SD 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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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 <u>Chapter 11: Land Development Procedures</u> 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:	537664/ The LOT Del Mar (CUP/SDP				
Property Address:	2673 Via De La Valle San Diego Ca. 92014					
Applicant Name/Co.:	Carlos Wellman/The LOT Del Mar					
Contact Phone:	858 442-8009	Contact Email:	carlos@thelotent.com			
Was a consultant reta	ained to complete this checklist?	🗆 Yes 🔳 No	If Yes, complete the following			
Consultant Name:		Contact Phone:				
Company Name:		Contact Email:				
Project Information	I					
1. What is the size of	the project (acres)?	0.64 Acres/ 10.3 Acres Property				
2. Identify all applica	ble proposed land uses:					
Residential	(indicate # of single-family units):					
🗆 Residential	l (indicate # of multi-family units):					
🔳 Commercia	al (total square footage):	Movie Theat	er/ 27,896 SF.			
🗆 Industrial (total square footage):					
🗆 Other (des	cribe):					
3. Is the project or a Transit Priority Ar	portion of the project located in a ea?	🗆 Yes 🔳 No				
4. Provide a brief des	scription of the project proposed:					

Construct a 27,896 SF. Movie Theater on an existing grade pad. Proposing 30'-0" height maximum building,parking and landscape are existing. Improve two drive ways on San Andres Drive and add landscape

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.



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 <u>OR</u>, 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?; <u>OR</u>, 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? 	Y			

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.

The project is consistent with the land use designations in the City's General Plan (Commercial) and the Community Plan. The project is a new movie Theatre with 8 auditoriums in a vacant lot, and the subject lot is one in which no other Land Use is permitted by right at this location.

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 <u>Greenbook</u> (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 <u>California Green Building</u> <u>Standards Code</u> (Attachment A)?; <u>OR</u>			
 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 <u>California</u> <u>Green Building Standards Code</u>?; <u>OR</u> 			
 Would the project include a combination of the above two options? 			
Check "N/A" only if the project does not include a roof component.	~		
See Attacment A			

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. See Attacment A		

Strategy 3: Bicycling, Walking, Transit & Land Use		
3. Electric Vehicle Charging		
 <u>Multiple-family projects of 17 dwelling units or less</u>: 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? <u>Multiple-family projects of more than 17 dwelling units</u>: 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? <u>Non-residential projects</u>: 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. 		
Strategy 3: Bicycling, Walking, Transit & Land Use (Complete this section if project includes non-residential or mixed uses)		
 <i>Bicycle Parking Spaces</i> Would the project provide more short- and long-term bicycle parking spaces than required in the City's Municipal Code (<u>Chapter 14, Article 2, Division 5</u>)?⁶ Check "N/A" only if the project is a residential project. 	P	

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

If the project tenant occu accordance <u>Code</u> as sho	ct includes nonreside upants (employees), v with the voluntary n own in the table belo Number of Tenant Occupants (Employees)	ential development tha would the project inclu neasures under the <u>Ca</u> w? Shower/Changing Facilities Required	at would accommodate ide changing/shower f alifornia Green Building Two-Tier (12" X 15" X 72") Personal Effects Lockers Required	e over 10 acilities in g <u>Standards</u>		
	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			V
Check "N/A nonresider (employee See Atta No show	A" only if the project in ntial development the es). Cachment A wers on premis	is a residential project, hat would accommoda es, single use te	or if it does not includ te over 10 tenant occu enant	e pants		

	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			
Note: Vehic pe conside spaces are addition to	cles bearing Clean Air Vehicle red eligible for designated pa to be provided within the ove it.	stickers from expired HOV lane rking spaces. The required desi erall minimum parking requirer	programs may gnated parking nent, not in		
Check "N/A Nonresiden	" only if the project is a reside itial use in a TPA.	ntial project, or if it does not in	clude		
	achment A				

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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? <u>Considerations for this question:</u>

- 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?

SD 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	Гуре	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,		≤2:12	0.55	0.75	64		
Hotels and Motels		> 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 <u>California Green Building Standards Code</u> (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 \leq 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	ble 2 Fixture Flow Rates for Non-Residential Buildings related to Question 2: Plumbing Fixtures a Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Pla				
	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			
Courses Adapted	from the California Croon Building Standards Code (CAL Croon) Tic	x 1 non-regidential valuatory measures shown in Tables AF 202.0.2.1 and			

Source: Adapted from the <u>California Green Building Standards Code</u> (CALGreen) Tier 1 non-residential voluntary measures shown in Tables A5.303.2.3.1 and A5.106.11.2.2, respectively. See the <u>California Plumbing Code</u> 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 3Standards 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	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 (3	8 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 k Be capable of cleaning 60 plates in an average time of not more than 3 seconds per plate. Be equipped with an integral automatic shutoff. Operate at static pressure of at least 30 psi (207 kPa) when designed for rate of 1.3 gallons per minute (0.08 L/s) or less. Seconds per minute (0.08 L/s) or less.					
Source: Adapted from the <u>California Green Building Standards Code</u> (CALGreen) Tier 1 non-residential voluntary measures shown in Section A5.303.3. See the <u>California Plumbing Code</u> 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 -2673 Via De La Valle. -The LOT Del Mar (Project No 537664)

CAP CONSISTENCY CHECKLIST SUPPORTING DOCUMENTATION

PROJECT DESCRIPTION

The project proposes a conditional use permit and site development permit for a new movie Theatre with 8 auditoriums and L47 liquor license for a total of 27,896 square feet of construction. The 10.35-acre site is located at 2673 Via De La Valle within the State Coastal overlay zone in the CC-1-3 base zone (no community plan) in Council District 1.

Land Use Consistency

1. The project is consistent with the land use designations in the City's General Plan (Commercial) and the Community Plan. The project is a new movie Theatre with 8 auditoriums in a vacant lot, and the subject lot is one in which no other Land Use is permitted by right at this location.

CAP Strategies Consistency

STRATEGY 1. ENERGY & WATER EFFICIENT BUILDINGS

1. Cool/Green Roofs -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 Building:

ATTACHMENT A -2673 Via De La Valle -The LOT Del Mar (Project No. 537664)

SUSTAINABLE FEATURES -The LOT Del Mar

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

2. Building 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.

ATTACHMENT A -8361 Del Oro Ct. -The LOT De (Project No. 537664)

STRATEGY 3. BICYCLE, WALKING, TRANSIT & LAND USE

4. Electrical Vehicle Charging -EV parking spaces will be provided in accordance with the California Building Code 11B-228.3, Table 11B-228.3.2.1 (8 Total spaces provided)

5. Bicycle Parking Spaces – Bicycle parking spaces will be provided in accordance with the San Diego Municipal Code Section 142.0530(e) (7 short -term and 7 long-term spaces provided)

6. Shower Facilities -Not Applicable

7. Designated Parking Spaces -The project provides designated parking for a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles in accordance with the City of San Diego CAP consistency checklist.

8. Transportation Demand Management Program -Not Applicable (no more than 50 employees)

Preliminary Drainage Study "The Lot – Del Mar"

Portion of Parcel 1, PM No. 3594 2673 Via de la Valle Del Mar, California 92014

> Prepared for: Adolfo Fastlicht Carlos Wellman 7611 Fay Avenue La Jolla, CA 92037

Prepared by: Christensen Engineering & Surveying 7888 Silverton Avenue, Suite "J" San Diego, CA 92126 (858) 271-9901

> April 24, 2017 Revised July 24, 2017 Revised November 06, 2017

> > PTS No. 537664

Introduction

This project proposes the development of a portion (0.792 ac) of this shopping center (that was previously developed) with a theater and café. Since the previous improvements have been demolished the area of imperviousness increases from 0.125 ac (15.8%) to 0.678 ac 85.6%). This project involves the removal of some of the existing parking lot and replacement with pervious paving and the new building and a biofiltration basin to treat new impervious area runoff.

The attached drainage area maps are from a topographic survey by Christensen Engineering & Surveying dated April 12, 2017. The site, in its existing preconstruction condition, drains southwesterly and southeasterly to two existing catch basins located in the existing parking lot. Following the construction this same general trend continues with a small area of runoff flowing to a more northerly driveway catch basin and the remainder flowing to the southerly driveway catch basin (roof and biofiltration basin by 8" PVC drain). All runoff from the site was previously conveyed to these catch basins when the subject development area was previously improved. The total runoff increases from 1.28 cfs to 2.42 cfs. All runoff, before and after development flows to a City of San Diego 6.5' x 4' box culvert that discharges to the San Dieguito River. Should the runoff exceed the capacity of the box culvert it will flow to the terminus of San Andres and continue to flow to the San Dieguito River. Therefore, the increase in runoff will have no adverse effect on the public storm drain system.

Section 404 of CWA regulates the discharge of dredged or fill material into waters of the United States. Section 404 is regulated by the Army Corps of Engineers. Section 401 of CWA requires that the State provide certification that any activity authorized under Section 404 is in compliance with effluent limits, the state's water quality standards, and any other appropriate requirements of state law. Section 401 is administered by the State Regional Water Quality Control Board. The project does not require a Federal CWA Section 404 permit nor Section 401 Certification because it does not cause dredging or filling in waters of the United States and is in compliance with the State Water Quality Standards. See separate SWQMP.

Since the project discharges by a hardened conveyance system to the San Dieguito River (an exempt waterbody) it is exempt from hydromodification requirements.

The Rational Method was used to calculate the anticipated flow for the 100-year storm return frequency event using the method outlined in the City of San Diego Drainage Design Manual.

Antony K. Christensen RCE 54021 Exp. 12-31-17 JN A2017-30

<u>11-06-17</u> Date



Calculations

1. Intensity Calculation

(From the City of San Diego Drainage Design Manual, Page 86) Tc = Time of concentration

Tc = 1.8 (1.1-C) (D)^{1/2} / S^{1/3}

Since the difference in elevation is 2' (22'-20') and the distance traveled is 275' (S=0.7%). C=0.85.

Tc = 8.4 minutes

From table on Page 83

 $I_{100} = 3.6$ inches

2. Coefficient Determination

The site is a commercial development (shopping center. From Page 82

Pre-Construction:

A portion of the site was previous developed and those improvements have been removed. A portion of the site is still improved.

Pre-construction the site will be considered vacant

C= 0.45

Post construction: From Page 82 for Commercial

C = 0.85

3. Volume calculations

Q = CIA

Areas of Drainage

The same area of the site will be used to compare Pre and Post Construciton runoff.

Pre-Construction

Area of westerly site flowing to westerly catch basin in parking area	W = 0.395 Acre
Area of easterly site flowing to southerly driveway catch basin	E = 0.397 Acre
Post-Construction	
Area draining from roofs and biofiltration basin that flows by 8" PVC drain to southerly driveway catch basin	PC-A = 0.696 Acre
Area draining from southerly pervious paving that flows to southerly driveway catch basin	PC-B = 0.060 Acre
Area draining from northerly pervious paving that flows to northerly driveway catch basin	PC-C = 0.036 Acre

Pre-Construction

 $Q_{100W} = (0.45) (3.6) (0.395)$ $Q_{100E} = (0.45) (3.3) (0.397)$

 $Q_{100W} = 0.64 \text{ cfs}$ $Q_{100E} = 0.64 \text{ cfs}$

Post-Construction

 $Q_{100PC-A} = (0.85) (3.6) (0.696)$ $Q_{100PC-B} = (0.85) (3.6) (0.060)$ $Q_{100PC-C} = (0.85) (3.6) (0.036)$

 $Q_{100PC-A} = 2.13 \text{ cfs}$ $Q_{100PC-B} = 0.18 \text{ cfs}$ $Q_{100PC-C} = 0.11 \text{ cfs}$

4. Discussion

The site, in its existing pre-construction condition, drains southwesterly and southeasterly to two existing catch basins located in the existing parking lot. Following the construction this same general trend continues with a small area of runoff flowing to a more northerly driveway catch basin and the remainder flowing to the southerly driveway catch basin. All runoff from the site was previously conveyed to these catch basins, when the subject development area was previously improved. The total runoff increases from 1.28 cfs to 2.42 cfs. All runoff, before and after development flows to a City of San Diego 6.5' x 4' box culvert drain that discharges to the San Dieguito River. Should the runoff exceed the capacity of the box culvert it will flow to the terminus of San Andres and continue to flow to the San Dieguito River. Therefore, the increase in runoff will have no adverse effect on the public storm drain system

Type of conveyance is a: 8" PVC Diameter of conveyance equals .67 Feet Slope of conveyance equals 3 % Roughness equals .01 Flow quantity equals 2.764797 CFS Area equals .3525653 Square Feet Velocity equals 7.841943 FPS Type of conveyance is a: 8" PVC DRAIN Diameter of conveyance equals .666 Feet Slope of conveyance equals 3 % Roughness equals .01 Flow quantity equals 2.130424 CFS Area equals .2396793 Square Feet Velocity equals 8.886874 FPS Depth of flow equals .5189976 Feet

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APPENDIX

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TABLE 2

RUNOFF COEFFICIENTS (RATIONAL METHOD)

DEVELOPED AREAS (URBAN)

Land Use	Coefficient, C Soil Type (1)
Residential:	D
Single Family	.55
Multi-Units	.70
Mobile Homes	.65
Rural (lots greater than 1/2 acre)	.45
Commercial (2) 80% Impervious	.85
Industrial (2) 90% Impervious	.95

NOTES:

- (1) Type D soil to be used for all areas.
- (2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in no case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual impe	rviou	sness		8	50%
Tabulated in	nperv	iousness		=	80%
Revised C	Ē	<u>50</u> x	0.85	= ·	0.53

82

APPENDIX -

INTENSITY - DURATION- FREQUENC CURVES for COUNTY OF SAN DIEGO

ELEY.

0-1500

1500-3000

3000-4000

4000-5000

5000-6000

DESERT

elevation.

<u>စ</u> ယ FACTOR

100

1.25

1.42

1.60

1.70

125

To obtain correct intensity, multiply intensity on chart

by factor for design

RAINFALL



DURATION

URBAN AREAS OVERLAND TIME OF FLOW CURVES



Surface Flow Time Curves

EXAMPLE: GIVEN: LENGTH OF FLOW = 400 FT. SLOPE = 1.0% COEFFICIENT OF RUNOFF C = .70 READ: OVERLAND FLOWTIME = 15 MINUTES



DRAINAGE AREA MAPS

PRE-DEVELOPMENT DRAINAGE AREA MAP



HER NG RATE	
RATE	1. UNDERGROUND UTILITIES ARE SHOWN AT RECORD LOCATIONS AS OBTAINED FROM CITY OF SAN DIEGO IMPROVEMENT PLANS. ACTUAL STRUCTURES AND LOCATION WILL NEED TO BE VERIFIED IN THE FIELD BY CONTRACTOR AND/OR UTILITY OFFICIALIES.
	2. THE SOURCE OF THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS FROM SURVEY BY CHRISTENSEN ENGINEERING & SURVEYING, DATED 04-12-17.
λL)	3. THE SUBJECT PROPERTY IS SERVED BY CITY OF SAN DIEGO SANITARY SEWER AND WATER MAINS.
STENCE	4. UTILITIES SHOWN HEREON ARE FROM CITY OF SAN DIEGO RECORDS AND ARE THEIR LOCATION ARE APPROXIMATE. NOT ALL UTILITIES MAY BE SHOWN. BEFORE ANY WORK TAKES PLACE CONTRACTOR SHALL HAVE ALL UTILITIES MARKED OUT AND SHALL USE SPECIAL CARE DURING CONSTRUCTION.
) INCE	5. AN ENCROACHMENT MAINTENANCE AND REMOVAL AGREEMENT WILL BE REQUIRED FOR ANY PRIVATI IMPROVEMENTS WITHIN PUBLIC EASEMENTS (PRIVATE 8" PVC DRAIN WITHIN WATER AND DRAINAGE EASEMENT.
E	6. NO ESL, INCLUDING FEMA FLOODWAYS EXIST ONSITE.
MUM	7. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITEE SHALL ENTER INTO A MAINTENANCE AGREEMENT FOR THE ONGOING PERMANENT BMP MAINTENANCE, SATISFACTORY T THE CITY ENGINEER.
	8. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITEE SHALL INCORPORA ANY CONSTRUCTION BEST MANAGEMENT PRACTICES NECESSRY TO COMPY WITH CHAPTER 14, ARTICLE 2, DIVISION 1 (GRADING REGULATIONS) OF THE SAN DIEGO MUNICIPAL CODE, INTO THE CONSTRUCTION PLANS OR SPECIFICATIONS.
	9. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITEE SHALL SUBMIT A WATER POLLUTION CONTROL PLAN (WPCP). THE WPCP SHALL BE PREPARED IN ACCORDANCE WITH THE GUIDELINES IN PART 2 CONSTRUCTION BMP STANDARDS CHAPTER 4 OF THE CITY'S STORM WATER STANDARDS.
	10. NO OBSTRUCTION, INCLUDING SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGH PLANT MATERIAL, OTHER THAN TREES, WITHIN THE PUBLIC RIGHT-OF-WAY THAT IS LOCATED WITHIN VISIBILITY AREAS SHALL NTO EXCEED 24 INCHES IN THEIGHT, MEASURED FROM THE TOP OF THE ADJACENT CURB.
	GRADING DATA
OTED	AREA OF SITE TO BE GRADED: 34,510 SF (0.792 AC) PERCENT OF SITE TO BE GRADED: 5.4% (ENTIRE SITE PREVIOUSLY GRADED) AREA OF SITE WITH SLOPES GREATER THAN 25%: 0 S.F.
لما سَمَّ 1	AMOUNT OF CUT - 1,350 C.Y. AMOUNT OF FILL - 750 C.Y. AMOUNT OF IMPORT - 600 C Y
	MAXIMUM FILL - < 2' MAXIMUM CUT - 3' VERTICAL IN BASIN AREA MAXIMUM HEIGHT OF FILL SLOPE - NONE
	MAXIMUM HEIGHT OF CUT SLOPE - NONE RETAINING WALL: NONE
	TO PAD NO CUT OR FILL GREATER THAN 5 FEET OCCURS ANYWHRE
	OUTSIDE OF BUILDING FOOTPRINT
	FACE OF BUILDING
	6" FREEBOARD 6" PONDING AREA
	6" FREEBOARD 6" PONDING AREA 18" SOIL LAYER 12" GRAVEL LAYER 8" PERFORATED PV/C LINDERDRAIN
	6" FREEBOARD 6" PONDING AREA 18" SOIL LAYER 12" GRAVEL LAYER 8" PERFORATED PVC UNDERDRAIN LOCATED 3" FROM BOTTOM OF BASIN
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BIOFILTRAT	INTONY K. CHRISTENSEN, R.C.E. 54021
BIOFILTRAT	Con Basin Detail MITONY K. CHRISTENSEN, R.C.E. 54021 Date Coviners: ADOLFO FASTLICHT CATION WELLMAN TO STALE Coviners: ADOLFO FASTLICHT CATION WELLMAN TO STALE COVINERS: COVIN
BIOFILTRAT	Grand Street Street Grand Street Street Stree Street <tr< td=""></tr<>
BIOFILTRAT	e* FREEBOARD B* PONDING AREA 18* SOIL LAYER P* PERFORATED PVC UNDERDRAIN LOCATED 9* FROM BOTTOM OF BASIN ION BASIN DETAIL TO SCALE JULY 29, 2017 JULY 29, 2017 Date JULY 29, 2017 Owners: ANTONY K. CHRISTENSEN, R.C.E. 54021 Date Owners: ADDIF/O FASTLICHT GARLOS YNELLMAN 7811 FAY AVENUE LA JOLLA, CA 92037 Prepared By: CHRISTENSEN ENGINEERING & SURVEYING 7868 SILVERTON AVENUE, SUITE 'J'
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	Prepend By: Christensen Engineering & Surveying 7989 Streem Area Preperd By: Christensen Engineering & Surveying 7989 Streem Area Preperd By: Christensen Engineering & Surveying 7989 Streem Area Preperd By: Christensen Engineering & Surveying 7989 Streem Area Preperd By: Christensen Engineering & Surveying 798 Streem Area Preperd By: Christensen Engineering & Surveying 798 Streem Area Project Address: 2673 VIA DE LA VALLE Det Mane: Project Name: The LOC - DEL Mag
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	F FREEDOARD SP FREEDOARD SP SOLLAYER 12° GRAVEL LAYER 12° GRAVEL LAYER PREFORATED SP FROM BOTTOM OF BASIN DOM BASIN DETAIL TO SCALE YOUNDER ANTONYK CHRISTENSEN, R.C.E. 54021 Date Owners: COULOF FASTLICHT COULOF FASTLICHT COULOF FASTLICHT COULOF FASTLICHT COULOF CHRISTENSEN, R.C.E. 54021 Date

A2017-30

POST-DEVELOPMENT DRAINAGE AREA MAP

LEGAL DESCRIPTION

PARCEL 1, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AS SHOWN AT PAGE 3594 OF PARCEL MAPS FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, FEBRUARY 28, 1975.

TOGETHER WITH THAT PORTION OF VIA DE LA VALLE AS VACATED BY RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SAN DIEGO, RECORDED NOVEMBER 23, 1976 AS INSTRUMENT NO. 76-392737 IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO AND STATE OF CALIFORNIA.

NOTES

- 1. EASEMENTS, AGREEMENTS, DOCUMENTS AND OTHER MATTERS WHICH AFFECT THIS PROPERTY MAY EXIST, BUT CANNOT BE PLOTTED. CURRENT TITLE REPORT NOT PROVIDED
- 2. THE PRECISE LOCATION OF UNDERGROUND UTILITIES COULD NOT BE DETERMINED IN THE FIELD. PRIOR TO ANY EXCAVATION UTILITY COMPANIES WILL NEED TO MARK-OUT THE UTILITY LOCATIONS.
- 3. THE ADDRESS FOR THE SUBJECT PROPERTY IS 2673 VIA DE LA VALLE, DEL MAR, CA 92014.
- 4. THE ASSESSOR PARCEL NUMBER FOR THE SUBJECT PROPERTY IS 298-490-41. 5. THE TOTAL AREA OF THE SUBJECT PARCEL IS TO BE DETERMINED.
- 6. EASEMENT IN FAVOR OF THE CITY OF SAN DIEGO HAVE BEEN PLOTTED BASED ON TITLE REPORT DATED FEBRUARY 25, 2015 BY CHICAGO TITLE COMPANY, ORDER NO. 12201920-996-U50. OTHER EASEMENTS HAVE NOT BEEN PLOTTED PENDING CURRENT TITLE REPORT.

BENCHMARK

CITY OF SAN DIEGO BENCHMARK LOCATED AT THE NORTHWESTERLY CORNER OF VIA DE LA VALLE AND DE LA VALLE PLACE. ELEVATION 24.34' MEAN SEA LEVEL (N.G.V.D. 1929).

BASIS OF BEARINGS

IS GRID NORTH BASED UPON GPS OBSERVATIONS

Prepared By:

CHRISTENSEN ENGINEERING & SURVEYING 7888 SILVERTON AVENUE, SUITE "J" SAN DIEGO, CA 92126 PHONE (858)271-9901 FAX (858)271-8912

Project Address:

Project Name:

Sheet Title:

THE LOT

2673 VIA DE LA VALLE DEL MAR, CA 92014 Revision 5: Revision 4: Revision 3: Revision 2: 07-23-17 ADDRESS CITY COMMENTS Revision 1: 04-21-17 ADDED EASEMENTS FAVORING CITY OF SAN DIEGO

Original Date: APRIL 12, 2017

Sheet 1 Of 1

TOPOGRAPHIC MAP

JN 2017-30

C-1

REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION

THE LOT DEL MAR 2673 VIA DE LA VALLE DEL MAR, CALIFORNIA

PREPARED FOR

BOFFO CINEMAS LLC 7611 FAY AVENUE LA JOLLA, CALIFORNIA 92037

PREPARED BY

CHRISTIAN WHEELER ENGINEERING 3980 HOME AVENUE SAN DIEGO, CALIFORNIA 92105

3980 Home Avenue + San Diego, CA 92105 + 619-550-1700 + FAX 619-550-1701
August 18, 2017

CHRISTIAN WHEELER ENGINEERING

Boffo Cinemas, LLC 7611 Fay Avenue La Jolla, California 92037 Attention: Adolfo Fastlicht CWE 2170315.03

Subject:Report of Preliminary Geotechnical InvestigationThe LOT Del Mar, LLC, 2673 Via de la Valle, Del Mar, California

Ladies and Gentlemen:

In accordance with your request and our proposal dated May 18, 2017, we have completed a geotechnical investigation for the subject project. We are presenting herewith a report of our findings and recommendations.

It is our professional opinion and judgment that no geotechnical conditions exist on the subject property that would preclude the construction of the subject project provided the recommendations presented herein are implemented.

If you have questions after reviewing this report, please do not hesitate to contact our office. This opportunity to be of professional service is sincerely appreciated.

Respectfully submitted, CHRISTIAN WHEELER ENGINEERING

Daniel B. Adler, RCE # 36037 DBA:tsw ec: carlos@thelotent.com

TROY S. ''ILSON -1 CERTIFIED OF CALIFORNIE

Troy S. Wilson, CEG #2551

No. 36037

Exp. 6-30-18

Introduction and Project Description	1
Scope of Services	2
Findings	3
Site Description	3
General Geology and Subsurface Conditions	3
Geologic Setting and Soil Description	3
Artificial Fill	3
Younger Alluvium	4
Groundwater	4
Tectonic Setting	4
Geologic Hazards	6
General	6
City of San Diego Seismic Safety Study	6
Surface Rupture and Soil Cracking	6
Landslide Potential and Slope Stability	6
Expansive Soil	6
Flooding	7
Tsunami	7
Seiches	7
Other Potential Hazards	7
Liquefaction	7
General	7
Description of Analysis	8
Earthquake Parameters	8
Potential for Liquefaction	8
Post Liquefaction Reconsolidation Settlement	8
Conclusions	9
Recommendations	10
Grading and Earthwork	10
General	10
Pregrade Meeting	10
Observation of Grading	10
Clearing and Grubbing	10
Site Preparation	10
Imported Fill Soils	11
Processing of Fill Areas	11
Compaction and Method of Filling	11
Surface Drainage	11
Foundations	12
General	12
Structural Mat Foundation	12
Shallow Foundations	13
Dimensions	13
Bearing Capacity	13
Footing Keinforcing	13

TABLE OF CONTENTS

CWE 2170315.03 THE LOT Del Mar 2673 Via de la Valle Del Mar, California

Lateral Load Resistance	14
Settlement Characteristics 1	14
Foundation Excavation Observation1	14
Expansive Characteristics1	14
Foundation Plan Review1	15
Seismic Design Factors 1	15
On-Grade Slabs 1	16
Under-Slab Vapor Retarders 1	16
Exterior Concrete Flatwork 1	16
Limitations 1	16
Review, Observation and Testing 1	16
Uniformity of Conditions1	17
Change in Scope1	17
Time Limitations 1	17
Professional Standard 1	18
Client's Responsibility 1	18
Field Explorations 1	18
Laboratory Testing1	19

ATTACHMENTS

TABLES

Table I	Seismic Design Parameters,	2016 CBC

FIGURES

Figure 1 Site Vicinity Map, Follows Page 1

PLATES

Plate 1 Site Plan & Geotechnical Map

APPENDICES

AppendixABoring LogsAppendixBLaboratory Testing ResultsAppendixCCone Penetration Test ResultsAppendixDLiquefaction AnalysesAppendixEReferencesAppendixFRecommended Grading Specifications – General Provisions



PRELIMINARY GEOTECHNICAL INVESTIGATION

<u>THE LOT Del Mar</u> <u>2673 VIA DE LA VALLE</u> <u>DEL MAR, CALIFORNIA</u>

INTRODUCTION AND PROJECT DESCRIPTION

This report presents the results of a preliminary geotechnical investigation performed for a proposed movie theatre to be located at 2673 Via de la Valle, Del Mar, California. The following Figure No. 1 presents a vicinity map showing the location of the property.

We understand that the subject project will consist of the construction of a single-story, high-bay movie theatre complex. It is anticipated that the proposed structure will be of wood-frame and steelframe construction. The proposed structure will be supported on a mat foundation. Grading to accommodate the proposed construction is expected to consist of cuts and fills up to about 1 foot from existing grade.

To assist in the preparation of this report, we were provided with a miscellaneous plans prepared by Alta Design Development, dated December 6, 2016, and preliminary grading plans, prepared by Christensen Engineering & Surveying, dated April 24, 2017. A copy of the preliminary grading plan was used as a base map for our Site Plan and Geologic Map, and is included herein as Plate No. 1.

This report has been prepared for the exclusive use of Boffo Cinemas LLC, and its design consultants, for specific application to the project described herein. Should the project be modified, the conclusions and recommendations presented in this report should be reviewed by Christian Wheeler Engineering for conformance with our recommendations and to determine whether any additional subsurface investigation, laboratory testing and/or recommendations are necessary. Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, expressed or implied.



SCOPE OF SERVICES

Our preliminary geotechnical investigation consisted of surface reconnaissance, subsurface exploration, obtaining representative soil samples, laboratory testing, analysis of the field and laboratory data, and review of relevant geologic literature. Our scope of service did not include assessment of hazardous substance contamination, recommendations to prevent floor slab moisture intrusion or the formation of mold within the structures, evaluation or design of storm water infiltration facilities, or any other services not specifically described in the scope of services presented below.

More specifically, the intent of our proposed investigation was to:

- Obtain a boring permit from the County of San Diego Department of Environmental Health to conduct the proposed subsurface investigation.
- Excavate 3 small-diameter borings using a hand auger to explore the near surface soil conditions at the site and to obtain samples for laboratory testing.
- Perform 3 Cone Penetration Tests (CPT) to a maximum depth 100 feet in order to explore the subsurface conditions at the site.
- Backfill the CPT holes and borings using a grout or a grout/bentonite mix as required by the County of San Diego Department of Environmental Health.
- Evaluate, by review of the CPT results, laboratory tests and our past experience with similar soil types, the engineering properties of the various soil strata that may influence the proposed construction, including bearing capacities, expansive characteristics and settlement potential.
- Describe the general geology at the site including possible geologic hazards, including liquefaction that could have an effect on the proposed construction, and provide the seismic design parameters as required by the 2016 edition of the California Building Code.
- Address potential construction difficulties that may be encountered due to soil conditions, groundwater or geologic hazards, and provide geotechnical recommendations to deal with these difficulties.
- Provide site preparation and grading recommendations, as necessary, for the anticipated work.
- Provide foundation recommendations for the type of construction anticipated and develop soil engineering design criteria for the recommended foundation designs.

• Provide a preliminary geotechnical report that presents the results of our investigation which includes a plot plan showing the location of our subsurface explorations, excavation logs, laboratory test results, and our conclusions and recommendations for the proposed project.

Although a test for the presence of soluble sulfates within the soils that may be in contact with reinforced concrete was performed as part of the scope of our services, it should be understood Christian Wheeler Engineering does not practice corrosion engineering. If a corrosivity analysis is considered necessary, we recommend that the client retain an engineering firm that specializes in this field to consult with them on this matter. The results of our sulfate testing should only be used as a guideline to determine if additional testing and analysis is necessary.

FINDINGS

SITE DESCRIPTION

The subject site is a vacant irregular-shaped lot located at 2673 Via de la Valle, Del Mar, California. The lot is located at the southeastern portion of a shopping center and is surrounded by commercial structures and associated paved parking and driveways. Topographically, the lot is near flat-lying. Based on the referenced grading plan provided, site elevations range from about 21 feet to about 22 feet.

GENERAL GEOLOGY AND SUBSURFACE CONDITIONS

GEOLOGIC SETTING AND SOIL DESCRIPTION: The subject site is located in the Coastal Plains Physiographic Province of San Diego County. Based upon the findings of our subsurface explorations and review of readily available, pertinent geologic and geotechnical literature, it was determined that the project area is generally underlain by artificial fill and younger alluvium. The materials encountered in the subsurface explorations are described below:

ARTIFICIAL FILL (Qaf): The site was found to be underlain by artificial fill extending to a depth of about 13 feet below existing grade. Deeper fill may exist in areas of the site not investigated. The fill materials generally consisted of interbedded brown, light brown, dark

Page No. 4

brown, light grayish-brown, and orange, damp to moist, medium dense to dense, silty sand (SM), sand with silt (SP-SM), and clayey sand (SC). Where the fill is found near the water table, the fill is expected to be very moist to wet. An approximately 3-inch-thick layer of dark brown, moist, stiff, sandy clay (CL) was encountered in HA-3 at a depth of about $2\frac{1}{2}$ from existing grade. The artificial fill was judged to have a very low to low expansion potential (EI < 50), except the sandy clay that was judged to have a medium expansive potential (EI Between 51 and 90).

YOUNGER ALLUVIUM (Qyal): Younger alluvial deposits underlie the artificial soils throughout the site. . As encountered in our exploratory borings, the younger alluvium extended the maximum exploration depth of about 100 feet from existing grade (Borings CPT-1). The younger alluvial materials generally consisted of interbedded moist to saturated, very loose to medium dense, silty sand (SM), sand with silt (SP-SM), silty clays (CL) and clayey silts (ML). The sandy younger alluvium was judged to have a low expansion potential (EI < 50), whereas the clayey and silty younger alluvium was judged to have a low to medium expansion potential (EI between 51 and 90).

GROUNDWATER: Groundwater was encountered in CPT-3 at about 16 feet below existing grade. We do not expect any significant groundwater related conditions during or after the proposed construction, unless relatively deep excavations are needed for underground utilities or fuel tank construction. However, it should be recognized that minor groundwater seepage problems might occur after construction and landscaping are completed, even at a site where none were present before construction. These are usually minor phenomena and are often the result of an alteration in drainage patterns and/or an increase in irrigation water. Based on the anticipated construction and the permeability of the on-site soils, it is our opinion that any seepage problems that may occur will be minor in extent. It is further our opinion that these problems can be most effectively corrected on an individual basis if and when they occur.

TECTONIC SETTING: Much of Southern California, including the San Diego County area, is characterized by a series of Quaternary-age fault zones that consist of several individual, en echelon faults that generally strike in a northerly to northwesterly direction. Some of these fault zones (and the individual faults within the zone) are classified as "active" according to the criteria of the California Division of Mines and Geology. Active fault zones are those that have shown conclusive evidence of faulting during the Holocene Epoch (the most recent 11,000 years). The Division of Mines and Geology used the term "potentially active" on Earthquake Fault Zone maps until 1988 to refer to all Quaternary-age (last 1.6 million years) faults for the purpose of evaluation for possible zonation in accordance with the Alquist-Priolo Earthquake Fault Zoning Act and identified all Quaternary-age faults as "potentially active" except for certain faults that were presumed to be inactive based on direct geologic evidence of inactivity during all of Holocene time or longer. Some faults considered to be "potentially active" would be considered to be "active" but lack specific criteria used by the State Geologist, such as *sufficiently active* and *well-defined*. Faults older than Quaternary-age are not specifically defined in Special Publication 42, Fault Rupture Hazard Zones in California, published by the California Division of Mines and Geology. However, it is generally accepted that faults showing no movement during the Quaternary period may be considered to be "inactive". The City of San Diego guidelines indicate that since the beginning of the Pleistocene Epoch marks the boundary between "potentially active" and "inactive" faults, unfaulted Pleistocene-age deposits are accepted as evidence that a fault may be considered to be "inactive".

A review of available geologic maps indicates that the nearest active fault is the Rose Canyon-Newport Inglewood Fault Zone, located approximately 6 miles to the northwest. Other active fault zones in the region that could possibly affect the site include the Coronado Bank, San Diego Trough and San Clemente Fault Zones to the west, the Palos Verdes Fault Zones to the northwest, and the Elsinore, Earthquake Valley, San Jacinto, and San Andreas Fault Zones to the northeast.

The following Table I presents the active faults that are considered most likely to significantly affect the proposed residence over the anticipated economic lifetime of the structure.

Fault Zone	Distance
Rose Canyon- Newport Inglewood	6 miles
Coronado Bank	16½ miles
San Diego Trough	28 miles
Elsinore	32 ¹ /2 miles
Earthquake Valley	41 miles
San Clemente	52 miles
Palos Verdes	52 miles
San Jacinto	53 miles
San Andreas	72 miles

GEOLOGIC HAZARDS

GENERAL: No geologic hazards of sufficient magnitude to preclude residential use of the site are known to exist. In our professional opinion and to the best of our knowledge, the site should be suitable for residential, provided sound engineering, construction, and site maintenance procedures are followed should the site be developed.

CITY OF SAN DIEGO SEISMIC SAFETY STUDY: As part of our services, we have reviewed the City of San Diego Seismic Safety Study. This study is the result of a comprehensive investigation of the City that rates areas according to geological risk potential (nominal, low, moderate, and high) and identifies potential geotechnical hazards and/or describes geomorphic conditions. According to the San Diego Seismic Safety Map No. 42, the subject site is located in Geologic Hazards Category 31. This category is assigned to land with high potential for shallow groundwater, major drainages, and hydraulic fills.

SURFACE RUPTURE AND SOIL CRACKING: Based on the information available to us, it is our professional opinion that no active or potentially active faults are present at the subject site proper so the site is not considered susceptible to surface rupture. The likelihood of soil cracking caused by shaking from distant sources should be considered to be nominal.

LANDSLIDE POTENTIAL AND SLOPE STABILITY: As part of this investigation we reviewed the publication, "Landslide Hazards in the Southern Part of the San Diego Metropolitan Area" by Tan, 1995. This reference is a comprehensive study that classifies San Diego County into areas of relative landslide susceptibility. The subject site is located in Area 2. Land within Area 2 is considered to be the marginally susceptible to slope failures. Based on the absence of significant slopes within the vicinity of the subject site, the potential for slope failures can be considered negligible.

EXPANSIVE SOILS: The majority of the near surface soils at the site are anticipated to possess a low expansive potential. However, the presence of detrimentally expansive soils (having an Expansion Index in excess of 50), if present, may be mitigated, should future development occur, by proper foundation reinforcing and design.

FLOODING: As delineated on the referenced Flood Insurance Rate Map (FIRM), panel 06073C1326G prepared by the Federal Emergency Management Agency, the site is located in Zone X-Area of Minimal Flood Hazard.

TSUNAMIS: Tsunamis are great sea waves produced by a submarine earthquake or volcanic eruption. Historically, the San Diego area has been free of tsunami-related hazards and tsunamis reaching San Diego have generally been well within the normal tidal range. It is thought that the wide continental margin off the coast acts to diffuse and reflect the wave energy of remotely generated tsunamis. The largest historical tsunami to reach San Diego's coast was 4.6 feet high, generated by the 1960 earthquake in Chile. A lack of knowledge about the offshore fault systems makes it difficult to assess the risk due to locally generated tsunamis. According to the Tsunami Inundation Map for Emergency Planning (CEMA, 2009) the site is not located within a tsunami inundation area. Given this information and the site's location, the risk associated with tsunamis at the site is considered to be low to moderate.

SEICHES: Seiches are periodic oscillations in large bodies of water such as lakes, harbors, bays or reservoirs. It is our opinion that the risk potential for damage caused by seiches is low.

OTHER POTENTIAL GEOLOGIC HAZARDS: Other potential geologic hazards such as, volcanoes or seismic-induced settlement should be considered to be negligible or nonexistent.

LIQUEFACTION

GENERAL: The subject site is in an area considered potentially susceptible to liquefaction. In order to be subject to liquefaction, three conditions must be present: loose sandy or cohesionless silty deposits, shallow groundwater, and earthquake shaking of sufficient magnitude and duration. Based on our site-specific study, it appears that shallow groundwater is present at the site and strong earthquake shaking may affect the site. Additionally, as described in the Geologic Setting and Soil Description section of this report above, the materials below the shallow water table in the project area consist of Holocene-age alluvial deposits that contain layers of sand, silty sand, and low to medium plasticity silts (ML) that are expected to have soil properties conducive to liquefaction. It should be noted that the following discussion is in no way a guarantee that the analysis will accurately predict the liquefaction potential at the site. The analysis provides general information only on the site liquefaction potential. It should be noted that many of the parameters used in liquefaction evaluations are subjective and open to interpretation, and that much is yet unknown about both the seismicity of the San Diego area and the phenomenon of liquefaction.

DESCRIPTION OF ANALYSIS: Our analysis was performed using the Cliq (version 2.1) software developed by Geologismiki, in which the results of our CPT soundings were input and evaluated in accordance with the procedure recommended by the National Center For Earthquake Engineering Research (NCEER, 1998). An algorithm was applied within the software to make corrections for thin stiff layers embedded within softer zones (Robertson, 2009). Our analyses were limited to the upper 50 feet of the existing soils as liquefaction below that depth is not considered to have a significant effect on surface improvements.

EARTHQUAKE PARAMETERS: As permitted in Section 1803.5.12 of the California Building Code, our calculations were performed using a peak ground acceleration (PGAM = 0.48g) as determined using the procedures set forth in Section 11.8.3 of ASCE 7-10. Based on this result and the proximity of the site to the Rose Canyon-Newport-Inglewood Fault Zone, we have used an earthquake magnitude of 6.7 in our liquefaction evaluation.

POTENTIAL FOR LIQUEFACTION: Using the parameters described above, the results of our liquefaction analyses indicate that much of the saturated sandy and silty portions of the alluvium below the water table possess factors-of-safety against soil liquefaction of less than 1.0 and are therefore considered liquefiable.

POST LIQUEFACTION RECONSOLIDATION SETTLEMENT: The potential amount of total vertical settlement due to reconsolidation of the liquefied soils was estimated within the Cliq software using the methods presented by Zhang et al, 2002. The estimated average settlement for the CPT soundings performed on-site was approximately 3.9 inches. It can be noted that, for sites with relatively small lateral displacement (i.e. less than one foot), predicted settlements are typically within a factor of two relative to those observed (Seed et al, 2003).

In terms of differential settlement, CGS Special Publication 117 notes that considerable difficulty exists in trying to "reliably estimate" the amount of differential settlement at a site caused by soil liquefaction. As such, a conservative estimate of differential settlement at any given site can be assumed to be two-thirds of the total liquefaction-induced settlement (CGS, 2008). Using this criterion, without any deep ground modification procedures, the subject project area may be assumed to be subject to approximately 2.6 inches of liquefaction-induced, differential settlement.

CONCLUSIONS

In general, it is our professional opinion and judgment that the subject property is suitable for the construction of the proposed movie theatre provided the recommendations presented herein are implemented. The main geotechnical condition affecting the proposed project consists of existing fill soils and potentially liquefiable younger alluvium.

The site is underlain by artificial fill and younger alluvial deposits. As encountered in our subsurface explorations, the artificial fill extends to a depth of about 13 feet from existing grade. In general, the artificial fill appears to be well compacted. However, due to the inherent uncertainty associated with the evaluation of existing fill soils and the potential for surface decompaction due to wetting and drying cycles associate with weather patterns, it is recommended that these materials be partially removed and replaced as compacted fill.

An additional geotechnical consideration for site development is the liquefaction potential of some of the younger alluvium underlying the fill soils. This condition will require special foundation consideration as described hereinafter. Good engineering practice requires that where liquefaction is likely, the hazards that might reasonably be caused by liquefaction that could result in the collapse of a structure and/or loss of life be mitigated. The client should realize that the foundation recommendations presented herein are intended to provide this level of life safety. These recommendations, however, will not necessarily prevent the building from sustaining structural damage, even to the extent that it may become uninhabitable in the event of a major, proximal earthquake. To fully mitigate the liquefaction potential at the site would require supporting the structures on deep foundations or altering the existing soils such that they are resistant to liquefaction through the use of extensive deep ground modification techniques. Younger alluvium is underlying the artificial fill and extends the maximum exploration depth of about 100 feet from existing grade (Borings CPT-1). Our investigation indicates that some of these materials are potentially liquefiable. Total and differential dynamic settlements were calculated to be about 3.9 inches and 2.6 inches, respectively.

RECOMMENDATIONS

GRADING AND EARTHWORK

GENERAL: All grading should conform to the guidelines presented in the current edition of the California Building Code, the minimum requirements of the City of Del Mar, and the recommended Grading Specifications and Special Provisions attached hereto, except where specifically superseded in the text of this report or our Report of Preliminary Geotechnical Investigation, which will be provided under separate cover.

PREGRADE MEETING: It is recommended that a pregrade meeting including the grading contractor, the client, and a representative from Christian Wheeler Engineering be performed, to discuss the recommendations of this report and address any issues that may affect grading operations.

OBSERVATION OF GRADING: Continuous observation by the Geotechnical Consultant is essential during the grading operation to confirm conditions anticipated by our investigation, to allow adjustments in design criteria to reflect actual field conditions exposed, and to determine that the grading proceeds in general accordance with the recommendations contained herein.

CLEARING AND GRUBBING: Site preparation should begin with the removal of any existing vegetation and other deleterious materials in areas to receive proposed improvements or new fill soils.

SITE PREPARATION: It is recommended that existing artificial fill underlying the proposed structure, associated improvements and new fills be removed to a minimum depth of 3 feet below existing or proposed grade, whichever is more. Deeper removals may be necessary in areas of the site not investigated or due to unforeseen conditions. Lateral removals limits should extend at least 5 feet from the perimeter of the structure, associated improvements and new fills or equal to removal depth,

whichever is more. No removals are recommended beyond property lines and within 3 feet from existing improvements to remain. All excavated areas should be approved by the geotechnical engineer or his representative prior to replacing any of the excavated soils. The excavated materials can be replaced as properly compacted fill.

IMPORTED FILL SOILS: Imported fill soils should consist of clayey and/or silty sands that have a low expansion potential (EI between 21 and 50), relatively high strength, and relatively low permeability characteristics. At least 72 hours will be necessary to perform necessary laboratory test to approve an import source.

PROCESSING OF FILL AREAS: Prior to placing any new fill soils or constructing any new improvements in areas that have been cleaned out to receive fill, the exposed soils should be scarified to a depth of 12 inches, watered thoroughly, and compacted to at least 90 percent relative compaction.

COMPACTION AND METHOD OF FILLING: In general, all structural fill placed at the site should be compacted to a relative compaction of at least 90 percent of its maximum laboratory dry density as determined by ASTM Laboratory Test D1557. Fills should be placed at or slightly above optimum moisture content, in lifts 6 to 8 inches thick, with each lift compacted by mechanical means. Fills should consist of approved earth material, free of trash or debris, roots, vegetation, or other materials determined to be unsuitable by the Geotechnical Consultant. Fill material should be free of rocks or lumps of soil in excess of three inches in maximum dimension.

Utility trench backfill within 5 feet of the proposed structure and beneath all concrete flatwork or pavements should be compacted to a minimum of 90 percent of its maximum dry density.

SURFACE DRAINAGE: The drainage around the proposed improvements should be designed to collect and direct surface water away from proposed improvements toward appropriate drainage facilities. Rain gutters with downspouts that discharge runoff away from the structure and the top of slopes into controlled drainage devices are recommended.

The ground around the proposed improvements should be graded so that surface water flows rapidly away from the improvements without ponding. In general, we suggest that the ground adjacent to structures be sloped away at a minimum gradient of 2 percent. For densely vegetated areas where runoff can be impaired should have a minimum gradient of 5 percent for the first 5 feet from the structure is suggested. It is essential that new and existing drainage patterns be coordinated to produce proper drainage. Pervious hardscape surfaces adjacent to structures should be similarly graded.

Drainage patterns provided at the time of construction should be maintained throughout the life of the proposed improvements. Site irrigation should be limited to the minimum necessary to sustain landscape growth. Over watering should be avoided. Should excessive irrigation, impaired drainage, or unusually high rainfall occur, zones of wet or saturated soil may develop.

FOUNDATIONS

GENERAL: Based on the anticipated soil conditions and the site preparation recommendations provided in this report, a concrete mat foundation may be utilized for the support of the proposed structure. Conventional shallow foundations may be utilized for the support of light exterior miscellaneous improvements.

STRUCTURAL MAT FOUNDATION

A structurally reinforced concrete mat foundation supported by the existing artificial fill soils is recommended for support of the proposed structure. Thickness and reinforcement requirements of the mat foundation should be in accordance with the recommendations of the project structural engineer. The mat should be designed using an allowable bearing capacity of no more than 1,500 pounds per square foot. The recommended allowable bearing capacity may be increased by up to one-third when considering loads of a short duration such as wind or seismic forces.

Mat foundations typically experience some deflection due to loads placed on the mat and the reaction of the soils underlying the mat. A design coefficient of subgrade reaction, K_{v1} , of 200 pounds per cubic inch (pci) may be used for evaluating such deflections at the site. This value is based on the soil conditions encountered in our exploratory excavations and is considered as

applied to a unit square foot area. The value should be adjusted for the design mat size. The coefficient of subgrade reaction K_b for a mat of a specific width may be evaluated using the following equation:

 $K_b = K_{v1} [(b+1)/2b]^2$ Where b is the least width of the foundation

Based on our preliminary evaluation, the anticipated total settlement for the full or partial mat foundation should be less than approximately one inch. Anticipated maximum differential settlements of approximately 50 percent of the total settlements may occur between the center of the base of the structure and the structure corners. Also, total settlement on the order of 3.9 inches and differential settlements on the order of 2.6 inches are possible as a result of liquefaction during a major, proximal seismic event.

Lateral forces may be resisted by passive pressure resistance. For passive pressure design, an allowable equivalent fluid pressure of 300 pounds per cubic foot (pcf) may be assumed.

SHALLOW FOUNDATIONS

DIMENSIONS: Spread footings supporting light exterior miscellaneous improvements should be embedded at least 18 inches below lowest adjacent finish pad grade. Continuous and isolated footings should have a minimum width of 12 inches and 24 inches, respectively.

BEARING CAPACITY: Spread footings supporting light exterior miscellaneous improvements with a minimum 18 -inch embedment may be designed for an allowable soil bearing pressure of 1,500 pounds per square foot (psf). This value may be increased by 400 pounds per square foot for each additional foot of embedment and 300 pounds per square foot for each additional foot of width up to a maximum of 3,000 pounds per square foot. These values may be increased by one-third for combinations of temporary loads such as those due to wind or seismic loads.

FOOTING REINFORCING: Reinforcement requirements for foundations should be provided by the structural designer. However, based on the expected soil conditions, we

recommend that the minimum reinforcing for continuous footings consist of at least 2 No. 5 bars positioned near the bottom of the footing and 2 No. 5 bars positioned near the top of the footing.

LATERAL LOAD RESISTANCE: Lateral loads against foundations may be resisted by friction between the bottom of the footing and the supporting soil, and by the passive pressure against the footing. The coefficient of friction between concrete and soil may be considered to be 0.30. The passive resistance may be considered to be equal to an equivalent fluid weight of 300 pounds per cubic foot. These values are based on the assumption that the footings are poured tight against undisturbed soil. If a combination of the passive pressure and friction is used, the friction value should be reduced by one-third.

SETTLEMENT CHARACTERISTICS: The anticipated total and differential footing static settlement is expected to be less than about 1 inch and 1 inch in 40 feet, respectively, provided the recommendations presented in this report are followed. It should be recognized that minor cracks normally occur in concrete slabs and foundations due to concrete shrinkage during curing or redistribution of stresses, therefore some cracks should be anticipated. Such cracks are not necessarily an indication of excessive vertical movements. In addition, total settlement on the order of 3.9 inches and differential settlements on the order of 2.6 inch are possible as a result of liquefaction during a major, proximal seismic event.

FOUNDATION EXCAVATION OBSERVATION: All footing excavations should be observed by Christian Wheeler Engineering prior to placing of forms and reinforcing steel to determine whether the foundation recommendations presented herein are followed and that the foundation soils are as anticipated in the preparation of this report. All footing excavations should be excavated neat, level, and square. All loose or unsuitable material should be removed prior to the placement of concrete.

EXPANSIVE CHARACTERISTICS: The prevailing foundation soils are assumed to have a low expansive potential (EI between 21 and 50). The recommendations within this report reflect these conditions.

FOUNDATION PLAN REVIEW: The final foundation plan and accompanying details and notes should be submitted to this office for review. The intent of our review will be to verify that the plans used for construction reflect the minimum dimensioning and reinforcing criteria presented in this section and that no additional criteria are required due to changes in the foundation type or layout. It is not our intent to review structural plans, notes, details, or calculations to verify that the design engineer has correctly applied the geotechnical design values. It is the responsibility of the design engineer to properly design/specify the foundations and other structural elements based on the requirements of the structure and considering the information presented in this report.

SEISMIC DESIGN FACTORS

The seismic design factors applicable to the subject site are provided below. The seismic design factors were determined in accordance with the 2016 California Building Code. The site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters are presented in the following Table I.

	r
Site Coordinates: Latitude	32.789°
Longitude	-116.845°
Site Class	D
Site Coefficient F _a	1.048
Site Coefficient F _v	1.564
Spectral Response Acceleration at Short Periods S _s	1.131 g
Spectral Response Acceleration at 1 Second Period S1	0.436 g
$S_{MS} = F_a S_s$	1.185 g
$S_{\rm M1}\!=\!F_{\rm v}S_1$	0.682 g
$S_{DS} = 2/3 * S_{MS}$	0.790 g
$S_{D1} = 2/3 * S_{M1}$	0.454 g

 TABLE I: SEISMIC DESIGN FACTORS

Probable ground shaking levels at the site could range from slight to moderate, depending on such factors as the magnitude of the seismic event and the distance to the epicenter. It is likely that the site will experience the effects of at least one moderate to large earthquake during the life of the proposed improvements.

Page No. 16

ON-GRADE SLABS

UNDER-SLAB VAPOR RETARDERS: Steps should be taken to minimize the transmission of moisture vapor from the subsoil through the interior slabs where it can potentially damage the interior floor coverings. Local industry standards typically include the placement of a vapor retarder, such as plastic, in a layer of coarse sand placed directly beneath the concrete slab. Two inches of sand are typically used above and below the plastic. The vapor retarder should be at least 15-mil Stegowrap® or similar material with sealed seams and should extend at least 12 inches down the sides of the interior and perimeter footings. The sand should have a sand equivalent of at least 30, and contain less than 10% passing the Number 100 sieve and less than 5% passing the Number 200 sieve. The membrane should be placed in accordance with the recommendation and consideration of ACI 302, "Guide for Concrete Floor and Slab Construction" and ASTM E1643, "Standards Practice for Installation of Water Vapor Retarder Used in Contact with Earth or Granular Fill Under Concrete Slabs." It is the flooring contractor's responsibility to place floor coverings in accordance with the flooring manufacturer specifications.

EXTERIOR CONCRETE FLATWORK: Exterior concrete slabs on grade should have a minimum thickness of 4 inches and be reinforced with at least No. 3 bars placed at 18 inches on center each way (ocew). All slabs should be provided with weakened plane joints in accordance with the American Concrete Institute (ACI) guidelines. Special attention should be paid to the method of concrete curing to reduce the potential for excessive shrinkage cracking. It should be recognized that minor cracks occur normally in concrete slabs due to shrinkage. Some shrinkage cracks should be expected and are not necessarily an indication of excessive movement or structural distress.

LIMITATIONS

REVIEW, OBSERVATION AND TESTING

The recommendations presented in this report are contingent upon our review of final plans and specifications. Such plans and specifications should be made available to the geotechnical engineer and engineering geologist so that they may review and verify their compliance with this report and with the California Building Code.

It is recommended that Christian Wheeler Engineering be retained to provide continuous soil engineering services during the earthwork operations. This is to verify compliance with the design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

UNIFORMITY OF CONDITIONS

The recommendations and opinions expressed in this report reflect our best estimate of the project requirements based on an evaluation of the subsurface soil conditions encountered at the subsurface exploration locations and on the assumption that the soil conditions do not deviate appreciably from those encountered. It should be recognized that the performance of the foundations and/or cut and fill slopes may be influenced by undisclosed or unforeseen variations in the soil conditions that may occur in the intermediate and unexplored areas. Any unusual conditions not covered in this report that may be encountered during site development should be brought to the attention of the geotechnical engineer so that he may make modifications if necessary.

CHANGE IN SCOPE

This office should be advised of any changes in the project scope or proposed site grading so that we may determine if the recommendations contained herein are appropriate. This should be verified in writing or modified by a written addendum.

TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Government Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a period of two years without a review by us verifying the suitability of the conclusions and recommendations.

PROFESSIONAL STANDARD

In the performance of our professional services, we comply with that level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions and in the same locality. The client recognizes that subsurface conditions may vary from those encountered at the locations where our borings, surveys, and explorations are made, and that our data, interpretations, and recommendations be based solely on the information obtained by us. We will be responsible for those data, interpretations, and recommendations, but shall not be responsible for the interpretations by others of the information developed. Our services consist of professional consultation and observation only, and no warranty of any kind whatsoever, express or implied, is made or intended in connection with the work performed or to be performed by us, or by our proposal for consulting or other services, or by our furnishing of oral or written reports or findings.

CLIENT'S RESPONSIBILITY

It is the responsibility of the Clients, or their representatives, to ensure that the information and recommendations contained herein are brought to the attention of the structural engineer and architect for the project and incorporated into the project's plans and specifications. It is further their responsibility to take the necessary measures to insure that the contractor and his subcontractors carry out such recommendations during construction.

FIELD EXPLORATIONS

Six subsurface explorations were made on April 14, 2017 at the locations indicated on the Site Plan and Geotechnical Map included herewith as Plate No. 1. These explorations consisted of three hand-augured borings and three cone penetrometer probes (CPT). The fieldwork was conducted under the observation and direction of our engineering geology personnel.

The explorations were carefully logged when made. The logs are presented on Appendix A. The CPT logs are presented in Appendix C. The soils are described in accordance with the Unified Soils Classification. In addition, a verbal textural description, the wet color, the apparent moisture, and the density or consistency is provided. The density of granular soils is given as very loose, loose, medium

dense, dense or very dense. The consistency of silts or clays is given as either very soft, soft, medium stiff, stiff, very stiff, or hard.

Bulk samples of the earth materials encountered were collected and transported to our laboratory for testing.

LABORATORY TESTING

Laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures. A brief description of the tests performed and the subsequent results are presented in Appendix B.



SITE PLAN AND GEOTECHNICAL MAP

DATE: AUGUST 2 BY: DBA/SD

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	CWE LEGEND
CPT-3	CONE PENETROMETER TEST LOCATION
HA-3	HAND AUGER TEST LOCATION
<u>Qaf</u> Qyal	ARTIFICIAL FILL OVER YOUNGER ALLUVIUM

2673 VIA DE LA VALLE DEL MAR, CALIFORNIA									
2017	JOB NO.:	2170315.03							
	PLATE NO.:	1							



Appendix A

Boring Logs

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DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL			st	JMMA (based	RY C on U	DF SU	UBSU I Soil	JRFA l Clas	ACE	CO cation	NDI n Sys	TIC stem	PNS)				PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY	RELATIVE	COMPACTION (%)	LABORATORY TESTS
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**	 * No Sample Recovery ** Non-Representative Blow Count 				BY:		S	SRD					- I	FIGU	RE N	10.:	A-1 CHRISTIAN WHEE				RING						

LOG OF HAN	D AUGER HA-2	Cal Modified California SPT Standard Penetration ST Shelby Tube	d Laboratory Test Legend Sampler CK Chunk ¹ Test DR Drive Ring				
Date Logged:7/14/17Logged By:TSWExisting Elevation:UnknownFinish Elevation:Unknown	Equipment:Hand AugerAuger Type:N/ADrive Type:N/ADepth to Water:N/A	MD Max Density SO4 Soluble Sulfates SA Sieve Analysis HA Hydrometer SE Sand Equivalent PI Plasticity Index CP Collapse Potential	DS Direct Shear Con Consolidation EI Expansion Index R-Val Resistance Value Chl Soluble Chlorides Res pH & Resistivity SD Sample Density				
DEPTH (ft) DEPTH (ft) CRAPHIC LOG CRAPHIC LOG CRAPHIC LOG CRAPHIC LOG CRAPHIC LOG	ARY OF SUBSURFACE CONDITIONS on Unified Soil Classification System)	PENETRATION (blows per foot) SAMPLE TYPE BULK	MOISTURE CONTENT (%) DRY DENSITY (pcf) RELATIVE COMPACTION (%) LABORATORY TESTS				
0 SM Artificial Fill (Qaf): medium-grained, SIL 1 0.5 Moist, medium dense, 1 Moist, medium dense, 2 SM Brown to dark brown, 3 SM SAND, 3.5 SM Light greenish-brown 4 SM/ Light greenish-brown 5 SM Standard and and and and and and and and and an	Light brown, damp, medium dense, fine- to Y SAND with gravel-size rock.						
Groundwater Level During Dinning Groundwater Level During Dinning Apparent Seepage No Sample Recovery	DEL MAR, CALIFORNIA DATE: AUGUST 2017 JOB NO.:	2170315.03	CHRISTIAN WHEELER ENGINEERING				

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I I F	Date Logged: Logged By: Existing Elev Finish Elevat	ation: ion:	7/14/17 TSW Unknown Unknown	Eq Au Dr De	uipment: ger Type: ive Type: pth to Water	Hand N/A N/A : N/A	Auger			MD SO4 SA HA SE PI CP	Max Densit Soluble Sulf Sieve Analy Hydromete Sand Equiva Plasticity In Collapse Po	y iates sis r alent idex otential		DS D Con Ca EI E7 R-Val Ra Chl Sc Res pI SD Sa	irect Shear onsolidation cpansion Inde esistance Valu luble Chloric I & Resistivit mple Density	x e les y
DEPTH (ft)	ELEVATION (ft) GRAPHIC LOG	USCS SYMBOL	SUMM4 (based	ARY OF SUI l on Unified S	3SURFACE Soil Classific	CONDIT ation Syst	TONS em)			PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0 0.5 1 1.5 2 - - - - - - - - - - - - -		SM CL SM/ SP SC SM/ SP	Artificial Fill (Qaf): medium-grained, SILT Moist, medium dense Dark brown, moist, st Light brown, moist, st Light brown, moist, m SILTY SAND. Dark brown, moist, m SAND. Light grayish-brown a medium-grained, slight Test trench terminated No groundwater or se	Light brown, TY SAND wit to dense, fine tiff, SANDY nedium dense nedium dense nedium dense dat 5 feet. repage encoun	damp, mediu h gravel-size	un dense, f rock. grained, SI - to mediu - to mediu dense to d	ine- to	AND. ed, slightly ed, slightly ed, cLAYI a a a a a a a a a a a a a a a a a a a								SA EI SO4 DS
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Appendix B

Laboratory Test Results

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:

- a) **CLASSIFICATION:** Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soil Classification System and are presented on the exploration logs in Appendix A.
- b) MAXIMUM DRY DENSITY AND OPTIUM MOISTURE CONTENT TEST: The maximum dry density and optimum moisture content of a selected soil samples were determined in the laboratory in accordance with ASTM D 1557, Method A.
- c) **DIRECT SHEAR:** Direct shear tests were performed on selected samples of the on-site soils in accordance with ASTM D 3080.
- d) **EXPANSION INDEX TEST:** Expansion index tests were performed on selected remolded soil samples in accordance with ASTM D 4829.
- e) **GRAIN SIZE DISTRIBUTION:** The grain size distribution of selected samples was determined in accordance with ASTM C136 and/or ASTM D 422.
- f) **SOLUBLE SULFATES:** The soluble sulfate content of a selected soil sample was determined in accordance with California Test Method 417.

LABORATORY TEST RESULTS

<u>THE LOT DEL MAR</u> <u>2673 VIA DE LA VALLE</u> DEL MAR, CALIFORNIA

MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT (ASTM D1557)

Sample LocationHA-3 @ 0-2½'Sample DescriptionLight Brown Silty Sand (SM)Maximum Density127.4 pcfOptimum Moisture8.8 %

DIRECT SHEAR (ASTM D3080)

Sample Location	HA-3 @ 0-21/2'
Sample Type	Remolded to 90 %
Friction Angle	31°
Cohesion	150 psf

EXPANSION INDEX TESTS (ASTM D4829)

Sample Location	HA-3 @ 0-2 ¹ /2'	HA-3 @ 3'-4½'
Initial Moisture:	9.9 %	8.9 %
Initial Dry Density	110.1 pcf	111.8 pcf
Final Moisture:	15.8 %	15.4 %
Expansion Index:	0 (Non-expansive)	0 (Non-expansive)

GRAIN SIZE DISTRIBUTION (ASTM D422)

Sample Location	HA-3 @ 0-21/2'	HA-3 @ 3'-2½'
Sieve Size	Percent Passing	Percent Passing
1"	100	100
³ /4"	99	99
¹ /2 "	98	99
3/8	97	98
#4	95	94
#8	93	90
#16	88	80
#30	82	68
#50	62	54
#100	33	34
#200	21	23

SOLUBLE SULFATES (CALIFORNIA TEST 417)

Sample Location	HA-3 @ 0-2½'
Soluble Sulfate	0.008 % (SO4)

Appendix C

Cone Penetration Test Results

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



Total depth: 102.03 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type:

CPT: CPT-1

Cone Operator: Kehoe Testing and Engineering

1

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



CPeT-IT v.2.0.1.26 - CPTU data presentation & interpretation software - Report created on: 8/3/2017, 10:38:24 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix C- CPT\2170315.03 CPTiT.cpt

CPT: CPT-1

Total depth: 102.03 ft, Date: 7/14/2017

Surface Elevation: 22.00 ft

Coords: X:0.00, Y:0.00

Cone Type:

Cone Operator: Kehoe Testing and Engineering

Project: 2170315 The Lot Del Mar

Location: 2673 Via De La Valle, Del Mar, CA



CPeT-IT v.2.0.1.26 - CPTU data presentation & interpretation software - Report created on: 8/3/2017, 10:38:24 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix C- CPT\2170315.03 CPTiT.cpt CPT: CPT-1 Total depth: 102.03 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type: Cone Operator: Kehoe Testing and Engineering

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



CPeT-IT v.2.0.1.26 - CPTU data presentation & interpretation software - Report created on: 8/3/2017, 10:38:25 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix C- CPT\2170315.03 CPTiT.cpt CPT: CPT-1 Total depth: 102.03 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type: Cone Operator: Kehoe Testing and Engineering
Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



Calculation parameters

Soil Sensitivity factor, Ns: 7.00

----- User defined estimation data

CPT: CPT-1 Total depth: 102.03 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type: Cone Operator: Kehoe Testing and Engineering

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



Total depth: 50.36 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type: Cone Operator: Kehoe Testing and Engineering

CPT: CPT-2

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



CPeT-IT v.2.0.1.26 - CPTU data presentation & interpretation software - Report created on: 8/3/2017, 10:38:25 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix C- CPT\2170315.03 CPTiT.cpt

CPT: CPT-2

Total depth: 50.36 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00

Cone Type:

Cone Operator: Kehoe Testing and Engineering

Project: 2170315 The Lot Del Mar

Location: 2673 Via De La Valle, Del Mar, CA



CPeT-IT v.2.0.1.26 - CPTU data presentation & interpretation software - Report created on: 8/3/2017, 10:38:25 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix C- CPT\2170315.03 CPTiT.cpt

CPT: CPT-2 Total depth: 50.36 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type: Cone Operator: Kehoe Testing and Engineering

8

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



CPeT-IT v.2.0.1.26 - CPTU data presentation & interpretation software - Report created on: 8/3/2017, 10:38:25 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix C- CPT\2170315.03 CPTiT.cpt Total depth: 50.36 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type: Cone Operator: Kehoe Testing and Engineering

CPT: CPT-2

Project: 2170315 The Lot Del Mar





Calculation parameters

Soil Sensitivity factor, Ns: 7.00

----- User defined estimation data

CPT: CPT-2 Total depth: 50.36 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type: Cone Operator: Kehoe Testing and Engineering

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



CPT: CPT-3 Total depth: 50.36 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type:

Cone Operator: Kehoe Testing and Engineering

11

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



CPeT-IT v.2.0.1.26 - CPTU data presentation & interpretation software - Report created on: 8/3/2017, 10:38:25 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix C- CPT\2170315.03 CPTiT.cpt 12

CPT: CPT-3 Total depth: 50.36 ft, Date: 7/14/2017

Surface Elevation: 22.00 ft

Coords: X:0.00, Y:0.00

Cone Type:

Cone Operator: Kehoe Testing and Engineering

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA CPT: CPT-3 Total depth: 50.36 ft, Date: 7/14/2017 Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00 Cone Type: Cone Operator: Kehoe Testing and Engineering



CPeT-IT v.2.0.1.26 - CPTU data presentation & interpretation software - Report created on: 8/3/2017, 10:38:26 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix C- CPT\2170315.03 CPTIT.cpt

Project: 2170315 The Lot Del Mar Location: 2673 Via De La Valle, Del Mar, CA



Total depth: 50.36 ft, Date: 7/14/2017

Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00

CPT: CPT-3

Cone Type:



Cone Operator: Kehoe Testing and Engineering



Calculation parameters

Soil Sensitivity factor, Ns: 7.00

CPT: CPT-3

Total depth: 50.36 ft, Date: 7/14/2017

Surface Elevation: 22.00 ft Coords: X:0.00, Y:0.00

Appendix D

Liquefaction Analyses



LIQUEFACTION ANALYSIS REPORT

Project title : 2170315 The Lot Del Mar

Location : 2673 Via De La Valle, Del Mar, CA



CLiq v.2.1.6.11 - CPT Liquefaction Assessment Software - Report created on: 8/3/2017, 10:34:35 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix D - Liquefaction\2170315.03 CLiq.clq



CLiq v.2.1.6.11 - CPT Liquefaction Assessment Software - Report created on: 8/3/2017, 10:34:35 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix D - Liquefaction\2170315.03 CLiq.clq



CLiq v.2.1.6.11 - CPT Liquefaction Assessment Software - Report created on: 8/3/2017, 10:34:35 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix D - Liquefaction\2170315.03 CLiq.clq



LIQUEFACTION ANALYSIS REPORT

Project title : 2170315 The Lot Del Mar

Location : 2673 Via De La Valle, Del Mar, CA





CLiq v.2.1.6.11 - CPT Liquefaction Assessment Software - Report created on: 8/3/2017, 10:34:37 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix D - Liquefaction\2170315.03 CLiq.clq



CLiq v.2.1.6.11 - CPT Liquefaction Assessment Software - Report created on: 8/3/2017, 10:34:37 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix D - Liquefaction\2170315.03 CLiq.clq



LIQUEFACTION ANALYSIS REPORT

Project title : 2170315 The Lot Del Mar

Location : 2673 Via De La Valle, Del Mar, CA



Depth to water table (insitu): 12.00 ft



50.00 ft

N/A

Limit depth:

Fill height:



CLiq v.2.1.6.11 - CPT Liquefaction Assessment Software - Report created on: 8/3/2017, 10:34:37 AM Project file: W:\2017 Jobs\2170315 - The Lot Del Mar, 2673 Via de la Valle\Reports\2170315.03 Geotechnical Invest\Appendix D - Liquefaction\2170315.03 CLiq.clq

Appendix E

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Appendix F

Recommended Grading Specifications - General Provisions

RECOMMENDED GRADING SPECIFICATIONS - GENERAL PROVISIONS

<u>THE LOT Del Mar</u> <u>2673 Via De La Valle</u> Del Mar, CALIFORNIA

GENERAL INTENT

The intent of these specifications is to establish procedures for clearing, compacting natural ground, preparing areas to be filled, and placing and compacting fill soils to the lines and grades shown on the accepted plans. The recommendations contained in the preliminary geotechnical investigation report and/or the attached Special Provisions are a part of the Recommended Grading Specifications and shall supersede the provisions contained hereinafter in the case of conflict. These specifications shall only be used in conjunction with the geotechnical report for which they are a part. No deviation from these specifications will be allowed, except where specified in the geotechnical report or in other written communication signed by the Geotechnical Engineer.

OBSERVATION AND TESTING

Christian Wheeler Engineering shall be retained as the Geotechnical Engineer to observe and test the earthwork in accordance with these specifications. It will be necessary that the Geotechnical Engineer or his representative provide adequate observation so that he may provide his opinion as to whether or not the work was accomplished as specified. It shall be the responsibility of the contractor to assist the Geotechnical Engineer and to keep him appraised of work schedules, changes and new information and data so that he may provide these opinions. In the event that any unusual conditions not covered by the special provisions or preliminary geotechnical report are encountered during the grading operations, the Geotechnical Engineer shall be contacted for further recommendations.

If, in the opinion of the Geotechnical Engineer, substandard conditions are encountered, such as questionable or unsuitable soil, unacceptable moisture content, inadequate compaction, adverse

weather, etc., construction should be stopped until the conditions are remedied or corrected or he shall recommend rejection of this work.

Tests used to determine the degree of compaction should be performed in accordance with the following American Society for Testing and Materials test methods:

Maximum Density & Optimum Moisture Content - ASTM D1557 Density of Soil In-Place - ASTM D1556 or ASTM D2922

All densities shall be expressed in terms of Relative Compaction as determined by the foregoing ASTM testing procedures.

PREPARATION OF AREAS TO RECEIVE FILL

All vegetation, brush and debris derived from clearing operations shall be removed, and legally disposed of. All areas disturbed by site grading should be left in a neat and finished appearance, free from unsightly debris.

After clearing or benching the natural ground, the areas to be filled shall be scarified to a depth of 6 inches, brought to the proper moisture content, compacted and tested for the specified minimum degree of compaction. All loose soils in excess of 6 inches thick should be removed to firm natural ground which is defined as natural soil which possesses an in-situ density of at least 90 percent of its maximum dry density.

When the slope of the natural ground receiving fill exceeds 20 percent (5 horizontal units to 1 vertical unit), the original ground shall be stepped or benched. Benches shall be cut to a firm competent formational soil. The lower bench shall be at least 10 feet wide or 1-1/2 times the equipment width, whichever is greater, and shall be sloped back into the hillside at a gradient of not less than two (2) percent. All other benches should be at least 6 feet wide. The horizontal portion of each bench shall be compacted prior to receiving fill as specified herein for compacted natural ground. Ground slopes flatter than 20 percent shall be benched when considered necessary by the Geotechnical Engineer.

Any abandoned buried structures encountered during grading operations must be totally removed. All underground utilities to be abandoned beneath any proposed structure should be removed from within 10 feet of the structure and properly capped off. The resulting depressions from the above described procedure should be backfilled with acceptable soil that is compacted to the requirements of the Geotechnical Engineer. This includes, but is not limited to, septic tanks, fuel tanks, sewer lines or leach lines, storm drains and water lines. Any buried structures or utilities not to be abandoned should be brought to the attention of the Geotechnical Engineer so that he may determine if any special recommendation will be necessary.

All water wells which will be abandoned should be backfilled and capped in accordance to the requirements set forth by the Geotechnical Engineer. The top of the cap should be at least 4 feet below finish grade or 3 feet below the bottom of footing whichever is greater. The type of cap will depend on the diameter of the well and should be determined by the Geotechnical Engineer and/or a qualified Structural Engineer.

FILL MATERIAL

Materials to be placed in the fill shall be approved by the Geotechnical Engineer and shall be free of vegetable matter and other deleterious substances. Granular soil shall contain sufficient fine material to fill the voids. The definition and disposition of oversized rocks and expansive or detrimental soils are covered in the geotechnical report or Special Provisions. Expansive soils, soils of poor gradation, or soils with low strength characteristics may be thoroughly mixed with other soils to provide satisfactory fill material, but only with the explicit consent of the Geotechnical Engineer. Any import material shall be approved by the Geotechnical Engineer before being brought to the site.

PLACING AND COMPACTION OF FILL

Approved fill material shall be placed in areas prepared to receive fill in layers not to exceed 6 inches in compacted thickness. Each layer shall have a uniform moisture content in the range that will allow the compaction effort to be efficiently applied to achieve the specified degree of compaction. Each layer shall be uniformly compacted to the specified minimum degree of compaction with equipment of adequate size to economically compact the layer. Compaction equipment should either be specifically designed for soil compaction or of proven reliability. The minimum degree of compaction to be achieved is specified in either the Special Provisions or the recommendations contained in the preliminary geotechnical investigation report.

When the structural fill material includes rocks, no rocks will be allowed to nest and all voids must be carefully filled with soil such that the minimum degree of compaction recommended in the Special Provisions is achieved. The maximum size and spacing of rock permitted in structural fills and in non-structural fills is discussed in the geotechnical report, when applicable.

Field observation and compaction tests to estimate the degree of compaction of the fill will be taken by the Geotechnical Engineer or his representative. The location and frequency of the tests shall be at the Geotechnical Engineer's discretion. When the compaction test indicates that a particular layer is at less than the required degree of compaction, the layer shall be reworked to the satisfaction of the Geotechnical Engineer and until the desired relative compaction has been obtained.

Fill slopes shall be compacted by means of sheepsfoot rollers or other suitable equipment. Compaction by sheepsfoot roller shall be at vertical intervals of not greater than four feet. In addition, fill slopes at a ratio of two horizontal to one vertical or flatter, should be trackrolled. Steeper fill slopes shall be over-built and cut-back to finish contours after the slope has been constructed. Slope compaction operations shall result in all fill material six or more inches inward from the finished face of the slope having a relative compaction of at least 90 percent of maximum dry density or the degree of compaction specified in the Special Provisions section of this specification. The compaction operation on the slopes shall be continued until the Geotechnical Engineer is of the opinion that the slopes will be surficially stable.

Density tests in the slopes will be made by the Geotechnical Engineer during construction of the slopes to determine if the required compaction is being achieved. Where failing tests occur or other field problems arise, the Contractor will be notified that day of such conditions by written communication from the Geotechnical Engineer or his representative in the form of a daily field report.

If the method of achieving the required slope compaction selected by the Contractor fails to produce the necessary results, the Contractor shall rework or rebuild such slopes until the required degree of compaction is obtained, at no cost to the Owner or Geotechnical Engineer.

CUT SLOPES

The Engineering Geologist shall inspect cut slopes excavated in rock or lithified formational material during the grading operations at intervals determined at his discretion. If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or fault planes are encountered during grading, these conditions shall be analyzed by the Engineering Geologist and Geotechnical Engineer to determine if mitigating measures are necessary.

Unless otherwise specified in the geotechnical report, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of the controlling governmental agency.

ENGINEERING OBSERVATION

Field observation by the Geotechnical Engineer or his representative shall be made during the filling and compaction operations so that he can express his opinion regarding the conformance of the grading with acceptable standards of practice. Neither the presence of the Geotechnical Engineer or his representative or the observation and testing shall release the Grading Contractor from his duty to compact all fill material to the specified degree of compaction.

SEASON LIMITS

Fill shall not be placed during unfavorable weather conditions. When work is interrupted by heavy rain, filling operations shall not be resumed until the proper moisture content and density of the fill materials can be achieved. Damaged site conditions resulting from weather or acts of God shall be repaired before acceptance of work.

RECOMMENDED GRADING SPECIFICATIONS - SPECIAL PROVISIONS

RELATIVE COMPACTION: The minimum degree of compaction to be obtained in compacted natural ground, compacted fill, and compacted backfill shall be at least 90 percent. For street and parking lot subgrade, the upper twelve inches should be compacted to at least 95 percent relative compaction.

EXPANSIVE SOILS: Detrimentally expansive soil is defined as clayey soil which has an expansion index of 50 or greater when tested in accordance with the American Society of Testing Materials (ASTM) Laboratory Test D4829-95.

OVERSIZED MATERIAL: Oversized fill material is generally defined herein as rocks or lumps of soil over six inches in diameter. Oversized materials should not be placed in fill unless recommendations of placement of such material is provided by the Geotechnical Engineer. At least 40 percent of the fill soils shall pass through a No. 4 U.S. Standard Sieve.

TRANSITION LOTS: Where transitions between cut and fill occur within the proposed building pad, the cut portion should be undercut a minimum of one foot below the base of the proposed footings and recompacted as structural backfill. In certain cases that would be addressed in the geotechnical report, special footing reinforcement or a combination of special footing reinforcement and undercutting may be required.



August 3, 2017

Boffo Cinemas, LLC 7611 Fay Avenue La Jolla, California 92037 Attention: Adolfo Fastlicht

Subject:Report of Geotechnical Infiltration Feasibility StudyThe LOT Del Mar, llc, 2673 Via de la Valle, Del Mar, California

Reference: Christensen Engineering and Surveying, Preliminary Grading Plan, dated April 24, 2017

Ladies and Gentlemen:

In accordance with your request and our proposal dated May 18, 2017, we have prepared this report to present the results of our geotechnical infiltration feasibility study at the subject site. In general, the purpose of our investigation was to provide design infiltration rates based on percolation rates measured in the field. We understand that the subject project will consist of the construction of a single-story, high-bay movie theatre complex. Based on the Preliminary Grading Plan, provided by Christensen Engineering and Surveying (CES), the proposed biofiltration basin will be located at a depth of approximately 30 inches below existing grades.

FINDINGS

SITE DESCRIPTION

The subject site is a vacant irregular-shaped lot located at 2673 Via de la Valle, Del Mar, California. The lot is located at the southeastern portion of a shopping center and is surrounded by commercial structures and associated paved parking and driveways. Topographically, the lot is near flat-lying. Topographically, the site is relatively flat-lying with existing ground surface elevations ranging between approximately 21 and 22 feet, based on the survey conducted by CES on April 4, 2017. The elevations presented in this report reference the National Geodetic Vertical Datum of 1929 (NGVD 1929).

CWE 2170315.02

FIELD INVESTIGATION

The subsurface exploration program consisted of three Cone Penetration Tests (CPTs) and three four inch diameter hand-auger borings. Two percolation test borings were also excavated within the site as part of the subsurface exploration program. The borings were logged in detail with emphasis on describing the soil profile. The approximate locations of the borings are shown on Plate No. 1. Logs of the explorations are presented in Appendix A of this report.

GEOLOGIC SETTING AND SOIL DESCRIPTION

Based on the results of our subsurface explorations and review of pertinent, readily available geologic literature, we have determined that the areas to support the proposed biofiltration basins are underlain by artificial fill primarily consisting of silty sands (SM).

GROUNDWATER

Groundwater was measured within our Cone Penetration Tests at approximate depth of 16 feet below the existing grade. Based on the preliminary grading plan, these depths correspond to an approximate elevation of 5 feet.

The Storm Water Standards BMP Design Manual (2016) states that the vertical distance from the base of the infiltration basin to the seasonal high groundwater mark must be greater than 10 feet. This vertical distance may be reduced at the discretion of the approval agency if the groundwater basin does not support beneficial uses and the groundwater quality is maintained. It is our opinion that the seasonal high groundwater level at the site is at approximately 14 feet below existing grade. The encountered groundwater is not expected to have any beneficial usage.

INFILTRATION RATE DETERMINATION

FIELD MEASUREMENTS

Percolation testing was performed within the two borings that were advanced in the proposed biofiltration basin area on July 14, 2017. The six-inch-diameter borings, designated as PT-1 and PT-2, were advanced to the depth of 3 and 3.1 feet below existing grades respectively, and cleaned of all loose material. The bottom elevations of the borings correspond to the anticipated bottom elevations of the proposed infiltration basins. In each of the borings, a 3-inch diameter perforated pipe was set in the excavation and surrounded by ³/₄-inch gravel to prevent caving. The approximate locations of the percolation borings are shown on Plate No. 1.

Page 3

The field percolation rates were determined the following day by using the falling head test method. The initial water level was established by adding water to the percolation borings. Percolation rates were monitored and recorded every 30 minutes over a period of 6 hours until the infiltration rates stabilized. Measurements were taken using a water level meter (Solinst, Model 101) with an accuracy of measurement of 0.005 foot (0.06 inch). To account for the use of gravel placed around the perforated pipe, an adjustment factor of 0.51 was used in the calculations. The gravel adjusted percolation rates and calculated infiltration rates are presented in Table I.

Test No.	Location	Soil Underlying BMP	Depth of Testing	Gravel Adjusted Percolation Rate	Infiltration Rate
PT-1	Southern PL	Artificial Fill – Silty Sand (SM)	3 feet	1.84 inches per hour	0.24 inches per hour
PT-2	Southern PL	Artificial Fill – Slightly Silty Sand (SM)	3.1 feet	4.65 inches per hour	0.57 inches per hour

TABLE I: FIELD PERCOLATION AND INFILTRATION RATES

Infiltration and percolation are two related but different processes describing the movement of moisture through soil. Infiltration is the downward (one dimensional) movement of water into soil and porous or fractured rock. Percolation testing measures the three dimensional movement of water into soil and porous or fractured rock (typically through the walls and bottom of a borehole). The direct measurement yielded by a percolation test tends to overestimate the infiltration rate, except perhaps in cases where an infiltration basin is similarly dimensioned to the borehole. As such, adjustments of the measured percolation rates were converted into infiltration rates using the Porchet Method. The spreadsheet used for the conversion is included in Appendix C of this report.

The average field infiltration rate of the fill material in the area of the proposed basin is 0.4 inches per hour.

FACTOR OF SAFETY

The City of San Diego Storm Water Standards Best Management Practices (BMP) Design Manual states that "a maximum factor of safety of 2.0 is recommended for infiltration feasibility screening such that an artificially high factor of safety cannot be used to inappropriately rule out infiltration, unless justified. If the site passes the feasibility analysis at a factor of safety of 2.0, then infiltration must be investigated, but a higher factor of safety may be selected at the discretion of the design engineer." Using a factor of safety of 2.0 will reduce the field infiltration rate will be approximately 0.2 inches per hour. According to the City of San Diego Storm Water Standards BMP Design Manual the infiltration rate at the subject site correspond to a partial infiltration criteria.

GEOTECHNICAL CRITERIA FOR INFILTRATION BASINS

GENERAL

Based on the current Storm Water Standards BMP Design Manual, certain geotechnical criteria need to be addressed when assessing the feasibility and desirability of the use of infiltration basins for a project site. Those criteria, Per Section C.2 of the manual, are addressed below.

C2.1 SOIL AND GEOLOGIC CONDITIONS

Site soil and geologic conditions influence the rate at which water can physically enter the soils. Based on the conditions observed in our subsurface explorations, the existing soils beneath the proposed infiltration basins consist of artificial fill. The artificial fill at the site primarily consists of silty sands (SM).

C2.2 SETTLEMENT AND VOLUME CHANGE

Settlement and volume change can occur when water is introduced below grade. Based on the soil conditions observed in subsurface explorations and laboratory testing, the site is underlain by artificial fill that has a low to moderate collapse potential upon wetting. This can be mitigated by a combination of remedial grading and incorporation of impermeable liners or cut-off walls.

C2.3 SLOPE STABILITY

Infiltration of water has the potential to increase the risk of failure in nearby slopes. The site is relatively flat and in our opinion the risk of slope instability is very low.

C2.4 UTILITY CONSIDERATIONS

Utilities are either public or private infrastructure components that include underground pipelines, vaults, and wires/conduit, and above ground wiring and associated structures. Infiltration of water can pose a risk to subsurface utilities, as well as increase the risk of geotechnical hazards that can occur within the utility trenches when water is introduced. Care should be taken when planning proposed utility trench and infiltration basin siting. Mitigation will be provided to reduce the potential for water flow into offsite utility trenches.

C2.5 GROUNDWATER MOUNDING

Groundwater mounding occurs when infiltrated water creates a rise in the groundwater table beneath the facility. Groundwater mounding can affect nearby subterranean structures and utilities. Based on the anticipated depth to groundwater, the potential for groundwater mounding is low.

C2.6 RETAINING WALL AND FOUNDATIONS

Infiltration of water can result in potential increase in lateral earth pressures and potential reduction in soil strength. Retaining walls and foundations can be negatively impacted by these changes in soil conditions. This should be taken into account when designing the storm water basins, retaining walls and foundations for the site.

CONCLUSIONS AND RECOMMENDATIONS

Based on a review of our field study and our experience with similar projects, we anticipate that, given that the recommendations contained herein are followed, infiltration of storm water utilizing the proposed onsite biofiltration basin would not result in soil piping, daylight water seepage, or slope instability for the property or areas down-gradient from the site.

Field infiltration rates within the soils below the proposed biofiltration basin fell within the partial infiltration criteria. The infiltration criterion was referenced from Storm Water Standards BMP Design Manual. Using a factor of safety of 2.0, the average infiltration rate of 0.2 inches per hour can be used for the planning phase.

Where the basin is located within 10 feet of a retaining wall or settlement-sensitive surface improvement we recommended that a cut-off wall or impermeable liner be constructed around the perimeter of the BMP. The cut-off wall or impermeable liner should extend a minimum of 5 feet below proposed grade, at least 2 feet below the lowest adjacent existing or proposed footing, whichever is greater.

It should be recognized that routine inspection and maintenance of the biofiltration basin is necessary to prevent clogging and failure. A maintenance plan should be specified by the designer and followed by the owner during the entire lifetime of the BMP device.

A completed and signed "Worksheet C.4-1: Categorization of Infiltration Feasibility Condition" for the subject project is included in Appendix B of this report. In addition, Part A of Worksheet D.5.1
Page 6

ESSI

No. 36037 Exp. 6-30-18

"Factor of Safety and Design Infiltration Rate Worksheet," has been completed and is included in Appendix D of this report. The BMP designer will complete Part B of the worksheet and assign the appropriate factor of safety. It should be noted that the D.5-1 worksheet typically only is provided for full infiltration sites.

It should be noted that it is not our intent to review the civil engineering plans, notes, details, or calculations, when prepared, to verify that the engineer has complied with any particular storm water design standards. It is the responsibility of the designer to properly prepare the storm water plan based on the municipal requirements considering the planned site development and infiltration rates.

LIMITATIONS

The recommendations and opinions expressed in this report reflect our best estimate of the project requirements based on limited percolation testing, an evaluation of the subsurface soil conditions encountered within subsurface explorations, and the assumption that the infiltration rates and soil conditions do not deviate appreciably from those encountered. It should be recognized that the performance of the biofiltration basin may be influenced by undisclosed or unforeseen variations in the soil conditions that may occur in the unexplored areas. Any conditions encountered during site development, that deviate from the ones described herein, should be brought to the attention of the geotechnical engineer so that modifications can be made if necessary. In addition, this office should be advised of any changes in the project scope, proposed site grading or storm water basin design so that it may be determined if the recommendations contained herein are appropriate. This should be verified in writing or modified by a written addendum.

If you should have any questions regarding this report, please do not hesitate to contact this office. This opportunity to be of professional service is sincerely appreciated.

Respectfully submitted,

CHRISTIAN WHEELER ENGINEERING

Troy S. Wilson, CEG #2551 DBA:az;tsw ec: CWellman@SunroadEnterprises.com TheLOTent.com AltaByDesign.com



Daniel B. Adler, RCE #36037



		THE LOT DI 2673 VIA DI DEL MAR, C	E L MAR, LLC E LA VALLE CALIFORNIA		
SITE PLAN AND GEOTECHNICAL MAP	DATE:	AUGUST 2017	JOB NO.:	2170315.02	Сні
	BY:	DBA/SD	PLATE NO.:	1	



	CWE LEGEND
CPT-3	CONE PENETROMETER TEST LOCATION
• PT-2	PERCOLATION TEST LOCATION
HA-3	HAND AUGER TEST LOCATION
<u>Qaf</u> Qyal	ARTIFICIAL FILL OVER YOUNGER ALLUVIUM



Appendix A

CPT and Boring Logs

		LOG OF HAND AUGER HA-1 Date Logged: 7/14/17 Equipment: Hand Auger															Cal SPT ST	Sample Modifie Standar Shelby	t Type d Califor d Penetrat Tube	and La nia Samp ion Test	abor eler	CK CH	e st Legen unk ive Ring	<u>d</u>			
	Date Logg Exist Finis	Logged: ed By: ing Elev h Elevat	ation: ion:	7 7 1 1 1	7/14/1 SW Jnknc Jnknc	7 own own]	Equip Auger Drive Deptł	oment r Typ e Typ 1 to V	t: be: e: Wate:	r:	Har N/2 N/2 N/2	nd Ar A. A. A.	uger				MD SO4 SA HA SE PI CP	Max De Soluble Sieve A Hydror Sand Eo Plastici Collaps	nsity Sulfates nalysis neter juivalent ty Index e Potentia	L		DS Di Con Co EI Ex R-Val Re Chl So Res pF SD Sau	rect Shear pansiolidation pansion Inde sistance Valu luble Chlorid I & Resistivit mple Density	x e les y
DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL		SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)								PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE	CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS							
			SM	Arti med Mois Ligh SILT Test No g	t brow st, mee	Fill ((rained dium dium ND. 1 tern lwate:	Qaf): 1 , SIL T dense t Dist, m	edium edium l at 3 f epage	se, fi	n, dau with g	dense	nediu i-size	e- to	medi	ium-	- to Y SA	ed, sli	ightly									
5.5 — 6 — 6.5 — 7 —																											
7.5	es:																										
∑ ▼		Sym Ground Ground	bol Le dwater Le dwater Le	e genc evel Dur evel Afte	<mark>l</mark> ing Dri r Drill	illing ing	rg 2673 VIA DE LA VALLE DEL MAR, CALIFORNL							LLC LE NIA							F						
96 ((*	 Apparent Seepage No Sample Recovery Non-Representative Blow Count 						DA BY:	TE:		AUG SRD	GUS'I	Г 201	7		- - - -	JOB I FIGL	NO.: JRE N	NO.:	2170 A-1	315.02		_	CHI	RISTIAI engin	N WHEE eering	LER.	

		LC)G	OF HAN	Cal SPT ST	ample Ty Modified Cal Standard Pen Shelby Tube	pe an liforni letratic	n d Labo a Sampler on Test	CK CL	est Legend nunk rive Ring	<u>d</u>			
	Date Logg Exist Finis	Logged: ed By: ing Elev h Elevat	ation: ion:	7/14/17 TSW Unknown Unknown	Equipment: Auger Type: Drive Type: Depth to Wa	Hand Aug N/A N/A tter: N/A	er	MD Max Density SO4 Soluble Sulfates SA Sieve Analysis HA Hydrometer SE Sand Equivalent PI Plasticity Index CP Collapse Potential				DS Di Con Ca EI Ex R-Val Re Chl So Res pH SD Sa	irect Shear onsolidation spansion Inder sistance Value luble Chlorid H & Resistivit mple Density	x e es y
DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMM. (basec	ARY OF SUBSURFAC on Unified Soil Classi	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS		
0 0.5 1 1.5 2 2.5 3.5 - 3.5 - - - - - - - -		Sym Ground Ground	SM SM SM SM SM SM SM SM SM SM SM SM SM S	Artificial Fill (Qaf): medium-grained, SIL7 Moist, medium dense, Moist, medium dense, Light greenish-brown SAND. Light greenish-brown slightly SILTY SANE Test trench terminate No groundwater or se Sand Segend	Light brown, damp, me Y SAND with gravel-si fine- to medium-grained moist, medium dense, f and orange, moist, med and orange, moist, med h at 5 feet. epage encountered. a a a a a a a a a a a a a a a a a a a	dium dense, fine- t ize rock.	o							
9 ((*	 Apparent Seepage No Sample Recovery Non-Representative Blow Count 				DATE: AUGU BY: SRD	IST 2017	JOB NO.: FIGURE NO.:	21703 A-2	15.02		СН	IRISTIA Engin	N WHEE	LER

		LC)G	OF HAN	Cal SPT ST	ample Ty Modified C Standard Pe Shelby Tub	/ pe a aliforni netratio	nd Labo ia Sampler on Test	CK Cl DR D	e st Legend nunk rive Ring	<u>d</u>					
	Date Logg Exist Finis	Logged: ed By: ing Elev h Elevat	ation: ion:	7/14/17 TSW Unknown Unknown	Ed A D D	quipment: uger Type: rive Type: epth to Water:	Hand Auge N/A N/A N/A	r	MD SO4 SA HA SE PI CP	Max Densit Soluble Sulf Sieve Analy Hydromete Sand Equiva Plasticity In Collapse Po	y ates sis r ılent dex tential		DS Direct Shear Con Consolidation EI Expansion Index R-Val Resistance Value Chl Soluble Chlorides Res pH & Resistivity SD Sample Density			
DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)									DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS	
			SM CL SM/ SP SC SM/ SP	Artificial Fill (Qaf) medium-grained, SIL Moist, medium dens Dark brown, moist, Light brown, moist, SILTY SAND. Dark brown, moist, SAND. Light grayish-brown medium-grained, slig Test trench terminat No groundwater or	ELight brown. TY SAND wi e to dense, find stiff, SANDY medium dense medium dense medium dense and orange, n htly SILTY SA ed at 5 feet. seepage encour	, damp, medium th gravel-size re e- to medium-gr CLAY, about 3 to dense, fine- to dense, fine- noist, medium d ND.	ained, SILTY S ained, SILTY S binches thick. to medium-grai to medium-grai	AND. AND. Ined, slightly Ined, CLAYEY inet to								
-6.5	es:	Sym	bol La	egend Evel During Drilling		T	HE LOT DH 2673 VIA DH									
₩ 90 (() **	 Groundwater Level After Drilling Apparent Seepage No Sample Recovery Non-Representative Blow Count (rocks present) 				DATE: BY:	AUGUST 2 SRD	2017	JOB NO.: FIGURE NO.:	21703 A-3	15.02		СН	IRISTIA Engin	N WHEE EERING	LER	



Kehoe Testing and Engineering 714-901-7270 rich@kehoetesting.com www.kehoetesting.com

Project: Christian Wheeler Engineering/Del Mar "The Lot" Location: 2689 Via De La Valle Del Mar, CA



CPeT-IT v.2.0.1.55 - CPTU data presentation & interpretation software - Report created on: 7/18/2017, 10:08:27 AM Project file: C:\ChristianWhDelMar7-17\Plot Data\Plots.cpt CPT-1 Total depth: 102.05 ft, Date: 7/14/2017 Cone Type: Vertek



Kehoe Testing and Engineering 714-901-7270 rich@kehoetesting.com www.kehoetesting.com

Project: Christian Wheeler Engineering/Del Mar "The Lot" Location: 2689 Via De La Valle Del Mar, CA



CPeT-IT v.2.0.1.55 - CPTU data presentation & interpretation software - Report created on: 7/18/2017, 10:08:56 AM Project file: C:\ChristianWhDelMar7-17\Plot Data\Plots.cpt



Project: Christian Wheeler Engineering/Del Mar "The Lot" Location: 2689 Via De La Valle Del Mar, CA



CPeT-IT v.2.0.1.55 - CPTU data presentation & interpretation software - Report created on: 7/18/2017, 10:09:12 AM Project file: C:\ChristianWhDelMar7-17\Plot Data\Plots.cpt

Appendix B

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

Categor	ization of Infiltration Feasibility Condition	Worksheet C.4-1						
Part 1 - F Would in conseque	full Infiltration Feasibility Screening Criteria filtration of the full design volume be feasible from a physical nces that cannot be reasonably mitigated?	perspective without a	any unde	esirable				
Criteria	Screening Question		Yes	No				
1	Is the estimated reliable infiltration rate below proposed facility loc greater than 0.5 inches per hour? The response to this Screening Q based on a comprehensive evaluation of the factors presented in A Appendix D.	ations uestion shall be ppendix C.2 and		X				
Geotechnic infiltration : that "a max artificially h 2.0, the ave	nverted t n Manual h that an Using a F	o l states FOS of						
2	Can infiltration greater than 0.5 inches per hour be allowed withou geotechnical hazards (slope stability, groundwater mounding, utiliti that cannot be mitigated to an acceptable level? The response to the Question shall be based on a comprehensive evaluation of the fact Appendix C.2.	t increasing risk of es, or other factors) is Screening ors presented in	X					
2 Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2. An infiltration rate assessment has been performed for the subject site. Based on the underlying soil condition recommendations presented in our report, we anticipate that infiltration greater than 0.5 inches per hour can allowed without increasing risk of geologic hazards that cannot be mitigated to an acceptable level. C.2.1 A site specific geotechnical investigation was performed. C.2.2 The underlying fill and younger alluvium are expected to have a low to moderate potential for hydro consolidation. Recommendations have been provided to mitigate for this condition. C.2.3 The site is relatively flat and in our opinion the risk of slope instability is very low. C.2.4 A vertical liner will be used to prevent lateral migration into nearby utility trenches. C.2.5 Based on the anticipated depth to groundwater, the potential for groundwater mounding is low. C.2.6 Where the BMP is located within 10 feet of a structure, retaining wall or settlement sensitive improvem recommended that a cut-off wall or impermeable liner be constructed around the perimeter of the BMP. The wall or impermeable liner should extend a minimum of 5 feet below proposed grade, and at least 2 feet below lowest adjacent existing or proposed footing, whichever is greater.								



	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 shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	Х						
Provide bas	is:							
Based on our review of items presented in Appendix C.3, we anticipate that infiltration rates greater than 0.5 inches p Based on our review of items presented in Appendix C.3, we anticipate that infiltration rates greater than 0.5 inches p hour can be allowed without increasing risk of groundwater contamination that cannot be mitigated to an acceptable level. C.3.1 The subgrade soil does not appear to be suitable for full onsite infiltration. We have no knowledge of groundwater or soil contamination onsite or down-gradient from the site. C.3.2 The seasonal high groundwater table is estimated to be approximately 14 feet below existing grade. C.3.3 No groundwater monitoring wells are known to be located within the subject site. C.3.4 The site was not previously utilized for industrial purposes. C.3.5 We recommend that infiltration activities be coordinated with the applicable groundwater management agency. C.3.6 There does not appear to be a high risk of causing potential water balance issues. C.3.7 We are not aware of any water rights downstream of the project. 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								
Provide b	presented in Appendix C.S.							
There doe ephemeral greater tha	s not appear to be a high risk of causing potential water balance issues such as change of se streams or increased discharge of contaminated groundwater to surface waters by allowing an 0.5 inches per hour.	asonality ; infiltratio	of on					
Part 1 If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration Part 1 Result* 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 *To be completed using gathered site information and best professional judgment considering the definition of MI								

*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 City Engineer to substantiate findings.



Worksheet C.4-1 Page 3 of 4										
Part 2 – Par Would infile consequence	rtial Infiltration vs. No Infiltration Feasibility Screening Criteria Itration of water in any appreciable amount be physically feasible without any nega ces that cannot be reasonably mitigated?	ative								
Criteria S	Screening Question	Yes	No							
5 e	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.	Х								
Geotechnical infiltration rate that "a maxim artificially high 2.0, the averag	Infiltration Feasibility Study (CWE 2170315.02). The measured percolation rates were co res using the Porchet Method. The City of San Diego Storm Water Standards BMP Design num factor of safety (FOS) of 2.0 is recommended for infiltration feasibility screening suc h factor of safety cannot be used to inappropriately rule out infiltration, unless justified." ge infiltration rate for the soils at the subject site is 0.2 inches per hour.	nverted to n Manual h that an Using a F	States OS of							
6 ti 6 A	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.	Х								
An infiltration rate assessment has been performed for the subject site. Based on the underlying soil conditions and our recommendations presented in our report, we anticipate that infiltration in any appreciable quantity can be allowed without increasing risk of geologic hazards that cannot be mitigated to an acceptable level. C.2.1 A site specific geotechnical investigation was performed. C.2.2 The underlying fill and younger alluvium are expected to have a low to moderate potential for hydro collapse and consolidation. Recommendations have been provided to mitigate for this condition. C.2.3 The site is relatively flat and in our opinion the risk of slope instability is very low. C.2.4 A vertical liner will be used to prevent lateral migration into nearby utility trenches. C.2.5 Based on the anticipated depth to groundwater, the potential for groundwater mounding is low. C.2.6 Where the BMP is located within 10 feet of a structure, retaining wall or settlement sensitive improvement we recommended that a cut-off wall or impermeable liner be constructed around the perimeter of the BMP. The cut-off wall or impermeable liner should extend a minimum of 5 feet below proposed grade, and at least 2 feet below the lowest adjacent existing or proposed footing, whichever is greater.										



	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.	Х								
Provide b	asis:	1.1	•							
Based on o be allowed	ur review of items presented in Appendix C.3, we anticipate that infiltration in any apprecia without increasing risk of groundwater contamination that cannot be mitigated to an accep	ible quant table level	ity can l.							
C.3.1 We C.3.2 The C.3.3 No C.3.4 We C.3.5 We C.3.5 We C.3.6 The C.3.7 We	have no knowledge of groundwater or soil contamination onsite or down-gradient from the seasonal high groundwater table is estimated to be approximately 14 feet below existing gr groundwater monitoring wells are known to be located within the subject site. have no knowledge of a previous industrial use. recommend that infiltration activities be coordinated with the applicable groundwater mana re does not appear to be a high risk of causing potential water balance issues. do not know of any water rights downstream of the project.	e site. ade. agement a	gency.							
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.	Х								
We did not perform a study regarding water rights. However, these rights are not typical in the San Diego area.										
Part 2 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.										

*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 City Engineer to substantiate findings

JSCh

Storm Water Standards Part 1: BMP Design Manual January 2016 Edition Troy S. Wilson, CEG #2551



Appendix C

Porchet Method- Percolation to Infiltration Conversion

Spreadsheet

Percolation to Infiltration Rate Conversion (Porchet Method)

Proposed Movie Theater Complex, 2673 Via De La Valle, Del Mar, CA

CWE 2170315.02

			Depth of Hole Below		Height of pipe	Initial Water Depth	Final Water Depth	Initial Water Height	Final Water Height		Average Head	Gravel Adjusted	Tested
Test #	Gravel Adjustment Factor	Effective Radius (inches) r	Existing Grade (inches)	Time Interval (min.) Δt	above surface (feet)	without correction (feet)	without correction (feet)	with correction (inches) H _o	with correction (inches) H _f	Change in head (inches) ΔH	Height (inches) H _{avg}	Percolation Rate (inch/hour)	Infiltration Rate (inch/hour) I _t
PT-1	0.51	3	36	30	2.00	4.08	4.23	11.04	9.24	1.80	10.14	1.84	0.24
PT-2	0.51	3	37	30	1.90	3.90	4.28	13.00	8.44	4.56	10.72	4.65	0.57

"Initial and final water depth without correction" are measurements taken from top of pipe if pipe is sticking out of ground (most cases) "Initial and final water height with correction" factors in the height of pipe above surface, and provides measurement of water above bottom of pipe If measurements are taken from grade "Height of pipe above surface" = 0

Gravel Adjustment Factor:

4-inch Diameter Pipe: 1.00 - No Gravel Used (No Caving)

0.51 - 3/4 inch gravel with 8 inch diameter hole 0.56 - 3/4 inch gravel with 7 inch diameter hole 0.64 - 3/4 inch gravel with 6 inch diameter hole

Porchet Method - Tested Percolation Rate Conversion to Tested Infiltration Rate

 $I_t = \frac{\Delta H \ 60 \ r}{\Delta t \ (r+2H_{avg})}$

- 3-inch Diameter Pipe: 1.00 No Gravel Used (No Caving)
 - 0.44 3/4 inch gravel with 8 inch diameter hole
 - 0.47 3/4 inch gravel with 7 inch diameter hole
 - 0.51 3/4 inch gravel with 6 inch diameter hole
 - I_t = tested infiltration rate, inches per hour
 - ΔH = change in head over the time interval, inches
 - Δt = time interval, minutes
 - r = effective radius of test hole
- H_{avg} = average head over the time interval, inches

Appendix D

Worksheet D.5-1: Factor of Safety and Design Infiltration

Rate Worksheet

I	Factor of Sai InfiltrationF	fety and Design Rate Worksheet	W	orksheet D.	5-1				
Facto	or Category	Factor Description	Assigned Weight (w)	Factor Value (v)	$\begin{array}{l} Product (p) \\ p = w x v \end{array}$				
		Soil assessment methods	0.25	2	.5				
		Predominant soil texture	0.25	2	.5				
А	Suitability	Site soil variability	0.25	1	.25				
	Assessment	Depth to groundwater / impervious layer	epth to groundwater / 0.25						
		Suitability Assessment Safety Factor,	$S_A = p$		1.75				
		Level of pretreatment/ expected sediment loads	0.5						
В	Design	Redundancy/resiliency	0.25						
		Compaction during construction	0.25						
		Design Safety Factor, $S_B = p$							
Com	bined Safety Fact	or, $S_{total} = S_A \times S_B$							
Obse	erved Infiltration 1	Rate, inch/hr, K _{observed}			0.2				
(corr	ected for test-spec	ific bias)			0.2				
Desiş	Design Infiltration Rate, in/hr, K _{design} = K _{observed} / S _{total}								
Supporting Data									
This worksheet has been completed assuming that the infiltration will occur within the artificial fill at the subject site. Percolation testing has been performed using the borehole falling head test method. The									

measured field percolation rates are presented in Appendix C of the report.

Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet