTIGATION MAP

0 40' 80'

PLATE: 1

Attachment 1
Engineering Borings by NOVA

BORING LOG B-1

DATE EXCAVATED: APRIL 17, 2017
EQUIPMENT: B-51
EXCAVATION DESCRIPTION: 6 INCH DIAMETER AUGER BORING
GPS COORD.: N/A
GROUNDWATER DEPTH: GROUNDWATER NOT ENCOUNTERED
ELEVATION: 48.0 FT

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MC	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION *SUMMARY OF SUBSURFACE CONDITIONS* *(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						*GRASS AND ORGANICS*		
				SM		**VERY OLD PARALIC DEPOSITS, UNIT 6 (Qvop6):** *SILTY SAND; LIGHT BROWN TO REDDISH-BROWN, MOIST, LOOSE, FINE GRAINED*		
					12			
							CN	*6.7% 103.7pcf*
5					8			
							CN SA	*6.4% 102.0pcf*
					13			
							CN	*7.7% 104.6pcf*
					13			
10								
					18	*MEDIUM DENSE*		
					21			
						BORING TERMINATED AT 13.5 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼	GROUNDWATER	#	ERRONEOUS BLOWCOUNT
⊠	BULK SAMPLE	*	NO SAMPLE RECOVERY
◸	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

ECO BLOK EAST
1765 FORTUNA AVENUE, 3977 SHASTA STREET,
1750 ROOSEVELT AVENUE
SAN DIEGO, CALIFORNIA

LOGGED BY:	HP	DATE:	MAY 2017
REVIEWED BY:	AJS	PROJECT NO.:	1017701

NOVA

APPENDIX B-1

BORING LOG B-2

DATE EXCAVATED: APRIL 17, 2017

EQUIPMENT: B-51

EXCAVATION DESCRIPTION: 6 INCH DIAMETER AUGER BORING

GPS COORD.: N/A

GROUNDWATER DEPTH: GROUNDWATER NOT ENCOUNTERED

ELEVATION: 42.0 FT

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MC	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION *SUMMARY OF SUBSURFACE CONDITIONS* *(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						*GRASS AND ORGANICS*		
				SM		**VERY OLD PARALIC DEPOSITS, UNIT 6 (Qvop6):** *SILTY SAND; LIGHT BROWN TO REDDISH-BROWN, MOIST, LOOSE, FINE GRAINED*		
					10			
5							CN	*7.8% 106.3pcf*
					13			
								8.5% 105.6pcf
					13		SA	
								8.3% 109.0pcf
10					29	*MEDIUM DENSE*		
					34			
						BORING TERMINATED AT 13.5 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼	GROUNDWATER	#	ERRONEOUS BLOWCOUNT
⊠	BULK SAMPLE	*	NO SAMPLE RECOVERY
▱	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

ECO BLOK EAST
1765 FORTUNA AVENUE, 3977 SHASTA STREET,
1750 ROOSEVELT AVENUE
SAN DIEGO, CALIFORNIA

LOGGED BY:	HP	DATE:	MAY 2017
REVIEWED BY:	AJS	PROJECT NO.: 1017701	

NOVA

APPENDIX B-2

BORING LOG B-3

DATE EXCAVATED:	APRIL 17, 2017	**EQUIPMENT:**	B-51
EXCAVATION DESCRIPTION:	6 INCH DIAMETER AUGER BORING	**GPS COORD.:**	N/A
GROUNDWATER DEPTH:	GROUNDWATER NOT ENCOUNTERED	**ELEVATION:**	37.0 FT

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MC	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	**SOIL DESCRIPTION** *SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0				SM-ML		**UNDOCUMENTED FILL (Qudf):** *SILTY SAND-SANDY SILT; BROWN, DAMP TO DRY, LOOSE OR SOFT, FINE TO MEDIUM GRAINED*		
				SM		**VERY OLD PARALIC DEPOSITS, UNIT 6 (Qvop6):** *SILTY SAND; LIGHT BROWN TO REDDISH-BROWN, MOIST, LOOSE, FINE GRAINED*		
5					13			*6.2% 97.9pcf*
					17	*MEDIUM DENSE*		
					18		CN SA	*9.4% 107.0pcf*
10					15			
					89	*VERY DENSE GRAVEL*		
						BORING TERMINATED AT 13.5 FT DUE TO REFUSAL. NO GROUNDWATER ENCOUNTERED. NO CAVING.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼	GROUNDWATER	#	ERRONEOUS BLOWCOUNT
⊠	BULK SAMPLE	*	NO SAMPLE RECOVERY
⧄	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

ECO BLOK EAST
1765 FORTUNA AVENUE, 3977 SHASTA STREET,
1750 ROOSEVELT AVENUE
SAN DIEGO, CALIFORNIA

LOGGED BY: HP	DATE: MAY 2017
REVIEWED BY: AJS	PROJECT NO.: 1017701

NOVA

APPENDIX B-3

Attachment 2
Laboratory Testing by NOVA

NOVA

Laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures. Brief descriptions of the tests performed are presented below:

- **CLASSIFICATION:** *Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soils Classification System and are presented on the exploration logs in Attachment 1.*

- **MAXIMUM DENSITY AND OPTIMUM MOISTURE CONTENT (ASTM D1557 METHOD A,B,C):** *The maximum dry density and optimum moisture content of typical soils were determined in the laboratory in accordance with ASTM Standard Test D1557, Method A, Method B, Method C.*

- **GRADATION ANALYSIS (ASTM C136 and/or ASTM D422):** *Tests were performed on selected representative soil samples in general accordance with ASTM D422. The grain size distributions of selected samples were determined in accordance with ASTM C136 and/or ASTM D422 The results of the tests are summarized on Attachment 2.3 through 2.5.*

- **CONSOLIDATION TESTS (ASTM D2435):** *Tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the tests are summarized on Appendix 2.6 through Appendix 2.10***.**

Moisture-Density (ASTM D2937)

Sample Location	Sample Depth (ft)	Soil Description	Moisture (%)	Dry Density (pcf)
B-1	4.0'	Light Reddish Brown Silty Sand	6.7	103.7
B-1	6.0'	Light Reddish Brown Silty Sand	6.4	102.0
B-1	8.0'	Light Reddish Brown Silty Sand	7.7	104.6
B-2	5.0'	Light Reddish Brown Silty Sand	7.8	106.3
B-2	7.0'	Light Reddish Brown Silty Sand	8.5	105.6
B-2	9.0'	Light Reddish Brown Silty Sand	8.3	109.0
B-3	4.0'	Light Reddish Brown Silty Sand	6.2	97.9
B-3	8.0'	Light Reddish Brown Silty Sand	9.4	107.0

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4373 VIEWRIDGE AVENUE, SUITE B
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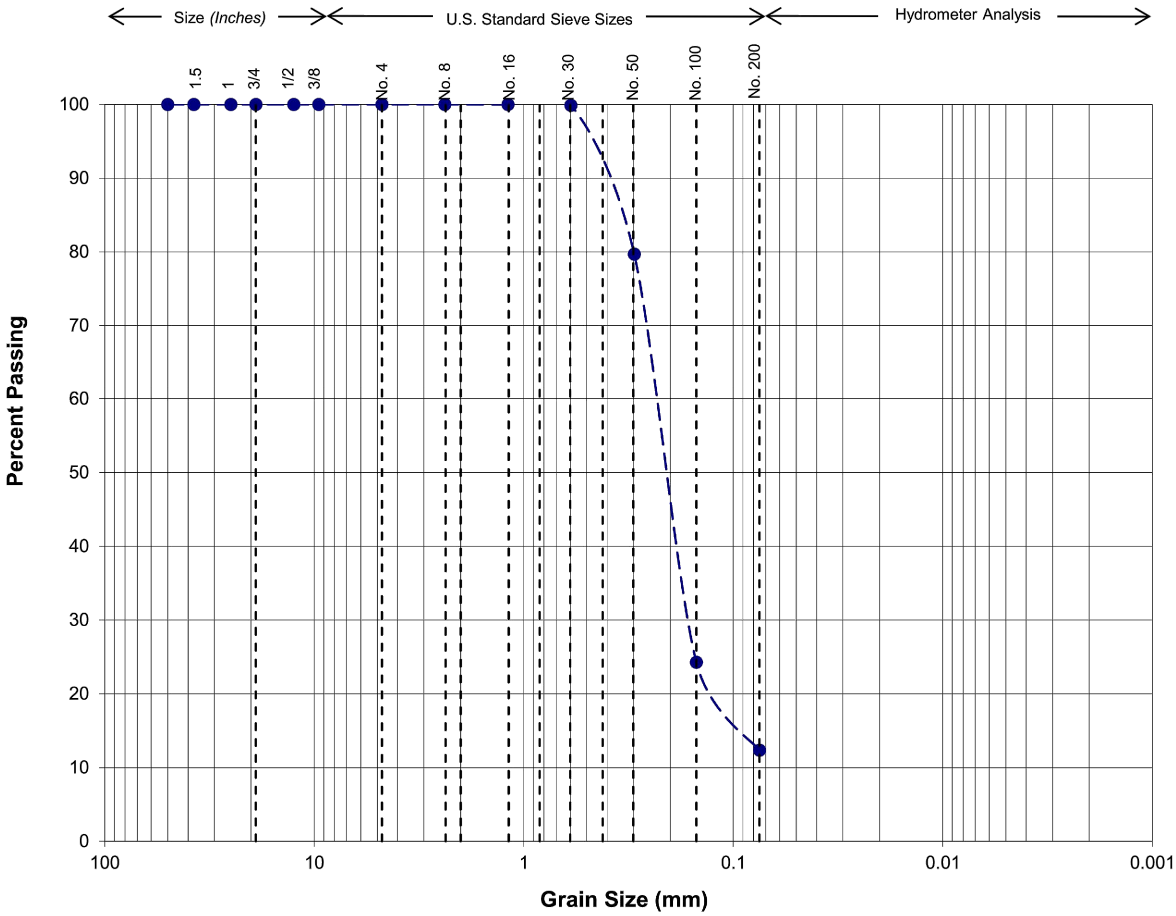
LAB TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.2



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample Location: B-1

Depth (ft.): 6.0'

USCS Soil Type: SM

Passing No. 200 (%): 12

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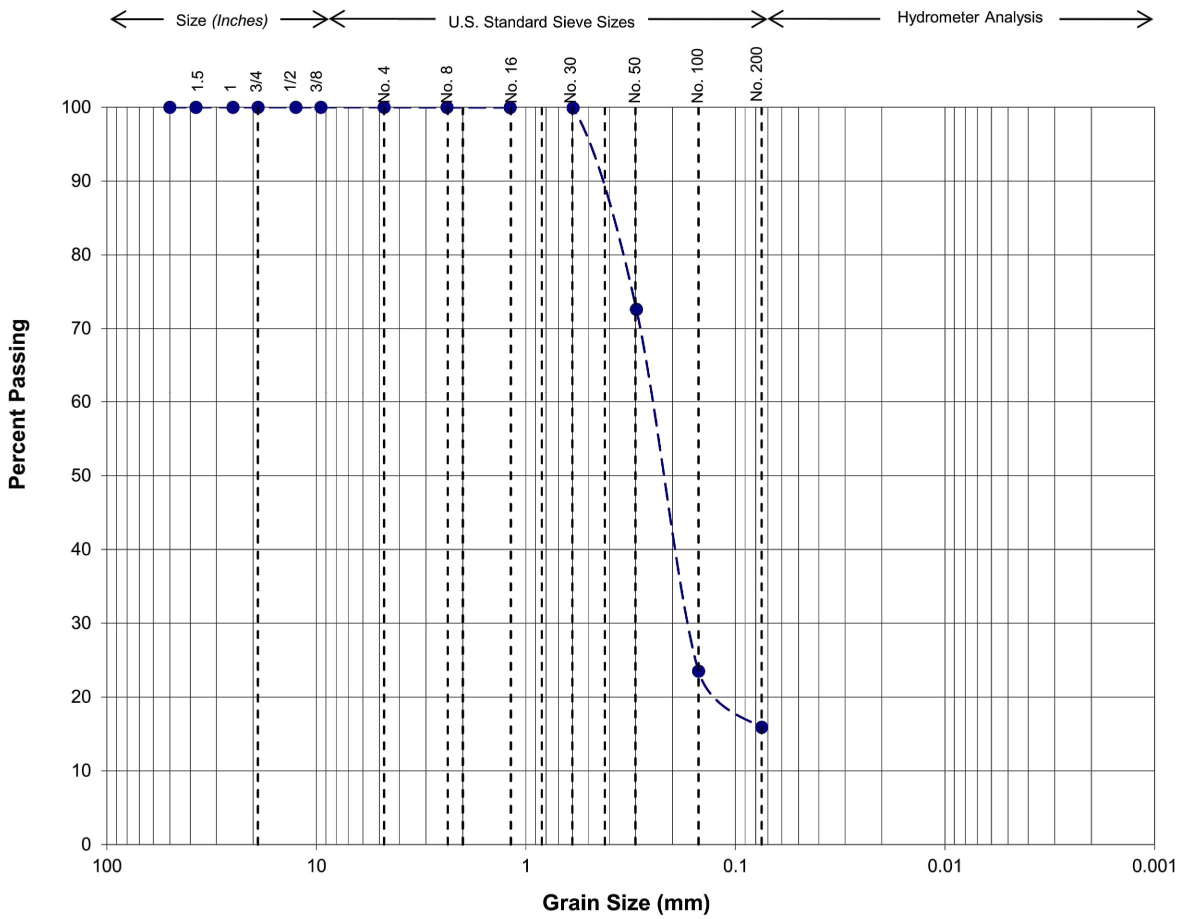
GRADATION ANALYSIS TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.3



<table>
<tr><td colspan="2">Gravel</td><td colspan="3">Sand</td><td rowspan="2">Silt or Clay</td></tr>
<tr><td>Coarse</td><td>Fine</td><td>Coarse</td><td>Medium</td><td>Fine</td></tr>
</table>

Sample Location: B-2

Depth (ft.): 7.0'

USCS Soil Type: SM

Passing No. 200 (%): 16

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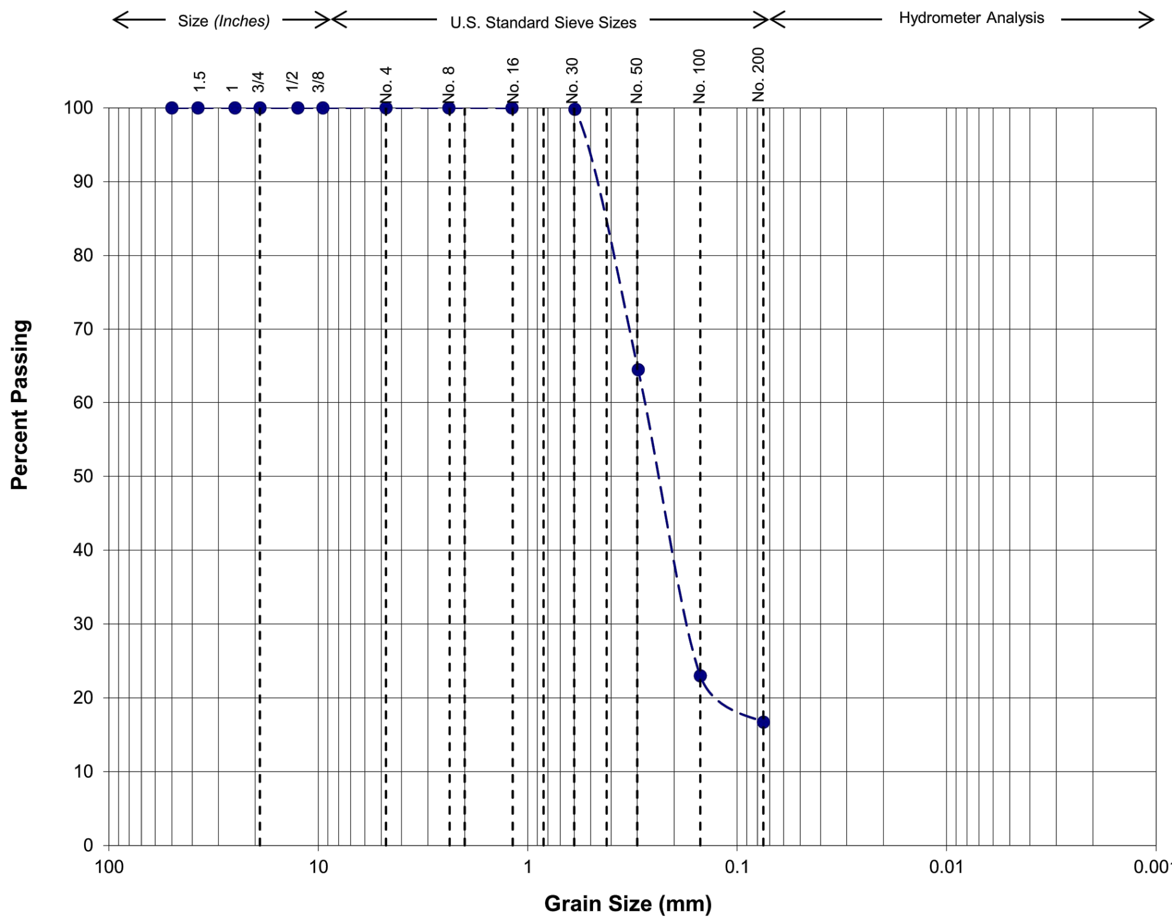
GRADATION ANALYSIS TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.4



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample Location: B-3

Depth (ft.): 8.0'

USCS Soil Type: SM

Passing No. 200 (%): 17

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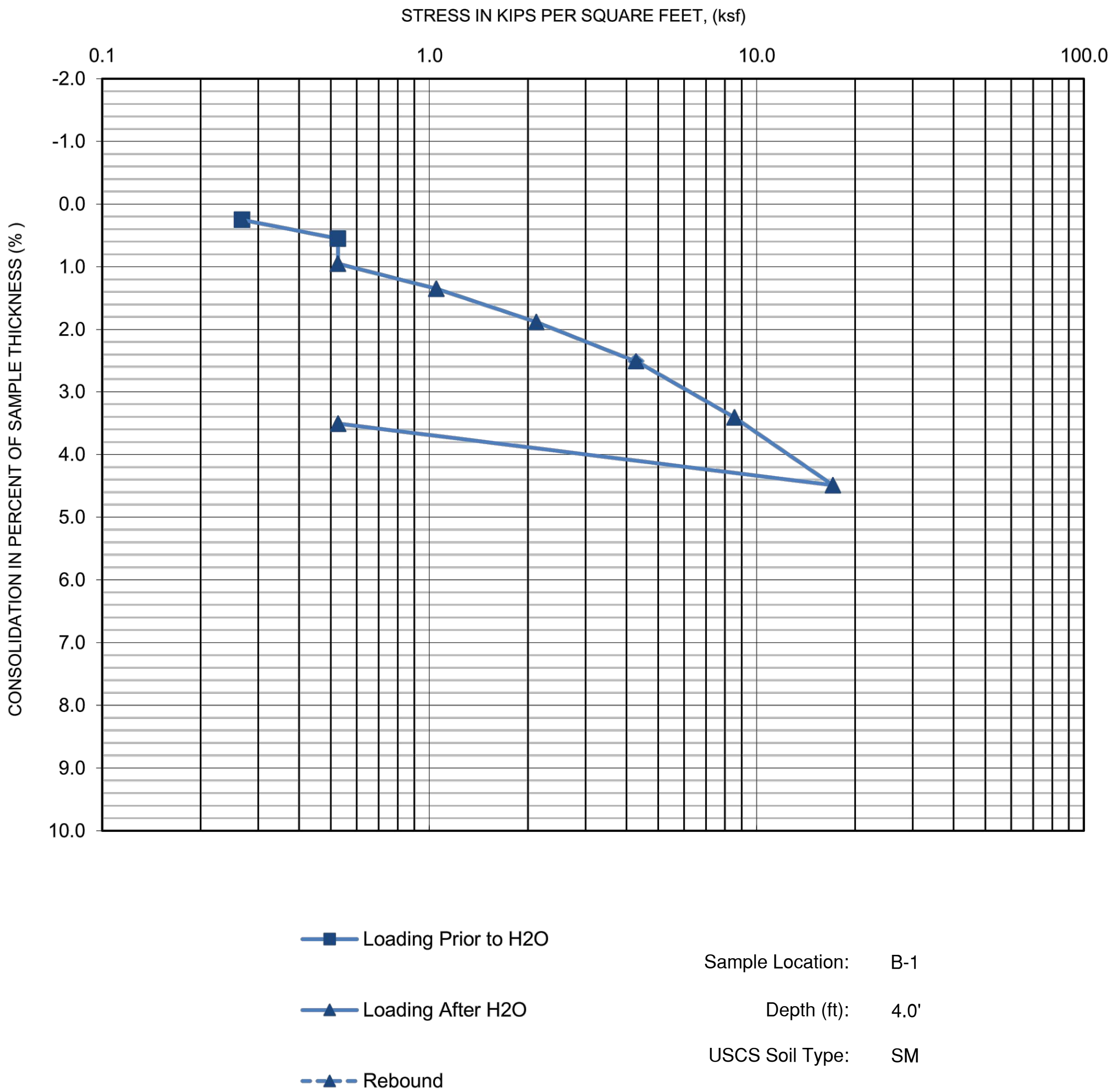
GRADATION ANALYSIS TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.5



Sample Location: B-1

Depth (ft): 4.0'

USCS Soil Type: SM

CONSOLIDATION TEST RESULTS

ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.

SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.6

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SAN DIEGO, CALIFORNIA

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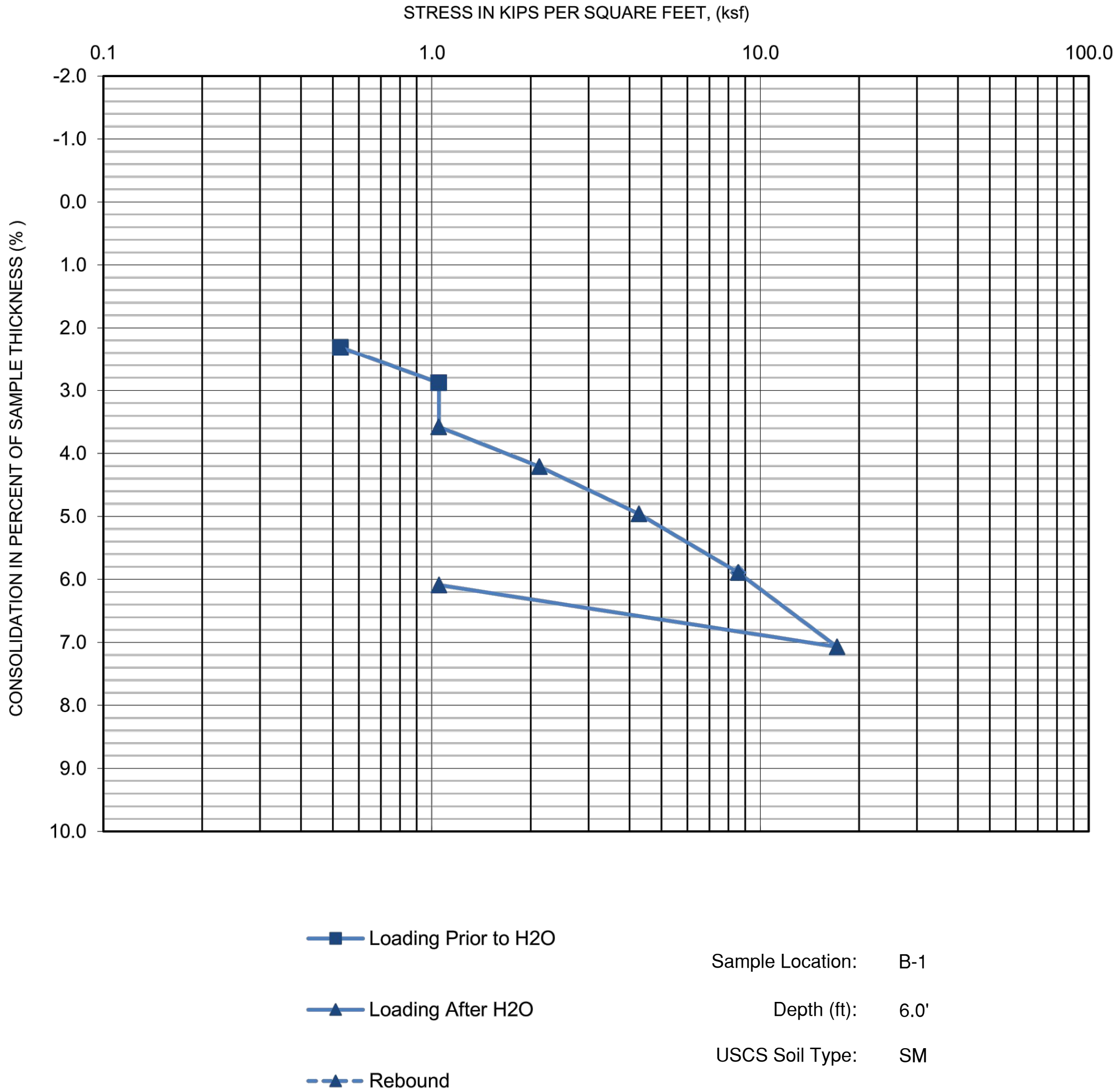

Sample Location: B-1

Depth (ft): 6.0'

USCS Soil Type: SM

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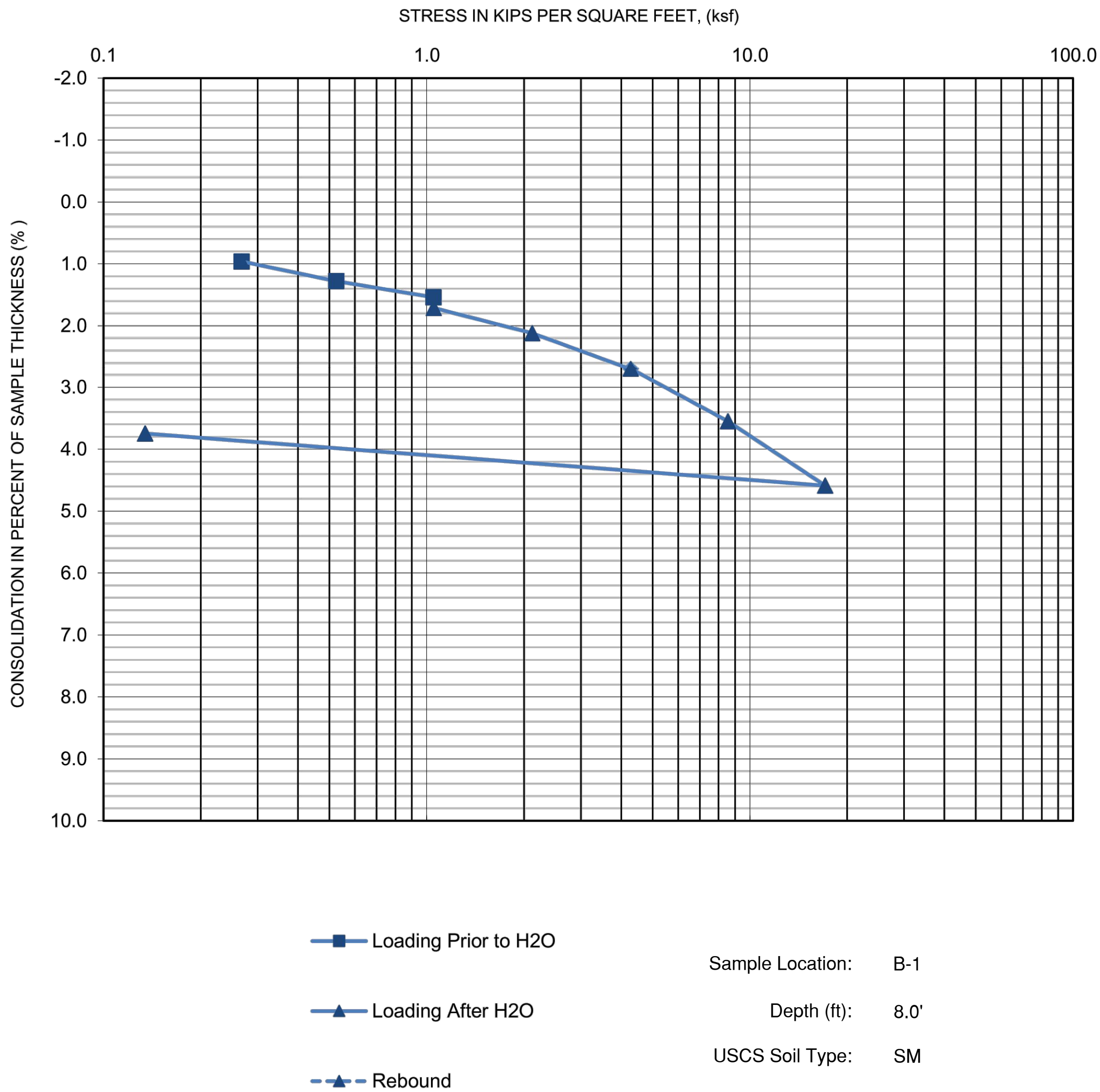
CONSOLIDATION TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.7



Sample Location: B-1

Depth (ft): 8.0'

USCS Soil Type: SM

CONSOLIDATION TEST RESULTS

ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.

SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.8

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SAN DIEGO, CALIFORNIA

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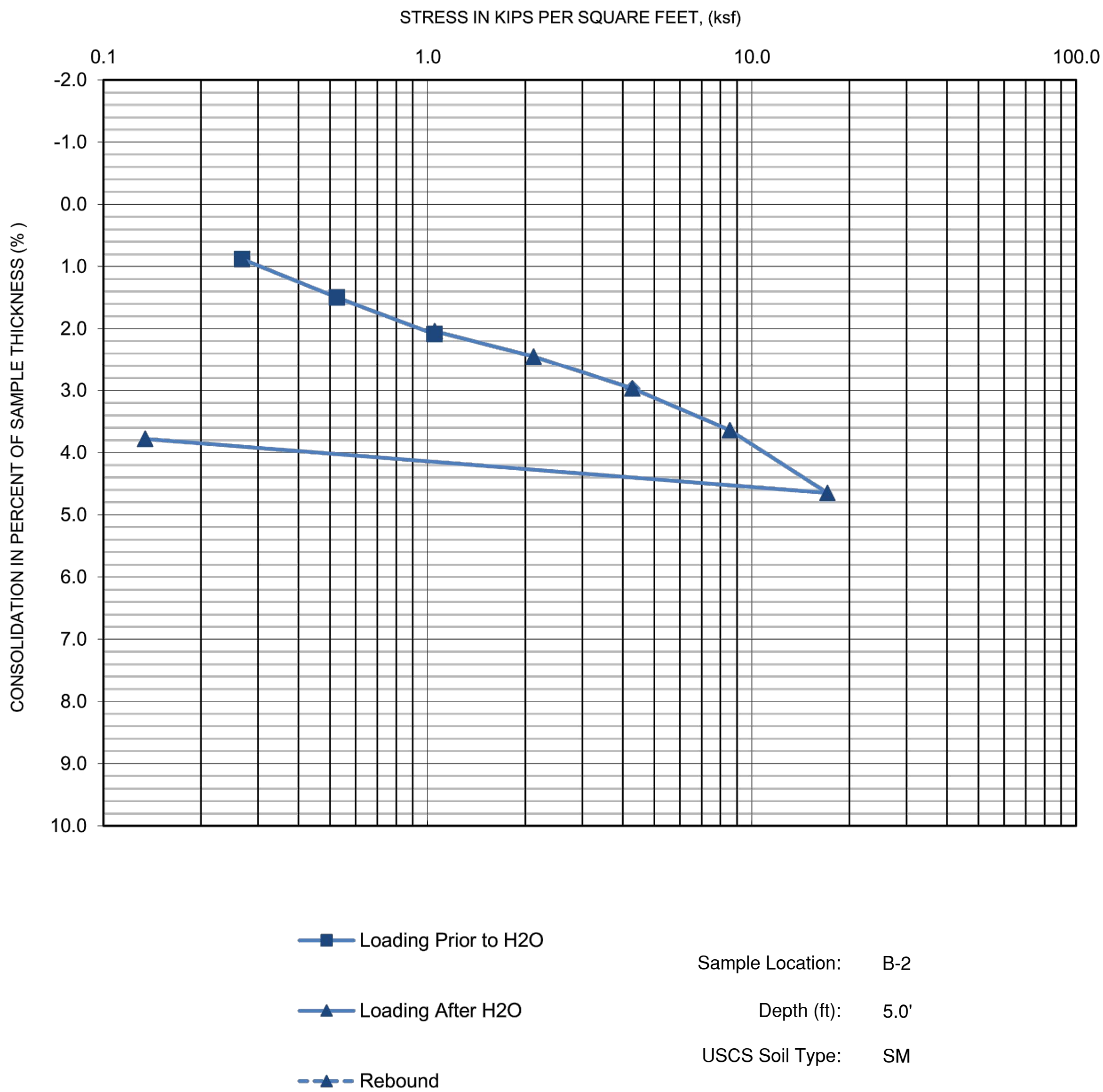

Sample Location: B-2

Depth (ft): 5.0'

USCS Soil Type: SM

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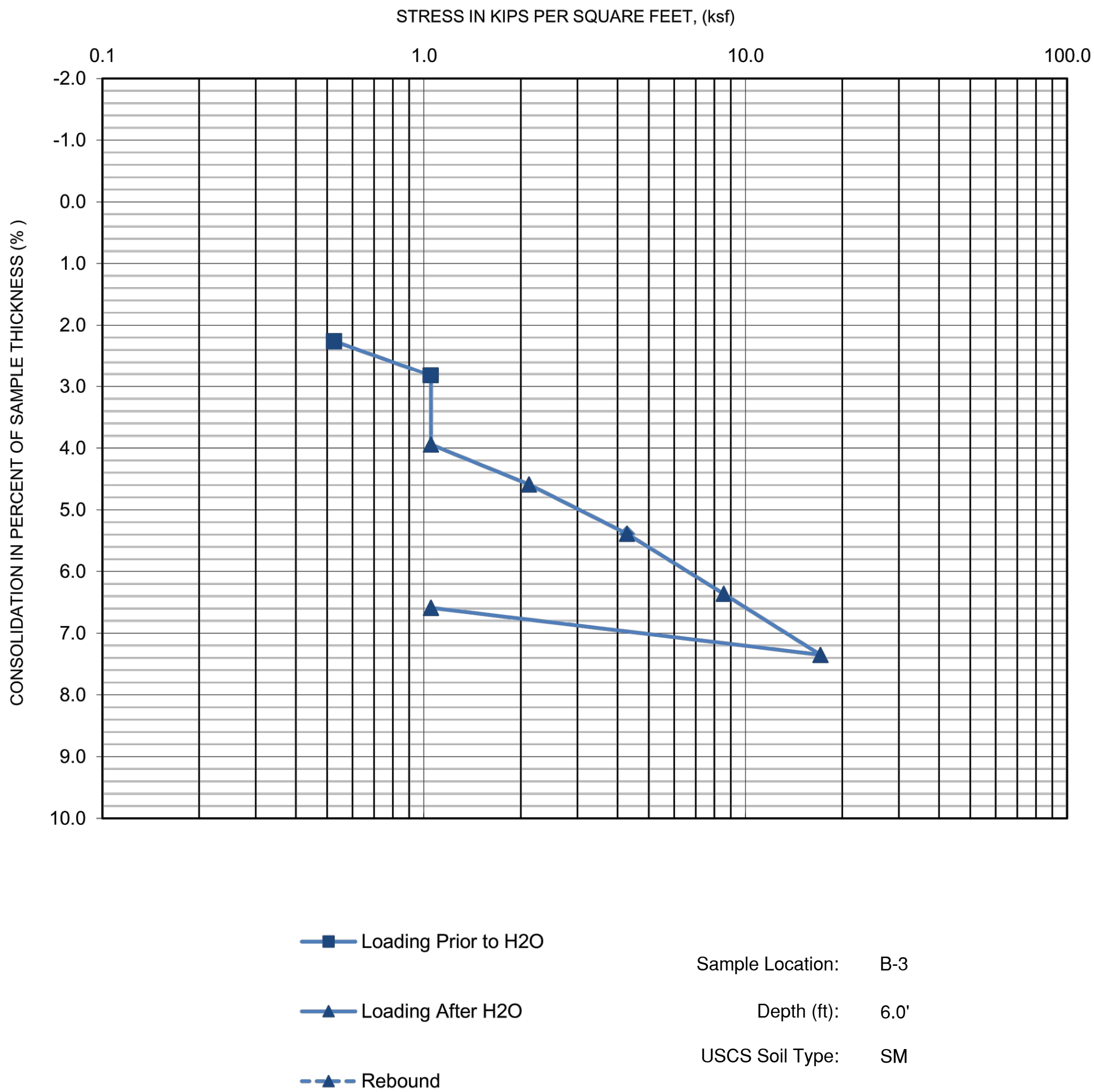
CONSOLIDATION TEST RESULTS

ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.

SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.9



Sample Location: B-3

Depth (ft): 6.0'

USCS Soil Type: SM

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CONSOLIDATION TEST RESULTS

ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.

SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.10

[illegible]

[illegible]

1. [illegible] *Geotechnical Investigation, Eco Blok East, Shasta Street, San Diego, California* [illegible]

2. [illegible] *Response to City of San Diego Review Comments, Eco Blok East, San Diego, California* [illegible]

3. [illegible] *Building Plan Set, Eco Blok Residences, 3977 Shasta Street, San Diego, California* [illegible]

4. [illegible] *Grading & Drainage Plans for: Eco Blok East, 1765 Fortuna Avenue, 3977 Shasta Street, 1750 Roosevelt Avenue, San Diego, California,* [illegible]

5. [illegible] *Report, Assessment of the Potential for Infiltration-Related Soil Collapse, Eco Blok East, San Diego, California,* [illegible]

[illegible]

NOVA

NOVA Services, Inc.

John F. O'Brien

Bryan Miller-Hicks

REGISTERED PROFESSIONAL ENGINEER
JOHN F. O'BRIEN
651
expires 3-31-2019
GEOTECHNICAL
STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST
BRYAN MILLER-HICKS
No. 1323
CERTIFIED
ENGINEERING
GEOLOGIST
Exp. 5/31/19
STATE OF CALIFORNIA

CLIMATE ACTION PLAN CONSISTENCY CHECKLIST INTRODUCTION

In December 2015, the City adopted a Climate Action Plan (CAP) that outlines the actions that City will undertake to achieve its proportional share of State greenhouse gas (GHG) emission reductions. The purpose of the Climate Action Plan Consistency Checklist (Checklist) is to, in conjunction with the CAP, provide a streamlined review process for proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to the California Environmental Quality Act (CEQA).[1]

Analysis of GHG emissions and potential climate change impacts from new development is required under CEQA. The CAP is a plan for the reduction of GHG emissions in accordance with CEQA Guidelines Section 15183.5. Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP.

This Checklist is part of the CAP and contains measures that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the CAP are achieved. Implementation of these measures would ensure that new development is consistent with the CAP's assumptions for relevant CAP strategies toward achieving the identified GHG reduction targets. Projects that are consistent with the CAP as determined through the use of this Checklist may rely on the CAP for the cumulative impacts analysis of GHG emissions. Projects that are not consistent with the CAP must prepare a comprehensive project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and incorporation of the measures in this Checklist to the extent feasible. Cumulative GHG impacts would be significant for any project that is not consistent with the CAP.

The Checklist may be updated to incorporate new GHG reduction techniques or to comply with later amendments to the CAP or local, State, or federal law.

[1] Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.

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CAP CONSISTENCY CHECKLIST SUBMITTAL APPLICATION

- ❖ The Checklist is required only for projects subject to CEQA review.[2]
- ❖ If required, the Checklist must be included in the project submittal package. Application submittal procedures can be found in Chapter 11: Land Development Procedures of the City's Municipal Code.
- ❖ The requirements in the Checklist will be included in the project's conditions of approval.
- ❖ The applicant must provide an explanation of how the proposed project will implement the requirements described herein to the satisfaction of the Planning Department.

Application Information

Contact Information

Project No./Name: EcoBlok Residences

Property Address: 3977 Shasta Street

Applicant Name/Co.: Silvergate Development

Contact Phone: ______ Contact Email: ______

Was a consultant retained to complete this checklist? ■ Yes ☐ No If Yes, complete the following

Consultant Name: Rose Kelly Contact Phone: (760)479-4258

Company Name: Dudek Contact Email: rkelly@dudek.com

Project Information

1. What is the size of the project (acres)? 1.64
2. Identify all applicable proposed land uses:
   - ■ Residential (indicate # of single-family units): 30
   - ☐ Residential (indicate # of multi-family units):
   - ☐ Commercial (total square footage):
   - ☐ Industrial (total square footage):
   - ☐ Other (describe):
3. Is the project or a portion of the project located in a Transit Priority Area? ■ Yes ☐ No
4. Provide a brief description of the project proposed:

The proposed Project involves the construction 30 single-family homes on 30 existing single-family lots totaling 71,250 SF (2,375 SF per lot) located in the Crown Point neighborhood of Pacific Beach in the City of San Diego, CA. The lots were previously home to three ARC (Association of Retarded Citizens) groups homes developed under a CUP and the Pacific Beach community garden. The Project site is currently zoned RM-1-1, which permits a maximum density of 1 dwelling for each 3,000 square feet of lot area. The underlying lots are subject to a maximum FAR of 0.75. Removing the CUP and reverting to the underlying single-family permits each lot to have 1 single-family home subject to the 0.75 FAR restriction.

[2] Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.

CAP CONSISTENCY CHECKLIST QUESTIONS

Step 1: Land Use Consistency

The first step in determining CAP consistency for discretionary development projects is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the City to determine a project's consistency with the land use assumptions used in the CAP.

Step 1: Land Use Consistency		
Checklist Item (Check the appropriate box and provide explanation and supporting documentation for your answer)	Yes	No
A. Is the proposed project consistent with the existing General Plan and Community Plan land use and zoning designations?;[3] OR, B. If the proposed project is not consistent with the existing land use plan and zoning designations, and includes a land use plan and/or zoning designation amendment, would the proposed amendment result in an increased density within a Transit Priority Area (TPA)[4] and implement CAP Strategy 3 actions, as determined in Step 3 to the satisfaction of the Development Services Department?; OR, C. If the proposed project is not consistent with the existing land use plan and zoning designations, does the project include a land use plan and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations?	☑	☐

If "***Yes***," proceed to Step 2 of the Checklist. For question B above, complete Step 3. For question C above, provide estimated project emissions under both existing and proposed designation(s) for comparison. Compare the maximum buildout of the existing designation and the maximum buildout of the proposed designation.

If "***No***," in accordance with the City's Significance Determination Thresholds, the project's GHG impact is significant. The project must nonetheless incorporate each of the measures identified in Step 2 to mitigate cumulative GHG emissions impacts unless the decision maker finds that a measure is infeasible in accordance with CEQA Guidelines Section 15091. Proceed and complete Step 2 of the Checklist.

[3] This question may also be answered in the affirmative if the project is consistent with SANDAG Series 12 growth projections, which were used to determine the CAP projections, as determined by the Planning Department.

[4] This category applies to all projects that answered in the affirmative to question 3 on the previous page: Is the project or a portion of the project located in a transit priority area.

Step 2: CAP Strategies Consistency

The second step of the CAP consistency review is to review and evaluate a project's consistency with the applicable strategies and actions of the CAP. Step 2 only applies to development projects that involve permits that would require a certificate of occupancy from the Building Official or projects comprised of one and two family dwellings or townhouses as defined in the California Residential Code and their accessory structures.[5] All other development projects that would not require a certificate of occupancy from the Building Official shall implement Best Management Practices for construction activities as set forth in the Greenbook (for public projects).

Step 2: CAP Strategies Consistency			
Checklist Item (Check the appropriate box and provide explanation for your answer)	Yes	No	N/A
Strategy 1: Energy & Water Efficient Buildings			
1. *Cool/Green Roofs*. • Would the project include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under California Green Building Standards Code (Attachment A)?; OR • Would the project roof construction have a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot as specified in the voluntary measures under California Green Building Standards Code?; OR • Would the project include a combination of the above two options? Check "N/A" only if the project does not include a roof component. The project would comply with the roofing materials as outlined in the California Green Building Code Appendix A4 "Residential Voluntary Measures". Additionally, each home would include photovoltaic panels.	☑	☐	☐

[5] Actions that are not subject to Step 2 would include, for example: 1) discretionary map actions that do not propose specific development, 2) permits allowing wireless communication facilities, 3) special events permits, 4) use permits or other permits that do not result in the expansion or enlargement of a building (e.g., decks, garages, etc.), and 5) non-building infrastructure projects such as roads and pipelines. Because such actions would not result in new occupancy buildings from which GHG emissions reductions could be achieved, the items contained in Step 2 would not be applicable.

2. *Plumbing fixtures and fittings* With respect to plumbing fixtures or fittings provided as part of the project, would those low-flow fixtures/appliances be consistent with each of the following: Residential buildings: • Kitchen faucets: maximum flow rate not to exceed 1.5 gallons per minute at 60 psi; • Standard dishwashers: 4.25 gallons per cycle; • Compact dishwashers: 3.5 gallons per cycle; and • Clothes washers: water factor of 6 gallons per cubic feet of drum capacity? Nonresidential buildings: • Plumbing fixtures and fittings that do not exceed the maximum flow rate specified in Table A5.303.2.3.1 (voluntary measures) of the California Green Building Standards Code (See Attachment A); and • Appliances and fixtures for commercial applications that meet the provisions of Section A5.303.3 (voluntary measures) of the California Green Building Standards Code (See Attachment A)? Check "N/A" only if the project does not include any plumbing fixtures or fittings. The project would include low-flow appliances consistent with the CAP.	☑	☐	☐

Strategy 3: Bicycling, Walking, Transit & Land Use			
3. *Electric Vehicle Charging* • Multiple-family projects of 17 dwelling units or less: Would 3% of the total parking spaces required, or a minimum of one space, whichever is greater, be provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official, to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents? • Multiple-family projects of more than 17 dwelling units: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents? • Non-residential projects: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use? Check "N/A" only if the project is a single-family project or would not require the provision of listed cabinets, boxes, or enclosures connected to a conduit linking the parking spaces with electrical service, e.g., projects requiring fewer than 10 parking spaces. The project only includes single family homes; however, each home will include an EV charging station.	☐	☐	☑

Strategy 3: Bicycling, Walking, Transit & Land Use (Complete this section if project includes non-residential or mixed uses)			
4. *Bicycle Parking Spaces* Would the project provide more short- and long-term bicycle parking spaces than required in the City's Municipal Code (Chapter 14, Article 2, Division 5)?[6] Check "N/A" only if the project is a residential project. The project does not include non-residential development.	☐	☐	☑

[6] Non-portable bicycle corrals within 600 feet of project frontage can be counted towards the project's bicycle parking requirements.

5. *Shower facilities*

If the project includes nonresidential development that would accommodate over 10 tenant occupants (employees), would the project include changing/shower facilities in accordance with the voluntary measures under the California Green Building Standards Code as shown in the table below?

Number of Tenant Occupants (Employees)	Shower/Changing Facilities Required	Two-Tier (12" X 15" X 72") Personal Effects Lockers Required
0-10	0	0
11-50	1 shower stall	2
51-100	1 shower stall	3
101-200	1 shower stall	4
Over 200	1 shower stall plus 1 additional shower stall for each 200 additional tenant-occupants	1 two-tier locker plus 1 two-tier locker for each 50 additional tenant-occupants

☐ ☐ ☑

Check "N/A" only if the project is a residential project, or if it does not include nonresidential development that would accommodate over 10 tenant occupants (employees).

The project does not include non-residential development.

6. *Designated Parking Spaces*

If the project includes a nonresidential use in a TPA, would the project provide designated parking for a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles in accordance with the following table?

Number of Required Parking Spaces	Number of Designated Parking Spaces
0-9	0
10-25	2
26-50	4
51-75	6
76-100	9
101-150	11
151-200	18
201 and over	At least 10% of total

This measure does not cover electric vehicles. See Question 4 for electric vehicle parking requirements.

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces. The required designated parking spaces are to be provided within the overall minimum parking requirement, not in addition to it.

Check "N/A" only if the project is a residential project, or if it does not include nonresidential use in a TPA.

☐ ☐ ☑

The project does not include non-residential development.

7. *Transportation Demand Management Program* If the project would accommodate over 50 tenant-occupants (employees), would it include a transportation demand management program that would be applicable to existing tenants and future tenants that includes: At least one of the following components: • Parking cash out program • Parking management plan that includes charging employees market-rate for single-occupancy vehicle parking and providing reserved, discounted, or free spaces for registered carpools or vanpools • Unbundled parking whereby parking spaces would be leased or sold separately from the rental or purchase fees for the development for the life of the development And at least three of the following components: • Commitment to maintaining an employer network in the SANDAG iCommute program and promoting its RideMatcher service to tenants/employees • On-site carsharing vehicle(s) or bikesharing • Flexible or alternative work hours • Telework program • Transit, carpool, and vanpool subsidies • Pre-tax deduction for transit or vanpool fares and bicycle commute costs • Access to services that reduce the need to drive, such as cafes, commercial stores, banks, post offices, restaurants, gyms, or childcare, either onsite or within 1,320 feet (1/4 mile) of the structure/use? Check "N/A" only if the project is a residential project or if it would not accommodate over 50 tenant-occupants (employees). The project does not include non-residential development.	☐	☐	☑

Step 3: Project CAP Conformance Evaluation (if applicable)

The third step of the CAP consistency review only applies if Step 1 is answered in the affirmative under option B. The purpose of this step is to determine whether a project that is located in a TPA but that includes a land use plan and/or zoning designation amendment is nevertheless consistent with the assumptions in the CAP because it would implement CAP Strategy 3 actions. In general, a project that would result in a reduction in density inside a TPA would not be consistent with Strategy 3.The following questions must each be answered in the affirmative and fully explained.

1. **Would the proposed project implement the General Plan's City of Villages strategy in an identified Transit Priority Area (TPA) that will result in an increase in the capacity for transit-supportive residential and/or employment densities?**

   Considerations for this question:
   - Does the proposed land use and zoning designation associated with the project provide capacity for transit-supportive residential densities within the TPA?
   - Is the project site suitable to accommodate mixed-use village development, as defined in the General Plan, within the TPA?
   - Does the land use and zoning associated with the project increase the capacity for transit-supportive employment intensities within the TPA?

2. **Would the proposed project implement the General Plan's Mobility Element in Transit Priority Areas to increase the use of transit?**

   Considerations for this question:
   - Does the proposed project support/incorporate identified transit routes and stops/stations?
   - Does the project include transit priority measures?

3. **Would the proposed project implement pedestrian improvements in Transit Priority Areas to increase walking opportunities?**

   Considerations for this question:
   - Does the proposed project circulation system provide multiple and direct pedestrian connections and accessibility to local activity centers (such as transit stations, schools, shopping centers, and libraries)?
   - Does the proposed project urban design include features for walkability to promote a transit supportive environment?

4. **Would the proposed project implement the City of San Diego's Bicycle Master Plan to increase bicycling opportunities?**

   Considerations for this question:
   - Does the proposed project circulation system include bicycle improvements consistent with the Bicycle Master Plan?
   - Does the overall project circulation system provide a balanced, multimodal, "complete streets" approach to accommodate mobility needs of all users?

5. **Would the proposed project incorporate implementation mechanisms that support Transit Oriented Development?**

   Considerations for this question:
   - Does the proposed project include new or expanded urban public spaces such as plazas, pocket parks, or urban greens in the TPA?
   - Does the land use and zoning associated with the proposed project increase the potential for jobs within the TPA?
   - Do the zoning/implementing regulations associated with the proposed project support the efficient use of parking through mechanisms such as: shared parking, parking districts, unbundled parking, reduced parking, paid or time-limited parking, etc.?

6. **Would the proposed project implement the Urban Forest Management Plan to increase urban tree canopy coverage?**

   Considerations for this question:
   - Does the proposed project provide at least three different species for the primary, secondary and accent trees in order to accommodate varying parkway widths?
   - Does the proposed project include policies or strategies for preserving existing trees?
   - Does the proposed project incorporate tree planting that will contribute to the City's 20% urban canopy tree coverage goal?

CLIMATE ACTION PLAN CONSISTENCY CHECKLIST
ATTACHMENT A

This attachment provides performance standards for applicable Climate Action Pan (CAP) Consistency Checklist measures.

Table 1 **Roof Design Values for Question 1: Cool/Green Roofs supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan**

Land Use Type	Roof Slope	Minimum 3-Year Aged Solar Reflectance	Thermal Emittance	Solar Reflective Index
Low-Rise Residential	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16
High-Rise Residential Buildings, Hotels and Motels	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16
Non-Residential	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 residential and non-residential voluntary measures shown in Tables A4.106.5.1 and A5.106.11.2.2, respectively. Roof installation and verification shall occur in accordance with the CALGreen Code.

CALGreen does not include recommended values for low-rise residential buildings with roof slopes of ≤ 2:12 for San Diego's climate zones (7 and 10). Therefore, the values for climate zone 15 that covers Imperial County are adapted here.

Solar Reflectance Index (SRI) equal to or greater than the values specified in this table may be used as an alternative to compliance with the aged solar reflectance values and thermal emittance.

Table 2	Fixture Flow Rates for Non-Residential Buildings related to Question 2: Plumbing Fixtures and Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan
Fixture Type	**Maximum Flow Rate**
Showerheads	1.8 gpm @ 80 psi
Lavatory Faucets	0.35 gpm @60 psi
Kitchen Faucets	1.6 gpm @ 60 psi
Wash Fountains	1.6 [rim space(in.)/20 gpm @ 60 psi]
Metering Faucets	0.18 gallons/cycle
Metering Faucets for Wash Fountains	0.18 [rim space(in.)/20 gpm @ 60 psi]
Gravity Tank-type Water Closets	1.12 gallons/flush
Flushometer Tank Water Closets	1.12 gallons/flush
Flushometer Valve Water Closets	1.12 gallons/flush
Electromechanical Hydraulic Water Closets	1.12 gallons/flush
Urinals	0.5 gallons/flush

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Tables A5.303.2.3.1 and A5.106.11.2.2, respectively. See the California Plumbing Code for definitions of each fixture type.

Where complying faucets are unavailable, aerators rated at 0.35 gpm or other means may be used to achieve reduction.

Acronyms:
gpm = gallons per minute
psi = pounds per square inch (unit of pressure)
in. = inch

Table 3	**Standards for Appliances and Fixtures for Commercial Application related to Question 2: Plumbing Fixtures and Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan**	
Appliance/Fixture Type	**Standard**	
Clothes Washers	Maximum Water Factor (WF) that will reduce the use of water by 10 percent below the California Energy Commissions' WF standards for commercial clothes washers located in Title 20 of the *California Code of Regulations.*	
Conveyor-type Dishwashers	0.70 maximum gallons per rack (2.6 L) (High-Temperature)	0.62 maximum gallons per rack (4.4 L) (Chemical)
Door-type Dishwashers	0.95 maximum gallons per rack (3.6 L) (High-Temperature)	1.16 maximum gallons per rack (2.6 L) (Chemical)
Undercounter-type Dishwashers	0.90 maximum gallons per rack (3.4 L) (High-Temperature)	0.98 maximum gallons per rack (3.7 L) (Chemical)
Combination Ovens	Consume no more than 10 gallons per hour (38 L/h) in the full operational mode.	
Commercial Pre-rinse Spray Valves (manufactured on or after January 1, 2006)	Function at equal to or less than 1.6 gallons per minute (0.10 L/s) at 60 psi (414 kPa) and • Be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate. • Be equipped with an integral automatic shutoff. • Operate at static pressure of at least 30 psi (207 kPa) when designed for a flow rate of 1.3 gallons per minute (0.08 L/s) or less.	

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Section A5.303.3. See the California Plumbing Code for definitions of each appliance/fixture type.

Acronyms:
L = liter
L/h = liters per hour
L/s = liters per second
psi = pounds per square inch (unit of pressure)
kPa = kilopascal (unit of pressure)

ATTACHMENT A - ECO BLöK RESIDENCES
(Project No. 530514)

CAP CONSISTENCY CHECKLIST SUPPORTING DOCUMENTATION

PROJECT DESCRIPTION

The project proposes the removal of an existing assisted living complex, and the construction of thirty new single family homes on the existing 30 legal lots (Lots 1 thru 24, Block 17, Map 894 and Lots 1 thru 6, Block 27, Map 894). The 30 new homes will consist of 6 plan types: Plan A(R) at 1,755-square feet, Plan B(R) at 1,726-square feet, Plan C(R) at 1,780-square feet, Plan D(R) at 1,757-square feet, Plan E(R) at 1,655-square feet, and Plan F(R) at 1,776-square feet. Project will utilize a Lot-Line Adjustment as the mechanism to alter the existing six lot shapes at the corners of the project site to better suit the infill construction in this existing developed neighborhood.

Land Use Consistency

1. The project is consistent with the land use designation in the City's General Plan (Residential) and the Community Plan for Pacific Beach. The project site is designated for multi-family residential development at a density of 9-14 units per acre in the Pacific Beach Community Plan. The RM1-1 zone implements the designated use and density. The proposal of thirty residences on an area of 1.64 acres is 18.3, which is over density for the prescribed use and density of the community plan. Although the project is over density of the community plan designation, the proposed lot line adjustment is not increasing the number of lots. The 30 existing underlying lots are allowed proposed development of 30 residences (one for each legal lot).

CAP Strategies Consistency

STRATEGY 1. ENERGY & WATER EFFICIENT BUILDINGS

1. Cool/Green Roofs - Where applicable, the project will include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under California Green Building Standards Code.

2. Plumbing fixtures and fittings - The project will use low-flow fixtures/appliances be consistent with each of the following:

- Kitchen faucets: maximum flow rate not to exceed 1.5. gallons per minute at 60 psi;
- Standard dishwashers: 4.25 gallons per cycle;
- Compact dishwashers: 3.5 gallons per cycle; and
- Clothes washers: water factor of 6 gallons per cubic feet of drum capacity.

STRATEGY 2. CLEAN & RENEWABLE ENERGY

3. Clean & Renewable Energy - designed to have an energy budget that shows a 15% energy improvement when compared to the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the California Energy Commission. The demand reduction will be provided through the list below of sustainable design features of this single family home:

ATTACHMENT A - ECO BLöK RESIDENCES
(Project No. 530514)

SUSTAINABLE FEATURES – ECO BLöK RESIDENCES

1. Homes will exceed TITLE-24 by a minimum of 15% and will includes Sustainable features throughout as outlined below.

2. Home to be equipped with a SOLAR PHOTO VOLTAIC SYSTEM that shall generate a minimum of 50% of the anticipated energy demand.

3. Exterior includes Sustainable fiber cement siding.

4. Energy efficient thermal exterior wall insulation to reduce heating and cooling load as well as insulation for all interior floor and wall assemblies as well.

5. Dual-pane LOW-E glass panels on doors and windows.

6. High efficiency Lighting and occupancy sensors.

7. Installation of ENERGY STAR rated appliances throughout the home.

8. Use of low VOC paints throughout the home.

9. Use of low emitting adhesives, coatings and carpets.

10. Framing to use sustainable manufactured lumber where ever possible to preserve old growth lumber.

11. Architectural design includes extensive use of passive solar heating and natural ventilation techniques to significantly reduce the heating and cooling load of the home.

12. High efficiency building and ductwork sealing to prevent air loss.

13. Ultra-high efficiency heating and cooling units

14. Use of ceiling fans, operable skylights and clerestory windows to reduce Heat gain and cooling load.

15. Use of tank-less energy efficient hot water heating systems.

STRATEGY 3. BICYCLE, WALKING, TRANSIT & LAND USE

4. Electrical Vehicle Charging - The required parking serving these single-family residences will be constructed with a listed cabinet, box or enclosure connected to a raceway linking the required parking space to the electrical service, to allow for the future installation of electric vehicle supply equipment to provide an electric vehicle charging station for use by the resident

5. Bicycle Parking Spaces - Not Applicable for Single-Family Residential Projects per the City of San Diego CAP consistency checklist.

6. Shower Facilities - Not Applicable for Single-Family Residential Projects per the City of San Diego CAP consistency checklist.

7. Designated Parking Spaces - Not Applicable for Single-Family Residential Projects per the City of San Diego CAP consistency checklist.

8. Transportation Demand Management Program - Not Applicable for Single-Family Residential Projects per the City of San Diego CAP consistency checklist.

DRAINAGE STUDY FOR:

ECO BLOK HOMES

CITY OF SAN DIEGO, CALIFORNIA

PTS NO. 530514

Prepared for:

Pathfinder Crown Point Apartments, LLC

4380 La Jolla Village Dr. Suite 250

San Diego, CA 92122

(858) 875-4450

Prepared by:

Latitude 33 Planning and Engineering

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San Diego, California 92131

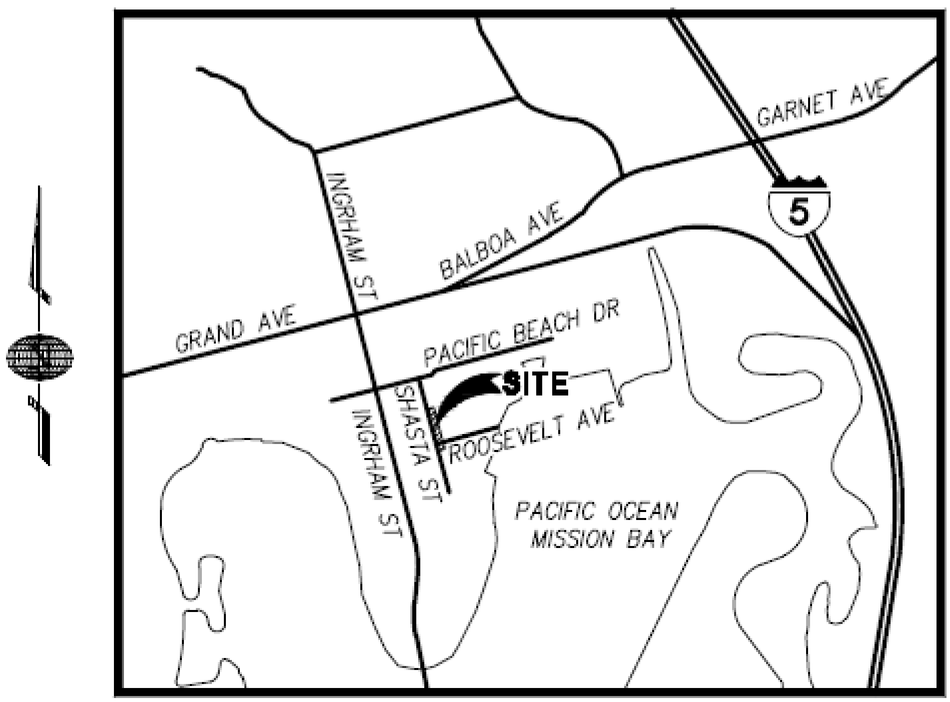
(858) 751-0633

Giovanni Posillico RCE 66332

TABLE OF CONTENTS

I. PROJECT DESCRIPTION

The Eco Blök Homes project is located in the city of San Diego and bounded to the south by Mission Bay, east by Interstate 5, north by Pacific Beach Drive and west by Ingraham Street, see vicinity map below. The project proposes to modify the 1.85-acre site with improvements such as infiltration BMPs, landscaping, sidewalk and single family houses. This report has been prepared to document the analysis of the existing and proposed drainage condition associated with Eco Blök Homess.



VICINITY MAP

NO SCALE

II. EXISTING SITE CONDITION

The project area is approximately 1.85 acres of developed land consisting of 3 existing units and an empty lot containing a garden. The existing site is comprised of buildings, sidewalk and landscaping. The existing site drainage is divided into three basins. The east side of the project (basin 1) drains to the southeast corner of the site and discharges to Roosevelt Avenue. The west side of the project (basin 2) drains to the southwest corner of the site and discharges southerly to curb and gutter along Shasta Avenue and converges with the discharge from basin 1 at Roosevelt Avenue. The southernmost portion of the project (basin 3) drains to the southeast corner of Roosevelt Avenue and Shasta Street. All of the storm water runoff from the project site then flows west down Roosevelt Avenue via curb and gutter where it finally come together at the corner of Roosevelt Avenue and Jewel Street. From there the entire project's runoff flows via curb and gutter to an existing inlet located 550 feet south at the corner of Jewel Street and La Playa Avenue. Storm water then is conveyed via storm drain to Mission Bay

III. DEVELOPED SITE CONDITION

The developed site at the Eco Blök Homes will disturb 1.64 acres and consists of sidewalk, landscaping and infiltration BMPs in addition to 30 single family row homes. The onsite storm water will be treated with infiltration basins.

There are no existing storm drain systems in the vicinity, thus for low flows that are associated with water quality treatment the infiltration systems will be connected through an underground storm drain network which will then discharge to the surface by means of pumps.

For flood control purposes the infiltration BMPs located within Basin 2 & 3 discharge to Shasta Street while those in Basin 1 discharge to the alley on the east side of the project. All water from the project site will be captured and directed to an infiltration BMP. The infiltration BMPs will fill up and the underlying media and aggregate will become saturated. The basins themselves will then begin to pond and fill up to their capacity. Once the proprietary systems reach their capacity the excess flow with simply bypass the BMP and flow into the unnamed alley on the east side of the project. Each standard infiltration BMP contains an overflow system for flows larger than the water quality demand. All of these overflow storm drain systems include a grated catch basin that have an open bottom. These open bottom structures will fill up with water and when a certain water level is reached the overflow will discharge via 3" underdrains to the surrounding curb and gutter. The remaining water that is in the catch basins and infiltration BMPs will then infiltrate through the media and aggregate.

Both overflow and subsurface flows from the project site will discharge through side walk underdrains to either the existing curb and gutter on Shasta Street or to the alley. All discharge points flow via curb and gutter 1,050 feet south to the existing storm drain inlet located at the corner of Jewel Street and La Playa Avenue. Storm water is then conveyed via storm drain pipes east down La Playa Avenue and across Crown Point park and then discharges directly into Mission Bay. The drainage areas have been designed to maintain the overall drainage design and the storm water discharges to the same inlet at the corner of Jewel Street and La Playa Avenue. This project does not propose to dredge or fill materials in water of the U.S. Jurisdictional Waters and will not be required to obtain Clean Water Act Section 401/404 Water Quality Certification.

Please see the Storm Water Quality Management Plan (SWQMP) for details of Water Quality calculations.

IV. HYDROLOGIC METHODOLOGY

This report is intended to support preliminary engineering design, as well as demonstrate compliance with applicable design standards. Specifically, this report will address the 50-yr and 100-yr flow rates for the pre and post condition.

Appendix I of the City of San Diego's 1984 *Drainage Design Manual's* rational method procedure was the basis for the pre and post conditions for the 100-year hydrologic analysis. This study was accomplished through the implementation of the 2015 Autodesk Storm and Sanitary Analysis software, which has the capability to utilize the rational method program based on the City of San Diego storm water design criteria. The input parameters are summarized below and the supporting data is included in Appendix A.

- Intensity-Duration-Frequency: The City's 50-year and 100-year Intensity-Duration-Frequency curve from the *Drainage Design Manual* was used.

- Drainage area: The pre-condition drainage basins were delineated from the base topographic mapping prepared for the project. Proposed condition drainage basins were delineated using the proposed Civil Site Plans which include storm drain layout.

- Manning's Roughness Coefficients: Table 1-104.14A was used to determine appropriate values.

- Run-off Coefficient: Taking into consideration the amount of landscaped area for the pre-condition a value of 0.50 was used and for the post condition a runoff coefficient of 0.70 was implemented in accordance with Table 2 in Appendix I. A weighted runoff coefficient was used e.g. for existing basin 1 (0.50) => Actual imp. 50%, Tabulated Imp. 70%; (0.50/0.70)*(0.70) = 0.50.

- Flow lengths and elevations: The flow lengths and elevations were obtained from the topographic mapping and grading plans.

V. DISCUSSION AND RESULT

As seen below, the rational method results show that there is an overall increase in flow from the existing condition to the proposed. Basin 1 and 2 in existing conditions will become one basin in proposed conditions via the use of area drains and swales. The volume retained and flow detained by the implementation of the water quality infiltration BMPs will return the post condition flows to existing condition values or lower. For Q100 mitigation, the project will store approximately 1,164 cubic feet of runoff for the west side of the project, and approximately 136 cubic feet of runoff for the east side. For the east side of the project, the Q100 mitigation will be accomplished via 6” of surface ponding as well as 1.2’ of gravel storage. For the east side, the all peak storm mitigation will be accomplished with just 6” of surface ponding.

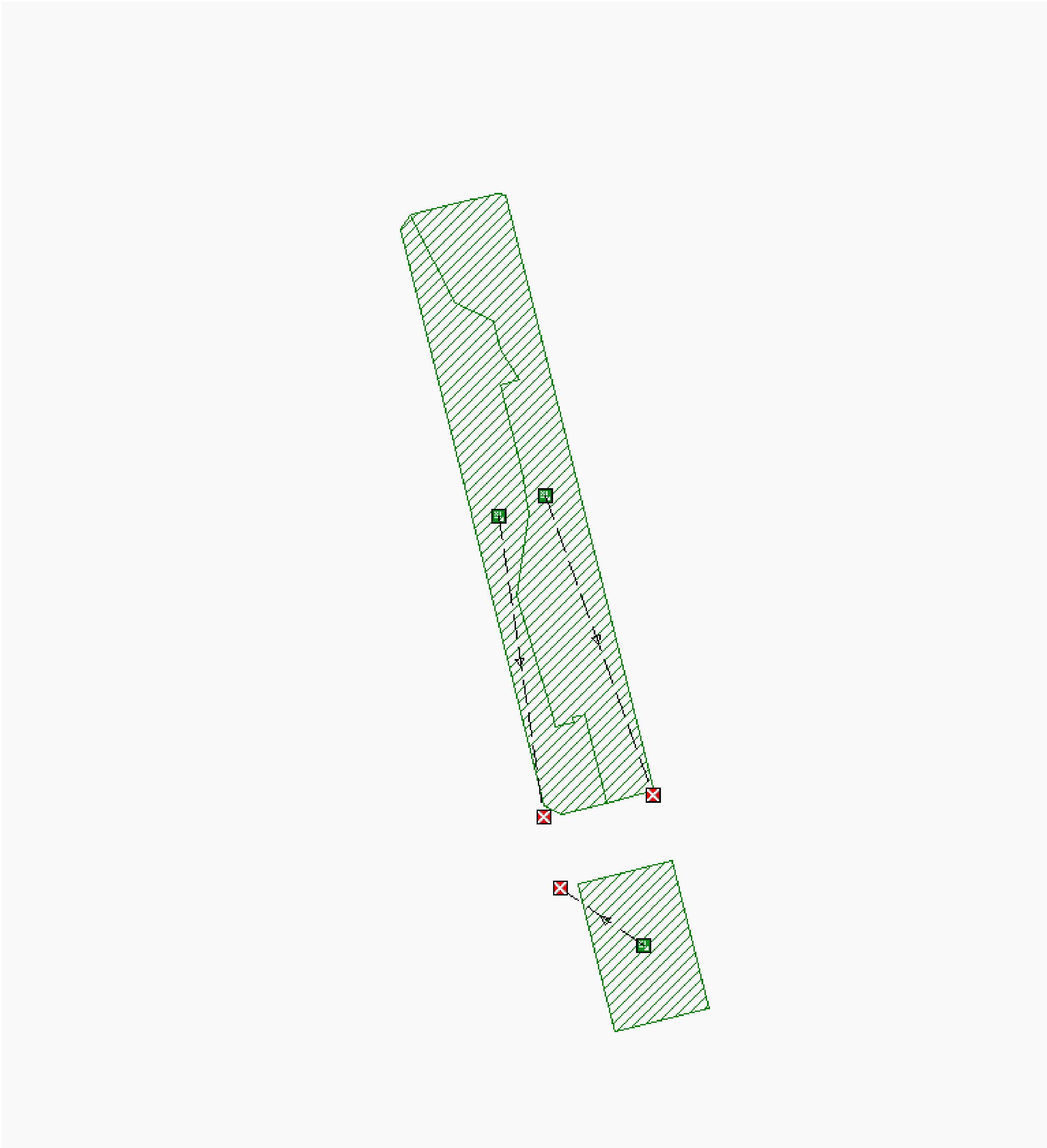
Basin	Area	Runoff Coefficient	100-yr Flows
	(Ac)		(cfs)
1	0.89	0.50	1.09
2	0.63	0.50	0.78
3	0.33	0.50	0.56
Total Area =	**1.85**	**Total Flows =**	**2.43**

Basin	Area	Runoff Coefficient	100-yr Flows	Mitigated Flow
	(Ac)		(cfs)	(cfs)
1	1.52	0.70	4.66	0.78
2	0.33	0.70	1.01	0.56
Total Area =	**1.85**	**Total Flows =**	**5.67**	**1.34**

Please see Appendix A for the hydrologic calculations and corresponding Drainage Area exhibits.

APPENDIX A: EXISTING & PROPOSED HYDROLOGIC CALCULATIONS

EXISTING



Autodesk® Storm and Sanitary Analysis 2015 - Version 9.1.140 (Build 1)

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Description .... H:\1300\1305.20 - PFP Coastal Holdings Shasta East\Engineering\Reports\Drainage\1305.20 Existing DA's.dwg

****
Analysis Options
****
Flow Units .... cfs
Subbasin Hydrograph Method. City of San Diego Rational Method
Time of Concentration...... SCS TR-55 (5 minutes minimum)
Return Period.............. 100 years
Storage Node Exfiltration.. Constant flow
Starting Date JUN-28-2017 00:00:00
Ending Date JUN-28-2017 01:00:00
Report Time Step 00:00:10

****
Element Count
****
Number of subbasins 3
Number of nodes 3
Number of links 0

****
Subbasin Summary
****

Subbasin ID	Total Area acres
{_}.E.1	0.89
{_}.E.2	0.63
{_}.E.3	0.33

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
POCA	OUTFALL	32.77	32.77	0.00	
POCB	OUTFALL	33.53	33.53	0.00	
POCC	OUTFALL	32.41	32.41	0.00	

************************** Runoff Quantity Continuity **************************	Volume acre-ft	Depth inches
Total Precipitation	0.128	0.829
Continuity Error (%)	0.504	

************************** Flow Routing Continuity **************************	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	0.063	0.021
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Runoff Coefficient Computations Report
****

Subbasin {_}.E.1

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.89	D	0.50
Composite Area & Weighted Runoff Coeff.	0.89		0.50

Subbasin {_}.E.2

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	D	0.50
Composite Area & Weighted Runoff Coeff.	0.63		0.50

Subbasin {_}.E.3

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.33	D	0.50
Composite Area & Weighted Runoff Coeff.	0.33		0.50

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

```
        Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

        Where:

        Tc = Time of Concentration (hrs)
        n  = Manning's Roughness
        Lf = Flow Length (ft)
        P  = 2 yr, 24 hr Rainfall (inches)
        Sf = Slope (ft/ft)
```

Shallow Concentrated Flow Equation

```
        V  = 16.1345 * (Sf^0.5) (unpaved surface)
        V  = 20.3282 * (Sf^0.5) (paved surface)
        V  = 15.0 * (Sf^0.5) (grassed waterway surface)
```

```
        V  = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
        V  = 9.0 * (Sf^0.5) (cultivated straight rows surface)
        V  = 7.0 * (Sf^0.5) (short grass pasture surface)
        V  = 5.0 * (Sf^0.5) (woodland surface)
        V  = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
        Tc = (Lf / V) / (3600 sec/hr)

        Where:

        Tc = Time of Concentration (hrs)
        Lf = Flow Length (ft)
        V  = Velocity (ft/sec)
        Sf = Slope (ft/ft)

Channel Flow Equation
---------------------

        V  = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
        R  = Aq / Wp
        Tc = (Lf / V) / (3600 sec/hr)

        Where:

        Tc = Time of Concentration (hrs)
        Lf = Flow Length (ft)
        R  = Hydraulic Radius (ft)
        Aq = Flow Area (ft²)
        Wp = Wetted Perimeter (ft)
        V  = Velocity (ft/sec)
        Sf = Slope (ft/ft)
        n  = Manning's Roughness

-------------------
Subbasin {_}.E.1
-------------------

Sheet Flow Computations
-----------------------
                                                Subarea A           Subarea B           Subarea C
        Manning's Roughness:                         0.40                0.00                0.00
        Flow Length (ft):                           71.83                0.00                0.00
        Slope (%):                                   3.52                0.00                0.00
        2 yr, 24 hr Rainfall (in):                   1.75                0.00                0.00
```

	Subarea A	Subarea B	Subarea C
Velocity (ft/sec):	0.07	0.00	0.00
Computed Flow Time (minutes):	17.77	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	30.35	0.00	0.00
Slope (%):	4.02	0.00	0.00
Surface Type:	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec):	1.40	0.00	0.00
Computed Flow Time (minutes):	0.36	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	583.57	0.00	0.00
Channel Slope (%):	1.59	0.00	0.00
Cross Section Area (ft^2):	2.00	0.00	0.00
Wetted Perimeter (ft):	20.00	0.00	0.00
Velocity (ft/sec):	2.70	0.00	0.00
Computed Flow Time (minutes):	3.60	0.00	0.00

===

Total TOC (minutes): 21.74

===

Subbasin {_}.E.2

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.40	0.00	0.00
Flow Length (ft):	66.32	0.00	0.00
Slope (%):	3.92	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.75	0.00	0.00
Velocity (ft/sec):	0.07	0.00	0.00
Computed Flow Time (minutes):	15.97	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	165.52	0.00	0.00
Slope (%):	1.17	0.00	0.00
Surface Type:	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec):	0.76	0.00	0.00
Computed Flow Time (minutes):	3.63	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	409.57	0.00	0.00
Channel Slope (%):	2.18	0.00	0.00
Cross Section Area (ft^2):	0.31	0.00	0.00
Wetted Perimeter (ft):	1.91	0.00	0.00
Velocity (ft/sec):	4.36	0.00	0.00
Computed Flow Time (minutes):	1.56	0.00	0.00

===

Total TOC (minutes): 21.17

===

Subbasin {_}.E.3

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.40	0.00	0.00
Flow Length (ft):	37.00	0.00	0.00
Slope (%):	5.14	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.75	0.00	0.00
Velocity (ft/sec):	0.07	0.00	0.00
Computed Flow Time (minutes):	8.99	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	61.67	0.00	0.00
Slope (%):	3.34	0.00	0.00
Surface Type:	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec):	1.28	0.00	0.00

Computed Flow Time (minutes):	0.80	0.00	0.00

Channel Flow Computations

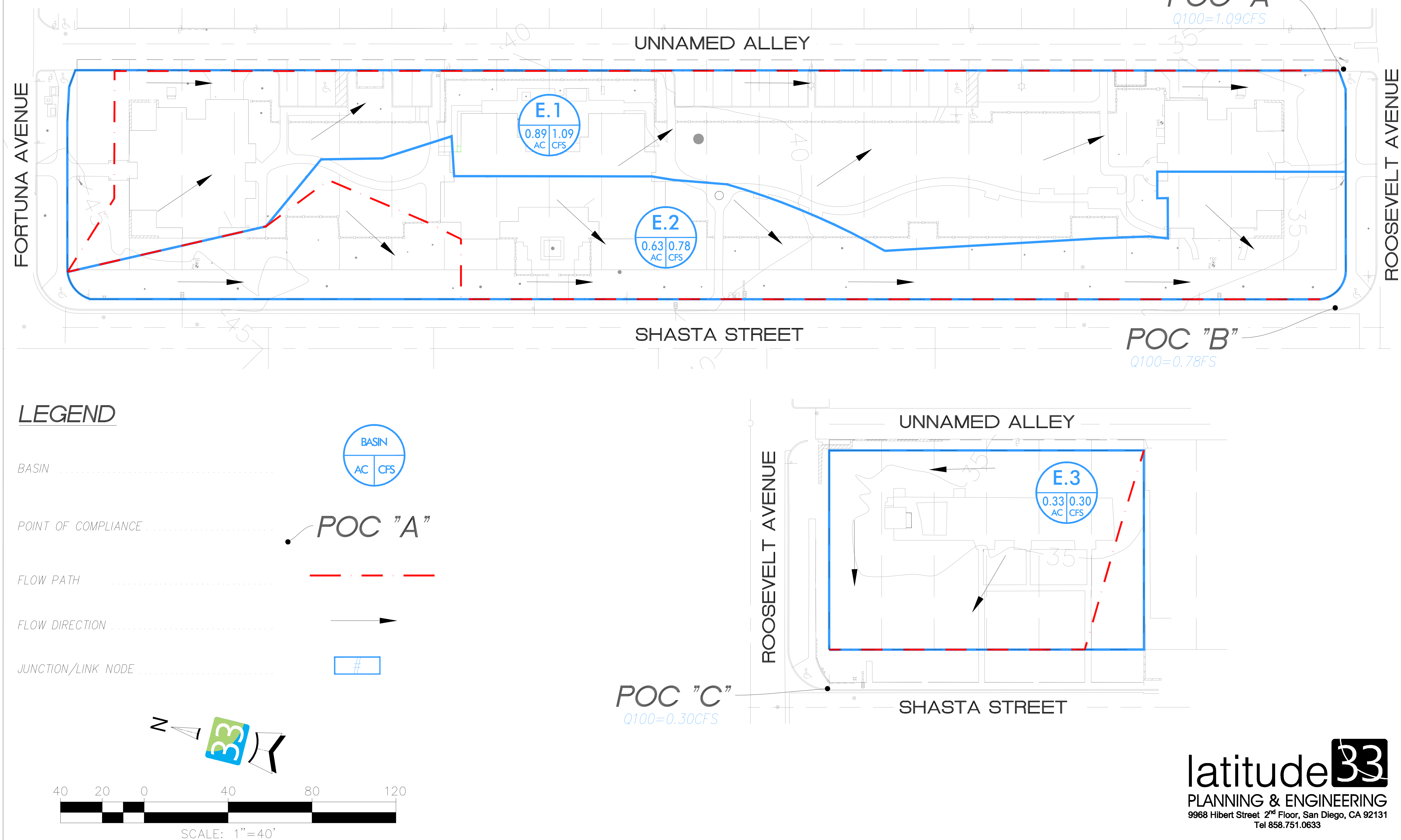
	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	121.81	0.00	0.00
Channel Slope (%):	0.96	0.00	0.00
Cross Section Area (ft²):	0.31	0.00	0.00
Wetted Perimeter (ft):	1.91	0.00	0.00
Velocity (ft/sec):	2.90	0.00	0.00
Computed Flow Time (minutes):	0.70	0.00	0.00
Total TOC (minutes):	10.49		

****
Subbasin Runoff Summary
****

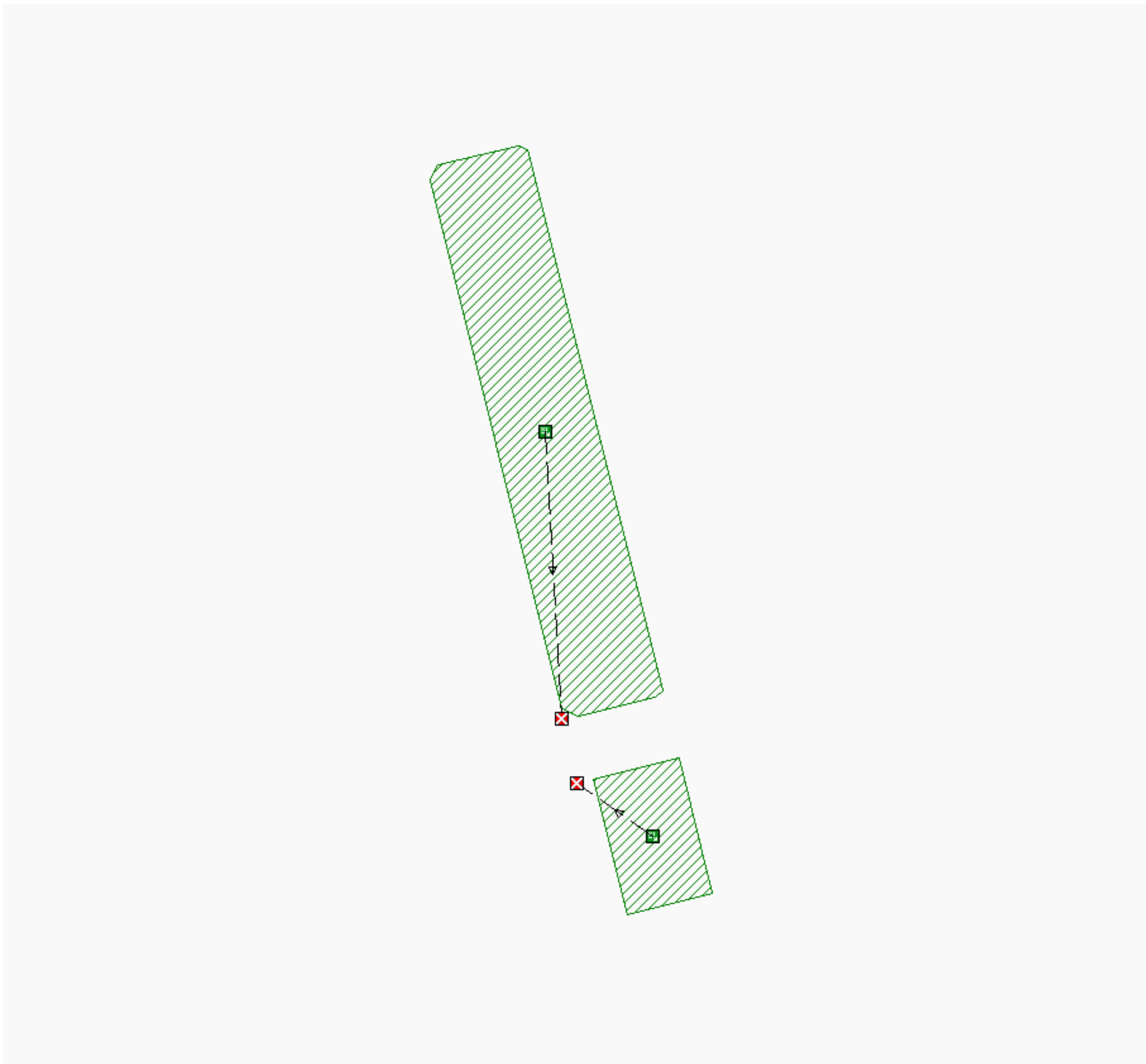
Subbasin ID	Accumulated Precip in	Rainfall Intensity in/hr	Total Runoff in	Peak Runoff cfs	Weighted Runoff Coeff	Time of Concentration days	Time of Concentration hh:mm:ss
{_}.E.1	0.88	2.44	0.44	1.09	0.500	0	00:21:44
{_}.E.2	0.88	2.48	0.44	0.78	0.500	0	00:21:10
{_}.E.3	0.60	3.42	0.30	0.56	0.500	0	00:10:29

Analysis began on: Thu Jun 29 10:02:08 2017
Analysis ended on: Thu Jun 29 10:02:08 2017
Total elapsed time: < 1 sec

EXISTING DRAINAGE BASIN AREAS



PROPOSED



Autodesk® Storm and Sanitary Analysis 2015 - Version 9.1.140 (Build 1)

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Description .... H:\1300\1305.20 - PFP Coastal Holdings Shasta East\Engineering\Reports\Drainage\1305.20 Existing DA's.dwg

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Analysis Options
****
Flow Units .... cfs
Subbasin Hydrograph Method. City of San Diego Rational Method
Time of Concentration...... SCS TR-55 (5 minutes minimum)
Return Period.............. 100 years
Storage Node Exfiltration.. Constant flow
Starting Date JUN-28-2017 00:00:00
Ending Date JUN-28-2017 01:00:00
Report Time Step 00:00:10

****
Element Count
****
Number of subbasins 2
Number of nodes 2
Number of links 0

****
Subbasin Summary
****

Subbasin ID	Total Area acres
{_}.P.2	0.33
P.1	1.52

```
************
Node Summary
************
Node                Element             Invert   Maximum    Ponded   External
ID                  Type             Elevation     Elev.      Area     Inflow
                                            ft        ft       ft²
-------------------------------------------------------------------------------
POCB                OUTFALL              33.53     33.53      0.00
POCC                OUTFALL              32.41     32.41      0.00


**************************        Volume         Depth
Runoff Quantity Continuity       acre-ft        inches
**************************     ---------       -------
Total Precipitation ......         0.056         0.365
Continuity Error (%) .....         0.306


**************************        Volume        Volume
Flow Routing Continuity          acre-ft      Mgallons
**************************     ---------     ---------
External Inflow ..........         0.000         0.000
External Outflow .........         0.039         0.013
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


**************************************
Runoff Coefficient Computations Report
**************************************

-------------------
Subbasin {_}.P.2
-------------------
                                                          Area         Soil       Runoff
Soil/Surface Description                                (acres)        Group       Coeff.
-------------------------------------------------------------------------------------------
-                                                          0.33            D         0.70
Composite Area & Weighted Runoff Coeff.                    0.33                      0.70

---------------
```

Subbasin P.1

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.52	-	0.70
Composite Area & Weighted Runoff Coeff.	1.52		0.70

```
***************************************************
SCS TR-55 Time of Concentration Computations Report
***************************************************

Sheet Flow Equation
-------------------

        Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

        Where:

        Tc = Time of Concentration (hrs)
        n  = Manning's Roughness
        Lf = Flow Length (ft)
        P  = 2 yr, 24 hr Rainfall (inches)
        Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation
----------------------------------

        V  = 16.1345 * (Sf^0.5) (unpaved surface)
        V  = 20.3282 * (Sf^0.5) (paved surface)
        V  = 15.0 * (Sf^0.5) (grassed waterway surface)
        V  = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
        V  = 9.0 * (Sf^0.5) (cultivated straight rows surface)
        V  = 7.0 * (Sf^0.5) (short grass pasture surface)
        V  = 5.0 * (Sf^0.5) (woodland surface)
        V  = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
        Tc = (Lf / V) / (3600 sec/hr)

        Where:

        Tc = Time of Concentration (hrs)
        Lf = Flow Length (ft)
```

```
        V  = Velocity (ft/sec)
        Sf = Slope (ft/ft)

Channel Flow Equation
---------------------

        V  = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
        R  = Aq / Wp
        Tc = (Lf / V) / (3600 sec/hr)

        Where:

        Tc = Time of Concentration (hrs)
        Lf = Flow Length (ft)
        R  = Hydraulic Radius (ft)
        Aq = Flow Area (ft²)
        Wp = Wetted Perimeter (ft)
        V  = Velocity (ft/sec)
        Sf = Slope (ft/ft)
        n  = Manning's Roughness

-------------------
Subbasin {_}.P.2
-------------------
==================================================================================================
        Total TOC (minutes):                        0.00
==================================================================================================


---------------
Subbasin P.1
---------------
==================================================================================================
        Total TOC (minutes):                        0.00
==================================================================================================

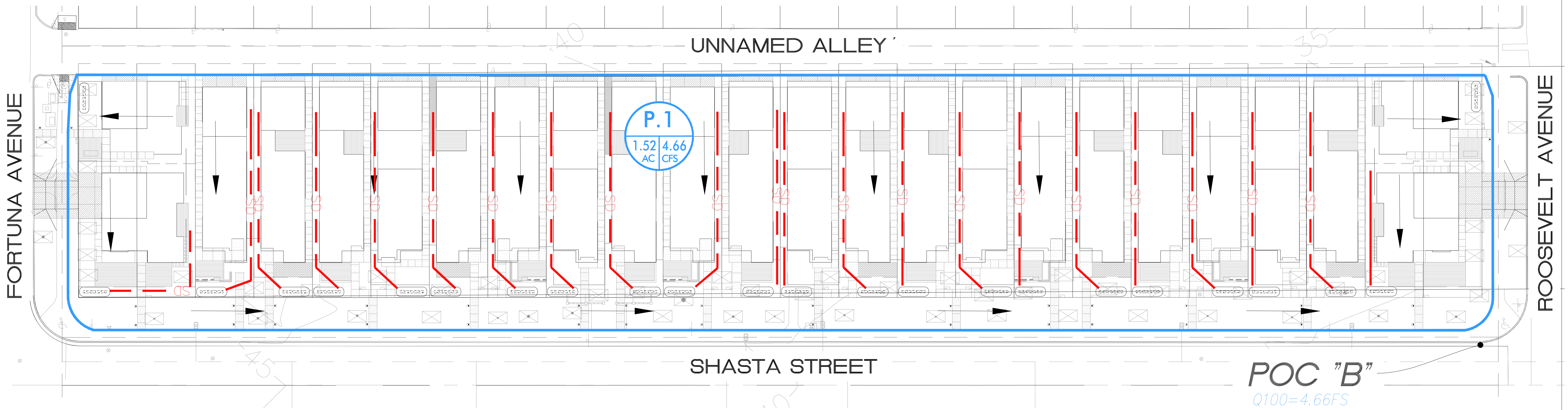

**********************
Subbasin Runoff Summary
**********************

-----------------------------------------------------------------------------------------
Subbasin       Accumulated     Rainfall     Total      Peak  Weighted           Time of
```

ID	Precip in	Intensity in/hr	Runoff in	Runoff cfs	Runoff Coeff	Concentration days	Concentration hh:mm:ss
{_}.P.2	0.36	4.38	0.26	1.01	0.700	0	00:05:00
P.1	0.36	4.38	0.26	4.66	0.700	0	00:05:00

Analysis began on: Thu Jun 29 09:53:22 2017
Analysis ended on: Thu Jun 29 09:53:22 2017
Total elapsed time: < 1 sec

EXISTING DRAINAGE BASIN AREAS



LEGEND

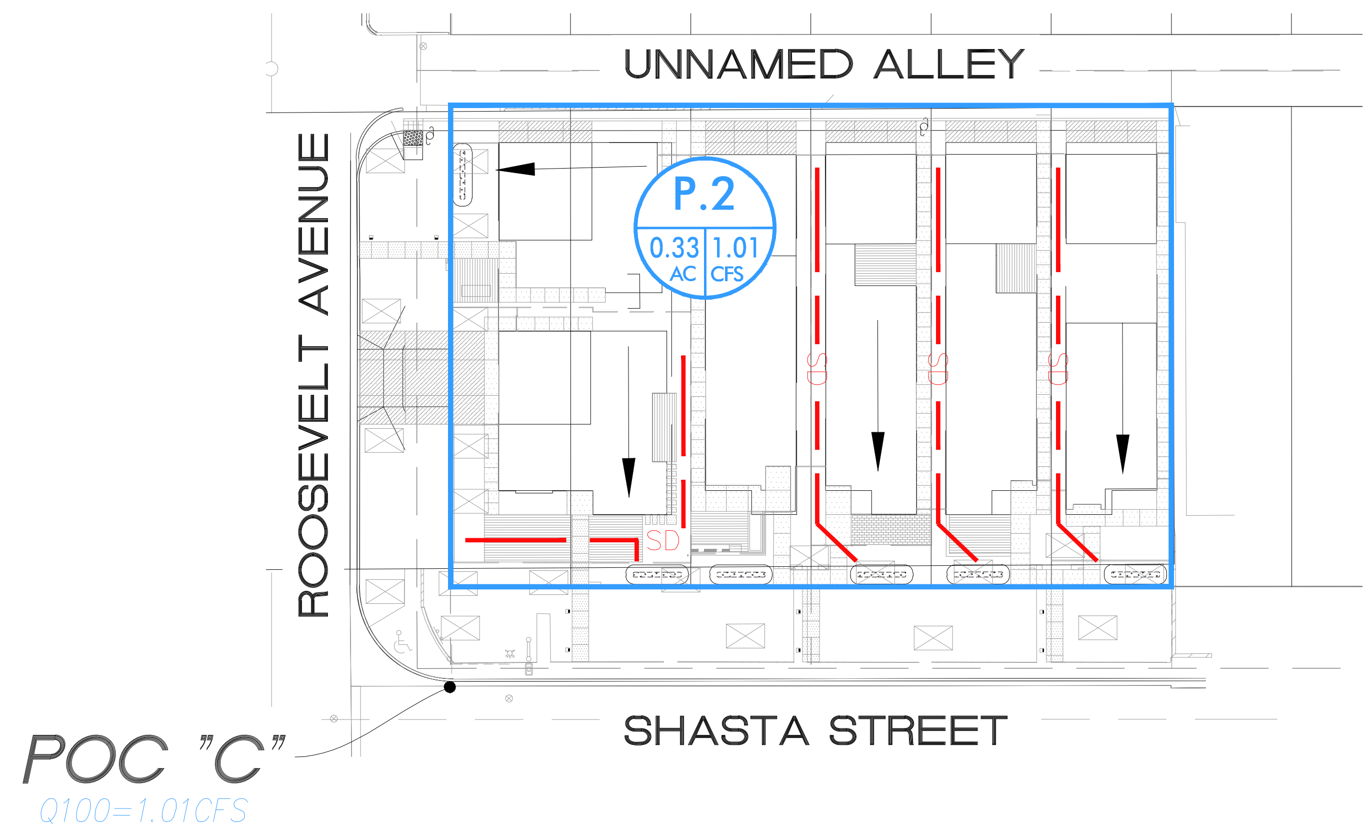
BASIN — BASIN / AC / CFS

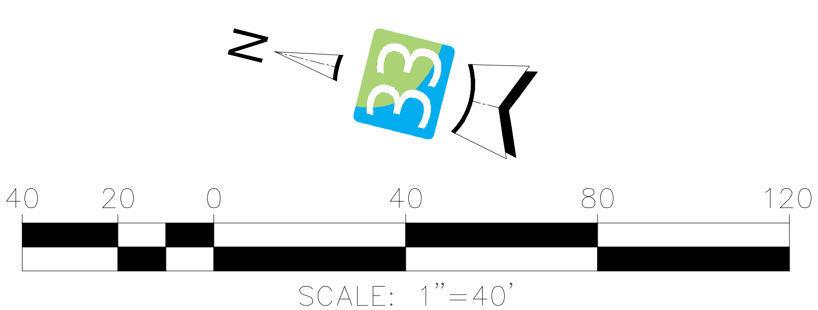
POINT OF COMPLIANCE — POC "A"

FLOW PATH

PROPOSED AREA DRAIN — SD

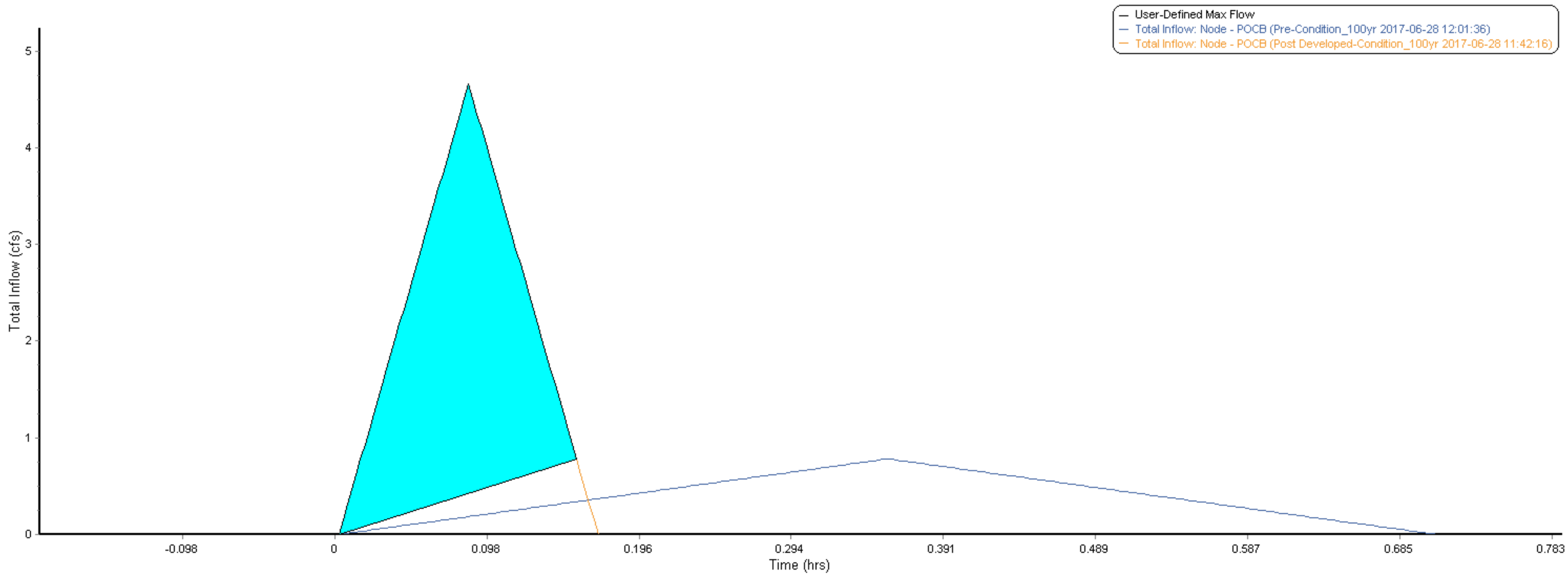
FLOW DIRECTION





latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

POC “B”



Total Inflow Summary Table

Time period

From: 06/28/2017, 12:00:00 AM

To: 06/28/2017, 01:00:10 AM

Thresholds

Exceedance: 0

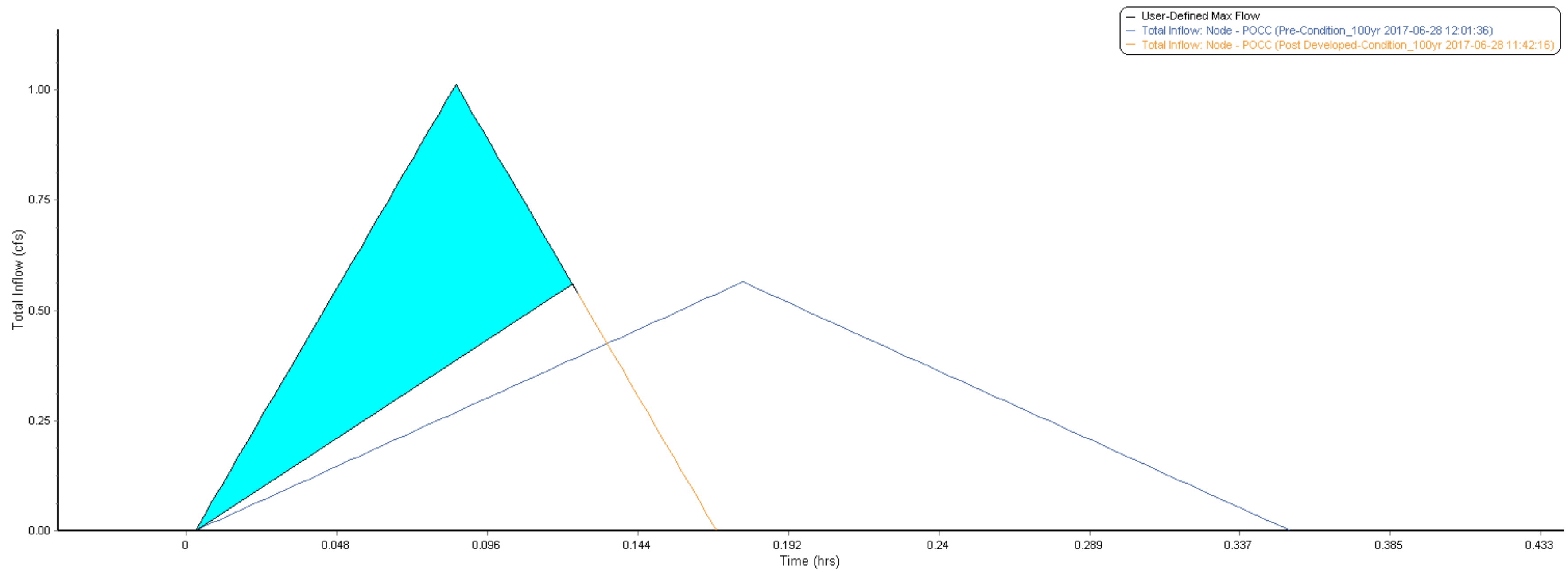
Deficit: 0

Detention storage

Max flow: 0.78

Element ID	POCB	POCB
Maximum Total Inflow (cfs)	0.78	4.66
Minimum Total Inflow (cfs)	0.00	0.00
Event Mean Total Inflow (cfs)	0.28	0.39
Duration of Exceedances (hrs)	N/A	N/A
Duration of Deficits (hrs)	N/A	N/A
Number of Exceedances	N/A	N/A
Number of Deficits	N/A	N/A
Volume of Exceedance (ft³)	N/A	N/A
Volume of Deficit (ft³)	N/A	N/A
Total Inflow Volume (ft³)	992.61	1398.1
Detention Storage (ft³)	1164.10	1164.10

POC “C”



Total Inflow Summary Table

Time period
From: 06/28/2017, 12:00:00 AM
To: 06/28/2017, 01:00:10 AM

Thresholds
Exceedance: 0
Deficit: 0

Detention storage
Max flow: 0.56

Element ID	POCC	POCC
Maximum Total Inflow (cfs)	0.56	1.01
Minimum Total Inflow (cfs)	0.00	0.00
Event Mean Total Inflow (cfs)	0.10	0.08
Duration of Exceedances (hrs)	N/A	N/A
Duration of Deficits (hrs)	N/A	N/A
Number of Exceedances	N/A	N/A
Number of Deficits	N/A	N/A
Volume of Exceedance (ft³)	N/A	N/A
Volume of Deficit (ft³)	N/A	N/A
Total Inflow Volume (ft³)	355.37	303.53
Detention Storage (ft³)	135.53	135.53

WASTE MANAGEMENT PLAN

FOR

ECO BLöK Residences

PTS - 530514

3977 Shasta Street
San Diego, CA 92109
PTS 530514

Prepared for:
City of San Diego Environmental Services Dept.
9601 Ridgehaven Court, MS 1002-A
San Diego, CA 92123

Prepared by:
Golba Architecture, Inc.
1940 Garnet Ave., Suite 100
San Diego, CA 92109
619.231.9905

August 22, 2017

PROJECT DESCRIPTION

The 1.64-acre *ECO BLöK Residences Project* site is located at 3977 Shasta Street, San Diego, California 92109, and consists of Lots 1 thru 24, Block 17, and Lots 1 thru 6, Block 27, Map 894 of San Diego County. The project proposes the removal of an existing assisted living complex, and the construction of 30 new single family homes on the existing 30 legal lots, with homes that average 1,750 square feet in size.

The project requires discretionary approval including: Coastal Development Permit, Site Development Permit, and Planned Development Permit.

The purpose of this Waste Management Plan (WMP) for the *ECO BLöK Residences Project - PTS 530514* in the City of San Diego is to provide analysis of the solid waste impacts anticipated and how those impacts will be mitigated. The goal of this WMP is to identify sufficient mitigation to reduce the potential impacts of the *ECO BLöK Residences Project* on solid waste services. Two acceptable approaches to managing waste are to reduce the tons disposed to 60 tons or less, or to provide diversion of 75 percent or more, thus meeting the goal established by Assembly Bill 341.

DEMOLITION WASTE

The project site is the location of an existing senior assisted living complex. The demolition phase will include the deconstruction/demolition and removal of 3 existing structures, asphalt parking and walkway areas, and interior landscape. Approximately 41.198 tons of waste is estimated to be generated during demolition. Approximately 39.538 tons of material would be recycled, to include trees, concrete, asphalt, foundations, building structure, masonry walls, curb and gutter, and switch gear and cable. Approximately 1.66 tons of debris would be disposed in a landfill, to include non-useable lumber, drywall, glass, miscellaneous trash, roofing paper, broken roof tiles, and floor tile.

Table 1, *ECO BLöK Residences Project Waste Generation - Demolition,* is included to summarize the type and amount of demolition materials, as well as diversion/disposal.

Table 1
ECO BLöK Residences Project Waste Generation - Demolition

Material Type	Estimated Waste Quantity (tons)	Handling	Estimated Diversion (tons)	Estimated Disposal (tons)
CONSTRUCTION WASTE				
Asphalt and Concrete	12.30	Hanson Aggregates 9229 Harris Plant Road San Diego, CA 92126 (100% diversion)	12.30	

Foundations/Building Structure	16.51	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	16.51	
Brick/Masonry/Tile	5.92	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	5.92	
Curbs/Gutters	1.02	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	1.02	
Switch Gear/Cable	.004	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	.004	
Drywall	2.05	EDCO Station Transfer and Buy Back Center 8184 Commercial Street La Mesa, CA 91942 (70% diversion)	1.44	.61
Landscape Materials	1.23	Miramar Greenery 5180 Convoy Street San Diego, CA 92111 (100% diversion)	1.23	
Roofing Materials	1.02	LEED Recycling 8725 Miramar Place San Diego, CA 92121 (100% diversion)	1.02	
Floor Tile	.004	Otay C&D/Inert Debris Processing Facility 1700 Maxwell Road Chula Vista, CA 91913 (76% diversion)	.003	.001
Glass	.08	Otay C&D/Inert Debris Processing Facility 1700 Maxwell Road Chula Vista, CA 91913 (76% diversion)	.061	.019
Non-Useable Lumber	.04	Otay C&D/Inert Debris Processing Facility 1700 Maxwell Road Chula Vista, CA 91913 (76% diversion)	.03	.01
Garbage/Trash	1.02	Miramar Landfill 5180 Convoy Street San Diego, CA 92111 (0% diversion)		1.02
TOTAL	**41.198**		**39.538**	**1.66**

In accordance with State diversion targets, a minimum of 75 percent of construction materials will be recycled. Materials to be recycled would be redirected to appropriate recipients selected from ESD's directory of facilities that recycle demolition materials, scrap metal, and yard waste.

CONSTRUCTION WASTE

Construction activities would generate packaging materials and unpainted wood, including wood pallets, and other miscellaneous debris. Construction debris would be separated on-site into material-specific containers to facilitate reuse and recycling and to increase the efficiency of waste reclamation. Source separation of materials at the construction site is essential to (1) ensure appropriate waste diversion rate, (2) minimize costs associated with transportation and disposal, and (3) facilitate compliance with the C&D ordinance. The types of construction waste anticipated to be generated include:

- Asphalt and Concrete
- Brick/Masonry/Tile
- Cardboard
- Carpet, Padding/Foam
- Drywall
- Landscape Debris
- Mixed C&D Debric
- Roofing Materials
- Scrap Metal
- Unpainted Wood and Pallets
- Garbage/Trash

In accordance with State diversion targets, a minimum of 75 percent of construction materials will be recycled. Materials to be recycled would be redirected to appropriate recipients selected from ESD's directory of facilities that recycle demolition materials, scrap metal, and yard waste.

MANAGING CONSTRUCTION MATERIAL

To facilitate management of construction materials, the developer shall identify one person or agency connected with the proposed development to act as Solid Waste Management Coordinator, whose responsibility it becomes to work with all contractors and subcontractors to ensure material separation and coordinate proper disposal and diversion of waste generated. The Solid Waste Management Coordinator will help to ensure all diversion practices outlined in this Waste Management Plan are upheld and communicate goals to all contractors involved efficiently. The responsibilities of the Solid Waste Management Coordinator, include, but are not limited to, the following:

- Review the Solid Waste Management Plan including responsibilities of Solid Waste Management Coordinator.
- Review and update procedures as needed for material separation and verify availability of containers and bins needed to avoid delays.
- Review and update procedures for periodic solid waste collection and transportation to recycling and disposing facilities.
- The authority to issue stop work orders if proper procedures are not being allowed.

The contractors will perform daily inspections of the construction site to ensure compliance with the requirements of the Waste Management Plan and all other applicable laws and ordinances and report directly to Solid Waste

Management Coordinator. Daily inspections will include verifying the availability and number of dumpsters based on amount of debris being generated, correct labeling of dumpsters, proper sorting and segregation materials, and salvaging of excess materials. Additionally, the following apply:

- Solid waste management coordinator will be responsible for educating contractors and subcontractors regarding waste management plan requirements and ensuring that contractors and subcontractors carry out the measures described in the WMP.
- Solid waste management coordinator will ensure ESD attendance at a Precon and assure compliance with segregation requirements, and verification of recycled content in base materials.
- Recycling areas will be clearly identified with large signs, approved by ESD, and sufficient amounts of material-specific bins will be provided for necessary segregation.
- Recycling bins will be placed in areas that are readily accessible to contractors/subcontractors and in areas that will minimize misuse or contamination by employees and the public.
- Solid waste management coordinator will be responsible for ensuring that contamination rates in bins remain below 5 percent by weight of the bin.

Table 2, *ECO BLöK Residences Project Waste Generation - Construction,* is included to summarize the types of waste generated, the amount of each waste type delivered, and the overall amount remaining to be disposed of in landfills.

Table 2
ECO BLöK Residences Project Waste Generation - Construction

Material Type	Estimated Waste Quantity (tons)	Handling	Estimated Diversion (tons)	Estimated Disposal (tons)
CONSTRUCTION WASTE				
Asphalt and Concrete	42.89	Hanson Aggregates 9229 Harris Plant Road San Diego, CA 92126 (100% diversion)	42.89	
Brick/Masonry/Tile	12.25	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	12.25	
Cardboard	1.22	EDCO Station Transfer and Buy Back Center 8184 Commercial Street La Mesa, CA 91942 (70% diversion)	.85	.37

Carpet, Padding/Foam	.61	DFS Flooring 10178 Willow Creek Road San Diego, CA 92131 (100% diversion)	.61	
Drywall	8.58	EDCO Station Transfer and Buy Back Center 8184 Commercial Street La Mesa, CA 91942 (70% diversion)	6.01	2.57
Landscape Debris	1.22	Miramar Greenery 5180 Convoy Street San Diego, CA 92111 (100% diversion)	1.22	
Mixed C&D Debris	36.76	Otay C&D/Inert Debris Processing Facility 1700 Maxwell Road Chula Vista, CA 91913 (76% diversion)	27.94	8.82
Roofing Materials	.61	LEED Recycling 8725 Miramar Place San Diego, CA 92121 (100% diversion)	.61	
Scrap Metal	3.06	EDCO Station Transfer and Buy Back Center 8184 Commercial Street La Mesa, CA 91942 (70% diversion)	2.14	.92
Unpainted Wood & Pallets	14.7	Miramar Greenery 5180 Convoy Street San Diego, CA 92111 (100% diversion)	14.7	
Garbage/Trash	.61	Miramar Landfill 5180 Convoy Street San Diego, CA 92111 (0% diversion)		.61
TOTAL	**122.51**		**109.22**	**13.29**

OCCUPANCY WASTE

While the construction phase for the *ECO BLöK Residences Project* occurs as a onetime waste generation event as construction of the project proceeds, tenant/owner occupancy requires an on-going plan to manage waste disposal to meet the waste reduction goals established by the City and State. The *ECO BLöK Residences Project* will comply with the City's Recycling Ordinance.

In accord with the City's Conservation Element, *ECO BLöK Residences Project* seeks to reduce its "environmental footprint" through a variety of sustainable design features. The project would comply with the Uniform Building Code (UBC) and Title 24 requirements for building materials and insulation in order to reduce unnecessary loss of energy.

The project proposes to utilize portions of areas which are designated for landscaping or other softscape for Low Impact Development (LID) storm water treatment. Landscaped areas would be used in the treatment of runoff prior to entering the storm drain system. These LID BMPs would also function to slow down site runoff, increase times of concentration, improve downstream hydrologic conditions, and treat storm water as compared to the existing condition. These BMPs are extremely effective in creating a low impact site design concerning storm water management.

As a result of the recommended site design, source control measures, and treatment control measures, water quality exceedances are not anticipated, and pollutants are not expected within project runoff that would adversely affect beneficial uses in downstream receiving waters. The project would implement controls designed to limit discharges to the appropriate standard. The project complies with the requirements of the State Regional Water Quality Control Board concerning coverage under the General Construction Permit.

The proposed Landscape Concept Plan includes the use of indigenous and native material, whenever possible. Planting is intended to be a connecting device linking the various pieces of the project and design style. The Landscape Concept Plan emphasizes a garden setting, where plant material would be used to help define spaces, screen objectionable views, encourage circulation paths, highlight entry points, and provide softness and scale to the architecture. Evergreen, deciduous, and flowering material are proposed throughout the project. Located adjacent to open space slopes, the perimeter planting is proposed as a blend of native material and native friendly fire safe planting.

Circulation throughout the project is accentuated with a hierarchy of landscape treatments. Enhanced paving at major intersections and nodes is proposed to signify pedestrian/vehicle interaction areas. Vehicle nodes with small medians are proposed to help slow the traffic flow, as well as break up long linear drives. Street trees are proposed to define vehicle/pedestrian spaces and to provide shade and scale to the street scene. Entry points would be highlighted with decorative trellis work and enhanced plantings.

IMPLEMENTATION

As shown in Table 3, *Estimated Waste Generation from the ECO BLöK Residences Project - Occupancy Phase,* during occupancy, the expected generated waste per year from the *ECO BLöK Residences Project* when fully occupied would be approximately 2.67 tons per single family residence.

Table 3
Estimated Waste Generation from the *ECO BLöK Residences Project* - Occupancy Phase
Per Single-Family Home

Use	Intensity (square feet)	Waste Generation Rate (tons/year/sq.ft.)	Estimated Waste Generated (tons/year)
Single Family Residential	1,780	.0015	2.67
		Total	**2.67**

In contrast, as shown in Table 4, *Estimated Waste Generation from the Existing Use as an Assisted Living Complex - Occupancy Phase,* during occupancy, the expected generated waste per year from the existing site use as an assisted living complex when fully occupied is approximately 16.18 tons.

Table 4
Estimated Waste Generation from the *Existing Use as an Assisted Living Complex* - Occupancy Phase

Use	Intensity (square feet)	Waste Generation Rate (tons/year/sq.ft.)	Estimated Waste Generated (tons/year)
Assisted Living Complex	10,785	.0015	16.18
		Total	**16.18**

On-site recycling services shall be provided to all residents within the *ECO BLöK Residences Project*. Residents within *ECO BLöK Residences Project* that receive solid waste collection service shall participate in a recycling program by separating recyclable materials from other solid waste and depositing the recyclable materials in the recycling container provided for the occupants. Recycling services are required by Section 66.0707 of the City of San Diego Land Development Code. Based on current requirements, these services shall include the following:

- Collection of recyclable materials as frequently as necessary to meet demand;
- Collection of plastic bottles and jars, paper, newspaper, metal containers, cardboard, and glass containers;
- Collection of other recyclable materials for which markets exist, such as scrap metal, wood pallets
- Use of recycling receptacles or containers which comply with the standards in the Container and Signage Guidelines established by the City of San Diego Environmental Services Department;
- Designated recycling collection and storage areas; and
- Signage on all recycling receptacles, containers, chutes, and/or enclosures which complies with the standards described in the Container and Signage Guidelines established by the City of San Diego Environmental Services Department

As required by Section 66.0707 of the City of San Diego Land Development Code, the building management or other designated personnel shall ensure that occupants are educated about the recycling services as follows:

- Information, including the types of recyclable materials accepted, the location of recycling containers, and the occupants responsibility to recycle shall be distributed to all occupants annually;

- All new occupants shall be given information and instructions upon occupancy; and
- All occupants shall be given information and instructions upon any change in recycling service to the commercial facility.

LANDSCAPE AND GREEN WASTE RECYCLING

Plant material selection will be guided by the macro-and micro-climate characteristics of the project site and surrounding region to encourage long-term sustainability without the excessive use of water pesticides and fertilizers. Irrigation of these areas, where practical, will utilize reclaimed water applied via low precipitation rate spray heads, drip emitters, or other highly efficient systems. Landscape maintenance would include the collection of green waste and disposal of green waste at recycling centers that accept green waste. This will help further reduce the waste generated by developments within the *ECO BLöK Residences Project* during the occupancy phases.

CONCLUSION

The City of San Diego Development Services Department is requiring that this Preliminary WMP be prepared and submitted to the City of San Diego's ESD. Since the project is in the design phase, this is only a preliminary plan, which specifies the intent to meet the requirements of PRC 939 and City ordinances. Prior to the issuance of any permits for construction within each neighborhood of *ECO BLöK Residences Project*, final reports will be submitted to ESD for final review and approval.

This Preliminary WMP will be implemented to the fullest degree of accuracy and efficiency. Additionally, the project will be required to adhere to City ordinances, including the Construction and Demolition Debris Diversion Deposit Program, the City's Recycling Ordinance, and the Refuse and Recyclable Materials Storages Regulations. The WMP plan for the *ECO BLöK Residences Project* is designed to implement and adhere to all city ordnance and regulations with regards to waste management. The measures in the WMP would ensure that impacts are mitigated to below a level of significance.

The City of San Diego

PRIORITY DEVELOPMENT PROJECT (PDP) FILNAL STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) FOR

ECO BLÖK HOMES

PTS# 530514

ENGINEER OF WORK:

Giovanni Posillico, RCE 66332

PREPARED FOR:

Pathfinder Crown Point Apartments, LLC
4380 La Jolla Village Dr. Suite 250
San Diego, CA 92122
(858) 875-4450

PREPARED BY:

Latitude 33 Planning & Engineering
9968 Hibert Street Second Floor
San Diego, CA 92131
(858) 751-0633

DATE:
JUNE 2017

Approved by: City of San Diego   Date

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TABLE OF CONTENTS

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ACRONYMS

APN	Assessor's Parcel Number
ASBS	Area of Special Biological Significance
BMP	Best Management Practice
CEQA	California Environmental Quality Act
CGP	Construction General Permit
DCV	Design Capture Volume
DMA	Drainage Management Areas
ESA	Environmentally Sensitive Area
GLU	Geomorphic Landscape Unit
GW	Ground Water
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
HU	Harvest and Use
INF	Infiltration
LID	Low Impact Development
LUP	Linear Underground/Overhead Projects
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project
PE	Professional Engineer
POC	Pollutant of Concern
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWPPP	Stormwater Pollutant Protection Plan
SWQMP	Storm Water Quality Management Plan
TMDL	Total Maximum Daily Load
WMAA	Watershed Management Area Analysis
WPCP	Water Pollution Control Program
WQIP	Water Quality Improvement Plan

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CERTIFICATION PAGE

Project Name: Eco Blök Homes
Permit Application Number: PTS# 530514

I hereby declare that I am the Engineer in Responsible Charge of design of storm water BMPs for this project, and that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the requirements of the Storm Water Standards, which is based on the requirements of SDRWQCB Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100 (MS4 Permit).

I have read and understand that the City Engineer has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the Storm Water Standards. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable source control and site design BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by the City Engineer is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

License Number 66332, Expires - 06/30/2018

Engineer of Work's Signature, PE Number & Expiration Date

Giovanni Posillico

Print Name

Latitude 33 Planning & Engineering

Company

Date

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SUBMITTAL RECORD

Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In last column indicate changes that have been made or indicate if response to plan check comments is included. When applicable, insert response to plan check comments.

Submittal Number	Date	Project Status	Changes
1	11/2016	☒ Preliminary Design/Planning/CEQA ☐ Final Design	Initial Submittal
2	5/2017	☒ Preliminary Design/Planning/CEQA ☐ Final Design	Second Submittal
3	7/2017	☒ Preliminary Design/Planning/CEQA ☐ Final Design	Third Submittal

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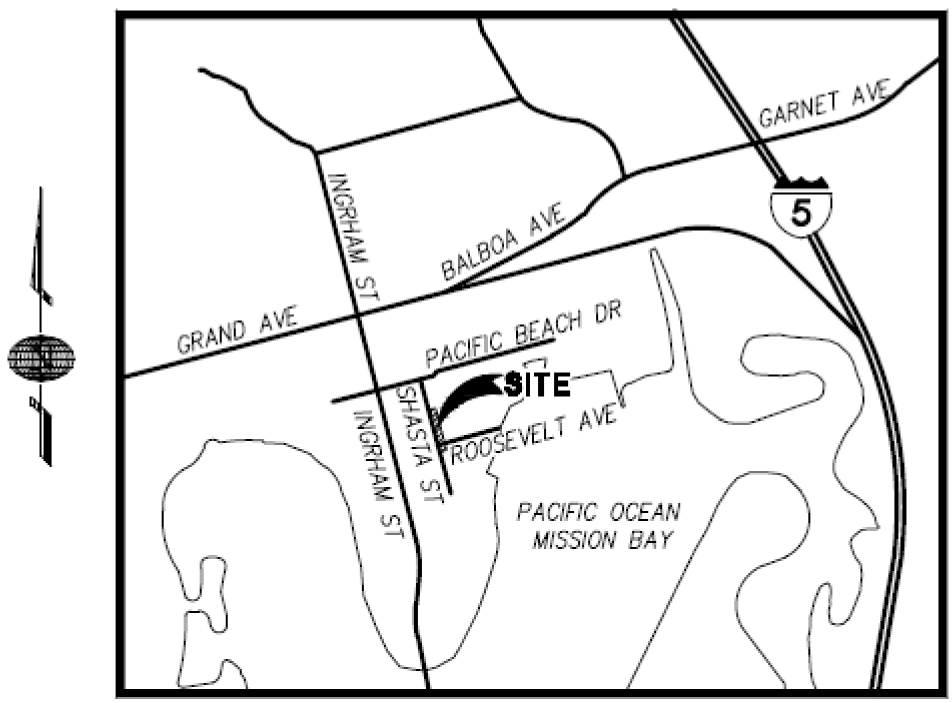
PROJECT VICINITY MAP

Project Name: Eco Blök Homes
Permit Application Number: PTS# 530514



VICINITY MAP

NO SCALE

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STORM WATER REQUIREMENTS APPLICABILITY CHECKLIST

Complete and attach DS-560 Form included in Appendix A.1

City of San Diego
Development Services
1222 First Ave., MS-302
San Diego, CA 92101
(619) 446-5000

Storm Water Requirements Applicability Checklist

FORM DS-560
OCTOBER 2016

Project Address: 1765 Fortuna Avenue, 3977 Shasta Street, 1750 Roosevelt Avenue, San Diego, CA 92109 & the vacant lot at the southeast corner of Roosevelt Avenue & Shasta Street.	Project Number *(for City Use Only)*:

SECTION 1. Construction Storm Water BMP Requirements:

All construction sites are required to implement construction BMPs in accordance with the performance standards in the Storm Water Standards Manual. Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP)[1], which is administered by the State Water Resources Control Board.

For all projects complete PART A: If project is required to submit a SWPPP or WPCP, continue to PART B.

PART A: Determine Construction Phase Storm Water Requirements.

1. Is the project subject to California's statewide General NPDES permit for Storm Water Discharges Associated with Construction Activities, also known as the State Construction General Permit (CGP)? (Typically projects with land disturbance greater than or equal to 1 acre.)

☒ Yes; SWPPP required, skip questions 2-4 ☐ No; next question

2. Does the project propose construction or demolition activity, including but not limited to, clearing, grading, grubbing, excavation, or any other activity resulting in ground disturbance and contact with storm water runoff?

☐ Yes; WPCP required, skip 3-4 ☐ No; next question

3. Does the project propose routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as pipeline/utility replacement)

☐ Yes; WPCP required, skip 4 ☐ No; next question

4. Does the project only include the following Permit types listed below?

- Electrical Permit, Fire Alarm Permit, Fire Sprinkler Permit, Plumbing Permit, Sign Permit, Mechanical Permit, Spa Permit.
- Individual Right of Way Permits that exclusively include only ONE of the following activities: water service, sewer lateral, or utility service.
- Right of Way Permits with a project footprint less than 150 linear feet that exclusively include only ONE of the following activities: curb ramp, sidewalk and driveway apron replacement, pot holing, curb and gutter replacement, and retaining wall encroachments.

☐ Yes; no document required

Check one of the boxes below, and continue to PART B:

☒ If you checked "Yes" for question 1, **a SWPPP is REQUIRED. Continue to PART B**

☐ If you checked "No" for question 1, and checked "Yes" for question 2 or 3, **a WPCP is REQUIRED.** If the project proposes less than 5,000 square feet of ground disturbance AND has less than a 5-foot elevation change over the entire project area, a Minor WPCP may be required instead. **Continue to PART B.**

☐ If you checked "No" for all questions 1-3, and checked "Yes" for question 4 PART B **does not apply and no document is required. Continue to Section 2.**

1. More information on the City's construction BMP requirements as well as CGP requirements can be found at: www.sandiego.gov/stormwater/regulations/index.shtml

PART B: Determine Construction Site Priority

This prioritization must be completed within this form, noted on the plans, and included in the SWPPP or WPCP. The city reserves the right to adjust the priority of projects both before and after construction. Construction projects are assigned an inspection frequency based on if the project has a "high threat to water quality." The City has aligned the local definition of "high threat to water quality" to the risk determination approach of the State Construction General Permit (CGP). The CGP determines risk level based on project specific sediment risk and receiving water risk. Additional inspection is required for projects within the Areas of Special Biological Significance (ASBS) watershed. **NOTE:** The construction priority does **NOT** change construction BMP requirements that apply to projects; rather, it determines the frequency of inspections that will be conducted by city staff.

Complete PART B and continued to Section 2

1. ☐ **ASBS**
   a. Projects located in the ASBS watershed.

2. ☒ **High Priority**
   a. Projects 1 acre or more determined to be Risk Level 2 or Risk Level 3 per the Construction General Permit and not located in the ASBS watershed.
   b. Projects 1 acre or more determined to be LUP Type 2 or LUP Type 3 per the Construction General Permit and not located in the ASBS watershed.

3. ☐ **Medium Priority**
   a. Projects 1 acre or more but not subject to an ASBS or high priority designation.
   b. Projects determined to be Risk Level 1 or LUP Type 1 per the Construction General Permit and not located in the ASBS watershed.

4. ☐ **Low Priority**
   a. Projects requiring a Water Pollution Control Plan but not subject to ASBS, high, or medium priority designation.

SECTION 2. Permanent Storm Water BMP Requirements.

Additional information for determining the requirements is found in the Storm Water Standards Manual.

PART C: Determine if Not Subject to Permanent Storm Water Requirements.

Projects that are considered maintenance, or otherwise not categorized as "new development projects" or "redevelopment projects" according to the Storm Water Standards Manual are not subject to Permanent Storm Water BMPs.

If "yes" is checked for any number in Part C, proceed to Part F and check "Not Subject to Permanent Storm Water BMP Requirements".

If "no" is checked for all of the numbers in Part C continue to Part D.

1.	Does the project only include interior remodels and/or is the project entirely within an existing enclosed structure and does not have the potential to contact storm water?	☐ Yes ☒ No
2.	Does the project only include the construction of overhead or underground utilities without creating new impervious surfaces?	☐ Yes ☒ No
3.	Does the project fall under routine maintenance? Examples include, but are not limited to: roof or exterior structure surface replacement, resurfacing or reconfiguring surface parking lots or existing roadways without expanding the impervious footprint, and routine replacement of damaged pavement (grinding, overlay, and pothole repair).	☐ Yes ☒ No

PART D: PDP Exempt Requirements.

PDP Exempt projects are required to implement site design and source control BMPs.

If "yes" was checked for any questions in Part D, continue to Part F and check the box labeled "PDP Exempt."

If "no" was checked for all questions in Part D, continue to Part E.

1. **Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:**
   - **Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;**
   - **Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;**
   - **Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City's Storm Water Standards manual?**

   ☐ Yes; PDP exempt requirements apply ☒ No; next question

2. Does the project ONLY include retrofitting or redeveloping existing paved alleys, streets or roads designed and constructed in accordance with the Green Streets guidance in the City's Storm Water Standards Manual?

   ☐ Yes; PDP exempt requirements apply ☒ No; project not exempt.

PART E: Determine if Project is a Priority Development Project (PDP).
Projects that match one of the definitions below are subject to additional requirements including preparation of a Storm Water Quality Management Plan (SWQMP).

If "yes" is checked for any number in PART E, continue to PART F and check the box labeled "Priority Development Project".

If "no" is checked for every number in PART E, continue to PART F and check the box labeled "Standard Development Project".

1.	**New Development that creates 10,000 square feet or more of impervious surfaces collectively over the project site.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.	☐ Yes ☒ No
2.	**Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces on an existing site of 10,000 square feet or more of impervious surfaces.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.	☒ Yes ☐ No
3.	**New development or redevelopment of a restaurant.** Facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC 5812), and where the land development creates and/or replace 5,000 square feet or more of impervious surface.	☐ Yes ☒ No
4.	**New development or redevelopment on a hillside.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater.	☐ Yes ☒ No
5.	**New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).**	☐ Yes ☒ No
6.	**New development or redevelopment of streets, roads, highways, freeways, and driveways.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).	☐ Yes ☒ No

7. **New development or redevelopment discharging directly to an Environmentally Sensitive Area.** The project creates and/or replaces 2,500 square feet of impervious surface (collectively over project site), and discharges directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands).	☐ Yes	☒ No
8. **New development or redevelopment projects of a retail gasoline outlet (RGO) that create and/or replaces 5,000 square feet of impervious surface.** The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.	☐ Yes	☒ No
9. **New development or redevelopment projects of an automotive repair shops that creates and/or replaces 5,000 square feet or more of impervious surfaces.** Development projects categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539.	☐ Yes	☒ No
10. **Other Pollutant Generating Project.** The project is not covered in the categories above, results in the disturbance of one or more acres of land and is expected to generate pollutants post construction, such as fertilizers and pesticides. This does not include projects creating less than 5,000 sf of impervious surface and where added landscaping does not require regular use of pesticides and fertilizers, such as slope stabilization using native plants. Calculation of the square footage of impervious surface need not include linear pathways that are for infrequent vehicle use, such as emergency maintenance access or bicycle pedestrian use, if they are built with pervious surfaces of if they sheet flow to surrounding pervious surfaces.	☐ Yes	☒ No

PART F: Select the appropriate category based on the outcomes of PART C through PART E.

1.	The project is **NOT SUBJECT TO PERMANENT STORM WATER REQUIREMENTS**.	☐
2.	The project is a **STANDARD DEVELOPMENT PROJECT**. Site design and source control BMP requirements apply. See the Storm Water Standards Manual for guidance.	☐
3.	The project is **PDP EXEMPT**. Site design and source control BMP requirements apply. See the Storm Water Standards Manual for guidance.	☐
4.	The project is a **PRIORITY DEVELOPMENT PROJECT**. Site design, source control, and structural pollutant control BMP requirements apply. See the Storm Water Standards Manual for guidance on determining if project requires a hydromodification plan management	☒

Melanie Foronda — Designer

Name of Owner or Agent *(Please Print)* — Title

[signature] — 05/16/2017

Signature — Date

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<table>
<tr><td colspan="2">Applicability of Permanent, Post-Construction Storm Water BMP Requirements</td><td>Form I-1</td></tr>
<tr><td colspan="3">Project Identification</td></tr>
<tr><td colspan="3">Project Name: Eco Blök Homes</td></tr>
<tr><td colspan="2">Permit Application Number: PTS # 530514</td><td>Date: 5/2017</td></tr>
<tr><td colspan="3">Determination of Requirements</td></tr>
<tr><td colspan="3">The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short <u>summary </u>of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.

Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop".
Refer to Part 1 of Storm Water Standards sections and/or separate forms referenced in each step below.</td></tr>
<tr><td>Step</td><td>Answer</td><td>Progression</td></tr>
<tr><td rowspan="2">Step 1: Is the project a "development project"? See Section 1.3 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</td><td>☒ Yes</td><td>Go to Step 2.</td></tr>
<tr><td>☐ No</td><td>Stop.
Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.</td></tr>
<tr><td colspan="3">Discussion / justification if the project is <u>not </u>a "development project" (e.g., the project includes <u>only </u>interior remodels within an existing building):</td></tr>
<tr><td rowspan="3">Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions?
To answer this item, see Section 1.4 of the BMP Design Manual (Part 1 of Storm Water Standards) <u>in its entirety </u>for guidance, AND complete Storm Water Requirements Applicability Checklist.</td><td>☐ Standard Project</td><td>Stop.
Standard Project requirements apply.</td></tr>
<tr><td>☒ PDP</td><td>PDP requirements apply, including PDP SWQMP.
Go to Step 3.</td></tr>
<tr><td>☐ PDP Exempt</td><td>Stop.
Standard Project requirements apply. Provide discussion and list any additional requirements below.</td></tr>
<tr><td colspan="3">Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:</td></tr>
</table>

<table>
<tr><th colspan="3">Form I-1 Page 2</th></tr>
<tr><th>Step</th><th>Answer</th><th>Progression</th></tr>
<tr><td rowspan="2">Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval?
See Section 1.10 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</td><td>☐ Yes</td><td>Consult the City Engineer to determine requirements.
Provide discussion and identify requirements below.
Go to Step 4.</td></tr>
<tr><td>☒ No</td><td>BMP Design Manual PDP requirements apply.
Go to Step 4.</td></tr>
<tr><td colspan="3">Discussion / justification of prior lawful approval, and identify requirements (<u>not required if prior lawful approval does not apply</u>):</td></tr>
<tr><td rowspan="2">Step 4. Do hydromodification control requirements apply?
See Section 1.6 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</td><td>☐ Yes</td><td>PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6).
Go to Step 5.</td></tr>
<tr><td>☒ No</td><td>Stop.
PDP structural BMPs required for pollutant control (Chapter 5) only.
Provide brief discussion of exemption to hydromodification control below.</td></tr>
<tr><td colspan="3">Discussion / justification if hydromodification control requirements do <u>not</u> apply:
This project is not subject to Hydromodification requirements set forth by Section 1.6 of the BMP Design Manual. This project discharges to storm drains which directly discharge to Mission Bay.</td></tr>
<tr><td rowspan="2">Step 5. Does protection of critical coarse sediment yield areas apply?
See Section 6.2 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</td><td>☐ Yes</td><td>Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2).
Stop.</td></tr>
<tr><td>☒ No</td><td>Management measures not required for protection of critical coarse sediment yield areas.
Provide brief discussion below.
Stop.</td></tr>
<tr><td colspan="3">Discussion / justification if protection of critical coarse sediment yield areas does <u>not</u> apply:</td></tr>
</table>

Site Information Checklist For PDPs	Form I-3B
Project Summary Information	
Project Name	Eco Blök Homes
Project Address	1765 Fortuna Ave. San Diego, CA 92109 3977 Shasta St. San Diego, CA 92109 1750 Roosevelt Ave. San Diego, CA 92109 Vacant lot at the southeast corner of Roosevelt Ave and Shasta St.
Assessor's Parcel Number(s) (APN(s))	424-482-14 424-532-25
Permit Application Number	PTS# 530514
Project Watershed	Select One: ☐ San Dieguito River ☐ Penasquitos ☒ Mission Bay ☐ San Diego River ☐ San Diego Bay ☐ Tijuana River
Hydrologic subarea name with Numeric Identifier up to two decimal places (9XX.XX)	906.30 Scripps Hydrology Area
Project Area (total area of Assessor's Parcel(s) associated with the project or total area of the right-of-way)	1.64 Acres (71,260 ft^2)
Area to be disturbed by the project (Project Footprint)	1.64 Acres (71,260 ft^2)
Project Proposed Impervious Area (subset of Project Footprint)	1.30 Acres (56,699ft^2)
Project Proposed Pervious Area (subset of Project Footprint)	0.34 Acres (14,561 ft^2)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Project Area.	
The proposed increase or decrease in impervious area in the proposed condition as compared to the pre-project condition.	62% Increase

Form I-3B Page 2 of 11
Description of Existing Site Condition and Drainage Patterns
Current Status of the Site (select all that apply): ☒ Existing development ☐ Previously graded but not built out ☐ Agricultural or other non-impervious use ☐ Vacant, undeveloped/natural Description / Additional Information: The site is previously developed with three existing buildings, landscaping and sidewalks.
Existing Land Cover Includes (select all that apply): ☒ Vegetative Cover ☐ Non-Vegetated Pervious Areas ☒ Impervious Areas Description / Additional Information: The site is previously developed with three existing buildings, landscaping and sidewalks.
Underlying Soil belongs to Hydrologic Soil Group (select all that apply): ☒ NRCS Type A ☐ NRCS Type B ☐ NRCS Type C ☐ NRCS Type D
Approximate Depth to Groundwater (GW): ☐ GW Depth < 5 feet ☐ 5 feet < GW Depth < 10 feet ☐ 10 feet < GW Depth < 20 feet ☒ GW Depth > 20 feet
Existing Natural Hydrologic Features (select all that apply): ☐ Watercourses ☐ Seeps ☐ Springs ☐ Wetlands ☒ None Description / Additional Information: The subject site does not include any Natural Hydrologic Features.

Form I-3B Page 3 of 11

Description of Existing Site Topography and Drainage:

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

1. Whether existing drainage conveyance is natural or urban;
2. If runoff from offsite is conveyed through the site? If yes, quantification of all offsite drainage areas, design flows, and locations where offsite flows enter the project site and summarize how such flows are conveyed through the site;
3. Provide details regarding existing project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, and natural and constructed channels;
4. Identify all discharge locations from the existing project along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Description / Additional Information:

The existing site drainage is divided into three basins. The east side of the project (basin 1) drains to the southeast corner of the site and discharges to the private alley until it meets Roosevelt Avenue. The west side of the project (basin 2) drains to the southwest corner of the site and discharges southerly to curb and gutter along Shasta Avenue and converges with the discharge from basin 1 at Roosevelt Avenue. The southernmost portion of the project (basin 3) drains to the southeast corner of Roosevelt Avenue and Shasta Street. All of the storm water runoff from the project site then flows west down Roosevelt Avenue via curb and gutter where it finally comes together at the corner of Roosevelt Avenue and Jewel Street. From there the entire project's runoff flows via curb and gutter to an existing inlet located 550 feet south at the corner of Jewell Street and La Playa Avenue. Storm water then is conveyed via storm drain to Mission Bay.

Form I-3B Page 4 of 11
Description of Proposed Site Development and Drainage Patterns
Project Description / Proposed Land Use and/or Activities: The proposed project will disturb 1.64 acres and consists of sidewalk, landscaping and infiltration basins in addition to 30 single family row homes. The onsite storm water will be treated by infiltration basin BMPs throughout the site and will follow similar flow patterns as the existing condition. The site will outfall to Shasta Street via curb and gutter 1,050 feet south to the existing storm drain inlet located at the corner of Jewell Street and La Playa Avenue. Strom water is then conveyed via storm drain pipes to Mission Bay. The drainage areas have been designed to maintain the overall drainage design and the storm water discharges to the same inlet at the corner of Jewell Street and La Playa Avenue.
List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features): Project impervious features include the following: • Concrete sidewalk • Single Family Homes
List/describe proposed pervious features of the project (e.g., landscape areas): Project pervious features include the following: • Landscaped Area • Infiltration Basins
Does the project include grading and changes to site topography? ☒ Yes ☐ No Description / Additional Information: There will be a minor amount of grading for buildings and landscaped areas.

Form I-3B Page 5 of 11

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☒ Yes

☐ No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural and constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Description / Additional Information:

The proposed project will add atrium landscape drains to convey storm water to the water treatment facilities. This conveyance system captures and directs the storm water runoff to infiltration basin BMPs. The treatment control BMPs for the Eco Blök Homes are infiltration basins designed using BMP fact sheet E.9 from the City of San Diego BMP Design Manual Appendix. See infiltration basin detail on sheet C-2.

For flows that are associated with water quality treatment, infiltration basins will be provided on each lot. To regulate flows larger than the water quality demand the full infiltration BMPs are fitted with overflow structures and sidewalk underdrains. These overflow systems will direct the runoff to Shasta Street. Please refer to the drainage report for a more detailed description of the flood control measures that have been put into place and their associated calculations.

Form I-3B Page 6 of 11
Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply): ☒ On-site storm drain inlets ☐ Interior floor drains and elevator shaft sump pumps ☐ Interior parking garages ☐ Need for future indoor & structural pest control ☒ Landscape/Outdoor Pesticide Use ☐ Pools, spas, ponds, decorative fountains, and other water features ☐ Food service ☐ Refuse areas ☐ Industrial processes ☐ Outdoor storage of equipment or materials ☐ Vehicle and Equipment Cleaning ☐ Vehicle/Equipment Repair and Maintenance ☐ Fuel Dispensing Areas ☐ Loading Docks ☐ Fire Sprinkler Test Water ☐ Miscellaneous Drain or Wash Water ☒ Plazas, sidewalks, and parking lots ☐ Large Trash Generating Facilities ☐ Animal Facilities ☐ Plant Nurseries and Garden Centers ☐ Automotive-related Uses Description / Additional Information:

Identification and Narrative of Receiving Water

Narrative describing flow path from discharge location(s), through urban storm conveyance system, to receiving creeks, rivers, and lagoons and ultimate discharge location to Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable)

The proposed flow path is very similar to the existing flow path. Both high and low flows will be discharged to Shasta Street. The water on Shasta street will travel via curb and gutter south to Roosevelt Ave. The water will then travel via curb and gutter to the corner of Jewell Street and La Playa Avenue where it will be captured by an existing drainage inlet. This storm drain conveys the capture runoff directly to Mission Bay.

Provide a summary of all beneficial uses of receiving waters downstream of the project discharge locations.

- ● Existing Beneficial Use
- ○ Potential Beneficial Use
- \+ Except from Municipal Use
- Beneficial use is impaired based on the 2010 303(d) list

Receiving Water (Hydrologic Unit Code)	Beneficial Use*															
	MUN	IND	REC1	REC2	BIOL	WARM	WILD	RARE	SPWN	NAV	COMM	EST	MAR	AQUA	MIGR	SHELL
Mission Bay Shoreline, at North Crown Point (906.3)		●	●	●			●	●	●		●	●	●		●	●

*Source: Table TC-1, Beneficial Uses of the 2010 303(d) Listed Waterbodies in Mission Bay WMA; Mission Bay WMA Water Quality Improvement Plan, Appendix C – Beneficial Uses of 303(d) Listed Waterbodies in Mission Bay WMA, February 2016.

Identify all ASBS (areas of special biological significance) receiving waters downstream of the project discharge locations.

No areas of ASBS have been identified for this project.

Provide distance from project outfall location to impaired or sensitive receiving waters.

The site will outfall 1,050 feet south to the existing storm drain inlet located at the corner of Jewell Street and La Playa Avenue. Strom water is then conveyed via storm drain pipes 1,475 feet southeast to Mission Bay.

Summarize information regarding the proximity of the permanent, post-construction storm water BMPs to the City's Multi-Habitat Planning Area and environmentally sensitive lands

There are no existing MHPA and open space areas within the project area. The nearest MHPA is approximately 1025 ft to the southeast of the site. There are environmentally sensitive areas surrounding this project site to the west, south and east, the nearest of which is 825 feet.

Form I-3B Page 8 of 11		
Identification of Receiving Water Pollutants of Concern		
List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:		
303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs/ WQIP Highest Priority Pollutant
Mission Bay Shoreline, North Crown Point	Enterococcus	*To be developed
	Total Coliform	

Identification of Project Site Pollutants*			
*Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated) Identify pollutants anticipated from the project site based on all proposed use(s) of the site (see BMP Design Manual (Part 1 of Storm Water Standards) Appendix B.6):			
Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment		X	X
Nutrients			
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris		X	
Oxygen Demanding Substances			
Oil & Grease		X	
Bacteria & Viruses		X	X
Pesticides		X	

*Source Table 2-1, 2010 303(d) or TMDL Listed Waterbodies in the Mission Bay WMA; Mission Bay WMA Water Quality Improvement Plan, 2 – Priority Water Quality Conditions, February 2016.

Form I-3B Page 9 of 11

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the BMP Design Manual)?

- ☐ Yes, hydromodification management flow control structural BMPs required.
- ☒ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

The proposed site will discharge through sidewalk underdrains to the curb and gutter on Shasta Street. All discharge points will flow via curb and gutter 1,050 feet south to the existing storm drain inlet located at the corner of Jewell Street and La Playa Avenue. Storm water is then conveyed via storm drain pipes east down La Playa Avenue and across Crown Point park and then discharges directly into Mission Bay (See figure on Form I-3 Page 11 of 11). This route satisfies the HMP exemption shown as criteria 3 in Figure 1-2 of section 1.6 of the City of San Diego's BMP Design Manual.

Critical Coarse Sediment Yield Areas*

*This Section only required if hydromodification management requirements apply

Based on Section 6.2 and Appendix H does CCSYA exist on the project footprint or in the upstream area draining through the project footprint?

- ☐ Yes
- ☒ No

Discussion / Additional Information:

There are no existing Course Sediment Yield Areas (CCYAs) onsite nor upstream of the project site.

Form I-3B Page 10 of 11
Flow Control for Post-Project Runoff* *This Section only required if hydromodification management requirements apply
List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.
Has a geomorphic assessment been performed for the receiving channel(s)? ☐ No, the low flow threshold is 0.1Q2 (default low flow threshold) ☐ Yes, the result is the low flow threshold is 0.1Q2 ☐ Yes, the result is the low flow threshold is 0.3Q2 ☐ Yes, the result is the low flow threshold is 0.5Q2 If a geomorphic assessment has been performed, provide title, date, and preparer:
Discussion / Additional Information: (optional)

Form I-3B Page 11 of 11

Other Site Requirements and Constraints
When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

Optional Additional Information or Continuation of Previous Sections As Needed
This space provided for additional information or continuation of information from previous sections as needed.

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Source Control BMP Checklist for All Development Projects			Form I-4
Source Control BMPs			
All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual (Part 1 of the Storm Water Standards) for information to implement source control BMPs shown in this checklist. Answer each category below pursuant to the following. • "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.			
Source Control Requirement	Applied?		
SC-1 Prevention of Illicit Discharges into the MS4	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-3 not implemented: The proposed project does not include outdoor material storage.			
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-4 not implemented: The proposed project does not include outdoor work area.			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-5 not implemented:			

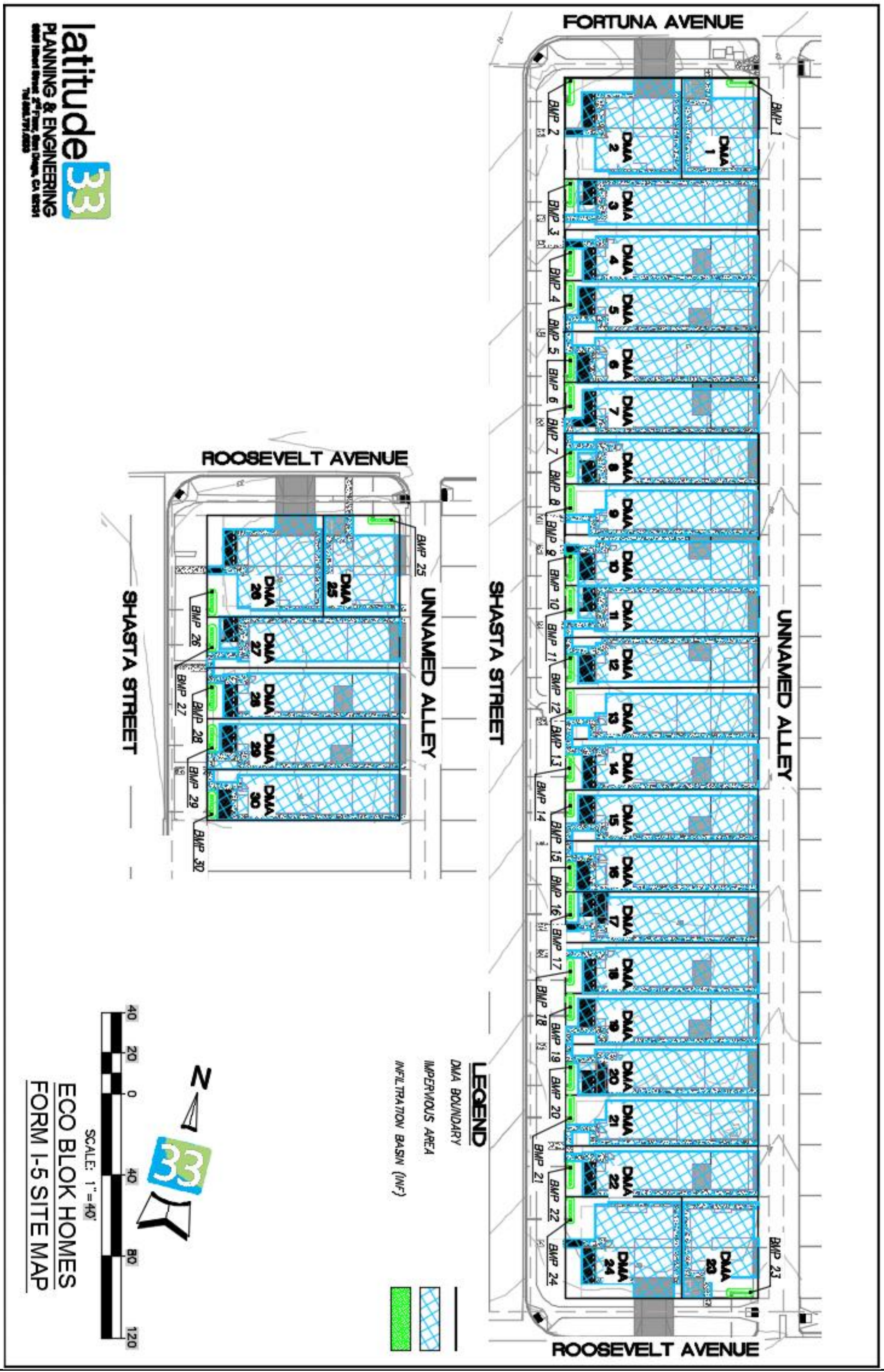
Form I-4 Page 2 of 2			
Source Control Requirement	Applied?		
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)			
On-site storm drain inlets	☒ Yes	☐ No	☐ N/A
Interior floor drains and elevator shaft sump pumps	☐ Yes	☐ No	☒ N/A
Interior parking garages	☐ Yes	☐ No	☒ N/A
Need for future indoor & structural pest control	☐ Yes	☐ No	☒ N/A
Landscape/Outdoor Pesticide Use	☒ Yes	☐ No	☐ N/A
Pools, spas, ponds, decorative fountains, and other water features	☐ Yes	☐ No	☒ N/A
Food service	☐ Yes	☐ No	☒ N/A
Refuse areas	☐ Yes	☐ No	☒ N/A
Industrial processes	☐ Yes	☐ No	☒ N/A
Outdoor storage of equipment or materials	☐ Yes	☐ No	☒ N/A
Vehicle/Equipment Repair and Maintenance	☐ Yes	☐ No	☒ N/A
Fuel Dispensing Areas	☐ Yes	☐ No	☒ N/A
Loading Docks	☐ Yes	☐ No	☒ N/A
Fire Sprinkler Test Water	☐ Yes	☐ No	☒ N/A
Miscellaneous Drain or Wash Water	☐ Yes	☐ No	☒ N/A
Plazas, sidewalks, and parking lots	☒ Yes	☐ No	☐ N/A
SC-6A: Large Trash Generating Facilities	☐ Yes	☐ No	☒ N/A
SC-6B: Animal Facilities	☐ Yes	☐ No	☒ N/A
SC-6C: Plant Nurseries and Garden Centers	☐ Yes	☐ No	☒ N/A
SC-6D: Automotive-related Uses	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			

Source Control BMP Checklist for All Development Projects	Form I-5		
Site Design BMPs			
All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual (Part 1 of Storm Water Standards) for information to implement site design BMPs shown in this checklist. Answer each category below pursuant to the following. • "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided. A site map with implemented site design BMPs must be included at the end of this checklist.			
Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☐ Yes	☐ No	☒ N/A
Discussion / justification if SD-1 not implemented: The proposed project does not include natural drainage pathways or hydrologic feature to maintain or conserve.			
1-1 Are existing natural drainage pathways and hydrologic features mapped on the site map?	☐ Yes	☒ No	
1-2 Are trees implemented? If yes, are they shown on the site map?	☐ Yes	☒ No	
1-3 Implemented trees meet the design criteria in SD-1 Fact Sheet (e.g. soil volume, maximum credit, etc.)?	☐ Yes	☒ No	
1-4 Is tree credit volume calculated using Appendix B.2.2.1 and SD-1 Fact Sheet in Appendix E?	☐ Yes	☒ No	
SD-2 Have natural areas, soils and vegetation been conserved?	☐ Yes	☐ No	☒ N/A
Discussion / justification if SD-2 not implemented: The project site has been previously developed. The proposed work area for this project only includes areas that have been previously disturbed or developed.			

Form I-5 Page 2 of 4			
Site Design Requirement	Applied?		
SD-3 Minimize Impervious Area	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-4 not implemented:			
SD-5 Impervious Area Dispersion	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-5 not implemented: Grading limitations prevent the implementation of such areas.			
5-1 Is the pervious area receiving runon from impervious area identified on the site map?	☐ Yes	☒ No	
5-2 Does the pervious area satisfy the design criteria in SD-5 Fact Sheet in Appendix E (e.g. maximum slope, minimum length, etc.)	☐ Yes	☒ No	
5-3 Is impervious area dispersion credit volume calculated using Appendix B.2.1.1 and SD-5 Fact Sheet in Appendix E?	☐ Yes	☒ No	

Form I-5 Page 3 of 4			
Site Design Requirement	Applied?		
SD-6 Runoff Collection	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-6 not implemented: Landscape areas, overflow structures, and infiltration BMPs have been placed throughout the project site to reduce the transportation of pollutants to receiving waters.			
6a-1 Are green roofs implemented in accordance with design criteria in SD-6A Fact Sheet? If yes, are they shown on the site map?	☐ Yes	☒ No	
6a-2 Is green roof credit volume calculated using Appendix B.2.1.2 and SD-6A Fact Sheet in Appendix E?	☐ Yes	☒ No	
6b-1 Are permeable pavements implemented in accordance with design criteria in SD-6B Fact Sheet? If yes, are they shown on the site	☐ Yes	☒ No	
6b-2 Is permeable pavement credit volume calculated using Appendix B.2.1.3 and SD-6B Fact Sheet in Appendix E?	☐ Yes	☒ No	
SD-7 Landscaping with Native or Drought Tolerant Species	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-7 not implemented:			
SD-8 Harvesting and Using Precipitation	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-8 not implemented: There are no feasible opportunities to harvest runoff for later use before it enters the existing storm drain system. See Form I-7 of Attachment 1c.			
8-1 Are rain barrels implemented in accordance with design criteria in SD-8 Fact Sheet? If yes, are they shown on the site map?	☐ Yes	☒ No	
8-2 Is rain barrel credit volume calculated using Appendix B.2.2.2 and SD-8 Fact Sheet in Appendix E?	☐ Yes	☒ No	

Insert Site Map with all site design BMPs identified:



Summary of PDP Structural BMPs	Form I-6
PDP Structural BMPs	
All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual, Part 1 of Storm Water Standards). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s). PDP structural BMPs must be verified by the City at the completion of construction. This includes requiring the project owner or project owner's representative to certify construction of the structural BMPs (complete Form DS-563). PDP structural BMPs must be maintained into perpetuity (see Chapter 7 of the BMP Design Manual). Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).	
Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate. **Step 1.** Sites were located for water pollutant control BMPs and DMAs were delineated and DCVs calculated. **Step 2.** Per the included Harvest and Use feasibility screening the proposed project is considered to be infeasible for harvest and use. **Step 3.** Per the “Assessment of the Potential for Infiltration-Related Soil Collapse” Report by Nova dated May 9, 2017, infiltration is feasible. **Step 4.** Infiltration BMPs have been strategically placed throughout the project site. For each infiltration BMP the “Design Capture Volume” Worksheet B.2-1 and B-4.1 was used to determine the minimum footprint required. It is important to note that the minimum footprint for every infiltration BMP was governed by the drawdown time less than 36 hours. **Step 5.** Flow-thru treatment devices are not proposed for this site as we are able to treat the DCV onsite with the proposed infiltration basins. The project is not subject to hydromodification requirements. The site discharges to an existing inlet and storm drain system that discharges directly to Mission Bay.	

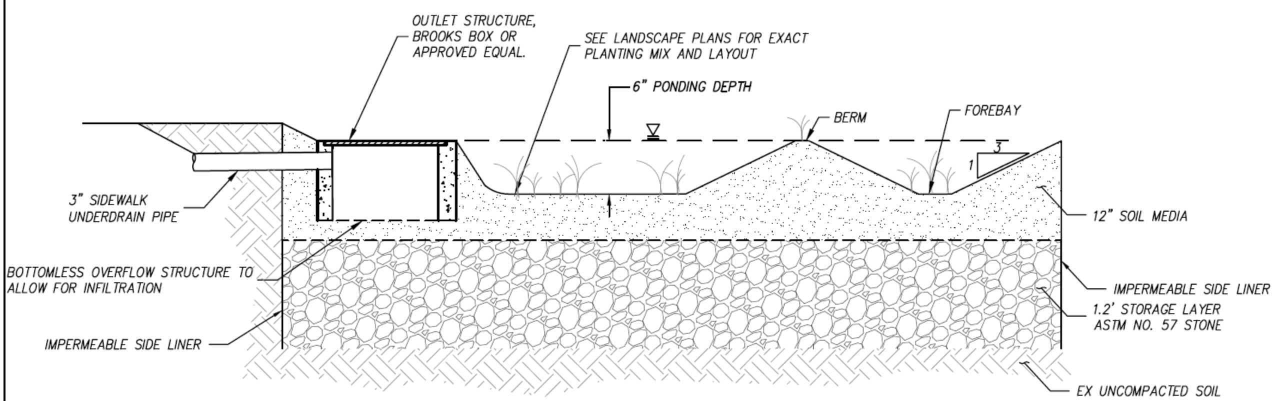
Form I-6 Page 2 of 62
(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)
(Continued from page 1)

Form I-6 Page 3 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 1	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 4 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 1
Construction Plan Sheet No. C-2

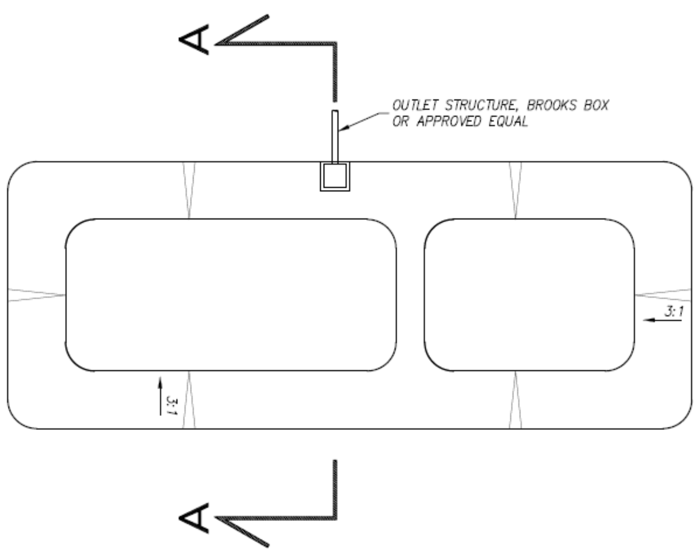
Discussion (as needed):

BMP 1 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

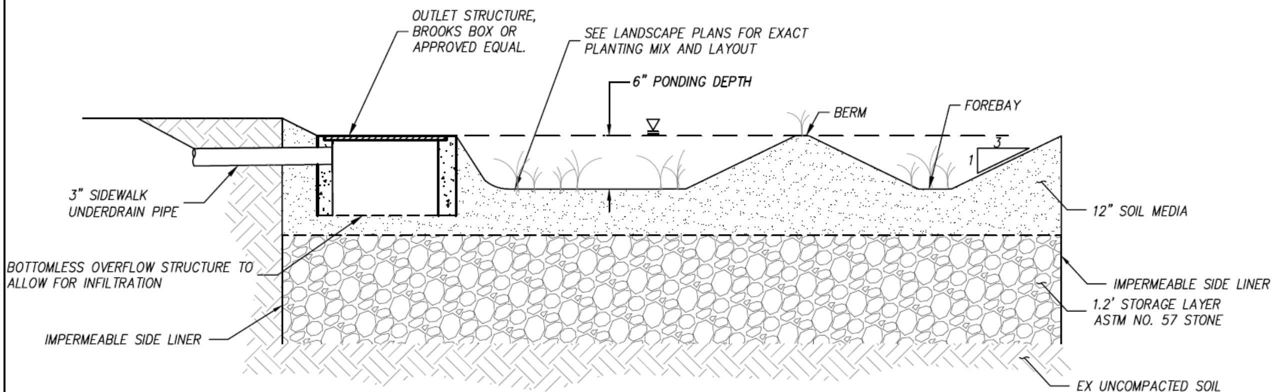
NTS

Form I-6 Page 5 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 2	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 6 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 2
Construction Plan Sheet No. C-2

Discussion (as needed):

BMP 2 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

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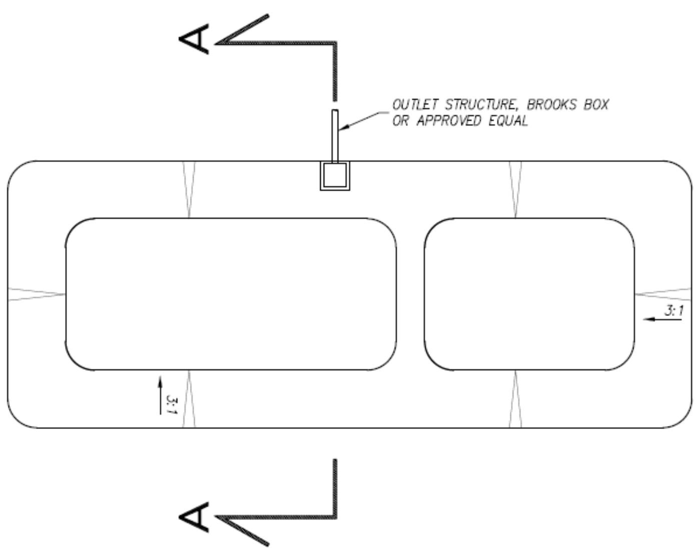


INFILTRATION BASIN DETAIL

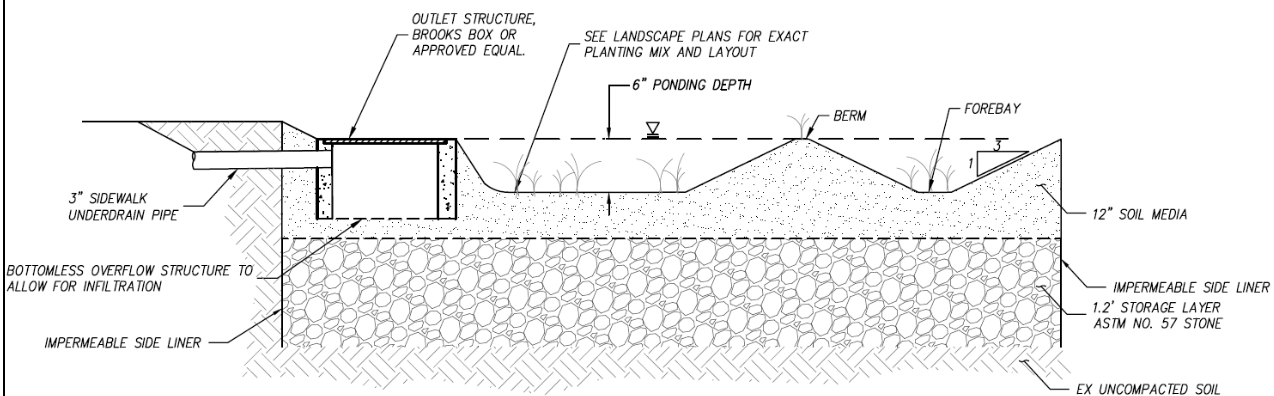
NTS

Form I-6 Page 7 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 3	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 8 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 3
Construction Plan Sheet No. C-2

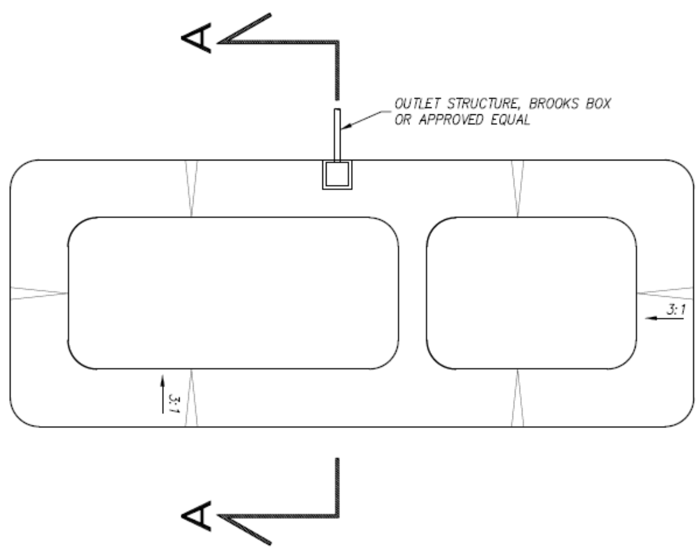
Discussion (as needed):

BMP 3 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

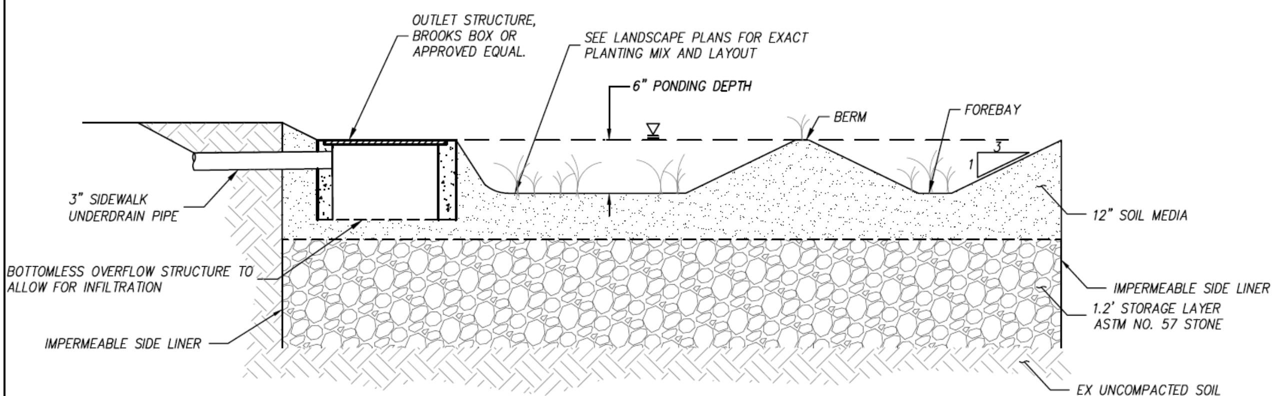
Form I-6 Page 9 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 4	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 4

Construction Plan Sheet No. C-2

Discussion (as needed):

BMP 4 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

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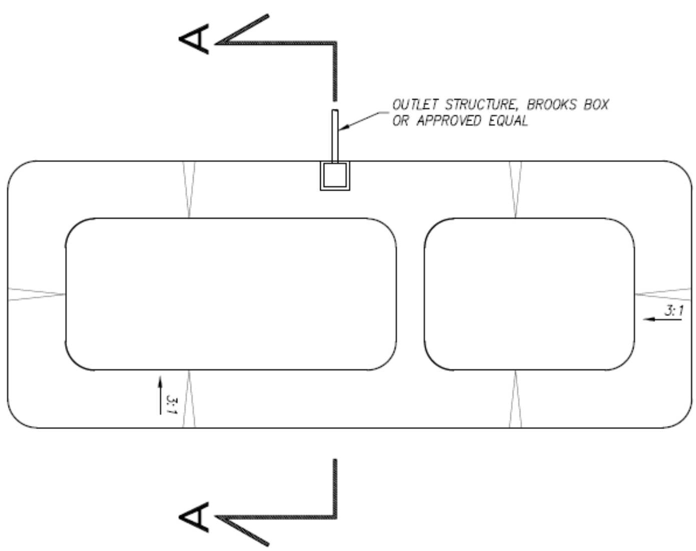


INFILTRATION BASIN DETAIL

NTS

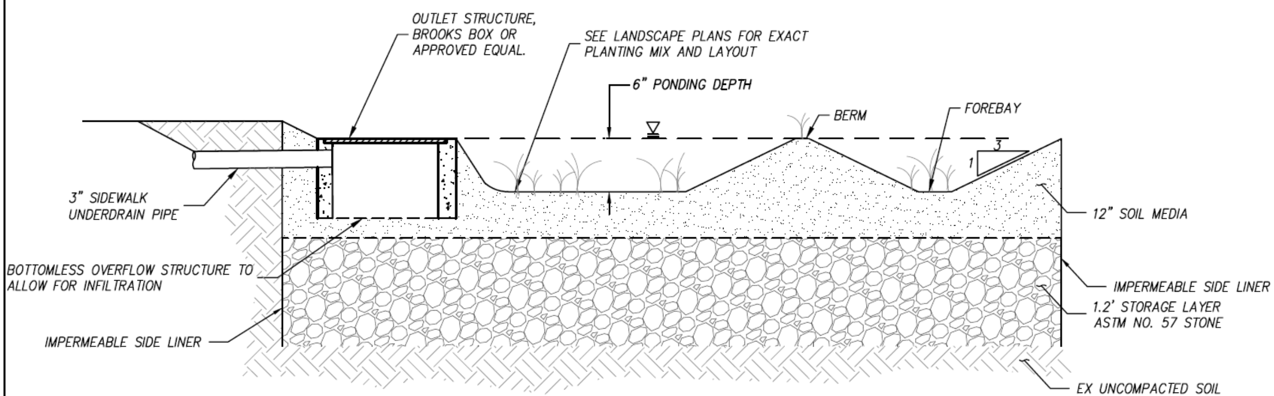
Form I-6 Page 11 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 105	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 5

Construction Plan Sheet No. C-2

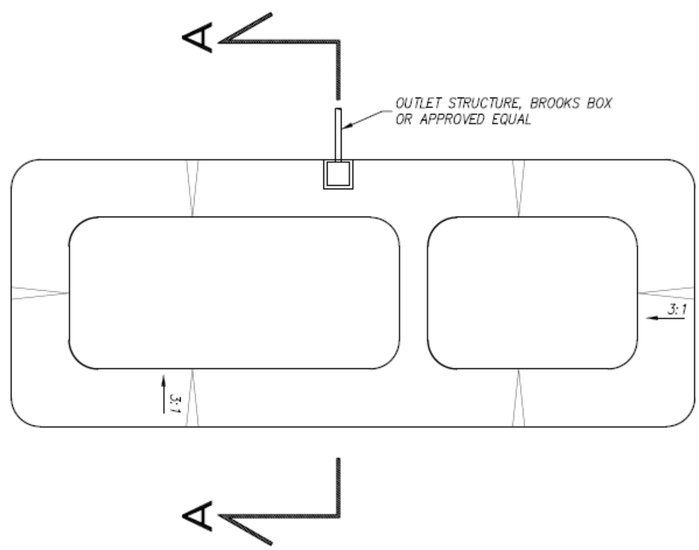
Discussion (as needed):

BMP 5 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

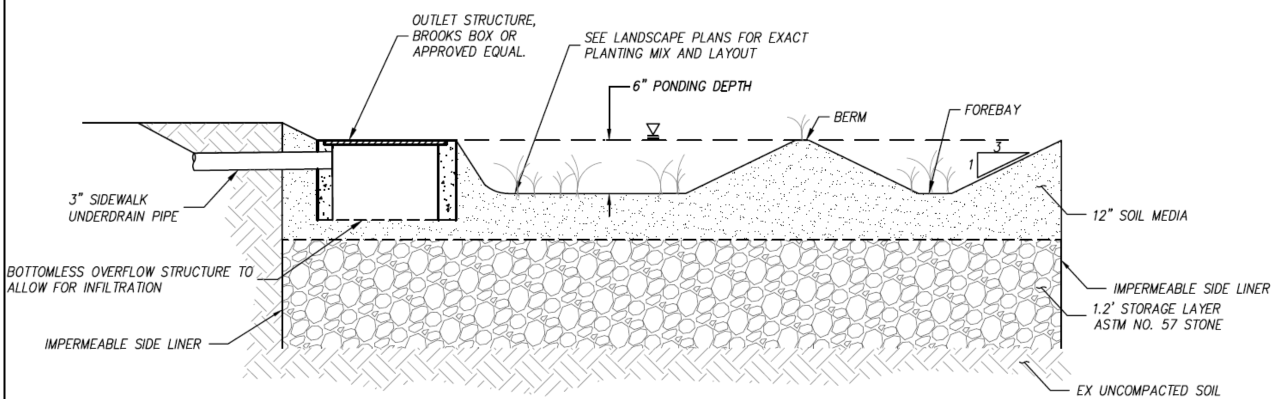
latitude 33 PLANNING & ENGINEERING

Form I-6 Page 13 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 6	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 14 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 6
Construction Plan Sheet No. C-2

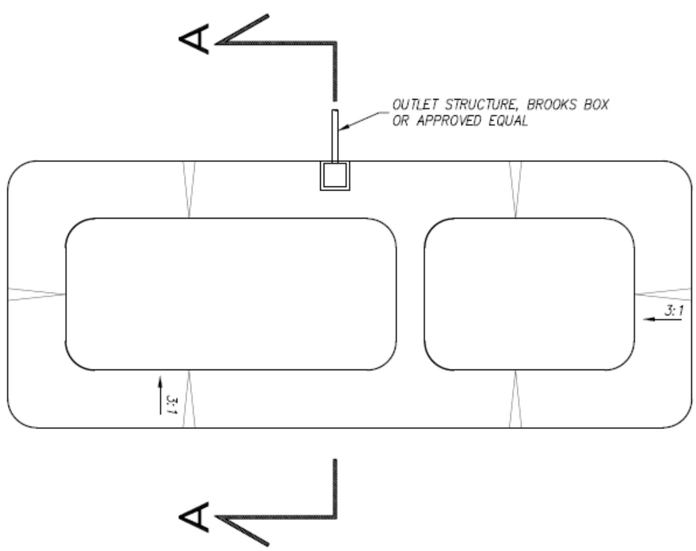
Discussion (as needed):

BMP 6 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



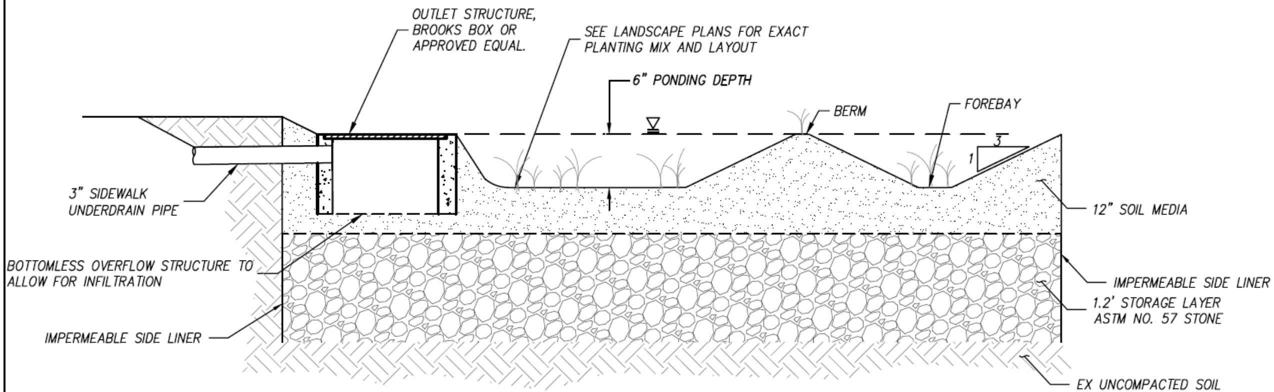
INFILTRATION BASIN DETAIL

NTS

Form I-6 Page 15 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 7	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

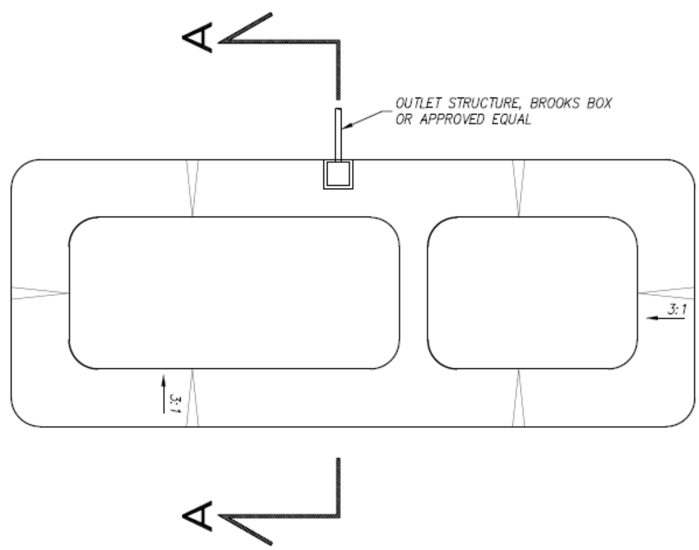
Form I-6 Page 16 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 7
Construction Plan Sheet No. C-2
Discussion (as needed):

BMP 7 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



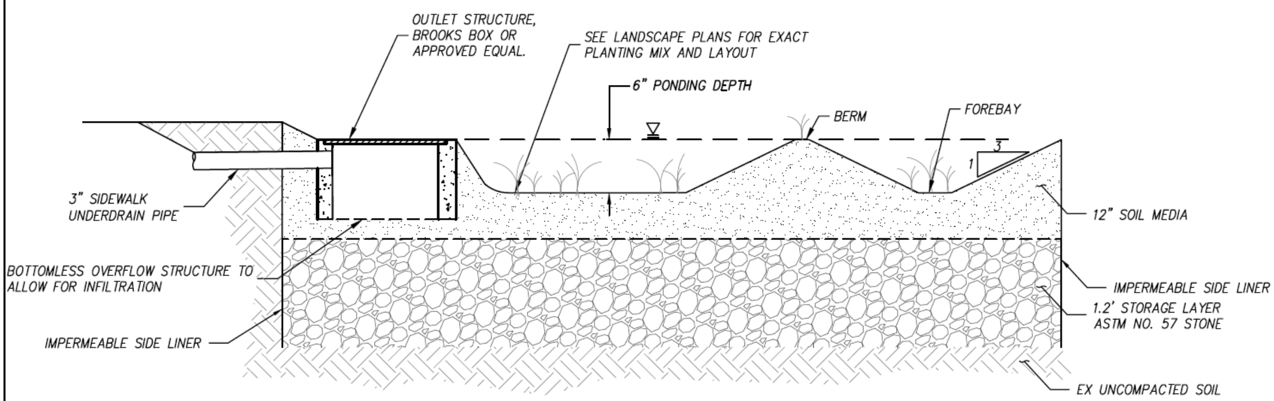
INFILTRATION BASIN DETAIL

NTS

Form I-6 Page 17 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 8	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

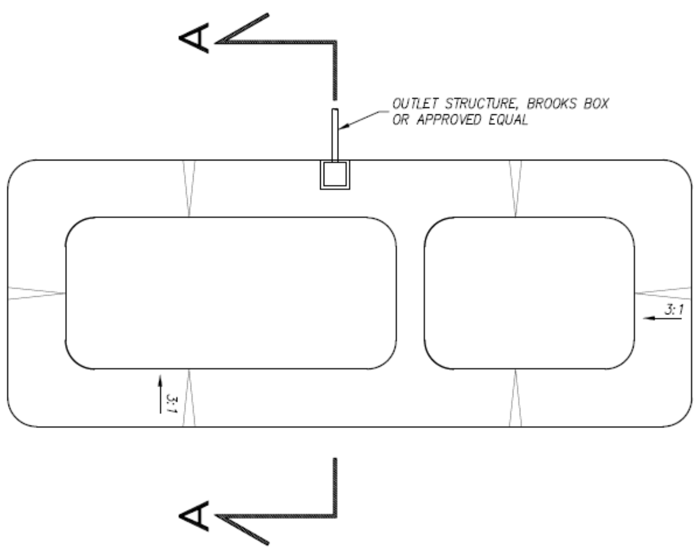
Form I-6 Page 18 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 8
Construction Plan Sheet No. C-2
Discussion (as needed):

BMP 8 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

Form I-6 Page 19 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 9	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

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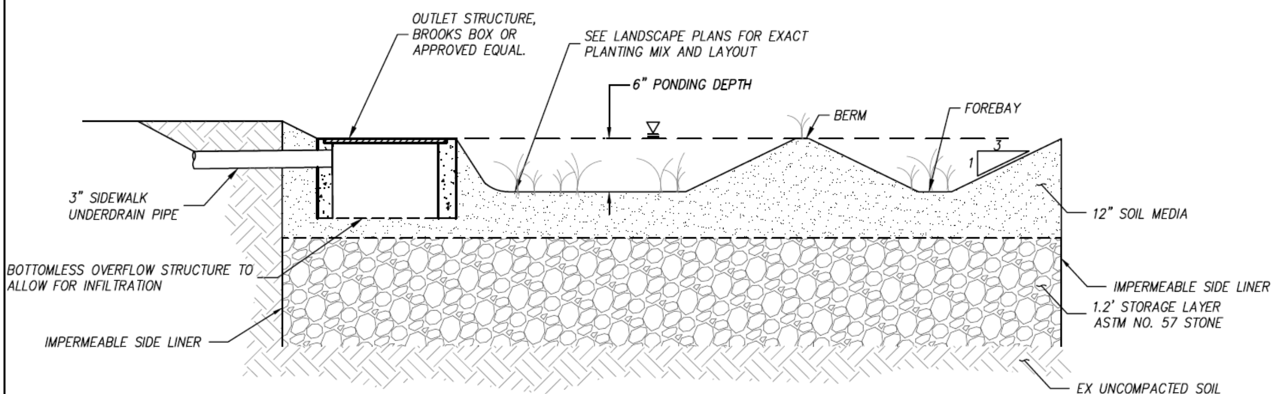
Structural BMP ID No. BMP 9

Construction Plan Sheet No. C-2

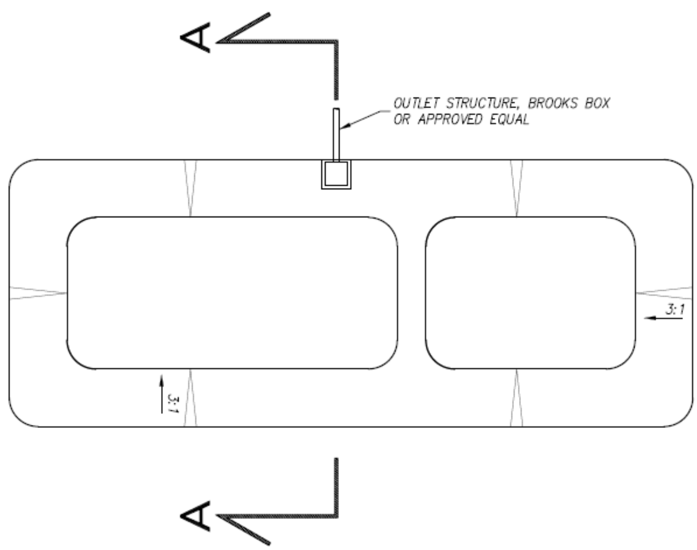
Discussion (as needed):

BMP 9 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS

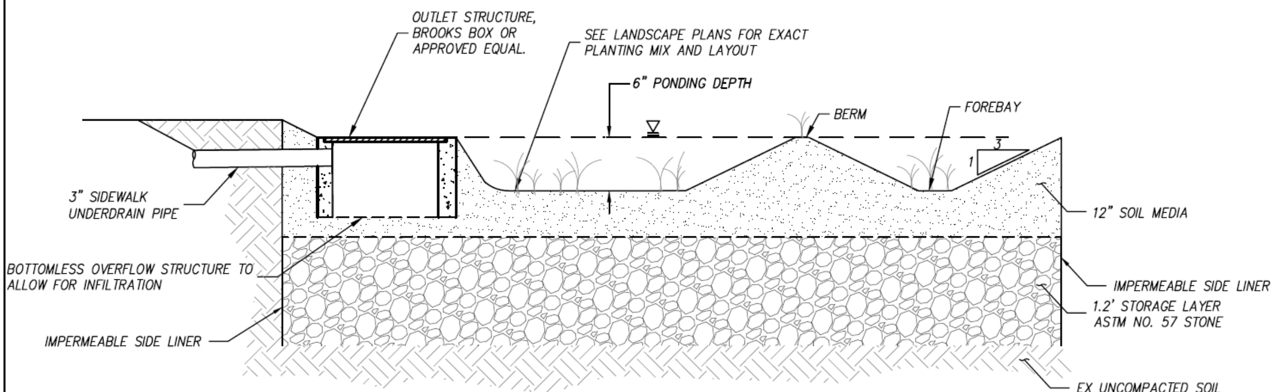


INFILTRATION BASIN DETAIL

NTS

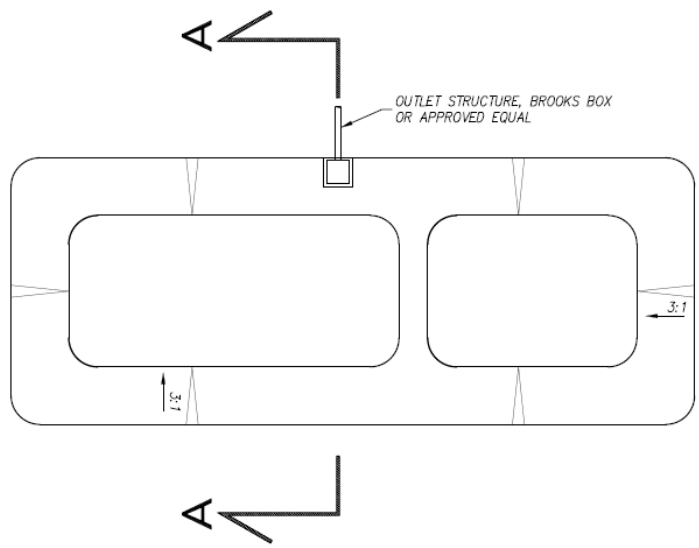
Form I-6 Page 21 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 10	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 22 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 10
Construction Plan Sheet No. C-2
Discussion (as needed): BMP 10 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



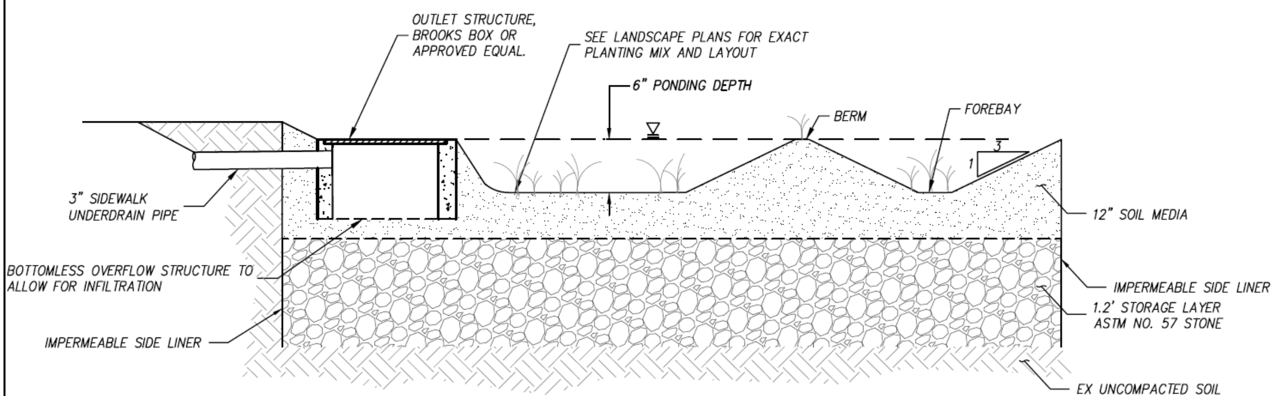
INFILTRATION BASIN DETAIL

NTS

Form I-6 Page 23 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 11	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

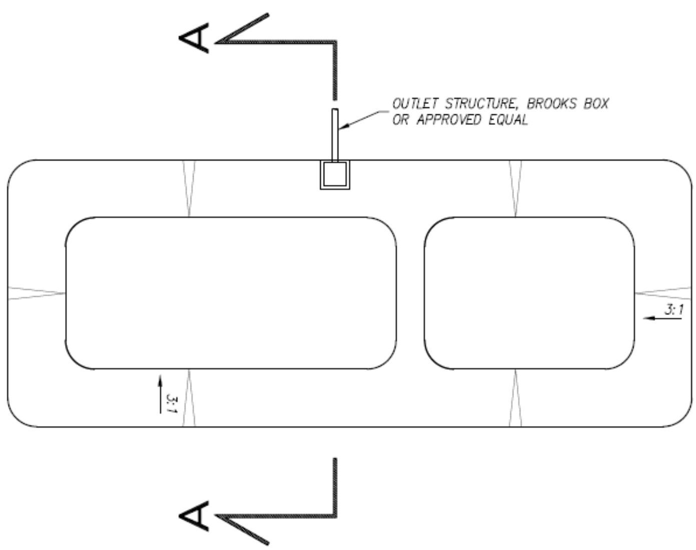
Form I-6 Page 24 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 11
Construction Plan Sheet No. C-2
Discussion (as needed):

BMP 11 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

Form I-6 Page 25 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 12	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

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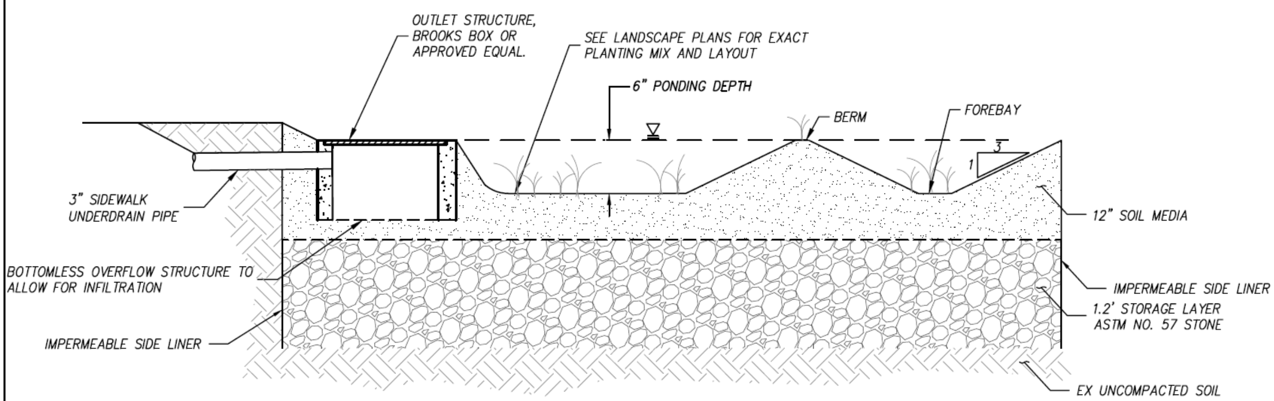
Structural BMP ID No. BMP 12

Construction Plan Sheet No. C-2

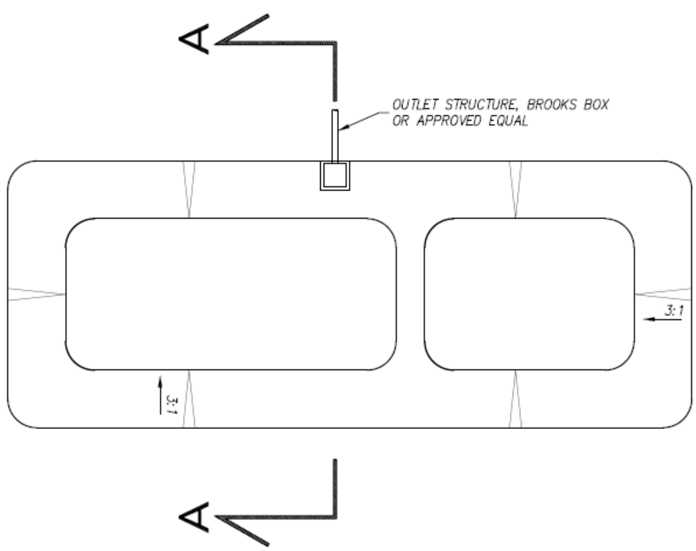
Discussion (as needed):

BMP 12 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

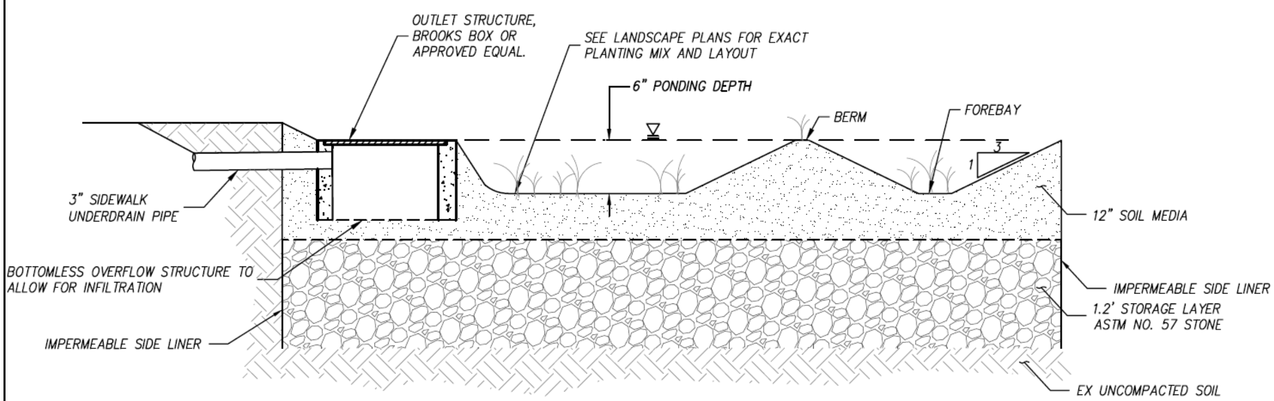
Form I-6 Page 27 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 13	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 13

Construction Plan Sheet No. C-2

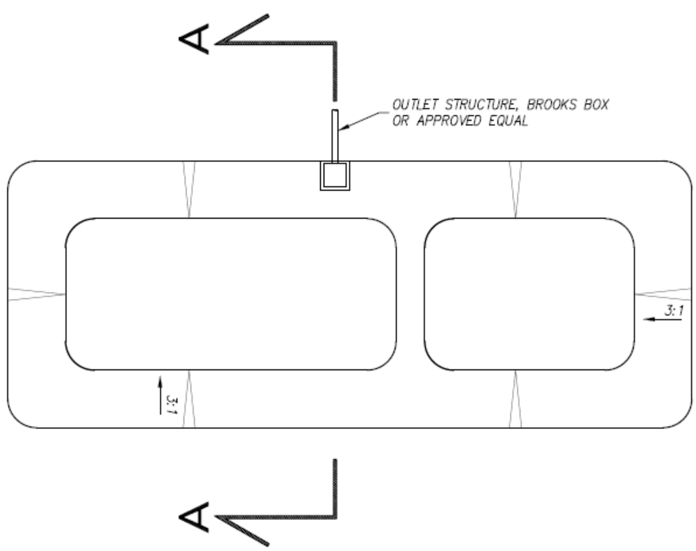
Discussion (as needed):

BMP 13 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

Form I-6 Page 28 of 62 (Copy as many as needed)
Structural BMP Summary Information
Structural BMP ID No. BMP 14
Construction Plan Sheet No. C-2
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

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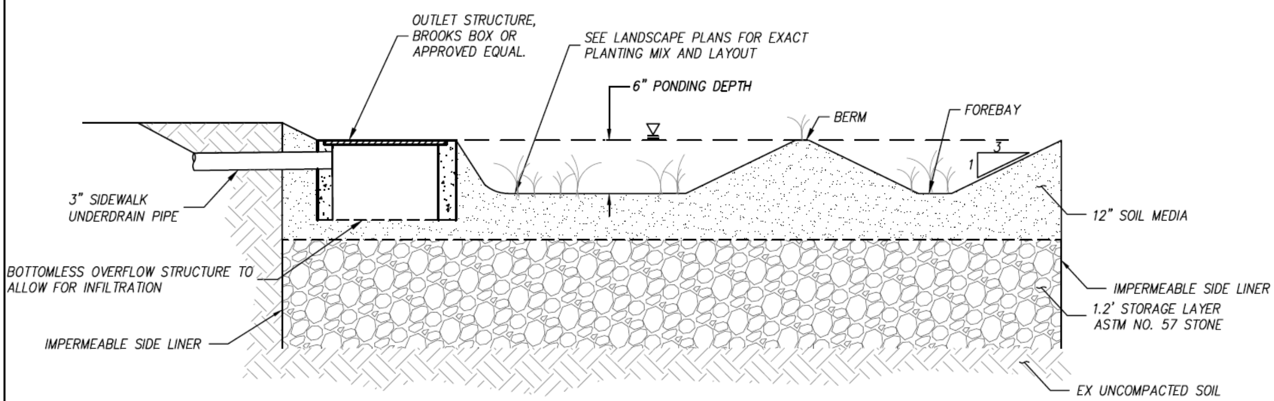
Structural BMP ID No. BMP 14

Construction Plan Sheet No. C-2

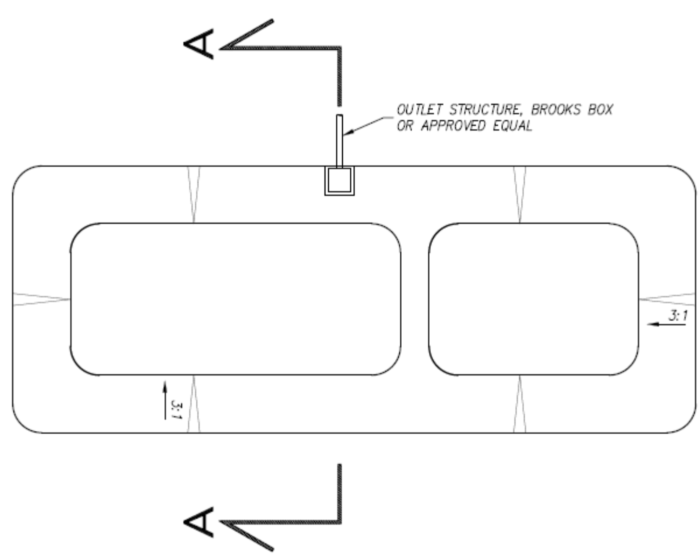
Discussion (as needed):

BMP 14 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

Form I-6 Page 31 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 15	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

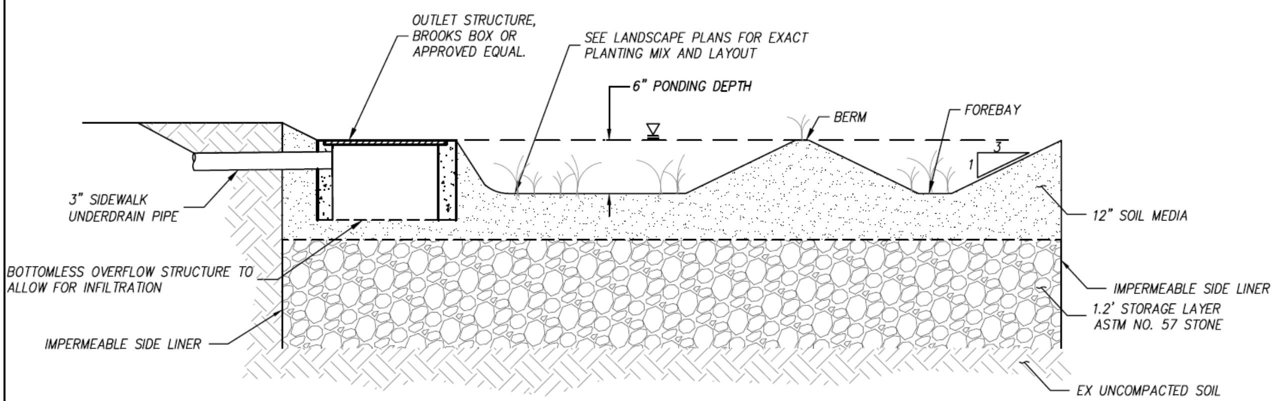
Form I-6 Page 32 of 62 (Copy as many as needed)

Structural BMP ID No. BMP 15

Construction Plan Sheet No. C-2

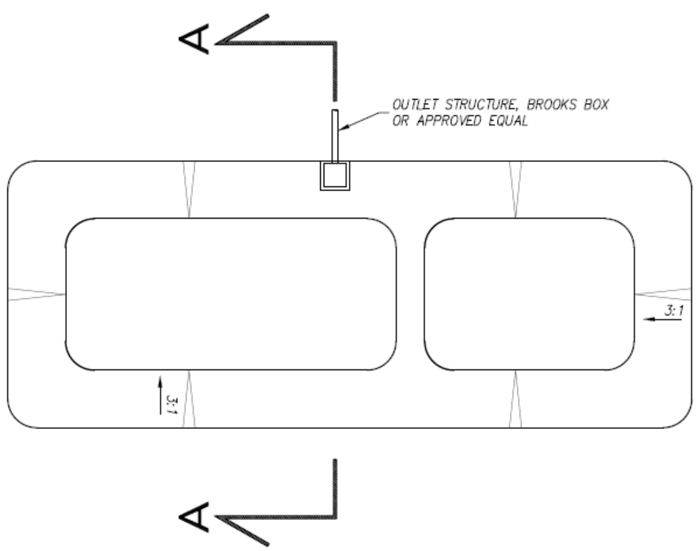
Discussion (as needed):

BMP 15 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

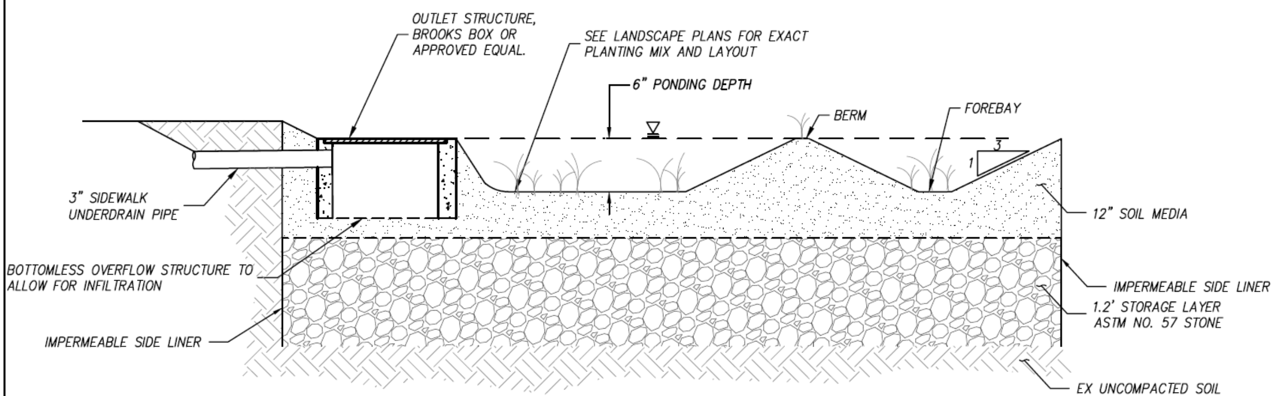
Form I-6 Page 33 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 16	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 16

Construction Plan Sheet No. C-2

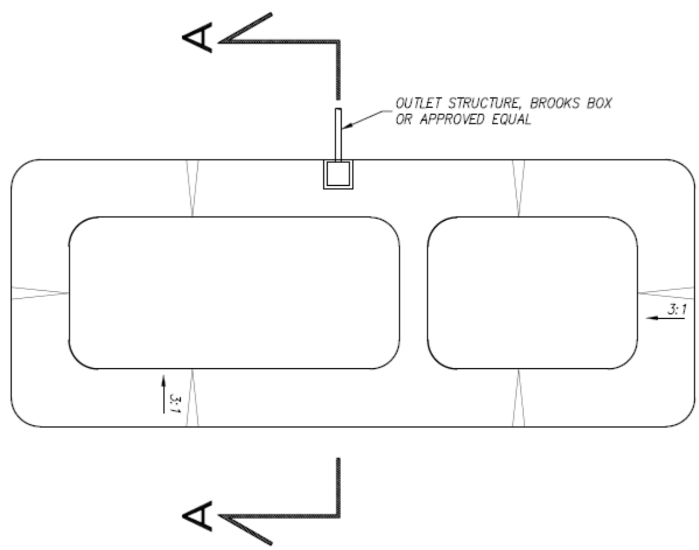
Discussion (as needed):

BMP 16 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

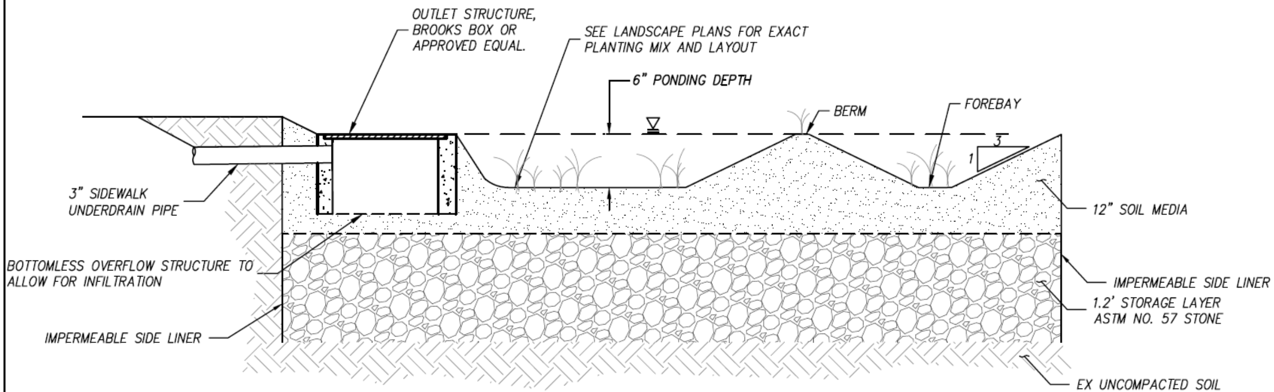
NTS

Form I-6 Page 35 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 17	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 36 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 17
Construction Plan Sheet No. C-2

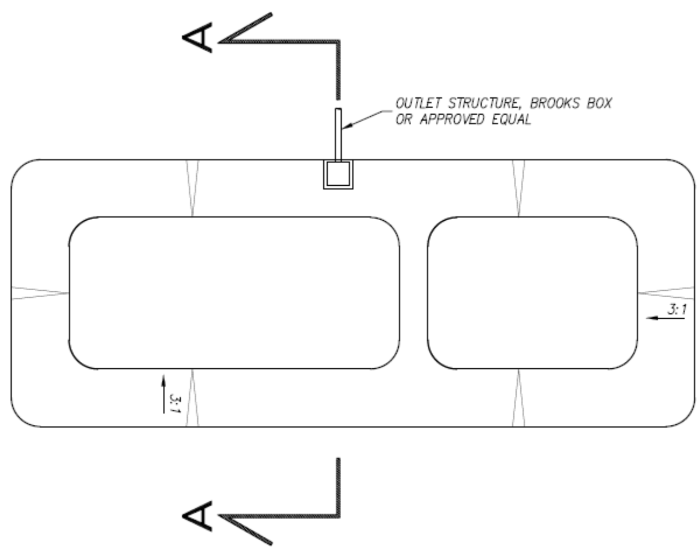
Discussion (as needed):

BMP 17 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

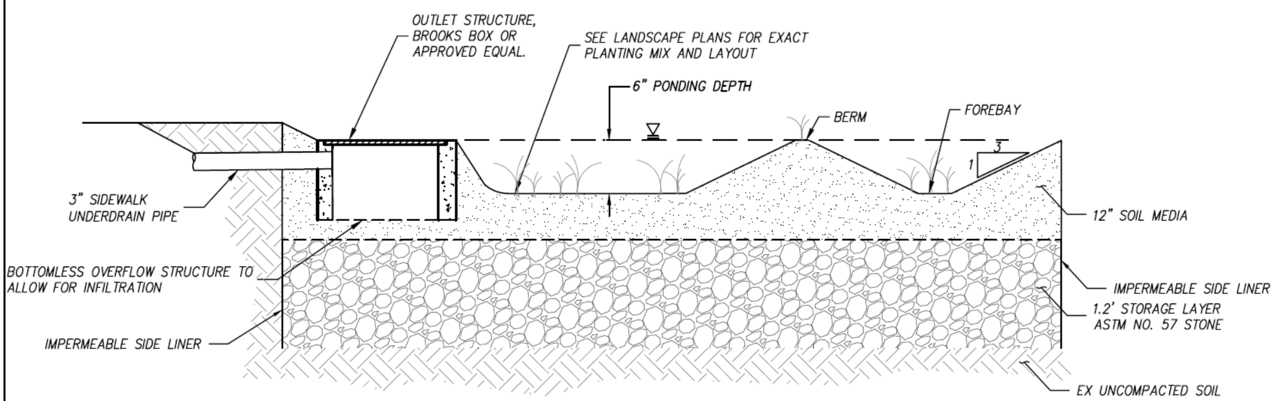
NTS

Form I-6 Page 37 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 18	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 38 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 18
Construction Plan Sheet No. C-2

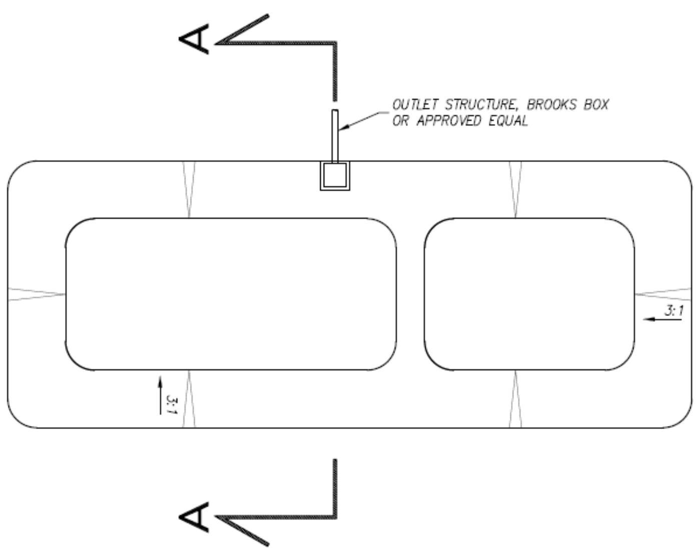
Discussion (as needed):

BMP 18 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

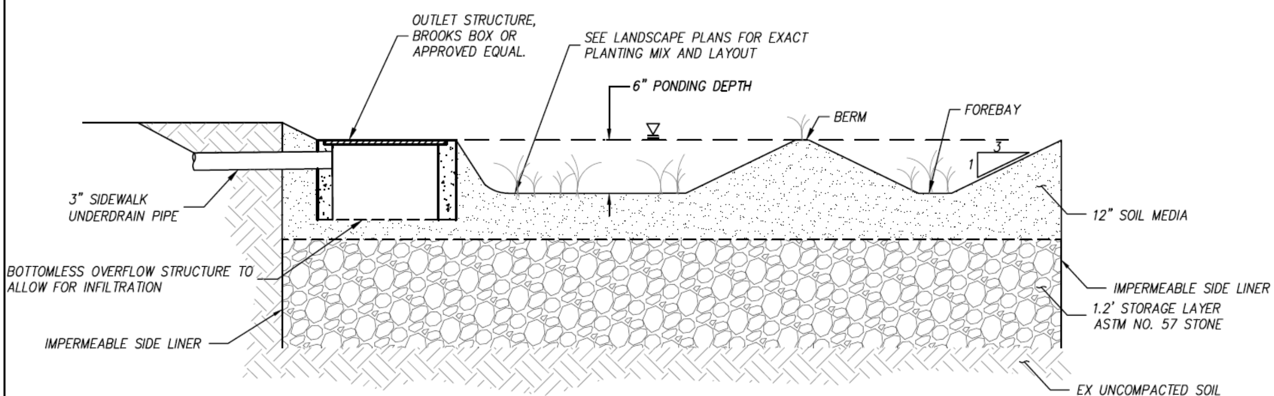
NTS

Form I-6 Page 39 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 19	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 40 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 19
Construction Plan Sheet No. C-2

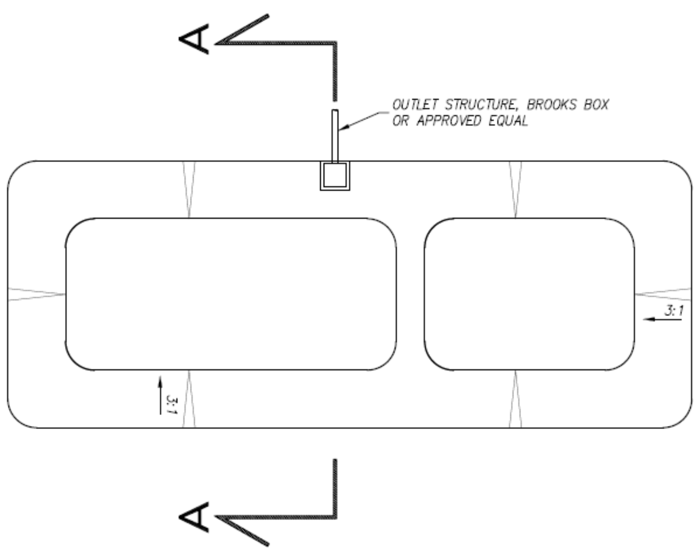
Discussion (as needed):

BMP 19 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

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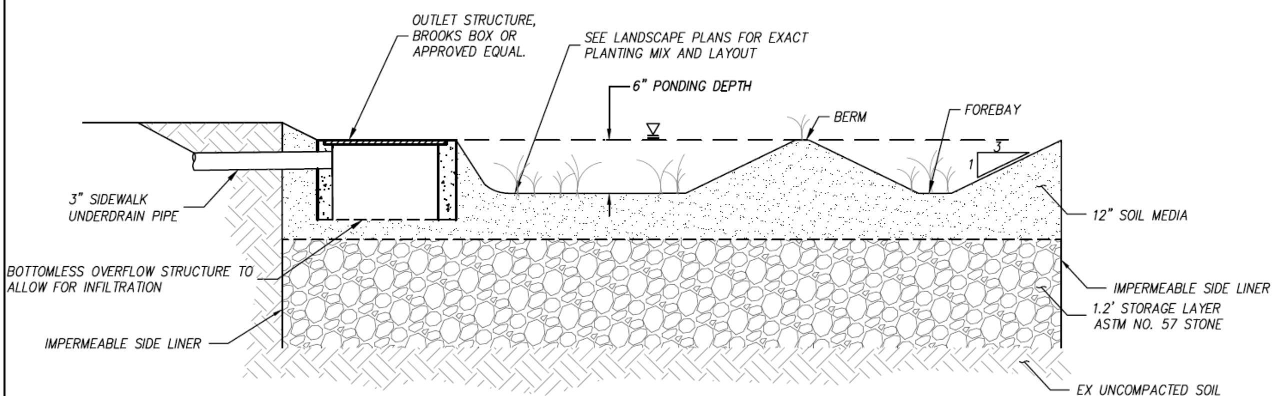
Form I-6 Page 41 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 20	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 42 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 20
Construction Plan Sheet No. C-2

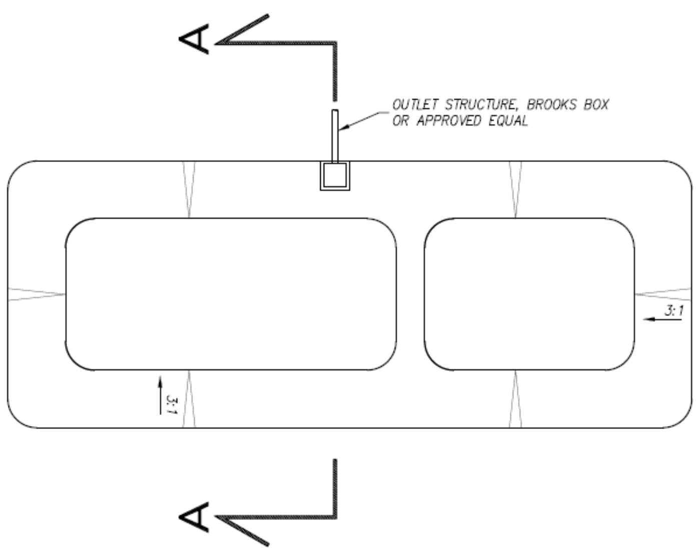
Discussion (as needed):

BMP 20 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS

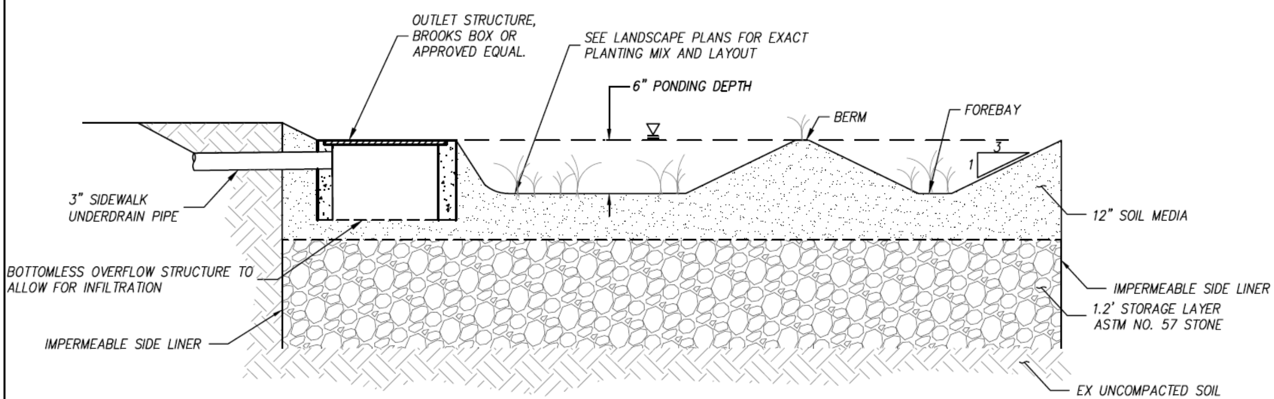


INFILTRATION BASIN DETAIL

NTS

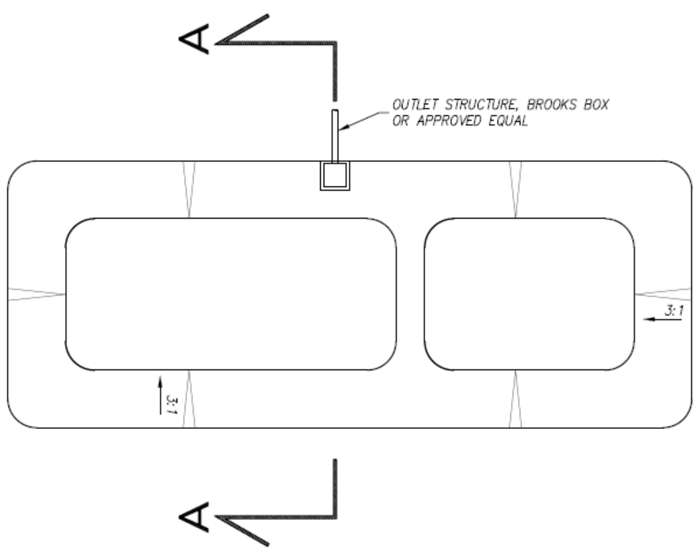
Form I-6 Page 43 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 21	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 44 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 21
Construction Plan Sheet No. C-2
Discussion (as needed): BMP 21 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

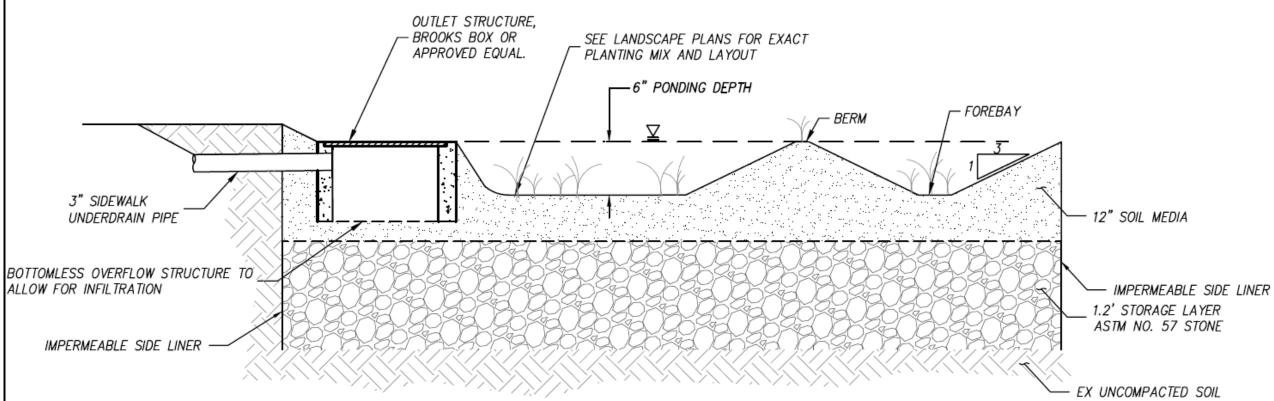
NTS

Form I-6 Page 45 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 22	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 46 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 22
Construction Plan Sheet No. C-2

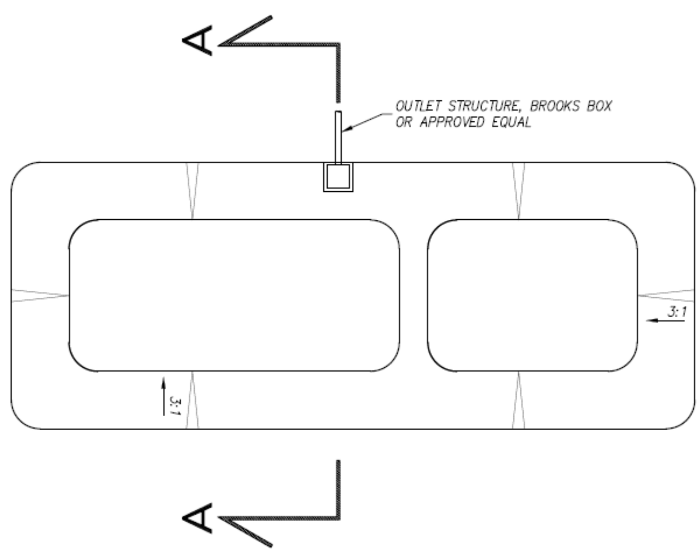
Discussion (as needed):

BMP 22 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

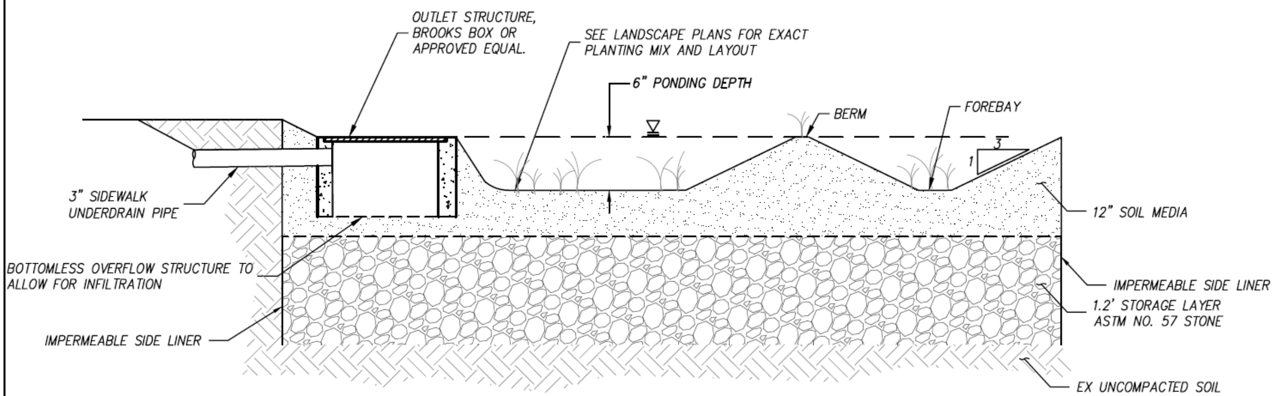
Form I-6 Page 47 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 23	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 23

Construction Plan Sheet No. C-2

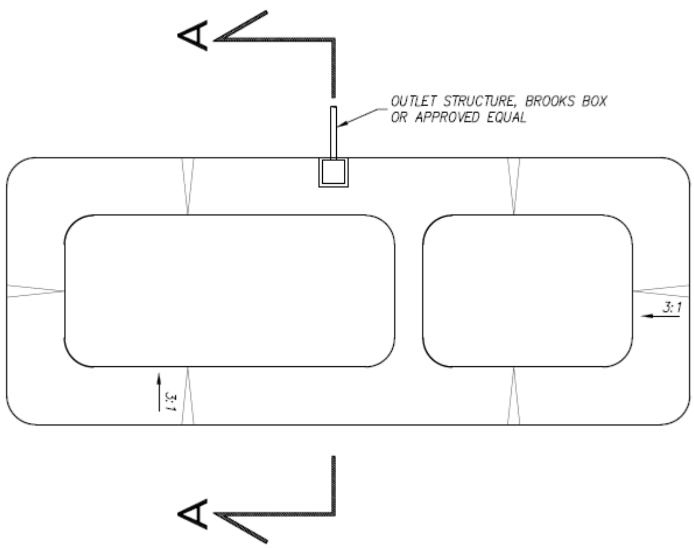
Discussion (as needed):

BMP 23 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

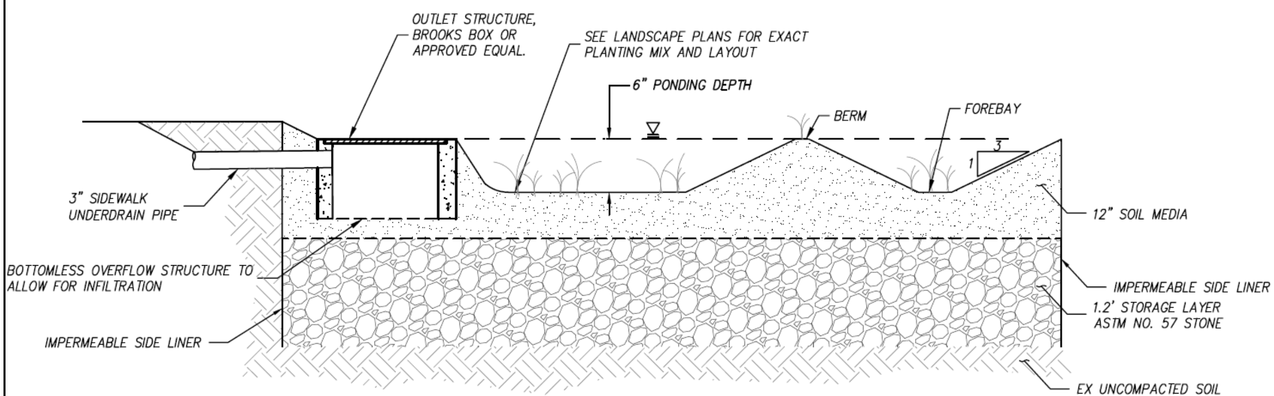
latitude 33 PLANNING & ENGINEERING

Structural BMP Summary Information	
Structural BMP ID No. BMP 24	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 50 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 24
Construction Plan Sheet No. C-2

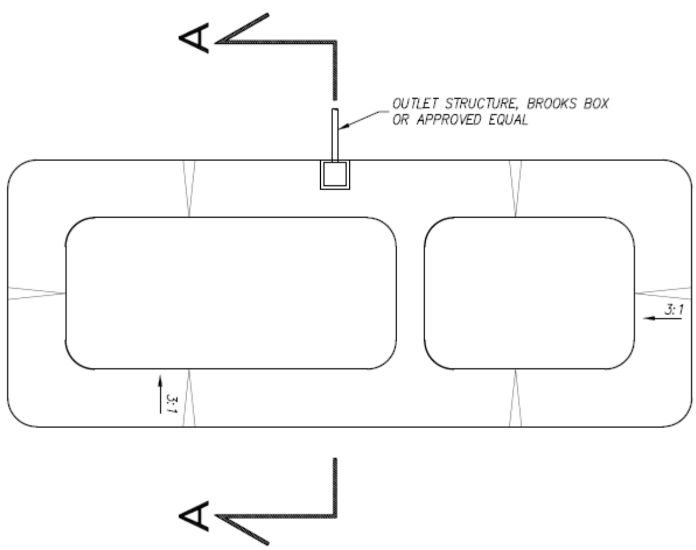
Discussion (as needed):

BMP 24 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 1: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

Form I-6 Page 51 of 62 (Copy as many as needed)
Structural BMP Summary Information
Structural BMP ID No. BMP 25
Construction Plan Sheet No. C-2

Type of structural BMP:

- ☐ Retention by harvest and use (HU-1)
- ☒ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below
- ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below
- ☐ Detention pond of vault for hydromodification management
- ☐ Other (describe in discussion section below)

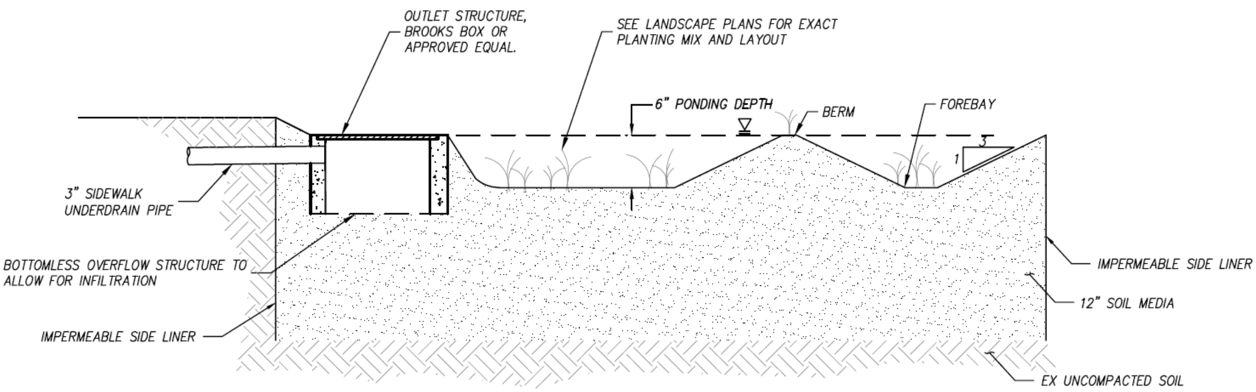
Purpose:

- ☒ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification control
- ☐ Pre-treatment / forebay for another structural BMP
- ☐ Other (describe in discussion section below

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

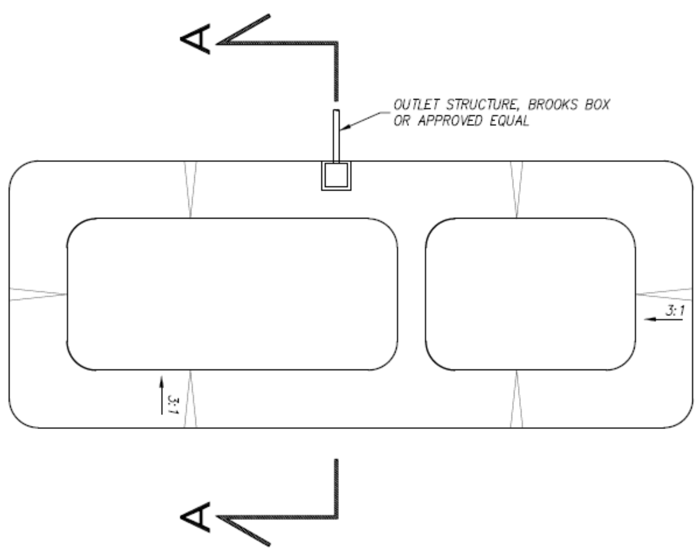
Form I-6 Page 52 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 25
Construction Plan Sheet No. C-2
Discussion (as needed):

BMP 25 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 2: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

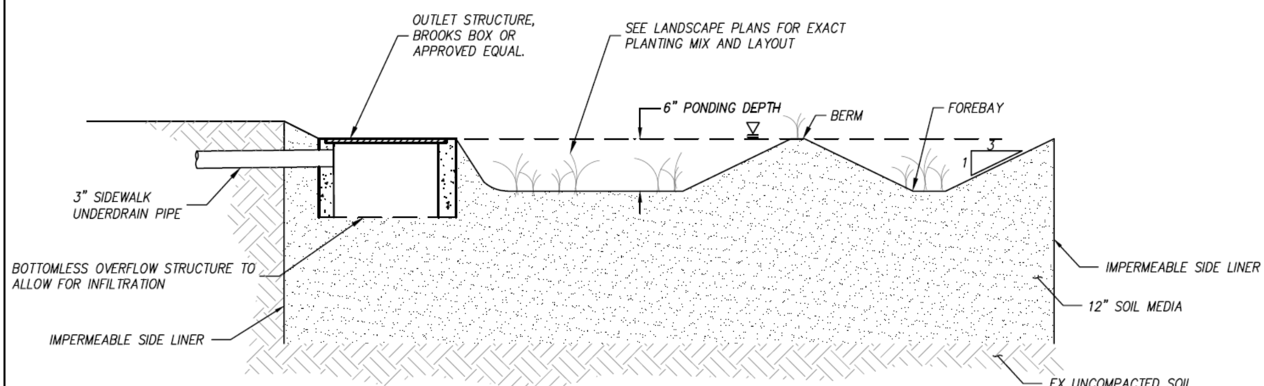
NTS

Form I-6 Page 53 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 26	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 26
Construction Plan Sheet No. C-2

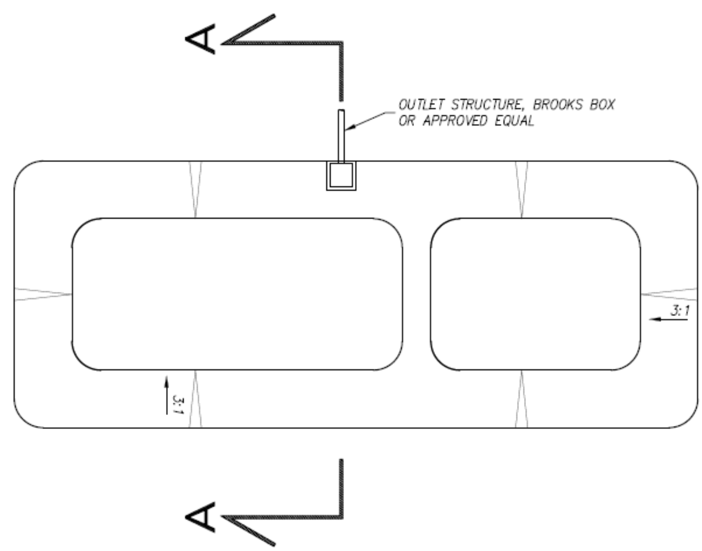
Discussion (as needed):

BMP 26 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 2: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

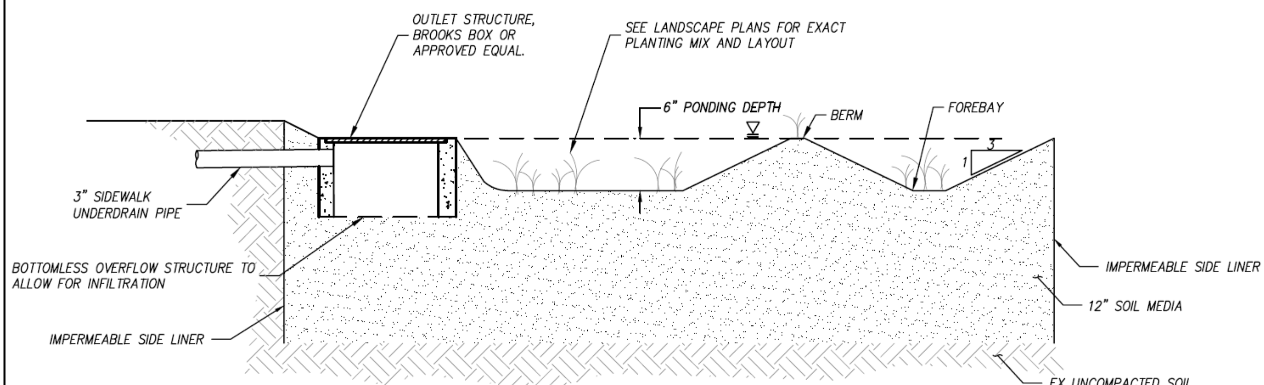
Form I-6 Page 55 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 27	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 27

Construction Plan Sheet No. C-2

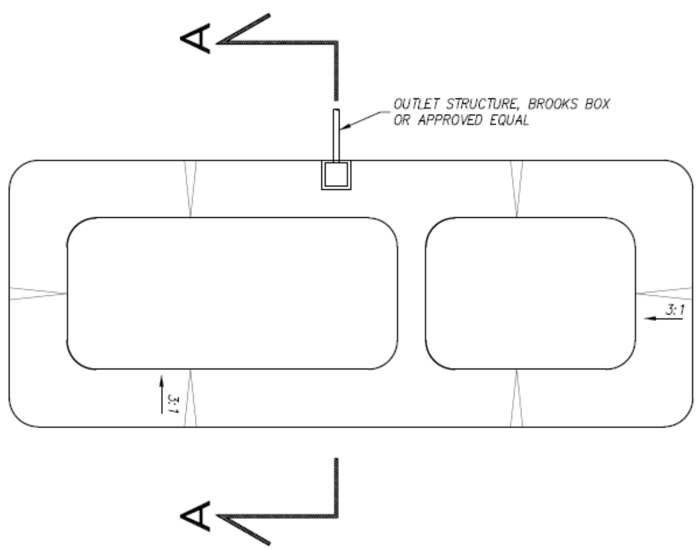
Discussion (as needed):

BMP 27 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 2: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

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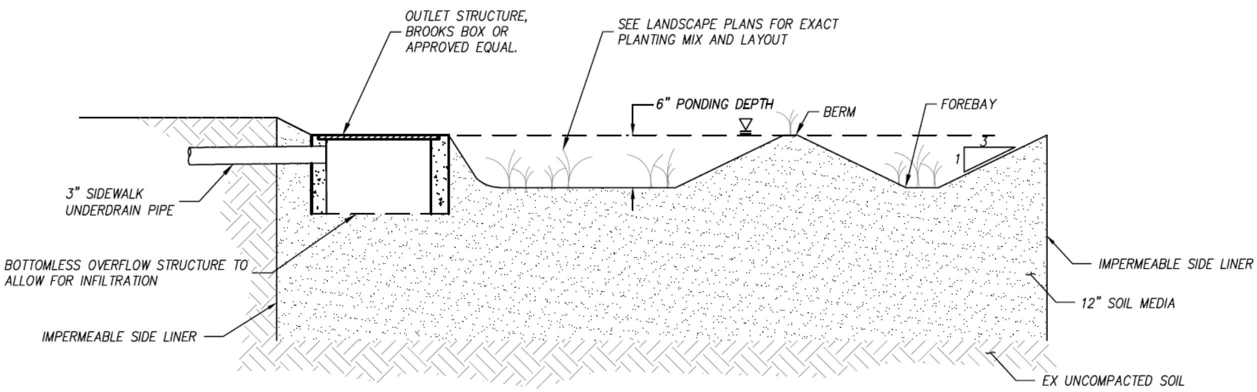
Form I-6 Page 57 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 28	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 28
Construction Plan Sheet No. C-2

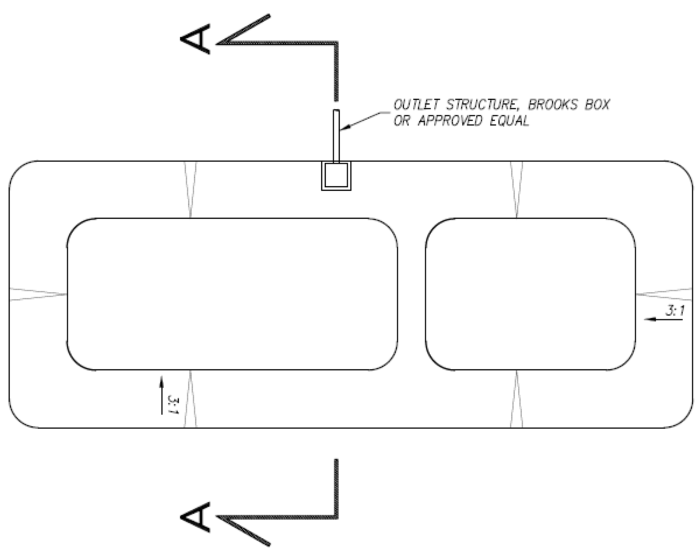
Discussion (as needed):

BMP 28 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 2: SECTION A-A

NTS



INFILTRATION BASIN DETAIL

NTS

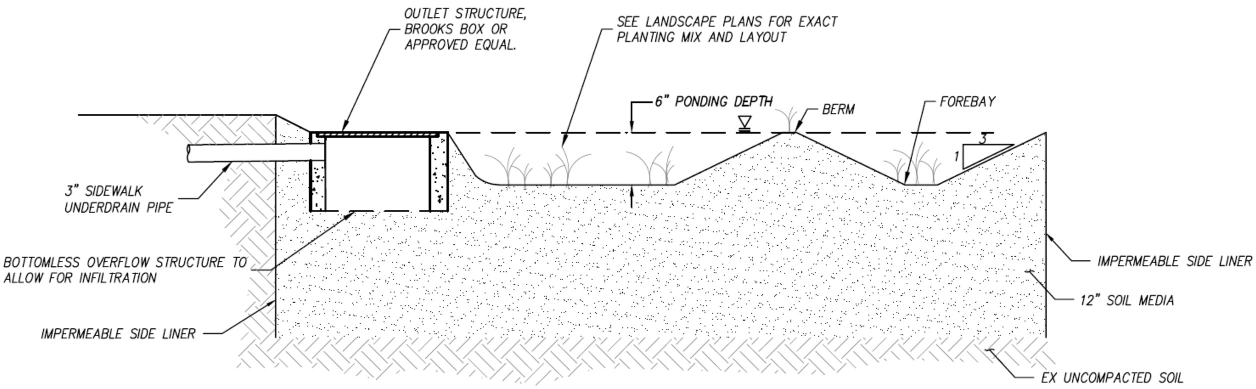
Form I-6 Page 59 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 29	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Structural BMP ID No. BMP 29

Construction Plan Sheet No. C-2

Discussion (as needed):

BMP 29 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 2: SECTION A-A

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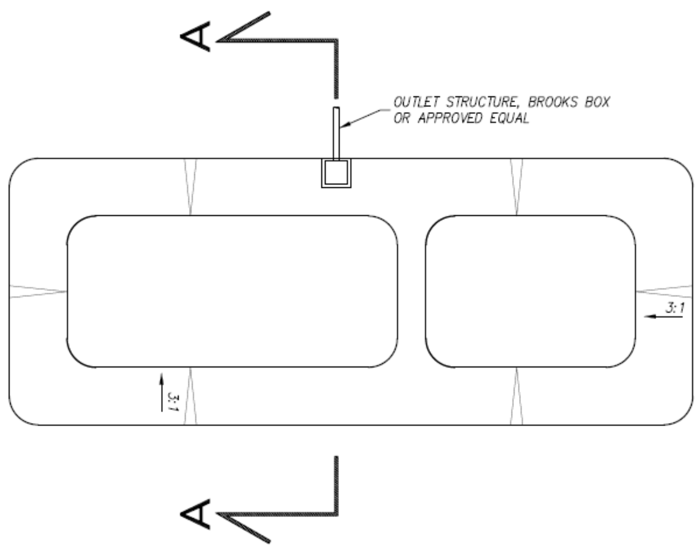

INFILTRATION BASIN DETAIL

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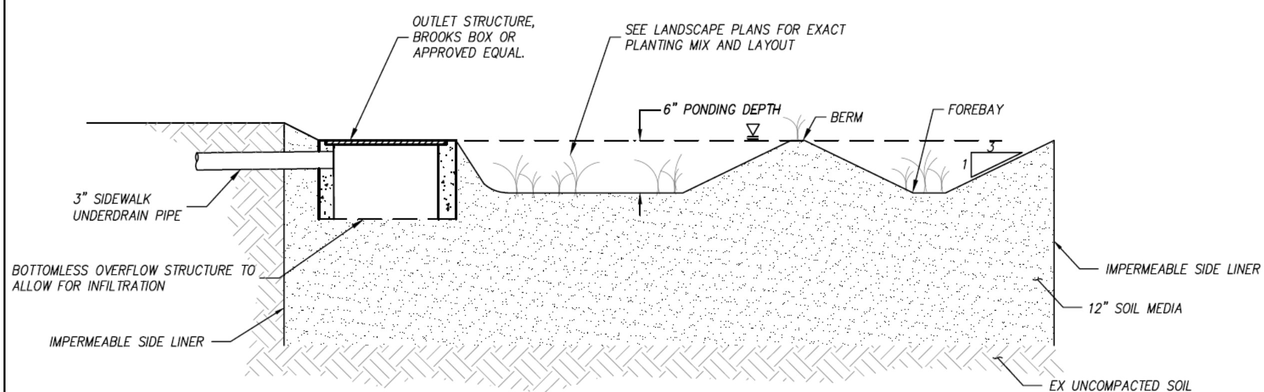
Form I-6 Page 61 of 62 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 30	
Construction Plan Sheet No. C-2	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☒ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (Provide BMP type / Description in discussion section below ☐ Flow-thru treatment control included as pre-treatment / forebay for an onsite retention or biofiltration BMP (provide BMP type / description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type / description in discussion section below ☐ Detention pond of vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment / forebay for another structural BMP ☐ Other (describe in discussion section below	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Giovanni Posillico, RCE 66332 Latitude 33 Planning & Engineering 9968 Hibert Street Second Floor San Diego, CA 92131 (858) 751-0633
Who will be the final owner of this BMP?	Pathfinder Crown Point Apartments, LLC
Who will maintain this BMP into perpetuity?	Pathfinder Crown Point Apartments, LLC
What is the funding mechanism for maintenance?	Pathfinder Crown Point Apartments, LLC

Form I-6 Page 62 of 62 (Copy as many as needed)
Structural BMP ID No. BMP 30
Construction Plan Sheet No. C-2
Discussion (as needed): BMP 30 proposes an infiltration basin with for pollutant control purposes. An overflow structure is provided in the basin to bypass the storm drain system in the case of a large storm event.



DETAIL 2: SECTION A-A

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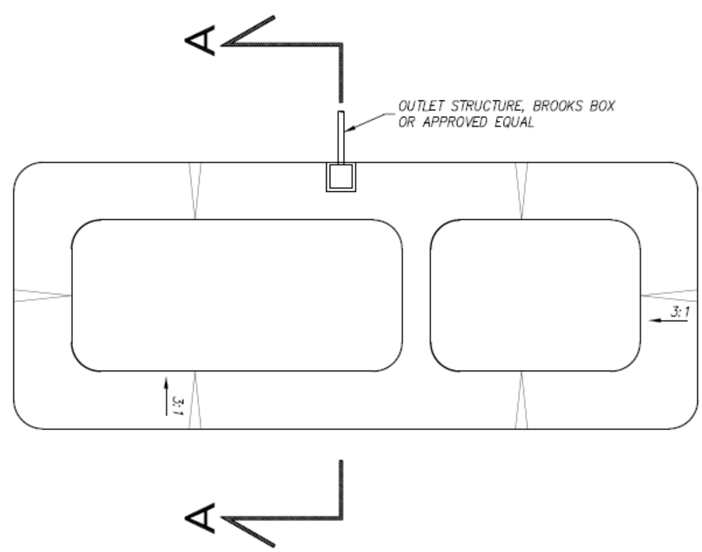

INFILTRATION BASIN DETAIL

NTS

	City of San Diego **Development Services** 1222 First Ave., MD-302 San Diego, CA 92101 (619) 446-5000	**Permanent BMP Construction** **Self Certification Form**	FORM DS-563 January 2016

THE CITY OF SAN DIEGO

Date Prepared:	Project No.:
Project Applicant:	Phone:
Project Address:	
Project Engineer:	Phone:

The purpose of this form is to verify that the site improvements for the project, identified above, have been constructed in conformance with the approved Storm Water Quality Management Plan (SWQMP) documents and drawings.

This form must be completed by the engineer and submitted prior to final inspection of the construction permit. Completion and submittal of this form is required for all new development and redevelopment projects in order to comply with the City's Storm Water ordinances and NDPES Permit Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100. Final inspection for occupancy and/or release of grading or public improvement bonds may be delayed if this form is not submitted and approved by the City of San Diego.

CERTIFICATION:
As the professional in responsible charge for the design of the above project, I certify that I have inspected all constructed Low Impact Development (LID) site design, source control and structural BMP's required per the approved SWQMP and Construction Permit No.________________________; and that said BMP's have been constructed in compliance with the approved plans and all applicable specifications, permits, ordinances and Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100 of the San Diego Regional Water Quality Control Board.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

Signature: ____________________________

Date of Signature: ____________________________

Printed Name: ____________________________

Title: ____________________________

Phone No. ____________________________

Engineer's Stamp

DS-563 (01-16)

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ATTACHMENT 1
BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

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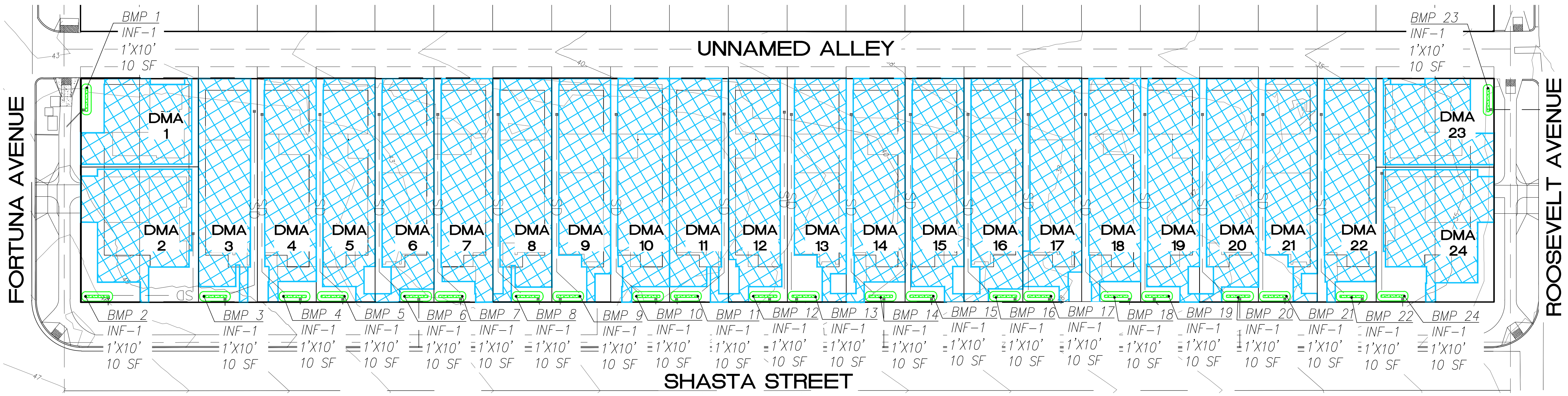
Indicate which Items are Included:

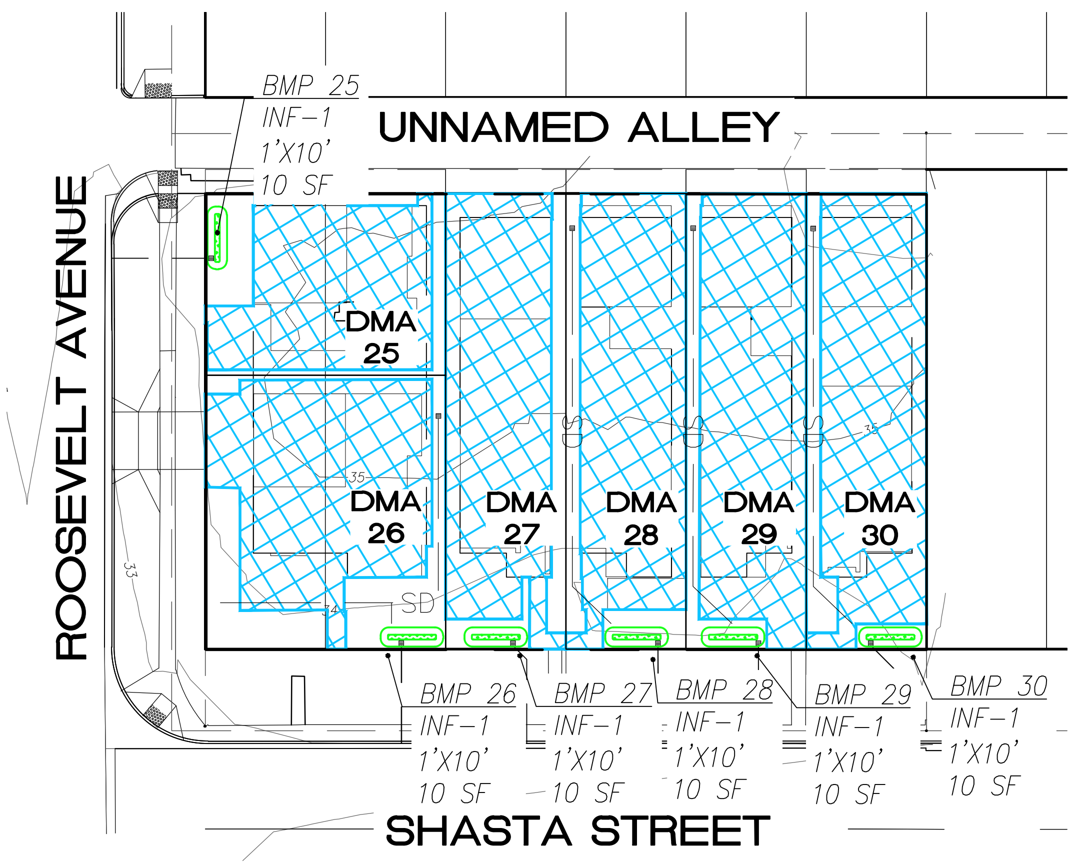
Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist.	☒ Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☒ Included on DMA Exhibit in Attachment 1a ☐ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	☒ Included ☐ Not included because the entire project will use infiltration BMPs
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	☒ Included ☐ Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines and site design credit calculations	☒ Included

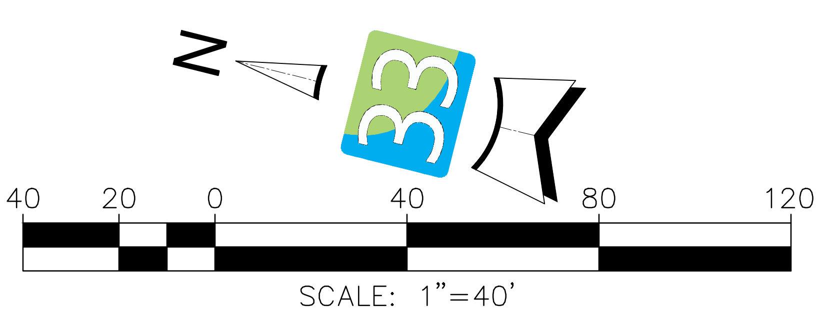
Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

- ☐ Underlying hydrologic soil group N/A
- ☐ Approximate depth to groundwater N/A
- ☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands) N/A
- ☐ Critical coarse sediment yield areas to be protected N/A
- ☒ Existing topography and impervious areas
- ☒ Existing and proposed site drainage network and connections to drainage offsite
- ☒ Proposed grading
- ☒ Proposed impervious features
- ☐ Proposed design features and surface treatments used to minimize imperviousness N/A
- ☒ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
- ☐ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B) N/A
- ☒ Structural BMPs (identify location, type of BMP, and size/detail)







DMA TABULAR SUMMARY

DMA	AREA (SF)	IMP AREA (SF)	PER AREA (SF)	INF–1 (SF)
1	1875	1447	428	10
2	2877	1962	915	10
3	2376	1948	428	10
4	2376	1913	463	10
5	2376	1958	421	10
6	2376	1976	400	10
7	2376	1955	421	10
8	2376	1958	418	10
9	2376	1783	593	10
10	2376	1954	422	10
11	2375	1961	415	10
12	2375	1934	438	10
13	2375	1808	567	10
14	2375	1941	434	10
15	2375	1947	428	10
16	2375	1976	399	10
17	2375	1980	395	10
18	2375	1924	451	10
19	2375	1947	428	10
20	2375	1965	410	10
21	2375	1808	566	10
22	2374	1922	453	10
23	1885	1447	438	10
24	2864	1958	906	10
25	1895	1458	438	10
26	2855	1959	896	10
27	2375	1966	409	10
28	2375	1948	427	10
29	2375	2014	361	10
30	2375	1984	392	10

EXISTING SITE INFORMATION

HYDROLOGIC SOIL GROUP: SOIL CLASS TYPE "A"

EXISTING DRAINAGE: ALL ONSITE RUNOFF IS COLLECTED VIA CURB AND GUTTER INTO A STORM DRAIN INLET AT JEWELL STREET AND LA PLAYA AVENUE, THEN DISCHARGES INTO MISSION BAY.

PROPOSED SITE INFORMATION

PROPOSED DRAINAGE: ONSITE RUNOFF IS COLLECTED VIA INFILTRATION BASINS. PROPOSED OVERFLOW STRUCTURES WITH SIDEWALK UNDERDRAINS OUTLET INTO EXISTING CURB AND GUTTER AND MAINTAINS EXISTING DRAINAGE PATTERNS.

PROPOSED IMPERVIOUS FEATURES: INCLUDES ROOFS, SIDEWALK, AND DRIVEWAYS SHOWN HEREON.

PROPOSED DESIGN FEATURES: SITE DESIGN REQUIREMENTS SHOWN HEREON. SEE FORM I-4 FOR EXPLANATION.

DRAINAGE MANAGEMENT AREAS: SHOWN HEREON. SEE DMA SUMMARY TABLE.

STRUCTURAL BMPS: INF–1 THROUGH INF–1 ARE FULL INFILTRATION BASINS

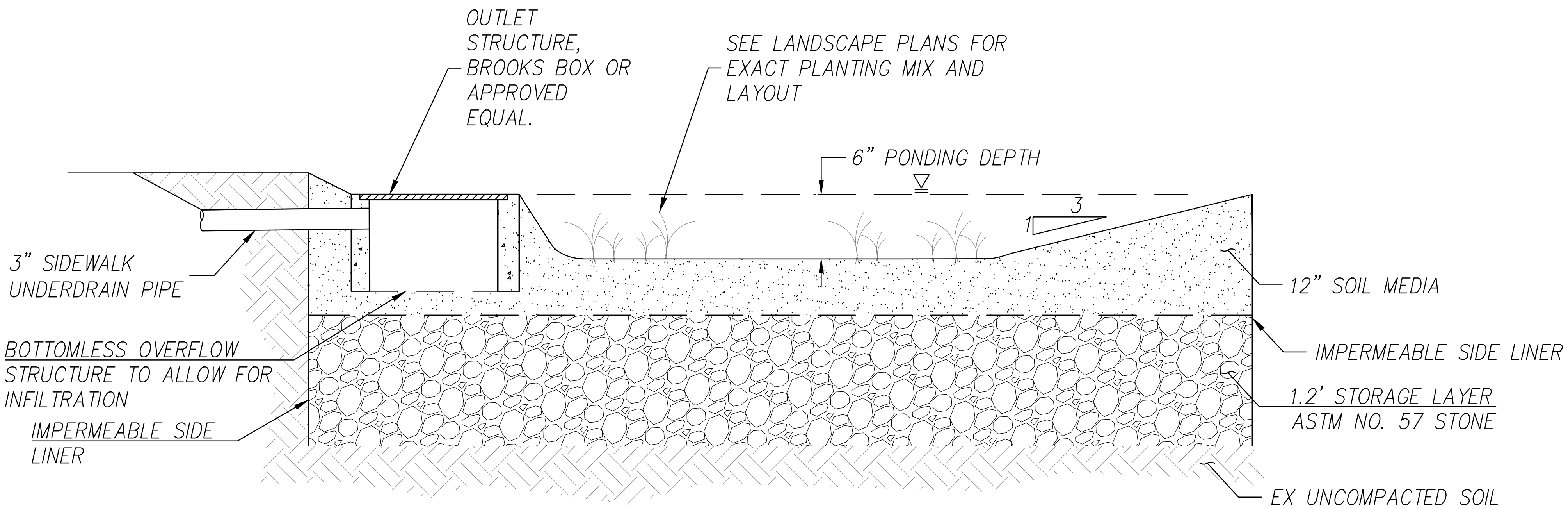
LEGEND

DMA BOUNDARY	
IMPERVIOUS AREA	
INFILTRATION BASIN (INF)	

ATTACHMENT 1A DMA EXHIBIT/2A HMP EXHIBIT

SCALE:	1"=40'	JOB NO.:	1305.20
DATE:	05-12-2017	SHEET:	1 OF 2

latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633



DETAIL 1: SECTION A-A

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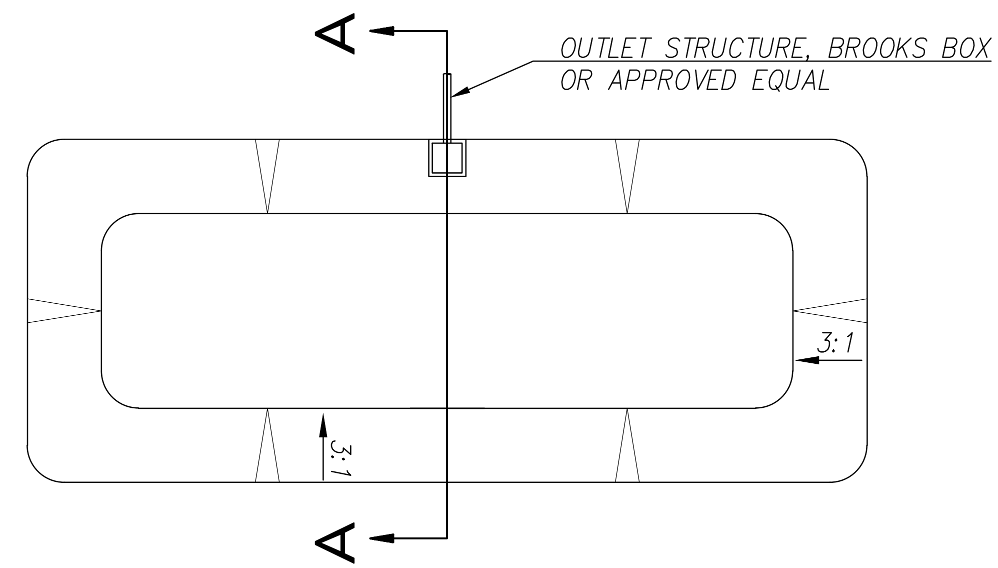
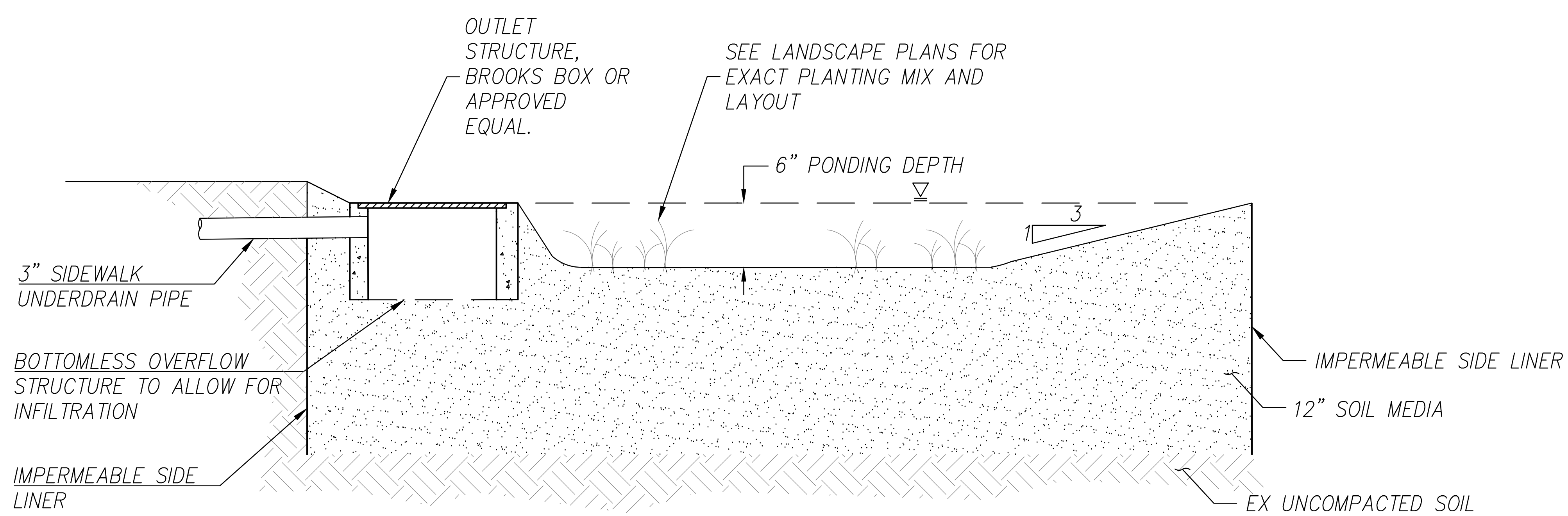


INFILTRATION BASIN DETAIL

NTS



DETAIL 2: SECTION A-A

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ATTACHMENT 1A DMA EXHIBIT/2A HMP EXHIBIT

SCALE:	NO SCALE	JOB NO.:	1305.20
DATE:	05-15-2017	SHEET:	2 OF 2

latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

Harvest and Use Feasibility Screening	Form I-7

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?

☒ Toilet and urinal flushing
☒ Landscape Irrigation
☐ Other: ________________

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.

Per Table B.3-1, Residential flushes per day amounts to 18.5/3.45 = 5.36 flushes/day. This is a new development which will employ the use of low-flow toilets. So, (5.36 flushes/day)x(1.6 gallons/flush)x(0.5 WEF) = (4.3 gallons/resident-day)*(126 residents) = (541.8 gallons/day)
(541.8 gallons/day)*1.5 = 812.7 gallons 36 hour demand

(812.7 gallons) * (1 cubic foot/7.48 gallons) => 36 Hour Demand = **109 Cubic Feet**

Assumed Moderate Plant Water use per Table B3-3.

Landscape = (1,470 gallons/irrigated acre)*(0.34 acres) = 499.8 gallons 36 hour demand

(466.8 gallons)*(1 cubic foot/7.48 gallons) => 36 Hour Demand = **62 Cubic Feet**

Total 36 Hour Demand = **171 Cubic Feet**

3. Calculate the DCV using worksheet B-2.1.

DCV= **2,230 cubic feet > 171 cubic feet**

0.25 DCV= **557.5 cubic feet > 171 cubic feet**

3a. Is the 36-hour demand greater than or equal to the DCV? Yes / No	3b. Is the 36-hour demand greater than 0.25 DCV but less than the full DCV? Yes / No	3c. Is the 36-hour demand less than 0.25DCV? Yes
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible.

Is harvest and use feasible based on further evaluation?

☐ Yes, refer to appendix E to select and size harvest and use BMPs
☒ No, select alternate BMPs

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

Categorization of Infiltration Feasibility Condition			**Worksheet C.4-1**
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?** Note that it is not necessary to investigate each and every criterion in the worksheet if infiltration is precluded. Instead a letter of justification from a geotechnical professional familiar with the local conditions substantiating any geotechnical issues will be required.			
Criteria	Screening Question	**Yes**	**No**
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	
Provide basis: *The design infiltration rate of the existing soils for locations I-1 through I-4 based on the on-site infiltration study conducted by Geocon (2016) was calculated to be more than 0.5 inches per hour after applying a minimum factor of safety.* [illegible] [illegible] [illegible] [illegible] Geocon (2016)			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: *C2.1 A geologic investigation was performed at the subject site by Geocon 2016 and NOVA 2017.* *C2.2 After the investigation performed by NOVA 2017, the findings support the judgment that the site will exhibit negligible compression upon saturation.* *C2.3 No slopes are within close proximity to the site.* *C2.4 BMPs should be at minimum of 10 feet from any utilities.* *C2.5 Stormwater infiltration can result in damaging ground water mounding during wet periods, however groundwater elevations were estimated by Geocon to be at depths greater than 30 feet below existing grade.* *C2.6 BMPs should be at a minimum of 10 feet from retaining walls and foundations.* *C2.7 Other Factors: After evaluating the compressibility, depth of testing, and soil density, it is NOVA's opinion that the site is capable of full infiltration.*			

Worksheet C.4-1 Page 2 of 4			
Criteria	Screening Question	**Yes**	**No**
3	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: *Water contamination was not evaluated by Geocon nor NOVA services.*			
4	**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: *The potential for water balance was not evaluated by Geocon nor NOVA services.*			
Part 1 Result*	If all answers to rows 1 - 4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration** If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2	YES	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by County staff to substantiate findings.

Worksheet C.4-1 Page 3 of 4			
Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria **Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?**			
Criteria	Screening Question	**Yes**	**No**
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	
Provide basis: *See criteria 1.*			
6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: *See criteria 2.*			

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: *Water contamination was not evaluated by Geocon nor NOVA services.*			
8	**Can infiltration be allowed without violating downstream water rights**? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: *The potential for water balance was not evaluated by Geocon nor NOVA services.*			
Part 2 Result*	If all answers from row 5-8 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**		

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Shasta East
DMA 1

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1446.78	0.033213	0.90	0.030	96.8%
Landscape	428.37	0.009834	0.10	0.000983	3.2%
TOTAL	**1875.15**	**0.04**	**1.00**	**0.03**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.04	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.72	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**57.16**	**cubic-feet**

Shasta East
DMA 1

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	57.16	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	5.72	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	18.29	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 2

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1962.37	0.04505	0.90	0.041	95.1%
Landscape	914.95	0.021004	0.10	0.0021	4.9%
TOTAL	**2877.32**	**0.07**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.07	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.65	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**78.95**	**cubic-feet**

Shasta East
DMA 2

Design Capture Volume		Worksheet B-4.1		
1	DCV (Worksheet B-2.1)	DCV=	78.95	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)	K_{design}=	3.75	in/hr
3	Available BMP surface area	A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})	D_{avg}=	7.89	feet
5	Drawdown time, T (D_{avg}*12/K_{design})	T=	25.26	hours
6	Provide alternative calculation of drawdown time, if needed.			

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 3

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1947.80	0.044715	0.90	0.040	97.6%
Landscape	428.34	0.009833	0.10	0.000983	2.4%
TOTAL	**2376.14**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

Design Capture Volume		Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.32**	**cubic-feet**

Shasta East
DMA 3

Design Capture Volume		Worksheet B-4.1		
1	DCV (Worksheet B-2.1)	DCV=	76.32	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)	K_{design}=	3.75	in/hr
3	Available BMP surface area	A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})	D_{avg}=	7.63	feet
5	Drawdown time, T (D_{avg}*12/K_{design})	T=	24.42	hours
6	Provide alternative calculation of drawdown time, if needed.			

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 4

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1912.68	0.043909	0.90	0.040	97.4%
Landscape	463.37	0.010638	0.10	0.001064	2.6%
TOTAL	**2376.05**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85[th] percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.74	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**75.13**	**cubic-feet**

Shasta East
DMA 4

Design Capture Volume		Worksheet B-4.1		
1	DCV (Worksheet B-2.1)	DCV=	75.13	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)	K_{design}=	3.75	in/hr
3	Available BMP surface area	A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})	D_{avg}=	7.51	feet
5	Drawdown time, T (D_{avg}*12/K_{design})	T=	24.04	hours
6	Provide alternative calculation of drawdown time, if needed.			

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 5

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1954.74	0.044875	0.90	0.040	97.7%
Landscape	421.23	0.00967	0.10	0.000967	2.3%
TOTAL	**2375.97**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85[th] percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.56**	**cubic-feet**

Shasta East
DMA 5

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.56	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.66	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.50	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 6

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1975.74	0.045357	0.90	0.041	97.8%
Landscape	400.14	0.009186	0.10	0.000919	2.2%
TOTAL	**2375.88**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.77	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**77.27**	**cubic-feet**

Shasta East
DMA 6

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	77.27	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.73	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.73	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 7

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1955.17	0.044885	0.90	0.040	97.7%
Landscape	420.61	0.009656	0.10	0.000966	2.3%
TOTAL	**2375.78**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.57**	**cubic-feet**

Shasta East
DMA 7

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.57	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.66	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.50	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 8

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1957.49	0.044938	0.90	0.040	97.7%
Landscape	418.21	0.009601	0.10	0.00096	2.3%
TOTAL	**2375.70**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85^{th} percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.65**	**cubic-feet**

Shasta East
DMA 8

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.65	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.67	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.53	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 9

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1783.02	0.040933	0.90	0.037	96.4%
Landscape	592.59	0.013604	0.10	0.00136	3.6%
TOTAL	**2375.61**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

Design Capture Volume		Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.70	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**70.72**	**cubic-feet**

Shasta East
DMA 9

Design Capture Volume		Worksheet B-4.1		
1	DCV (Worksheet B-2.1)	DCV=	70.72	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)	K_{design}=	3.75	in/hr
3	Available BMP surface area	A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})	D_{avg}=	7.07	feet
5	Drawdown time, T (D_{avg}*12/K_{design})	T=	22.63	hours
6	Provide alternative calculation of drawdown time, if needed.			

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 10

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1953.50	0.044846	0.90	0.040	97.7%
Landscape	422.03	0.009688	0.10	0.000969	2.3%
TOTAL	**2375.53**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.52**	**cubic-feet**

Shasta East
DMA 10

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.52	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.65	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.48	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 11

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1960.69	0.045011	0.90	0.041	97.7%
Landscape	414.75	0.009521	0.10	0.000952	2.3%
TOTAL	**2375.44**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.76**	**cubic-feet**

Shasta East
DMA 11

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.76	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.68	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.56	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 12

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1937.68	0.044483	0.90	0.040	97.6%
Landscape	437.67	0.010048	0.10	0.001005	2.4%
TOTAL	**2375.35**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.75	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**75.98**	**cubic-feet**

Shasta East
DMA 12

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	75.98	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.60	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.31	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 13

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1808.22	0.041511	0.90	0.037	96.6%
Landscape	567.05	0.013018	0.10	0.001302	3.4%
TOTAL	**2375.27**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.71	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**71.57**	**cubic-feet**

Shasta East
DMA 13

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	71.57	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.16	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	22.90	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 14

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1941.10	0.044562	0.90	0.040	97.6%
Landscape	434.08	0.009965	0.10	0.000997	2.4%
TOTAL	**2375.18**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.75	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.09**	**cubic-feet**

Shasta East
DMA 14

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.09	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.61	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.35	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 15

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1947.06	0.044698	0.90	0.040	97.6%
Landscape	428.03	0.009826	0.10	0.000983	2.4%
TOTAL	**2375.09**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.29**	**cubic-feet**

Shasta East
DMA 15

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.29	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.63	feet
5	Drawdown time, T ($D_{avg}*12/K_{design}$)					T=	24.41	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 16

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1975.87	0.04536	0.90	0.041	97.8%
Landscape	399.13	0.009163	0.10	0.000916	2.2%
TOTAL	**2375.00**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85^{th} percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.77	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**77.27**	**cubic-feet**

Shasta East
DMA 16

Design Capture Volume		Worksheet B-4.1		
1	DCV (Worksheet B-2.1)	DCV=	77.27	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)	K_{design}=	3.75	in/hr
3	Available BMP surface area	A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})	D_{avg}=	7.73	feet
5	Drawdown time, T (D_{avg}*12/K_{design})	T=	24.73	hours
6	Provide alternative calculation of drawdown time, if needed.			

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 17

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1979.76	0.045449	0.90	0.041	97.8%
Landscape	395.15	0.009071	0.10	0.000907	2.2%
TOTAL	**2374.91**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.77	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**77.41**	**cubic-feet**

Shasta East
DMA 17

Design Capture Volume		Worksheet B-4.1	
1	DCV (Worksheet B-2.1)	DCV=	77.41	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)	K_{design}=	3.75	in/hr
3	Available BMP surface area	A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})	D_{avg}=	7.74	feet
5	Drawdown time, T (D_{avg}*12/K_{design})	T=	24.77	hours
6	Provide alternative calculation of drawdown time, if needed.			

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 18

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1923.88	0.044166	0.90	0.040	97.5%
Landscape	450.95	0.010352	0.10	0.001035	2.5%
TOTAL	**2374.83**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.75	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**75.50**	**cubic-feet**

Shasta East
DMA 18

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	75.50	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.55	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.16	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 19

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1946.52	0.044686	0.90	0.040	97.6%
Landscape	428.22	0.009831	0.10	0.000983	2.4%
TOTAL	**2374.74**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.27**	**cubic-feet**

Shasta East
DMA 19

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.27	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.63	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.41	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 20

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1964.61	0.045101	0.90	0.041	97.7%
Landscape	410.05	0.009413	0.10	0.000941	2.3%
TOTAL	**2374.66**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.89**	**cubic-feet**

Shasta East
DMA 20

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.89	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.69	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.60	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 21

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1808.22	0.041511	0.90	0.037	96.6%
Landscape	566.35	0.013002	0.10	0.0013	3.4%
TOTAL	**2374.57**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.71	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**71.57**	**cubic-feet**

Shasta East
DMA 21

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	71.57	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.16	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	22.90	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 22

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1921.67	0.044115	0.90	0.040	97.4%
Landscape	452.81	0.010395	0.10	0.00104	2.6%
TOTAL	**2374.48**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.75	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**75.43**	**cubic-feet**

Shasta East
DMA 22

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	75.43	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.54	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.14	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 23

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1447.11	0.033221	0.90	0.030	96.7%
Landscape	438.35	0.010063	0.10	0.001006	3.3%
TOTAL	**1885.46**	**0.04**	**1.00**	**0.03**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.04	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.71	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**57.21**	**cubic-feet**

Shasta East
DMA 23

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	57.21	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	5.72	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	18.31	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 24

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1958.32	0.044957	0.90	0.040	95.1%
Landscape	906.04	0.0208	0.10	0.00208	4.9%
TOTAL	**2864.36**	**0.07**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.07	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.65	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**78.76**	**cubic-feet**

Shasta East
DMA 24

Design Capture Volume		Worksheet B-4.1		
1	DCV (Worksheet B-2.1)	DCV=	78.76	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)	K_{design}=	3.75	in/hr
3	Available BMP surface area	A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})	D_{avg}=	7.88	feet
5	Drawdown time, T (D_{avg}*12/K_{design})	T=	25.20	hours
6	Provide alternative calculation of drawdown time, if needed.			

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 25

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1457.62	0.033462	0.90	0.030	96.8%
Landscape	437.51	0.010044	0.10	0.001004	3.2%
TOTAL	**1895.13**	**0.04**	**1.00**	**0.03**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.04	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.72	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**57.61**	**cubic-feet**

Shasta East
DMA 25

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	57.61	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	5.76	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	18.44	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 26

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1959.33	0.04498	0.90	0.040	95.2%
Landscape	895.71	0.020563	0.10	0.002056	4.8%
TOTAL	**2855.04**	**0.07**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.07	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.65	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**78.75**	**cubic-feet**

Shasta East
DMA 26

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	78.75	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.88	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	25.20	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 27

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1966.37	0.045142	0.90	0.041	97.7%
Landscape	408.80	0.009385	0.10	0.000938	2.3%
TOTAL	**2375.17**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85^{th} percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.95**	**cubic-feet**

Shasta East
DMA 27

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.95	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.70	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.62	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 28

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1947.82	0.044716	0.90	0.040	97.6%
Landscape	427.42	0.009812	0.10	0.000981	2.4%
TOTAL	**2375.24**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.76	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**76.32**	**cubic-feet**

Shasta East
DMA 28

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	76.32	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.63	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.42	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 29

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	2014.29	0.046242	0.90	0.042	98.0%
Landscape	361.01	0.008288	0.10	0.000829	2.0%
TOTAL	**2375.30**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.78	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**78.58**	**cubic-feet**

Shasta East
DMA 29

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	78.58	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.86	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	25.15	hours
6	Provide alternative calculation of drawdown time, if needed.							

<u>Notes:</u>

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

Shasta East
DMA 30

DESIGN CAPTURE VOLUME

Use	Area (SF)	Area (ac)	C	C·A (ac)	% DCV
Hardscape	1983.66	0.045539	0.90	0.041	97.9%
Landscape	391.70	0.008992	0.10	0.000899	2.1%
TOTAL	**2375.36**	**0.05**	**1.00**	**0.04**	**100%**

B.1.1 Runoff Factor

Estimate the area weighted runoff factor for the tributary area to the BMP using runoff factor (from Table B.1-1) and area of each surface type in the tributary area and the following equation:

$$C = \frac{\sum C_x A_x}{\sum A_x}$$

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

	Design Capture Volume	Worksheet B-2.1		
1	85[th] percentile 24-hr storm depth from Figure B.1-1	d=		inches
2	Area tributary to BMP (s)	A=		acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=		unitless
4	Street trees volume reduction	TCV=		cubic-feet
5	Rain barrels volume reduction	RCV=		cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=		cubic-feet

	Design Capture Volume	Worksheet B-2.1		
1	85TH PERCENTILE 24-HR STORM	D=	0.51	inches
2	AREA TRIBUTARY TO BMP (s)	A=	0.05	acres
3	AREA WEIGHTED RUNOFF FACTOR (ESTIMATE USING APPENDIX B.1.1 AND B.2.1)	C=	0.77	unitless
4	STREET TREES VOLUME REDUCTION	TCV=	-	cubic-feet
5	RAIN BARRELS VOLUME REDUCTION	RCV=	-	cubic-feet
6	CALCULATE DCV=(3630 X C X D X A) - TCV - RCV	**DCV=**	**77.54**	**cubic-feet**

Shasta East
DMA 30

Design Capture Volume						Worksheet B-4.1		
1	DCV (Worksheet B-2.1)					DCV=	77.54	cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)					K_{design}=	3.75	in/hr
3	Available BMP surface area					A_{BMP}=	10.00	sq-ft
4	Average Effective Depth in the BMP footprint (DCV/A_{BMP})					D_{avg}=	7.75	feet
5	Drawdown time, T (D_{avg}*12/K_{design})					T=	24.81	hours
6	Provide alternative calculation of drawdown time, if needed.							

Notes:

Drawdown time must be less than 36 hours. This criterion was set to achieve average annual capture of 80% to account for back to back storms (See rationale in section B.4.3). In order to use a different drawdown time, BMPs should be sized using the percent capture method (Section B.4.2).

The average effective depth calculation should account for any aggregate/media in the BMP. For example, 4 feet of stone at a porosity of 0.4 would equate to 1.6 feet of effective depth.

This method may overestimate drawdown time for BMPs that drain through both the bottom and walls of the system. BMP specific calculations of drawdown time may be provided that account for BMP-specific geometry.

ATTACHMENT 2
BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☒ Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

HMP EXEMPT EXHIBIT

ECO BLOK REMODEL

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ATTACHMENT 3
STRUCTURAL BMP MAINTENANCE INFORMATION

This is the cover sheet for Attachment 3.

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Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	☒ Included See Structural BMP Maintenance Information Checklist.
Attachment 3b	Maintenance Agreement (Form DS-3247) (when applicable)	☒ Included ☐ Not Applicable

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Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

Preliminary Design / Planning / CEQA level submittal:

- Attachment 3a must identify:
  - ☒ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual
- Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

Final Design level submittal:

Attachment 3a must identify:

- ☐ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐ When applicable, frequency of bioretention soil media replacement.
- ☐ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b must include a Storm Water Management and Discharge Control Maintenance Agreement (Form DS-3247). The following information must be included in the exhibits attached to the maintenance agreement:

- ☐ Vicinity map
- ☐ Site design BMPs for which DCV reduction is claimed for meeting the pollutant control obligations.
- ☐ BMP and HMP location and dimensions
- ☐ BMP and HMP specifications/cross section/model
- ☐ Maintenance recommendations and frequency
- ☐ LID features such as (permeable paver and LS location, dim, SF).

Typical Maintenance Indicator(s) for Vegetated BMPs	Maintenance Actions
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.
Overgrown vegetation	Mow or trim as appropriate, but not less than the design height of the vegetation per original plans when applicable (e.g. a vegetated swale may require a minimum vegetation height).
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the City Engineer shall be contacted prior to any additional repairs or reconstruction.
Standing water in vegetated swales	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, loosening or replacing top soil to allow for better infiltration, or minor re-grading for proper drainage. If the issue is not corrected by restoring the BMP to the original plan and grade, the City Engineer shall be contacted prior to any additional repairs or reconstruction.
Standing water in bioretention, biofiltration with partial retention, or biofiltration areas, or flow-through planter boxes for longer than 96 hours following a storm event*	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains (where applicable), or repairing/replacing clogged or compacted soils.
Obstructed inlet or outlet structure	Clear obstructions.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable.
*These BMPs typically include a surface ponding layer as part of their function which may take 96 hours to drain following a storm event.	

Typical Maintenance Indicator(s) for Detention Basins	Maintenance Actions
Poor vegetation establishment	Re-seed, re-establish vegetation.
Overgrown vegetation	Mow or trim as appropriate.
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or re-grading where necessary.
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials.
Standing water	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, or minor re-grading for proper drainage.
Obstructed inlet or outlet structure	Clear obstructions.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable.

The City of SAN DIEGO

RECORDING REQUESTED BY:
THE CITY OF SAN DIEGO AND
WHEN RECORDED MAIL TO:

Pathfinder Crown Point Apartments, LLC
4380 La Jolla Village Dr. Suite 250
San Diego, CA 92122

(THIS SPACE IS FOR RECORDER'S USE ONLY)

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT

APPROVAL NUMBER:	ASSESSORS PARCEL NUMBER:	PROJECT NUMBER:
	424-482-14 and 424-532-25	530514

This agreement is made by and between the City of San Diego, a municipal corporation [City] and Pathfinder Crown Point Apartments, LLC, the owner or duly authorized representative of the owner [Property Owner] of property located at

3977 Shasta Street
(PROPERTY ADDRESS)

and more particularly described as: Lots 1 through 24 of Block 17 and Lots 1 through 6 of Block 27 of Map No. 894
(LEGAL DESCRIPTION OF PROPERTY)

in the City of San Diego, County of San Diego, State of California.

Property Owner is required pursuant to the City of San Diego Municipal Code, Chapter 4, Article 3, Division 3, Chapter 14, Article 2, Division 2, and the Land Development Manual, Storm Water Standards to enter into a Storm Water Management and Discharge Control Maintenance Agreement [Maintenance Agreement] for the installation and maintenance of Permanent Storm Water Best Management Practices [Permanent Storm Water BMP's] prior to the issuance of construction permits. The Maintenance Agreement is intended to ensure the establishment and maintenance of Permanent Storm Water BMP's onsite, as described in the attached exhibit(s), the project's Storm Water Quality Management Plan [SWQMP] and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s): 530514.

Property Owner wishes to obtain a building or engineering permit according to the Grading and/or Improvement Plan Drawing No(s) or Building Plan Project No(s): 530514.

Continued on Page 2

NOW, THEREFORE, the parties agree as follows:

1. Property Owner shall have prepared, or if qualified, shall prepare an Operation and Maintenance Procedure [OMP] for Permanent Storm Water BMP's, satisfactory to the City, according to the attached exhibit(s), consistent with the Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s): 530514.

2. Property Owner shall install, maintain and repair or replace all Permanent Storm Water BMP's within their property, according to the OMP guidelines as described in the attached exhibit(s), the project's SWQMP and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s) 530514.

3. Property Owner shall maintain operation and maintenance records for at least five (5) years. These records shall be made available to the City for inspection upon request at any time.

This Maintenance Agreement shall commence upon execution of this document by all parties named hereon, and shall run with the land.

Executed by the City of San Diego and by Property Owner in San Diego, California.

See Attached Exhibit(s): A-D

(Owner Signature)

(Print Name and Title)

(Company/Organization Name)

(Date)

THE CITY OF SAN DIEGO

APPROVED:

(City Control Engineer Signature)

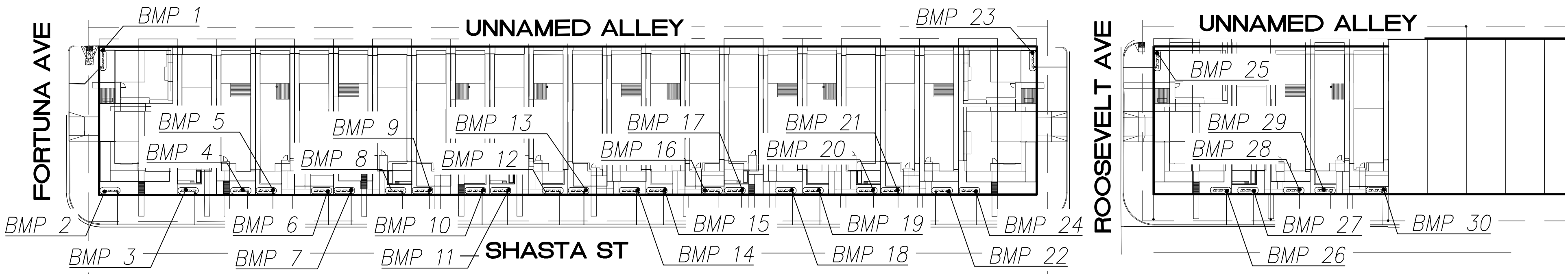
(Print Name)

(Date)

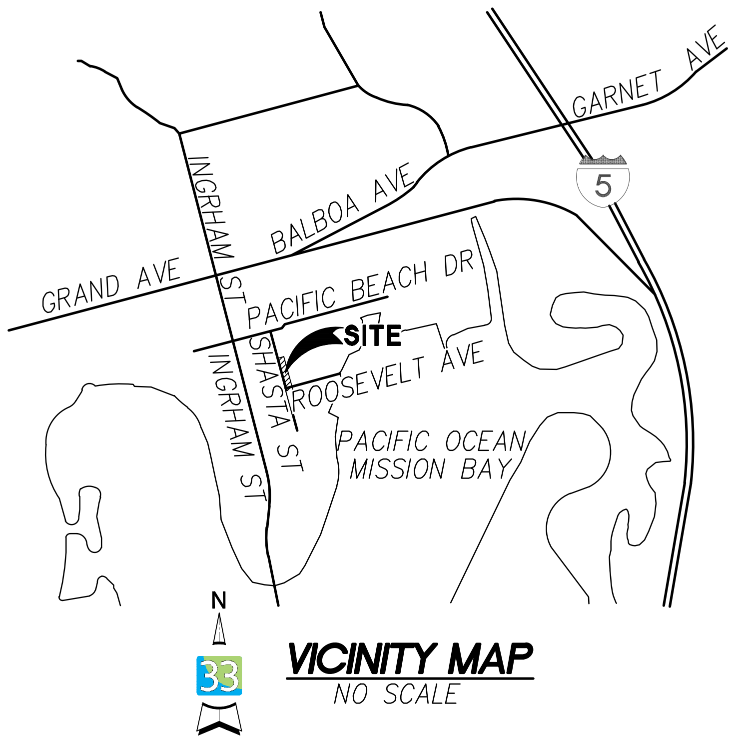
NOTE: ALL SIGNATURES MUST INCLUDE NOTARY ACKNOWLEDGMENTS PER CIVIL CODE SEC. 1180 ET.SEQ.

Reset Button Page 2

EXHIBIT 'A'
VICINITY OVERVIEW



KEY MAP
NO SCALE



VICINITY MAP
NO SCALE

EXHIBIT 'B'
OPERATION AND MAINTENANCE

SITE DESIGN, SOURCE CONTROL, AND POLLUTANT CONTROL BMP OPERATION + MAINTENANCE PROCEDURE

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT APPROVAL NO.:

O&M RESPONSIBLE PARTY DESIGNEE: PROPERTY OWNER / HOA / CITY / OTHER

BMP DESCRIPTION	INSPECTION FREQUENCY	MAINTENANCE FREQUENCY	MAINTENANCE METHOD	QUANTITY	INCLUDED IN O&M MANUAL	SHEET #
SITE DESIGN ELEMENTS					YES	
SD-3, SD-4, SD-5, SD-6	MONTHLY & AS-NEEDED BEFORE AND AFTER RAIN EVENTS	AS-NEEDED AND BEFORE AND AFTER RAIN EVENTS	MINIMIZE SOIL COMPACTION IN NON-HARDSCAPE AREAS BY LIMITING DISTURBANCE AND TILLING OF SOIL TO ALLOW FOR BETTER INFILTRATION. ENSURE THAT IMPERVIOUS AREAS DRAIN TO PERVIOUS AREAS.	N/A		7
SOURCE CONTROL ELEMENTS					YES	
SC-1, SC-2, SC-5	WEEKLY, MONTHLY & AS-NEEDED BEFORE AND AFTER RAIN EVENTS	WEEKLY, MONTHLY & AS-NEEDED BEFORE AND AFTER RAIN EVENTS	INSPECT AND MAKE CORRECTIVE ACTIONS AS NECESSARY TO PREVENT ANY ILLICIT DISCHARGES. REMOVE AND REPLACE SIGNS, SCREENS AND/OR COVERS AS-NEEDED. SWEEP AND CLEAN THE WASTE MANAGEMENT AREAS REGULARLY. USE DRY METHODS WHEN POSSIBLE WHEN CLEANING AROUND DUMPSTER AREAS. IF WATER MUST BE USED AFTER SWEEPING, USE ABSORBENTS, COLLECT WATER, AND DISCHARGE THROUGH GREASE INTERCEPTORS TO THE SEWER.	N/A		7
POLLUTANT CONTROL BMP(S)					YES	
INF-1 INFILTRATION BASIN	EVERY 3 MONTHS & AS-NEEDED BEFORE AND AFTER RAIN EVENTS	EVERY 3 MONTHS & AS-NEEDED BEFORE AND AFTER RAIN EVENTS	PRUNE AND/OR MOW OVERGROWN VEGETATION. WATER VEGETATION UNTIL ESTABLISHMENT AND AS NEEDED FOR PLANT HEALTH. REMOVE AND REPLACE ANY DEAD OR DISEASED VEGETATION AS NEEDED. REPAIR, RE-SEED AND/OR RE-PLANT ERODED AREAS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS FROM BASIN AND OUTLET STRUCTURES.	11		3-4

HMP EXEMPT	X

EXHIBIT 'C'
SITE BMPS

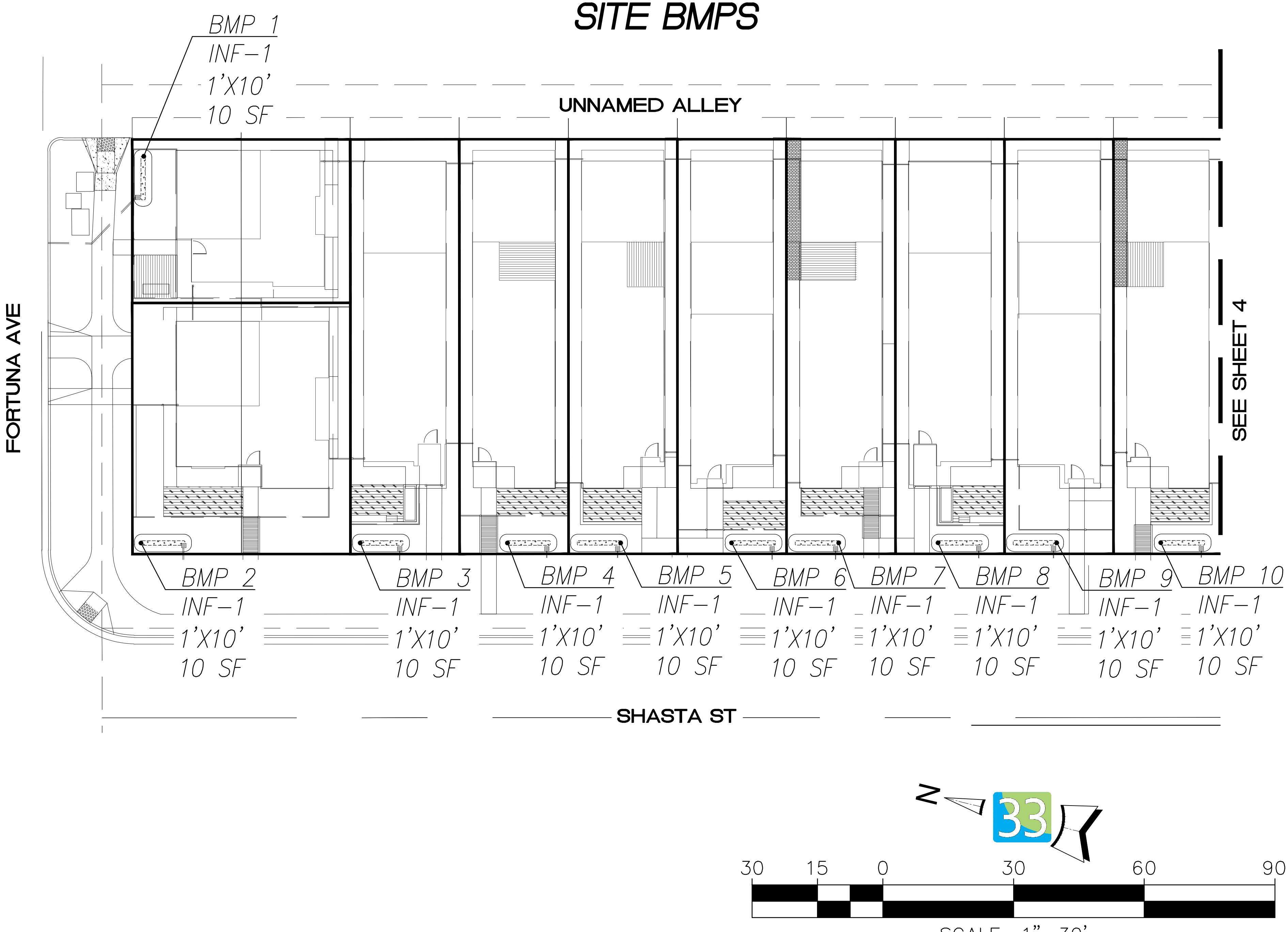


EXHIBIT 'C'
SITE BMPS

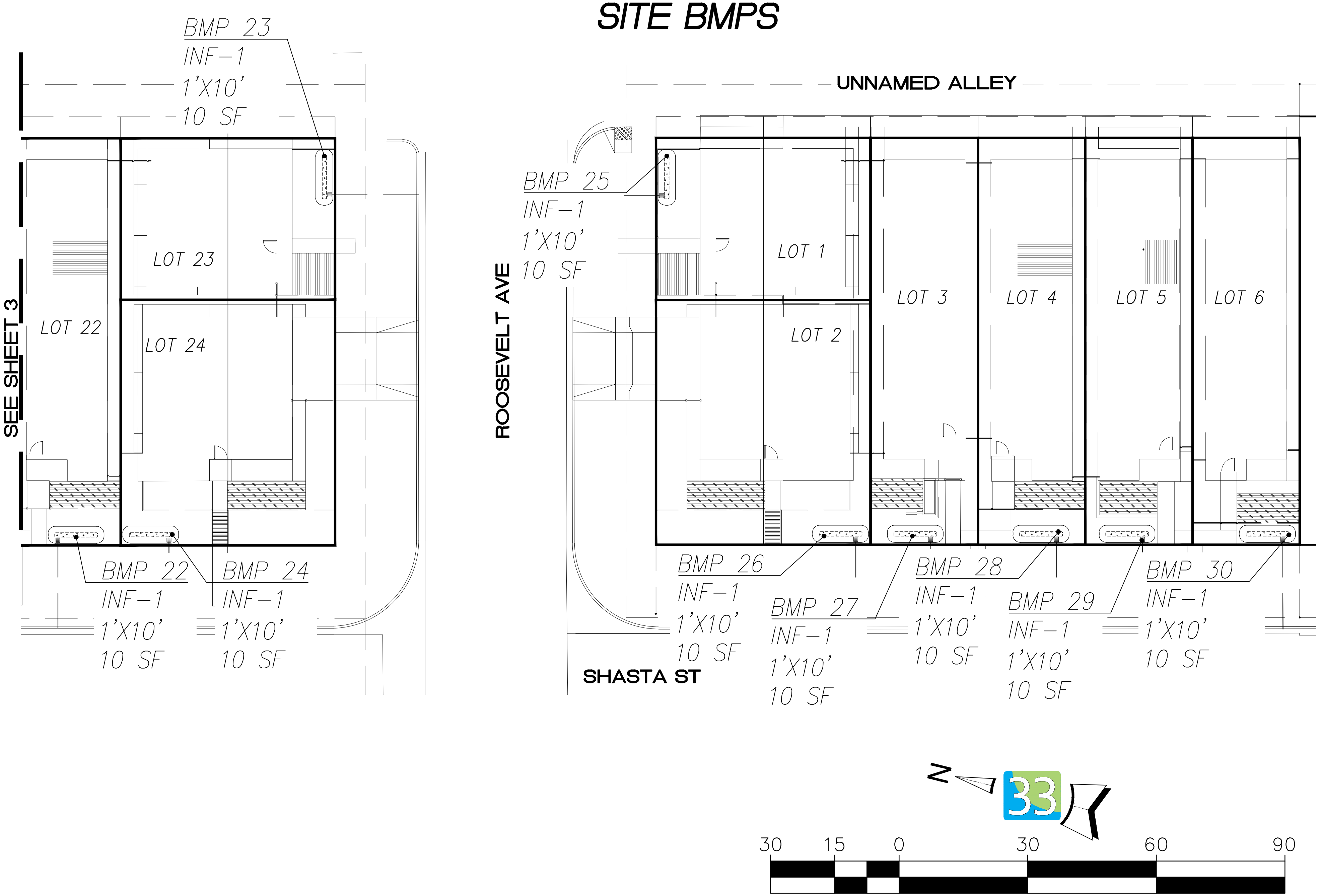
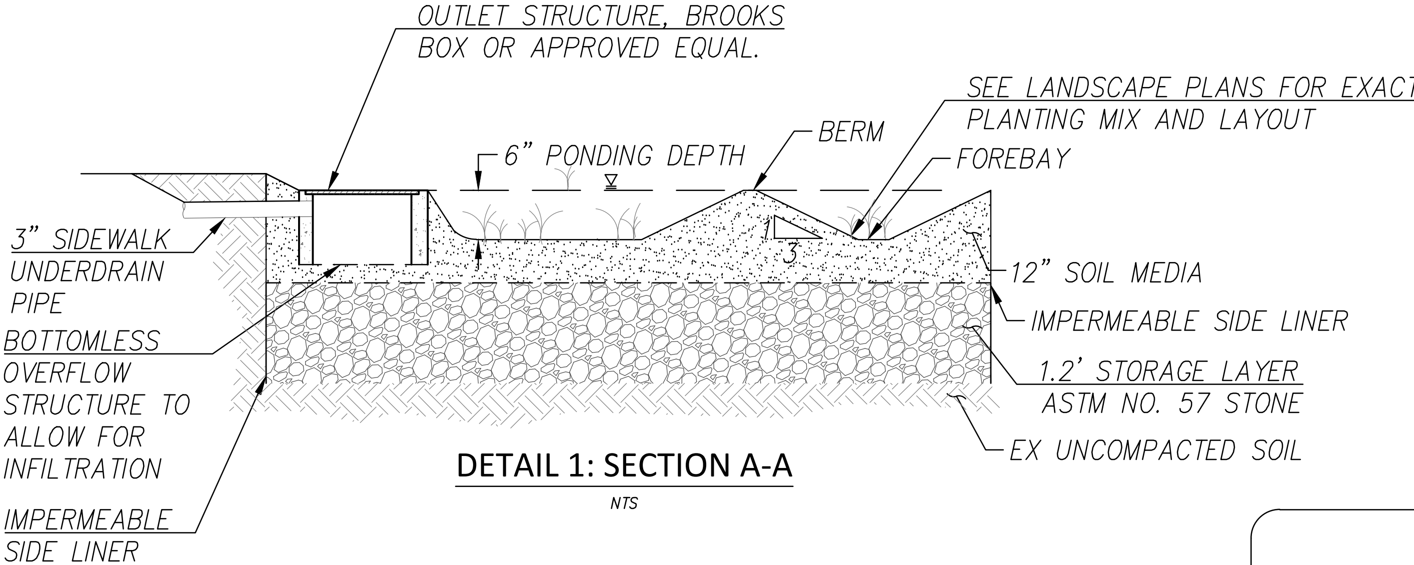
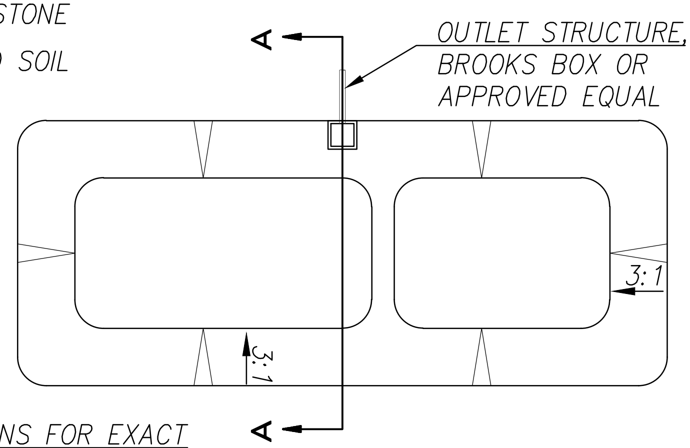


EXHIBIT 'D'
DETAILS



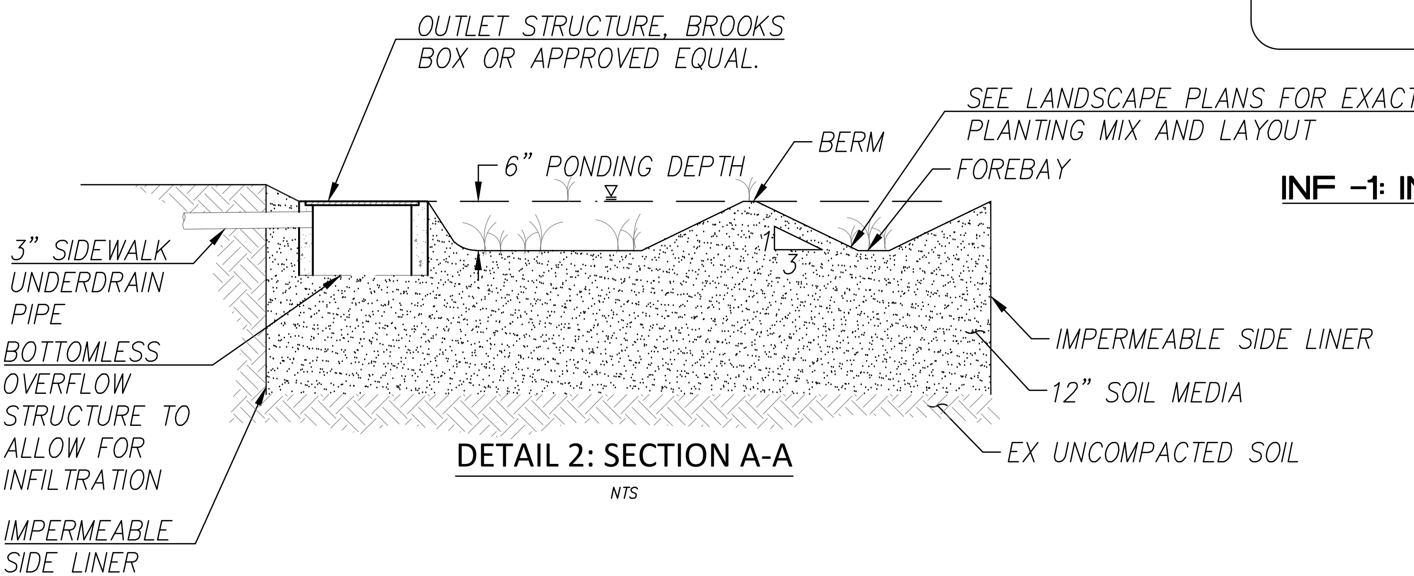
DETAIL 1: SECTION A-A

NTS



INF -1: INFILTRATION BASIN DETAIL

NTS



DETAIL 2: SECTION A-A

NTS

ATTACHMENT 4
COPY OF PLAN SHEETS SHOWING PERMANENT STORM WATER BMPS

This is the cover sheet for Attachment 4.

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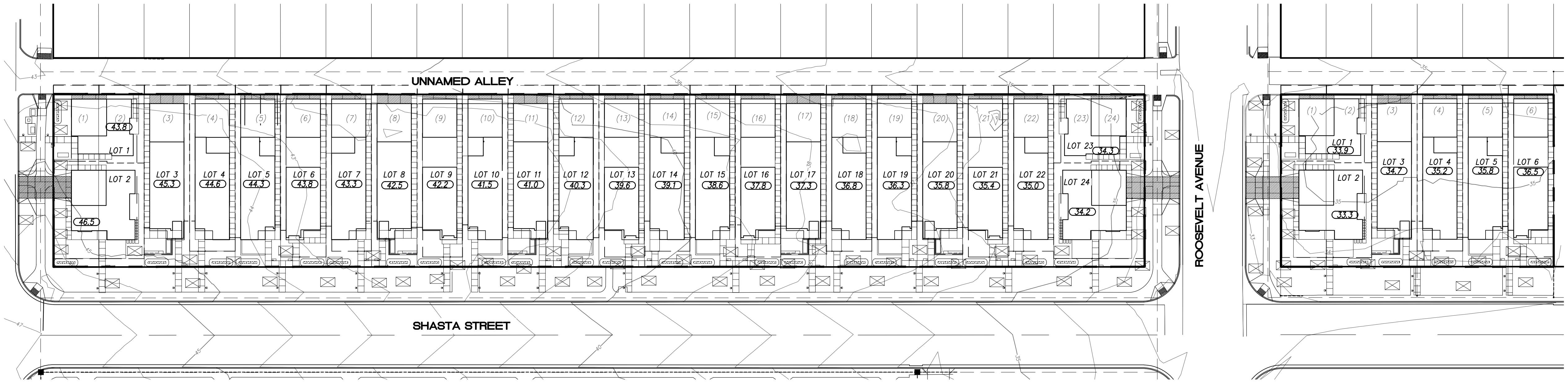
Use this checklist to ensure the required information has been included on the plans:

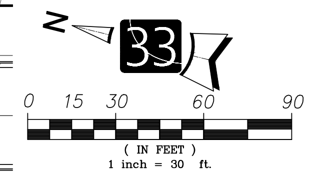
The plans must identify:

- ☐ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- ☐ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☐ Details and specifications for construction of structural BMP(s)
- ☐ Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- ☐ All BMPs must be fully dimensioned on the plans
- ☐ When proprietary BMPs are used, site specific cross section with outflow, inflow and model number shall be provided. Boucher photocopies are not allowed.

GRADING & DRAINAGE PLANS FOR:

ECO BLÖK HOMES





LEGEND

EXISTING IMPROVEMENT	STANDARD DWGS.	SYMBOL
PROPERTY BOUNDARY		
EXISTING LOT LINE		
EXISTING CONTOURS		40
EXISTING LOT NO.		(5)
EXISTING SURFACE ELEVATION		(30.45 FS)
PROPOSED IMPROVEMENT	**STANDARD DWGS.**	**SYMBOL**
PROPOSED PROPERTY LINE		
DIRECTION OF FLOW		
INFILTRATION BASIN	(SEE DETAIL SHEET C-2)	
TRUNCATED DOMES	(DOME DEPTH = 36")	
PEDESTRIAN RAMP		
VISIBILITY TRIANGLE		
6" AREA DRAIN		SD
12" BROOKS BOX OR APPROVED EQUAL		
3" PVC SIDEWALK UNDERDRAIN PIPE	(D-27)	
CONCRETE DRIVEWAY APPROACH	(SEE L1.07)	
AC PAVEMENT		
DRAINAGE ARROW		
TREE LOCATION (SEE LANDSCAPE PLANS)		
PROPOSED CONTOURS		40
PERMEABLE PAVERS	(SEE L1.08)	
DISTURBED AREA		
PROPOSED SURFACE ELEVATION		32.15 FS
PROPOSED PAD ELEVATION		45.0
PROPOSED LOT		LOT 06
PROPOSED 4" SEWER LATERAL	SDS-102/103, SDS-105, SDS-108	
PROPOSED 8" PVC SEWER MAIN		S
PROPOSED 6" PVC WATER MAIN		W
PROPOSED 1" COPPER WATER SERVICE	SDW-134, SDW-150, SDW-150. WS-03	
PROPOSED 3/4" COPPER WATER METER	SDW-134, SDW-150,	

Underground Service Alert

CALL BEFORE YOU DIG

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"811"

TWO WORKING DAYS BEFORE YOU DIG

EARTHWORK QUANTITES

1. TOTAL DISTURBED AREA: 1.64 ACRES
2. EXISTING REMOVED IMPERVIOUS AREA: 0.58 ACRES
3. AMOUNT OF CREATED IMPERVIOUS AREA: 1.16 ACRES
4. AMOUNT OF REPLACE IMPERVIOUS AREA: 0.00 ACRES
5. TOTAL PROPOSED IMPERVIOUS AREA: 1.16 ACRES
6. IMPERVIOUS % INCREASE: 100.0%
7. PERCENT OF TOTAL SITE TO BE GRADED: 100.0%
8. AMOUNT OF SITE WITH 25 PERCENT SLOPES OR GREATER: 0 ACRES
9. PERCENT OF TOTAL SITE WITH 25 PERCENT SLOPES OR GREATER: 0%
10. PERCENT OF THE EXISTING SLOPES STEEPER THAN 25% PROPOSED TO BE GRADED: 0%
11. AMOUNT OF CUT: 2056 CUBIC YARDS
12. AMOUNT OF FILL: 567 CUBIC YARDS
13. MAXIMUM HEIGHT OF FILL SLOPE(S): 2.5'
14. MAXIMUM HEIGHT OF CUT SLOPE(S): 2.8' FEET
15. AMOUNT OF EXPORT SOIL: 1488 CUBIC YARDS

SITE DEVELOPMENT

1. GRADING AS SHOWN ON THESE PLANS SHALL BE IN CONFORMANCE WITH THE CITY STANDARD DRAWINGS SDL-101 AND SDL-102, CURRENT STANDARD SPECIFICATIONS AND DIVISION 4, SECTION 62 OF THE SAN DIEGO MUNICIPAL CODE.
2. PLANT AND IRRIGATE ALL CUT AND FILL SLOPES AS REQUIRED BY DIVISION 4, SECTION 62, OF THE SAN DIEGO MUNICIPAL CODE AND ACCORDING TO CITY ENGINEER'S SPECIFICATION FOR LANDSCAPING AND IRRIGATION FOR LAND DEVELOPMENT, DOCUMENT 746595, FILES FEBRUARY 20, 1974.
3. SEE LANDSCAPE ARCHITECTURAL PLANS FOR ELEVATIONS AND HARDSCAPE DIMENSIONING BETWEEN CURB AND BUILDING FACE.

BENCHMARK

BRASS PLUG ON THE NORTH EAST CORNER OF SHASTA STREET AND CROWN POINT DRIVE PER THE CITY OF SAN DIEGO VERTICAL CONTROL BENCHMARK. ELEVATION = 31.115 MSL
SOURCE: PATHFINDER PARTNERS, LLC.
DATE: MARCH 31, 2015
MSL DATUM: NAVD 29

REFERENCE DRAWINGS

22760-D
26005-D
5429-W

LEGAL DESCRIPTION

PARCEL 2:

LOTS 1 THROUGH 24 INCLUSIVE OF BLOCK 17 OF FORTUNA PARK ADDITION, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 894, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JANUARY 22, 1903.

EXCEPTING THEREFROM THE EASTERLY 5.00 FEET AS DEDICATED TO THE CITY OF SAN DIEGO, IN DEED RECORDED APRIL 22, 1992 AS INSTRUMENT NO. 1992-0236618 OF OFFICIAL RECORDS

PARCEL 3:

LOTS 1 THROUGH 6 INCLUSIVE OF BLOCK 27 OF FORTUNA PARK ADDITION, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 894, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JANUARY 22, 1903.

EXCEPTING THEREFROM THE EASTERLY 5.00 FEET AS DEDICATED TO THE CITY OF SAN DIEGO, IN NEED RECORDED APRIL 22, 1992 AS INSTRUMENT NO. 1992-0236618 OF OFFICIAL RECORDS

THE ABOVE DESCRIBED PARCEL IS THE SAME LAND AS DESCRIBED IN STEWARD TITLE PRELIMINARY REPORT NO. 01180-150645, DATED AS OF APRIL 30, 2015 AT 7:30 AM

ASSESSOR'S PARCEL NUMBER

424-482-14, 424-532-25

OWNER/APPLICANT

PATHFINDER PARTNERS COASTAL HOLDINGS, LLC
4380 LA JOLLA VILLAGE DRIVE, SUITE 250
SAN DIEGO, CA 92122
TEL: 858-875-4400

GENERAL NOTES

1. GAS AND ELECTRIC: SAN DIEGO GAS & ELECTRIC
2. TELEPHONE: TIME WARNER CABLE
3. CABLE TELEVISION: TIME WARNER CABLE
   SEWER: CITY OF SAN DIEGO
   WATER: CITY OF SAN DIEGO
4. DRAINAGE SYSTEM: AS REQUIRED BY CITY ENGINEER
5. FIRE: CITY OF SAN DIEGO
6. SCHOOL DISTRICT: SAN DIEGO UNIFIED SCHOOL DISTRICT
7. CONTOUR INTERVAL: 2-FEET
   SOURCE: PATHFINDER PARTNERS, LLC
   DATE: 03-2015
   FIELD VERIFIED BY: ALYSON CONSULTING
   DATE VERIFIED: 12-2015
8. GRADING SHOWN HEREON IS PRELIMINARY AND IS SUBJECT TO MODIFICATION IN FINAL DESIGN
9. ALL EXISTING BUILDINGS ARE TO REMAIN.

NOTES

1. PROVIDE BUILDING ADDRESS NUMBERS, VISIBLE AND LEGIBLE FROM THE STREET OR ROAD
2. THE DEVELOPER RESERVES THE RIGHT TO FILE MULTIPLE MAP UNITS WHICH MAY BE FILED AS INDIVIDUAL FINAL MAPS AS PERMITTED BY THE CALIFORNIA STATE SUBDIVISION MAP ACT. THE DEVELOPER ALSO RESERVES THE RIGHT TO FILE THE FINAL MAPS OUT OF NUMERICAL SEQUENCE. THE CITY ENGINEER SHALL REVIEW SUCH MAP UNITS AND IMPOSE REASONABLE CONDITIONS RELATING TO THE FILING OF SAID MAP UNITS.
3. AT NO TIME WILL THE DEVELOPER REQUEST, OR THE CITY PERMIT, WATER METERS WITHIN ANY VEHICULAR USE AREA TO SERVE THIS DEVELOPMENT.
4. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITTEE SHALL ENTER INTO A MAINTENANCE AGREEMENT FOR THE ONGOING PERMANENT BMP MAINTENANCE, SATISFACTORY TO THE CITY ENGINEER.
5. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITTEE SHALL INCORPORATE ANY CONSTRUCTION BEST MANAGEMENT PRACTICES NECESSARY TO COMPLY WITH CHAPTER 14, ARTICLE 2, DIVISION 1 (GRADING REGULATIONS) OF THE SAN DIEGO MUNICIPAL CODE, INTO THE CONSTRUCTION PLANS OR SPECIFICATIONS.
6. NO TREES OR SHRUBS EXCEEDING THREE (3) FEET IN HEIGHT IN MATURITY SHALL BE INSTALLED WITHIN TEN (10) FEET OF ANY PUBLIC SEWER FACILITIES AND FIVE (5) FEET OF ANY WATER FACILITIES.
7. NO STRUCTURES OR LANDSCAPING SHALL BE INSTALLED IN OR OVER ANY SEWER EASEMENT PRIOR TO THE APPLICANT OBTAINING A MAINTENANCE AND ENCROACHMENT REMOVAL AGREEMENT.
8. THIS PROJECT SHALL COMPLY WITH ALL CURRENT STREET LIGHTING STANDARDS ACCORDING TO THE CITY OF SAN DIEGO STREET DESIGN MANUAL (DOCUMENT NO. 297376, FILED NOVEMBER 25, 2002) AND THE AMENDMENT TO COUNCIL POLICY 200-18 APPROVED BY CITY COUNCIL ON FEBRUARY 26, 2002 (RESOLUTION R-296141) SATISFACTORY TO THE CITY ENGINEER.
9. DEVELOPMENT OF THIS PROJECT SHALL COMPLY WITH ALL STORM WATER CONSTRUCTION REQUIREMENTS OF STATE CONSTRUCTION GENERAL PERMIT, ORDER NO. 2009-00090DWQ, OR SUBSEQUENT ORDER, AND THE MUNICIPAL STORM WATER PERMIT, ORDER NO. R9-2013-0001, OR SUBSEQUENT ORDER. IN ACCORDANCE WITH ORDER NO. 2009-009DWQ, OR SUBSEQUENT ORDER, A RISK LEVEL DETERMINATION SHALL BE CALCULATED FOR THE SITE AND A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE IMPLEMENTED WITH THE COMMENCEMENT OF GRADING ACTIVITIES.

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

GIOVANNI POSILLICO
R.C.E 66332

DATE

REGISTERED PROFESSIONAL ENGINEER
GIOVANNI POSILLICO
No. 66332
CIVIL
STATE OF CALIFORNIA

latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

TITLE SHEET

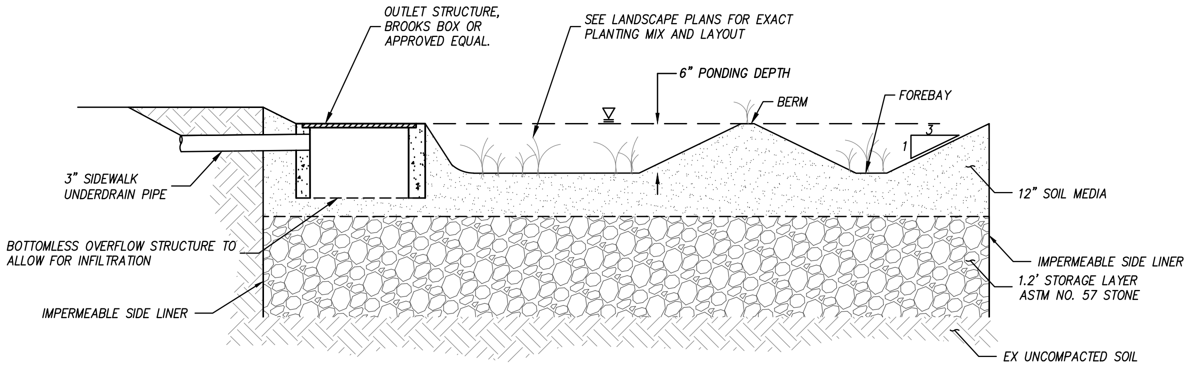
PREPARED BY:	LATITUDE 33 9968 HIBERT STREET SECOND FLOOR SAN DIEGO, CA 92131	REVISION 6: REVISION 5: REVISION 4:	
LOT NUMBER:	PARCEL 2: 1-24 PARCEL 3: 1-6	REVISION 3: REVISION 2: REVISION 1:	
APN:	424-482-14 424-532-25	ORIGINAL DATE:	XX-XX-16
PROJECT NAME:	ECO BLÖK HOMES		
SHEET TITLE:	TITLE SHEET		
SHEET COUNT:	1 OF 4	PTS #: 530514	

ECO BLÖK HOMES

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CA. 92109

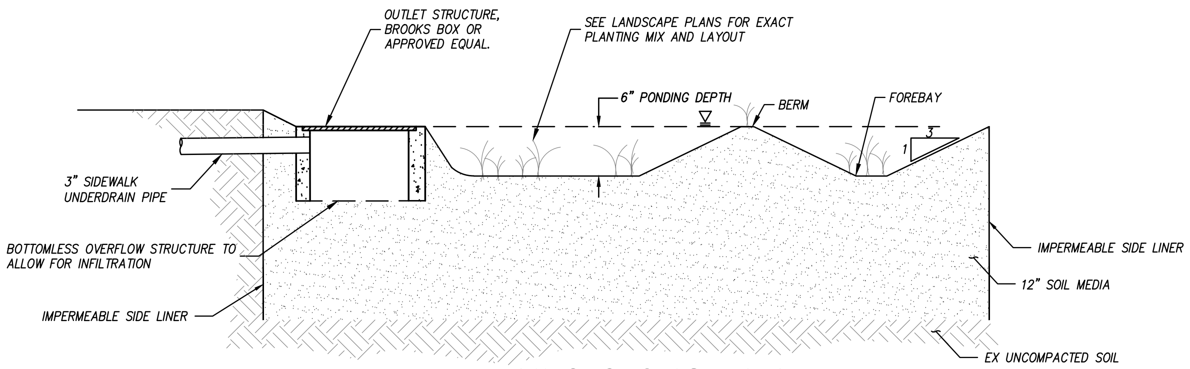
ISSUE	DESCRIPTION	DATE
1	COASTAL DEVELOPMENT PERMIT	XX/XX/16

DATE:	02.27.17
SCALE:	
DRAWN:	
JOB:	
SHEET	C-1



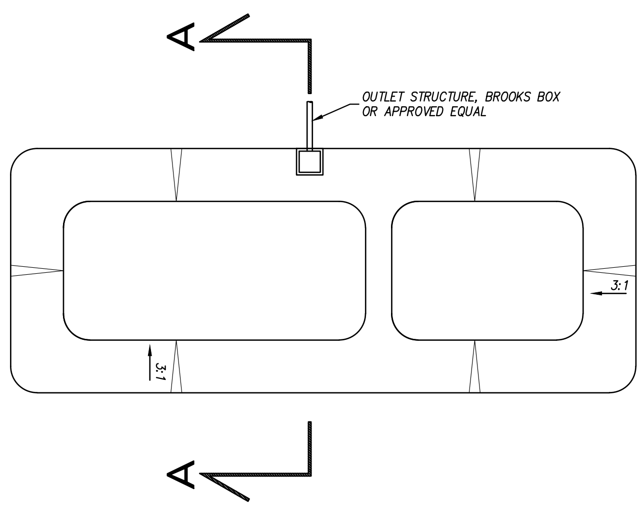
DETAIL 1: SECTION A-A

NTS



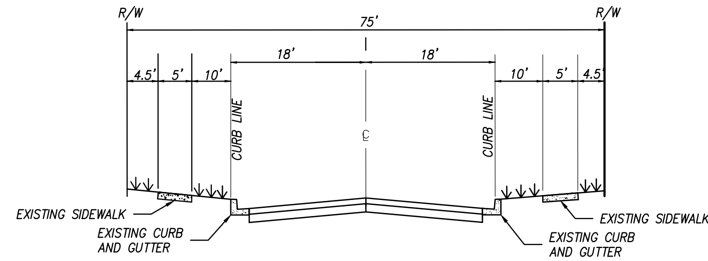
DETAIL 2: SECTION A-A

NTS

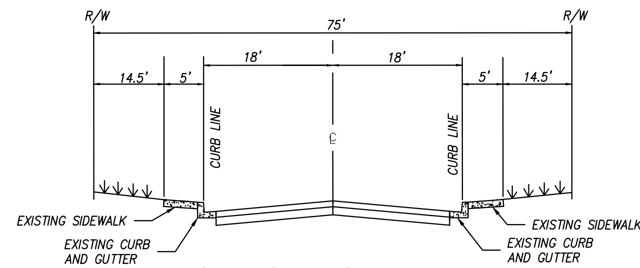


INFILTRATION BASIN DETAIL

NTS

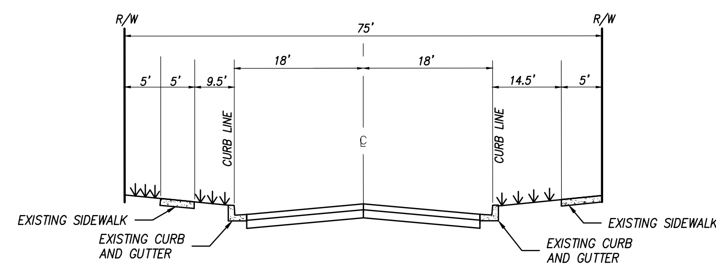


FORTUNA AVENUE



SHASTA STREET

NO SCALE



ROOSEVELT STREET

NO SCALE

Underground Service Alert

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REGISTERED PROFESSIONAL ENGINEER GIOVANNI POSILLICO No. 66332 CIVIL STATE OF CALIFORNIA

latitude 33 PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

DETAILS AND SECTIONS

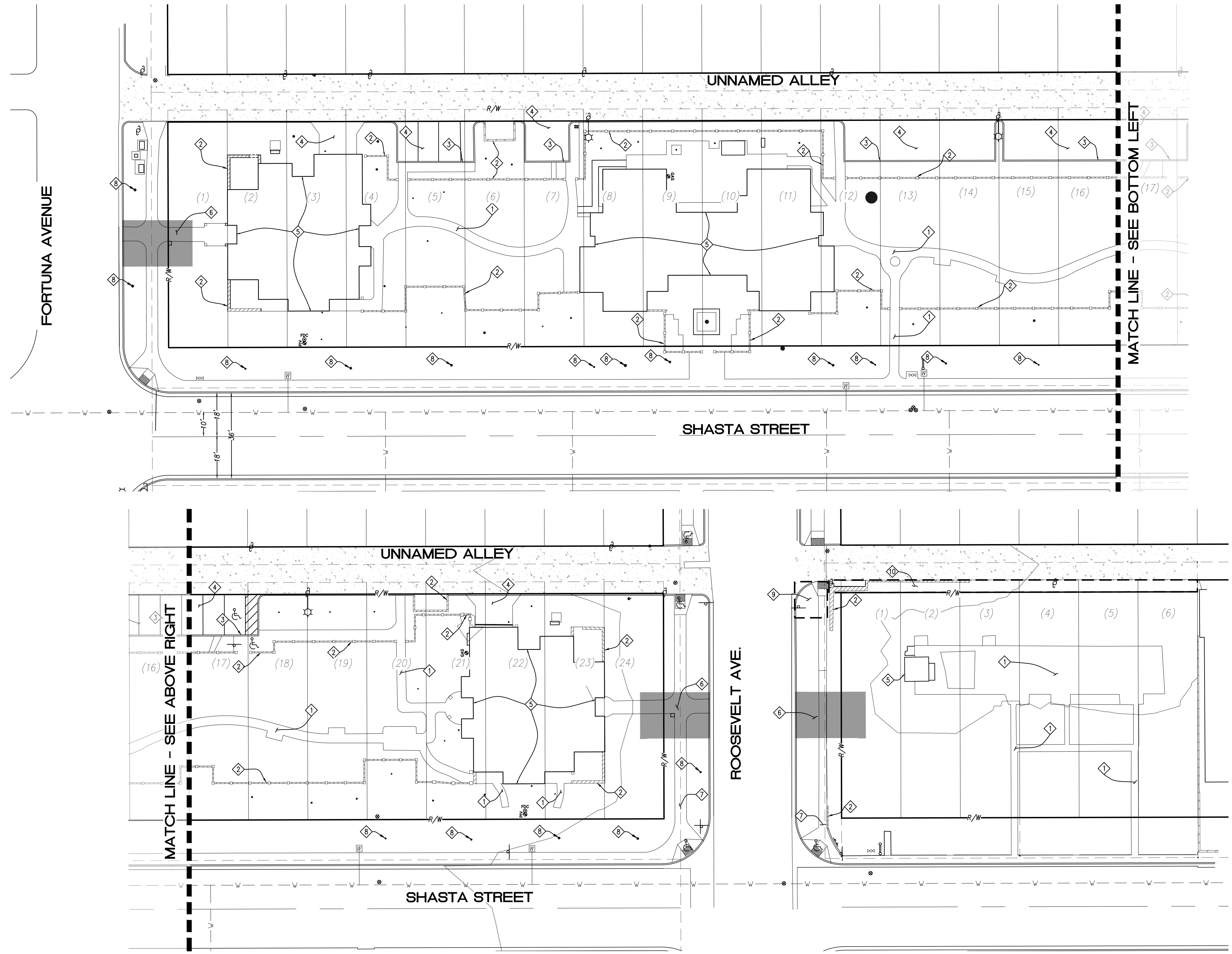
PREPARED BY:	LATITUDE 33 9968 HIBERT STREET SECOND FLOOR SAN DIEGO, CA 92131	REVISION 6: REVISION 5: REVISION 4:	
LOT NUMBER:	PARCEL 2: 1-24 PARCEL 3: 1-6	REVISION 3: REVISION 2: REVISION 1:	
APN:	424-482-14 424-532-25	ORIGINAL DATE:	XX-XX-16
PROJECT NAME:	ECO BLÖK HOMES		
SHEET TITLE:	DETAILS AND SECTIONS		
SHEET COUNT:	2 OF 4	PTS #: 530514	

ISSUE	DESCRIPTION	DATE
1	COASTAL DEVELOPMENT PERMIT	XX/XX/16

ECO BLÖK HOMES

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CA. 92109

DATE: 02.27.17
SCALE:
DRAWN:
JOB:
SHEET
C-2



EMRA NOTE:

AN EMRA WILL BE REQUIRED FOR THE PRIVATE CONCRETE WALKWAYS , SIDEWALK UNDERDRAINS, LANDSCAPE AND IRRIGATION, AND SEWER LATERALS WITHIN THE PUBLIC RIGHT OF WAY.

NOTE:

CONTRACTOR TO VERIFY SEWER LATERAL LOCATIONS PRIOR TO CONSTRUCTION, NOTIFY ENGINEER OF ANY DISCREPANCIES.

DEMOLITION NOTES

1. EXISTING SIDEWALK TO BE REMOVED
2. EXISTING WALL TO BE REMOVED
3. EXISTING CURB AND GUTTER TO BE REMOVED
4. EXISTING AC PAVEMENT TO BE REMOVED
5. EXISTING BUILDING TO BE REMOVED
6. EXISTING IMPROVEMENTS TO BE REMOVED FOR PROPOSED PUBLIC DRIVEWAY
7. EXISTING IMPROVEMENT TO REMAIN AND PROTECT IN PLACE
8. EXISTING TREE TO REMAIN
9. EXISTING IMPROVEMENTS TO BE REMOVED FOR PROPOSED CURB RAMP, CURB AND GUTTER, CONCRETE APRON, AND SIDEWALK
10. EXISTING IMPROVEMENTS TO BE REMOVED FOR PROPOSED 5' RIGHT OF WAY DEDICATION

ISSUE	DESCRIPTION	DATE
1	COASTAL DEVELOPMENT PERMIT	XX/XX/16

ECO BLÖK HOMES

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CA. 92109

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0 10 20 40 60
(IN FEET)
1 inch = 20 ft.

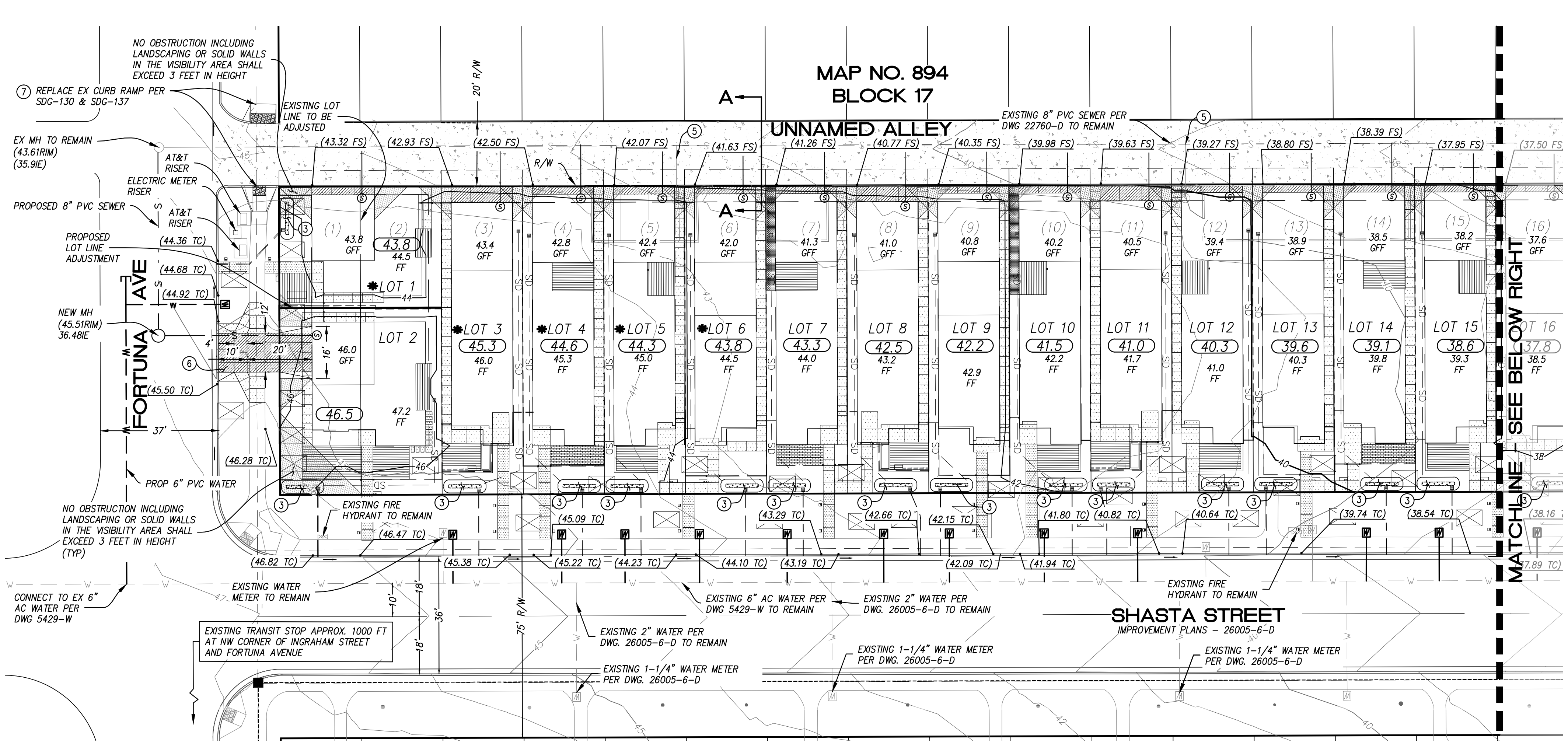
REGISTERED PROFESSIONAL ENGINEER
GIOVANNI POSILLICO
No. 66332
CIVIL
STATE OF CALIFORNIA

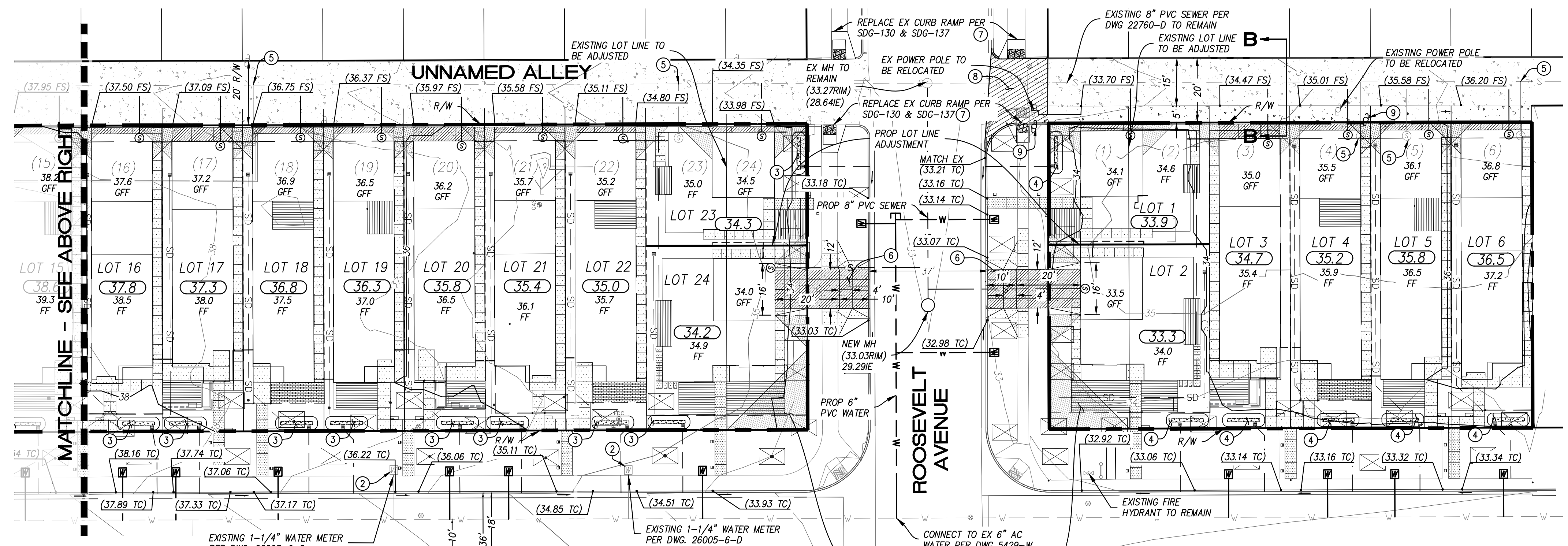
latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

DEMOLITION PLAN

PREPARED BY:	LATITUDE 33 9968 HIBERT STREET SECOND FLOOR SAN DIEGO, CA 92131	REVISION 6: REVISION 5: REVISION 4: REVISION 3: REVISION 2: REVISION 1:	
LOT NUMBER:	PARCEL 2: 1–24 PARCEL 3: 1–6		
APN:	424–482–14 424–532–25	ORIGINAL DATE:	XX-XX-16
PROJECT NAME:	ECO BLÖK HOMES		
SHEET TITLE:	DEMOLITION PLAN		
SHEET COUNT:	3 OF 4	PTS #: 530514	

DATE:	02.27.17
SCALE:	
DRAWN:	
JOB:	
SHEET	C-3





CONSTRUCTION NOTES

1. SIDEWALK UNDERDRAIN PER D-27
2. EXISTING WATER METER TO REMAIN
3. INFILTRATION BMP PER DETAIL 1: SECTION A-A ON SHEET C-2
4. INFILTRATION BMP PER DETAIL 2: SECTION A-A ON SHEET C-2
5. EXISTING SEWER LATERAL TO BE REMOVED
6. PROPOSED PUBLIC DRIVEWAY PER SDG-161
7. RECONSTRUCT EXISTING CURB RAMP PER SDG-130 AND SDG-137
8. RECONSTRUCT EXISTING ALLEY APRON PER SDG-120
9. RELOCATED POWER POLE

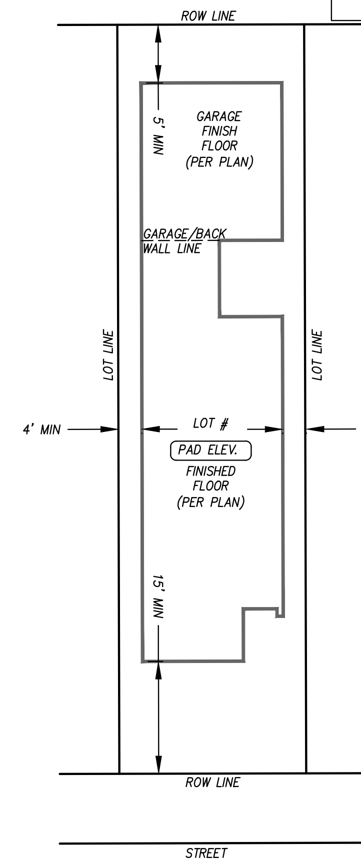
EMRA NOTE:

AN EMRA WILL BE REQUIRED FOR THE PRIVATE CONCRETE WALKWAYS, SIDEWALK UNDERDRAINS, LANDSCAPE AND IRRIGATION, AND SEWER LATERALS WITHIN THE PUBLIC RIGHT OF WAY.

NOTE:
CONTRACTOR TO VERIFY SEWER LATERAL LOCATIONS PRIOR TO CONSTRUCTION, NOTIFY ENGINEER OF ANY DISCREPANCIES.

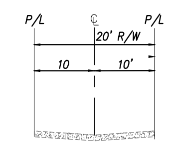
NOTE:
WHEN PRECISE GRADING PLAN IS SUBMITTED WITH BUILDING PERMIT, AREA DRAIN PIPE SYSTEM AND SWALES WILL BE DESIGNED

* BACKWATER VALVE WILL BE REQUIRED ON THIS LOT

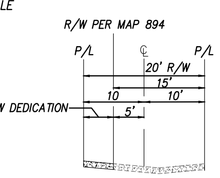


TYPICAL PAD GRADING - PVT

NO SCALE



SECTION A-A



SECTION B-B

0 10 20 40 60
(IN FEET)
1 inch = 20 ft.

Underground Service Alert
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REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA

latitude 33
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9968 Hibert Street 2nd Floor, San Diego, CA 92131
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ECO BLÖK HOMES

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CA. 92109

ISSUE	DESCRIPTION	DATE
1	COASTAL DEVELOPMENT PERMIT	XX/XX/16

GRADING PLAN

PREPARED BY:	LATITUDE 33 9968 HIBERT STREET SECOND FLOOR SAN DIEGO, CA 92131	REVISION 6: REVISION 5: REVISION 4: REVISION 3: REVISION 2: REVISION 1:
LOT NUMBER:	PARCEL 2: 1-24 PARCEL 3: 1-6	
APN:	424-482-14 424-532-25	ORIGINAL DATE: XX-XX-16
PROJECT NAME:	ECO BLÖK HOMES	
SHEET TITLE:	GRADING PLAN	
SHEET COUNT:	4 OF 4	PTS #: 530514

DATE: 02.27.17
SCALE:
DRAWN:
JOB:
SHEET
C-4

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ATTACHMENT 5
DRAINAGE REPORT

Attach project's drainage report. Refer to Drainage Design Manual to determine the reporting requirements.

DRAINAGE STUDY FOR:

ECO BLOK HOMES

CITY OF SAN DIEGO, CALIFORNIA

PTS NO. 530514

Prepared for:

Pathfinder Crown Point Apartments, LLC

4380 La Jolla Village Dr. Suite 250

San Diego, CA 92122

(858) 875-4450

Prepared by:

Latitude 33 Planning and Engineering

9968 Hibert Street, 2nd Floor

San Diego, California 92131

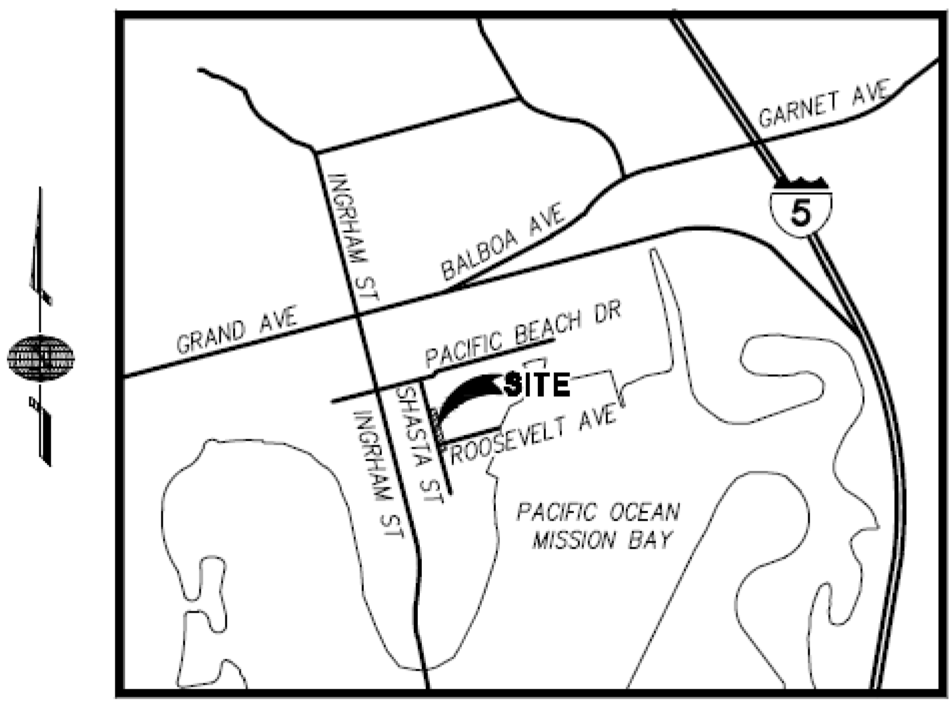
(858) 751-0633

Giovanni Posillico RCE 66332

TABLE OF CONTENTS

I. PROJECT DESCRIPTION

The Eco Blök Homes project is located in the city of San Diego and bounded to the south by Mission Bay, east by Interstate 5, north by Pacific Beach Drive and west by Ingraham Street, see vicinity map below. The project proposes to modify the 1.85-acre site with improvements such as infiltration BMPs, landscaping, sidewalk and single family houses. This report has been prepared to document the analysis of the existing and proposed drainage condition associated with Eco Blök Homess.



VICINITY MAP

NO SCALE

II. EXISTING SITE CONDITION

The project area is approximately 1.85 acres of developed land consisting of 3 existing units and an empty lot containing a garden. The existing site is comprised of buildings, sidewalk and landscaping. The existing site drainage is divided into three basins. The east side of the project (basin 1) drains to the southeast corner of the site and discharges to Roosevelt Avenue. The west side of the project (basin 2) drains to the southwest corner of the site and discharges southerly to curb and gutter along Shasta Avenue and converges with the discharge from basin 1 at Roosevelt Avenue. The southernmost portion of the project (basin 3) drains to the southeast corner of Roosevelt Avenue and Shasta Street. All of the storm water runoff from the project site then flows west down Roosevelt Avenue via curb and gutter where it finally come together at the corner of Roosevelt Avenue and Jewel Street. From there the entire project's runoff flows via curb and gutter to an existing inlet located 550 feet south at the corner of Jewel Street and La Playa Avenue. Storm water then is conveyed via storm drain to Mission Bay

III. DEVELOPED SITE CONDITION

The developed site at the Eco Blök Homes will disturb 1.64 acres and consists of sidewalk, landscaping and infiltration BMPs in addition to 30 single family row homes. The onsite storm water will be treated with infiltration basins.

There are no existing storm drain systems in the vicinity, thus flows will be collected by onsite brooks boxes and storm drain pipes that flow into the proposed infiltration basins for water quality treatment control purposes.

For flood control purposes the infiltration BMPs located within Basin P.1 & P.2 discharge to Shasta Street. All water from the project site will be captured and directed to an infiltration BMP. The infiltration BMPs will fill up and the underlying media and aggregate will become saturated. The basins themselves will then begin to pond and fill up to their capacity. Each standard infiltration BMP contains an overflow system for flows larger than the water quality demand. All of these overflow storm drain systems include a grated catch basin that have an open bottom. These open bottom structures will fill up with water and when a certain water level is reached the overflow will discharge via 3" underdrains to the surrounding curb and gutter. The remaining water that is in the catch basins and infiltration BMPs will then infiltrate through the media and aggregate.

Both overflow and subsurface flows from the project site will discharge through side walk underdrains to either the existing curb and gutter on Shasta Street or to the alley. All discharge points flow via curb and gutter 1,050 feet south to the existing storm drain inlet located at the corner of Jewel Street and La Playa Avenue. Storm water is then conveyed via storm drain pipes east down La Playa Avenue and across Crown Point park and then discharges directly into Mission Bay. The drainage areas have been designed to maintain the overall drainage design and the storm water discharges to the same inlet at the corner of Jewel Street and La Playa Avenue. This project does not propose to dredge or fill materials in water of the U.S. Jurisdictional Waters and will not be required to obtain Clean Water Act Section 401/404 Water Quality Certification.

Please see the Storm Water Quality Management Plan (SWQMP) for details of Water Quality calculations.

IV. HYDROLOGIC METHODOLOGY

This report is intended to support preliminary engineering design, as well as demonstrate compliance with applicable design standards. Specifically, this report will address the 50-yr and 100-yr flow rates for the pre and post condition.

Appendix I of the City of San Diego's 1984 *Drainage Design Manual's* rational method procedure was the basis for the pre and post conditions for the 100-year hydrologic analysis. This study was accomplished through the implementation of the 2015 Autodesk Storm and Sanitary Analysis software, which has the capability to utilize the rational method program based on the City of San Diego storm water design criteria. The input parameters are summarized below and the supporting data is included in Appendix A.

- Intensity-Duration-Frequency: The City's 50-year and 100-year Intensity-Duration-Frequency curve from the *Drainage Design Manual* was used.

- Drainage area: The pre-condition drainage basins were delineated from the base topographic mapping prepared for the project. Proposed condition drainage basins were delineated using the proposed Civil Site Plans which include storm drain layout.

- Manning's Roughness Coefficients: Table 1-104.14A was used to determine appropriate values.

- Run-off Coefficient: Taking into consideration the amount of landscaped area for the pre-condition a value of 0.50 was used and for the post condition a runoff coefficient of 0.70 was implemented in accordance with Table 2 in Appendix I. A weighted runoff coefficient was used for both existing and proposed conditions e.g. for existing basin E.1 (0.50) => Actual imp. 50%, Tabulated Imp. 70%; (0.50/0.70)*(0.70) = 0.50. For proposed basin P.1 (0.70) => Actual imp. 70%, Tabulated Imp. 80%; (0.70/0.80)*(0.80) = 0.70.

- Flow lengths and elevations: The flow lengths and elevations were obtained from the topographic mapping and grading plans.

V. DISCUSSION AND RESULT

As seen below, the rational method results show that there is an overall increase in flow from the existing condition to the proposed. Basin 1 and 2 in existing conditions will become one basin in proposed conditions via the use of area drains and swales. The volume retained and flow detained by the implementation of the water quality infiltration BMPs will return the post condition flows to existing condition values or lower. For Q100 mitigation, the project will store approximately 1,164 cubic feet of runoff for the west side of the project, and approximately 136 cubic feet of runoff for the east side. For the east side of the project, the Q100 mitigation will be accomplished via 6” of surface ponding as well as 1.2’ of gravel storage. For the east side, the all peak storm mitigation will be accomplished with just 6” of surface ponding.

EXISTING CONDITIONS

Basin	Area	Runoff Coefficient	100-yr Flows
	(Ac)		(cfs)
1	0.89	0.50	1.09
2	0.63	0.50	0.78
3	0.33	0.50	0.56
Total Area =	**1.85**	**Total Flows =**	**2.43**

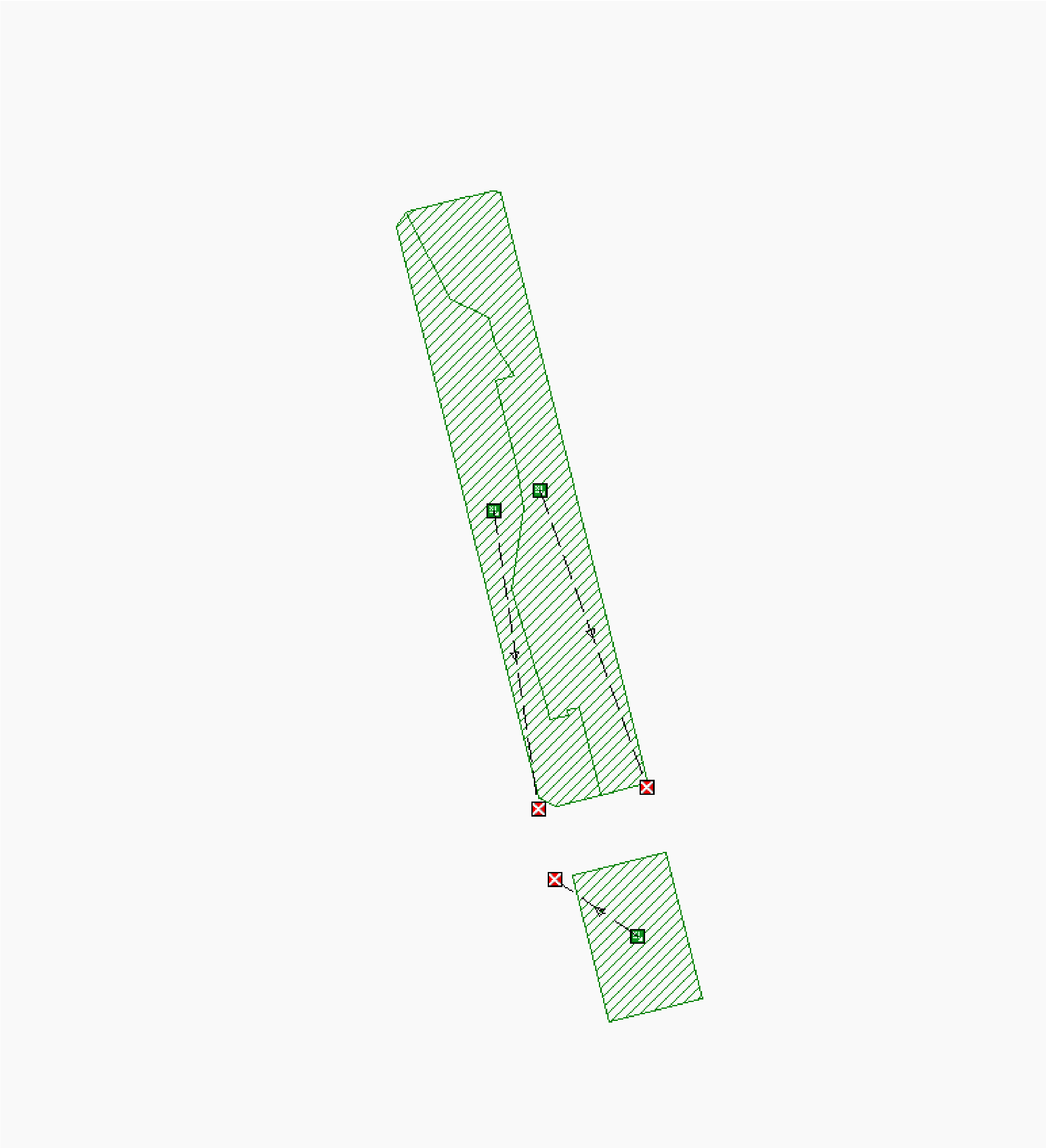
PROPOSED CONDITIONS

Basin	Area	Runoff Coefficient	100-yr Flows	Mitigated Flow
	(Ac)		(cfs)	(cfs)
1	1.52	0.70	4.66	0.78
2	0.33	0.70	1.01	0.56
Total Area =	**1.85**	**Total Flows =**	**5.67**	**1.34**

Please see Appendix A for the hydrologic calculations and corresponding Drainage Area exhibits.

APPENDIX A: EXISTING & PROPOSED HYDROLOGIC CALCULATIONS

EXISTING



Autodesk® Storm and Sanitary Analysis 2015 - Version 9.1.140 (Build 1)

****
Project Description
****
File Name .... Pre-Condition_100yr.SPF
Description .... H:\1300\1305.20 - PFP Coastal Holdings Shasta East\Engineering\Reports\Drainage\1305.20 Existing DA's.dwg

****
Analysis Options
****
Flow Units .... cfs
Subbasin Hydrograph Method. City of San Diego Rational Method
Time of Concentration...... SCS TR-55 (5 minutes minimum)
Return Period.............. 100 years
Storage Node Exfiltration.. Constant flow
Starting Date JUN-28-2017 00:00:00
Ending Date JUN-28-2017 01:00:00
Report Time Step 00:00:10

****
Element Count
****
Number of subbasins 3
Number of nodes 3
Number of links 0

****
Subbasin Summary
****

Subbasin ID	Total Area acres
{_}.E.1	0.89
{_}.E.2	0.63
{_}.E.3	0.33

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
POCA	OUTFALL	32.77	32.77	0.00	
POCB	OUTFALL	33.53	33.53	0.00	
POCC	OUTFALL	32.41	32.41	0.00	

************************** Runoff Quantity Continuity **************************	Volume acre-ft	Depth inches
Total Precipitation	0.128	0.829
Continuity Error (%)	0.504	

************************** Flow Routing Continuity **************************	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	0.063	0.021
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Runoff Coefficient Computations Report
****

Subbasin {_}.E.1

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.89	D	0.50
Composite Area & Weighted Runoff Coeff.	0.89		0.50

Subbasin {_}.E.2

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	D	0.50
Composite Area & Weighted Runoff Coeff.	0.63		0.50

Subbasin {_}.E.3

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.33	D	0.50
Composite Area & Weighted Runoff Coeff.	0.33		0.50

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

```
Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n  = Manning's Roughness
Lf = Flow Length (ft)
P  = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)
```

Shallow Concentrated Flow Equation

```
V  = 16.1345 * (Sf^0.5) (unpaved surface)
V  = 20.3282 * (Sf^0.5) (paved surface)
V  = 15.0 * (Sf^0.5) (grassed waterway surface)
```

```
        V  = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
        V  = 9.0 * (Sf^0.5) (cultivated straight rows surface)
        V  = 7.0 * (Sf^0.5) (short grass pasture surface)
        V  = 5.0 * (Sf^0.5) (woodland surface)
        V  = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
        Tc = (Lf / V) / (3600 sec/hr)

        Where:

        Tc = Time of Concentration (hrs)
        Lf = Flow Length (ft)
        V  = Velocity (ft/sec)
        Sf = Slope (ft/ft)

Channel Flow Equation
---------------------

        V  = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
        R  = Aq / Wp
        Tc = (Lf / V) / (3600 sec/hr)

        Where:

        Tc = Time of Concentration (hrs)
        Lf = Flow Length (ft)
        R  = Hydraulic Radius (ft)
        Aq = Flow Area (ft²)
        Wp = Wetted Perimeter (ft)
        V  = Velocity (ft/sec)
        Sf = Slope (ft/ft)
        n  = Manning's Roughness

-------------------
Subbasin {_}.E.1
-------------------

Sheet Flow Computations
-----------------------
                                             Subarea A           Subarea B           Subarea C
        Manning's Roughness:                      0.40                0.00                0.00
        Flow Length (ft):                        71.83                0.00                0.00
        Slope (%):                                3.52                0.00                0.00
        2 yr, 24 hr Rainfall (in):                1.75                0.00                0.00
```

Velocity (ft/sec):	0.07	0.00	0.00
Computed Flow Time (minutes):	17.77	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	30.35	0.00	0.00
Slope (%):	4.02	0.00	0.00
Surface Type:	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec):	1.40	0.00	0.00
Computed Flow Time (minutes):	0.36	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	583.57	0.00	0.00
Channel Slope (%):	1.59	0.00	0.00
Cross Section Area (ft²):	2.00	0.00	0.00
Wetted Perimeter (ft):	20.00	0.00	0.00
Velocity (ft/sec):	2.70	0.00	0.00
Computed Flow Time (minutes):	3.60	0.00	0.00

==

Total TOC (minutes): 21.74

==

Subbasin {_}.E.2

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.40	0.00	0.00
Flow Length (ft):	66.32	0.00	0.00
Slope (%):	3.92	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.75	0.00	0.00
Velocity (ft/sec):	0.07	0.00	0.00
Computed Flow Time (minutes):	15.97	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	165.52	0.00	0.00
Slope (%):	1.17	0.00	0.00
Surface Type:	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec):	0.76	0.00	0.00
Computed Flow Time (minutes):	3.63	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	409.57	0.00	0.00
Channel Slope (%):	2.18	0.00	0.00
Cross Section Area (ft^2):	0.31	0.00	0.00
Wetted Perimeter (ft):	1.91	0.00	0.00
Velocity (ft/sec):	4.36	0.00	0.00
Computed Flow Time (minutes):	1.56	0.00	0.00

===

Total TOC (minutes): 21.17

===

Subbasin {_}.E.3

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.40	0.00	0.00
Flow Length (ft):	37.00	0.00	0.00
Slope (%):	5.14	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.75	0.00	0.00
Velocity (ft/sec):	0.07	0.00	0.00
Computed Flow Time (minutes):	8.99	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	61.67	0.00	0.00
Slope (%):	3.34	0.00	0.00
Surface Type:	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec):	1.28	0.00	0.00

Computed Flow Time (minutes):	0.80	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	121.81	0.00	0.00
Channel Slope (%):	0.96	0.00	0.00
Cross Section Area (ft²):	0.31	0.00	0.00
Wetted Perimeter (ft):	1.91	0.00	0.00
Velocity (ft/sec):	2.90	0.00	0.00
Computed Flow Time (minutes):	0.70	0.00	0.00

==

Total TOC (minutes):	10.49

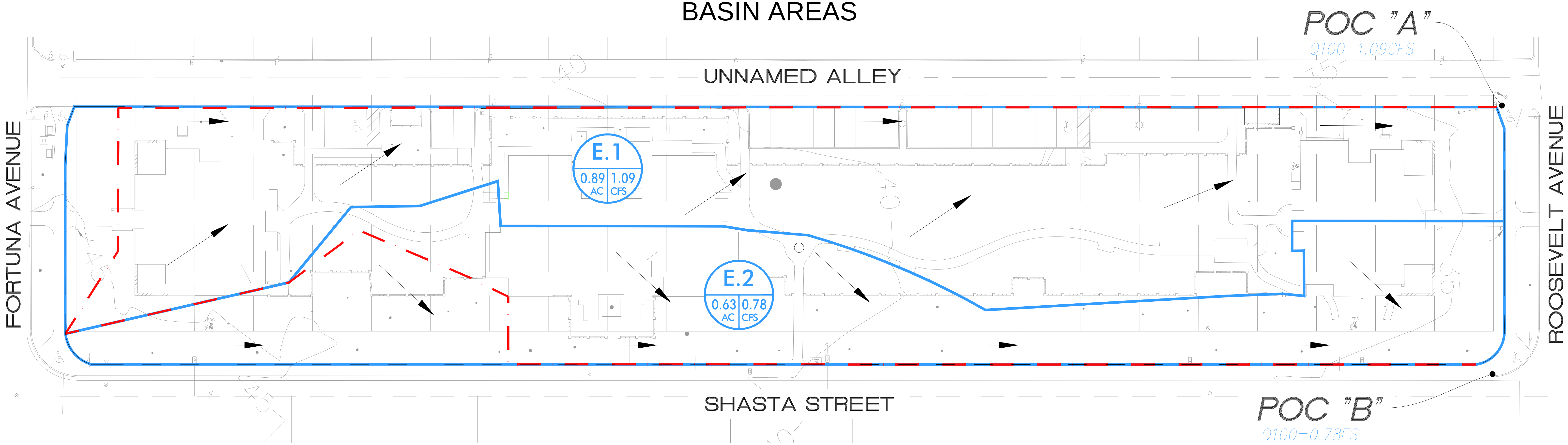
==

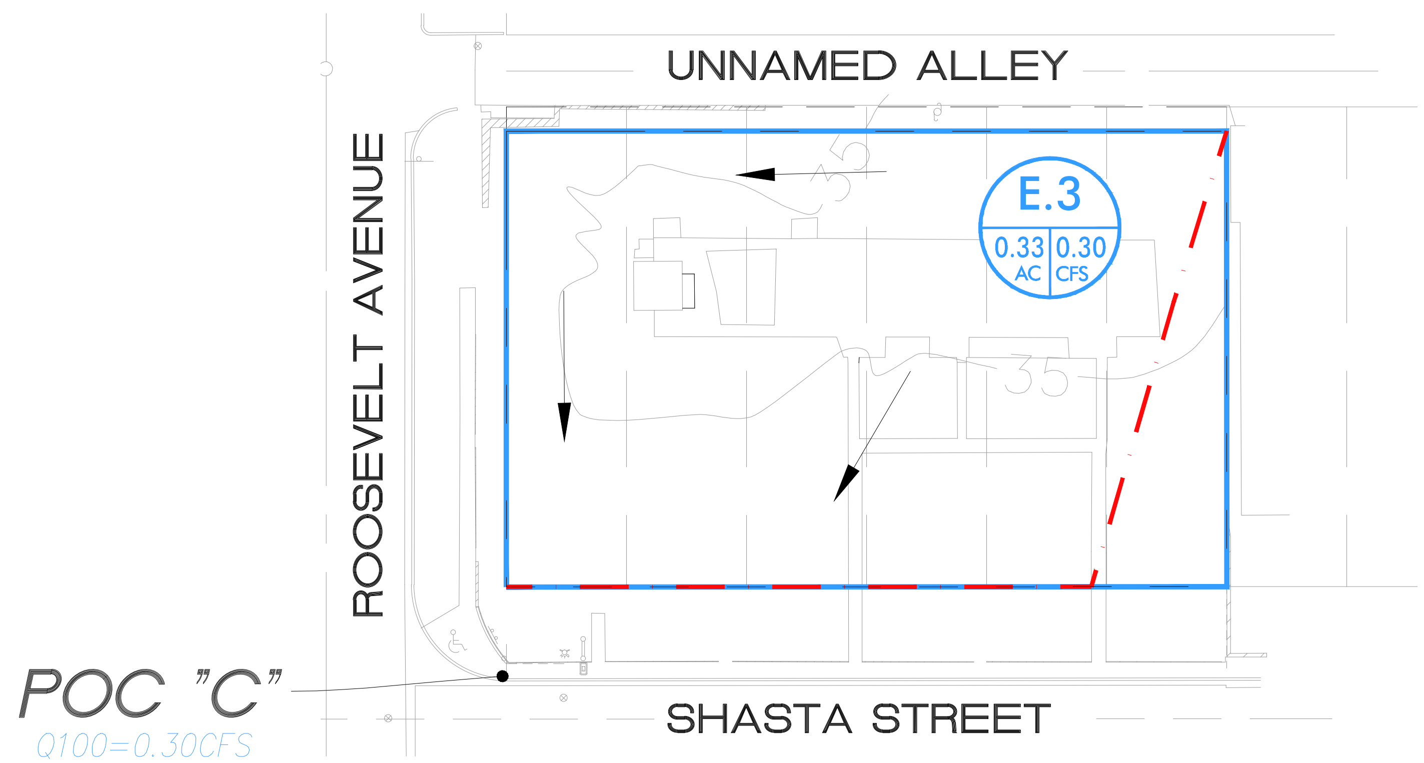
****
Subbasin Runoff Summary
****

Subbasin ID	Accumulated Precip in	Rainfall Intensity in/hr	Total Runoff in	Peak Runoff cfs	Weighted Runoff Coeff	Time of Concentration days	Time of Concentration hh:mm:ss
{_}.E.1	0.88	2.44	0.44	1.09	0.500	0	00:21:44
{_}.E.2	0.88	2.48	0.44	0.78	0.500	0	00:21:10
{_}.E.3	0.60	3.42	0.30	0.56	0.500	0	00:10:29

Analysis began on: Thu Jun 29 10:02:08 2017
Analysis ended on: Thu Jun 29 10:02:08 2017
Total elapsed time: < 1 sec

EXISTING DRAINAGE BASIN AREAS





LEGEND

BASIN — BASIN AC CFS

POINT OF COMPLIANCE — POC "A"

FLOW PATH

FLOW DIRECTION

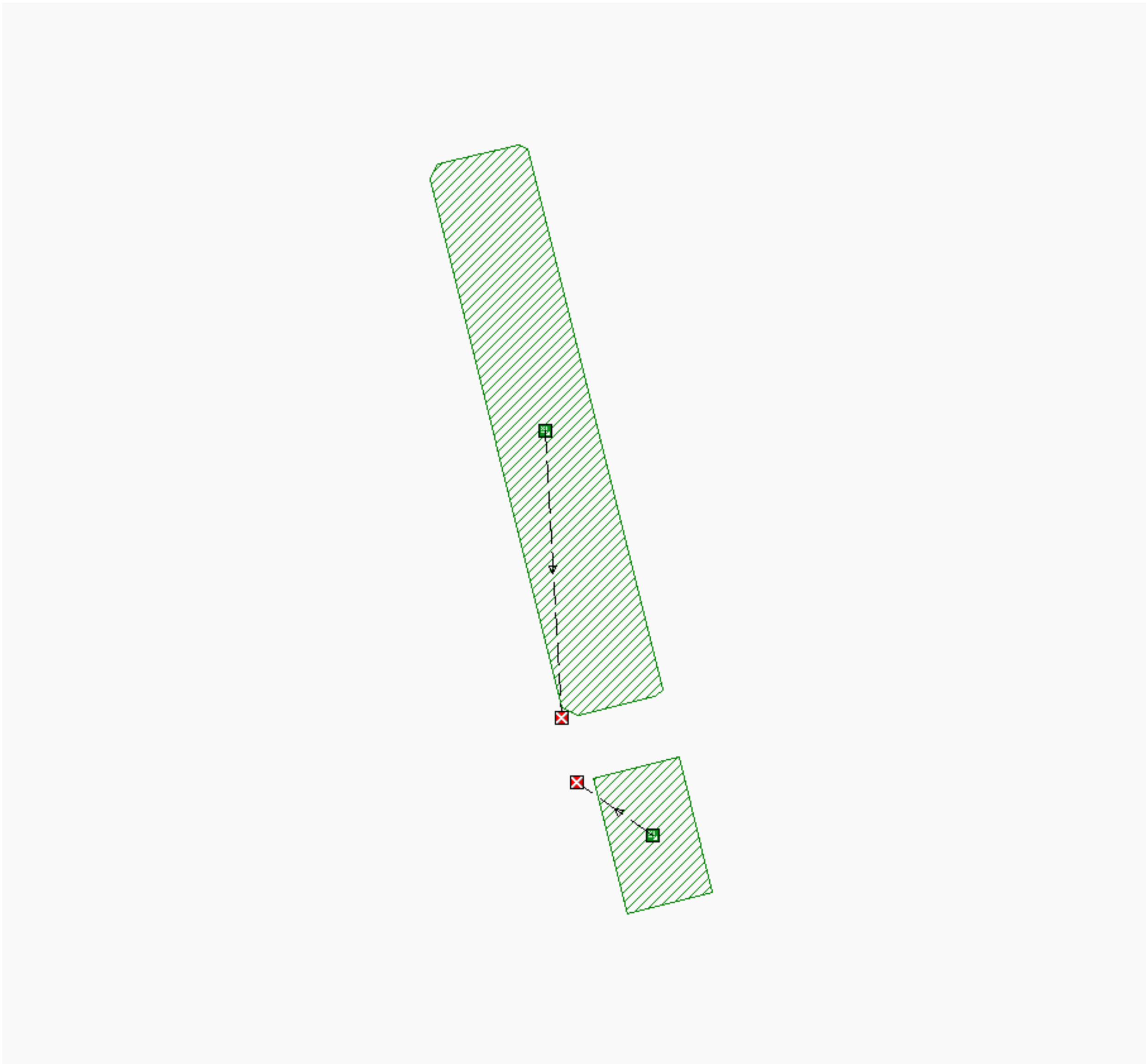
JUNCTION/LINK NODE — #

40 20 0 40 80 120

SCALE: 1"=40'

latitude 33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

PROPOSED



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Autodesk® Storm and Sanitary Analysis 2015 - Version 9.1.140 (Build 1)
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*******************
Project Description
*******************
File Name ................. Post Developed-Condition_100yr.SPF
Description ............... H:\1300\1305.20 - PFP Coastal Holdings Shasta East\Engineering\Reports\Drainage\1305.20
Existing DA's.dwg


****************
Analysis Options
****************
Flow Units ................ cfs
Subbasin Hydrograph Method. City of San Diego Rational Method
Time of Concentration...... SCS TR-55 (5 minutes minimum)
Return Period.............. 100 years
Storage Node Exfiltration.. Constant flow
Starting Date ............. JUN-28-2017 00:00:00
Ending Date ............... JUN-28-2017 01:00:00
Report Time Step .......... 00:00:10


*************
Element Count
*************
Number of subbasins ....... 2
Number of nodes ........... 2
Number of links ........... 0


****************
Subbasin Summary
****************
Subbasin                 Total
                          Area
ID                       acres
------------------------------
{_}.P.2                   0.33
P.1                       1.52
```

```
************
Node Summary
************
Node                Element             Invert   Maximum    Ponded    External
ID                  Type             Elevation     Elev.      Area      Inflow
                                            ft        ft       ft²
------------------------------------------------------------------------------
POCB                OUTFALL              33.53     33.53      0.00
POCC                OUTFALL              32.41     32.41      0.00


**************************        Volume         Depth
Runoff Quantity Continuity       acre-ft        inches
**************************     ---------       -------
Total Precipitation ......         0.056         0.365
Continuity Error (%) .....         0.306


**************************        Volume        Volume
Flow Routing Continuity          acre-ft      Mgallons
**************************     ---------     ---------
External Inflow ..........         0.000         0.000
External Outflow .........         0.039         0.013
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


**************************************
Runoff Coefficient Computations Report
**************************************

-------------------
Subbasin {_}.P.2
-------------------
                                                          Area          Soil        Runoff
Soil/Surface Description                                (acres)         Group        Coeff.
------------------------------------------------------------------------------------------
-                                                          0.33             D          0.70
Composite Area & Weighted Runoff Coeff.                    0.33                        0.70

---------------
```

Subbasin P.1

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.52	-	0.70
Composite Area & Weighted Runoff Coeff.	1.52		0.70

```
***************************************************
SCS TR-55 Time of Concentration Computations Report
***************************************************

Sheet Flow Equation
-------------------

        Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

        Where:

        Tc = Time of Concentration (hrs)
        n  = Manning's Roughness
        Lf = Flow Length (ft)
        P  = 2 yr, 24 hr Rainfall (inches)
        Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation
----------------------------------

        V  = 16.1345 * (Sf^0.5) (unpaved surface)
        V  = 20.3282 * (Sf^0.5) (paved surface)
        V  = 15.0 * (Sf^0.5) (grassed waterway surface)
        V  = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
        V  = 9.0 * (Sf^0.5) (cultivated straight rows surface)
        V  = 7.0 * (Sf^0.5) (short grass pasture surface)
        V  = 5.0 * (Sf^0.5) (woodland surface)
        V  = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
        Tc = (Lf / V) / (3600 sec/hr)

        Where:

        Tc = Time of Concentration (hrs)
        Lf = Flow Length (ft)
```

```
        V  = Velocity (ft/sec)
        Sf = Slope (ft/ft)

Channel Flow Equation
---------------------

        V  = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
        R  = Aq / Wp
        Tc = (Lf / V) / (3600 sec/hr)

        Where:

        Tc = Time of Concentration (hrs)
        Lf = Flow Length (ft)
        R  = Hydraulic Radius (ft)
        Aq = Flow Area (ft²)
        Wp = Wetted Perimeter (ft)
        V  = Velocity (ft/sec)
        Sf = Slope (ft/ft)
        n  = Manning's Roughness

-------------------
Subbasin {_}.P.2
-------------------
==================================================================================================
        Total TOC (minutes):                        0.00
==================================================================================================


---------------
Subbasin P.1
---------------
==================================================================================================
        Total TOC (minutes):                        0.00
==================================================================================================

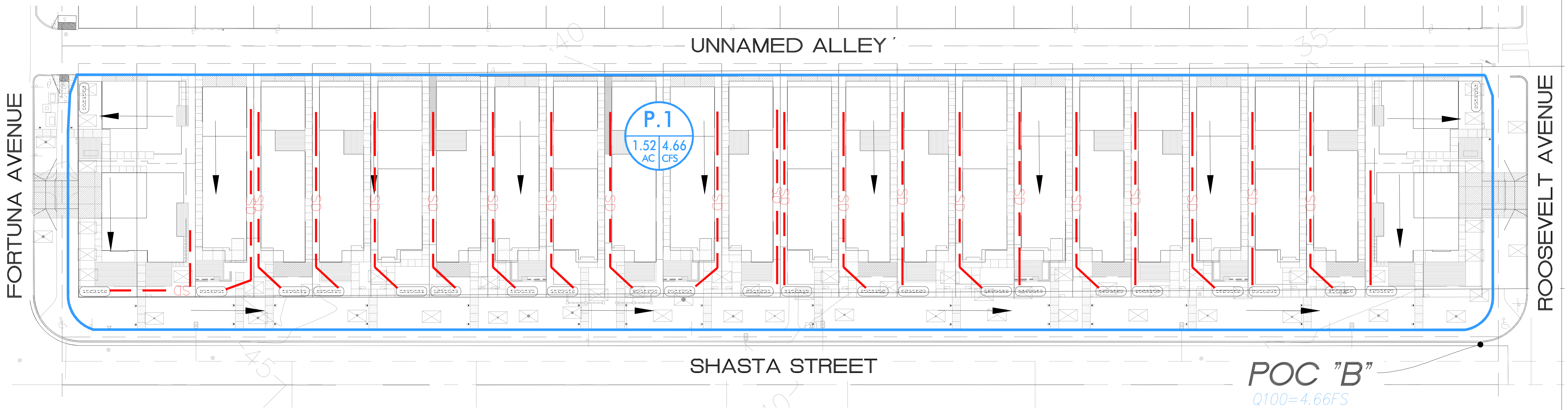

***********************
Subbasin Runoff Summary
***********************

-----------------------------------------------------------------------------------------
Subbasin       Accumulated     Rainfall     Total      Peak  Weighted           Time of
```

ID	Precip in	Intensity in/hr	Runoff in	Runoff cfs	Runoff Coeff	Concentration days	Concentration hh:mm:ss
{_}.P.2	0.36	4.38	0.26	1.01	0.700	0	00:05:00
P.1	0.36	4.38	0.26	4.66	0.700	0	00:05:00

Analysis began on: Thu Jun 29 09:53:22 2017
Analysis ended on: Thu Jun 29 09:53:22 2017
Total elapsed time: < 1 sec

PROPOSED DRAINAGE BASIN AREAS



LEGEND

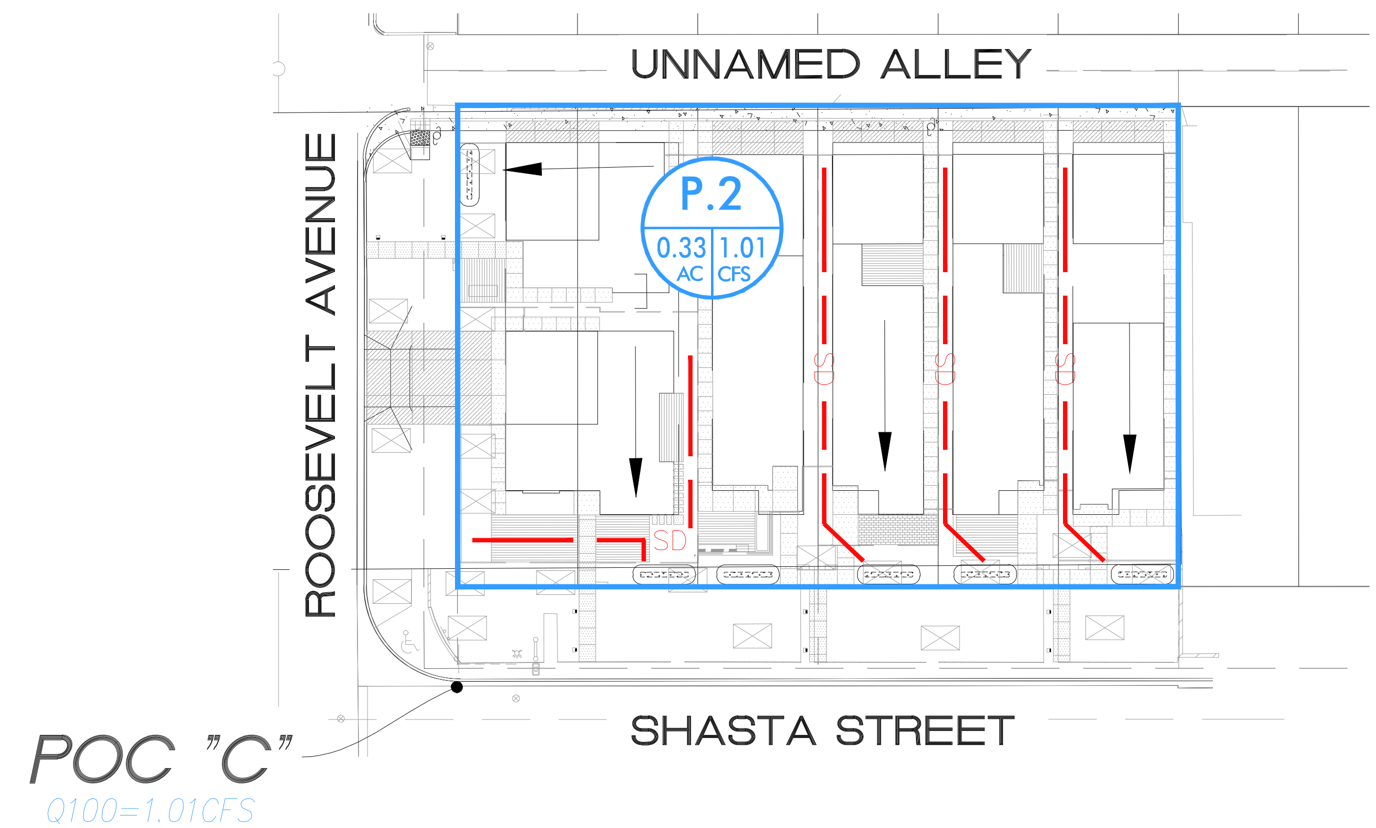
BASIN — BASIN / AC / CFS

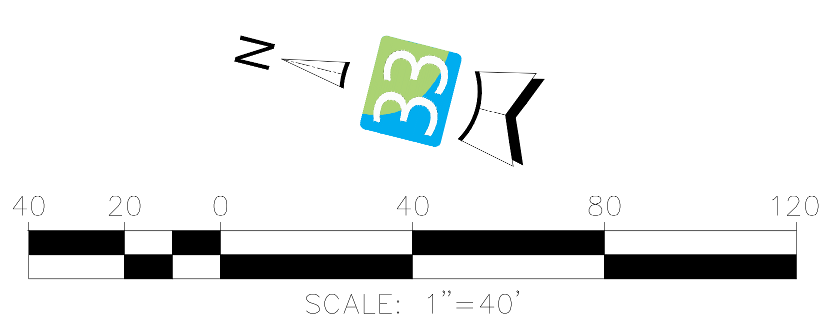
POINT OF COMPLIANCE — POC "A"

FLOW PATH

PROPOSED AREA DRAIN — SD

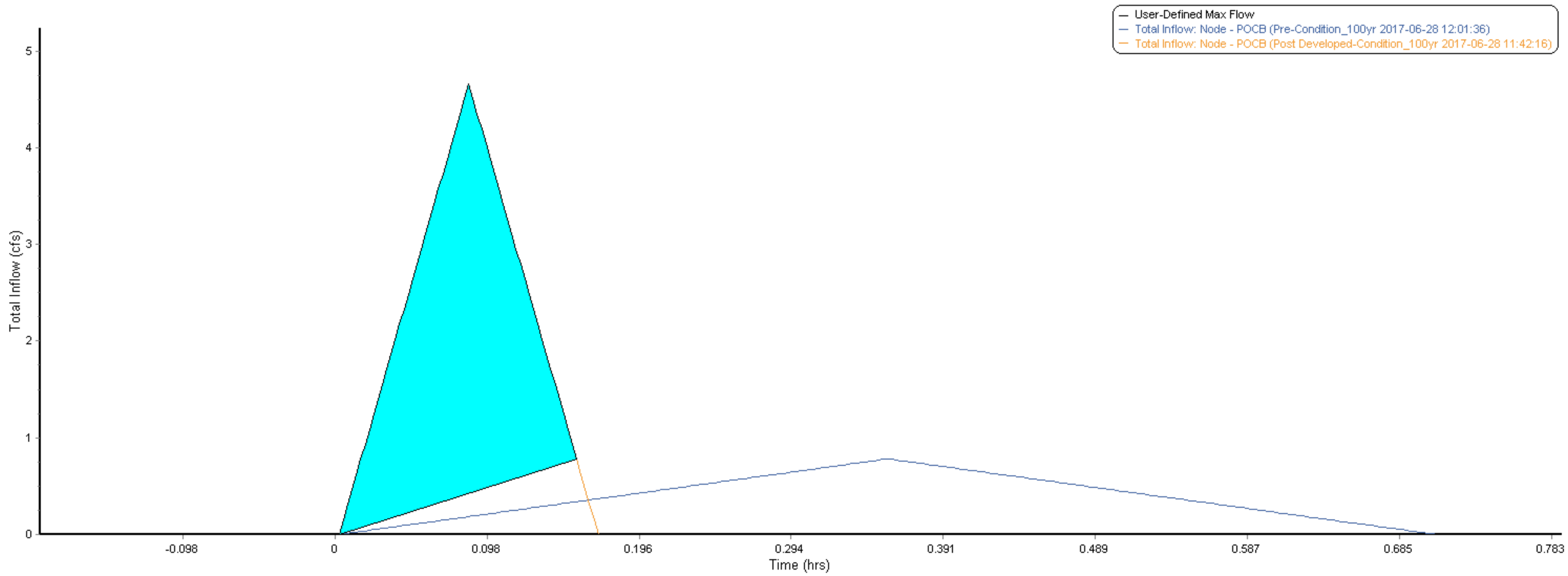
FLOW DIRECTION





latitude33
PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

POC “B”



Total Inflow Summary Table

Time period

From: 06/28/2017, 12:00:00 AM

To: 06/28/2017, 01:00:10 AM

Thresholds

Exceedance: 0

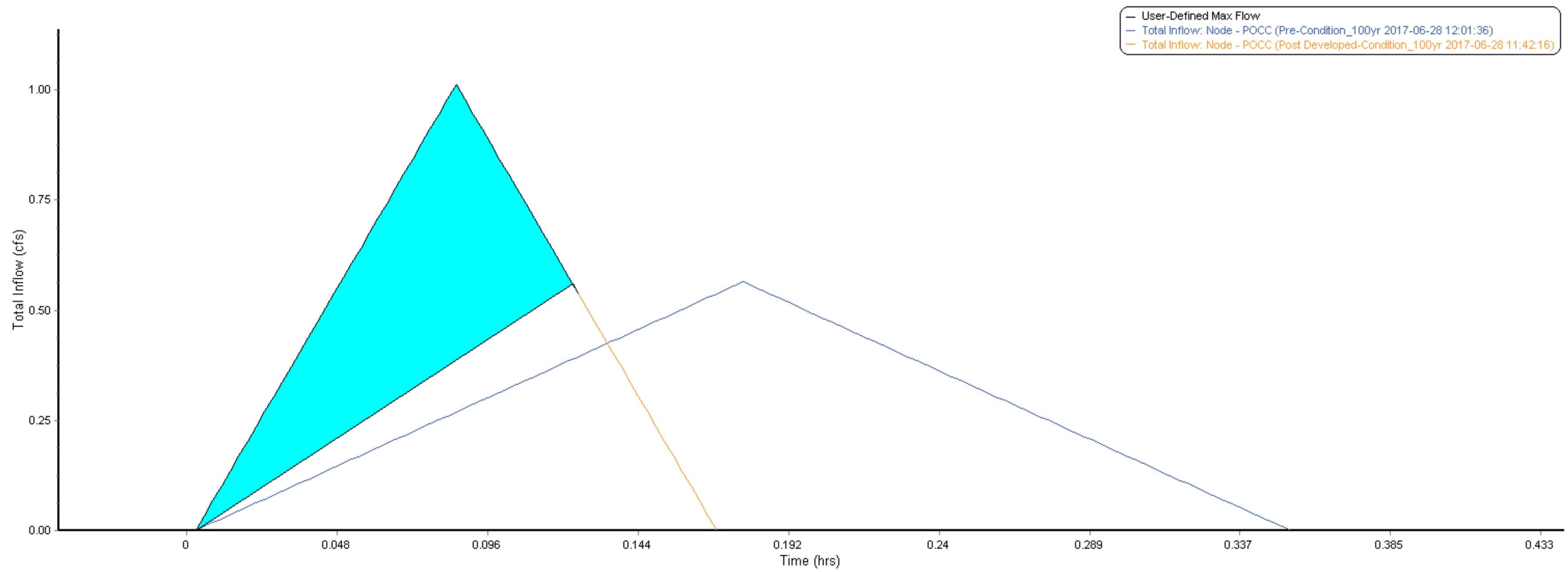
Deficit: 0

Detention storage

Max flow: 0.78

Element ID	POCB	POCB
Maximum Total Inflow (cfs)	0.78	4.66
Minimum Total Inflow (cfs)	0.00	0.00
Event Mean Total Inflow (cfs)	0.28	0.39
Duration of Exceedances (hrs)	N/A	N/A
Duration of Deficits (hrs)	N/A	N/A
Number of Exceedances	N/A	N/A
Number of Deficits	N/A	N/A
Volume of Exceedance (ft³)	N/A	N/A
Volume of Deficit (ft³)	N/A	N/A
Total Inflow Volume (ft³)	992.61	1398.1
Detention Storage (ft³)	1164.10	1164.10

POC "C"



Total Inflow Summary Table

Time period

From: 06/28/2017, 12:00:00 AM

To: 06/28/2017, 01:00:10 AM

Thresholds

Exceedance: 0

Deficit: 0

Detention storage

Max flow: 0.56

Element ID	POCC	POCC
Maximum Total Inflow (cfs)	0.56	1.01
Minimum Total Inflow (cfs)	0.00	0.00
Event Mean Total Inflow (cfs)	0.10	0.08
Duration of Exceedances (hrs)	N/A	N/A
Duration of Deficits (hrs)	N/A	N/A
Number of Exceedances	N/A	N/A
Number of Deficits	N/A	N/A
Volume of Exceedance (ft³)	N/A	N/A
Volume of Deficit (ft³)	N/A	N/A
Total Inflow Volume (ft³)	355.37	303.53
Detention Storage (ft³)	135.53	135.53

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ATTACHMENT 6
GEOTECHNICAL AND GROUNDWATER INVESTIGATION REPORT

Attach project's geotechnical and groundwater investigation report. Refer to Appendix C.4 to determine the reporting requirements.

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

GEOTECHNICAL INVESTIGATION

ECO BLOK EAST
SHASTA STREET
SAN DIEGO, CALIFORNIA

PREPARED FOR

PFP COASTAL HOLDINGS, LLC
SAN DIEGO, CALIFORNIA

DECEMBER 19, 2016
PROJECT NO. G1832-42-03

PROFESSIONAL GEOLOGIST
GARRY WELLS CANNON
No. 2201
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
RODNEY C. MIKESELL
No.2533
GEOTECHNICAL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
GARRY WELLS CANNON
No. C 056468
CIVIL
STATE OF CALIFORNIA

TABLE OF CONTENTS

TABLE OF CONTENTS (Concluded)

GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

[illegible]

[illegible] *Shasta East – Preliminary Site Exhibit,* [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

2. SITE AND PROJECT DESCRIPTION

[illegible]

3. SOIL AND GEOLOGIC CONDITIONS

3.1 Undocumented Fill (Qudf)

3.2 Old Terrace Deposits (Qt)

4. GROUNDWATER

[illegible]

5. GEOLOGIC HAZARDS

5.1 Faulting and Seismicity

[illegible] *EZ-FRISK* [illegible]

TABLE 5.1.1
DETERMINISTIC SPECTRA SITE PARAMETERS

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Peak Ground Acceleration		
			Boore-Atkinson (2008) NGA USGS 2008 (g)	Campbell-Bozorgnia (2008) NGA USGS 2008 (g)	Chiou-Youngs (2007) NGA USGS 2008 (g)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] *EZ-FRISK* [illegible] *EZ-FRISK* [illegible]

[illegible]

TABLE 5.1.2
PROBABILISTIC SEISMIC HAZARD PARAMETERS

Probability of Exceedence	Peak Ground Acceleration		
	Boore-Atkinson NGA USGS 2008 (g)	Campbell-Bozorgnia NGA USGS 2008 (g)	Chiou-Youngs (2007) NGA USGS 2008 (g)
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

5.2 Ground Rupture

[illegible]

5.3 Liquefaction and Seismically Induced Settlement

[illegible]

5.4 Landslides

[illegible]

5.5 Tsunami and Seiche

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

6.2 Excavation and Soil Characteristics

TABLE 6.2.1
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	Expansion Classification	2013 CBC Expansion Classification
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	

[illegible] [illegible]

TABLE 6.2.2
REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Sulfate Exposure	Exposure Class	Water-Soluble Sulfate Percent by Weight	Cement Type	Maximum Water to Cement Ratio by Weight	Minimum Compressive Strength (psi)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] [illegible]

6.3 Grading

Recommended Grading Specifications

[illegible]

6.4 Seismic Design Criteria

[illegible] *U.S. Seismic Design Maps* [illegible]

TABLE 6.4.1
2016 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2013 CBC Reference
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[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

TABLE 6.4.2
2016 CBC SITE ACCELERATION DESIGN PARAMETERS

Parameter	Value	ASCE 7-10 Reference
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

6.5 Foundation and Concrete Slabs-On-Grade Recommendations

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] *American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials* [illegible]

[illegible]

[illegible]

TABLE 6.5.1
POST-TENSIONED FOUNDATION SYSTEM DESIGN PARAMETERS

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

- [illegible]
- [illegible]

[illegible]

[illegible]

- [illegible]
- [illegible] F [illegible]
- [illegible]

[illegible] [illegible] M [illegible]

[illegible] [illegible]

[illegible] [illegible]

6.6 Retaining Walls and Lateral Loads

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

6.7 Slope Maintenance

[illegible]

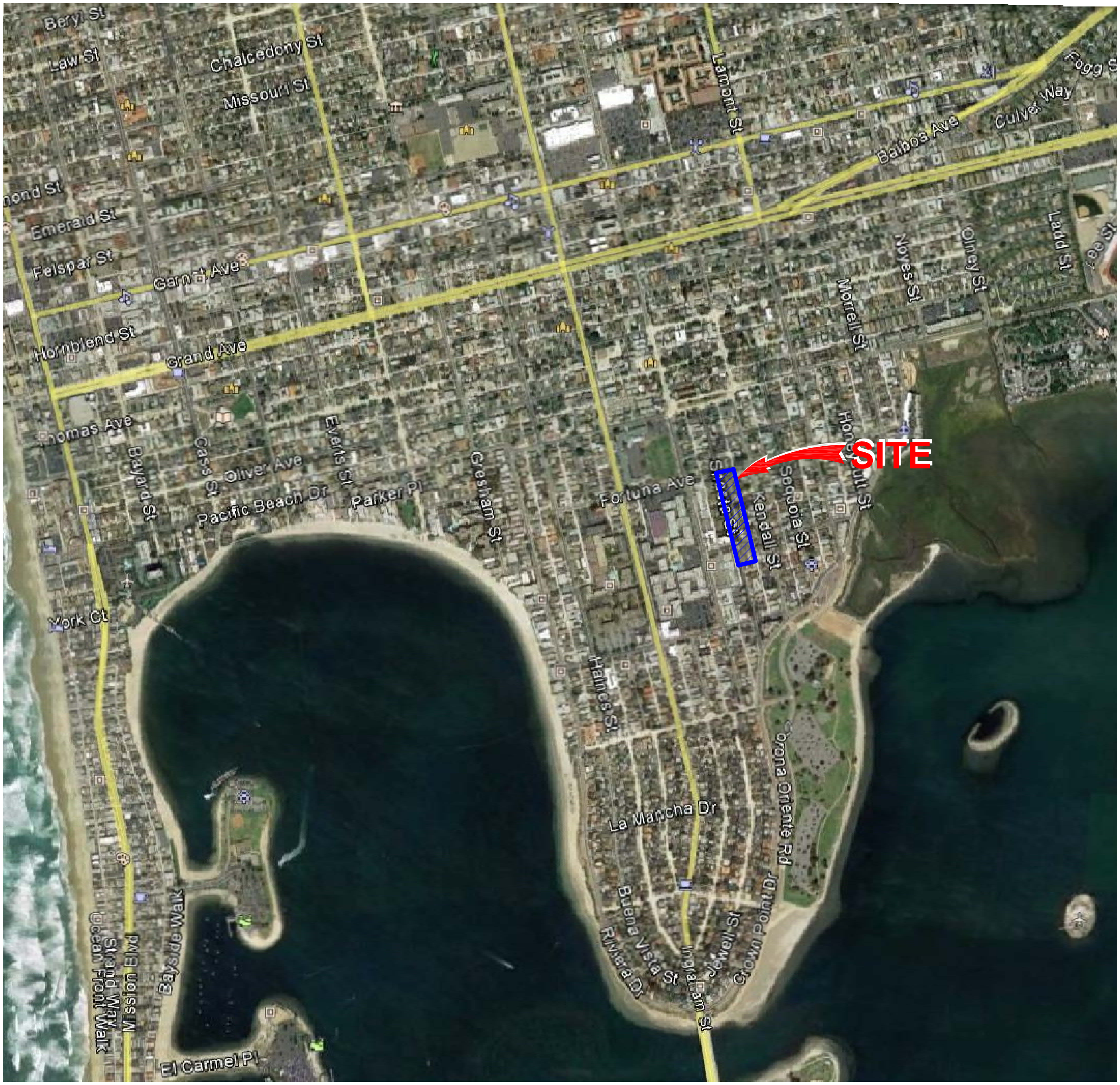
6.8 Storm Water Management

[illegible]

6.9 Site Drainage and Moisture Protection

6.10 Grading and Foundation Plan Review

LIMITATIONS AND UNIFORMITY OF CONDITIONS



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VICINITY MAP

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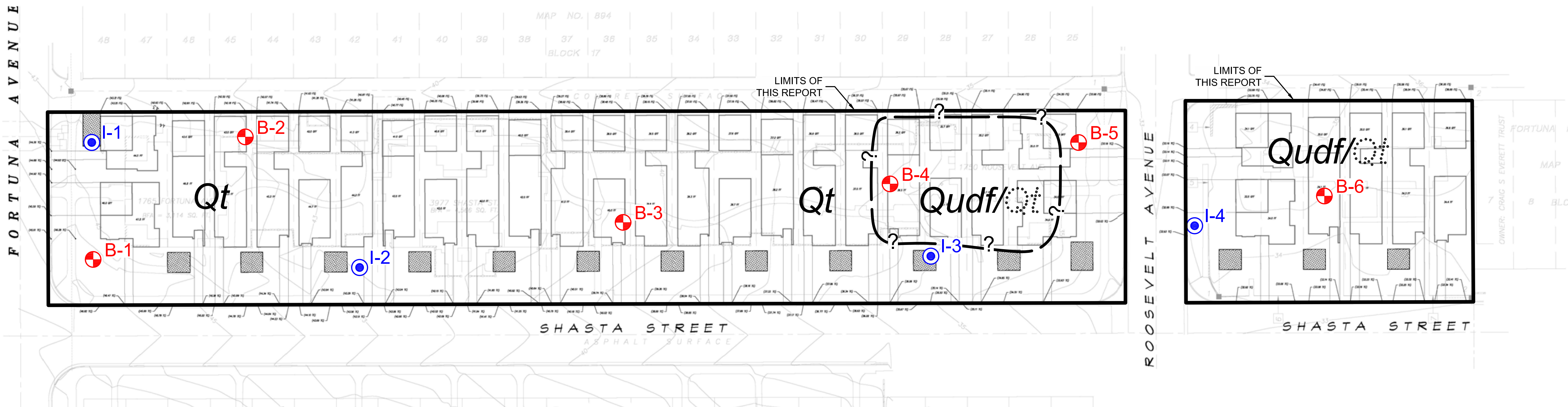
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

ECO BLOK EAST
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 12 - 19 - 2016	PROJECT NO. G1832 - 42 - 03	FIG. 1

ECO BLOK EAST
SAN DIEGO, CALIFORNIA



GEOCON LEGEND

Qudf ........UNDOCUMENTED FILL

Qt ....TERRACE DEPOSITS (Dotted Where Buried)

........APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)

B-6 ....APPROX. LOCATION OF BORING

I-4 ....APPROX. LOCATION OF INFILTRATION TEST

NOT TO SCALE

GEOLOGIC MAP

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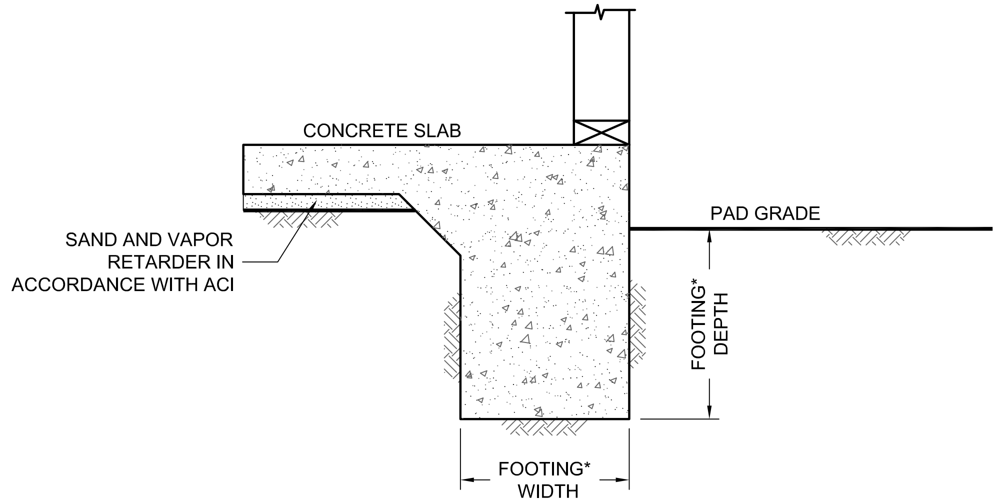
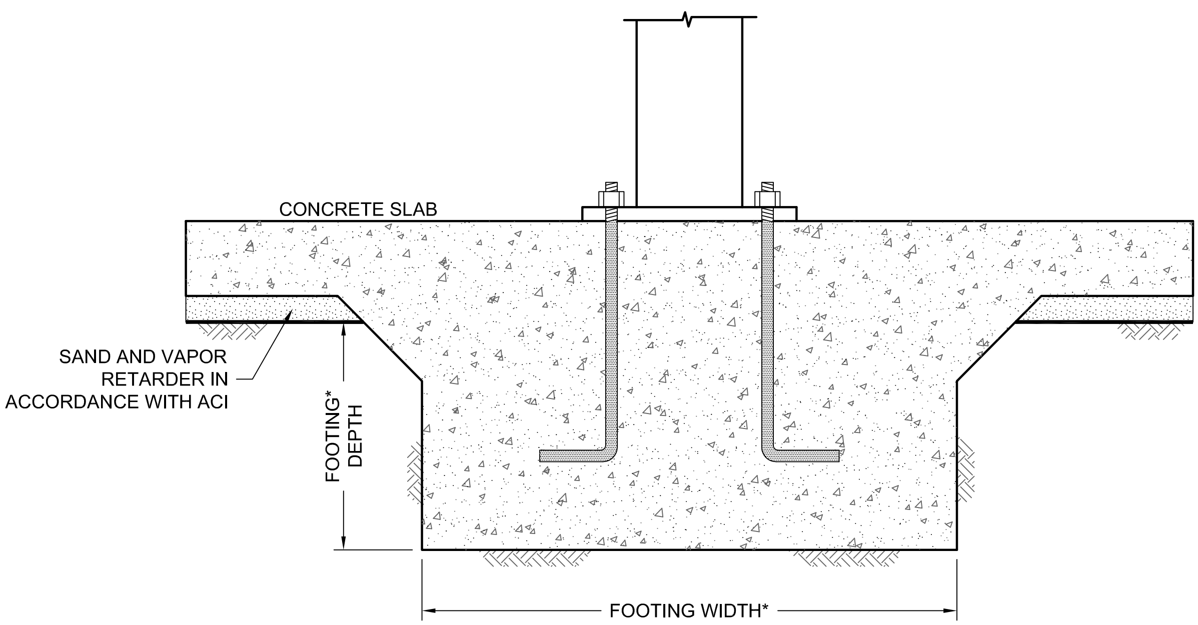
PHONE 858 558-6900 - FAX 858 558-6159

PROJECT NO. G1832 - 42 - 03
FIGURE 2
DATE 12 - 19 - 2016





*....SEE REPORT FOR FOUNDATION WIDTH AND DEPTH RECOMMENDATION

NO SCALE

WALL / COLUMN FOOTING DIMENSION DETAIL

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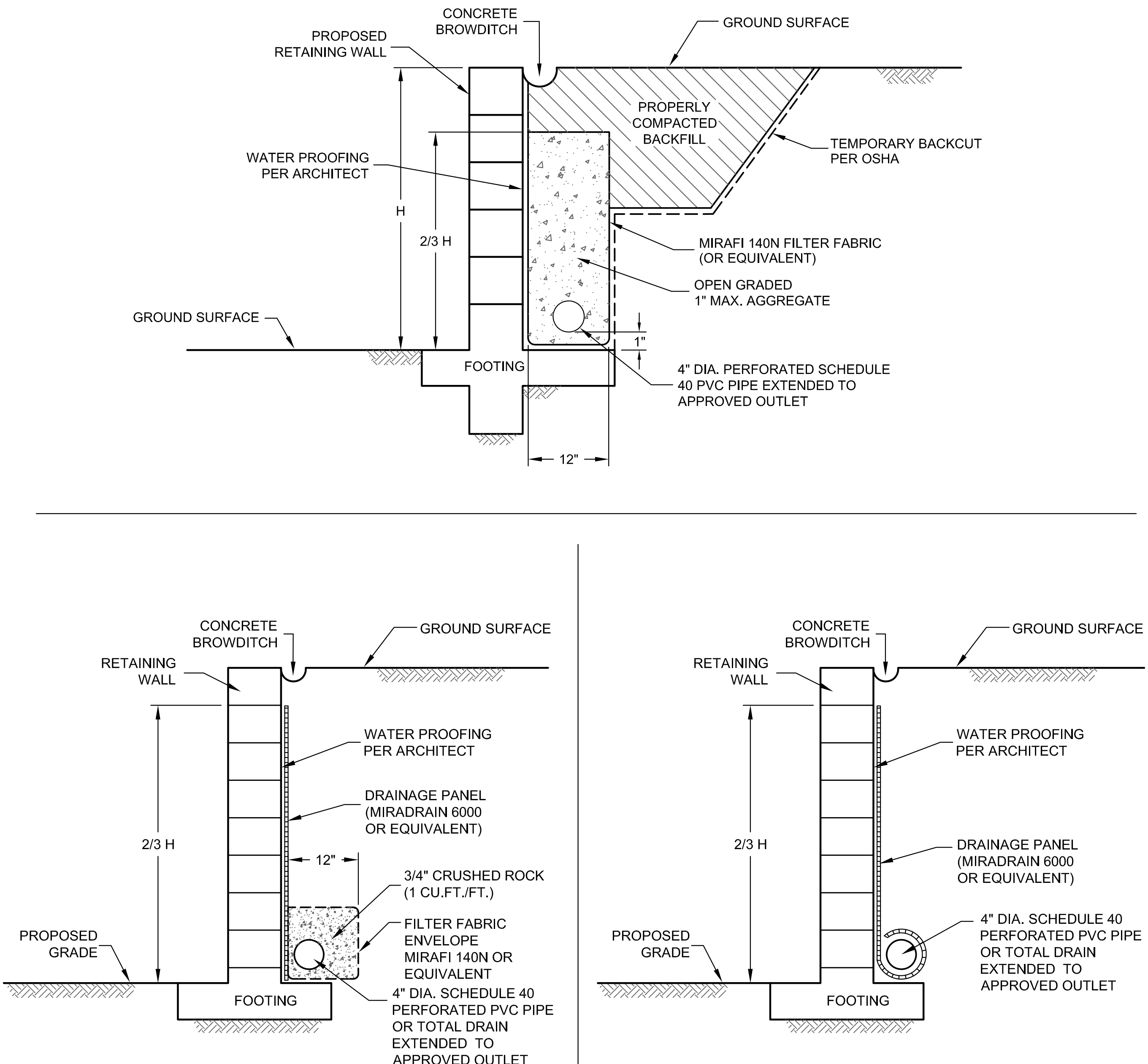
SAN DIEGO, CALIFORNIA

RM / AML		DSK/GTYPD	DATE 12 - 19 - 2016	PROJECT NO. G1832 - 42 - 03	FIG. 3



NOTE :

DRAIN SHOULD BE UNIFORMLY SLOPED TO GRAVITY OUTLET
OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPING

NO SCALE

TYPICAL RETAINING WALL DRAIN DETAIL

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RM / AML		DSK/GTYPD	DATE 12 - 19 - 2016	PROJECT NO. G1832 - 42 - 03	FIG. 4

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

BORING B 1

ELEV. (MSL.) **49'** DATE COMPLETED **11-08-2016**

EQUIPMENT **FRASTE** BY: **J. LAYOG**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B1-1			SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, moist, light brown to brown, fine grained SAND with silt to Silty SAND; 2-4" sod at surface			
2	B1-2					7		
4	B1-3					10		
6								
8					-Becomes medium dense			
10	B1-4					15		
12					-Layer of gravel approx. 6" thick			
14	B1-5					25		
16					BORING TERMINATED AT 16 FEET Groundwater not encountered Backfilled with cuttings on 11-08-2016			

Figure A-1,
Log of Boring B 1, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 2

ELEV. (MSL.) **45'** DATE COMPLETED **11-08-2016**

EQUIPMENT **FRASTE** BY: **J. LAYOG**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B2-1				2" **ASPHALT** Over 3" **BASE**			
				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Medium dense, damp to moist, light brown to brown, fine SAND with silt to Silty SAND			
2								
	B2-2					18		
4								
	B2-3					27		
6					-Becomes moist			
8								
10	B2-4				-Becomes light brown	38		
12								
					-Layer of gravel approx. 6" thick			
14					-Becomes dense			
	B2-5					50		
16					BORING TERMINATED AT 16 FEET Groundwater not encountered Backfilled with cuttings on 11-08-2016			

Figure A-2,
Log of Boring B 2, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G1832-42-03

BORING B 3

ELEV. (MSL.) **43'** DATE COMPLETED **11-08-2016**

EQUIPMENT **FRASTE** BY: **J. LAYOG**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, damp to moist, light brown to brown, fine SAND with silt to Silty SAND; 3-4" sod at surface			
2	B3-1					14		
4	B3-2				-Becomes moist	13		
6								
8								
10	B3-3					26		
12								
14	B3-4				-Layer of gravel approx. 6" thick -Becomes dense -No sample; gravel in shoe	64		
16					BORING TERMINATED AT 16FEET Groundwater not encountered Backfilled with cuttings on 11-08-2016			

Figure A-3,
Log of Boring B 3, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 4

ELEV. (MSL.) **39'** DATE COMPLETED **11-08-2016**

EQUIPMENT **FRASTE** BY: **J. LAYOG**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B4-1			SM	**UNDOCUMENTED FILL (Qudf)** Loose, moist, dark brown to brown, Silty, fine SAND; 3-4" of sod at surface			
				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, moist, light brown to brown, fine SAND with silt to Silty SAND			
2								
	B4-2					14		
4								
	B4-3					7		
6								
8					-Becomes medium dense			
10	B4-4					34		
					-Gravel in shoe			

BORING TERMINATED AT 11 FEET
Groundwater not encountered
Backfilled with cuttings on 11-08-2016

Figure A-4,
Log of Boring B 4, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

BORING B 5

ELEV. (MSL.) **37'** DATE COMPLETED **11-08-2016**

EQUIPMENT **FRASTE** BY: **J. LAYOG**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, damp to moist, light brown to brown, fine SAND with silt to Silty SAND; 3-4" of sod at surface			
2								
	B5-1					13		
4								
	B5-2					12		
6								
8								
10					-Layer of gravel approx. 6-12" thick			
12								
14								
	B5-3				-Becomes medium dense	15		
16					BORING TERMINATED AT 16 FEET Groundwater not encountered Backfilled with cuttings on 11-08-2016			

Figure A-5,
Log of Boring B 5, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 6

ELEV. (MSL.) 38' DATE COMPLETED 11-08-2016

EQUIPMENT FRASTE BY: J. LAYOG

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B6-1			SM	**UNDOCUMENTED FILL (Qudf)** Loose, damp, dark brown, Silty, fine SAND			
2				SP-SM/SM	**TERRACE DEPOSITS (Qt)** Loose, damp to moist, light brown to brown, fine SAND with silt to Silty SAND			
	B6-2					6		
4								
	B6-3					11		
6								
8					-Becomes medium dense			
10	B6-4					19		
12								
14								
	B6-5				-Becomes medium grained, yellowish brown	29		
16					-Gravel in shoe			

BORING TERMINATED AT 16 FEET
Groundwater not encountered
Backfilled with cuttings on 11-08-2016

Figure A-6,
Log of Boring B 6, Page 1 of 1

G1832-42-03.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

APPENDIX B

APPENDIX B

LABORATORY TESTING

[illegible]

TABLE B-I
SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS
ASTM D 1557

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry wt.)
[illegible]	[illegible]	[illegible]	[illegible]

TABLE B-II
SUMMARY OF LABORATORY REMOLDED DIRECT SHEAR TEST RESULTS
ASTM D 3080

Sample No.	Dry Density (pcf)	Moisture Content (%)	Peak Unit Cohesion (psf)	Peak Angle of Shear Resistance (degrees)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE B-III
SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
ASTM D 4829

Sample No.	Moisture Content		Dry Density (pcf)	Expansion Index
	Before Test (%)	After Test (%)		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

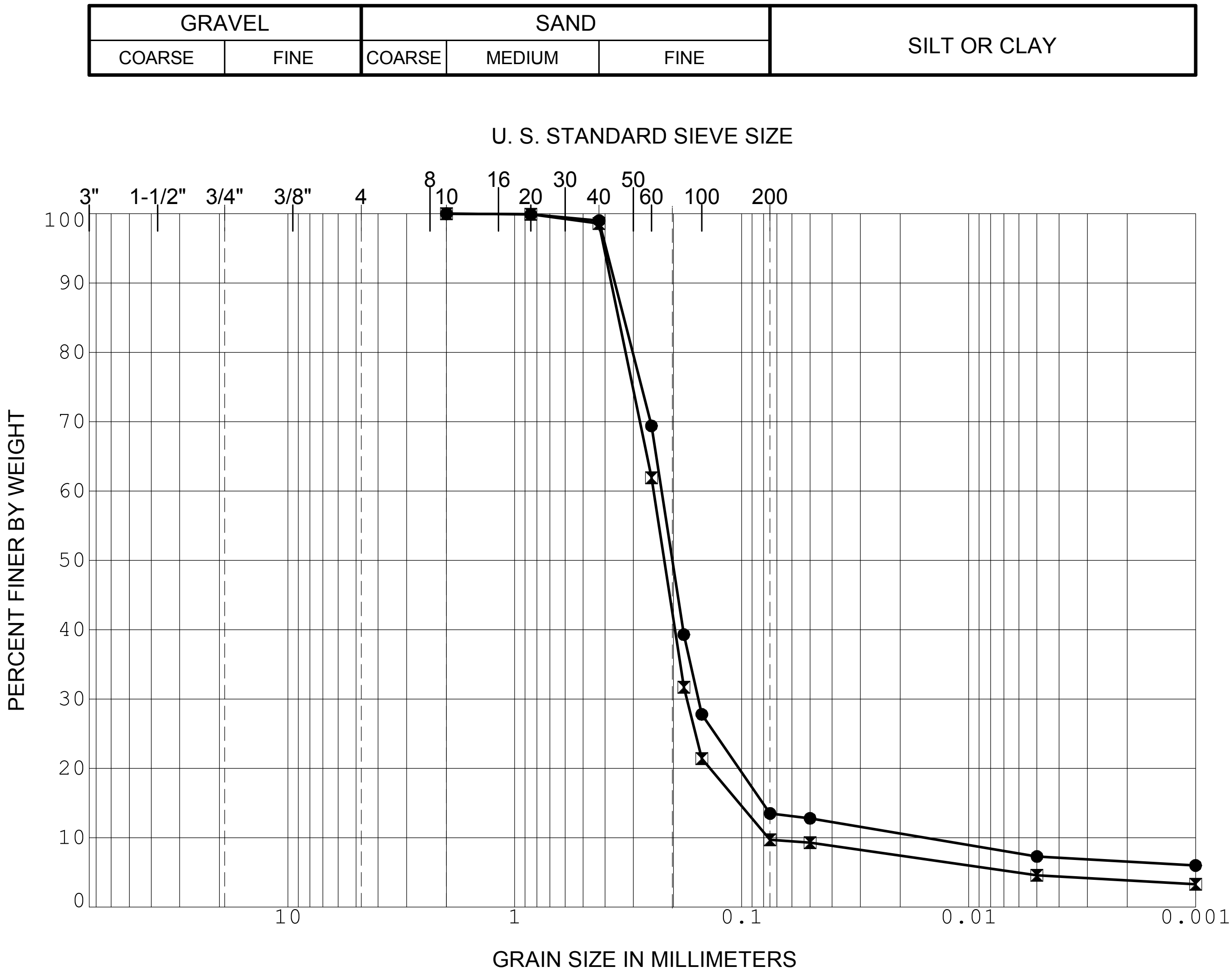
TABLE B-IV
SUMMARY OF LABORATORY WATER-SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water-Soluble Sulfate (%)	Classification
[illegible]	[illegible]	[illegible]

TABLE B-V
SUMMARY OF LABORATORY R-VALUE AND SAND EQUIVALENT TEST RESULTS
ASTM D 2844

Sample No.	R-Value
[illegible]	[illegible]

PROJECT NO. G1832-42-03



	SAMPLE	DEPTH (ft)	CLASSIFICATION	NAT WC	LL	PL	PI
●	I-2	0.0	(SM) Silty SAND				
⧗	I-4	0.0	(SP-SM) Poorly graded SAND with silt				
▲							

GRADATION CURVE

ECO BLOK EAST

SAN DIEGO, CALIFORNIA

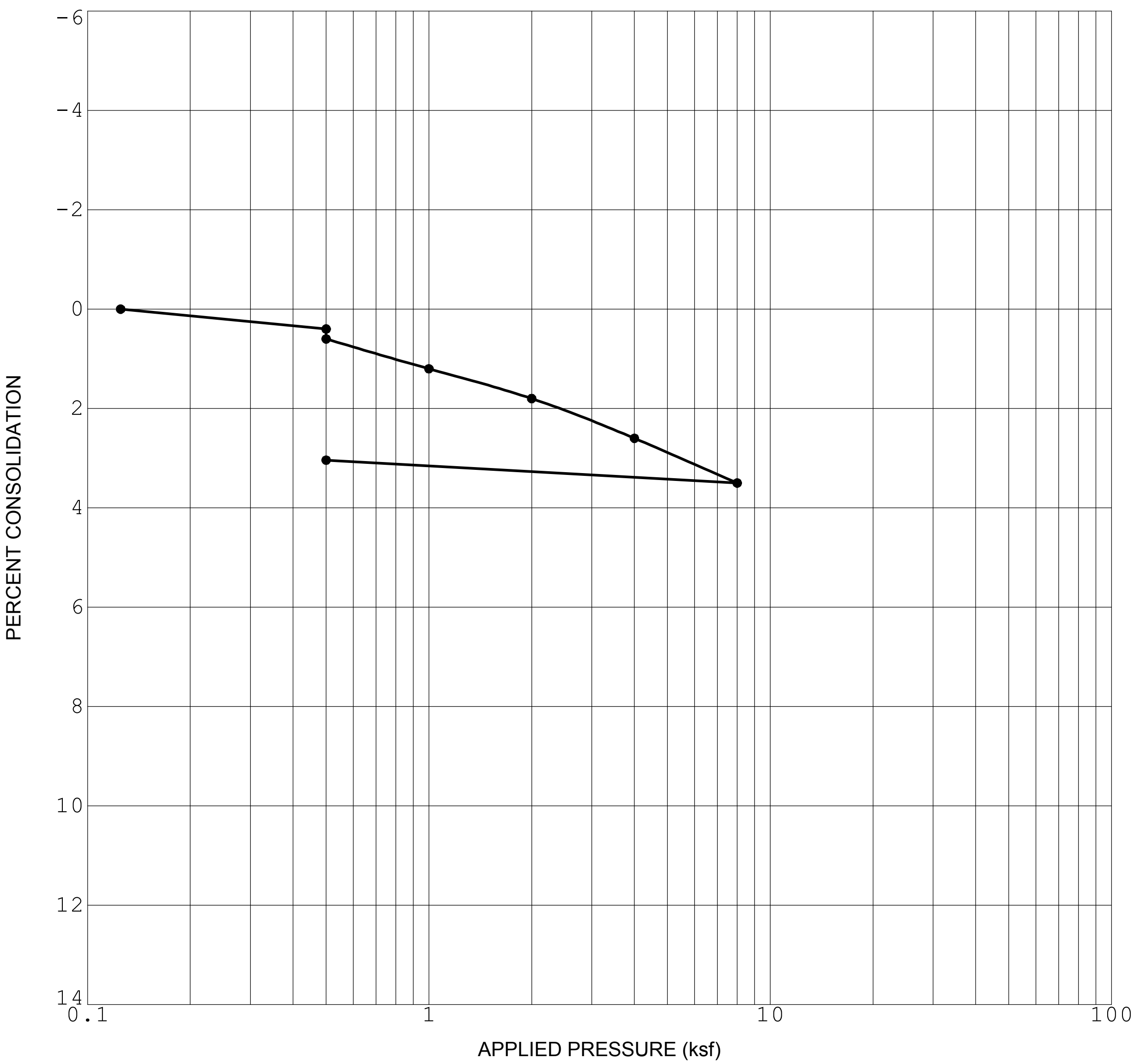
G1832-42-03.GPJ

Figure B-1

GEOCON

PROJECT NO. G1832-42-03

SAMPLE NO. B1-1



Initial Dry Density (pcf)	98.3
Initial Water Content (%)	5.8

Initial Saturation (%)	24.7
Sample Saturated at (ksf)	.5

CONSOLIDATION CURVE

ECO BLOK EAST

SAN DIEGO, CALIFORNIA

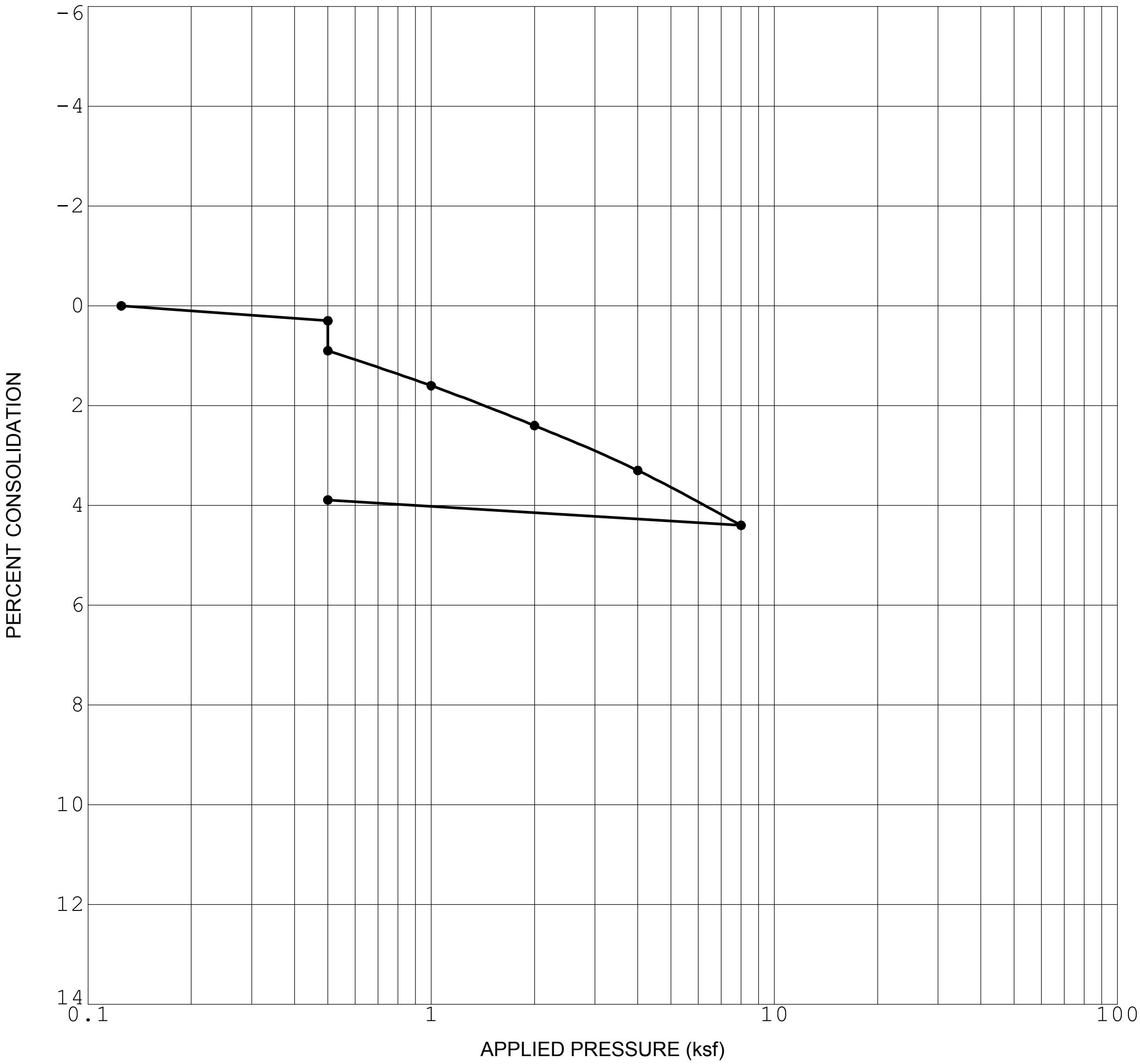
G1832-42-03.GPJ

Figure B-2

GEOCON

PROJECT NO. G1832-42-03

SAMPLE NO. B1-2



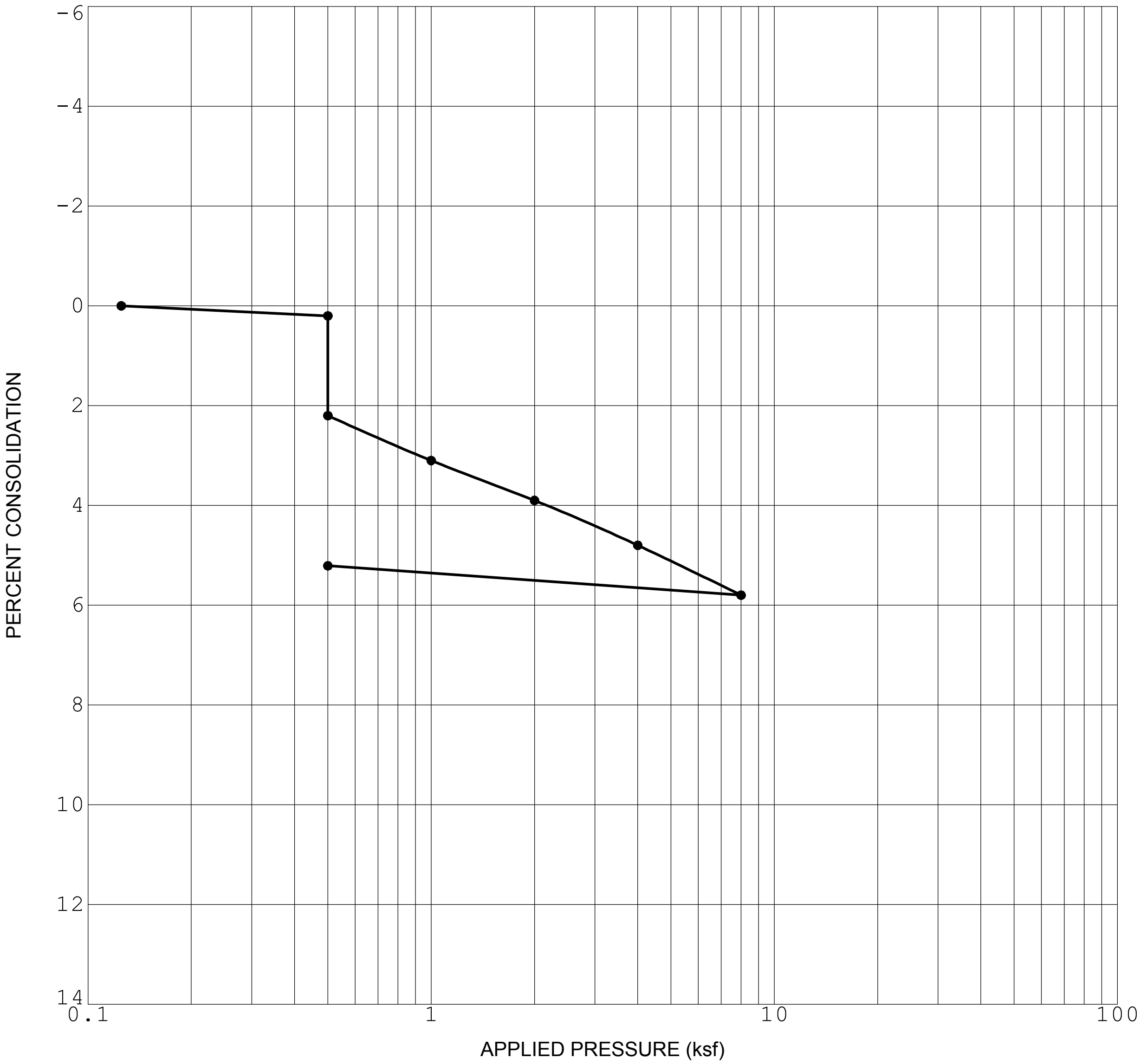
Initial Dry Density (pcf)	99.3	**Initial Saturation (%)**	36.8
Initial Water Content (%)	9.3	**Sample Saturated at (ksf)**	.5

CONSOLIDATION CURVE

ECO BLOK EAST

SAN DIEGO, CALIFORNIA

SAMPLE NO. B1-3



Initial Dry Density (pcf)	95.9	**Initial Saturation (%)**	27.8
Initial Water Content (%)	7.6	**Sample Saturated at (ksf)**	.5

CONSOLIDATION CURVE

ECO BLOK EAST

SAN DIEGO, CALIFORNIA

APPENDIX C

APPENDIX C

STORM WATER MANAGEMENT

Hydrologic Soil Group

TABLE C-1
HYDROLOGIC SOIL GROUP DEFINITIONS

Soil Group	Soil Group Definition
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

TABLE C-2
USDA WEB SOIL SURVEY – HYDROLOGIC SOIL GROUP

Map Unit Name	Map Unit Symbol	Approximate Percentage of Property	Hydrologic Soil Group	k_{SAT} of Most Limiting Layer (inches/hour)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Infiltration Testing

[illegible]

[illegible]

TABLE C-3
UNFACTORED HYDRAULIC CONDUCTIVITY TEST RESULTS

Test No.	Geologic Unit	Test Elevation (feet, MSL)	Field Infiltration Rate, I (inches/hour)
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

STORM WATER MANAGEMENT CONCLUSIONS

Soil Types

Undocumented Fill (Qudf) –

Old Terrace Deposits (Qt) –

Groundwater Elevation

Existing Utilities

Existing and Proposed Foundations

Soil or Groundwater Contamination

Slopes

Infiltration Rates

[illegible]

Storm Water Management Devices

[illegible]

Storm Water Standard Worksheets

[illegible] *Categorization of Infiltration Feasibility Condition* [illegible]

[illegible]

TABLE C-4
SUITABILITY ASSESSMENT RELATED CONSIDERATIONS FOR INFILTRATION FACILITY SAFETY FACTORS

Consideration	High Concern – 3 Points	Medium Concern – 2 Points	Low Concern – 1 Point
[illegible]	[illegible]	[illegible]	[illegible]

TABLE C-4 (Concluded)
SUITABILITY ASSESSMENT RELATED CONSIDERATIONS FOR INFILTRATION FACILITY SAFETY FACTORS

Consideration	High Concern – 3 Points	Medium Concern – 2 Points	Low Concern – 1 Point
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

TABLE C-5
FACTOR OF SAFETY WORKSHEET D.5-1 DESIGN VALUES[1]

Suitability Assessment Factor Category	Assigned Weight (w)	Factor Value (v)	Product (p = w x v)
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]			[illegible]

[1] [illegible]

CONCLUSIONS

[illegible]

[illegible]

Aardvark Permeameter Data Analysis

Project Name:	Eco Blok East	Date:	11/7/2016
Project Number:	G1832-42-03	By:	JTL
Borehole Location:	I-1	Ref. EL (feet, MSL):	44.0
		Bottom EL (feet, MSL):	41.8

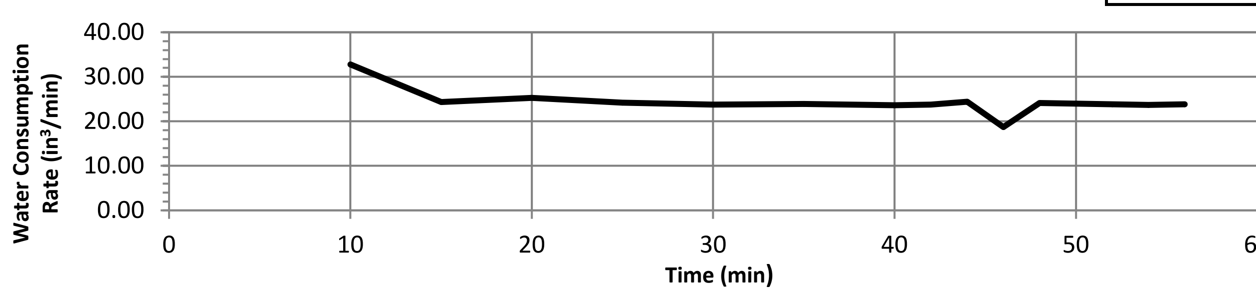
Borehole Diameter (inches):	4.00
Borehole Depth, **H** (inches):	27.00
Distance Between Reservoir & Top of Borehole (inches):	29.00
Depth to Water Table, **s** (feet):	100
Height APM Raised from Bottom (inches):	2.00

Wetted Area, **A** (in^2): 83.64

Distance Between Resevoir and APM, **D** (inches):	46.75
Head Height Calculated, **h** (inches):	5.66
Head Height Recorded, **h** (inches):	4.50
Distance Between Constant Head and Water Table, **L** (inches):	1179

Reading	Time (min)	Time Elapsed (min)	Reservoir Water Weight (g)	Resevoir Water Weight (lbs)	Interval Water Consumption (lbs)	Total Water Consumption (lbs)	*Water Consumption Rate (in^3/min)
1	0.00			64.345			
2	10.00	10.00		52.520	11.825	11.825	32.778
3	15.00	5.00		48.135	4.385	16.210	24.310
4	20.00	5.00		43.580	4.555	20.765	25.252
5	25.00	5.00		39.220	4.360	25.125	24.171
6	30.00	5.00		34.935	4.285	29.410	23.755
7	35.00	5.00		30.620	4.315	33.725	23.921
8	40.00	5.00		26.360	4.260	37.985	23.617
9	42.00	2.00		24.645	1.715	39.700	23.769
10	44.00	2.00		22.885	1.760	41.460	24.393
11	46.00	2.00		21.535	1.350	42.810	18.710
12	48.00	2.00		19.795	1.740	44.550	24.115
13	50.00	2.00		18.065	1.730	46.280	23.977
14	52.00	2.00		16.345	1.720	48.000	23.838
15	54.00	2.00		14.635	1.710	49.710	23.700
16	56.00	2.00		12.915	1.720	51.430	23.838
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							

Steady Flow Rate, Q (in^3/min): 23.792



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

Case 1: L/h > 3 K_{sat} = 1.25E-01 in/min 7.501 in/hr

GEOCON

Aardvark Permeameter Data Analysis

Project Name:	Eco Blok East	Date:	11/7/2016
Project Number:	G1832-42-03	By:	JTL
Borehole Location:	I-2	Ref. EL (feet, MSL):	43.0
		Bottom EL (feet, MSL):	40.1

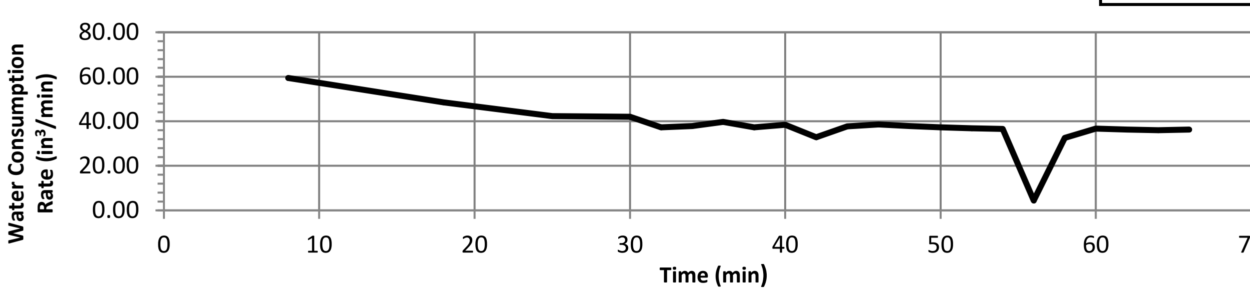
Borehole Diameter (inches):	4.00
Borehole Depth, **H** (inches):	35.00
Distance Between Reservoir & Top of Borehole (inches):	29.00
Depth to Water Table, **s** (feet):	100
Height APM Raised from Bottom (inches):	2.00

Wetted Area, **A** (in^2): 83.97

Distance Between Resevoir and APM, **D** (inches):	54.75
Head Height Calculated, **h** (inches):	5.68
Head Height Recorded, **h** (inches):	5.00
Distance Between Constant Head and Water Table, **L** (inches):	1171

Reading	Time (min)	Time Elapsed (min)	Reservoir Water Weight (g)	Resevoir Water Weight (lbs)	Interval Water Consumption (lbs)	Total Water Consumption (lbs)	*Water Consumption Rate (in^3/min)
1	0.00			109.840			
2	8.00	8.00		92.675	17.165	17.165	59.474
3	18.00	10.00		75.160	17.515	34.680	48.550
4	25.00	7.00		64.455	10.705	45.385	42.390
5	30.00	5.00		56.870	7.585	52.970	42.050
6	32.00	2.00		54.180	2.690	55.660	37.282
7	34.00	2.00		51.445	2.735	58.395	37.906
8	36.00	2.00		48.575	2.870	61.265	39.777
9	38.00	2.00		45.880	2.695	63.960	37.351
10	40.00	2.00		43.110	2.770	66.730	38.391
11	42.00	2.00		40.735	2.375	69.105	32.916
12	44.00	2.00		38.015	2.720	71.825	37.698
13	46.00	2.00		35.230	2.785	74.610	38.599
14	48.00	2.00		32.495	2.735	77.345	37.906
15	50.00	2.00		29.800	2.695	80.040	37.351
16	52.00	2.00		27.135	2.665	82.705	36.936
17	54.00	2.00		24.500	2.635	85.340	36.520
18	56.00	2.00		24.180	0.320	85.660	4.435
19	58.00	2.00		21.830	2.350	88.010	32.570
20	60.00	2.00		19.175	2.655	90.665	36.797
21	62.00	2.00		16.555	2.620	93.285	36.312
22	64.00	2.00		13.955	2.600	95.885	36.035
23	66.00	2.00		11.335	2.620	98.505	36.312
24							
25							
26							
27							
28							

Steady Flow Rate, Q (in^3/min): 36.219



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

Case 1: L/h > 3 K_{sat} = 1.89E-01 in/min 11.347 in/hr

GEOCON

Aardvark Permeameter Data Analysis

Project Name:	Eco Blok East	Date:	11/7/2016
Project Number:	G1832-42-03	By:	JTL
Borehole Location:	I-3	Ref. EL (feet, MSL):	37.0
		Bottom EL (feet, MSL):	33.8

Borehole Diameter (inches):	4.00
Borehole Depth, **H** (inches):	39.00
Distance Between Reservoir & Top of Borehole (inches):	28.50
Depth to Water Table, **s** (feet):	100
Height APM Raised from Bottom (inches):	2.00

Wetted Area, **A** (in^2): 84.12

Distance Between Resevoir and APM, **D** (inches):	58.25
Head Height Calculated, **h** (inches):	5.69
Head Height Recorded, **h** (inches):	4.25
Distance Between Constant Head and Water Table, **L** (inches):	1167

Reading	Time (min)	Time Elapsed (min)	Reservoir Water Weight (g)	Resevoir Water Weight (lbs)	Interval Water Consumption (lbs)	Total Water Consumption (lbs)	*Water Consumption Rate (in^3/min)
1	0.00			80.795			
2	5.00	5.00		68.975	11.820	11.820	65.528
3	10.00	5.00		60.295	8.680	20.500	48.120
4	15.00	5.00		52.840	7.455	27.955	41.329
5	20.00	5.00		45.270	7.570	35.525	41.967
6	25.00	5.00		38.600	6.670	42.195	36.977
7	30.00	5.00		31.610	6.990	49.185	38.751
8	35.00	5.00		24.660	6.950	56.135	38.529
9	40.00	5.00		17.805	6.855	62.990	38.003
10	45.00	5.00		10.880	6.925	69.915	38.391
11	47.00	2.00		8.105	2.775	72.690	38.460
12	49.00	2.00		5.330	2.775	75.465	38.460
13							
14							
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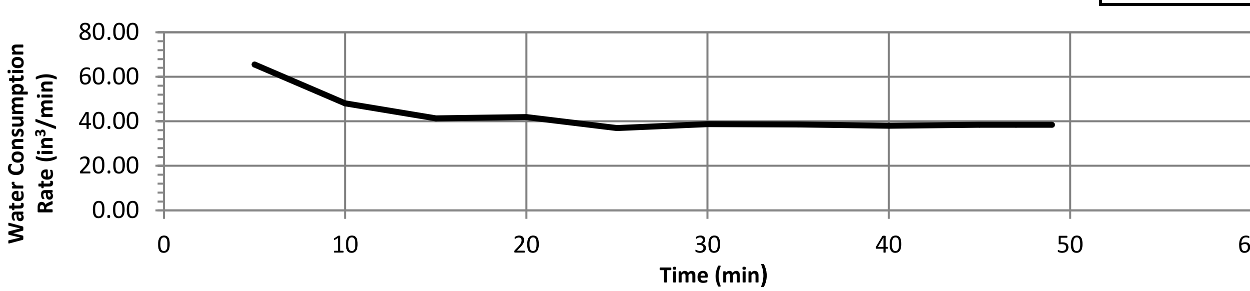
27							
28							

Steady Flow Rate, Q (in^3/min): 38.437



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

Case 1: L/h > 3 K_{sat} = 2.00E-01 in/min 12.009 in/hr

Aardvark Permeameter Data Analysis

Project Name: Eco Blok East
Project Number: G1832-42-03
Borehole Location: I-4

Date: 11/7/2016
By: JTL
Ref. EL (feet, MSL): 33.0
Bottom EL (feet, MSL): 29.4

Borehole Diameter (inches): 4.00
Borehole Depth, **H** (inches): 43.00
Distance Between Reservoir & Top of Borehole (inches): 28.50
Depth to Water Table, **s** (feet): 100
Height APM Raised from Bottom (inches): 2.00

Wetted Area, **A** (in^2): 84.29

Distance Between Resevoir and APM, **D** (inches): 62.25
Head Height Calculated, **h** (inches): 5.71
Head Height Recorded, **h** (inches): 4.25
Distance Between Constant Head and Water Table, **L** (inches): 1163

Reading	Time (min)	Time Elapsed (min)	Reservoir Water Weight (g)	Resevoir Water Weight (lbs)	Interval Water Consumption (lbs)	Total Water Consumption (lbs)	*Water Consumption Rate (in^3/min)
1	0.00			114.400			
2	5.00	5.00		102.620	11.780	11.780	65.306
3	10.00	5.00		92.600	10.020	21.800	55.549
4	15.00	5.00		82.845	9.755	31.555	54.080
5	20.00	5.00		73.910	8.935	40.490	49.534
6	25.00	5.00		64.800	9.110	49.600	50.504
7	30.00	5.00		56.615	8.185	57.785	45.376
8	35.00	5.00		48.015	8.600	66.385	47.677
9	40.00	5.00		40.045	7.970	74.355	44.184
10	45.00	5.00		32.410	7.635	81.990	42.327
11	50.00	5.00		24.170	8.240	90.230	45.681
12	52.00	2.00		21.760	2.410	92.640	33.401
13	54.00	2.00		18.545	3.215	95.855	44.558
14	56.00	2.00		15.300	3.245	99.100	44.974
15	58.00	2.00		12.115	3.185	102.285	44.142
16	60.00	2.00		8.955	3.160	105.445	43.796
17	62.00	2.00		5.805	3.150	108.595	43.657
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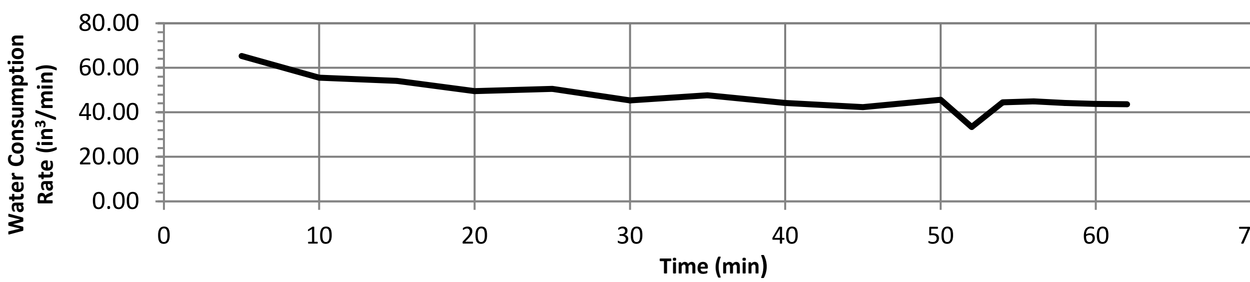
28							

Steady Flow Rate, Q (in^3/min): 43.865



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

Case 1: L/h > 3 ***K_{sat} =*** 2.28E-01 in/min 13.662 in/hr

Categorization of Infiltration Feasibility Condition			Form I-8
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?**			
Criteria	Screening Question	Yes	No
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	
Provide basis: [illegible]			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide basis: [illegible]			

Form I-8 Page 2 of 4			
Criteria	Screening Question	**Yes**	**No**
3	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: [illegible]			
4	**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: [illegible]			
Part 1 Result*	If all answers to rows 1 - 4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration** If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2	Full Infiltration not feasible	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

Form I-8 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	

Provide basis:

Criteria	Screening Question	Yes	No
6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis:

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: [illegible]			
8	**Can infiltration be allowed without violating downstream water rights?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: [illegible]			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**		[illegible]

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

APPENDIX D

APPENDIX D

RECOMMENDED GRADING SPECIFICATIONS

FOR

ECO BLOK EAST
SHASTA STREET
SAN DIEGO, CALIFORNIA

PROJECT NO. G1832-42-03

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9 and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition.

4. CLEARING AND PREPARING AREAS TO BE FILLED

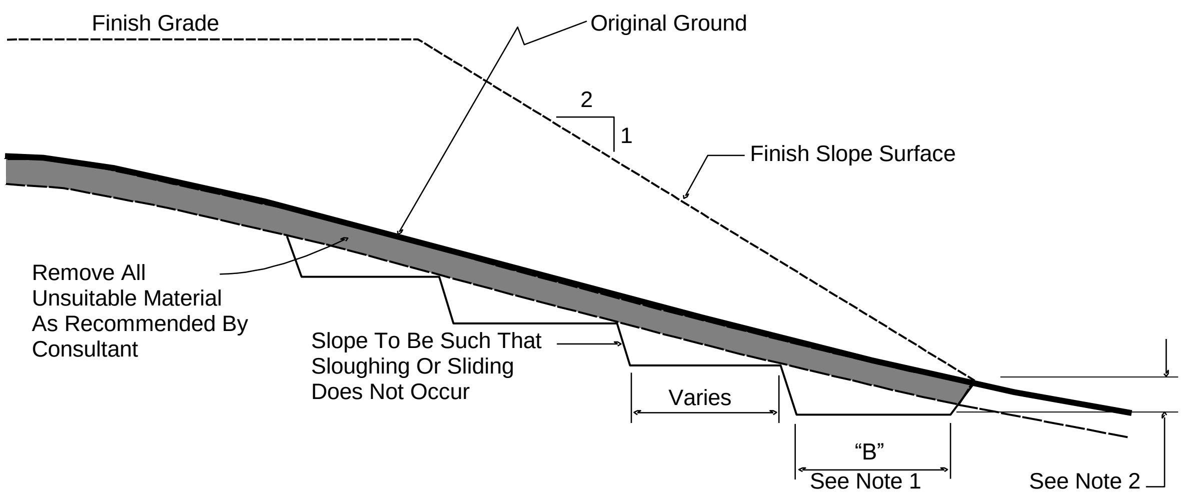
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

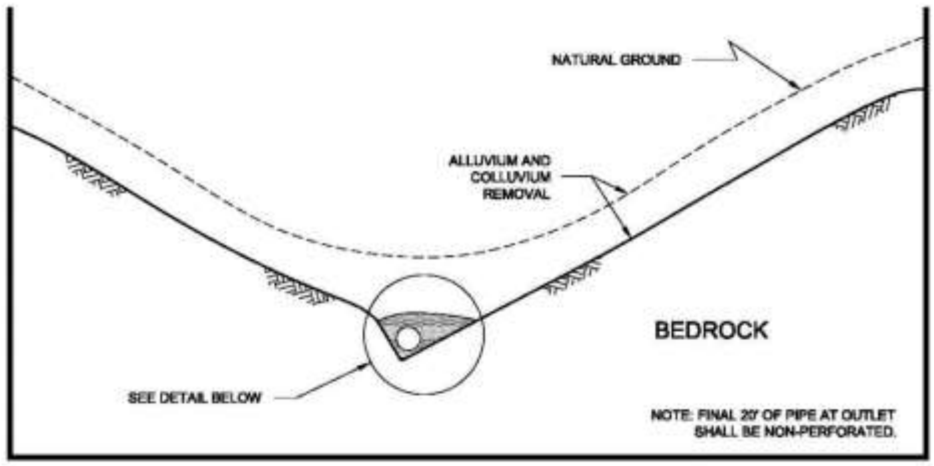
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

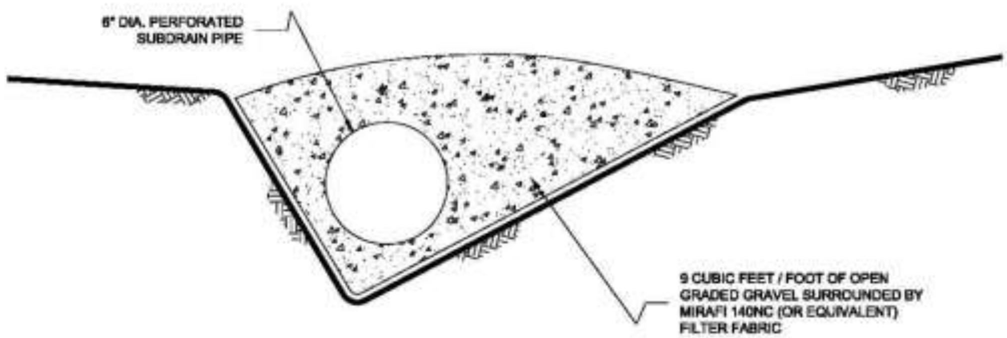
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

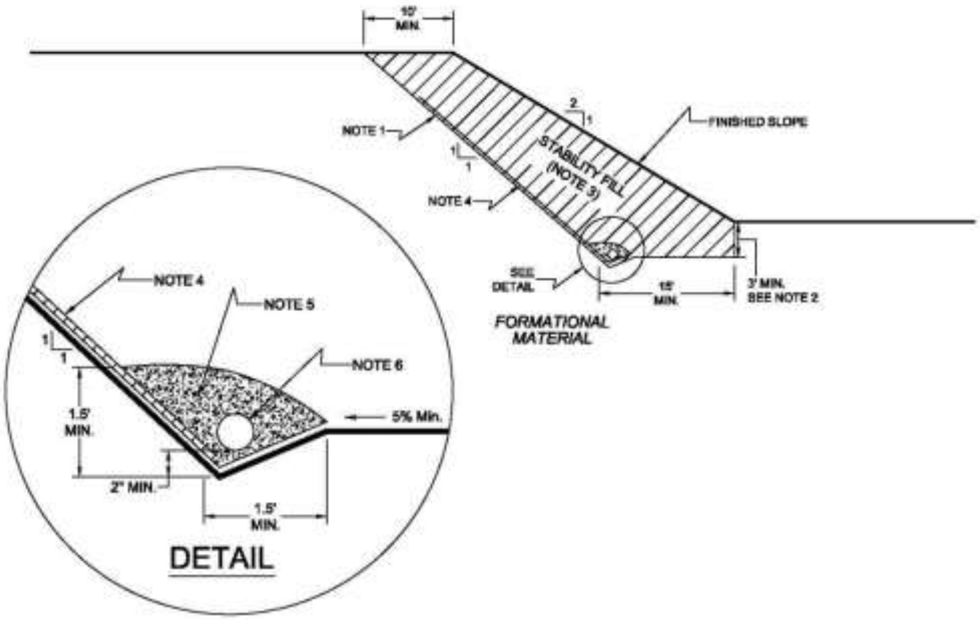
1......8-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2......6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

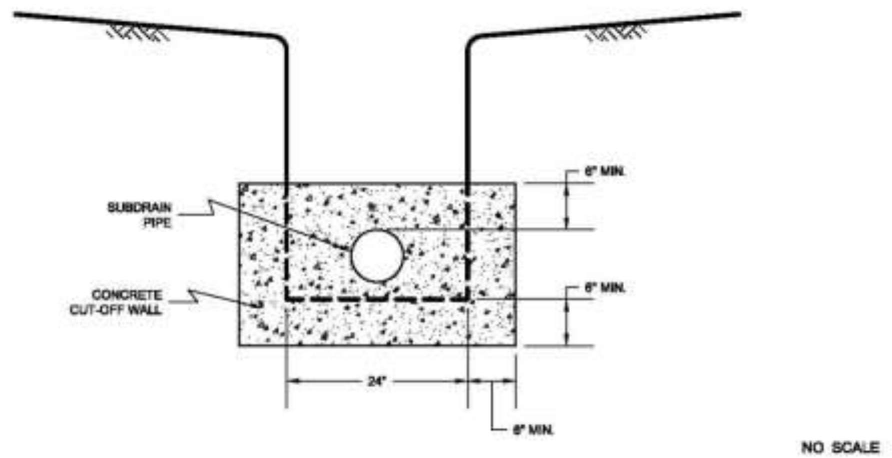
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

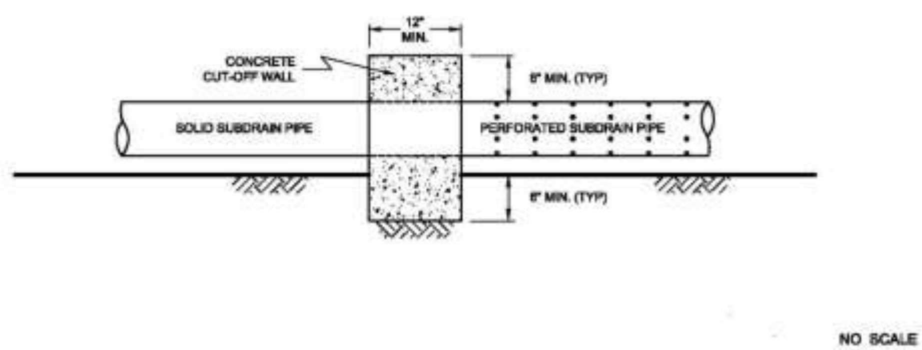
7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW

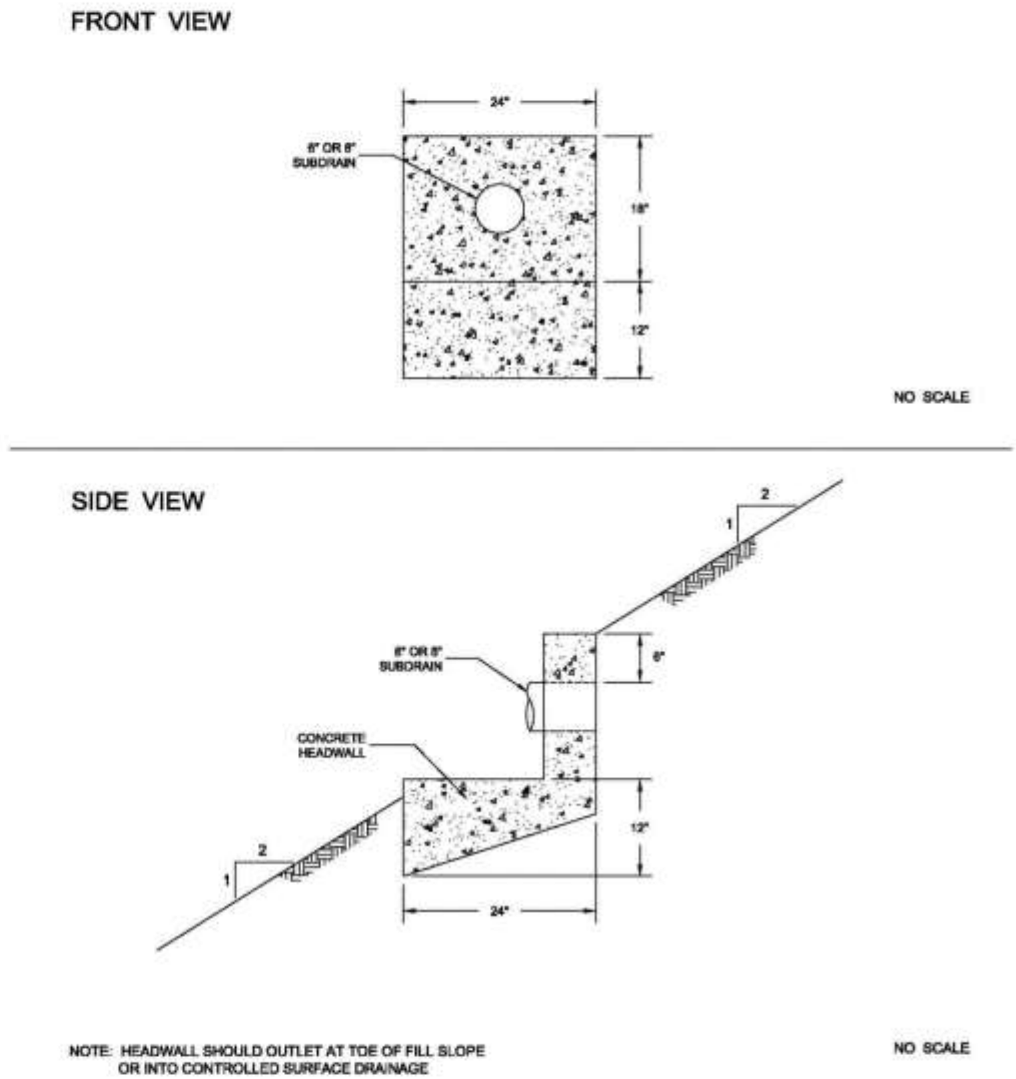


SIDE VIEW



7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

TYPICAL HEADWALL DETAIL



7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner’s representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

LIST OF REFERENCES

1. *Geologic Map of the San Diego 30’ x 60’ Quadrangle, California*

2. *EZ-FRISK (Version 7.65)*

3. *U.S. Seismic Design Maps,*

GEOCON
INCORPORATED

G E O T E C H N I C A L ■ E N V I R O N M E N T A L ■ M A T E R I A L S

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] *Cycle Issues, Preliminary Review, Project No. 530514* [illegible]

[illegible] *Geotechnical Investigation, Eco Blok East, Shasta Street, San Diego, California,* [illegible]

[illegible]

[illegible]

Issue 3: *The geotechnical consultant should consider revising their description of geologic units in accordance with the recent Geologic Map of the San Diego Quadrangle (2008).*

Response: [illegible] *Soil and Geologic Conditions* [illegible]

Issue 4: *The boring log for Sample B1-1 indicates a disturbed or bag sample. Clarify if the consolidation testing as depicted n Figure B-2 was performed on this sample.*

Response: [illegible]

Issue 5: *The geotechnical consultant must indicate if in their professional opinion the consolidation testing results are representative of the sedimentary old surficial deposits onsite.*

Response: [illegible]

Issue 6: *Based on ASTM D5333 the consolidation test results are considered to have a slight potential for hydro consolidation. Clarify if differential settlement due to hydro consolidation is considered to be a significant effect on the proposed development. Clarify if the effect can be mitigated to an acceptable level (e.g. foundation design).*

Response: [illegible]

[illegible]

Issue 7: *A geotechnical condition created by the proposed development may not be considered a valid geotechnical hazard or constraint as the constraint is proposed by the project.*

Response: [illegible]

Issue 8: *Based on the responses to the review cycle issues, revise Worksheet C.4-1 as necessary.*

Response: [illegible]

[illegible]

[illegible]

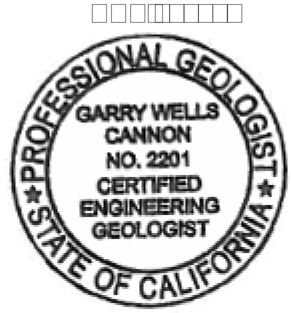
[illegible]

[illegible]

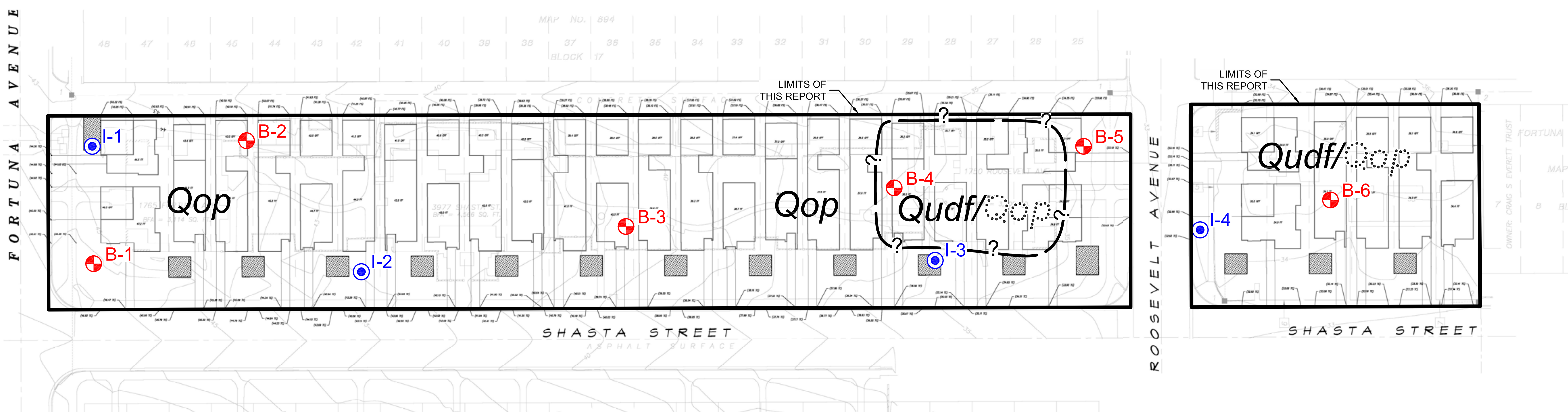
[illegible]

[illegible]

[illegible]



ECO BLOK EAST
SAN DIEGO, CALIFORNIA



GEOCON LEGEND

Qudf ........UNDOCUMENTED FILL

Qop ....OLD PARALIC DEPOSITS (Dotted Where Buried)

........APPROX. LOCATION OF GEOLOGIC CONTACT (Queried Where Uncertain)

B-6 ....APPROX. LOCATION OF BORING

I-4 ....APPROX. LOCATION OF INFILTRATION TEST

NOT TO SCALE

GEOLOGIC MAP

GEOCON INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

PROJECT NO. G1832 - 42 - 03
FIGURE 1
DATE 03 - 02 - 2017

Geotechnical Investigation, Eco Blok East, Shasta Street, San Diego, California,

Cycle Issues, Preliminary Review, Project No. 530514

Response to City of San Diego Review Comments, Eco Blok East, Shasta Street, San Diego

& Drainage Plans for: Eco Blok East, 1765 Fortuna Avenue, 3977 Shasta Street, 1750 Roosevelt Avenue, San Diego, California

TERMS OF REFERENCE

OBJECTIVE, SCOPE, USE AND LIMITATIONS OF THIS WORK

Objective

NOVA

Scope

General

Understood Use

Limitations

SITE DESCRIPTION

Location

PLANNED DEVELOPMENT

General

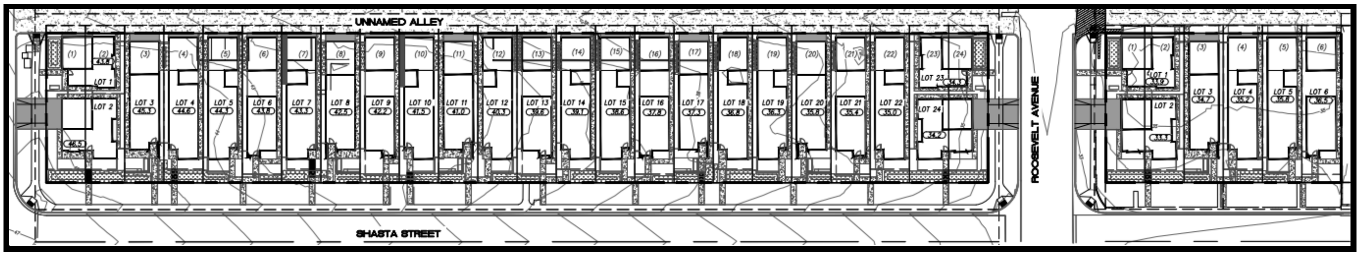


Figure 1. Conceptual Development Plan

Stormwater BMPs

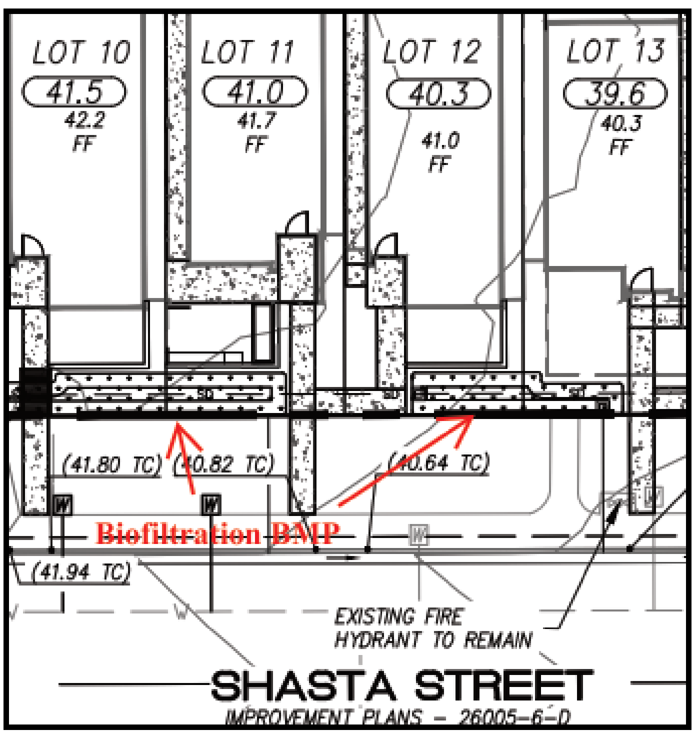


Figure 3. Typical Location of Biofiltration BMPs

ENGINEERING BORINGS

Engineering Borings

General

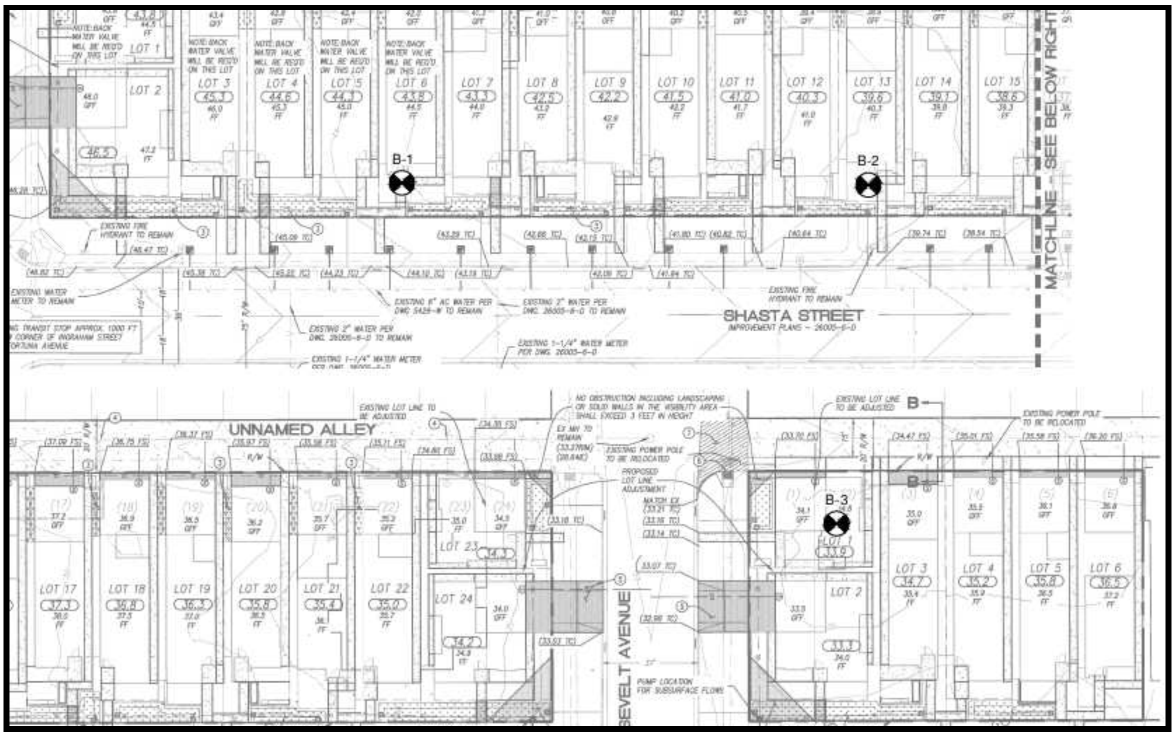


Figure 3. Boring Location Plan

Drilling and Sampling

Closure

[illegible]

LABORATORY TESTING

General

[illegible]

[illegible]

[illegible]

Index Testing

[illegible]

[illegible]

Table 1. Abstract of the Soil Index Testing by NOVA

Sample Ref		As Sampled		Gradation		Classification after ASTM D2488
Boring	**Depth (feet)**	**Natural Moisture (%)**	**Dry Unit Weight (pcf)**	**Passing #200**	**C_u**	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Compressibility Testing

NOVA

Table 2. Abstract of the Compressibility Testing by NOVA

Sample Ref		As Sampled		Strain on Saturation		Soil Classification
Boring	Depth (feet)	Natural Moisture (%)	Dry Unit Weight (pcf)	Saturation Pressure (psf)	Strain on Saturation (%)	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Geocon 2016

Table 3. Abstract of the Indications of the Effects of Saturation on Strain Reported in Geocon 2017

Sample Reference	Depth (feet)	Dry Unit Weight (lb/ft^3)	Strain (%) on Saturation	Soil Classification
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

DISCUSSION

Review of Geocon 2016

Subsurface Conditions

Foundations

Stormwater Infiltration

Testing by NOVA

Objectives

Concern.

Solution.

- *Concern.*
- *Solution.*

- *Concern.* (γ … rder of γ …
- *Solution.*

Indications

The dry unit weight (γ) of the sands tested by and Geocon average NOVA γ …

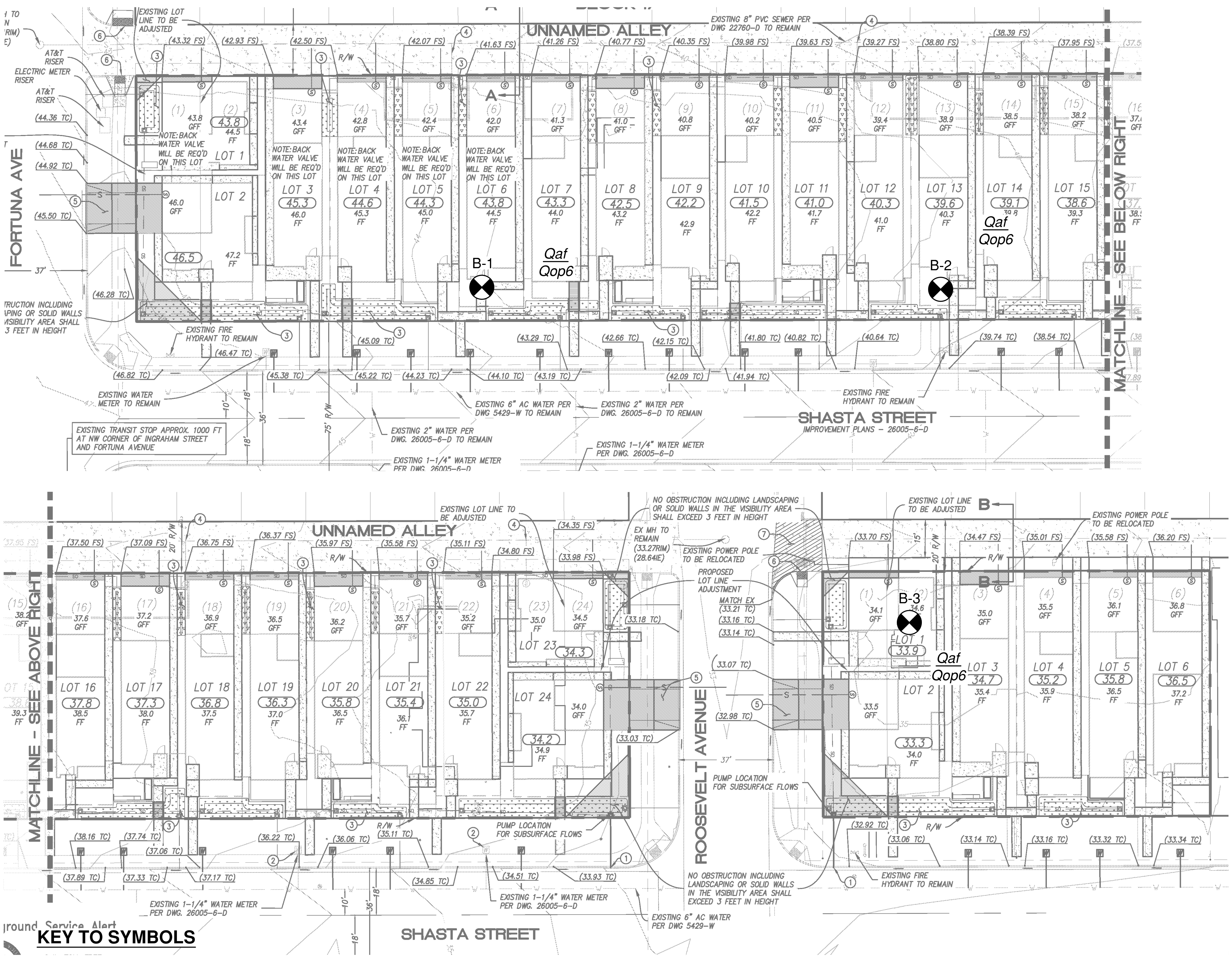
concern when γ …

RECOMMENDATION

CLOSURE

NOVA Services, Inc.

REGISTERED PROFESSIONAL ENGINEER
JOHN F. O'BRIEN
651
expires 3-31-2019
GEOTECHNICAL
STATE OF CALIFORNIA



KEY TO SYMBOLS

Qaf	ARTIFICIAL FILL
Qop6	OLD PARALIC DEPOSITS, UNIT 6
B-3	APPROXIMATE LOCATION OF GEOTECHNICAL BORING

latitude 33 PLANNING & ENGINEERING
9968 Hibert Street 2nd Floor, San Diego, CA 92131
Tel 858.751.0633

REGISTERED PROFESSIONAL ENGINEER GIOVANNI POSILLICO No. 66332 CIVIL STATE OF CALIFORNIA

NOVA
4373 VIEWRIDGE AVENUE, SUITE B
SAN DIEGO, CALIFORNIA

858-292-7575
858-292-7570 (FAX)

WWW.USA-NOVA.COM

ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST.,
1750 ROOSEVELT AVE.,
SAN DIEGO, CALIFORNIA

PROJECT NO:	2017701
DATE:	MAY 2017
DESIGN BY:	AJS
DRAWN BY:	AJS
CHECKED BY:	WM
REVIEWED BY:	JDB

SUBSURFACE INVESTIGATION MAP

0 40' 80'

PLATE: 1

Attachment 1
Engineering Borings by NOVA

NOVA

BORING LOG B-1

DATE EXCAVATED:	APRIL 17, 2017	**EQUIPMENT:**	B-51
EXCAVATION DESCRIPTION:	6 INCH DIAMETER AUGER BORING	**GPS COORD.:**	N/A
GROUNDWATER DEPTH:	GROUNDWATER NOT ENCOUNTERED	**ELEVATION:**	48.0 FT

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MC	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)	LABORATORY	REMARKS
0						*GRASS AND ORGANICS*		
				SM		**VERY OLD PARALIC DEPOSITS, UNIT 6 (Qvop6):** *SILTY SAND; LIGHT BROWN TO REDDISH-BROWN, MOIST, LOOSE, FINE GRAINED*		
					12			
							CN	*6.7% 103.7pcf*
5					8			
							CN SA	*6.4% 102.0pcf*
					13			
							CN	*7.7% 104.6pcf*
					13			
10								
					18	*MEDIUM DENSE*		
					21			
						BORING TERMINATED AT 13.5 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼	GROUNDWATER	#	ERRONEOUS BLOWCOUNT
⊠	BULK SAMPLE	*	NO SAMPLE RECOVERY
◻	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

ECO BLOK EAST
1765 FORTUNA AVENUE, 3977 SHASTA STREET,
1750 ROOSEVELT AVENUE
SAN DIEGO, CALIFORNIA

LOGGED BY:	HP	DATE:	MAY 2017
REVIEWED BY:	AJS	PROJECT NO.:	1017701

NOVA

APPENDIX B-1

BORING LOG B-2

DATE EXCAVATED: APRIL 17, 2017 **EQUIPMENT:** B-51

EXCAVATION DESCRIPTION: 6 INCH DIAMETER AUGER BORING **GPS COORD.:** N/A

GROUNDWATER DEPTH: GROUNDWATER NOT ENCOUNTERED **ELEVATION:** 42.0 FT

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MC	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION *SUMMARY OF SUBSURFACE CONDITIONS* *(USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)*	LABORATORY	REMARKS
0						*GRASS AND ORGANICS*		
				SM		**VERY OLD PARALIC DEPOSITS, UNIT 6 (Qvop6):** *SILTY SAND; LIGHT BROWN TO REDDISH-BROWN, MOIST, LOOSE, FINE GRAINED*		
					10			
5							CN	*7.8% 106.3pcf*
					13			
								8.5% 105.6pcf
					13		SA	
								8.3% 109.0pcf
10					29	*MEDIUM DENSE*		
					34			
						BORING TERMINATED AT 13.5 FT. NO GROUNDWATER ENCOUNTERED. NO CAVING.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼	GROUNDWATER	#	ERRONEOUS BLOWCOUNT
☒	BULK SAMPLE	*	NO SAMPLE RECOVERY
◫	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

ECO BLOK EAST
1765 FORTUNA AVENUE, 3977 SHASTA STREET,
1750 ROOSEVELT AVENUE
SAN DIEGO, CALIFORNIA

LOGGED BY:	HP	DATE:	MAY 2017
REVIEWED BY:	AJS	PROJECT NO.:	1017701

NOVA

APPENDIX B-2

BORING LOG B-3

DATE EXCAVATED: APRIL 17, 2017
EQUIPMENT: B-51
EXCAVATION DESCRIPTION: 6 INCH DIAMETER AUGER BORING
GPS COORD.: N/A
GROUNDWATER DEPTH: GROUNDWATER NOT ENCOUNTERED
ELEVATION: 37.0 FT

LAB TEST ABBREVIATIONS

CR	CORROSIVITY
MC	MAXIMUM DENSITY
DS	DIRECT SHEAR
EI	EXPANSION INDEX
AL	ATTERBERG LIMITS
SA	SIEVE ANALYSIS
RV	RESISTANCE VALUE
CN	CONSOLIDATION
SE	SAND EQUIVALENT

DEPTH (FT)	GRAPHIC LOG	BULK SAMPLE	CAL/SPT SAMPLE	SOIL CLASS. (USCS)	BLOWS PER 12-INCHES	SOIL DESCRIPTION SUMMARY OF SUBSURFACE CONDITIONS (USCS; COLOR, MOISTURE, DENSITY, GRAIN SIZE, OTHER)	LABORATORY	REMARKS
0				SM-ML		**UNDOCUMENTED FILL (Qudf):** *SILTY SAND-SANDY SILT; BROWN, DAMP TO DRY, LOOSE OR SOFT, FINE TO MEDIUM GRAINED*		
				SM		**VERY OLD PARALIC DEPOSITS, UNIT 6 (Qvop6):** *SILTY SAND; LIGHT BROWN TO REDDISH-BROWN, MOIST, LOOSE, FINE GRAINED*		
5					13			*6.2% 97.9pcf*
					17	*MEDIUM DENSE*		
					18		CN SA	*9.4% 107.0pcf*
10					15			
					89	*VERY DENSE GRAVEL*		
						BORING TERMINATED AT 13.5 FT DUE TO REFUSAL. NO GROUNDWATER ENCOUNTERED. NO CAVING.		
15								
20								
25								
30								

KEY TO SYMBOLS

▼	GROUNDWATER	#	ERRONEOUS BLOWCOUNT
⊠	BULK SAMPLE	*	NO SAMPLE RECOVERY
◩	SPT SAMPLE (ASTM D1586)	———	GEOLOGIC CONTACT
■	CAL. MOD. SAMPLE (ASTM D3550)	— — —	SOIL TYPE CHANGE

ECO BLOK EAST
1765 FORTUNA AVENUE, 3977 SHASTA STREET,
1750 ROOSEVELT AVENUE
SAN DIEGO, CALIFORNIA

NOVA

LOGGED BY:	HP	DATE:	MAY 2017
REVIEWED BY:	AJS	PROJECT NO.:	1017701

APPENDIX B-3

Attachment 2
Laboratory Testing by NOVA

NOVA

Laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures. Brief descriptions of the tests performed are presented below:

- **CLASSIFICATION:** *Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soils Classification System and are presented on the exploration logs in Attachment 1.*

- **MAXIMUM DENSITY AND OPTIMUM MOISTURE CONTENT (ASTM D1557 METHOD A,B,C):** *The maximum dry density and optimum moisture content of typical soils were determined in the laboratory in accordance with ASTM Standard Test D1557, Method A, Method B, Method C.*

- **GRADATION ANALYSIS (ASTM C136 and/or ASTM D422):** *Tests were performed on selected representative soil samples in general accordance with ASTM D422. The grain size distributions of selected samples were determined in accordance with ASTM C136 and/or ASTM D422 The results of the tests are summarized on Attachment 2.3 through 2.5.*

- **CONSOLIDATION TESTS (ASTM D2435):** *Tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the tests are summarized on Appendix 2.6 through Appendix 2.10*.

NOVA
4373 VIEWRIDGE AVENUE, SUITE B
SAN DIEGO, CALIFORNIA
PHONE: 858-292-7575 FAX: 858-292-7570

LAB TEST SUMMARY

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.1

Moisture-Density (ASTM D2937)

Sample Location	Sample Depth (ft)	Soil Description	Moisture (%)	Dry Density (pcf)
B-1	4.0'	Light Reddish Brown Silty Sand	6.7	103.7
B-1	6.0'	Light Reddish Brown Silty Sand	6.4	102.0
B-1	8.0'	Light Reddish Brown Silty Sand	7.7	104.6
B-2	5.0'	Light Reddish Brown Silty Sand	7.8	106.3
B-2	7.0'	Light Reddish Brown Silty Sand	8.5	105.6
B-2	9.0'	Light Reddish Brown Silty Sand	8.3	109.0
B-3	4.0'	Light Reddish Brown Silty Sand	6.2	97.9
B-3	8.0'	Light Reddish Brown Silty Sand	9.4	107.0

NOVA
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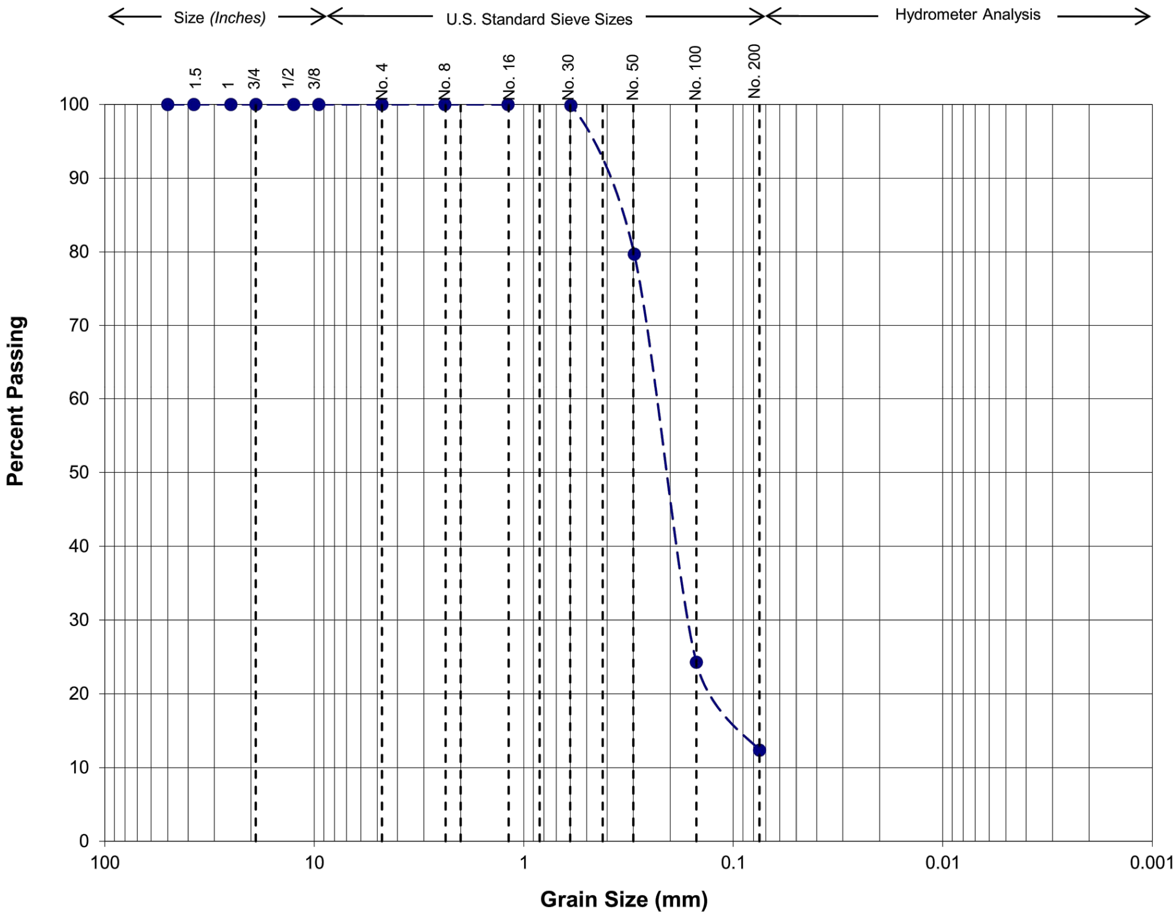
LAB TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.2



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample Location: B-1

Depth (ft.): 6.0'

USCS Soil Type: SM

Passing No. 200 (%): 12

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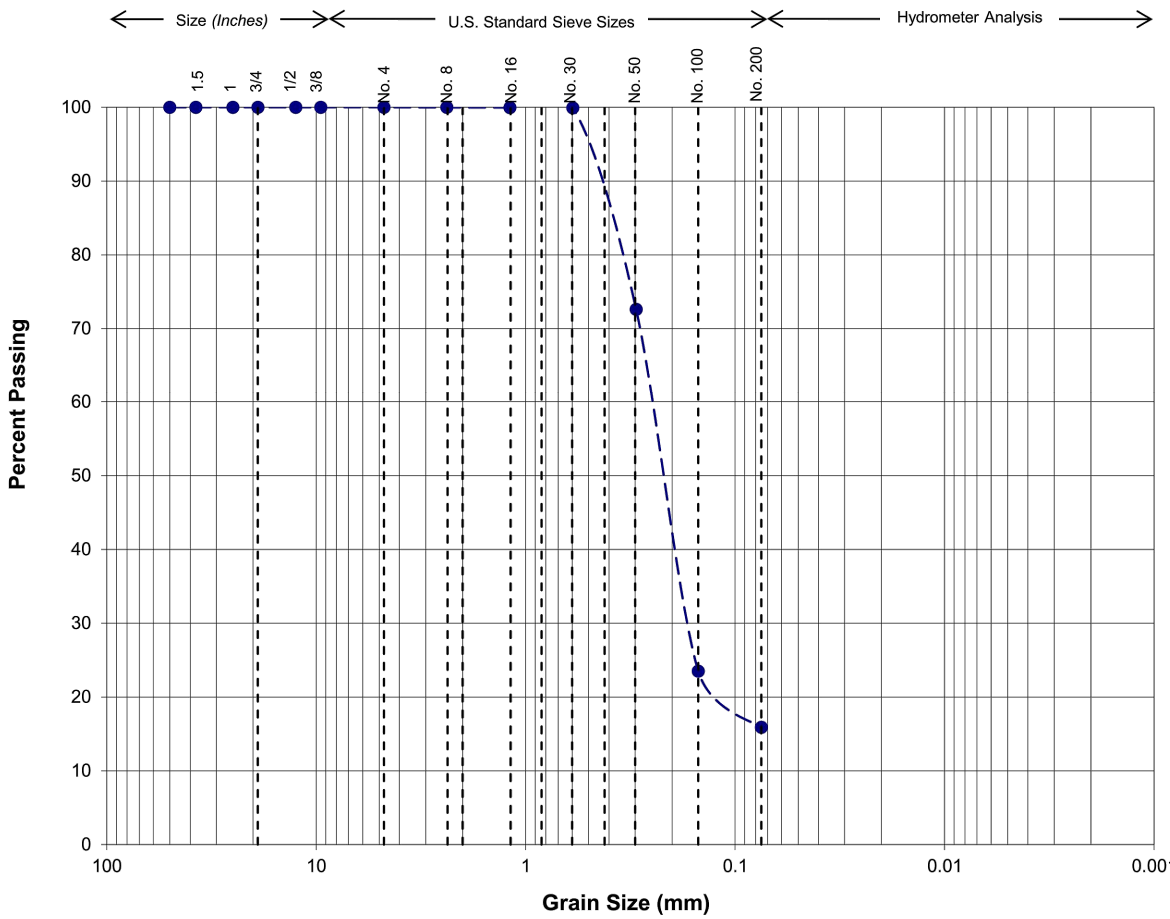
GRADATION ANALYSIS TEST RESULTS

ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.

SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.3



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample Location: B-2

Depth (ft.): 7.0'

USCS Soil Type: SM

Passing No. 200 (%): 16

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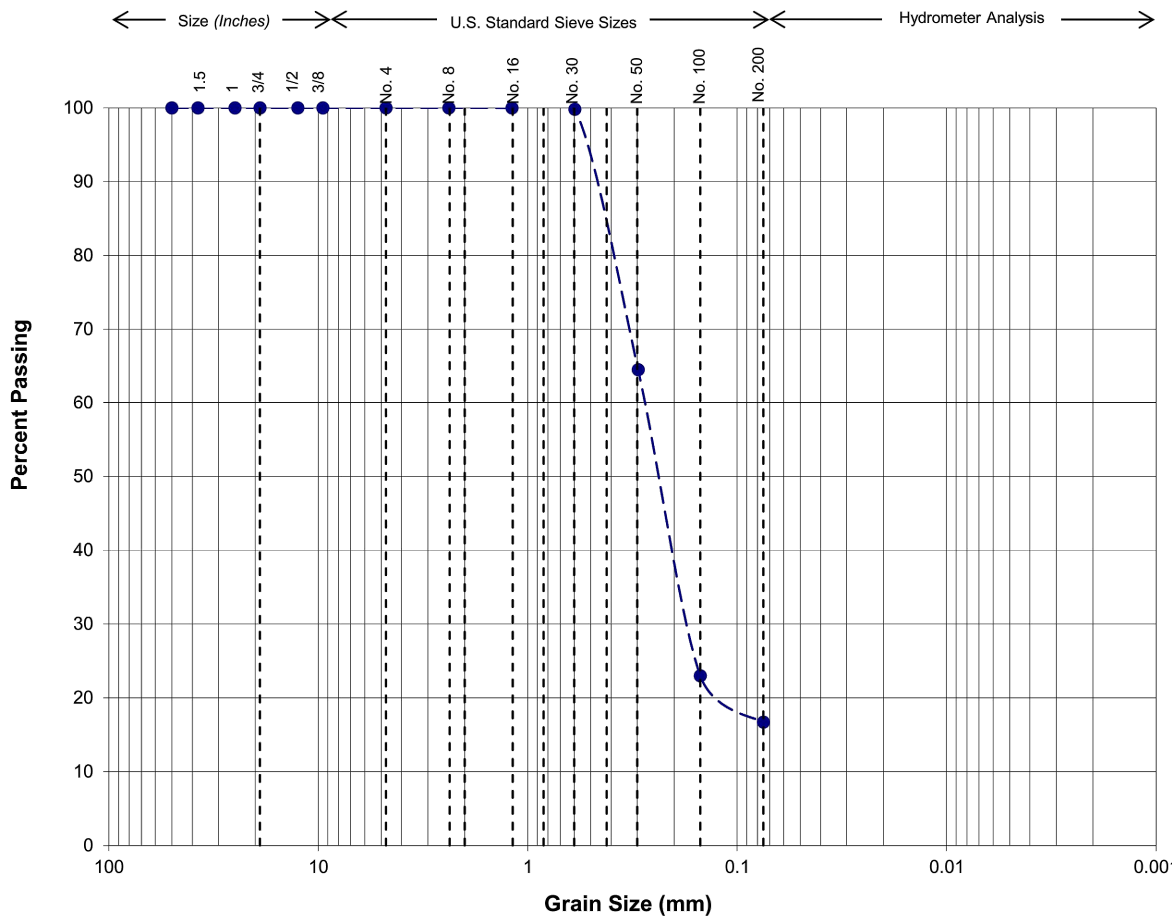
GRADATION ANALYSIS TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.4



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample Location: B-3

Depth (ft.): 8.0'

USCS Soil Type: SM

Passing No. 200 (%): 17

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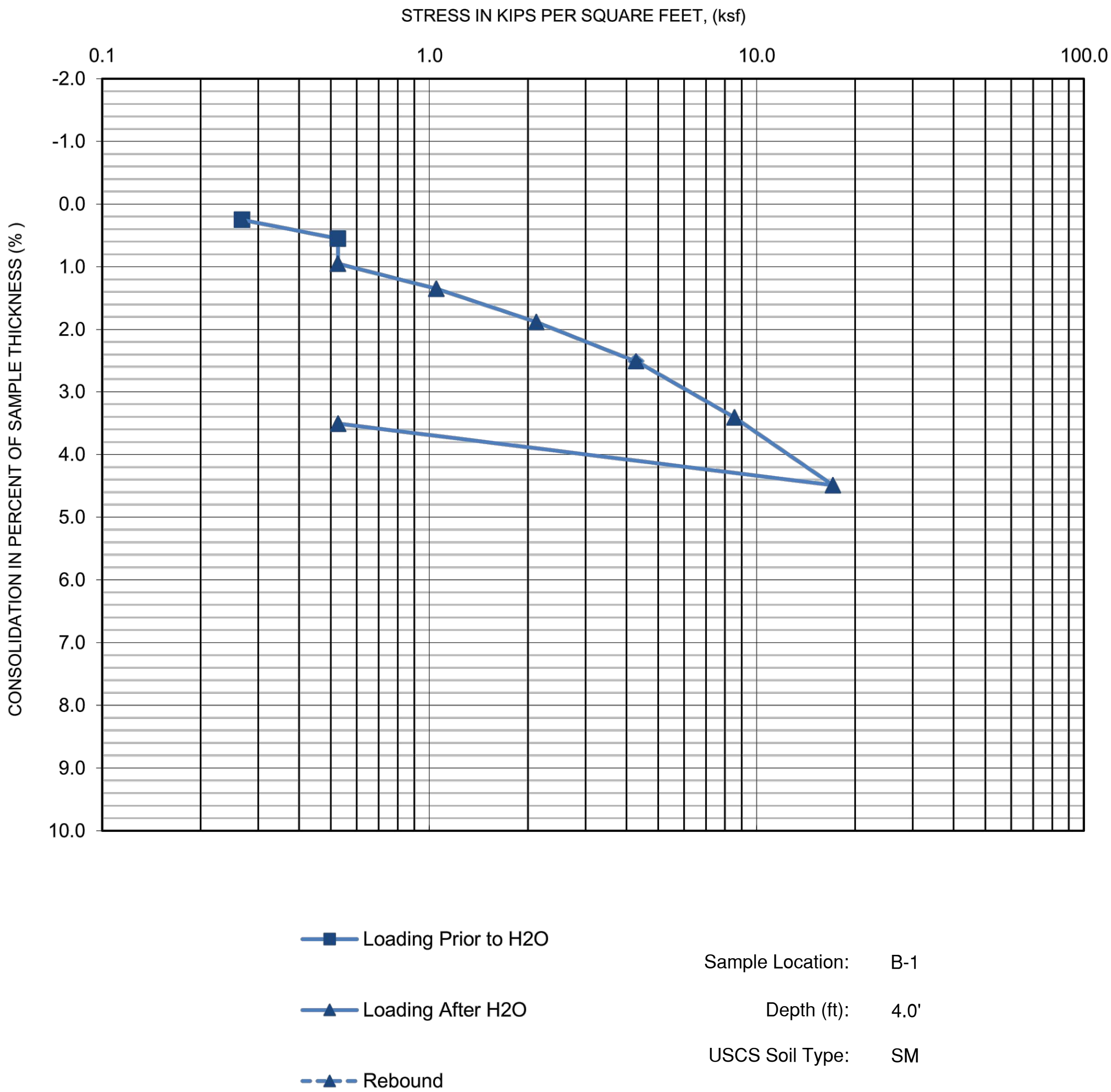
GRADATION ANALYSIS TEST RESULTS

ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.

SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.5



Sample Location: B-1

Depth (ft): 4.0'

USCS Soil Type: SM

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SAN DIEGO, CALIFORNIA
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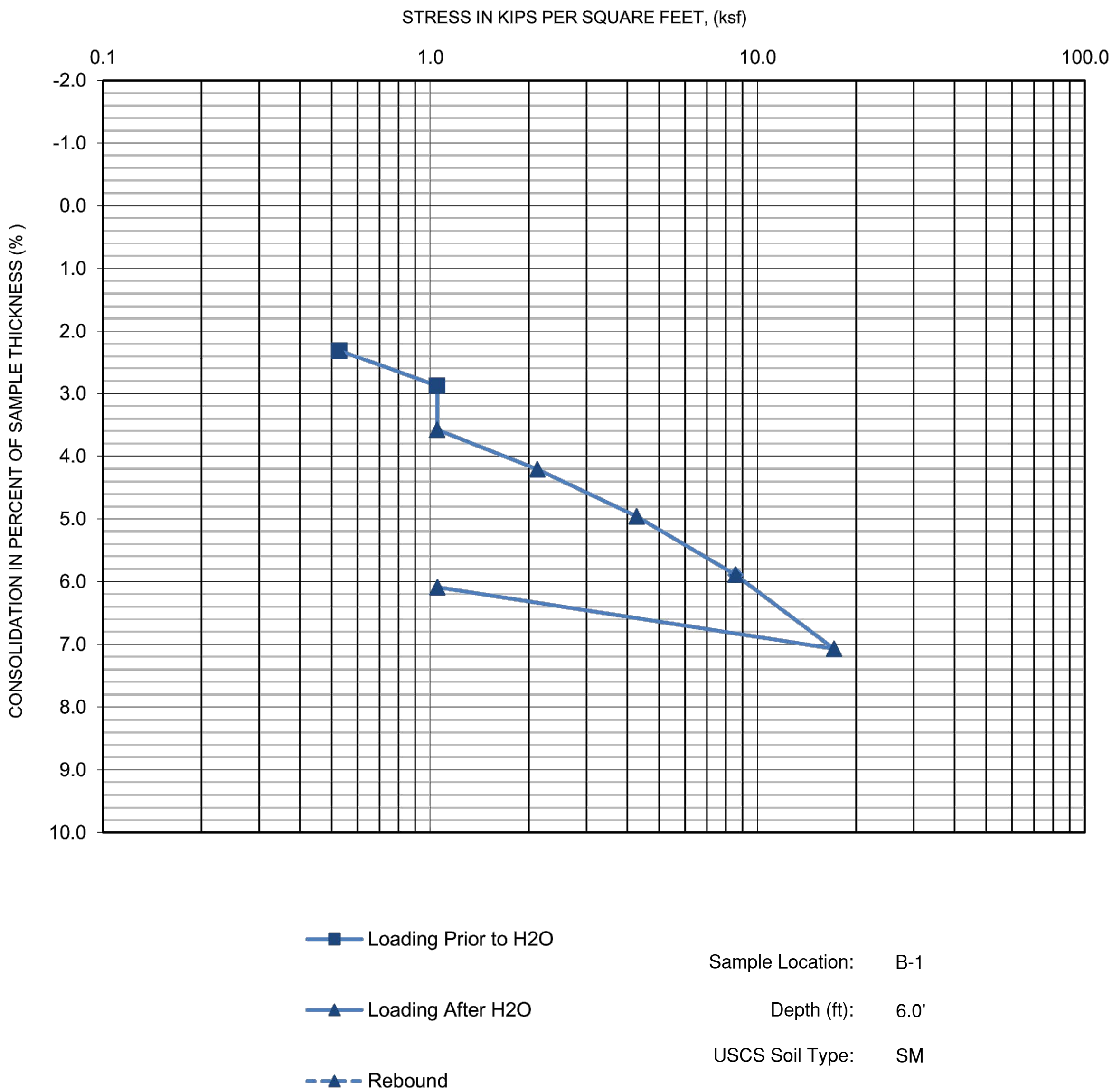
CONSOLIDATION TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.6



Sample Location: B-1

Depth (ft): 6.0'

USCS Soil Type: SM

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SAN DIEGO, CALIFORNIA

PHONE: 858-292-7575 FAX: 858-292-7570

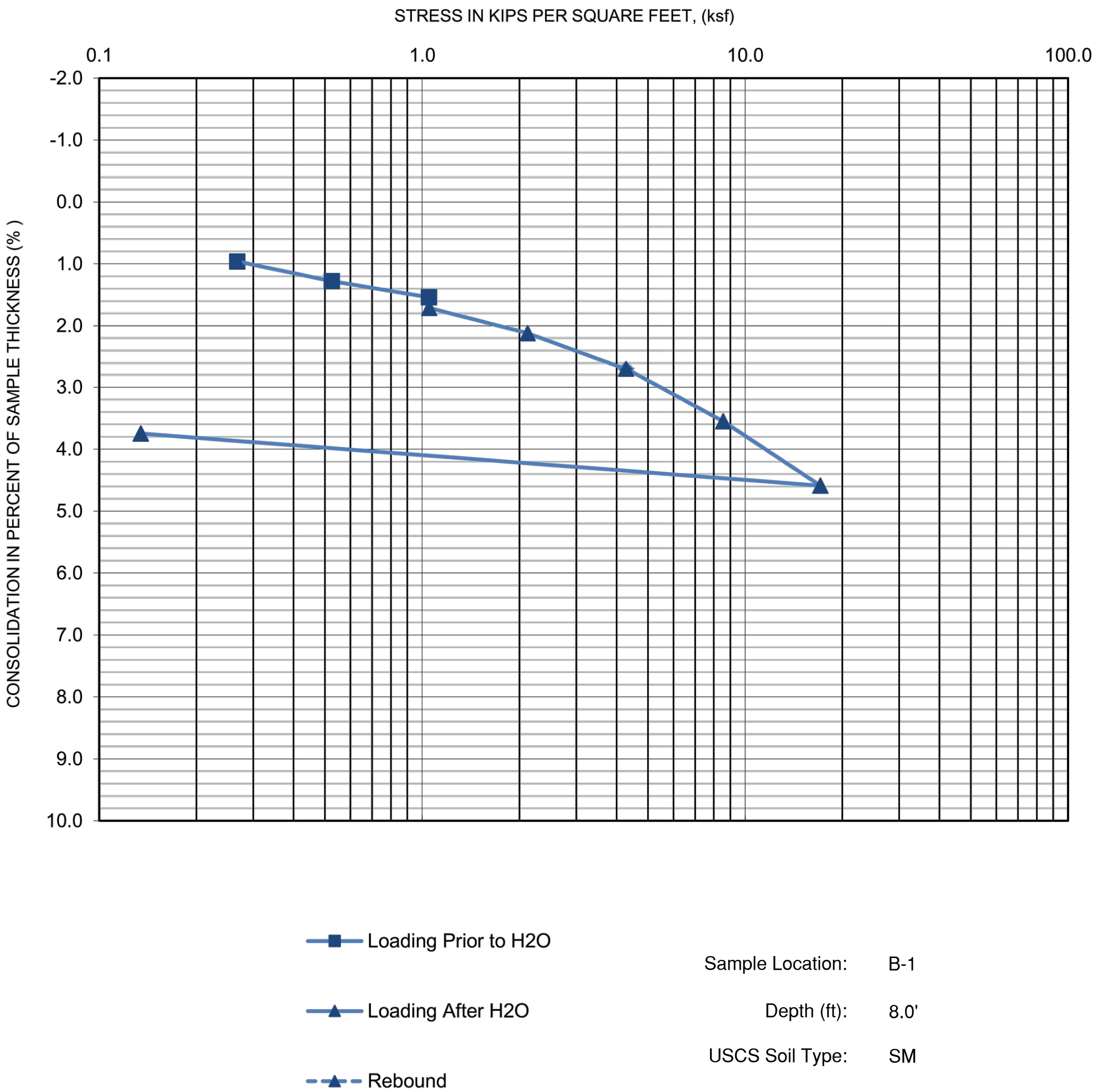
CONSOLIDATION TEST RESULTS

ECO BLOK EAST

1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.

SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.7



Sample Location: B-1

Depth (ft): 8.0'

USCS Soil Type: SM

NOVA

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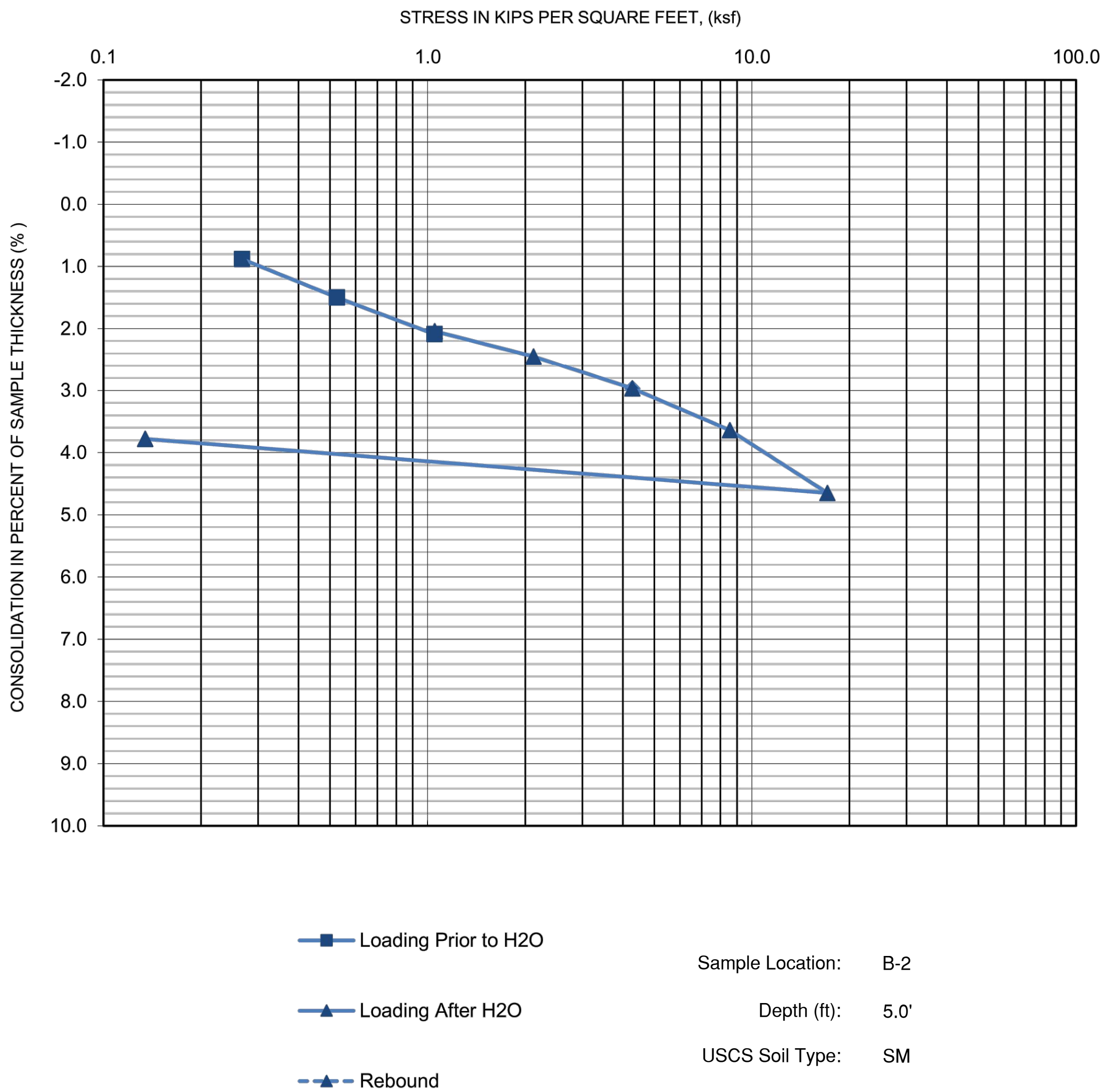
SAN DIEGO, CALIFORNIA
PHONE: 858-292-7575 FAX: 858-292-7570

CONSOLIDATION TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.8



Sample Location: B-2

Depth (ft): 5.0'

USCS Soil Type: SM

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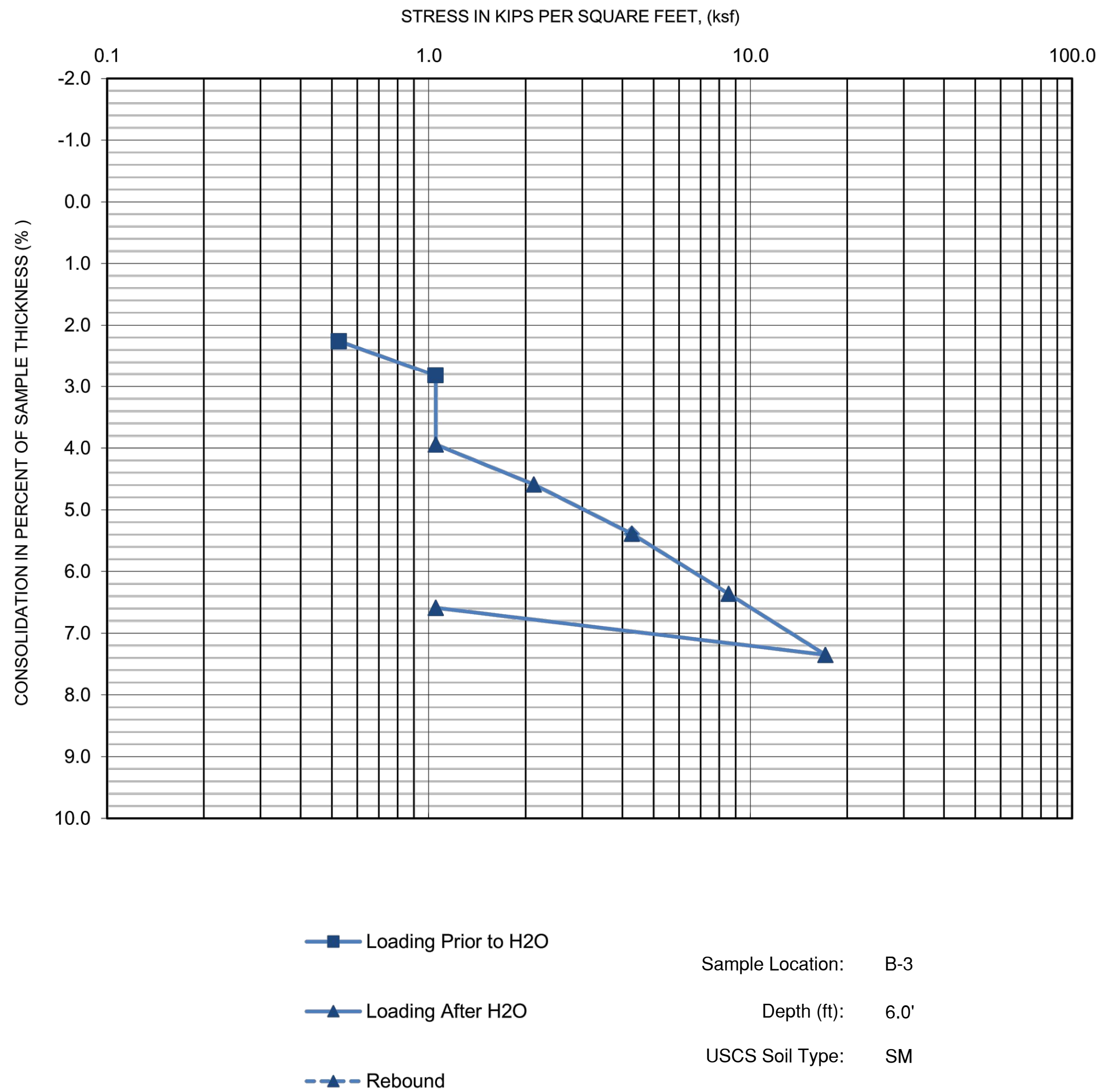
CONSOLIDATION TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.9



Sample Location: B-3

Depth (ft): 6.0'

USCS Soil Type: SM

NOVA
4373 VIEWRIDGE AVENUE, SUITE B
SAN DIEGO, CALIFORNIA
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CONSOLIDATION TEST RESULTS

ECO BLOK EAST
1765 FORTUNA AVE., 3977 SHASTA ST., 1750 ROOSEVELT AVE.
SAN DIEGO, CALIFORNIA

BY: AJS	DATE: MAY 2017	PROJECT: 2017701	ATTACHMENT: 2.10

NOVA

[illegible]

1. [illegible] *Geotechnical Investigation, Eco Blok East, Shasta Street, San Diego, California* [illegible]

2. [illegible] *Response to City of San Diego Review Comments, Eco Blok East, San Diego, California* [illegible]

3. [illegible] *Building Plan Set, Eco Blok Residences, 3977 Shasta Street, San Diego, California* [illegible]

4. [illegible]. *Grading & Drainage Plans for: Eco Blok East, 1765 Fortuna Avenue, 3977 Shasta Street, 1750 Roosevelt Avenue, San Diego, California,* [illegible]

5. [illegible] *Report, Assessment of the Potential for Infiltration-Related Soil Collapse, Eco Blok East, San Diego, California,* [illegible]

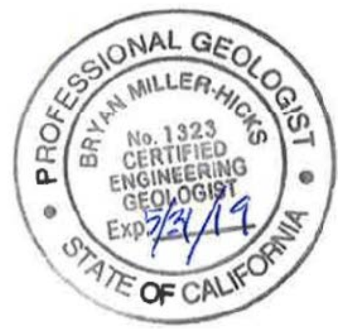
[illegible]

NOVA

NOVA Services, Inc.

John F. O'Brien

Bryan Miller-Hicks



Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

Categorization of Infiltration Feasibility Condition		Worksheet C.4-1	
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?** Note that it is not necessary to investigate each and every criterion in the worksheet if infiltration is precluded. Instead a letter of justification from a geotechnical professional familiar with the local conditions substantiating any geotechnical issues will be required.			
Criteria	Screening Question	**Yes**	**No**
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	
Provide basis: *The design infiltration rate of the existing soils for locations I-1 through I-4 based on the on-site infiltration study conducted by Geocon (2016) was calculated to be more than 0.5 inches per hour after applying a minimum factor of safety.*			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: *C2.1 A geologic investigation was performed at the subject site by Geocon 2016 and NOVA 2017.* *C2.2 After the investigation performed by NOVA 2017, the findings support the judgment that the site will exhibit negligible compression upon saturation.* *C2.3 No slopes are within close proximity to the site.* *C2.4 BMPs should be at minimum of 10 feet from any utilities.* *C2.5 Stormwater infiltration can result in damaging ground water mounding during wet periods, however groundwater elevations were estimated by Geocon to be at depths greater than 30 feet below existing grade.* *C2.6 BMPs should be at a minimum of 10 feet from retaining walls and foundations.* *C2.7 Other Factors: After evaluating the compressibility, depth of testing, and soil density, it is NOVA's opinion that the site is capable of full infiltration.*			

Table inserted in the basis for Criteria 1:

[illegible]
[illegible]
[illegible]
[illegible]

Geocon (2016)

Worksheet C.4-1 Page 2 of 4			
Criteria	Screening Question	**Yes**	**No**
3	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: *Water contamination was not evaluated by Geocon nor NOVA services.*			
4	**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: *The potential for water balance was not evaluated by Geocon nor NOVA services.*			
Part 1 Result*	If all answers to rows 1 - 4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration** If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2	YES	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by County staff to substantiate findings.

Worksheet C.4-1 Page 3 of 4			
Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria **Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?**			
Criteria	Screening Question	**Yes**	**No**
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	
Provide basis: *See criteria 1.*			
6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: *See criteria 2.*			

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: *Water contamination was not evaluated by Geocon nor NOVA services.*			
8	**Can infiltration be allowed without violating downstream water rights**? The response to this Screening Question must be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: *The potential for water balance was not evaluated by Geocon nor NOVA services.*			
Part 2 Result*	If all answers from row 5-8 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**		

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

C.5 Feasibility Screening Exhibits

Table C.5-1 lists the feasibility screening exhibits that were generated using readily available GIS data sets to assist the project applicant to screen the project site for feasibility.

Table C.5-1: Feasibility Screening Exhibits

Figures	Layer	Intent/Rationale	Data Sources
C.1 Soils	Hydrologic Soil Group – A, B, C, D	Hydrologic Soil Group will aid in determining areas of potential infiltration	SanGIS http://www.sangis.org/
	Hydric Soils	Hydric soils will indicate layers of intermittent saturation that may function like a D soil and should be avoided for infiltration	USDA Web Soil Survey. Hydric soils, (ratings of 100) were classified as hydric. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm
C.2: Slopes and Geologic Hazards	Slopes >25%	BMPs are hard to construct on slopes >25% and can potentially cause slope instability	SanGIS http://www.sangis.org/
	Liquefaction Potential	BMPs (particularly infiltration BMPs) must not be sited in areas with high potential for liquefaction or landslides to minimize earthquake/landslide risks	SanGIS http://www.sangis.org/
	Landslide Potential		SanGIS Geologic Hazards layer. Subset of polygons with hazard codes related to landslides was selected. This data is limited to the City of San Diego Boundary. http://www.sangis.org/
C.3: Groundwater Table Elevations	Groundwater Depths	Infiltration BMPs will need to be sited in areas with adequate distance (>10 ft) from the groundwater table	GeoTracker. Data downloaded for San Diego county from 2014 and 2013. In cases where there were multiple measurements made at the same well, the average was taken over that year. http://geotracker.waterboards.ca.gov/data_download_by_county.asp
C.4: Contaminated Sites	Contaminated soils and/or groundwater sites	Infiltration must limited in areas of contaminated soil/groundwater	GeoTracker. Data downloaded for San Diego county and limited to active cleanup sites http://geotracker.waterboards.ca.gov/

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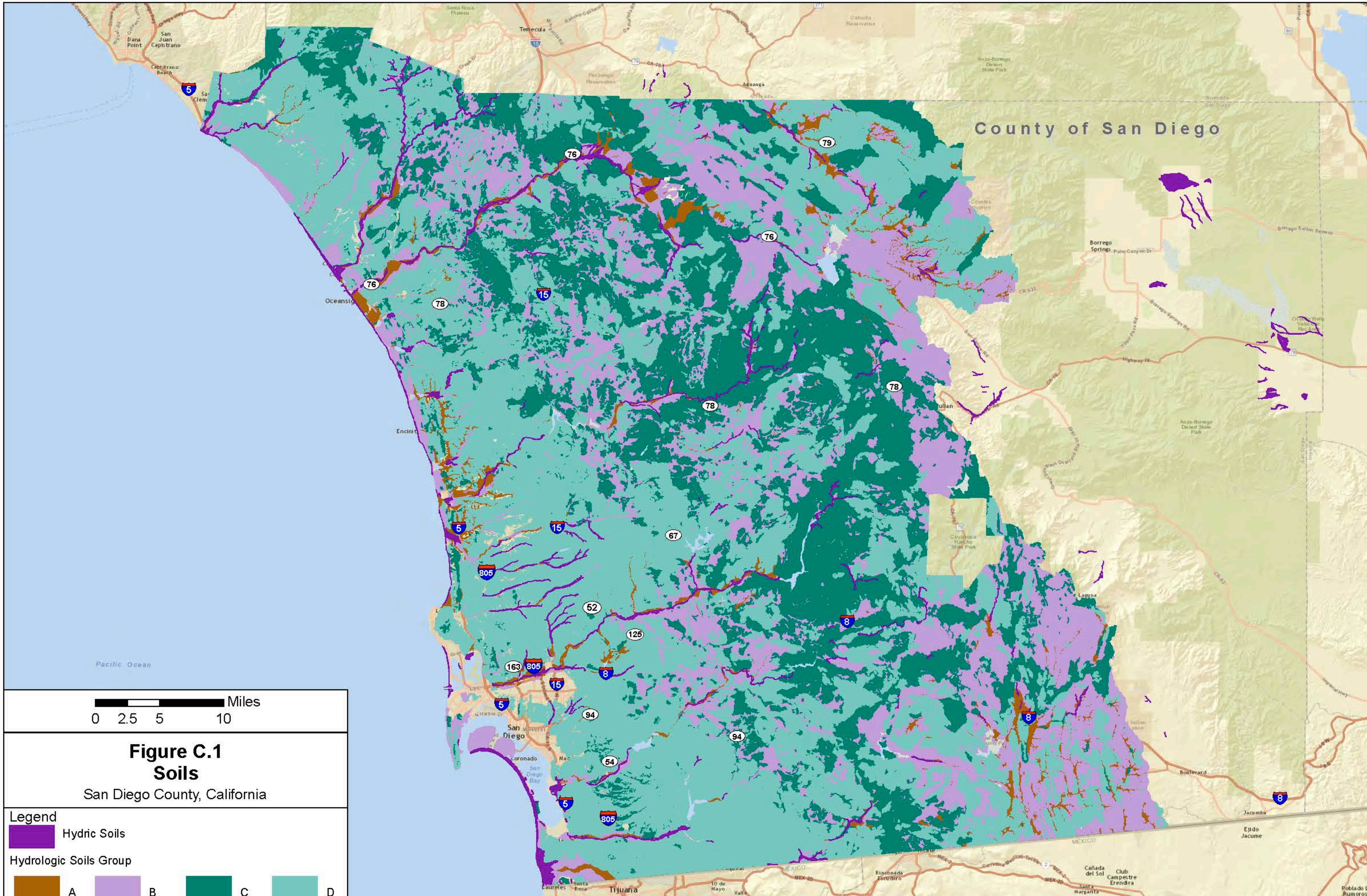

Figure C.1
Soils
San Diego County, California

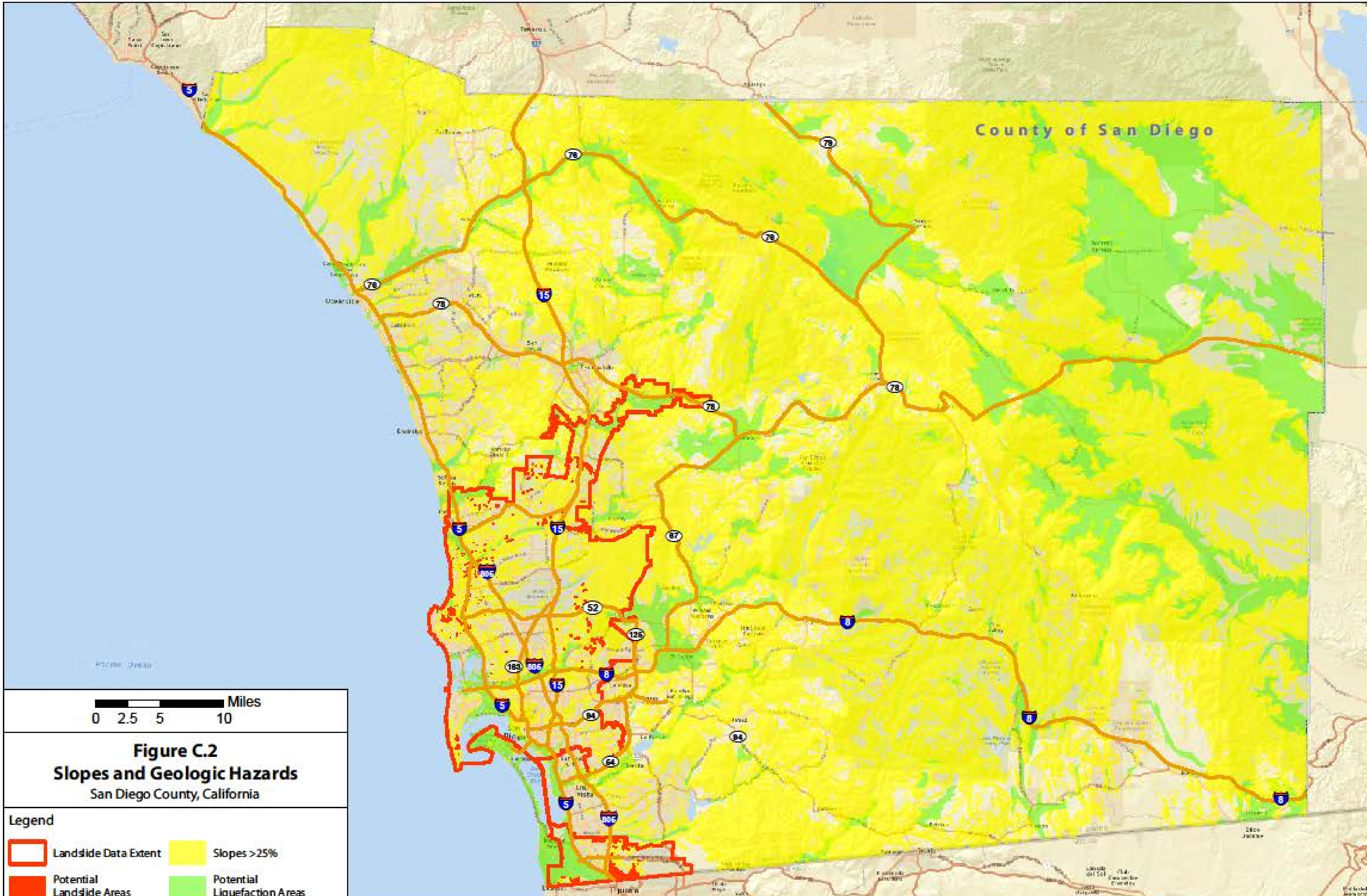

Figure C.2
Slopes and Geologic Hazards
San Diego County, California

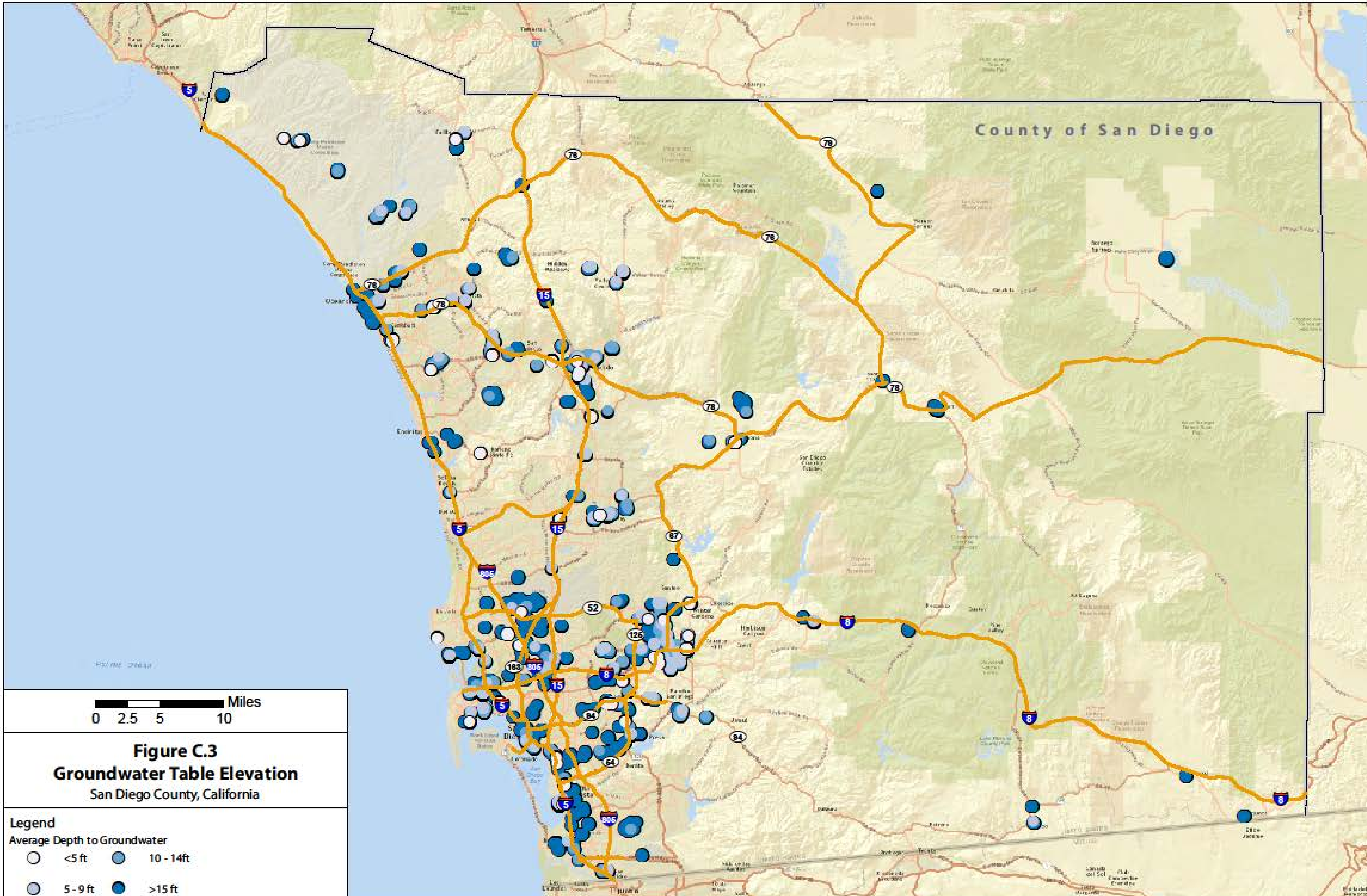

Figure C.3
Groundwater Table Elevation
San Diego County, California

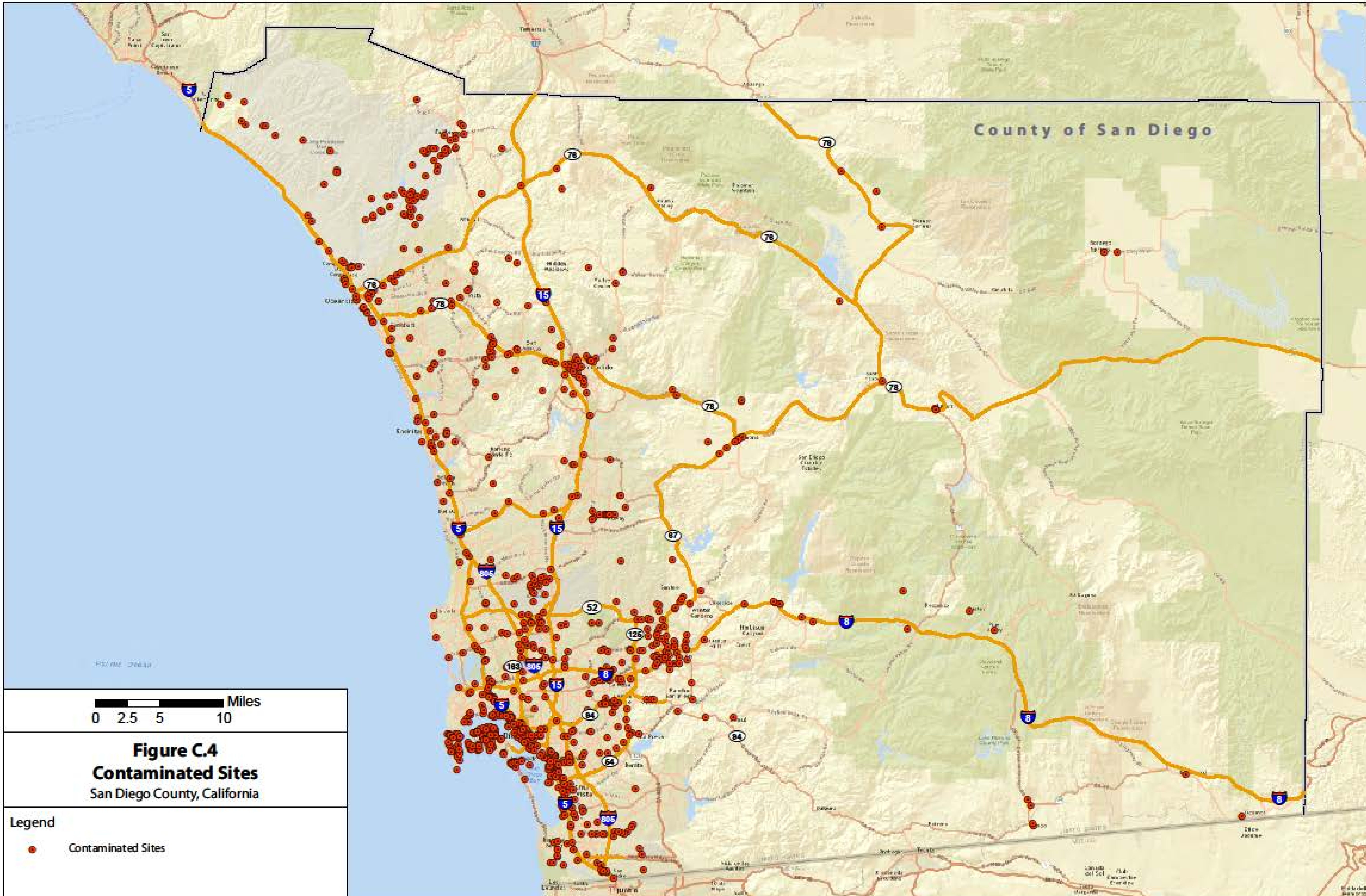

Figure C.4
Contaminated Sites
San Diego County, California