The City of San Diego

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

Montezuma Multi-Family
P.T.S. No. 501449
Drawing Number (If Applicable) & Internal Order Number (If Applicable)

ENGINEER OF WORK:

JHPalacios

REGISTERED PROFESSIONAL ENGINEER
JORGE H. PALACIOS
No. 32031
12/31/18
CIVIL
STATE OF CALIFORNIA

Jorge H. Palacios, RCE 32031
Provide Wet Signature and Stamp Above Line

PREPARED FOR:

Elsey Partners
1532 College Avenue, F19
Manhattan, KS 66502
(785) 317-5265

PREPARED BY:

JP Engineering, Inc.
4849 Ronson Court, Suite 105
San Diego, CA 92111
(858) 569-7377

DATE:
March 9, 2017

Approved by: City of San Diego   Date

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Project Name: **Montezuma Multi-Family**

TABLE OF CONTENTS

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ACRONYMS

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

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CERTIFICATION PAGE

Project Name: Montezuma Multi-Family
Permit Application Number: PTS No. 501449

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

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

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

Jorge H. Palacios, RCE 32031, Exp. 12-31-18
Print Name

JP Engineering, Inc.
Company

March 9, 2017
Date

Engineer's Stamp

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Project Name: **Montezuma Multi-Family**

SUBMITTAL RECORD

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

Submittal Number	Date	Project Status	Changes
1	12/8/16	◉ Preliminary Design/Planning/CEQA ○ Final Design	Initial Submittal
2	3/9/17	◉ Preliminary Design/Planning/CEQA ○ Final Design	Second Submittal
3	Enter a date.	○ Preliminary Design/Planning/CEQA ◉ Final Design	Click here to enter text.
4	Enter a date.	○ Preliminary Design/Planning/CEQA ◉ Final Design	Click here to enter text.

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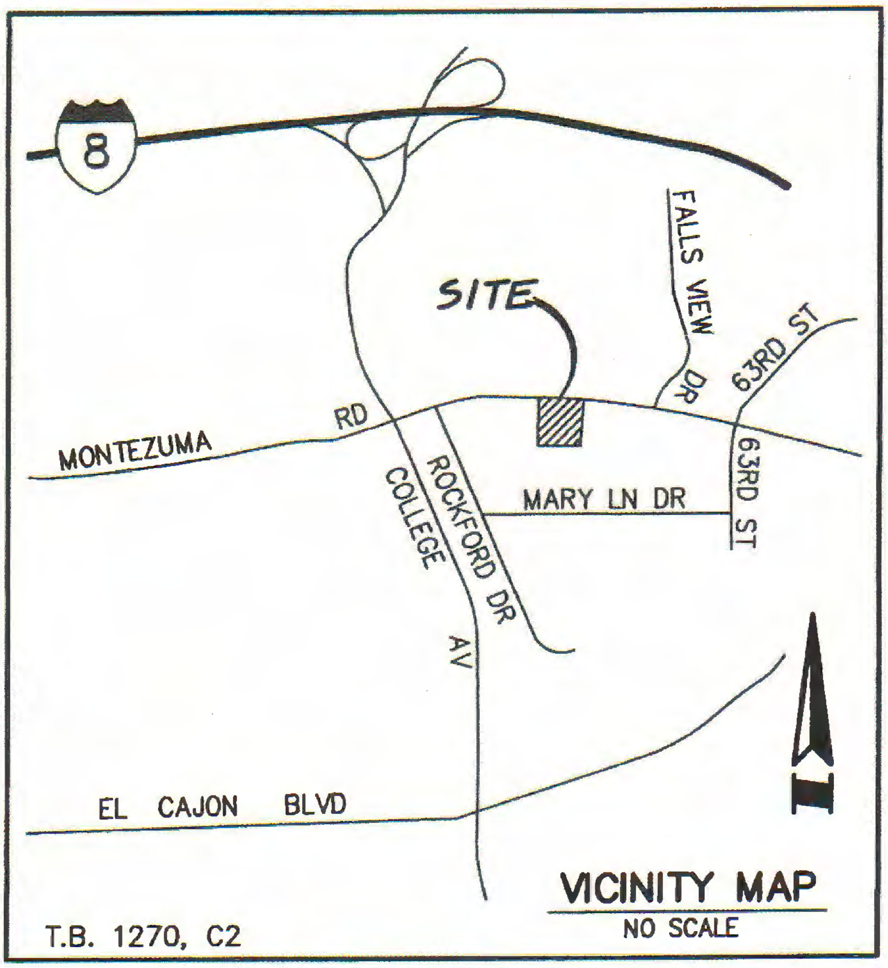
PROJECT VICINITY MAP

Project Name: Montezuma Multi-Family
Permit Application Number: PTS No. 501449



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

Storm Water Requirements Applicability Checklist

FORM
DS-560
OCTOBER 2016

Project Address: 6213 Montezuma Road, San Diego, CA 92115	Project Number *(for City Use Only)*:

SECTION 1. Construction Storm Water BMP Requirements:

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

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

PART A: Determine Construction Phase Storm Water Requirements.

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

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

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

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

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

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

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

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

☐ Yes; no document required

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

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

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

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

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

PART B: Determine Construction Site Priority

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

Complete PART B and continued to Section 2

1. ☐ **ASBS**

   a. Projects located in the ASBS watershed.

2. ☐ **High Priority**

   a. Projects 1 acre or more determined to be Risk Level 2 or Risk Level 3 per the Construction General Permit and not located in the ASBS watershed.

   b. Projects 1 acre or more determined to be LUP Type 2 or LUP Type 3 per the Construction General Permit and not located in the ASBS watershed.

3. ☐ **Medium Priority**

   a. Projects 1 acre or more but not subject to an ASBS or high priority designation.

   b. Projects determined to be Risk Level 1 or LUP Type 1 per the Construction General Permit and not located in the ASBS watershed.

4. ☒ **Low Priority**

   a. Projects requiring a Water Pollution Control Plan but not subject to ASBS, high, or medium priority designation.

SECTION 2. Permanent Storm Water BMP Requirements.

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

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

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

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

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

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

Clear Page 2

PART D: PDP Exempt Requirements.

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

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

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

1. Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:

- **Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;**
- **Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;**
- **Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City's Storm Water Standards manual?**

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

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

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

PART E: Determine if Project is a Priority Development Project (PDP).

Projects that match one of the definitions below are subject to additional requirements including preparation of a Storm Water Quality Management Plan (SWQMP).

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

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

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

Clear Page 3

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

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

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

Jorge H. Palacios	Agent
Name of Owner or Agent *(Please Print)*	Title
JHPalacios	12/08/2016
Signature	Date

<table>
<tr><td colspan="3">Applicability of Permanent, Post-Construction Storm Water BMP Requirements
(Storm Water Intake Form for all Development Permit Applications)</td><td>Form I-1</td></tr>
<tr><td colspan="4">Project Identification</td></tr>
<tr><td colspan="4">Project Name: Montezuma Multi-Family</td></tr>
<tr><td colspan="3">Permit Application Number: PTS No. 501449</td><td>Date: 12/8/16</td></tr>
<tr><td colspan="4">Determination of Requirements</td></tr>
<tr><td colspan="4">The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short <u>summary</u> of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.

Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop".
Refer to Part 1 of Storm Water Standards sections and/or separate forms referenced in each step below.</td></tr>
<tr><td>Step</td><td>Answer</td><td colspan="2">Progression</td></tr>
<tr><td rowspan="2">Step 1: Is the project a "development project"? See Section 1.3 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</td><td>☒ Yes</td><td colspan="2">Go to Step 2.</td></tr>
<tr><td>☐ No</td><td colspan="2">Stop.
Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.</td></tr>
<tr><td colspan="4">Discussion / justification if the project is <u>not</u> a "development project" (e.g., the project includes <u>only</u> interior remodels within an existing building):
Click or tap here to enter text.</td></tr>
<tr><td rowspan="3">Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions?
To answer this item, see Section 1.4 of the BMP Design Manual (Part 1 of Storm Water Standards) <u>in its entirety</u> for guidance, AND complete Storm Water Requirements Applicability Checklist.</td><td>☐ Standard Project</td><td colspan="2">Stop.
Standard Project requirements apply.</td></tr>
<tr><td>☒ PDP</td><td colspan="2">PDP requirements apply, including PDP SWQMP.
Go to Step 3.</td></tr>
<tr><td>☐ PDP Exempt</td><td colspan="2">Stop.
Standard Project requirements apply. Provide discussion and list any additional requirements below.</td></tr>
<tr><td colspan="4">Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:
Click or tap here to enter text.</td></tr>
</table>

Project Name: Montezuma Multi-Family

<table>
<tr><th colspan="3">Form I-1 Page 2</th></tr>
<tr><th>Step</th><th>Answer</th><th>Progression</th></tr>
<tr><td rowspan="2">Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval?
See Section 1.10 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</td><td>○ Yes</td><td>Consult the City Engineer to determine requirements.
Provide discussion and identify requirements below.
Go to Step 4.</td></tr>
<tr><td>⦿ No</td><td>BMP Design Manual PDP requirements apply.
Go to Step 4.</td></tr>
<tr><td colspan="3">Discussion / justification of prior lawful approval, and identify requirements (<u>not required if prior lawful approval does not apply</u>):
Click or tap here to enter text.</td></tr>
<tr><td rowspan="2">Step 4. Do hydromodification control requirements apply?
See Section 1.6 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</td><td>⦿ Yes</td><td>PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6).
Go to Step 5.</td></tr>
<tr><td>○ No</td><td>Stop.
PDP structural BMPs required for pollutant control (Chapter 5) only.
Provide brief discussion of exemption to hydromodification control below.</td></tr>
<tr><td colspan="3">Discussion / justification if hydromodification control requirements do <u>not</u> apply:
Runoff from project discharges into the San Deigo Bay, which is exempted from Hydromodification. See attached Figure H-G.2-2 for exempted bodies and see City of San Diego Drawing and picture in Attachment 2.</td></tr>
<tr><td rowspan="2">Step 5. Does protection of critical coarse sediment yield areas apply?
See Section 6.2 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</td><td>○ Yes</td><td>Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2).
Stop.</td></tr>
<tr><td>⦿ No</td><td>Management measures not required for protection of critical coarse sediment yield areas.
Provide brief discussion below.
Stop.</td></tr>
<tr><td colspan="3">Discussion / justification if protection of critical coarse sediment yield areas does <u>not</u> apply:
The property does not have on-site or upstream critical coarse sediment yield areas (CCSYA) and is not shown in the attached Figure H-G.2-1 for potential CCSYA.</td></tr>
</table>

Project Name: **Montezuma Multi-Family**

Site Information Checklist For PDPs	Form I-3B
Project Summary Information	
Project Name	Montezuma Multi-Family
Project Address	6213 Montezuma Road. San Diego, CA 92115
Assessor's Parcel Number(s) (APN(s))	467-171-28-00 & 467-171-29-00
Permit Application Number	PTS No. 501449
Project Watershed	Select One: ○ San Dieguito River ○ Penasquitos ○ Mission Bay ◉ San Diego River ○ San Diego Bay ○ Tijuana River
Hydrologic subarea name with Numeric Identifier up to two decimal paces (9XX.XX)	San Diego River Hydrologic Unit - 907-11
Project Area (total area of Assessor's Parcel(s) associated with the project or total area of the right-of-way)	12,416 SQFT Acres ([SQFT] Square Feet)
Area to be disturbed by the project (Project Footprint)	12,416 SQFT Acres ([SQFT] Square Feet)
Project Proposed Impervious Area (subset of Project Footprint)	9,861 Acres ([SQFT] Square Feet)
Project Proposed Pervious Area (subset of Project Footprint)	2,555 SQFT Acres ([SQFT] Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Project Area.	
The proposed increase or decrease in impervious area in the proposed condition as compared to the pre-project condition.	80 %

Form I-3B Page 2 of 11
Description of Existing Site Condition and Drainage Patterns
Current Status of the Site (select all that apply): X Existing development Previously graded but not built out ☐ Agricultural or other non-impervious use X Vacant, undeveloped/natural Description / Additional Information: The property was previously a multi-family building that has been demolished.
Existing Land Cover Includes (select all that apply): Vegetative Cover X Non-Vegetated Pervious Areas X Impervious Areas Description / Additional Information: The property is presentlty 20% impervious due to the existing buildings that were demolished..
Underlying Soil belongs to Hydrologic Soil Group (select all that apply): NRCS Type A ☐ NRCS Type B ☐ NRCS Type C X NRCS Type D
Approximate Depth to Groundwater (GW): ○ GW Depth < 5 feet ○ 5 feet < GW Depth < 10 feet ○ 10 feet < GW Depth < 20 feet ◉ GW Depth > 20 feet
Existing Natural Hydrologic Features (select all that apply): ☐ Watercourses ☐ Seeps ☐ Springs ☐ Wetlands X None Description / Additional Information: Click or tap here to enter text.

Form I-3B Page 3 of 11
Description of Existing Site Topography and Drainage:
How is storm water runoff conveyed from the site? At a minimum, this description should answer: 1. Whether existing drainage conveyance is natural or urban; 2. If runoff from offsite is conveyed through the site? If yes, quantification of all offsite drainage areas, design flows, and locations where offsite flows enter the project site and summarize how such flows are conveyed through the site; 3. Provide details regarding existing project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, and natural and constructed channels; 4. Identify all discharge locations from the existing project along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.
Description / Additional Information:
1. The existing drainage is urban. 2. There is no runoff from offsite that is being conveyed throughout the site. 3. The existing site drains northerly to the existing concrete curb and gutter at Montezuma Road. The runoff from Montezuma Road is conveyed to an existing 10' curb inlet type C, which is 300 feet west of the property. 4. The pre-development and post-development project will maintain the same pattern. The area of site, 0.28 acres and the Q50=0.65 cfs will drain to the existing concrete curb and gutter at Montezuma Road.

Form I-3B Page 4 of 11
Description of Proposed Site Development and Drainage Patterns
Project Description / Proposed Land Use and/or Activities: The project consists of a student dormitory building.
List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features): Proposed five (5) story building with three levels of underground parking and courtyard.
List/describe proposed pervious features of the project (e.g., landscape areas): Proposed biofiltration areas and permeable areas within the property.
Does the project include grading and changes to site topography? ◉ Yes ○ No Description / Additional Information: The proposed grading will export 11,600 cubic yards of dirt to construct the underground parking.

Form I-3B Page 5 of 11
Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)? ◉ Yes ○ No
If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural and constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations. Description / Additional Information: The proposed site will drain to biofiltration areas inside the property and then to the existing concrete curb and gutter at Montezuma road via a curb outlet. A summary of the pre and post-project drainage areas and design flows are shown in page 2 of our Hydrology and Drainage calculations report in Attachment 5.

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

Project Name: **Montezuma Multi-Family**

Form I-3B Page 7 of 11
Identification and Narrative of Receiving Water
Narrative describing flow path from discharge location(s), through urban storm conveyance system, to receiving creeks, rivers, and lagoons and ultimate discharge location to Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable) The existing site drains northerly to the existing concrete curb and gutter at Montezuma Road and westerly to an existing public storm drain system which discharges to the Alvarado Creek and continues to the San Diego River and ultimately to the Pacific Ocean.
Provide a summary of all beneficial uses of receiving waters downstream of the project discharge locations. The San Diego River Hydrologic Unit 907.11 are as follows: -Municipal and Domestic Supply (MUN) -Agricultural Supply (AGR) -Industrical Process Supply (PROC) -Contact Recreation (REC1) -Non-Contact Recreation (REC2) -Warm Freshwater Habitat (WARM) -Cold Freshwater Habitat (COLD) -Wildlife Habitat (WILD)
Identify all ASBS (areas of special biological significance) receiving waters downstream of the project discharge locations. Project not subject to ASBS.
Provide distance from project outfall location to impaired or sensitive receiving waters. The nearest impaired body is the Pacific Ocean, which is approximately 12 miles west from the project.
Sumarize information regarding the proximity of the permanent, post-construction storm water BMPs to the City's Multi-Habitat Planning Area and environmentally sensitive lands The City's Multi-Habitat Planning Area and environmentally sensitive lands are not close to the property.

Project Name: **Montezuma Multi-Family**

Form I-3B Page 8 of 11

Identification of Receiving Water Pollutants of Concern

List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs/ WQIP Highest Priority Pollutant
San Diego River (Lower)	Fecal Coliform (lower 6 miles)	TMDL/WQIP
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

Identification of Project Site Pollutants*

*Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)

Identify pollutants anticipated from the project site based on all proposed use(s) of the site (see BMP Design Manual (Part 1 of Storm Water Standards) Appendix B.6):

Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment	○	◉	○
Nutrients	○	◉	○
Heavy Metals	◉	○	○
Organic Compounds	◉	○	○
Trash & Debris	○	◉	○
Oxygen Demanding Substances	○	◉	○
Oil & Grease	◉	○	○
Bacteria & Viruses	○	◉	○
Pesticides	○	◉	○

Form I-3B Page 9 of 11
Hydromodification Management Requirements
Do hydromodification management requirements apply (see Section 1.6 of the BMP Design Manual)? ◉ Yes, hydromodification management flow control structural BMPs required. ○ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean. ○ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean. ○ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides. Description / Additional Information (to be provided if a 'No' answer has been selected above): Click or tap here to enter text.
Critical Coarse Sediment Yield Areas* *This Section only required if hydromodification management requirements apply
Based on Section 6.2 and Appendix H does CCSYA exist on the project footprint or in the upstream area draining through the project footprint? ○ Yes ◉ No, No critical coarse sediment yield areas to be protected based on WMAA maps Discussion / Additional Information: The property does not have on-site or upstream Critical Coarse Sediment Yield Areas (CCSYA) and is not shown in the atatched Figure H-G.2-1 for potential CCSYA and shown in Attachment 2.

Form I-3B Page 10 of 11
Flow Control for Post-Project Runoff* *This Section only required if hydromodification management requirements apply
List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit. POC: BMP 1 on the northwesterly corner of property.
Has a geomorphic assessment been performed for the receiving channel(s)? ◉ No, the low flow threshold is 0.1Q2 (default low flow threshold) ○ Yes, the result is the low flow threshold is 0.1Q2 ○ Yes, the result is the low flow threshold is 0.3Q2 ○ Yes, the result is the low flow threshold is 0.5Q2 If a geomorphic assessment has been performed, provide title, date, and preparer: Click or tap here to enter text.
Discussion / Additional Information: (optional) Click or tap here to enter text.

Form I-3B Page 11 of 11
Other Site Requirements and Constraints
When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements. None.
Optional Additional Information or Continuation of Previous Sections As Needed
This space provided for additional information or continuation of information from previous sections as needed. Click or tap here to enter text.

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

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

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

Project Name: Montezuma Multi-Family

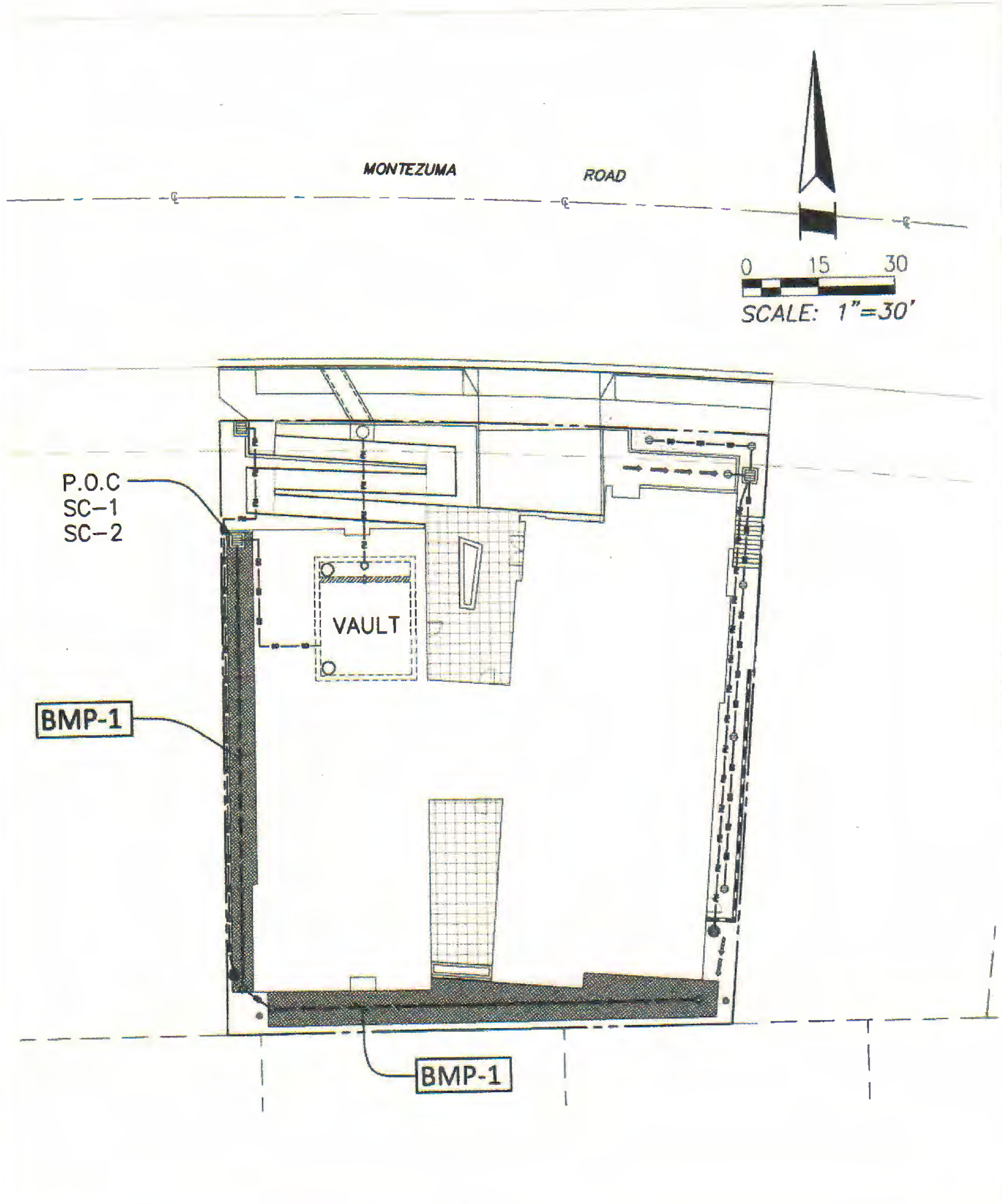
Form I-5 Page 2 of 4			
Site Design Requirement	Applied?		
SD-3 Minimize Impervious Area	◉ Yes	○ No	○ N/A
Discussion / justification if SD-3 not implemented: Click or tap here to enter text.			
SD-4 Minimize Soil Compaction	◉ Yes	○ No	○ N/A
Discussion / justification if SD-4 not implemented: Click or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

Project Name: **Montezuma Multi-Family**

Form I-5 Page 3 of 4			
Site Design Requirement	Applied?		
SD-6 Runoff Collection	⦿ Yes	○ No	○ N/A
Discussion / justification if SD-6 not implemented: Click or tap here to enter text.			
6a-1 Are green roofs implemented in accordance with design criteria in SD-6A Fact Sheet? If yes, are they shown on the site map?	⦿ Yes	○ No	○ N/A
6a-2 Is green roof credit volume calculated using Appendix B.2.1.2 and SD-6A Fact Sheet in Appendix E?	○ Yes	⦿ No	○ N/A
6b-1 Are permeable pavements implemented in accordance with design criteria in SD-6B Fact Sheet? If yes, are they shown on the site map?	⦿ Yes	○ No	○ N/A
6b-2 Is permeable pavement credit volume calculated using Appendix B.2.1.3 and SD-6B Fact Sheet in Appendix E?	○ Yes	⦿ No	○ N/A
SD-7 Landscaping with Native or Drought Tolerant Species	⦿ Yes	○ No	○ N/A
Discussion / justification if SD-7 not implemented: Click or tap here to enter text.			
SD-8 Harvesting and Using Precipitation	○ Yes	⦿ No	○ N/A
Discussion / justification if SD-8 not implemented: The amount of landscaping is minimal, therefore harvest and use is considered economically infeasible.			
8-1 Are rain barrels implemented in accordance with design criteria in SD-8 Fact Sheet? If yes, are they shown on the site map?	○ Yes	⦿ No	○ N/A
8-2 Is rain barrel credit volume calculated using Appendix B.2.2.2 and SD-8 Fact Sheet in Appendix E?	○ Yes	⦿ No	○ N/A

Project Name: **Montezuma Multi-Family**

Form I-5 Page 4 of 4
Insert Site Map with all site design BMPs identified:



Summary of PDP Structural BMPs	Form I-6
PDP Structural BMPs	
All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual, Part 1 of Storm Water Standards). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s). PDP structural BMPs must be verified by the City at the completion of construction. This includes requiring the project owner or project owner's representative to certify construction of the structural BMPs (complete Form DS-563). PDP structural BMPs must be maintained into perpetuity (see Chapter 7 of the BMP Design Manual). Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).	
Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate. The storm water pollutant control BMP for the project site is bio-filtration swales that are shown in the DMA exhibit. The DCV for the project site will be retained and treated by the bio-filtration detail. The BMP footprint has been calculated and will fit in the project site. The BMP's for the property will be done via biofiltration swales for a flow-thru treatment control. See Attachment 1b with Design Capture Volume (DCV) calculations. (Continue on page 2 as necessary.)	

Form I-6 Page 2 of X
(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)
(Continued from page 1) Click or tap here to enter text.

Project Name: **Montezuma Multi-Family**

Form I-6 Page 3 of X (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. 1	
Construction Plan Sheet No. C-1, C-3	
Type of structural BMP: ○ Retention by harvest and use (HU-1) ○ Retention by infiltration basin (INF-1) ○ Retention by bioretention (INF-2) ○ Retention by permeable pavement (INF-3) ◉ Partial retention by biofiltration with partial retention (PR-1) ○ Biofiltration (BF-1) ○ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide (BMP type/description in discussion section below) ○ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ○ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion ○ Detention pond or vault for hydromodification management ○ Other (describe in discussion section below)	
Purpose: ○ Pollutant control only ○ Hydromodification control only ◉ Combined pollutant control and hydromodification control ○ Pre-treatment/forebay for another structural BMP ○ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Elsey Partners 1532 College Avenue, F19 Manhattan, KS 66502 (785) 317-5265
Who will be the final owner of this BMP?	Elsey Partners
Who will maintain this BMP into perpetuity?	Elsey Partners
What is the funding mechanism for maintenance?	Property Owner

Form I-6 Page 4 of X (Copy as many as needed)	
Structural BMP ID No.	
Construction Plan Sheet No.	
Discussion (as needed): Type of structural BMP: ○ Retention by harvest and use (HU-1) ○ Retention by infiltration basin (INF-1) ○ Retention by bioretention (INF-2) ○ Retention by permeable pavement (INF-3) ○ Partial retention by biofiltration with partial retention (PR-1) ○ Biofiltration (BF-1) ○ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide (BMP type/description in discussion section below) ○ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ○ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion ○ Detention pond or vault for hydromodification management ○ Other (describe in discussion section below)	
Purpose: ○ Pollutant control only ○ Hydromodification control only ○ Combined pollutant control and hydromodification control ○ Pre-treatment/forebay for another structural BMP ○ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	
Who will be the final owner of this BMP?	
Who will maintain this BMP into perpetuity?	
What is the funding mechanism for maintenance?	

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

Permenant BMP Construction

Self Certification Form

FORM
DS-563
January 2016

Date Prepared:	Project No.:
Project Applicant:	Phone:
Project Address:	
Project Engineer:	Phone:

The purpose of this form is to verify that the site improvements for the project, identified above, have been constructed in conformance with the approved Storm Water Quality Management Plan (SWQMP) documents and drawings.

This form must be completed by the engineer and submitted prior to final inspection of the construction permit. Completion and submittal of this form is required for all new development and redevelopment projects in order to comply with the City's Storm Water ordinances and NDPES Permit Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100. Final inspection for occupancy and/or release of grading or public improvement bonds may be delayed if this form is not submitted and approved by the City of San Diego.

CERTIFICATION:

As the professional in responsible charge for the design of the above project, I certify that I have inspected all constructed Low Impact Development (LID) site design, source control and structural BMP's required per the approved SWQMP and Construction Permit No. Click here to enter text.; and that said BMP's have been constructed in compliance with the approved plans and all applicable specifications, permits, ordinances and Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100 of the San Diego Regional Water Quality Control Board.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

Signature: ______________________________

Date of Signature: _ __

Printed Name: _____

Title: _____

Phone No. _____

Engineer's Stamp

DS-563 (12-15)

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ATTACHMENT 1
BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

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Project Name: **Montezuma Multi-Family**

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist.	X Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	◉ Included on DMA Exhibit in Attachment 1a ○ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	○ Included ◉ Not included because the entire project will use infiltration BMPs
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	◉ Included ○ Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines and site design credit calculations	Included

Project Name: Montezuma Multi-Family

Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

X Underlying hydrologic soil group

X Approximate depth to groundwater

X Existing natural hydrologic features (watercourses, seeps, springs, wetlands)

☐ Critical coarse sediment yield areas to be protected

X Existing topography and impervious areas

X Existing and proposed site drainage network and connections to drainage offsite

X Proposed grading

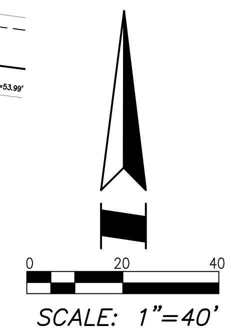
X Proposed impervious features

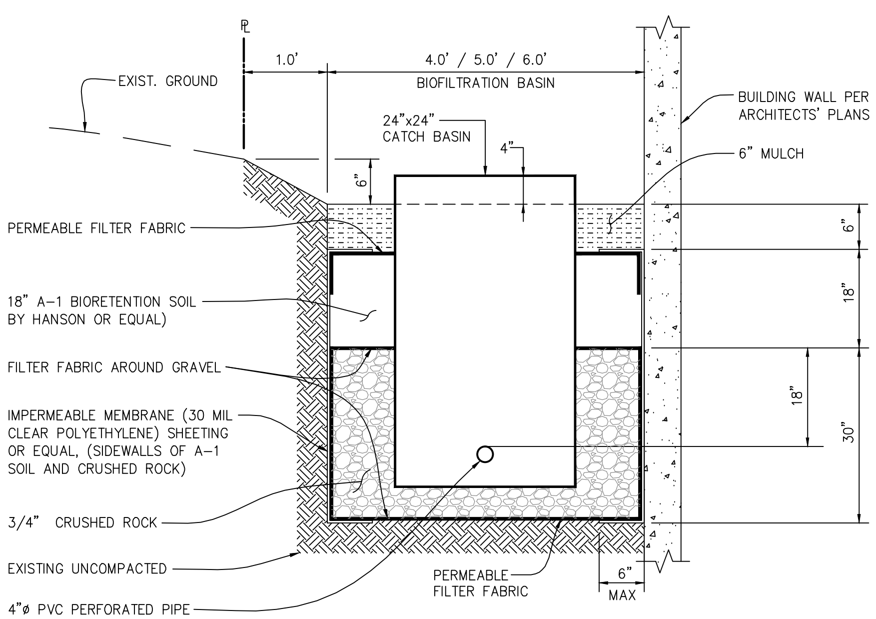
X Proposed design features and surface treatments used to minimize imperviousness

X Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)

X Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)

X Structural BMPs (identify location, type of BMP, and size/detail)





BIOFILTRATION BASIN–BMP 1

NO SCALE
CASQA STD. TC-32

NOTE: GRADATION OF A–1 SOIL AND SIZE OF GRAVEL TO BE APPROVED BY SOILS ENGINEER. PRIOR TO BACKFILLING, CALL FOR INSPECTION

Hanson
HEIDELBERGCEMENT Group

A-1 Bio-Retention Soil
(Soil Medium for Bio-Swales & Bio-Retention Basins)

A1 SOILS

PRODUCT DESCRIPTION:

A-1 Bioswale Soil is a blend of **80% washed coarse sand** and ***20% sandy loam topsoil.*** The blended material is low in silt and clay which allows the material to perform at the required minimum drainage properties of > 5" per hour KSat Perc Rate @ 85% relative compaction. This satisfies civil engineering requirements while maintaining the agronomical properties of a well graded sand with silt to satisfy the landscape architect's desire to support growth of plant material. Clay content is limited to provide a minimum cation exchange capacity for healthy plant material if desired.

The uniform sand sizes of A-1 Bio-Retention Soil results in long lasting pore space and moisture capacity for a reasonably priced, readily available, consistent source of an appropriate soil medium to comply with State Water Quality requirements.

(***NOTE;** Organic matter may be incorporated by volume percentage when requested by the customer for an additional cost that will vary depending on the desired type and percentage requested. It is recommended that organic matter be incorporated into the soil medium's top six inches after installation to relieve compaction or in the planting hole for trees or shrubs to concentrated the amendment where it will benefit the plants and restrict water movement.)

PRODUCT USES:

A-1 Bio-Retention Soil is a soil medium for Bio-Retention Basins and Swales which helps remove contaminants from storm water runoff as required by the State of California Regional Water Quality Control Board and other government agencies charged with enforcement of these requirements. The ultimate goal is to help prevent contamination of the downstream beneficial water sources of the State.

(***NOTE:** All materials should be sampled, submitted, and approved prior to shipment or installation as job plans and specifications **VARY GREATLY!** It is the customer's responsibility to assure the soil is approved **BEFORE** installation!

INSTALLATION:

A-1 Bio-Retention Soil should be installed per construction plans or engineers specifications. Compaction should be avoided and ideally the soil should be installed at less than optimum moisture.

A-1 Bioswale Soil is a locally available mix that is a reasonably priced solution for architects and engineers designing project to achieve LEED credits and certification as well as compliance with local and state storm drain requirements.

- Sustainable Sites Credit 5.1 Site Development - Protect / Restore Habitat
- Sustainable Sites Credit 6.1 Storm Water Design - Quality Control
- Sustainable Sites Credit 6.2 Storm Water Design - Quality Control
- Water Effiiency Prerequisite Water Use Reduction - 20% Reduction
- Water Efficiency Credit 1 - Water Efficiency Landscaping
- Material and Resources Credit 5 - Regional Materials
- Innovation in Design - Protect & Restore Habitat

POLLUTANT SOURCE AREAS	SOURCE AREAS	LOCATION
a.ON-SITE STORM DRAIN INLETS	• All inlets will be marked with the words "NO Dumping! Flows to River" or similar. • Maintain and periodically repaint or replace inlet markings. • Provide storm water pollution prevention information to new site owners, lessees, or operators. • See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com. • Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."	DMA-1
b.SIDEWALK AND WALKWAYS	• Sidewalks, and parking lots will be swept regularly to prevent the accumulation of litter and debris. • Debris from pressure washing will be collected to prevent entry into the storm drain system. Washwater containing any clean agent or degreaser will be collected and discharged to the sanitary sewer and not discharged to a storm drain.	DMA-1

LEGEND

SYMBOL

PROPOSED 2"-3" PVC SIDEWALK UNDERDRAIN
PROPOSED PRIVATE CATCH BASIN
LIMITS OF DMA-1
PROPOSED VAULT
PROPOSED TYPE "A" CURB OUTLET
PROPOSED PRIVATE 2" FORCE MAIN — FM
PROPOSED PRIVATE STORM DRAIN PIPE — SD
PROPOSED PRIVATE 0.48"ø ORIFICE STORM DRAIN PIPE
PROPOSED PRIVATE PERFORATED PIPE
PROPOSED IMPERVIOUS AREA
PROPOSED BIOFILTRATION AREA
PROPOSED PLANTER AREA
PROPOSED PERMEABLE CONCRETE OR PERMEABLE PAVERS
DIRECTION OF FLOW
PLACE PLACARD SIGN ON CONCRETE ("NO DUMPING – DRAINS TO OCEAN") — S

NOTES

1. HYDROLOGIC SOIL GROUP : NRCS TYPE D
2. DEPTH OF GROUNDWATER=GREATER THAN 20 FEET BELOW EXISTING GROUND.
3. POTENTIAL POLLUTANTS FROM SITE:
   - SEDIMENT
   - NUTRIENTS
   - TRASH AND DEBRIS
   - OIL AND GREASE
   - PESTICIDES
   - BACTERIA AND VIRUSES
4. RECOMMENDED EQUIPMENT TO PERFORM MAINTENANCE:
   - LANDSCAPE EQUIPMENT
5. 5. POLLUTANT SOURCE AREAS, SOURCE CONTROL AND LOCATION OF FOLLOWS:

COLOR	DMA NO.	LEGEND	DMA AREA (SQ. FT.)	DMA TYPE	AREA TREATED (SQ. FT.)
	1-A	IMPERVIOUS AREA	9,470	DRAINS TO BMP	9,470
	1-B	PLANTER AREA	1,093	SELF-MITIGATING	1,093
	1-C	PERMEABLE CONCRETE OR PERMEABLE PAVERS	368	SELF-MITIGATING	368
	1-D	BIORETENTION AREA	1,078	SELF-MITIGATING	1,078
		TOTAL	12,009		12,009

IMPERVIOUS AREA	= 9,470	SQ. FT. =	0.22	ACRES.
PERVIOUS AREA	= 2,539	SQ. FT. =	0.06	ACRES.
TOTAL	=12,009	SQ. FT. =	0.28	ACRES.

SHEET 1 OF 1
Project No. 999-15

SHEET TITLE: DRAINAGE MANAGEMENT AREA (DMA) EXHIBIT AND BMP
PROJECT NAME: 6213 MONTEZUMA APARTMENTS
A.P.N. 467-171-28-00 & 467-171-29-00

DESIGNER JHP
DRAWN DHN
CHECKED JHP
DATE 03-09-17

JORGE H. PALACIOS
R.C.E. 32031
DATE: 03-09-17

BY | NO. | DATE

CIVIL ENGINEERING ▪ LAND PLANNING ▪ SURVEYING ▪ 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111 ▪ (858)569-7377 FAX (858)569-0830

DESIGN CAPTURE VOLUME (DCV) CALCULATIONS

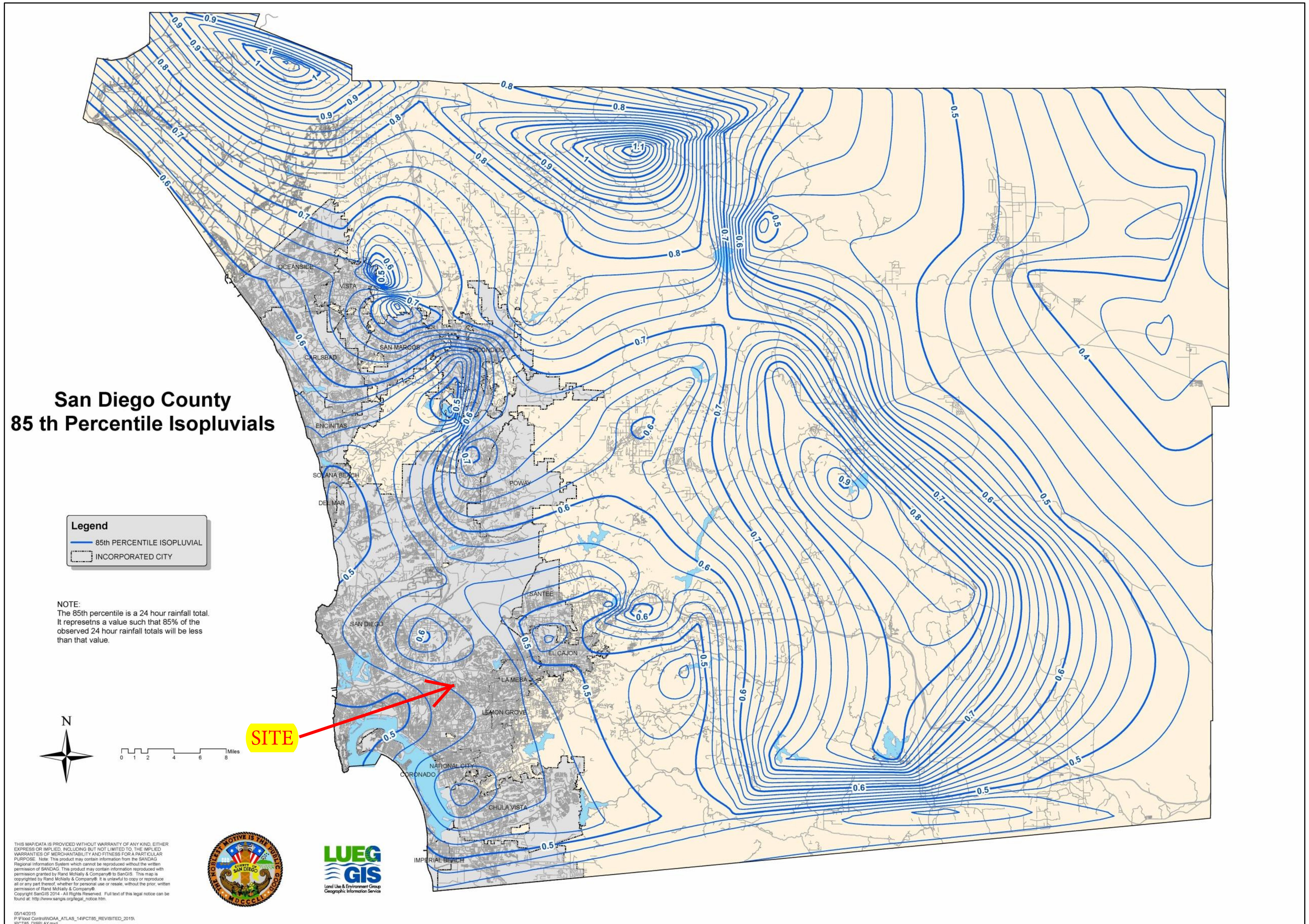
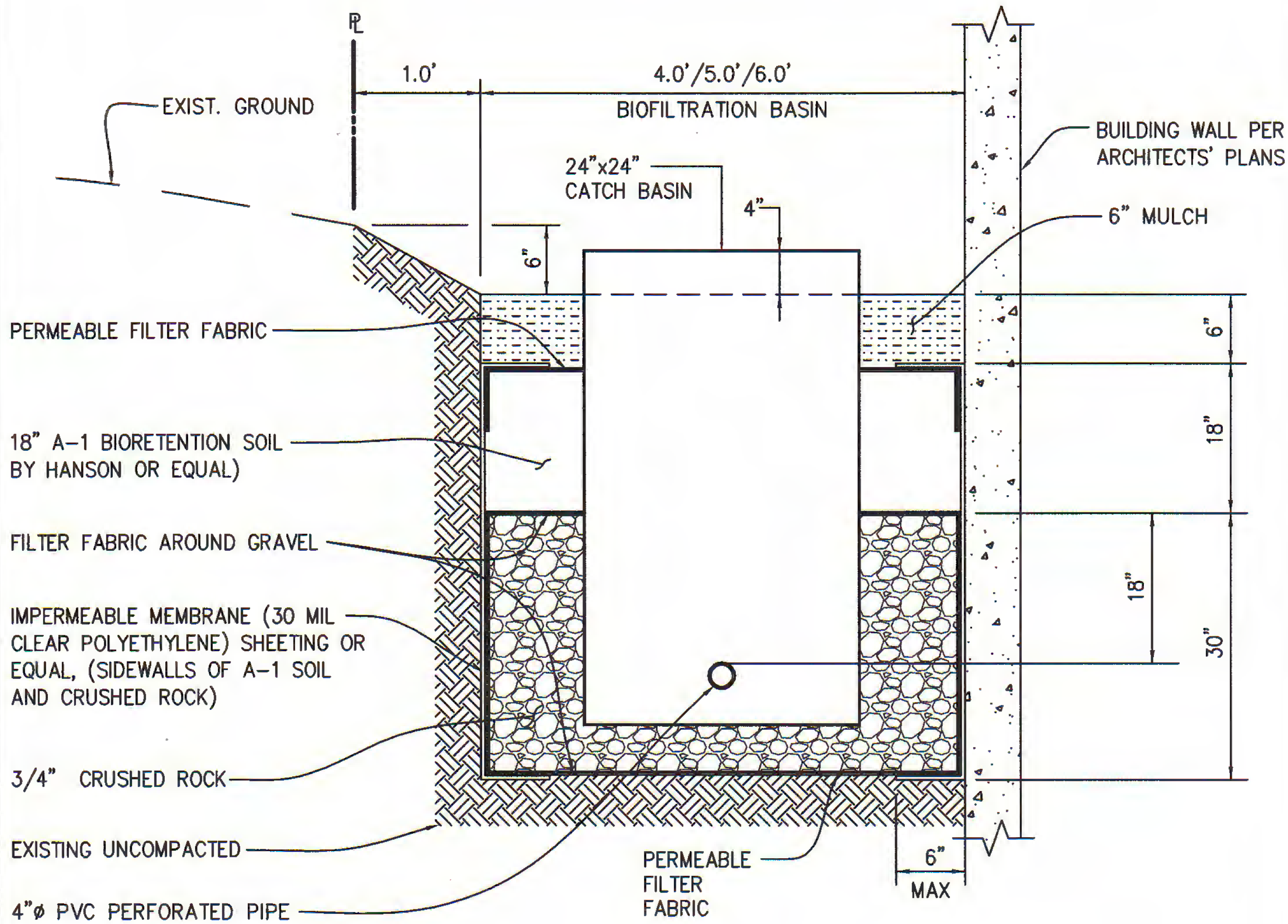


Figure B.1-1: 85th Percentile 24-hour Isopluvial Map



BIOFILTRATION BASIN-BMP 1

NO SCALE
CASQA STD. TC-32

NOTE: GRADATION OF A-1 SOIL AND SIZE OF GRAVEL TO BE APPROVED BY SOILS ENGINEER. PRIOR TO BACKFILLING, CALL FOR INSPECTION

Montezuma PDP/CUP

The Montezuma PDP/CUP is a priority project that will be required to retain the 85th percentile storm event. The definition of retain will be to infiltrate or store the volume.

The project, via Bioretention, will hold 75% of the Design Capture Volume (DCV).

DCV Calculations For Basin 1
Using equation B.1-1 from Appendix B of the Storm Water Standards Manual:

DCV = CxdxAx43,560 sf/ACx1/12 in/ft
DCV = 3,630xCxdxA
C = runoff factor, using equation B.1-2.
d = 85th percentile, 24-hour storm event rainfall depth (inches), using Figure B.1-1 =0.55
A = Tributary area (acres) = 0.28 Acres

The C runoff factor is computed using Table B.1-1 as follows:

From DMA Exhibit

Impervious Area	=	9,470 S.F.
Total Impervious Area		9,470 S.F.
	=	0.22 Acres
Pervious Areas and Bioretention Areas	=	2,539 S.F.
Total Pervious Area		2,539 S.F.
	=	0.06 Acres

Total Tributary Area = 0.22 + 0.06 = 0.28 Acres

C for Impervious area = $\frac{0.90 \times 0.22}{0.28} = 0.71$

C for pervious area = $\frac{0.10 \times 0.06}{0.28} = 0.02$

Weighted C = 0.71 + 0.02 = 0.81

DCV is computed as follows:

DCV = 3,630 x 0.81 x 0.55 x 0.22
= 356 cubic feet
75% DCV = 356 x 0.75 = 267 cubic feet

Proposed Storage Volume

- Voidance within 3/4" gravel storage within Bioretention Area =
  [(6' wide x 66' long) + (4+ wide x 21' long) + (6.5' wide x 90' long)] [2.5+ deep x 0.40 (40%voidance)]
  = 1,065 cubic feet

- 6" freeboard for ponding:
  = [(6' wide x 66' long) + (4' wide x 21' long) + (6' wide x 90' long)] [0.50' freeboard]
  = 532 cubic feet

Total Storage Volume = 1,065 + 532 = 1,597 cubic feet

∴ Total Storage volume of 1,597 cubic feet is greater than the 75% of DCV of 267 cubic feet.

Project complies with the bio-filtration area and exceeds the DCV on site and has addressed the storm water pollutant control BMP's requirements.

BASIN 1

Worksheet B.2-1 DCV

Design Capture Volume		Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.55	inches
2	Area tributary to BMP (s)	A=	0.22	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.81	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	356	cubic-feet

JP ENGINEERING, INC.
4849 RONSON COURT, SUITE 105
SAN DIEGO, CALIFORNIA 92111
(858) 569-7377 FAX (858) 569-0830

JOB Montezuma Multi-Family
SHEET NO. 1 OF 1
CALCULATED BY JHP DATE 03-09-17
CHECKED BY DATE
SCALE

BASIN 1

DRAWDOWN CALCULATIONS

BASIN AREA = 970 SQ. FT.

PONDING = 970 SQ. FT. x 0.50 FT = 485 CU. FT.

DISCHARGE VIA 4" ϕ PIPE

RATE = 0.09 CFS

485/0.09 = 5,389 SECONDS = 1.50 HOURS

Worksheet B.3-1. Harvest and Use Feasibility Screening

Harvest and Use Feasibility Screening		Worsksheet B.3-1
1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season? ☐ Toilet and urinal flushing ☒ Landscape irrigation ☐ Other:_______________		
2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2. [Provide a summary of calculations here]		
3. Calculate the DCV using worksheet B-2.1. [Provide a results here] 356 CU FT.		
3a. Is the 36-hour demand greater than or equal to the DCV? Yes / No ⇨ ⇩	3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV? Yes / No ⇨ ⇩	3c. Is the 36-hour demand less than 0.25DCV? Yes ⇩
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible.

BASIN 1

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

Factor of Safety and Design Infiltration Rate Worksheet			Worksheet D.5-1		
Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	2	0.50
		Predominant soil texture	0.25	2	0.50
		Site soil variability	0.25	2	0.50
		Depth to groundwater / impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			1.75
B	Design	Level of pretreatment/ expected sediment loads	0.5	1	0.50
		Redundancy/resiliency	0.25	1	0.25
		Compaction during construction	0.25	1	0.25
		Design Safety Factor, $S_B = \Sigma p$			1.0
Combined Safety Factor, $S_{total} = S_A \times S_B$				1.0	
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)				0.20	
Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$				0.20	
Supporting Data					
Briefly describe infiltration test and provide reference to test forms: See Attachment 6 for Geotechnical and Infiltration Assessment Report.					

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs

Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1 (Page 1 of 2)	
1	Remaining DCV after implementing retention BMPs	356	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.2	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	7.2	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	18	inches
7	Assumed surface area of the biofiltration BMP	350	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	262	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	94	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	18	inches
19	Total Depth Treated [Line 17 + Line 18]	48	inches

Note: Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

Simple Sizing Method for Biofiltration BMPs		Worksheet B.5-1 (Page 2 of 2)	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	141	cubic-feet
21	Required Footprint [Line 20/ Line 19] x 12	35	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	70	cubic-feet
23	Required Footprint [Line 22/ Line 18] x 12	47	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	12,009	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.81	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	292	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	292	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.740	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV ≥ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☒ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

Categorization of Infiltration Feasibility Condition			Form I-8
Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: The infiltration rate of the on-site soils has not been measured. However, based on our soil classification and grain-size analysis, the soils are expected to be classified as hydrologic soil type D. As such, it is our professional opinion that soil does not allow for a reliable infiltration rate greater than 0.5 inches per hour. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: C.2.1 A site specific geotechnical investigation was performed. C.2.2 Based upon the soil conditions observed in our borings, the site is underlain by fill, colluvium, very old paralic deposits and Mission Valley formation. In our opinion the colluvium, very old paralic deposits and Mission Valley formation are not subject to significant collapse or heave upon wetting. C.2.3 The site is sloping and descending slopes, if saturated, can become unstable. In addition, nuisance seepage issues can occur. As such, it is recommended that the storm water BMPs be setback a minimum of 50 feet from descending slopes. C.2.4 It is recommended that a vertical liner will be used to prevent lateral migration of water into nearby utility trenches. C.2.5 Groundwater mounding is not expected to be a concern. C.2.6 Recommendations are provided in the report to mitigate this hazard.			

Form I-8 Page 2 of 4			
Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: The risk of groundwater contamination has not been evaluated at this time; however, we do not anticipate any groundwater related concerns at the subject site. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: The risk of causing potential water balance issues such as change of seasonality of ephemeral sreams or increased discharge of contaminated groundwater to surface waters has not been evaluated at this time; however, we do not anticipate any issues.			
Part 1 Result*	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		No Infil-tration

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

<table>
<tr><th colspan="4">Form I-8 Page 3 of 4</th></tr>
<tr><td colspan="4">Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria
Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?</td></tr>
<tr><td>Criteria</td><td>Screening Question</td><td>Yes</td><td>No</td></tr>
<tr><td>5</td><td>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.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:

The infiltration rate for the on-site soils has not been measured. However, based on soil mapping, our soil classification and grain-size analysis, the soils are expected to be classified as hydrologic soil type D. As such, the soil is expected to have an infiltration rate greater than 0.01 inches per hour and less than 0.5 inches per hour.</td></tr>
<tr><td>6</td><td>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.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:

C.2.1 A site specific geotechnical investigation was performed.
C.2.2 Based upon the soil conditions observed in our borings, the site is underlain by fill, colluvium, very old paralic deposits and Mission Valley formation. In our opinion the colluvium, very old paralic deposits and Mission Valley formation are not subject to significant collapse or heave upon wetting.
C.2.3 The site is sloping and descending slopes, if saturated, can become unstable. In addition, nuisance seepage issues can occur. As such, it is recommended that the storm water BMPs be setback a minimum of 50 feet from descending slopes.
C.2.4 It is recommended that a vertical liner will be used to prevent lateral migration of water into nearby utility trenches.
C.2.5 Groundwater mounding is not expected to be a concern.
C.2.6 Recommendations are provided in the report to mitigate this hazard.</td></tr>
</table>

<table>
<tr><th colspan="4">Form I-8 Page 4 of 4</th></tr>
<tr><td>Criteria</td><td>Screening Question</td><td>Yes</td><td>No</td></tr>
<tr><td>7</td><td>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.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:

The risk of groundwater contamination has not been evaluated at this time; however, we do not anticipate any groundwater related concerns at the subject site.</td></tr>
<tr><td>8</td><td>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.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:

The risk of causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters has not been evaluated at this time; however, we are unaware of any water rights in this area of San Diego.</td></tr>
<tr><td>Part 2 Result*</td><td colspan="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.</td><td>Partial Infiltra-tion</td></tr>
</table>

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

ATTACHMENT 2
BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☐ Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

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Project Name: **Montezuma Multi-Family**

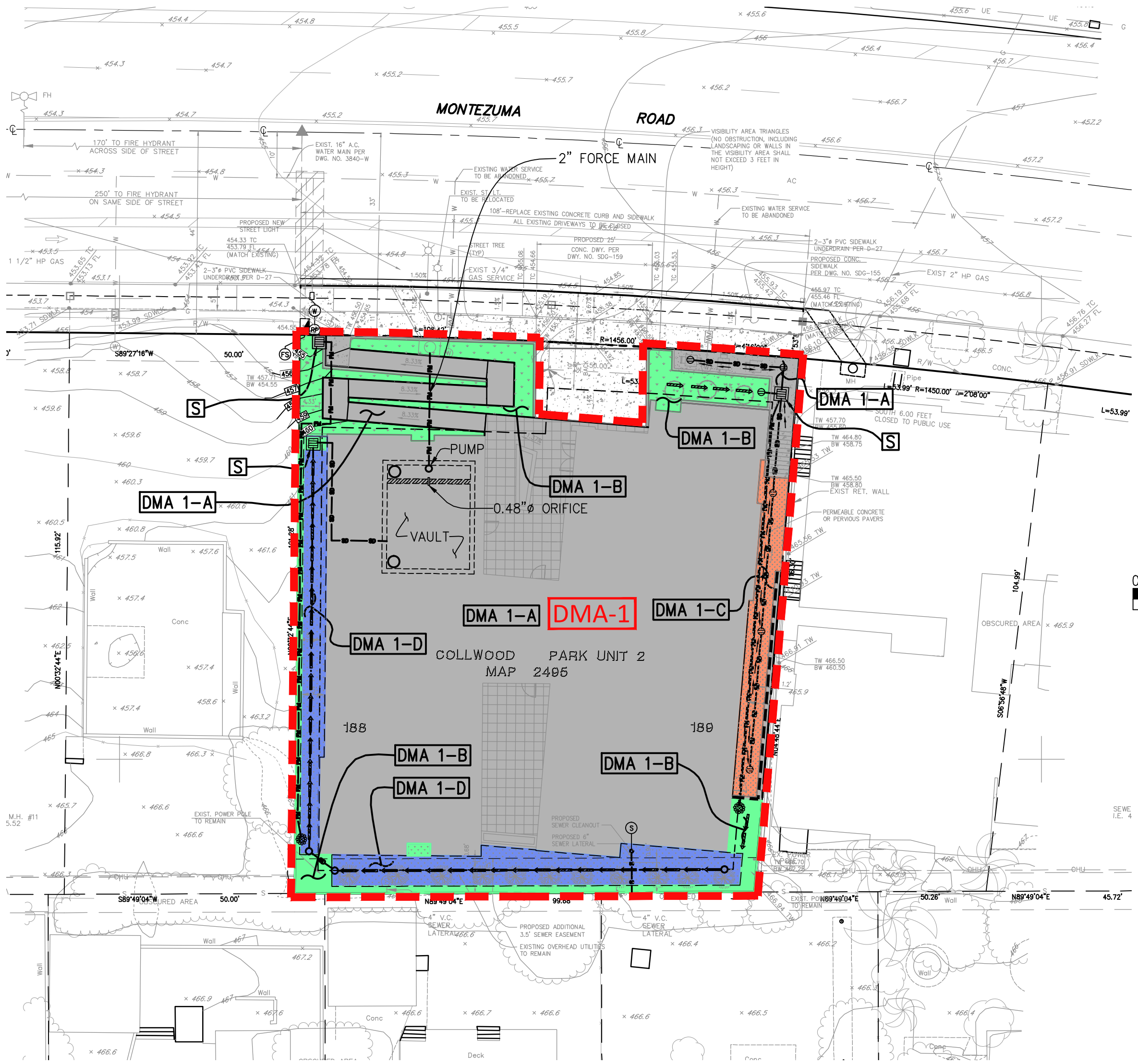
Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	Included See Hydromodification Management Exhibit Checklist.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	XExhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination ☐ 6.2.1 Verification of Geomorphic Landscape Units Onsite ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	◉ Not Performed ○ Included ○ Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design and Structural BMP Drawdown Calculations (Required) Overflow Design Summary for each structural BMP See Chapter 6 and Appendix G of the BMP Design Manual	◉ Included ○ Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	○ Included ◉ Not required because BMPs will drain in less than 96 hours

Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:

☒ Underlying hydrologic soil group
☒ Approximate depth to groundwater
☒ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☒ Critical coarse sediment yield areas to be protected
☒ Existing topography
☒ Existing and proposed site drainage network and connections to drainage offsite
☒ Proposed grading
☒ Proposed impervious features
☒ Proposed design features and surface treatments used to minimize imperviousness
☒ Point(s) of Compliance (POC) for Hydromodification Management
☒ Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
☒ Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)



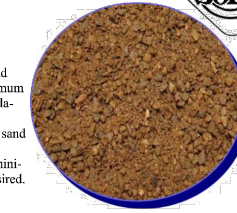
SCALE: 1"=40'

0 20 40

A-1 Bio-Retention Soil

(Soil Medium for Bio-Swales & Bio-Retention Basins)

PRODUCT DESCRIPTION:



A-1 Bioswale Soil is a blend of **80% washed coarse sand** and ***20% sandy loam topsoil.*** The blended material is low in silt and clay which allows the material to perform at the required minimum drainage properties of > 5" per hour KSat Perc Rate @ 85% relative compaction. This satisfies civil engineering requirements while maintaining the agronomical properties of a well graded sand with silt to satisfy the landscape architect's desire to support growth of plant material. Clay content is limited to provide a minimum cation exchange capacity for healthy plant material if desired.

The uniform sand sizes of A-1 Bio-Retention Soil results in long lasting pore space and moisture capacity for a reasonably priced, readily available, consistent source of an appropriate soil medium to comply with State Water Quality requirements.

(***NOTE;** Organic matter may be incorporated by volume percentage when requested by the customer for an additional cost that will vary depending on the desired type and percentage requested. It is recommended that organic matter be incorporated into the soil medium's top six inches after installation to relieve compaction or in the planting hole for trees or shrubs to concentrated the amendment where it will benefit the plants and restrict water movement.)

PRODUCT USES:

A-1 Bio-Retention Soil is a soil medium for Bio-Retention Basins and Swales which helps remove contaminants from storm water runoff as required by the State of California Regional Water Quality Control Board and other government agencies charged with enforcement of these requirements. The ultimate goal is to help prevent contamination of the downstream beneficial water sources of the State.

(***NOTE:** All materials should be sampled, submitted, and approved prior to shipment or installation as job plans and specifications **VARY GREATLY!** It is the customer's responsibility to assure the soil is approved **BEFORE** installation!

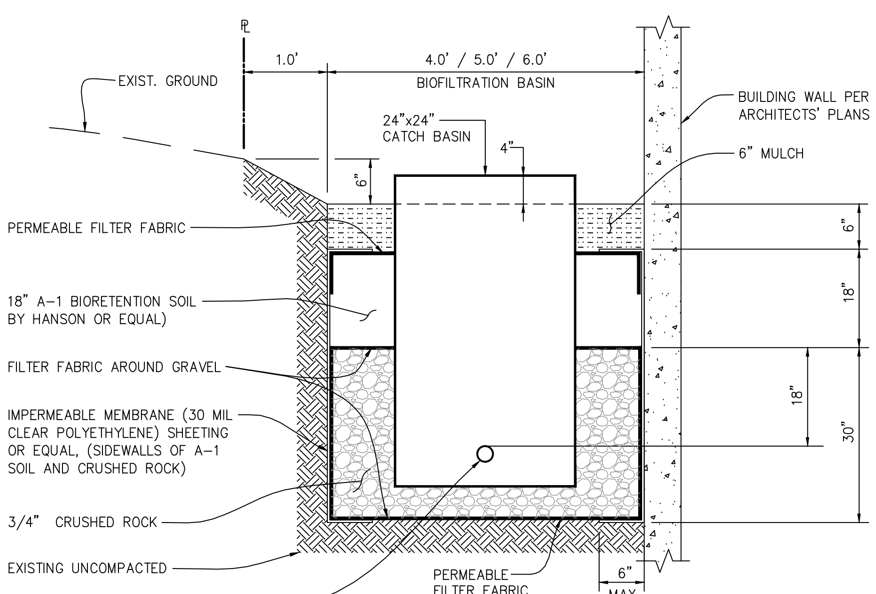
INSTALLATION:

A-1 Bio-Retention Soil should be installed per construction plans or engineers specifications. Compaction should be avoided and ideally the soil should be installed at less than optimum moisture.

A-1 Bioswale Soil is a locally available mix that is a reasonably priced solution for architects and engineers designing project to achieve LEED credits and certification as well as compliance with local and state storm drain requirements.

- Sustainable Sites Credit 5.1 Site Development - Protect / Restore Habitat
- Sustainable Sites Credit 6.1 Storm Water Design - Quality Control
- Sustainable Sites Credit 6.2 Storm Water Design - Quality Control
- Water Effiiency Prerequisite Water Use Reduction - 20% Reduction
- Water Efficiency Credit 1 - Water Efficiency Landscaping
- Material and Resources Credit 5 - Regional Materials
- Innovation in Design - Protect & Restore Habitat

POLLUTANT SOURCE AREAS	SOURCE AREAS	LOCATION
a.ON-SITE STORM DRAIN INLETS	• All inlets will be marked with the words "NO Dumping! Flows to River" or similar. • Maintain and periodically repaint or replace inlet markings. • Provide storm water pollution prevention information to new site owners, lessees, or operators. • See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com. • Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."	DMA-1
b.SIDEWALK AND WALKWAYS	• Sidewalks, and parking lots will be swept regularly to prevent the accumulation of litter and debris. • Debris from pressure washing will be collected to prevent entry into the storm drain system. Washwater containing any clean agent or degreaser will be collected and discharged to the sanitary sewer and not discharged to a storm drain.	DMA-1



BIOFILTRATION BASIN-BMP 1

NO SCALE
CASQA STD. TC-32

NOTE: GRADATION OF A-1 SOIL AND SIZE OF GRAVEL TO BE APPROVED BY SOILS ENGINEER. PRIOR TO BACKFILLING, CALL FOR INSPECTION

LEGEND

	SYMBOL
PROPOSED 2"-3" PVC SIDEWALK UNDERDRAIN	
PROPOSED PRIVATE CATCH BASIN	
LIMITS OF DMA-1	
PROPOSED VAULT	
PROPOSED TYPE "A" CURB OUTLET	
PROPOSED PRIVATE 2" FORCE MAIN	FM
PROPOSED PRIVATE STORM DRAIN PIPE	SD
PROPOSED PRIVATE 0.48"ø ORIFICE STORM DRAIN PIPE	
PROPOSED PRIVATE PERFORATED PIPE	
PROPOSED IMPERVIOUS AREA	
PROPOSED BIOFILTRATION AREA	
PROPOSED PLANTER AREA	
PROPOSED PERMEABLE CONCRETE OR PERMEABLE PAVERS	
DIRECTION OF FLOW	
PLACE PLACARD SIGN ON CONCRETE ("NO DUMPING - DRAINS TO OCEAN")	S

NOTES

1. HYDROLOGIC SOIL GROUP : NRCS TYPE D [1]
2. DEPTH OF GROUNDWATER=GREATER THAN 20 FEET BELOW EXISTING GROUND.
3. POTENTIAL POLLUTANTS FROM SITE:
   -SEDIMENT
   -NUTRIENTS
   -TRASH AND DEBRIS
   -OIL AND GREASE
   -PESTICIDES
   -BACTERIA AND VIRUSES
4. RECOMMENDED EQUIPMENT TO PERFORM MAINTENANCE:
   -LANDSCAPE EQUIPMENT
5. 5. POLLUTANT SOURCE AREAS, SOURCE CONTROL AND LOCATION OF FOLLOWS: [2]

COLOR	DMA NO.	LEGEND	DMA AREA (SQ. FT.)	DMA TYPE	AREA TREATED (SQ. FT.)
	1-A	IMPERVIOUS AREA	9,470	DRAINS TO BMP	9,470
	1-B	PLANTER AREA	1,093	SELF-MITIGATING	1,093
	1-C	PERMEABLE CONCRETE OR PERMEABLE PAVERS	368	SELF-MITIGATING	368
	1-D	BIORETENTION AREA	1,078	SELF-MITIGATING	1,078
		TOTAL	12,009		12,009

IMPERVIOUS AREA = 9,470 SQ. FT. = 0.22 ACRES.
PERVIOUS AREA = 2,539 SQ. FT. = 0.06 ACRES.
TOTAL =12,009 SQ. FT. = 0.28 ACRES.

SHEET 1 OF 1

SHEET TITLE: HYDROMODIFYCATION MANAGEMENT EXHIBIT AND BMP

PROJECT NAME: 6213 MONTEZUMA APARTMENTS

A.P.N. 467-171-28-00 & 467-171-29-00

Project No. 999-15

DESIGNER JHP | DRAWN DHN | CHECKED JHP | DATE 03-09-17

JORGE H. PALACIOS
R.C.E. 32031
DATE: 03-09-17

NO. | DATE | BY

CIVIL ENGINEERING ▪ LAND PLANNING ▪ SURVEYING ▪ 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111 ▪ (858)569-7377 FAX (858)569-0830

SDHM 3.0

PROJECT REPORT

SDHM 3.0
PROJECT REPORT

Project Name: JP Montezuma Bio and Vault
Site Name: JP Engineering
Site Address: 6213 Montezuma Rd
City : San Diego
Report Date: 3/2/2017
Gage : FASHIONV
Data Start : 10/01/1971
Data End : 09/30/2004
Precip Scale: 1.00
Version Date: 2016/05/11

Low Flow Threshold for POC 1 : 10 Percent of the 2 Year

High Flow Threshold for POC 1: 10 year

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre
D,NatVeg,Flat	.276
Pervious Total	0.276

Impervious Land Use	acre
Impervious Total	0
Basin Total	0.276

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	acre

D,Urban,Flat .036

Pervious Total 0.036

Impervious Land Use	**acre**
IMPERVIOUS-FLAT	0.217

Impervious Total 0.217

Basin Total 0.253

Element Flows To:

Surface	**Interflow**	**Groundwater**
Surface iofiltration	Surface iofiltration	

Name : Biofiltration
Bottom Length: 180.00 ft.
Bottom Width: 5.00 ft.
Material thickness of first layer: 0.5
Material type for first layer: Amended 1.5 in/hr
Material thickness of second layer: 1.5
Material type for second layer: Amended 5 in/hr
Material thickness of third layer: 2.5
Material type for third layer: GRAVEL
Underdrain used
Underdrain Diameter (feet): 0.34
Orifice Diameter (in.): 4
Offset (in.): 0
Flow Through Underdrain (ac-ft.): 4.929
Total Outflow (ac-ft.): 5.037
Percent Through Underdrain: 97.86
Discharge Structure
Riser Height: 0.5 ft.
Riser Diameter: 27 in.

Element Flows To:

Outlet 1	**Outlet 2**
Vault 1	

Biofiltration Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0207	0.0000	0.0000	0.0000
0.0604	0.0207	0.0005	0.0000	0.0000
0.1209	0.0207	0.0009	0.0000	0.0000
0.1813	0.0207	0.0014	0.0000	0.0000
0.2418	0.0207	0.0018	0.0000	0.0000
0.3022	0.0207	0.0023	0.0000	0.0000
0.3626	0.0207	0.0027	0.0000	0.0000
0.4231	0.0207	0.0032	0.0003	0.0000

0.4835	0.0207	0.0036	0.0006	0.0000
0.5440	0.0207	0.0042	0.0012	0.0000
0.6044	0.0207	0.0047	0.0021	0.0000
0.6648	0.0207	0.0052	0.0032	0.0000
0.7253	0.0207	0.0057	0.0042	0.0000
0.7857	0.0207	0.0063	0.0046	0.0000
0.8462	0.0207	0.0068	0.0064	0.0000
0.9066	0.0207	0.0073	0.0074	0.0000
0.9670	0.0207	0.0078	0.0078	0.0000
1.0275	0.0207	0.0084	0.0086	0.0000
1.0879	0.0207	0.0089	0.0112	0.0000
1.1484	0.0207	0.0094	0.0122	0.0000
1.2088	0.0207	0.0099	0.0141	0.0000
1.2692	0.0207	0.0105	0.0175	0.0000
1.3297	0.0207	0.0110	0.0188	0.0000
1.3901	0.0207	0.0115	0.0190	0.0000
1.4505	0.0207	0.0120	0.0214	0.0000
1.5110	0.0207	0.0126	0.0257	0.0000
1.5714	0.0207	0.0131	0.0273	0.0000
1.6319	0.0207	0.0136	0.0305	0.0000
1.6923	0.0207	0.0141	0.0358	0.0000
1.7527	0.0207	0.0147	0.0366	0.0000
1.8132	0.0207	0.0152	0.0378	0.0000
1.8736	0.0207	0.0157	0.0410	0.0000
1.9341	0.0207	0.0162	0.0410	0.0000
1.9945	0.0207	0.0168	0.0410	0.0000
2.0549	0.0207	0.0173	0.0410	0.0000
2.1154	0.0207	0.0178	0.0410	0.0000
2.1758	0.0207	0.0183	0.0410	0.0000
2.2363	0.0207	0.0188	0.0410	0.0000
2.2967	0.0207	0.0193	0.0410	0.0000
2.3571	0.0207	0.0199	0.0410	0.0000
2.4176	0.0207	0.0204	0.0410	0.0000
2.4780	0.0207	0.0209	0.0410	0.0000
2.5385	0.0207	0.0214	0.0410	0.0000
2.5989	0.0207	0.0219	0.0410	0.0000
2.6593	0.0207	0.0225	0.0410	0.0000
2.7198	0.0207	0.0230	0.0410	0.0000
2.7802	0.0207	0.0235	0.0410	0.0000
2.8407	0.0207	0.0240	0.0410	0.0000
2.9011	0.0207	0.0245	0.0410	0.0000
2.9615	0.0207	0.0250	0.0410	0.0000
3.0220	0.0207	0.0256	0.0410	0.0000
3.0824	0.0207	0.0261	0.0410	0.0000
3.1429	0.0207	0.0266	0.0410	0.0000
3.2033	0.0207	0.0271	0.0410	0.0000
3.2637	0.0207	0.0276	0.0410	0.0000
3.3242	0.0207	0.0282	0.0410	0.0000
3.3846	0.0207	0.0287	0.0410	0.0000
3.4451	0.0207	0.0292	0.0410	0.0000
3.5055	0.0207	0.0297	0.0410	0.0000
3.5659	0.0207	0.0302	0.0410	0.0000
3.6264	0.0207	0.0308	0.0410	0.0000
3.6868	0.0207	0.0313	0.0410	0.0000
3.7473	0.0207	0.0318	0.0410	0.0000
3.8077	0.0207	0.0323	0.0410	0.0000
3.8681	0.0207	0.0328	0.0410	0.0000
3.9286	0.0207	0.0333	0.0410	0.0000
3.9890	0.0207	0.0339	0.0410	0.0000

4.0495	0.0207	0.0344	0.0410	0.0000
4.1099	0.0207	0.0349	0.0410	0.0000
4.1703	0.0207	0.0354	0.0410	0.0000
4.2308	0.0207	0.0359	0.0410	0.0000
4.2912	0.0207	0.0365	0.0410	0.0000
4.3516	0.0207	0.0370	0.0410	0.0000
4.4121	0.0207	0.0375	0.0410	0.0000
4.4725	0.0207	0.0380	0.0410	0.0000
4.5000	0.0207	0.0382	0.0410	0.0000

Surface iofiltration Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Wetted Surface
4.5000	0.0207	0.0382	0.0000	0.0410	0.0000
4.5604	0.0207	0.0395	0.0000	0.0410	0.0000
4.6209	0.0207	0.0407	0.0000	0.0410	0.0000
4.6813	0.0207	0.0420	0.0000	0.0410	0.0000
4.7418	0.0207	0.0432	0.0000	0.0410	0.0000
4.8022	0.0207	0.0445	0.0000	0.0410	0.0000
4.8626	0.0207	0.0457	0.0000	0.0410	0.0000
4.9231	0.0207	0.0470	0.0000	0.0410	0.0000
4.9835	0.0207	0.0482	0.0000	0.0410	0.0000
5.0440	0.0207	0.0495	0.2200	0.0410	0.0000
5.1044	0.0207	0.0507	0.8044	0.0410	0.0000
5.1648	0.0207	0.0520	1.5933	0.0410	0.0000
5.2253	0.0207	0.0532	2.5373	0.0410	0.0000
5.2857	0.0207	0.0545	3.6035	0.0410	0.0000
5.3462	0.0207	0.0557	4.7633	0.0410	0.0000
5.4066	0.0207	0.0570	5.9885	0.0410	0.0000
5.4670	0.0207	0.0582	7.2502	0.0410	0.0000
5.5000	0.0207	0.0589	8.5190	0.0410	0.0000

Name : Surface iofiltration

Element Flows To:

Outlet 1	**Outlet 2**
Vault 1	Biofiltration

Name : Vault 1
Width : 18 ft.
Length : 18.5 ft.
Depth: 4 ft.
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 12 in.
Notch Type: Rectangular
Notch Width: 1.000 ft.
Notch Height: 0.023 ft.
Orifice 1 Diameter: 0.484 in. **Elevation:** 0 ft.

Element Flows To:

Outlet 1 **Outlet 2**

Vault Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.007	0.000	0.000	0.000
0.0444	0.007	0.000	0.001	0.000
0.0889	0.007	0.000	0.001	0.000
0.1333	0.007	0.001	0.002	0.000
0.1778	0.007	0.001	0.002	0.000
0.2222	0.007	0.001	0.003	0.000
0.2667	0.007	0.002	0.003	0.000
0.3111	0.007	0.002	0.003	0.000
0.3556	0.007	0.002	0.003	0.000
0.4000	0.007	0.003	0.004	0.000
0.4444	0.007	0.003	0.004	0.000
0.4889	0.007	0.003	0.004	0.000
0.5333	0.007	0.004	0.004	0.000
0.5778	0.007	0.004	0.004	0.000
0.6222	0.007	0.004	0.005	0.000
0.6667	0.007	0.005	0.005	0.000
0.7111	0.007	0.005	0.005	0.000
0.7556	0.007	0.005	0.005	0.000
0.8000	0.007	0.006	0.005	0.000
0.8444	0.007	0.006	0.005	0.000
0.8889	0.007	0.006	0.006	0.000
0.9333	0.007	0.007	0.006	0.000
0.9778	0.007	0.007	0.006	0.000
1.0222	0.007	0.007	0.006	0.000
1.0667	0.007	0.008	0.006	0.000
1.1111	0.007	0.008	0.006	0.000
1.1556	0.007	0.008	0.006	0.000
1.2000	0.007	0.009	0.007	0.000
1.2444	0.007	0.009	0.007	0.000
1.2889	0.007	0.009	0.007	0.000
1.3333	0.007	0.010	0.007	0.000
1.3778	0.007	0.010	0.007	0.000
1.4222	0.007	0.010	0.007	0.000
1.4667	0.007	0.011	0.007	0.000
1.5111	0.007	0.011	0.007	0.000
1.5556	0.007	0.011	0.007	0.000
1.6000	0.007	0.012	0.008	0.000
1.6444	0.007	0.012	0.008	0.000
1.6889	0.007	0.012	0.008	0.000
1.7333	0.007	0.013	0.008	0.000
1.7778	0.007	0.013	0.008	0.000
1.8222	0.007	0.013	0.008	0.000
1.8667	0.007	0.014	0.008	0.000
1.9111	0.007	0.014	0.008	0.000
1.9556	0.007	0.014	0.008	0.000
2.0000	0.007	0.015	0.009	0.000
2.0444	0.007	0.015	0.009	0.000
2.0889	0.007	0.016	0.009	0.000
2.1333	0.007	0.016	0.009	0.000
2.1778	0.007	0.016	0.009	0.000
2.2222	0.007	0.017	0.009	0.000
2.2667	0.007	0.017	0.009	0.000
2.3111	0.007	0.017	0.009	0.000
2.3556	0.007	0.018	0.009	0.000
2.4000	0.007	0.018	0.009	0.000
2.4444	0.007	0.018	0.009	0.000

2.4889	0.007	0.019	0.010	0.000
2.5333	0.007	0.019	0.010	0.000
2.5778	0.007	0.019	0.010	0.000
2.6222	0.007	0.020	0.010	0.000
2.6667	0.007	0.020	0.010	0.000
2.7111	0.007	0.020	0.010	0.000
2.7556	0.007	0.021	0.010	0.000
2.8000	0.007	0.021	0.010	0.000
2.8444	0.007	0.021	0.010	0.000
2.8889	0.007	0.022	0.010	0.000
2.9333	0.007	0.022	0.010	0.000
2.9778	0.007	0.022	0.011	0.000
3.0222	0.007	0.023	0.057	0.000
3.0667	0.007	0.023	0.204	0.000
3.1111	0.007	0.023	0.412	0.000
3.1556	0.007	0.024	0.660	0.000
3.2000	0.007	0.024	0.930	0.000
3.2444	0.007	0.024	1.206	0.000
3.2889	0.007	0.025	1.470	0.000
3.3333	0.007	0.025	1.706	0.000
3.3778	0.007	0.025	1.902	0.000
3.4222	0.007	0.026	2.052	0.000
3.4667	0.007	0.026	2.161	0.000
3.5111	0.007	0.026	2.275	0.000
3.5556	0.007	0.027	2.371	0.000
3.6000	0.007	0.027	2.463	0.000
3.6444	0.007	0.027	2.551	0.000
3.6889	0.007	0.028	2.637	0.000
3.7333	0.007	0.028	2.720	0.000
3.7778	0.007	0.028	2.801	0.000
3.8222	0.007	0.029	2.879	0.000
3.8667	0.007	0.029	2.956	0.000
3.9111	0.007	0.029	3.030	0.000
3.9556	0.007	0.030	3.102	0.000
4.0000	0.007	0.030	3.173	0.000
4.0444	0.007	0.030	3.243	0.000
4.0889	0.000	0.000	3.310	0.000

ANALYSIS RESULTS

Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.276
Total Impervious Area:0

Mitigated Landuse Totals for POC #1
Total Pervious Area:0.036
Total Impervious Area:0.217

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.017568

5 year	0.054262
10 year	0.073983
25 year	0.11202

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.00997
5 year	0.01473
10 year	0.031635
25 year	0.041135

POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0115	42	43	102	Pass
0.0133	40	35	87	Pass
0.0150	36	27	75	Pass
0.0168	33	26	78	Pass
0.0186	31	19	61	Pass
0.0203	29	16	55	Pass
0.0221	26	15	57	Pass
0.0238	24	13	54	Pass
0.0256	21	12	57	Pass
0.0274	19	11	57	Pass
0.0291	19	10	52	Pass
0.0309	19	9	47	Pass
0.0327	19	8	42	Pass
0.0344	18	7	38	Pass
0.0362	18	5	27	Pass
0.0379	17	4	23	Pass
0.0397	16	3	18	Pass
0.0415	14	1	7	Pass
0.0432	12	0	0	Pass
0.0450	10	0	0	Pass
0.0468	10	0	0	Pass
0.0485	10	0	0	Pass
0.0503	10	0	0	Pass
0.0520	9	0	0	Pass
0.0538	9	0	0	Pass
0.0556	7	0	0	Pass
0.0573	6	0	0	Pass
0.0591	5	0	0	Pass
0.0609	5	0	0	Pass
0.0626	5	0	0	Pass
0.0644	5	0	0	Pass
0.0661	4	0	0	Pass
0.0679	4	0	0	Pass
0.0697	4	0	0	Pass
0.0714	4	0	0	Pass
0.0732	4	0	0	Pass
0.0750	4	0	0	Pass
0.0767	4	0	0	Pass

0.0785	4	0	0	Pass
0.0802	4	0	0	Pass
0.0820	4	0	0	Pass
0.0838	4	0	0	Pass
0.0855	4	0	0	Pass
0.0873	3	0	0	Pass
0.0891	3	0	0	Pass
0.0908	3	0	0	Pass
0.0926	3	0	0	Pass
0.0943	3	0	0	Pass
0.0961	3	0	0	Pass
0.0979	3	0	0	Pass
0.0996	3	0	0	Pass
0.1014	3	0	0	Pass
0.1032	3	0	0	Pass
0.1049	2	0	0	Pass
0.1067	2	0	0	Pass
0.1084	2	0	0	Pass
0.1102	1	0	0	Pass
0.1120	1	0	0	Pass
0.1137	1	0	0	Pass
0.1155	1	0	0	Pass
0.1173	1	0	0	Pass
0.1190	1	0	0	Pass
0.1208	1	0	0	Pass
0.1225	1	0	0	Pass
0.1243	1	0	0	Pass
0.1261	1	0	0	Pass
0.1278	1	0	0	Pass
0.1296	0	0	0	Pass
0.1314	0	0	0	Pass
0.1331	0	0	0	Pass
0.1349	0	0	0	Pass
0.1366	0	0	0	Pass
0.1384	0	0	0	Pass
0.1402	0	0	0	Pass
0.1419	0	0	0	Pass
0.1437	0	0	0	Pass
0.1455	0	0	0	Pass
0.1472	0	0	0	Pass
0.1490	0	0	0	Pass
0.1507	0	0	0	Pass
0.1525	0	0	0	Pass
0.1543	0	0	0	Pass
0.1560	0	0	0	Pass
0.1578	0	0	0	Pass
0.1596	0	0	0	Pass
0.1613	0	0	0	Pass
0.1631	0	0	0	Pass
0.1648	0	0	0	Pass
0.1666	0	0	0	Pass
0.1684	0	0	0	Pass
0.1701	0	0	0	Pass
0.1719	0	0	0	Pass
0.1737	0	0	0	Pass
0.1754	0	0	0	Pass
0.1772	0	0	0	Pass
0.1789	0	0	0	Pass
0.1807	0	0	0	Pass

0.1825	0	0	0	Pass
0.1842	0	0	0	Pass
0.1860	0	0	0	Pass

Drawdown Time Results

Perlnd and Implnd Changes

No changes have been made.

General Model Information

Project Name:	JP Montezuma Bio and Vault
Site Name:	JP Engineering
Site Address:	6213 Montezuma Rd
City:	San Diego
Report Date:	3/1/2017
Gage:	FASHIONV
Data Start:	10/01/1968
Data End:	09/30/2004
Timestep:	Hourly
Precip Scale:	1.000
Version Date:	2016/11/23

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data
Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
D,NatVeg,Flat	0.276
Pervious Total	0.276
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.276

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
D,Urban,Flat	0.036
Pervious Total	0.036
Impervious Land Use	acre
IMPERVIOUS-FLAT	0.217
Impervious Total	0.217
Basin Total	0.253

Element Flows To:

Surface	Interflow	Groundwater
Surface iofiltration	Surface iofiltration	

Routing Elements
Predeveloped Routing

Mitigated Routing

Biofiltration

Bottom Length:		180.00 ft.
Bottom Width:		5.00 ft.
Material thickness of first layer:		0.5
Material type for first layer:		Amended 1.5 in/hr
Material thickness of second layer:		1.5
Material type for second layer:		Amended 5 in/hr
Material thickness of third layer:		2.5
Material type for third layer:		GRAVEL
Underdrain used		
Underdrain Diameter (feet):		0.34
Orifice Diameter (in.):		4
Offset (in.):		0
Flow Through Underdrain (ac-ft.):		4.929
Total Outflow (ac-ft.):		5.037
Percent Through Underdrain:		97.86
Discharge Structure		
Riser Height:	0.5 ft.	
Riser Diameter:	27 in.	
Element Flows To:		
Outlet 1	Outlet 2	
Vault 1		

Landscape Swale Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.0207	0.0000	0.0000	0.0000
0.0604	0.0207	0.0005	0.0000	0.0000
0.1209	0.0207	0.0009	0.0000	0.0000
0.1813	0.0207	0.0014	0.0000	0.0000
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0.3022	0.0207	0.0023	0.0000	0.0000
0.3626	0.0207	0.0027	0.0000	0.0000
0.4231	0.0207	0.0032	0.0003	0.0000
0.4835	0.0207	0.0036	0.0006	0.0000
0.5440	0.0207	0.0042	0.0012	0.0000
0.6044	0.0207	0.0047	0.0021	0.0000
0.6648	0.0207	0.0052	0.0032	0.0000
0.7253	0.0207	0.0057	0.0042	0.0000
0.7857	0.0207	0.0063	0.0046	0.0000
0.8462	0.0207	0.0068	0.0064	0.0000
0.9066	0.0207	0.0073	0.0074	0.0000
0.9670	0.0207	0.0078	0.0078	0.0000
1.0275	0.0207	0.0084	0.0086	0.0000
1.0879	0.0207	0.0089	0.0112	0.0000
1.1484	0.0207	0.0094	0.0122	0.0000
1.2088	0.0207	0.0099	0.0141	0.0000
1.2692	0.0207	0.0105	0.0175	0.0000
1.3297	0.0207	0.0110	0.0188	0.0000
1.3901	0.0207	0.0115	0.0190	0.0000
1.4505	0.0207	0.0120	0.0214	0.0000
1.5110	0.0207	0.0126	0.0257	0.0000
1.5714	0.0207	0.0131	0.0273	0.0000
1.6319	0.0207	0.0136	0.0305	0.0000
1.6923	0.0207	0.0141	0.0358	0.0000

1.7527	0.0207	0.0147	0.0366	0.0000
1.8132	0.0207	0.0152	0.0378	0.0000
1.8736	0.0207	0.0157	0.0410	0.0000
1.9341	0.0207	0.0162	0.0410	0.0000
1.9945	0.0207	0.0168	0.0410	0.0000
2.0549	0.0207	0.0173	0.0410	0.0000
2.1154	0.0207	0.0178	0.0410	0.0000
2.1758	0.0207	0.0183	0.0410	0.0000
2.2363	0.0207	0.0188	0.0410	0.0000
2.2967	0.0207	0.0193	0.0410	0.0000
2.3571	0.0207	0.0199	0.0410	0.0000
2.4176	0.0207	0.0204	0.0410	0.0000
2.4780	0.0207	0.0209	0.0410	0.0000
2.5385	0.0207	0.0214	0.0410	0.0000
2.5989	0.0207	0.0219	0.0410	0.0000
2.6593	0.0207	0.0225	0.0410	0.0000
2.7198	0.0207	0.0230	0.0410	0.0000
2.7802	0.0207	0.0235	0.0410	0.0000
2.8407	0.0207	0.0240	0.0410	0.0000
2.9011	0.0207	0.0245	0.0410	0.0000
2.9615	0.0207	0.0250	0.0410	0.0000
3.0220	0.0207	0.0256	0.0410	0.0000
3.0824	0.0207	0.0261	0.0410	0.0000
3.1429	0.0207	0.0266	0.0410	0.0000
3.2033	0.0207	0.0271	0.0410	0.0000
3.2637	0.0207	0.0276	0.0410	0.0000
3.3242	0.0207	0.0282	0.0410	0.0000
3.3846	0.0207	0.0287	0.0410	0.0000
3.4451	0.0207	0.0292	0.0410	0.0000
3.5055	0.0207	0.0297	0.0410	0.0000
3.5659	0.0207	0.0302	0.0410	0.0000
3.6264	0.0207	0.0308	0.0410	0.0000
3.6868	0.0207	0.0313	0.0410	0.0000
3.7473	0.0207	0.0318	0.0410	0.0000
3.8077	0.0207	0.0323	0.0410	0.0000
3.8681	0.0207	0.0328	0.0410	0.0000
3.9286	0.0207	0.0333	0.0410	0.0000
3.9890	0.0207	0.0339	0.0410	0.0000
4.0495	0.0207	0.0344	0.0410	0.0000
4.1099	0.0207	0.0349	0.0410	0.0000
4.1703	0.0207	0.0354	0.0410	0.0000
4.2308	0.0207	0.0359	0.0410	0.0000
4.2912	0.0207	0.0365	0.0410	0.0000
4.3516	0.0207	0.0370	0.0410	0.0000
4.4121	0.0207	0.0375	0.0410	0.0000
4.4725	0.0207	0.0380	0.0410	0.0000
4.5000	0.0207	0.0382	0.0410	0.0000

Landscape Swale Hydraulic Table

Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**To Amended(cfs)**	**Infilt(cfs)**
4.5000	0.0207	0.0382	0.0000	0.0410	0.0000
4.5604	0.0207	0.0395	0.0000	0.0410	0.0000
4.6209	0.0207	0.0407	0.0000	0.0410	0.0000
4.6813	0.0207	0.0420	0.0000	0.0410	0.0000
4.7418	0.0207	0.0432	0.0000	0.0410	0.0000
4.8022	0.0207	0.0445	0.0000	0.0410	0.0000
4.8626	0.0207	0.0457	0.0000	0.0410	0.0000
4.9231	0.0207	0.0470	0.0000	0.0410	0.0000

4.9835	0.0207	0.0482	0.0000	0.0410	0.0000
5.0440	0.0207	0.0495	0.2200	0.0410	0.0000
5.1044	0.0207	0.0507	0.8044	0.0410	0.0000
5.1648	0.0207	0.0520	1.5933	0.0410	0.0000
5.2253	0.0207	0.0532	2.5373	0.0410	0.0000
5.2857	0.0207	0.0545	3.6035	0.0410	0.0000
5.3462	0.0207	0.0557	4.7633	0.0410	0.0000
5.4066	0.0207	0.0570	5.9885	0.0410	0.0000
5.4670	0.0207	0.0582	7.2502	0.0410	0.0000
5.5000	0.0207	0.0589	8.5190	0.0410	0.0000

Surface iofiltration

Element Flows To:

Outlet 1	Outlet 2
Vault 1	Biofiltration

Vault 1

Width: 18 ft.
Length: 18.5 ft.
Depth: 4 ft.
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 12 in.
Notch Type: Rectangular
Notch Width: 1.000 ft.
Notch Height: 0.023 ft.
Orifice 1 Diameter: 0.484 in. Elevation:0 ft.
Element Flows To:
Outlet 1 Outlet 2

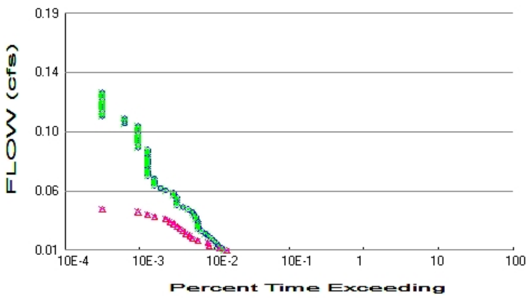
Vault Hydraulic Table

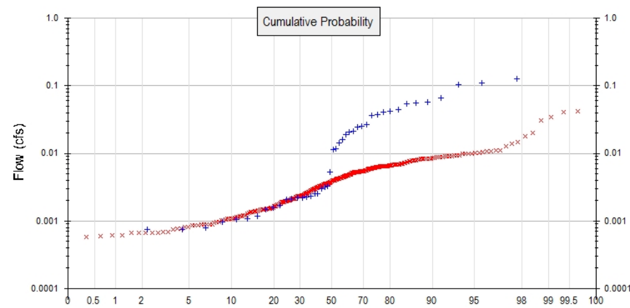
Stage(feet)	**Area(ac.)**	**Volume(ac-ft.)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.007	0.000	0.000	0.000
0.0444	0.007	0.000	0.001	0.000
0.0889	0.007	0.000	0.001	0.000
0.1333	0.007	0.001	0.002	0.000
0.1778	0.007	0.001	0.002	0.000
0.2222	0.007	0.001	0.003	0.000
0.2667	0.007	0.002	0.003	0.000
0.3111	0.007	0.002	0.003	0.000
0.3556	0.007	0.002	0.003	0.000
0.4000	0.007	0.003	0.004	0.000
0.4444	0.007	0.003	0.004	0.000
0.4889	0.007	0.003	0.004	0.000
0.5333	0.007	0.004	0.004	0.000
0.5778	0.007	0.004	0.004	0.000
0.6222	0.007	0.004	0.005	0.000
0.6667	0.007	0.005	0.005	0.000
0.7111	0.007	0.005	0.005	0.000
0.7556	0.007	0.005	0.005	0.000
0.8000	0.007	0.006	0.005	0.000
0.8444	0.007	0.006	0.005	0.000
0.8889	0.007	0.006	0.006	0.000
0.9333	0.007	0.007	0.006	0.000
0.9778	0.007	0.007	0.006	0.000
1.0222	0.007	0.007	0.006	0.000
1.0667	0.007	0.008	0.006	0.000
1.1111	0.007	0.008	0.006	0.000
1.1556	0.007	0.008	0.006	0.000
1.2000	0.007	0.009	0.007	0.000
1.2444	0.007	0.009	0.007	0.000
1.2889	0.007	0.009	0.007	0.000
1.3333	0.007	0.010	0.007	0.000
1.3778	0.007	0.010	0.007	0.000
1.4222	0.007	0.010	0.007	0.000
1.4667	0.007	0.011	0.007	0.000
1.5111	0.007	0.011	0.007	0.000
1.5556	0.007	0.011	0.007	0.000
1.6000	0.007	0.012	0.008	0.000
1.6444	0.007	0.012	0.008	0.000
1.6889	0.007	0.012	0.008	0.000

1.7333	0.007	0.013	0.008	0.000
1.7778	0.007	0.013	0.008	0.000
1.8222	0.007	0.013	0.008	0.000
1.8667	0.007	0.014	0.008	0.000
1.9111	0.007	0.014	0.008	0.000
1.9556	0.007	0.014	0.008	0.000
2.0000	0.007	0.015	0.009	0.000
2.0444	0.007	0.015	0.009	0.000
2.0889	0.007	0.016	0.009	0.000
2.1333	0.007	0.016	0.009	0.000
2.1778	0.007	0.016	0.009	0.000
2.2222	0.007	0.017	0.009	0.000
2.2667	0.007	0.017	0.009	0.000
2.3111	0.007	0.017	0.009	0.000
2.3556	0.007	0.018	0.009	0.000
2.4000	0.007	0.018	0.009	0.000
2.4444	0.007	0.018	0.009	0.000
2.4889	0.007	0.019	0.010	0.000
2.5333	0.007	0.019	0.010	0.000
2.5778	0.007	0.019	0.010	0.000
2.6222	0.007	0.020	0.010	0.000
2.6667	0.007	0.020	0.010	0.000
2.7111	0.007	0.020	0.010	0.000
2.7556	0.007	0.021	0.010	0.000
2.8000	0.007	0.021	0.010	0.000
2.8444	0.007	0.021	0.010	0.000
2.8889	0.007	0.022	0.010	0.000
2.9333	0.007	0.022	0.010	0.000
2.9778	0.007	0.022	0.011	0.000
3.0222	0.007	0.023	0.057	0.000
3.0667	0.007	0.023	0.204	0.000
3.1111	0.007	0.023	0.412	0.000
3.1556	0.007	0.024	0.660	0.000
3.2000	0.007	0.024	0.930	0.000
3.2444	0.007	0.024	1.206	0.000
3.2889	0.007	0.025	1.470	0.000
3.3333	0.007	0.025	1.706	0.000
3.3778	0.007	0.025	1.902	0.000
3.4222	0.007	0.026	2.052	0.000
3.4667	0.007	0.026	2.161	0.000
3.5111	0.007	0.026	2.275	0.000
3.5556	0.007	0.027	2.371	0.000
3.6000	0.007	0.027	2.463	0.000
3.6444	0.007	0.027	2.551	0.000
3.6889	0.007	0.028	2.637	0.000
3.7333	0.007	0.028	2.720	0.000
3.7778	0.007	0.028	2.801	0.000
3.8222	0.007	0.029	2.879	0.000
3.8667	0.007	0.029	2.956	0.000
3.9111	0.007	0.029	3.030	0.000
3.9556	0.007	0.030	3.102	0.000
4.0000	0.007	0.030	3.173	0.000
4.0444	0.007	0.030	3.243	0.000
4.0889	0.000	0.000	3.310	0.000

Analysis Results

POC 1





+ Predeveloped   x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.276
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.036
Total Impervious Area: 0.217

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.017568
5 year	0.047424
10 year	0.065178
25 year	0.110923

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.009924
5 year	0.014099
10 year	0.030503
25 year	0.041107

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0115	42	46	109	Pass
0.0133	40	37	92	Pass
0.0150	36	27	75	Pass
0.0168	33	26	78	Pass
0.0186	31	19	61	Pass
0.0203	29	16	55	Pass
0.0221	26	15	57	Pass
0.0238	24	13	54	Pass
0.0256	21	12	57	Pass
0.0274	19	11	57	Pass
0.0291	19	10	52	Pass
0.0309	19	9	47	Pass
0.0327	19	8	42	Pass
0.0344	18	7	38	Pass
0.0362	18	5	27	Pass
0.0379	17	4	23	Pass
0.0397	16	3	18	Pass
0.0415	14	1	7	Pass
0.0432	12	0	0	Pass
0.0450	10	0	0	Pass
0.0468	10	0	0	Pass
0.0485	10	0	0	Pass
0.0503	10	0	0	Pass
0.0520	9	0	0	Pass
0.0538	9	0	0	Pass
0.0556	7	0	0	Pass
0.0573	6	0	0	Pass
0.0591	5	0	0	Pass
0.0609	5	0	0	Pass
0.0626	5	0	0	Pass
0.0644	5	0	0	Pass
0.0661	4	0	0	Pass
0.0679	4	0	0	Pass
0.0697	4	0	0	Pass
0.0714	4	0	0	Pass
0.0732	4	0	0	Pass
0.0750	4	0	0	Pass
0.0767	4	0	0	Pass
0.0785	4	0	0	Pass
0.0802	4	0	0	Pass
0.0820	4	0	0	Pass
0.0838	4	0	0	Pass
0.0855	4	0	0	Pass
0.0873	3	0	0	Pass
0.0891	3	0	0	Pass
0.0908	3	0	0	Pass
0.0926	3	0	0	Pass
0.0943	3	0	0	Pass
0.0961	3	0	0	Pass
0.0979	3	0	0	Pass
0.0996	3	0	0	Pass
0.1014	3	0	0	Pass
0.1032	3	0	0	Pass

0.1049	2	0	0	Pass
0.1067	2	0	0	Pass
0.1084	2	0	0	Pass
0.1102	1	0	0	Pass
0.1120	1	0	0	Pass
0.1137	1	0	0	Pass
0.1155	1	0	0	Pass
0.1173	1	0	0	Pass
0.1190	1	0	0	Pass
0.1208	1	0	0	Pass
0.1225	1	0	0	Pass
0.1243	1	0	0	Pass
0.1261	1	0	0	Pass
0.1278	1	0	0	Pass
0.1296	0	0	0	Pass
0.1314	0	0	0	Pass
0.1331	0	0	0	Pass
0.1349	0	0	0	Pass
0.1366	0	0	0	Pass
0.1384	0	0	0	Pass
0.1402	0	0	0	Pass
0.1419	0	0	0	Pass
0.1437	0	0	0	Pass
0.1455	0	0	0	Pass
0.1472	0	0	0	Pass
0.1490	0	0	0	Pass
0.1507	0	0	0	Pass
0.1525	0	0	0	Pass
0.1543	0	0	0	Pass
0.1560	0	0	0	Pass
0.1578	0	0	0	Pass
0.1596	0	0	0	Pass
0.1613	0	0	0	Pass
0.1631	0	0	0	Pass
0.1648	0	0	0	Pass
0.1666	0	0	0	Pass
0.1684	0	0	0	Pass
0.1701	0	0	0	Pass
0.1719	0	0	0	Pass
0.1737	0	0	0	Pass
0.1754	0	0	0	Pass
0.1772	0	0	0	Pass
0.1789	0	0	0	Pass
0.1807	0	0	0	Pass
0.1825	0	0	0	Pass
0.1842	0	0	0	Pass
0.1860	0	0	0	Pass

Water Quality

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

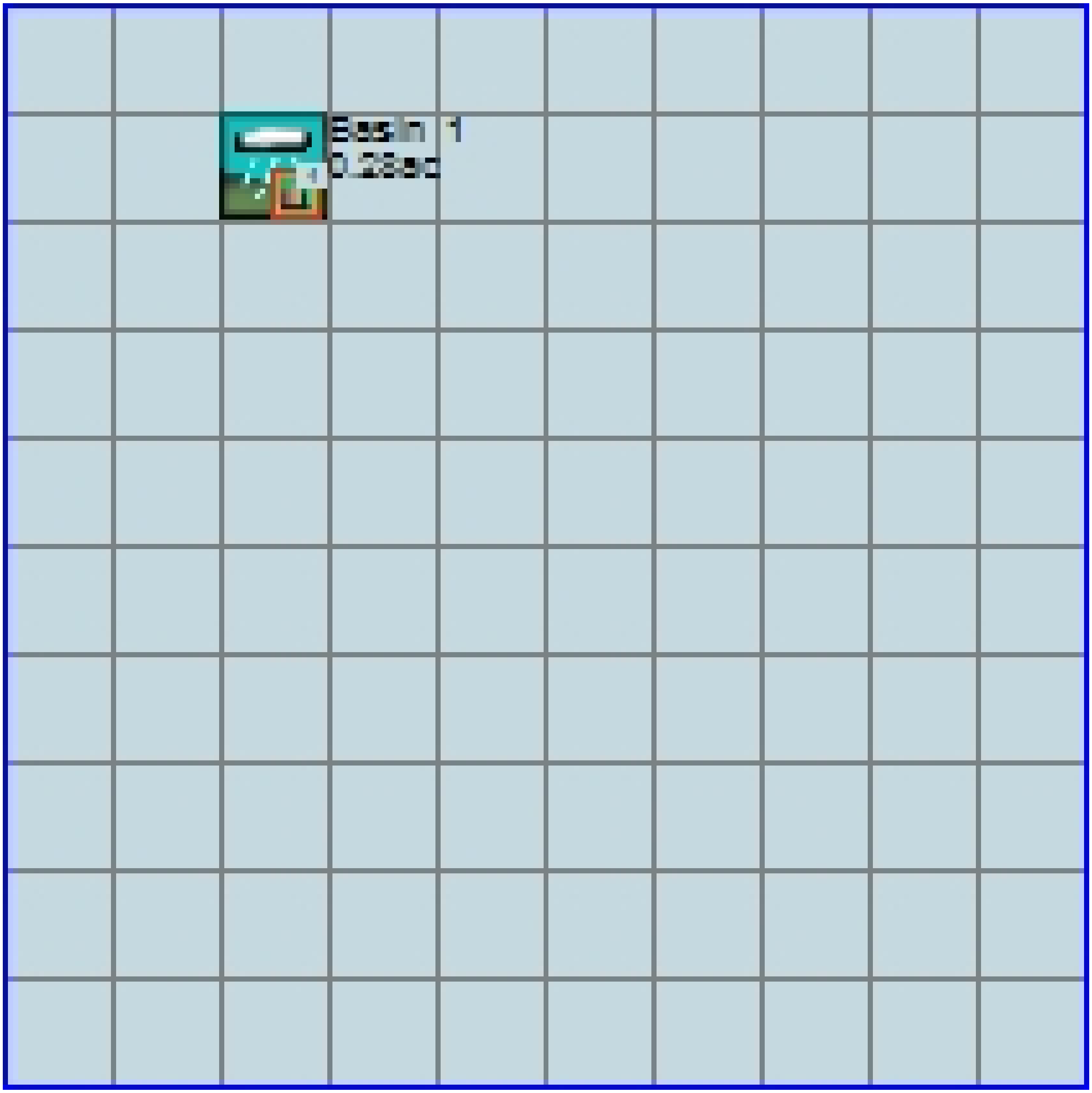
No PERLND changes have been made.

IMPLND Changes

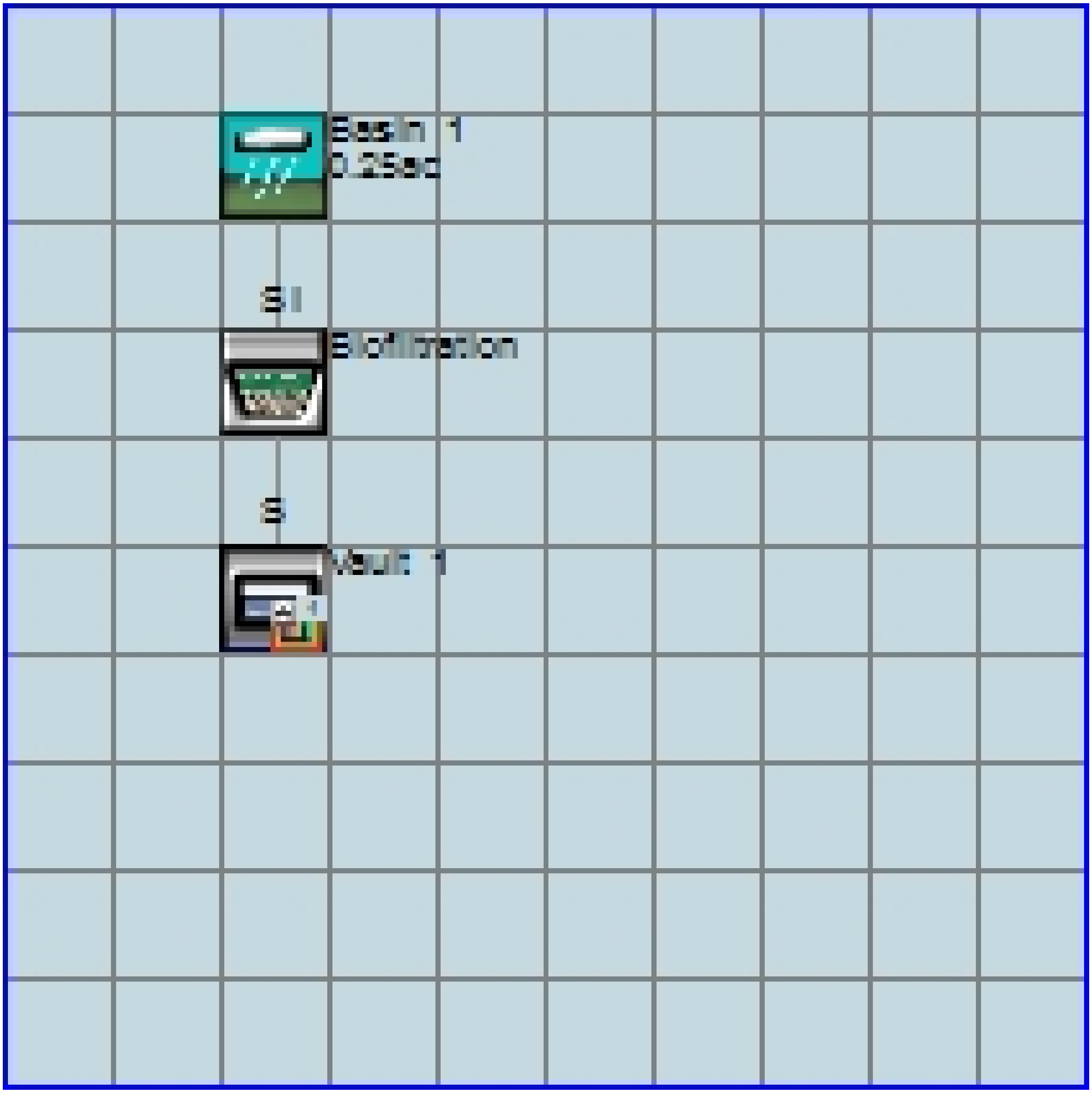
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1968 10 01        END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                   UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                             ***
WDM        26   JP Montezuma Bio and Vault.wdm
MESSU      25   PreJP Montezuma Bio and Vault.MES
           27   PreJP Montezuma Bio and Vault.L61
           28   PreJP Montezuma Bio and Vault.L62
           30   POCJP Montezuma Bio and Vault1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:60
      PERLND      28
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                   MAX                     1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   28      D,NatVeg,Flat          1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   28         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   28         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   28         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   28              0       4.8      0.04       200      0.05       2.5     0.915
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   28              0         0         2         2         0      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                     ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   28              0       0.6       0.2       1.5       0.7         0
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   28       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   28       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
              ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   28              0         0      0.01         0       0.4      0.01         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                      in  out           ***
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
  END IWAT-PARM2
```

```
  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND  28                       0.276     COPY   501     12
PERLND  28                       0.276     COPY   501     13

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                 ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG            ***
                                           in  out                           ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                      ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                         ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit       for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES
```

```
SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1968 10 01        END    2004 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                   UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM        26   JP Montezuma Bio and Vault.wdm
MESSU      25   MitJP Montezuma Bio and Vault.MES
           27   MitJP Montezuma Bio and Vault.L61
           28   MitJP Montezuma Bio and Vault.L62
           30   POCJP Montezuma Bio and Vault1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:60
      PERLND      46
      IMPLND       1
      RCHRES       1
      RCHRES       2
      RCHRES       3
      COPY         1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Vault  1                    MAX                     1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1        1    1
  501        1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   46      D,Urban,Flat           1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   46         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
```

```
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   46         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   46         0    1    1    1    0    0    0    0    1    1    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   46              0       4.8      0.04       200      0.05       2.5     0.915
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   46              0         0         2         2         0      0.05      0.05
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                               ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   46              0       0.6       0.2       1.5       0.7         0
  END PWAT-PARM4
  MON-LZETPARM
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   46       0.4  0.4  0.4  0.4  0.6  0.6  0.6  0.6  0.6  0.4  0.4  0.4
  END MON-LZETPARM
  MON-INTERCEP
    <PLS >      PWATER input info: Part 3         ***
    # -  #  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC  ***
   46       0.1  0.1  0.1  0.1 0.06 0.06 0.06 0.06 0.06  0.1  0.1  0.1
  END MON-INTERCEP

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
              ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   46              0         0      0.15         0         1      0.05         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                      in  out           ***
    1      IMPERVIOUS-FLAT        1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
```

```
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    1
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            100      0.05      0.05       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND  46                       0.036     RCHRES   1      2
PERLND  46                       0.036     RCHRES   1      3
IMPLND   1                       0.217     RCHRES   1      5

******Routing******
RCHRES   2                           1     RCHRES   3      6
RCHRES   2                                 COPY     1     16
RCHRES   1                           1     RCHRES   3      7
RCHRES   1                                 COPY     1     17
RCHRES   1                           1     RCHRES   2      8
RCHRES   3                           1     COPY   501     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   12.1        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                 ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG            ***
                                          in  out                            ***
    1     Surface iofiltra-004    3    1    1    1   28    0    1
    2     Biofiltration           1    1    1    1   28    0    1
    3     Vault  1                1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
    2         1    0    0    0    0    0    0    0    0    0
    3         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY
```

```
  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1       4    0    0    0    0    0    0    0    0    0    1    9
    2       4    0    0    0    0    0    0    0    0    0    1    9
    3       4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                        ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
    1        0  1  0  0    4  5  6  0  0       0  0  0  0  0       2  2  2  2  2
    2        0  1  0  0    4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
    3        0  1  0  0    4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50         ***
  <------><--------><--------><--------><--------><--------><-------->         ***
    1             1      0.01       0.0       0.0       0.5       0.0
    2             2      0.03       0.0       0.0       0.5       0.0
    3             3      0.01       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                           ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
         *** ac-ft     for each possible exit       for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1          0          4.0  5.0  6.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    2          0          4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    3          0          4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE       2
   76    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.020661  0.000000  0.000000
  0.060440  0.020661  0.000456  0.000000
  0.120879  0.020661  0.000912  0.000000
  0.181319  0.020661  0.001367  0.000000
  0.241758  0.020661  0.001823  0.000000
  0.302198  0.020661  0.002279  0.000000
  0.362637  0.020661  0.002735  0.000000
  0.423077  0.020661  0.003191  0.000259
  0.483516  0.020661  0.003646  0.000624
  0.543956  0.020661  0.004171  0.001210
  0.604396  0.020661  0.004695  0.002056
  0.664835  0.020661  0.005220  0.003191
  0.725275  0.020661  0.005744  0.004243
  0.785714  0.020661  0.006269  0.004644
  0.846154  0.020661  0.006793  0.006440
  0.906593  0.020661  0.007318  0.007386
  0.967033  0.020661  0.007842  0.007828
  1.027473  0.020661  0.008367  0.008603
  1.087912  0.020661  0.008891  0.011156
  1.148352  0.020661  0.009416  0.012180
  1.208791  0.020661  0.009940  0.014120
  1.269231  0.020661  0.010465  0.017515
  1.329670  0.020661  0.010989  0.018756
  1.390110  0.020661  0.011513  0.019048
  1.450549  0.020661  0.012038  0.021360
  1.510989  0.020661  0.012562  0.025673
```

```
  1.571429  0.020661  0.013087  0.027253
  1.631868  0.020661  0.013611  0.030473
  1.692308  0.020661  0.014136  0.035776
  1.752747  0.020661  0.014660  0.036612
  1.813187  0.020661  0.015185  0.037793
  1.873626  0.020661  0.015709  0.041010
  1.934066  0.020661  0.016234  0.041010
  1.994505  0.020661  0.016758  0.041010
  2.054945  0.020661  0.017276  0.041010
  2.115385  0.020661  0.017795  0.041010
  2.175824  0.020661  0.018313  0.041010
  2.236264  0.020661  0.018831  0.041010
  2.296703  0.020661  0.019349  0.041010
  2.357143  0.020661  0.019868  0.041010
  2.417582  0.020661  0.020386  0.041010
  2.478022  0.020661  0.020904  0.041010
  2.538462  0.020661  0.021422  0.041010
  2.598901  0.020661  0.021941  0.041010
  2.659341  0.020661  0.022459  0.041010
  2.719780  0.020661  0.022977  0.041010
  2.780220  0.020661  0.023495  0.041010
  2.840659  0.020661  0.024013  0.041010
  2.901099  0.020661  0.024532  0.041010
  2.961538  0.020661  0.025050  0.041010
  3.021978  0.020661  0.025568  0.041010
  3.082418  0.020661  0.026086  0.041010
  3.142857  0.020661  0.026605  0.041010
  3.203297  0.020661  0.027123  0.041010
  3.263736  0.020661  0.027641  0.041010
  3.324176  0.020661  0.028159  0.041010
  3.384615  0.020661  0.028678  0.041010
  3.445055  0.020661  0.029196  0.041010
  3.505495  0.020661  0.029714  0.041010
  3.565934  0.020661  0.030232  0.041010
  3.626374  0.020661  0.030750  0.041010
  3.686813  0.020661  0.031269  0.041010
  3.747253  0.020661  0.031787  0.041010
  3.807692  0.020661  0.032305  0.041010
  3.868132  0.020661  0.032823  0.041010
  3.928571  0.020661  0.033342  0.041010
  3.989011  0.020661  0.033860  0.041010
  4.049451  0.020661  0.034378  0.041010
  4.109890  0.020661  0.034896  0.041010
  4.170330  0.020661  0.035415  0.041010
  4.230769  0.020661  0.035933  0.041010
  4.291209  0.020661  0.036451  0.041010
  4.351648  0.020661  0.036969  0.041010
  4.412088  0.020661  0.037488  0.041010
  4.472527  0.020661  0.038006  0.041010
  4.500000  0.020661  0.080307  0.041010
  END FTABLE  2
  FTABLE      1
   18    6
     Depth      Area    Volume  Outflow1  Outflow2  outflow 3 Velocity  Travel
Time***
      (ft)   (acres) (acre-ft)   (cfs)      (cfs)     (cfs)   (ft/sec)
(Minutes)***
  0.000000  0.020661  0.000000  0.000000  0.000000  0.000000
  0.060440  0.020661  0.001249  0.000000  0.041010  0.000000
  0.120879  0.020661  0.002498  0.000000  0.041010  0.000000
  0.181319  0.020661  0.003746  0.000000  0.041010  0.000000
  0.241758  0.020661  0.004995  0.000000  0.041010  0.000000
  0.302198  0.020661  0.006244  0.000000  0.041010  0.000000
  0.362637  0.020661  0.007493  0.000000  0.041010  0.000000
  0.423077  0.020661  0.008741  0.000000  0.041010  0.000000
  0.483516  0.020661  0.009990  0.000000  0.041010  0.000000
  0.543956  0.020661  0.011239  0.220020  0.041010  0.000000
  0.604396  0.020661  0.012488  0.804417  0.041010  0.000000
  0.664835  0.020661  0.013736  1.593288  0.041010  0.000000
  0.725275  0.020661  0.014985  2.537261  0.041010  0.000000
```

0.785714	0.020661	0.016234	3.603508	0.041010	0.000000
0.846154	0.020661	0.017483	4.763335	0.041010	0.000000
0.906593	0.020661	0.018731	5.988526	0.041010	0.000000
0.967033	0.020661	0.019980	7.250231	0.041010	0.000000
1.000000	0.020661	0.020661	8.518959	0.041010	0.000000

END FTABLE 1
FTABLE 3
92 4

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.007645	0.000000	0.000000		
0.044444	0.007645	0.000340	0.001340		
0.088889	0.007645	0.000680	0.001895		
0.133333	0.007645	0.001019	0.002321		
0.177778	0.007645	0.001359	0.002680		
0.222222	0.007645	0.001699	0.002997		
0.266667	0.007645	0.002039	0.003283		
0.311111	0.007645	0.002378	0.003546		
0.355556	0.007645	0.002718	0.003791		
0.400000	0.007645	0.003058	0.004020		
0.444444	0.007645	0.003398	0.004238		
0.488889	0.007645	0.003737	0.004445		
0.533333	0.007645	0.004077	0.004642		
0.577778	0.007645	0.004417	0.004832		
0.622222	0.007645	0.004757	0.005014		
0.666667	0.007645	0.005096	0.005190		
0.711111	0.007645	0.005436	0.005361		
0.755556	0.007645	0.005776	0.005526		
0.800000	0.007645	0.006116	0.005686		
0.844444	0.007645	0.006455	0.005842		
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0.933333	0.007645	0.007135	0.006141		
0.977778	0.007645	0.007475	0.006286		
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END FTABLES

EXT SOURCES
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<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    1              PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    1              IMPLND   1 999 EXTNL  PETINP
WDM     22 IRRG     ENGL    0.7       SAME PERLND  46     EXTNL  SURLI
WDM      2 PREC     ENGL    1              RCHRES   1     EXTNL  PREC
WDM      1 EVAP     ENGL    0.5            RCHRES   1     EXTNL  POTEV
WDM      1 EVAP     ENGL    0.7            RCHRES   2     EXTNL  POTEV

END EXT SOURCES

EXT TARGETS
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<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   3 HYDR   RO     1 1        1      WDM   1004 FLOW     ENGL      REPL
RCHRES   3 HYDR   STAGE  1 1        1      WDM   1005 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     12.1      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     12.1      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
```

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IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK        6
RCHRES     ROFLOW                          RCHRES         INFLOW
  END MASS-LINK    6

  MASS-LINK        7
RCHRES     OFLOW  OVOL   1                 RCHRES         INFLOW IVOL
  END MASS-LINK    7

  MASS-LINK        8
RCHRES     OFLOW  OVOL   2                 RCHRES         INFLOW IVOL
  END MASS-LINK    8

  MASS-LINK       16
RCHRES     ROFLOW                          COPY           INPUT  MEAN
  END MASS-LINK   16

  MASS-LINK       17
RCHRES     OFLOW  OVOL   1                 COPY           INPUT  MEAN
  END MASS-LINK   17

END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

Legal Notice

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6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

JP Engineering
SDHM 3.0

Site:								
Rain Gage:	Fashion Valley							
Soil:	D							
Pre-Veg:	NatVeg							
Slope:	Flat							
Total Area:	12009	sq ft						
	0.276	ac						
Imp Area:	9470	sq ft						**Final**
	0.217	ac		Vault		Vault		**Vault**
biofiltration	180	ft	length	0	length	14	ft	**18.5**
	5	ft	width	0	width	14	ft	**18**
	970	sq ft	area	0	height	7	ft	**4**
	0.022	ac	area	0.000	vol	1372	cu ft	**1332**
landscape	1569	sq ft		2539				
	0.036	ac		0.058				
biofiltration								
layer 1	0.5	ft	mulch (amended 1.5 in/hr)					
layer 2	1.5	ft	bioretention soil (amended 5 in/hr)					
layer 3	2.5	ft	gravel					
underdrain								
dia	0.33	ft						
orifice	4	in						
offset	0	in						
riser								
length	2	ft						
width	2	ft						
area	4	ft						
equiv dia	2.26	ft						
	27	in						

CLEAR CREEK SOLUTIONS, INC
DOUG BEYERLEIN
DATE: 10/30/2015

SAN DIEGO

USGS REGRESSION EQUATION (GOTVALD, 2012)

Q2 = 3.60*(A^0.672)*(P^0.753)
Q10 = 6.56*(A^0.783)*(P^1.07)

A = AREA (SQ MI)
P = MEAN ANNUAL PRECIP (IN)

			USGS	USGS		SDHM 3.0 (D,Grass,Flat)	
A	P	0.1Q2	Q2	Q10		Q2	Q10
0.000431	10.4	0.0115	0.1150	0.186	Fashion Valley	0.002	0.065

ATTACHMENT 3
STRUCTURAL BMP MAINTENANCE INFORMATION

This is the cover sheet for Attachment 3.

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Project Name: **Montezuma Multi-Family**

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	X Included See Structural BMP Maintenance Information Checklist.
Attachment 3b	Maintenance Agreement (Form DS-3247) (when applicable)	○ Included ◉ Not Applicable

Project Name: Montezuma Multi-Family

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

Preliminary Design / Planning / CEQA level submittal:

- Attachment 3a must identify:

  X Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

- Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

Final Design level submittal:

Attachment 3a must identify:

X Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
☐ How to access the structural BMP(s) to inspect and perform maintenance
☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
☐ When applicable, frequency of bioretention soil media replacement
☐ Recommended equipment to perform maintenance
☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b must include a Storm Water Management and Discharge Control Maintenance Agreement (Form DS-3247). The following information must be included in the exhibits attached to the maintenance agreement:

☐ Vicinity map
☐ Site design BMPs for which DCV reduction is claimed for meeting the pollutant control obligations.
☐ BMP and HMP location and dimensions
☐ BMP and HMP specifications/cross section/model
☐ Maintenance recommendations and frequency
☐ LID features such as (permeable paver and LS location, dim, SF).

THE CITY OF SAN DIEGO

RECORDING REQUESTED BY:
THE CITY OF SAN DIEGO
AND WHEN RECORDED MAIL TO:

J

(THIS SPACE IS FOR THE RECORDER'S USE ONLY)

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT

APPROVAL NUMBER:	ASSESSOR'S PARCEL NUMBER:	PROJECT NUMBER:
	Click or tap here to enter text.	Click or tap here to enter text.

This agreement is made by and between the City of San Diego, a municipal corporation [City] and Click or tap here to enter text.

the owner or duly authorized representative of the owner [Property Owner] of property located at:
Click or tap here to enter text.

(PROPERTY ADDRESS)

and more particularly described as: Click or tap here to enter text.

(LEGAL DESCRIPTION OF PROPERTY)

in the City of San Diego, County of San Diego, State of California.

Property Owner is required pursuant to the City of San Diego Municipal Code, Chapter 4, Article 3, Division 3, Chapter 14, Article 2, Division 2, and the Land Development Manual, Storm Water Standards to enter into a Storm Water Management and Discharge Control Maintenance Agreement [Maintenance Agreement] for the installation and maintenance of Permanent Storm Water Best Management Practices [Permanent Storm Water BMP's] prior to the issuance of construction permits. The Maintenance Agreement is intended to ensure the establishment and maintenance of Permanent Storm Water BMP's onsite, as described in the attached exhibit(s), the project's Storm Water Quality Management Plan [SWQMP] and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s): Click or tap here to enter text.

Property Owner wishes to obtain a building or engineering permit according to the Grading and/or Improvement Plan Drawing No(s) or Building Plan Project No(s): Click or tap here to enter text.

Continued on Page 2

NOW, THEREFORE, the parties agree as follows:

1. Property Owner shall have prepared, or if qualified, shall prepare an Operation and Maintenance Procedure [OMP] for Permanent Storm Water BMP's, satisfactory to the City, according to the attached exhibit(s), consistent with the Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s):Click or tap here to enter text..
2. Property Owner shall install, maintain and repair or replace all Permanent Storm Water BMP's within their property, according to the OMP guidelines as described in the attached exhibit(s), the project's WQTR and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s)Click or tap here to enter text..
3. Property Owner shall maintain operation and maintenance records for at least five (5) years. These records shall be made available to the City for inspection upon request at any time.

This Maintenance Agreement shall commence upon execution of this document by all parties named hereon, and shall run with the land.

Executed by the City of San Diego and by Property Owner in San Diego, California.

See Attached Exhibits(s):Click or tap here to enter text.

(Owner Signature)

(Print Name and Title)

(Company/Organization Name)

(Date)

THE CITY OF SAN DIEGO

APPROVED:

(City Control engineer Signature

(Print Name)

(Date)

NOTE: ALL SIGNATURES MUST INCLUDE NOTARY ACKNOWLEDMENTS PER CIVIL CODE SEC. 1180 ET.SEQ

If These Sources Will Be on the Project Site …	… Then Your SWQMP Shall Consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
☒ A. Onsite storm drain inlets ❑ Not Applicable	☒ Locations of inlets.	☒ Mark all inlets with the words "No Dumping! Flows to Bay" or similar.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide storm water pollution prevention information to new site owners, lessees, or operators. ☒ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com. ☒ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
☒ B. Interior floor drains and elevator shaft sump pumps ❑ Not Applicable		☒ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☒ Inspect and maintain drains to prevent blockages and overflow.
☒ C. Interior parking garages ❑ Not Applicable		☒ State that parking garage floor drains will be plumbed to the sanitary sewer.	☒ Inspect and maintain drains to prevent blockages and overflow.
❑ D1. Need for future indoor & structural pest control ☒ Not Applicable		❑ Note building design features that discourage entry of pests.	❑ Provide Integrated Pest Management information to owners, lessees, and operators.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
☒ D2. Landscape/ Outdoor Pesticide Use ❑ Not Applicable	☒ Show locations of existing trees or areas of shrubs and ground cover to be undisturbed and retained. ☒ Show self-retaining landscape areas, if any. ☒ Show storm water treatment facilities.	☒ State that final landscape plans will accomplish all of the following. ☒ Preserve existing drought tolerant trees, shrubs, and ground cover to the maximum extent possible. ☒ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution. ☒ Where landscaped areas are used to retain or detain storm water, specify plants that are tolerant of periodic saturated soil conditions. ☒ Consider using pest-resistant plants, especially adjacent to hardscape. ☒ To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☒ Maintain landscaping using minimum or no pesticides. ☒ See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com. ☒ Provide IPM information to new owners, lessees and operators.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
❑ E. Pools, spas, ponds, decorative fountains, and other water features. ☒ Not Applicable	❑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.	❑ If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	❑ See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.
❑ F. Food service ☒ Not Applicable	❑ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ❑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	❑ Describe the location and features of the designated cleaning area. ❑ Describe the items to be cleaned in this facility and how it has been sized to ensure that the largest items can be accommodated.	

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
❑ G. Refuse areas ☒ Not Applicable	❑ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ❑ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. Also show how the designated area will be protected from wind dispersal. ❑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	❑ State how site refuse will be handled and provide supporting detail to what is shown on plans. ❑ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	❑ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
❑ H. Industrial processes. ☒ Not Applicable	❑ Show process area.	❑ If industrial processes are to be located onsite, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	❑ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.
❑ I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.) ☒ Not Applicable	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or runoff from area and protected from wind dispersal. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	❑ Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release Prevention Program ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
❑ J. Vehicle and Equipment Cleaning ☒ Not Applicable	❑ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited onsite and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	❑ If a car wash area is not provided, describe measures taken to discourage onsite car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): ❑ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. ❑ Car dealerships and similar may rinse cars with water only. ❑ See Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
❑ K. Vehicle/Equipment Repair and Maintenance ☒ Not Applicable	❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to protect from rainfall, run-on runoff, and wind dispersal. ❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the report, note that all of the following restrictions apply to use the site: ❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ❑ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ❑ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
❑ L. Fuel Dispensing Areas ☒ Not Applicable	❑ Fueling areas[1] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are (1) graded at the minimum slope necessary to prevent ponding; and (2) separated from the rest of the site by a grade break that prevents run-on of storm water to the MEP. ❑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area1.] The canopy [or cover] shall not drain onto the fueling area.		❑ The property owner shall dry sweep the fueling area routinely. ❑ See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
M. Loading Docks ☒ Not Applicable	❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct storm water away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited. ❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ❑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		❑ Move loaded and unloaded items indoors as soon as possible. ❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
☒ N. Fire Sprinkler Test Water ❑ Not Applicable		☒ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☒ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com.

O. Miscellaneous Drain or Wash Water ☒ Boiler drain lines ☒ Condensate drain lines ☒ Rooftop equipment ☒ Drainage sumps ☒ Roofing, gutters, and trim ☐ Not Applicable		☒ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☒ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☒ Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☒ Any drainage sumps onsite shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☒ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	

If These Sources Will Be on the Project Site …	… Then Your SWQMP shall consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
☒ P. Plazas, sidewalks, and parking lots. ❑ Not Applicable			☒ Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

ATTACHMENT 4
COPY OF PLAN SHEETS SHOWING PERMANENT STORM WATER BMPS

This is the cover sheet for Attachment 4.

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Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

X Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs

X The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit

X Details and specifications for construction of structural BMP(s)

X Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer

X How to access the structural BMP(s) to inspect and perform maintenance

X Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)

☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable

X Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)

X Recommended equipment to perform maintenance

☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)

X All BMPs must be fully dimensioned on the plans

☐ When propritery BMPs are used, site specific cross section with outflow, inflow and model number shall be provided. Broucher photocopies are not allowed.

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6213 MONTEZUMA MULTI-FAMILY PDP/CUP

GENERAL NOTES

1. DEVELOPMENT DESCRIPTION:
CONSTRUCTION OF A FIVE (5) STORY BUILDING WITH ONE HUNDRED AND TWENTY EIGHT (128) BEDROOM SUITES OVER 3 LEVELS OF UNDERGROUND PARKING GARAGE ON A VACANT PARCEL OF 0.285 ACRES.

2. ZONING AND PARCEL INFORMATION:
a. BASIC ZONE: RM-3-9
b. COMMUNITY PLAN: COLLEGE AREA COMMUNITY PLANNING AREA
c. OVERLAY ZONES:
-AIRPORT INFLUENCE AREA
-PARKING IMPACT
d. ENVIRONMENTALLY SENSITIVE LANDS:
-NOT APPLICABLE TO SITE
e. PERMITTED LAND USE: RESIDENTIAL
f. DEVELOPMENT REGULATIONS (PER TABLE 131-04G):
-MAXIMUM DENSITY ALLOWED: 1 DWELLING UNIT PER 600 S.F. OF LOT AREA
-MINIMUM LOT AREA: 7,000 SQUARE FEET
-SETBACKS:
FRONT SETBACK: MINIMUM 10' FOR UP TO 50% OF THE WIDTH OF BUILDING ENVELOPE, PROVIDED THE REMAINING PERCENTAGE OF THE BUILDING ENVELOPE WIDTH OBSERVES THE STANDARD 20 FOOT SETBACK
SIDE SETBACK: MINIMUM 5' OR 10% OF THE PREMISES WIDTH
REAR SETBACK: 5'
-MAXIMUM STRUCTURE HEIGHT: 60 FEET
-MAXIMUM FLOOR AREA RATIO: 2.9

3. PERMITS REQUESTED:
a. CONDITIONAL USE PERMIT FOR:
1. STUDENT DORMITORY, SUBJECT TO SDMC SECTIONS 141.0304 AND 131.0422
b. PLANNED DEVELOPMENT PERMIT FOR:
1. DEVIATIONS TO SIDE YARD SETBACKS TO BE 5' MINIMUM
c. DEVIATIONS FOR 27% PARKING REDUCTION, FROM 78 SPACES TO 57 SPACES

4. BUILDING DATA:
FIVE (5) STORY BUILDING WITH THREE (3) LEVELS OF UNDERGROUND PARKING FOR RENTAL COMMUNITY HOUSING WITH SHARED LIVING & OUTDOOR OPEN SPACE

BUILDING HEIGHT:	56'-0" WITH DEVIATION REQUESTED FOR ELEVATOR OVERHEAD AT 58'-3" TO ALLOW ACCESSIBLE ACCESS TO ROOFTOP AREA
BEDROOM SUITES:	128
COMMON ACCESSIBLE BATHROOM:	5
OFFICE:	1
LAUNDRY ROOM:	5

5. GARAGE UNDERGROUND PARKING DATA:

PROPOSED NUMBER OF OFF-STREET HANDICAPPED PARKING:	3 SPACES
PROPOSED NUMBER OF OFF-STREET STANDARD PARKING:	54 SPACES
TOTAL:	57 SPACES

PROJECT WILL PROVIDE FOR FORTY (40) BICYCLE SPACES.
PROJECT WILL PROVIDE FOR EIGHT (8) MOTORCYCLE SPACES.

6. SEWER AND WATER SERVICES:
SEWER AND WATER SERVICES ARE PROVIDED BY THE CITY OF SAN DIEGO. ON-SITE SEWER AND WATER SYSTEMS WILL BE PRIVATE AND SHALL CONFORM TO THE CITY OF SAN DIEGO STANDARDS AND UNIFORM PLUMBING CODE.

7. DRAINAGE SYSTEM:
WATER WILL BE DISPOSED OF BY SURFACE FLOW AND UNDERGROUND STORM DRAIN SYSTEM. THE DRAINAGE SYSTEM SHOWN IS CONCEPTUAL, THE FINAL DRAINAGE DESIGN SHALL CONFORM TO THE CITY OF SAN DIEGO STANDARDS.

8. SERVICES:
THE GAS AND ELECTRIC POWER IS PROVIDED BY SAN DIEGO GAS AND ELECTRIC COMPANY. THE TELEPHONE SERVICE IS PROVIDED BY SBC COMMUNICATIONS. SCHOOL SERVICE IS PROVIDED BY SAN DIEGO UNIFIED SCHOOL DISTRICT. FIRE SERVICE IS PROVIDED BY THE CITY OF SAN DIEGO FIRE DEPARTMENT.

9. GRADING AND LANDSCAPING:
THE PROPOSED PRELIMINARY GRADING IS SUBJECT TO REVISIONS DURING FINAL DESIGN. CUT OF APPROXIMATELY 11,600 CUBIC YARDS AND FILL OF APPROXIMATELY 0.00 CUBIC YARDS OF MATERIAL WILL BE REQUIRED ON SITE. CUT AND FILL QUANTITIES ARE SUBJECT TO CHANGE DURING FINAL DESIGN. THE MAXIMUM SLOPE GRADIENT WILL BE 2:1. ALL SLOPES SHALL BE ROUNDED IN ACCORDANCE WITH CITY DESIGN STANDARDS. ALL CUT AND FILL BANKS WILL BE PROPERLY LANDSCAPED, IRRIGATED AND MAINTAINED, IN ACCORDANCE WITH CITY STANDARDS.

10. CONTOURS SHOWN WERE DERIVED FROM AN AERIAL TOPOGRAPHY DATED 10-29-15 BY SAN-LO AERIAL SURVEYS AND JP ENGINEERING, INC..

11. ENGINEER OF WORK:
JP ENGINEERING, INC.
4849 RONSON COURT, SUITE 105
SAN DIEGO, CA 92111
TELEPHONE: (619) 569-7377

REGISTERED PROFESSIONAL ENGINEER
JORGE H. PALACIOS
No. 32031
12/31/18
CIVIL
STATE OF CALIFORNIA

BY: JORGE H. PALACIOS, R.C.E. 32031 DATE: 03-09-17

BENCH MARK	
DESCRIPTION:	BRASS PLUG
LOCATION:	NORTHWEST CORNER OF MONTEZUMA ROAD AND E. FALLS VIEW DR.
RECORD FROM:	CITY OF SAN DIEGO
ELEVATION: 459.201	DATUM: M.S.L.

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NOTES:

1. ALL DRIVEWAYS SHALL CONFORM TO MUNICIPAL CODE SECTION 142.0560 (j)(9)(c) AND DIAGRAM 142-05D. DRIVEWAY SLOPES GREATER THAN 14% SHALL HAVE TRANSITIONS FOR THE FIRST AND LAST 8 FEET OF THE RAMP. A DETAILED DRIVEWAY PROFILE WILL BE SHOWN IN THE FINAL CONSTRUCTION PLANS TO VERIFY THE PROPOSED DRIVEWAY WILL ADHERE TO THE MUNICIPAL CODE.

2. VISIBILITY AREA TRIANGLES DETAILS SHALL BE SHOWN IN THE FINAL CONSTRUCTION PLANS AT THE DRIVEWAYS PER MUNICIPAL CODE SECTION 113-0273, DIAGRAM 113-02SS. THE VISIBILITY AREA SHALL EXTEND 10 FEET INWARD ONTO PRIVATE PROPERTY ALONG THE DRIVEWAY AND ALONG THE PROPERTY LINE. NO OBSTRUCTION, INCLUDING LANDSCAPING OR SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGHT.

3. THE DEVELOPER SHALL UNDERGROUND PROPOSED PUBLIC UTILITY SYSTEMS AND SERVICE FACILITIES IN ACCORDANCE WITH THE SAN DIEGO MUNICIPAL CODE.

4. THE COLOR OF THE RETAINING WALLS SHALL BLEND WITH THE NATURAL TERRAIN AND THE COLOR OF THE STRUCTURES ON THE SITE.

5. THE MINIMUM TREE OR SHRUB SEPARATION DISTANCES SHALL BE AS FOLLOWS:
- TRAFFIC SIGNAL, STOP SIGN - 20 FEET
- UNDERGROUND UTILITY LINES (EXCEPT SEWER) - 5 FEET
- SEWER LINES - 10 FEET
- ABOVE GROUND UTILITY STRUCTURES - 10 FEET
- DRIVEWAYS - 10 FEET
- INTERSECTIONS (INTERSECTION CURB LINES OF TWO STREETS) - 25 FEET

6. BUILDING ADDRESS:
PROVIDE BUILDING ADDRESS NUMBERS, VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY PER SDMC SECTION 95.0209

7. BUS STOPS:
BUS STOPS ARE LOCATED IN THE VICINITY OF THE DEVELOPMENT.

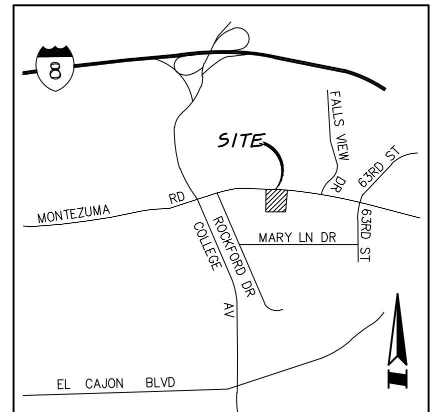
8. TRASH RECEPTACLES:
TRASH RECEPTACLES WILL BE LOCATED IN EACH FLOOR WITH MAIN STORAGE FOR REFUSE AND RECYCLEABLE MATERIAL ON GARAGE LEVEL 1.

9. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITTEE SHALL ENTER INTO A MAINTENANCE AGREEMENT FOR THE ONGOING PERMANENT BMP MAINTENANCE, SATISFACTORY TO THE CITY ENGINEER.

10. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITTE SHALL INCORPORATE ANY CONSTRUCTION BEST MANAGEMENT PRACTICES NECESSARY TO COMPLY WITH CHAPTER 14, ARTICLE 2, DIVISION 1 (GRADING REGULATIONS) OF THE SAN DIEGO MUNICIPAL CODE, INTO THE CONSTRUCTION PLANS OR SPECIFICATIONS.

11. PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITTE SHALL SUMMIT 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.

12. ALL GRADED, DISTURBED, OR ERODED AREA THAT WILL NOT BE PERMANENTLY PAVED, COVERED BY STRUCTURE, OR PLANTED FOR A PERIOD OVER 90 CALENDAR DAYS SHALL BE TEMPORARILY REVEGETATED WITH A NON-IRRIGATED HYDROSEED MIX. ALL REQUIRED REVEGETATION AND EROSION CONTROL SHALL BE COMPLETED WITH IN 90 CALENDAR DAYS OF THE COMPLETION OF GRADING OR DISTURBANCE. PLEASE PROVIDE DETAILS OF A PROVISIONAL HYDROSEED MIX, INDICATING SEED MIX BOTANICAL NAMES, POUNDS PER ACRE, PERCENT PURE LIVE SEED AND TOTAL POUNDS PER ACRE, INCLUDING SPECIFICATIONS FOR APPLICANT.



VICINITY MAP
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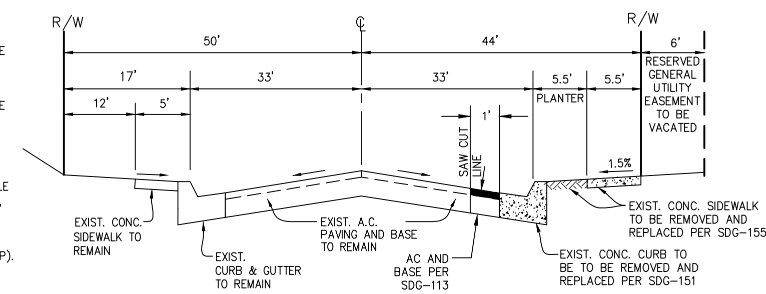


EXISTING TYPICAL SECTION-MONTEZUMA ROAD
NO SCALE

LEGAL DESCRIPTION

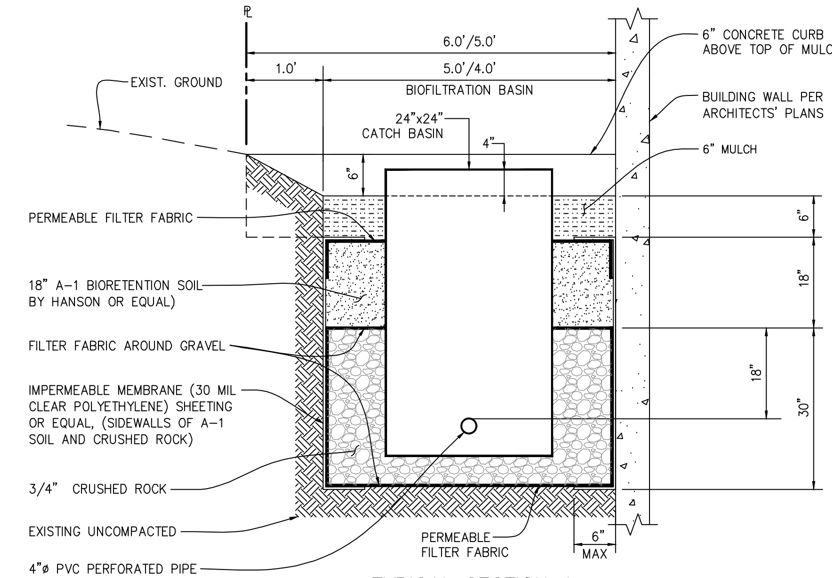
THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF SAN DIEGO, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

LOTS 188 AND 189 OF COLLWOOD PARK UNIT NO. 2, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP NO. 2495, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, AUGUST 12, 1948, TOGETHER WITH THAT PORTION OF THE SOUTH 6.00 FEET OF MONTEZUMA ROAD ADJOINING SAID LOTS ON THE NORTH AS CLOSED TO PUBLIC USE BY RESOLUTION NO. 184453, RECORDED AUGUST 06, 1965 AS INSTRUMENT NO. 141427 OF OFFICIAL RECORDS.

A.P.N.: 467-171-28-00 AND 467-171-29-00

SHEET INDEX

SHEET NO.	DWG NO.	TITLE
1	C-1	TITLE SHEET, STREET TYPICAL SECTION AND NOTES
2	C-2	PROPERTY BOUNDARY, TOPOGRAPHY, EXISTING EASEMENTS AND SLOPE ANALYSIS
3	C-3	PRELIMINARY GRADING PLAN



TYPICAL SECTION A
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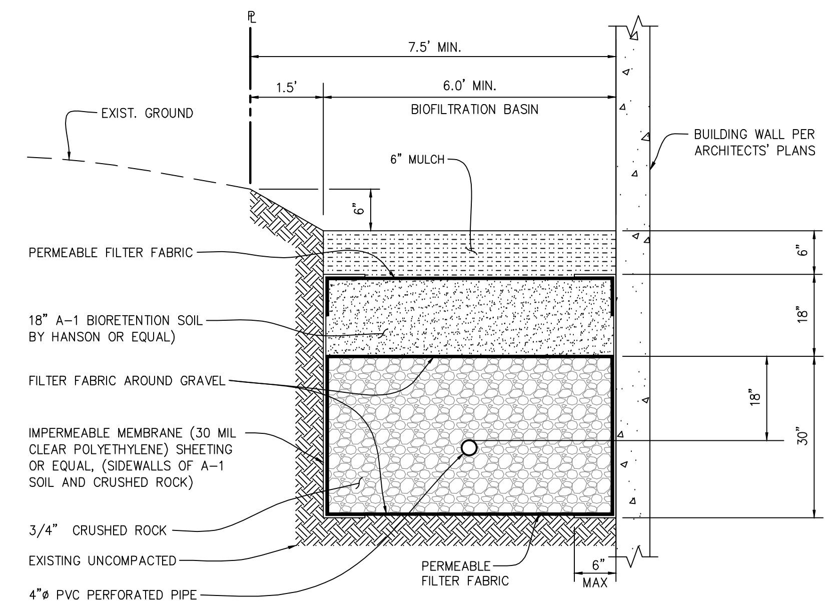

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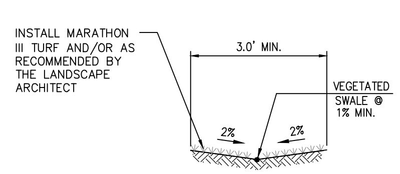

VEGETATED SWALE DETAIL
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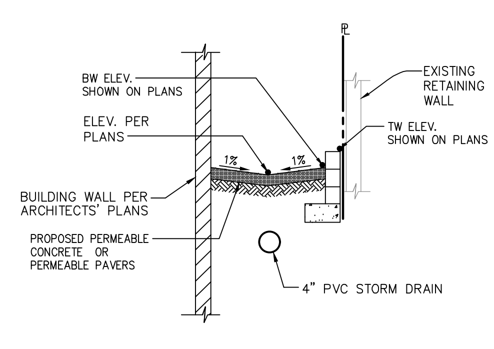


TYPICAL SECTION C
NO SCALE

FOR LOCATION OF TYPICAL SECTIONS SEE SHEET C-3

Prepared By:
Name: JP ENGINEERING, INC.
Address: 4849 Ronson Court, Suite 105
SAN DIEGO, CA 92111
Phone #: (858) 569-7377
FAX #: (858) 569-0830

Project Address:
6213-6219 Montezuma Road
San Diego, California 92115

Project Name:
6213 Montezuma Multi-Family

Sheet Title:
TITLE SHEET, STREET TYPICAL SECTION AND NOTES

Revision 14:	
Revision 13:	
Revision 12:	
Revision 11:	
Revision 10:	
Revision 9:	
Revision 8:	
Revision 7:	
Revision 6:	
Revision 5:	
Revision 4:	MARCH 09, 2017
Revision 3:	FEBRUARY 22, 2017
Revision 2:	JANUARY 30, 2017
Revision 1:	DECEMBER 12, 2016

Original Date: JUNE 30, 2016

Sheet 1 of 3

DEP# PTS NO. 501449

W.O. No. 24006849

C-1

L.C. 220-1748 | CCS 1880-6308

SHEET C-1

SHEET TITLE: TITLE SHEET, STREET TYPICAL SECTION AND NOTES
PROJECT NAME: 6213 MONTEZUMA MULTI-FAMILY
A.P.N. 467-171-28-00 & 467-171-29-00

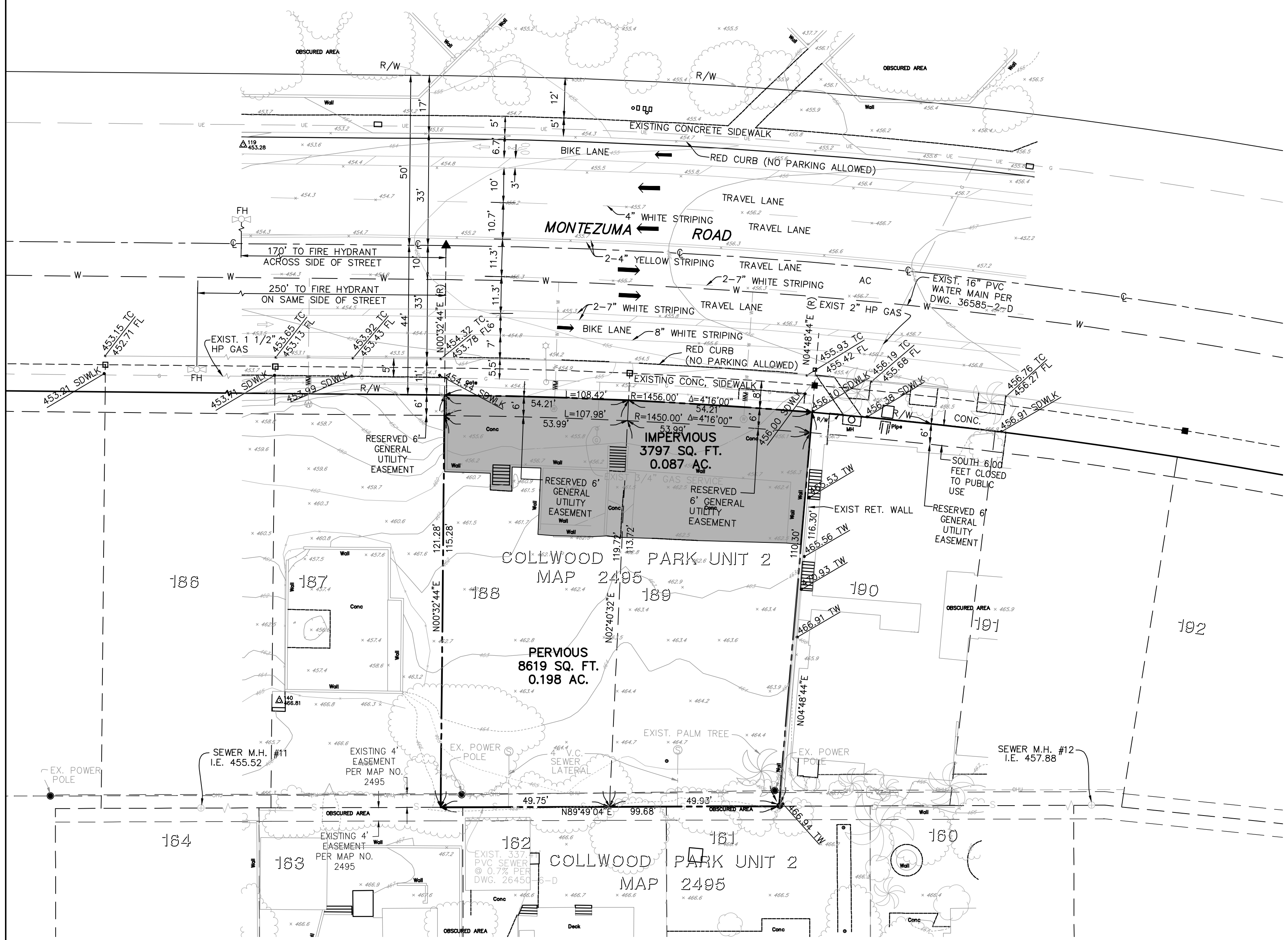
DESIGNER JHP
DRAWN DHN
CHECKED JHP
DATE 03-09-17

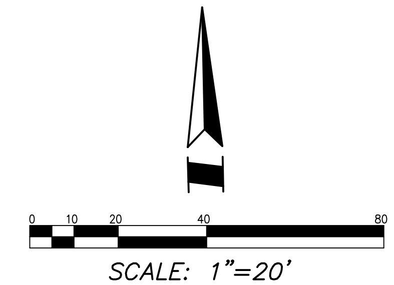
JORGE H. PALACIOS
R.C.E. 32031
DATE: 03-09-17

BY | NO. | DATE

Project No. 999-15

CIVIL ENGINEERING ▪ LAND PLANNING ▪ SURVEYING ▪ 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111 ▪ (858)569-7377 FAX (858)569-0830





LEGEND

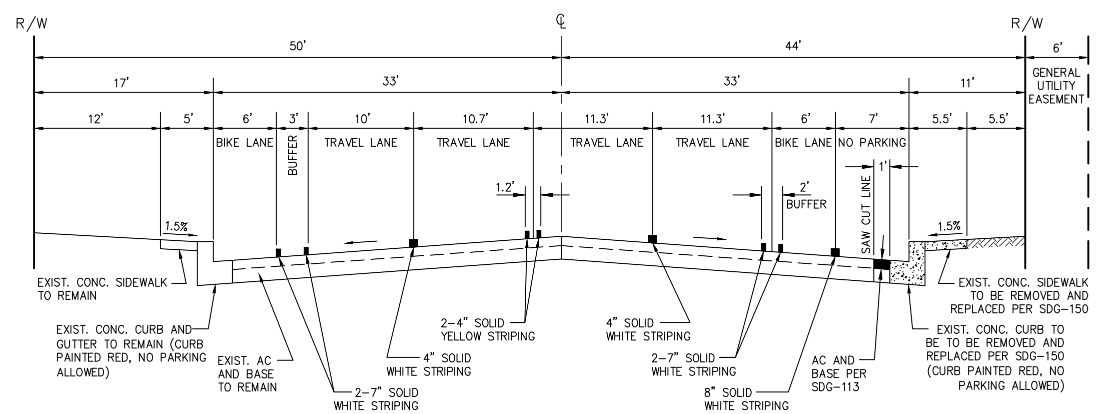
PROPERTY BOUNDARY	
RIGHT OF WAY	
ADJACENT LOT LINE	
EXISTING CONTOUR LINE	455
EXISTING CONCRETE CURB	
EXISTING CONCRETE SIDEWALK	CONC.
EXISTING AC DRIVEWAY	AC
EXISTING RETAINING WALL	
EXISTING TOP OF CURB ELEVATION	455.93 T.C.
EXISTING FLOWLINE ELEVATION	455.42 F.L.
EXISTING TOP OF WALL ELEVATION	465.53 T.W.
EXISTING SPOT ELEVATION	× 456.7
EXISTING FENCE	X
EXISTING ROOF OVERHANG	
EXISTING EASEMENT	
EXIST CENTERLINE	℄
EXISTING FIREHYDRANT	
EXISTING WATER MAIN	W
EXISTING SEWER MAIN	S
EXISTING GAS MAIN	G
EXISTING OVERHEAD ELECTRICAL	OHU
EXISTING UNDERGROUND ELECTRICAL	UE
EXISTING SEWER MANHOLE	
EXISTING POWER POLE	
EXISTING WATER SERVICE AND METER BOX	WM
EXISTING SEWER LATERAL	S
EXISTING GAS SERVICE	G
FOUND LEAD AND DISC STAMPED "LS 8733" PER CORNER RECORD 33586	■
FOUND LEAD AND TACK PER MAP 2495	□
FOUND 5/8" SQUARE PIN PER CORNER RECORD 33586	●
FOUND STREET SURVEY MONUMENT PER R.O.S. 6770	▲

TOTAL PROJECT SLOPE ANALYSIS				IMPACTS BY GRADING	
LEGEND	SLOPE	AREA (SQ.FT.)	PERCENT(%) OF AREA	ENCROACHMENT AREA (SQ. FT.)	PERCENT(%) OF SLOPE AREA
	0-25%	12,416	100%	12,416	100%
	TOTAL	12,416			

PROPERTY AREA: 12,416 SQUARE FEET = 0.285 AC

TOPOGRAPHY SOURCE

CONTOURS AND ELEVATIONS WERE DERIVED FROM AN AERIAL TOPOGRAPHY DATED 10-29-15 BY SAN-LO AERIAL SURVEYS AND JP ENGINEERING, INC.



EXISTING TYPICAL SECTION-MONTEZUMA ROAD

NO SCALE

Prepared By:
Name: JP ENGINEERING, INC.
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Phone #: (858) 569-7377
FAX #: (858) 569-0830

Project Address:
6213-6219 Montezuma Road
San Diego, California 92115

Project Name:
6213 Montezuma Multi-Family

Sheet Title:
PROPERTY BOUNDARY, EXISTING TOPOGRAPHY, EXISTING EASEMENTS AND SLOPE ANALYSIS

Revision 14:	
Revision 13:	
Revision 12:	
Revision 11:	
Revision 10:	
Revision 9:	
Revision 8:	
Revision 7:	
Revision 6:	
Revision 5:	
Revision 4:	MARCH 09, 2017
Revision 3:	FEBRUARY 22, 2017
Revision 2:	JANUARY 30, 2017
Revision 1:	DECEMBER 12, 2016

Original Date: JUNE 30, 2016

Sheet 2 of 3

DEP# PTS NO. 501449

W.O. No. 24006849

C-2

L.C. 220-1748 | CCS 1880-6308

BENCH MARK	
DESCRIPTION:	BRASS PLUG
LOCATION:	NORTHWEST CORNER OF MONTEZUMA ROAD AND E. FALLS VIEW DR.
RECORD FROM:	CITY OF SAN DIEGO
ELEVATION: 459.201	DATUM: M.S.L.

REGISTERED PROFESSIONAL ENGINEER
JORGE H. PALACIOS
No. 32031
12/31/18
CIVIL
STATE OF CALIFORNIA

F:\PROJECT\999\999-C-2.dwg, 3/23/2017 3:29:18 PM

SHEET TITLE: PROPERTY BOUNDARY, EXISTING TOPOGRAPHY, EXISTING EASEMENTS AND SLOPE ANALYSIS

PROJECT NAME: 6213 MONTEZUMA MULTI-FAMILY
A.P.N. 467-171-28-00 & 467-171-29-00

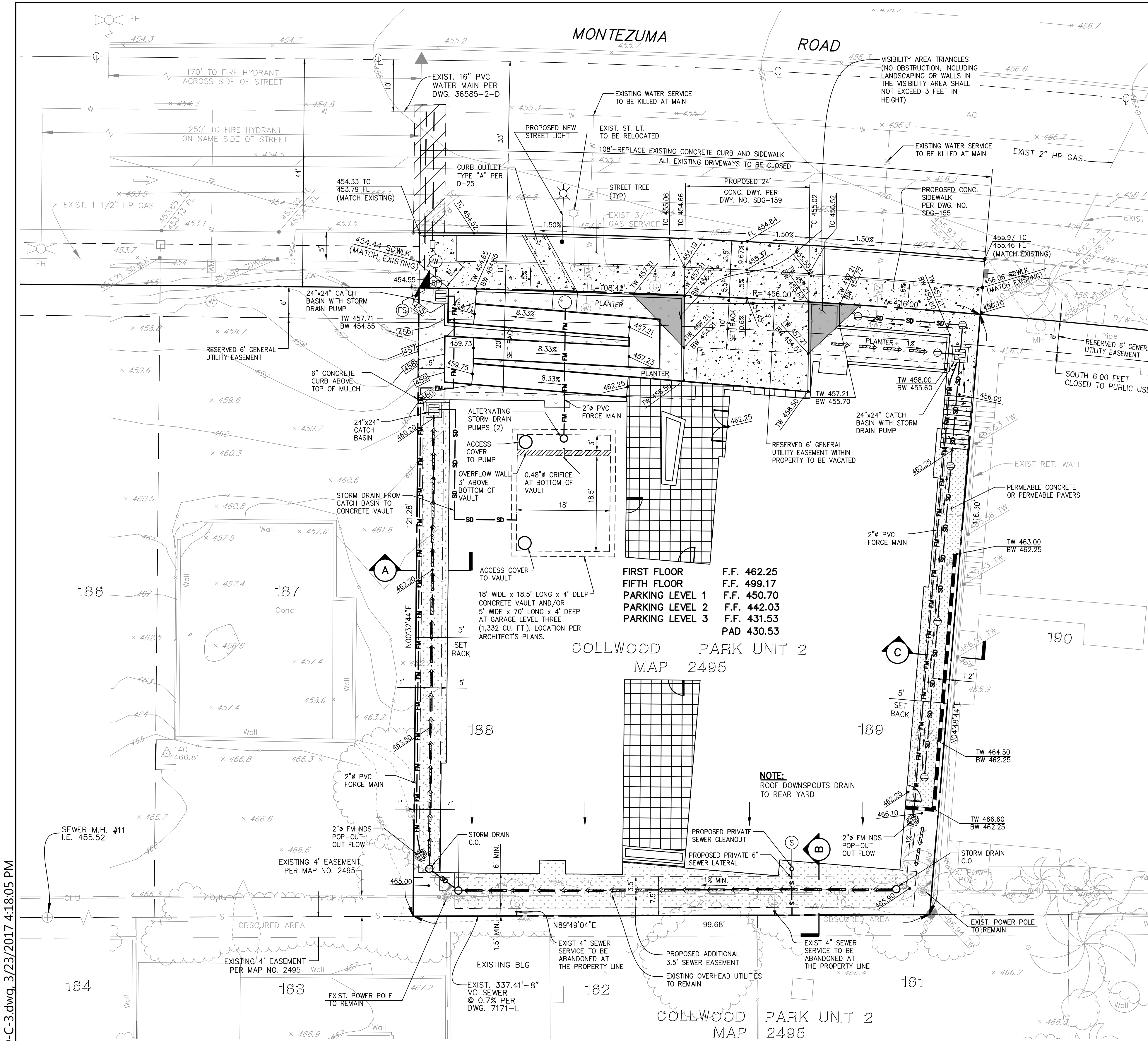
SHEET C-2

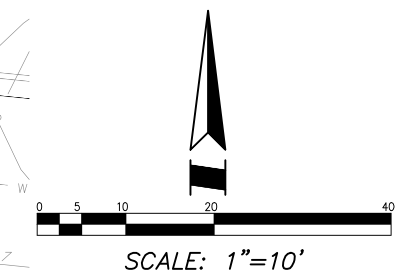
Project No. 999-15

DESIGNER JHP | DRAWN AL | CHECKED JHP | DATE 03-09-17

JORGE H. PALACIOS
R.C.E. 32031
DATE: 03-09-17

CIVIL ENGINEERING • LAND PLANNING • SURVEYING • 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111 • (858)569-7377 FAX (858)569-0830





LEGEND

IMPROVEMENT	STANDARD DWGS.	SYMBOL
PROPERTY BOUNDARY		
PROPOSED CONCRETE CURB AND GUTTER	SDG-151	
PROPOSED SEWER EASEMENT		
PROPOSED CONCRETE SIDEWALK	SDG-155	
PROPOSED TRENCH RESURFACING TYPE A	SDG-107	
PROPOSED PERMEABLE CONCRETE OR PERVIOUS PAVERS		
PROPOSED BIOFILTRATION AREA		
PROPOSED CONCRETE DRIVEWAY	SDG-159	
PROPOSED PRIVATE CURB OUTLET TYPE 'A'	D-25	
PROPOSED PRIVATE 4"/6" FIRE SERVICE WITH BACKFLOW PREVENTER DIVIDE	SDW-118, SDW-105	FS
PROPOSED 2" WATER SERVICE	SDW-135, SDW-149, WS-03	W
PROPOSED PRESSURE BACKFLOW PREVENTER DEVICE	SDW-155	RP
PROPOSED PRIVATE 6" SEWER LATERAL	SDS-101, SDS-105, SDS-110	S
PROPOSED PRIVATE SEWER CLEANOUT	SDS-103	
PROPOSED STREET LIGHT		
PROPOSED FINISHED FLOOR ELEVATION		F.F. 462.25
PROPOSED TOP OF CONCRETE CURB ELEVATION		TC 454.25
PROPOSED SPOT ELEVATION		454.80
PROPOSED MASONRY RETAINING WALL		
PROPOSED TOP OF WALL ELEVATION BOTTOM OF WALL ELEVATION		463.00 TW 462.25 BW
PROPOSED 24"x24" CATCH BASIN		
PROPOSED CATCH BASIN		
PROPOSED STORM DRAIN PIPE		SD
PROPOSED ORIFICE STORM DRAIN PIPE (0.48"ø)		
PROPOSED CONTOUR ELEVATION		460
PROPOSED VEGETATED SWALE		
DIRECTION OF FLOW		
PROPOSED 4"ø PVC PERFORATED PIPE		
PROPOSED STORM DRAIN CLEANOUT	SDS-103	SD
PROPOSED 2"ø PVC FORCE MAIN		FM
PROPOSED 2"ø FM NDS POP-OUT		

GRADING DATA:

1. -TOTAL AMOUNT OF SITE TO BE GRADED: 0.285 ACRES.
2. -PERCENT OF TOTAL SITE GRADED: 100%
3. -AMOUNT OF CUT: 11,600 CUBIC YARDS.
4. -AMOUNT OF FILL: 0 CUBIC YARDS.
5. -MAXIMUM HEIGHT OF FILL SLOPE(S): 0 FEET 0 SLOPE RATIO.
6. -MAXIMUM HEIGHT OF CUT SLOPE(S): 36 FEET SHORING SLOPE RATIO.
7. -AMOUNT OF EXPORT SOIL: 11,600 CUBIC YARDS.
8. -RETAINING/CRIB WALLS: HOW MANY: 4 MAXIMUM LENGTH: 110 FEET MAXIMUM HEIGHT: 5.2 FEET

Prepared By:
Name: JP ENGINEERING, INC.
Address: 4849 Ronson Court, Suite 105 SAN DIEGO, CA 92111
Phone #: (858) 569-7377
FAX #: (858) 569-0830

Project Address:
6213-6219 Montezuma Road
San Diego, California 92115

Project Name:
6213 Montezuma Multi-Family

Sheet Title:
PRELIMINARY GRADING PLAN

Revision 14:	
Revision 13:	
Revision 12:	
Revision 11:	
Revision 10:	
Revision 9:	
Revision 8:	
Revision 7:	
Revision 6:	
Revision 5:	
Revision 4:	MARCH 09, 2017
Revision 3:	FEBRUARY 22, 2017
Revision 2:	JANUARY 30, 2017
Revision 1:	DECEMBER 12, 2016

Original Date: JUNE 30, 2016
Sheet 3 of 3
DEP# PTS NO. 501449
W.O. No. 24006849

C-3

L.C. 220-1748 | CCS 1880-6308

FOR TYPICAL SECTIONS SEE SHEET C-1

BENCH MARK	
DESCRIPTION:	BRASS PLUG
LOCATION:	NORTHWEST CORNER OF MONTEZUMA ROAD AND E. FALLS VIEW DR.
RECORD FROM:	CITY OF SAN DIEGO
ELEVATION: 459.201	DATUM: M.S.L.

REGISTERED PROFESSIONAL ENGINEER JORGE H. PALACIOS No. 32031 12/31/18 CIVIL STATE OF CALIFORNIA

SHEET C-3
Project No. 999-15
SHEET TITLE: PRELIMINARY GRADING PLAN
PROJECT NAME: 6213 MONTEZUMA MULTI-FAMILY A.P.N. 467-171-28-00 & 467-171-29-00
(858)569-7377 FAX (858)569-0830
DESIGNER JHP DRAWN DHN CHECKED JHP DATE 03-09-17
JORGE H. PALACIOS R.C.E. 32031 DATE: 03-09-17
CIVIL ENGINEERING ▪ LAND PLANNING ▪ SURVEYING ▪ 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111

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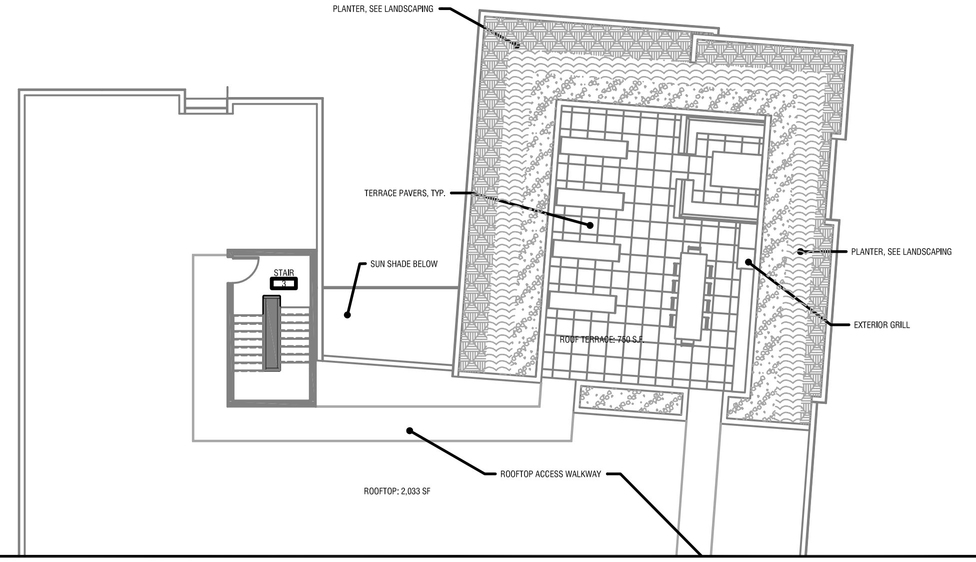
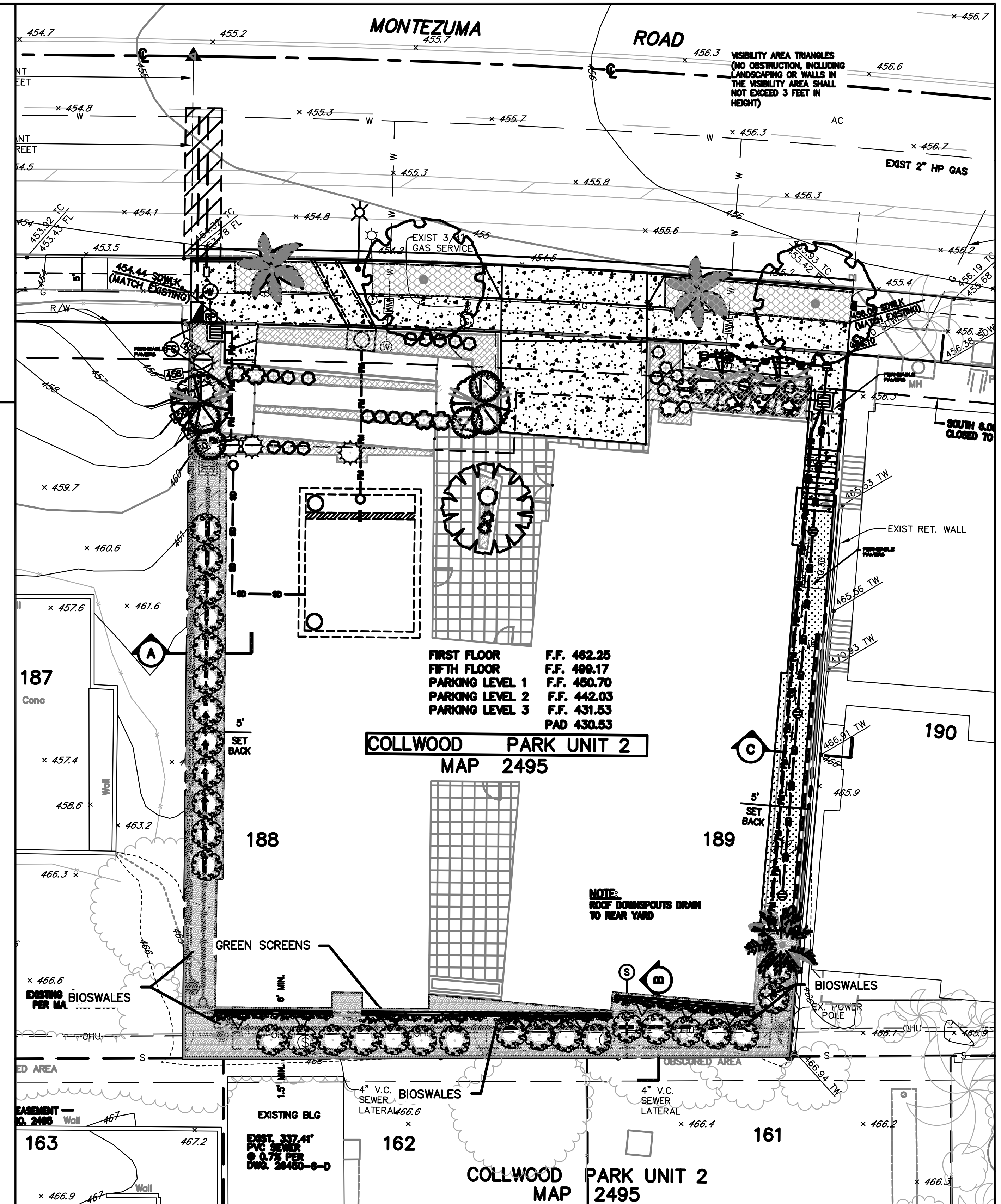


ROOF TOP GARDEN

PLANT SCHEDULE

	BOTANICAL NAME	COMMON NAME	SIZE	WUCOLS	QTY / SPACING
TREES	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**QTY**
	KOELREUTERIA BIPINNATA	CHINESE FLAME TREE	24" BOX	M	2
	SYAGRUS ROMANZOFFIANA BTH: 17' SUCH AS: (100% 24" BOX)	QUEEN PALM	BTH	M	1
COURTYARD TREES	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**QTY**
	SCHEFFLERA PUECKLERI SUCH AS: (100% 24" BOX)	TUPIDANTHUS	24"BOX	M	1
FLOWERING TREES	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**QTY**
	HYMENOSPORUM FLAVUM SUCH AS: (100% 24" BOX)	SWEETSHADE	24"BOX	M	4
STREET TREES	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**QTY**
	SYAGRUS ROMANZOFFIANA BTH: 10' SUCH AS: (100% 5 GAL.)	QUEEN PALM	BTH	M	2
NATIVE SHRUBS	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**QTY**
	CEANOTHUS GRISEUS HORIZONTALIS 'YANKEE POINT'	CALIFORNIA LILAC	5 GAL	L	5
	MAHONIA AQUIFOLIUM 'GOLDEN ABUNDANCE'	GOLDEN ABUNDANCE OREGON GRAPE	5 GAL	L	7
	RHAPHIOLEPIS INDICA SUCH AS: (100% 1 GAL.)	INDIAN HAWTHORN	5 GAL	L	30
SHADE PLANTS	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**QTY**
	ASPIDISTRA ELATIOR 'MILKY WAY'	MILKY WAY CAST IRON PLANT	1 GAL	M	1
	GRAPTOPETALUM PARAGUAYENSE SUCH AS: (75% 1 GAL., 25% 5 GAL.)	GHOST PLANT	1 GAL	L	2
SUCCULENTS	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**QTY**
	KALANCHOE LUCIAE	PADDLE PLANT	5 GAL	L	23
	SENECIO DECARYI SUCH AS: (100% 15 GAL.)	MADAGASCAR SENECIO	1 GAL	L	9
VINE/ESPALIER	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**QTY**
	DISTICTIS BUCCINATORIA SUCH AS: (100% FLATS)	BLOOD RED TRUMPET VINE	15 GAL ESP.	M	10
GROUND COVERS	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**SPACING**
	BULBINE FRUTESCENS 'HALLMARK' SUCH AS: (100% 1 GAL.)	STALKED BULBINE	FLAT	L	18" o.c.
GRASSES	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**SPACING**
	CAREX FLACCA	BLUE SEDGE	1 GAL	L	18" o.c.
	CAREX OSHIMENSIS 'EVERGOLD'	VARIEGATED JAPANESE SEDGE	1 GAL	M	24" o.c.
	CAREX TUMULICOLA SUCH AS: (37% 1 GAL., 37% FLATS, 26% 4" POTS)	BERKELEY SEDGE	1 GAL	L	18" o.c.
ROOF TOP GARDEN	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WUCOLS**	**SPACING**
	CRASSULA CAPITELLA 'CAMPFIRE' MIX WITH ASSORTED OTHER SUCCULENTS	CAMPFIRE CRASSULA	4"POT	L	12" o.c.
	HELICTOTRICHON SEMPERVIRENS	BLUE OAT GRASS	FLAT	M	36" o.c.
	PORTULACARIA AFRA	ELEPHANT BUSH	1 GAL	L	36" o.c.



STREET LEVEL PLANTING

NOTE: ABANDON WATER LINE PER CIVIL PLAN

ROOT BARRIER NOTE:

ALL TREES PLANTED WITHIN 5' OF ANY CURB, WALL, HARDSCAPE ELEMENT, BUILDING, FIRE HYDRANT, UTILITY VAULT, OR LIGHT FIXTURE SHALL RECEIVE A 10' LENGTH OF 19.5" DEEP ROOT BARRIER. NO ROOT BARRIER SHALL ENCIRCLE THE ROOT BALL.

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10 5 0 10 20 30
SCALE: 1"=10'-0"

N

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JPBLA

MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD
SAN DIEGO, CA 92115

REVISIONS

1ST SUBMITTAL
xx/xx/xx

Phase:

Date: 7/8/16
Reviewed by: JPB
Drawn: JVS/DRB
Job No.: 2016-32

Sheet Title:
PLANTING CONCEPT PLAN

Sheet:
LC-1
Of 4 Sheets

MAINTENANCE RESPONSIBILITY NOTE:

THE PROPERTY OWNERS ARE RESPONSIBLE FOR THE CONTINUAL MAINTENANCE OF ALL LANDSCAPED AREAS ON SITE AND WITHIN THE ADJACENT RIGHTS-OF-WAY. ALL LANDSCAPED AREAS SHALL BE KEPT FREE OF WEEDS AND DEBRIS. PLANTINGS SHALL BE MAINTAINED IN A HEALTHY, VIGOROUSLY GROWING CONDITION, AND SHALL RECEIVE REGULAR PRUNING, FERTILIZING, MOWING AND TRIMMING. IRRIGATION SYSTEMS SHALL BE REGULARLY INSPECTED AND KEPT IN FULLY OPERATIONAL CONDITION ACCORDING TO MANUFACTURERS' DESIGN STANDARDS AT ALL TIMES.

IRRIGATION NOTE:

ALL PLANTING AREAS SHALL BE IRRIGATED ACCORDING TO PLANT TYPE AND ENVIRONMENTAL EXPOSURE. ALL IRRIGATED AREAS SHALL RECEIVE UNIFORM COVERAGE BY MEANS OF AN AUTOMATICALLY CONTROLLED, ELECTRICALLY ACTIVATED UNDERGROUND PIPED IRRIGATION SYSTEM FOR WATER CONSERVATION AND TO MINIMIZE EROSION. STATE OF THE ART AUTOMATIC CONTROLLER WITH MASTER VALVE AND RAIN SHUTOFF CAPABILITIES. A REDUCED PRESSURE BACKFLOW PREVENTER WILL BE USED IN ACCORDANCE WITH LOCAL AND REGIONAL STANDARDS. REMOTE CONTROL VALVES SHALL BE UTILIZED WITH LOW PRECIPITATION HEADS FOR REDUCED WATER CONSUMPTION. PRESSURE COMPENSATING DRIP AND LOW PRECIPITATION HEADS SHALL BE USED WHERE APPLICABLE. ALL PRESSURIZED MAINLINE AND LATERAL LINES WILL BE PVC INSTALLED BELOW GRADE PER LOCAL AND REGIONAL STANDARDS. AN AUTOMATIC, WATER EFFICIENT IRRIGATION SYSTEM SHALL BE PROVIDED TO ESTABLISH AND MAINTAIN LANDSCAPING.

LANDSCAPE NOTES:

1. ALL LANDSCAPE AND IRRIGATION SHALL CONFORM TO THE CITY OF SAN DIEGO LANDSCAPE STANDARDS MANUAL AND ALL OTHER APPLICABLE STANDARDS AS OF THE APPROVED DATE OF THESE PLANS.
2. TREES PLANTED WITHIN 5 FEET OF WALKS, CURBS OR PAVING SHALL BE PLANTED WITH A ROOT BARRIER (BIO-BARRIER).
3. MULCH: ALL REQUIRED PLANTING AREAS AND ALL EXPOSED SOIL AREAS WITHOUT VEGETATION SHALL BE COVERED WITH MULCH TO A MINIMUM DEPTH OF 3 INCHES.
4. IF ANY EXISTING HARDSCAPE OR LANDSCAPE INDICATED ON THE APPROVED PLANS ARE DAMAGED OR REMOVED DURING DEMOLITION OR CONSTRUCTION, IT SHALL BE REPAIRED AND/OR REPLACED IN KIND AND EQUIVALENT SIZE PER THE APPROVED PLANS BY THE OWNER/PERMITTEE.
5. ALL LANDSCAPE MATERIALS SHALL BE PERMANENTLY MAINTAINED IN A GROWING AND HEALTHY CONDITION AT ALL TIMES, INCLUDING TRIMMING AS APPROPRIATE TO MAINTAIN APPROVED LANDSCAPE MATERIALS. ANY REQUIRED PLANT MATERIAL THAT DIES POS-CONSTUCTION SHALL BE REPLACED AT SIZES AND QUANTITIES SET FORTH UNDER 142.0403(b)(8).
6. IN THE EVENT THE ROADS ARE WIDENED, THE EXISTING STREET TREES SHALL BE RELOCATED TO THE SATIFACTION OF THE CITY OF SAN DIEGO'S DEVELOPMENT SERVICES.
7. NO BRUSH MANAGEMENT SHALL BE BE REQUIRED FOR THIS PROJECT.

MINIMUM TREE SEPARATION DISTANCE

IMPROVEMENT	MINIMUM DISTANCE TO STREET TREE
TRAFFIC SIGNALS (STOP SIGN)	20 FEET
UNDERGROUND UTILITY LINES	5 FEET
ABOVE GROUND UTILITY STRUCTURES	10 FEET
DRIVEWAY (ENTRIES)	10 FEET
INTERSECTIONS (INTERSECTING CURB LINES OF 2 STREETS)	25 FEET
SEWER LINES	10 FEET

TREE SEPARATION NOTES:

1. NO TREES OR SHRUBS EXCEEDING THREE FEET IN HEIGHT AT MATURITY SHALL BE INSTALLED WITHIN TEN FEET OF ANY PUBLIC WATER AND SEWER FACILITIES.
2. TREES INSTALLED WITHIN 10 FEET OF PRIVATE WATER LINES SHALL HAVE A ROOT BARRIER (BIO-BARRIER, 19.5" DEPTH) INSTALLED ADJACENT TO LINE FOR PROTECTION FROM TREE ROOTS

NOTE: ALL GRADED, DISTURBED, OR ERODED AREAS THAT WILL NOT BE PERMANENTLY PAVED, COVERED BY STRUCTURE, OR PLANTED FOR A PERIOD OVER 90 CALENDAR DAYS SHALL BE TEMPORARILY REVEGETATED WITH A NON-IRRIGATED HYDROSEED MIX. ALL REQUIRED REVEGETATION AND EROSION COMMENTS SHALL BE COMPLETED WITHIN 90 CALENDER DAYS OF THE COMPLETION OF GRADING OR DISTURBANCE.

City of San Diego
Development Services
1222 First Ave., MS-501
San Diego, CA 92101-4154
(619) 446-5000

Landscape Calculations Worksheet

Multiple Dwelling Unit Development in All Zones

Provide the following information on the Landscape Plans. The Landscape Calculations determine the planting area and points required by the Landscape Regulations, Chapter 14, Article 2, Division 4 of the Land Development Code.

STREET YARD

- A minimum 40 sq. ft. planting area shall be provided for all trees, with no dimension less than 5 ft.
- At least one-half of the required planting points shall be achieved with trees.

Planting Area Required [142.0404]	Planting Area Provided	Excess Area Provided
Total Area 1952 sq. ft. x 50%= 976 sq. ft.	768 sq. ft.	-208 sq. ft.

Planting Points Required [142.0404]	Plant Points Provided	Excess Points Provided
Total Area 1952 sq. ft. x 0.05= 97.6 points	340 points	242.4 points

Points achieved with trees: 80 points

Planting Area allowable as hardscape or unattached unit pavers [142.0405(b)(1)(B)]	Provided
Total Area 1952 sq. ft. x 10%= 195.2 sq. ft.	656 sq. ft.

REMAINING YARD - 2 Dwelling Units

Plant Points Required	Plant Points Provided	Points Achieved with trees (at least 50%)
60 points in the remaining yard	– points	– Points

REMAINING YARD - 3 or more Dwelling Units

Plant Points Required	Plant Points Provided	Points Achieved with trees (at least 50%)
60 points x 1 # of buildings	60 points	60 Points

VEHICULAR USE AREA (VUA) - See separate worksheet (DS-5)

ADDITIONAL YARD PLANTING AREA AND POINT REQUIREMENTS

If any of the requirements of Landscape Regulations, Section 142.0405 (a) 1, 2, or 3 apply to your project, provide a written summary explaining how requirements are being met.

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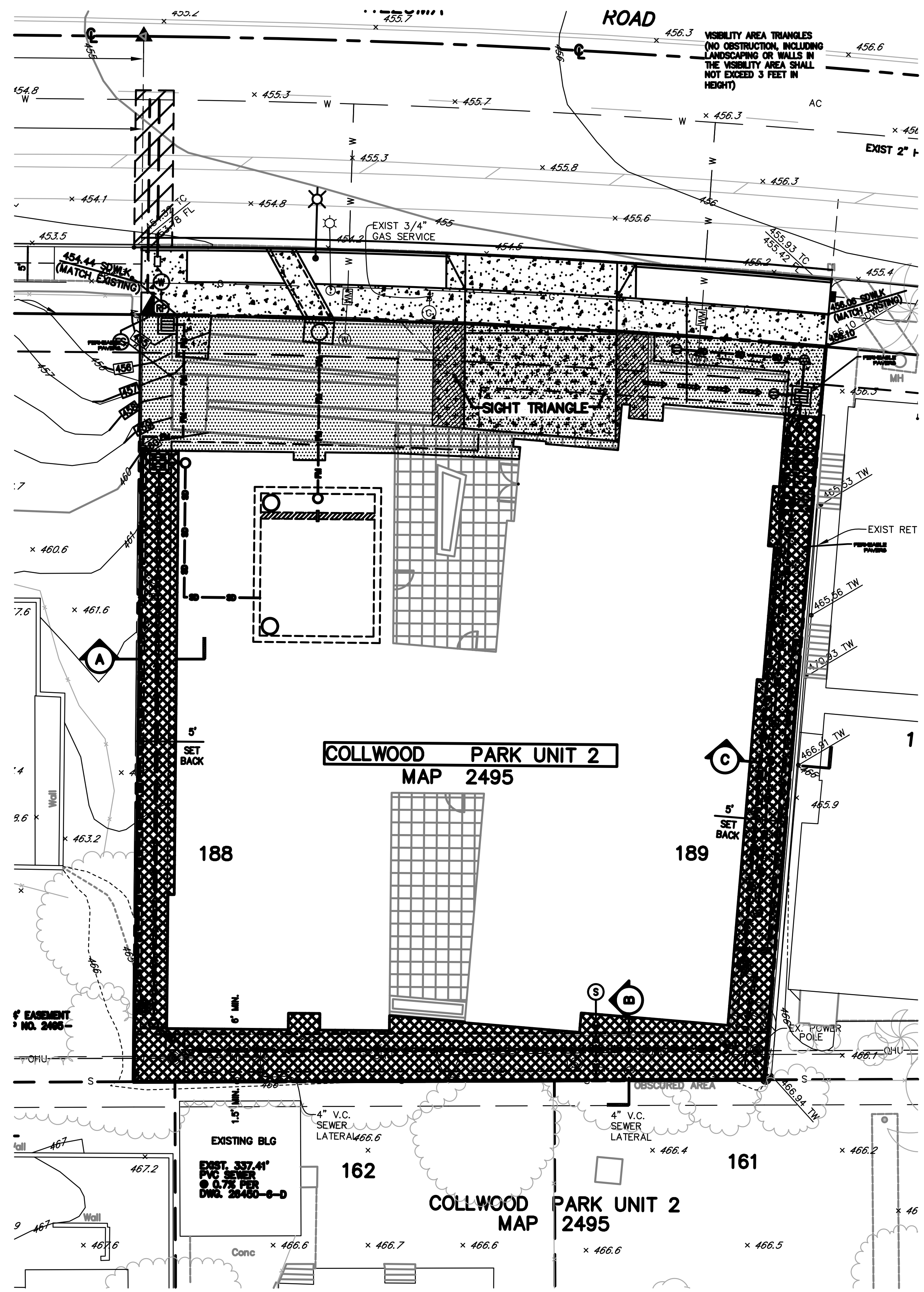
Upon request, this information is available in alternative formats for persons with disabilities.

DS-006 (03-09)

PER THE CITY OF SAN DIEGO PUD—WATER & SEWER DEVELOPMENT COMMENTS ISSUE NUMBER 8, "NO TREES OR SHRUBS EXCEEDING THREE FEET IN HEIGHT AT MATURITY SHALL BE INSTALLED WITHIN 5 FEET OF ANY PUBLIC WATER FACILITIES OR WITHIN AND 10 FEET OF ANY PUBLIC SEWER FACILITIES.



LANDSCAPE CALCULATIONS

SUMMARY OF LANDSCAPE CALCULATIONS
LANDSCAPE CALCULATIONS FOR 6213 MONTEZUMA

STREET TREES IN PUBLIC RIGHT-OF-WAY
Length of street - width of driveway = 85'
Required: 4 Trees (provided at a rate of one per 20ft)
Provided: 2 Palms & 2 Trees

STREET YARD*
Total Area 1,952 s.f.
*Planting Area required 976 s.f. - 448 s.f. = 528 s.f., provided= 192 s.f. hardscape
Plant Points Required 97.6, provided 340 points - 97.6 s.f.= 242.4 excess points
- Planting Area required 976 s.f. - provided 1,424 s.f. = 448 s.f. excess provided
Concrete pavers area: 656 s.f., Planting area: 768
- Plant Points required 97.6, provided 340 pts.
Points achieved through Trees: 80

REMAINING YARD**
Total Area 2,007 s.f.
Plant Points required 60, provided 658
Plant Points required to be achieved by trees: NA
Plant Points achieved through Trees : 0

VEHICULAR USE AREA
Total Area 556 s.f.
Planting Area required 27.8 s.f., provided 149 s.f.
Plant Points required 0 provided 0
Points achieved through Trees : n/a

STREET YARD
1,952 SQ. FT.

REMAINING YARD
2,007 SQ. FT.

VEHICULAR USE AREA
556 SQ. FT.

LANDSCAPE IN THE VUA
149 SQ. FT.

ROOT BARRIER NOTE:
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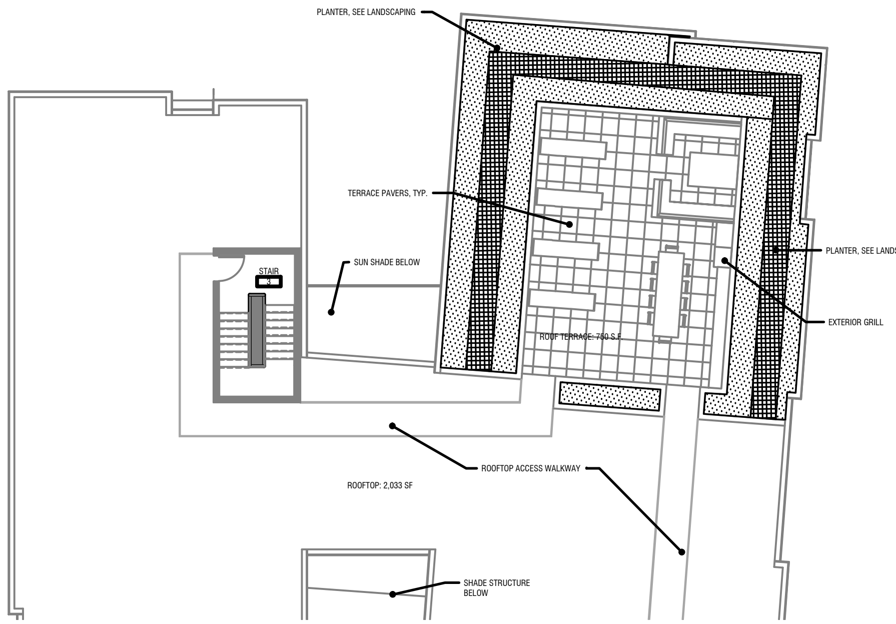
REVISIONS
1ST SUBMITTAL
xx/xx/xx

Phase:
Date: 7/8/16
Reviewed by: JPB
Drawn: JVS/DRB
Job No.: 2016-32
Sheet Title: LANDSCAPE CALCULATIONS
Sheet: LC-2
Of 4 Sheets



ZONE 1

HYDROZONE 1: DRIP, LOW WATER-USE PLANTING (2,579 SF, 79% OF TOTAL LANDSCAPE AREA)

ZONE 2

HYDROZONE 2: DRIP, MEDIUM WATER-USE PLANTING (388 SF, 12% OF TOTAL LANDSCAPE AREA)

ZONE 3

HYDROZONE 3: TREE BUBBLERS, MEDIUM WATER-USE (250 SF, 8% OF TOTAL LANDSCAPE AREA)

ZONE 4

HYDROZONE 4: ESPALIER BUBBLER, MEDIUM WATER-USE PLANTING (40 SF, 1% OF TOTAL LANDSCAPE AREA)

THE TOTAL IRRIGATED AREA (INCLUDING WATER FOUNTAINS POOL, AND SPA) IS 3,257 SF

WATER USE CALCULATIONS

This calculation assumes that Hydrozone 1 is planted with low water shrubs with a Plant Factor (PF) of 0.1 and utilizes a Drip System with an Irrigation Efficiency (IE) of 0.8 (80%). It assumes that Hydrozone 2 is planted with medium water shrubs with a PF of 0.3 and utilizes a Drip system with an IE of 0.8 (80%). It assumes that Hydrozone 3 is planted with medium water-use trees with a PF of 0.3 and utilizes a drip system with an IE of 0.85 (85%). It assumes that Hydrozone 4 is planted with medium water-use espalier on with a PF of 0.3 and utilizes a drip system with an IE of 0.85 (85%).

HYDROZONE	PLANT WATER USE TYPE	PLANT FACTOR	IRRIGATION METHOD	IRRIGATION EFFICIENCY	LA (SQ FT)	PERCENT OF TOTAL LA	ETAF	SLA
1	LOW	0.1	DRIP	0.8	2,579	79%	0.55	NO
2	MEDIUM	0.3	DRIP	0.8	388	12%	055	NO
3	MEDIUM	0.3	BUBBLER	0.85	250	8%	0.55	NO
4	MEDIUM	0.3	BUBBLER	0.85	40	1%	0.55	NO

ETO - (47)
0.62 - The conversion factor to gallons per SQ FT
ETAF - 0.55 for residential areas
ETAF - 0.45 for non-residential areas
LA - The Landscaped Area for each zone.
SLA - Is the total special landscape area in SQ FT

HYDROZONE 1
MAWA = (ETO) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]
MAWA = (47) (0.62) [(0.55 x 2,579) + ((1-0.55) x 0)]
MAWA = 41,334 gal / yr

HYDROZONE 2
MAWA = (ETO) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]
MAWA = (47) (0.62) [(0.55 x 388) + ((1-0.55) x X)]
MAWA = 6,219 gal / yr

HYDROZONE 3
MAWA = (ETO) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]
MAWA = (47) (0.62) [(0.55 x 250) + ((1-0.55) x 0)]
MAWA = 4,007 gal / yr

HYDROZONE 4
MAWA = (ETO) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]
MAWA = (47) (0.62) [(0.55 x 40) + ((1-0.55) x 0)]
MAWA = 642 gal / yr

MAXIMUM APPLIED WATER ALLOWANCE (MAWA)
MAWA = (ETO) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]
MAWA = (47) (0.62) [(0.55 x 3,257) + ((1-0.55) x 0)]
MAWA = 52,202 gal / yr

HYDROZONE	IRRIGATION EFFICIENCY	PLANT FACTOR	LA (SQ FT)	ETAF (PF/IE)
1	0.8	0.1	2,579	0.125
2	0.8	0.3	388	0.375
3	0.85	0.3	250	0.353
4	0.85	0.3	40	0.353

ETO - (47)
0.62 - The conversion factor to gallons per SQ FT
ETAF - The Plant factor/Irrigation Efficiency
AREA - The Landscaped Area for each zone.
SLA - Is the total special landscape area in SQ FT

HYDROZONE 1
ETWU = (Eto) (0.62) x ETAF x AREA
ETWU = (47) (0.62) x 0.125 x 2,579
ETWU = 9,395 gal / yr

HYDROZONE 2
ETWU = (Eto) (0.62) x ETAF x AREA
ETWU = (47) (0.62) x 0.375 x 388
ETWU = 4,240 gal / yr

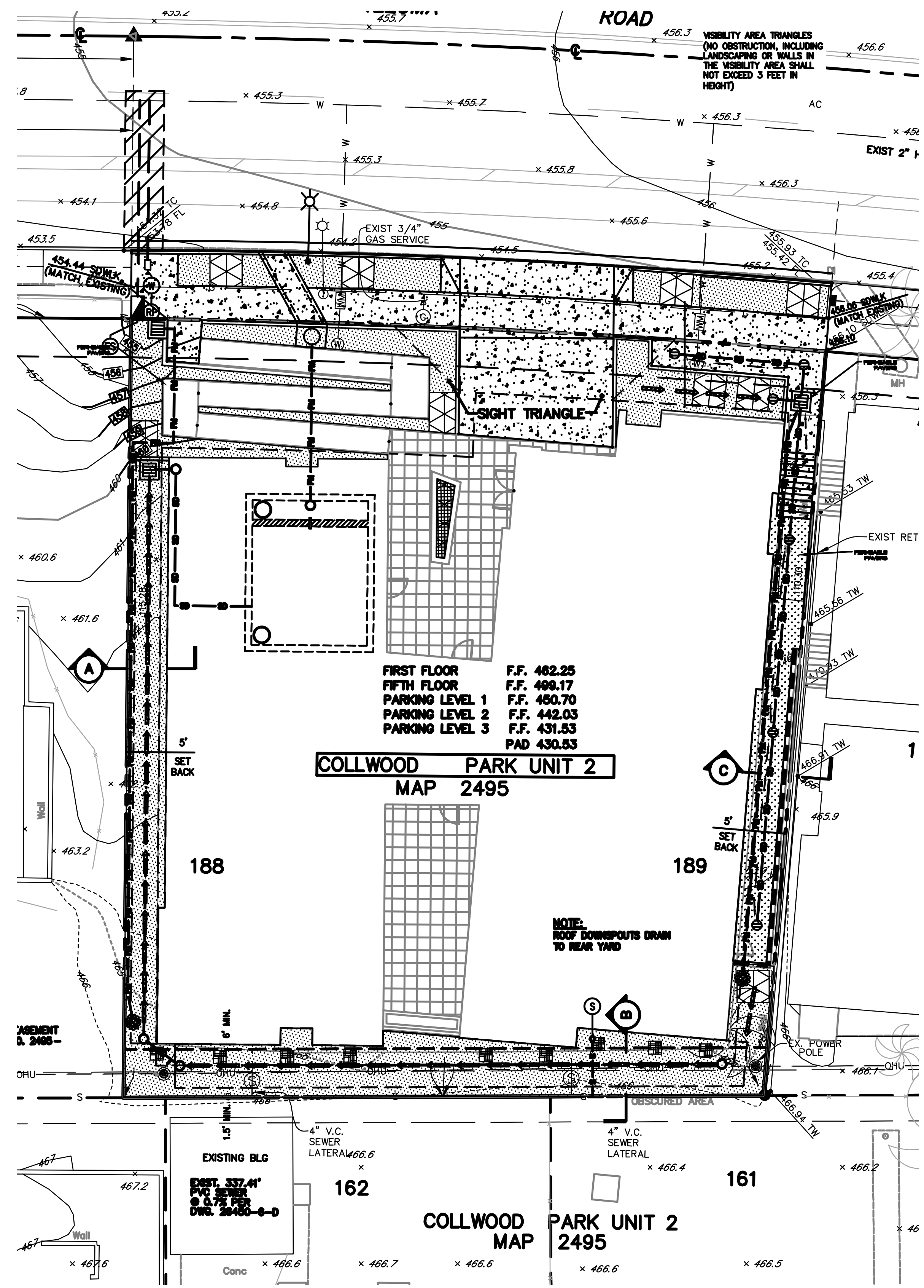
HYDROZONE 3
ETWU = (Eto) (0.62) x ETAF x AREA
ETWU = (47) (0.62) x 0.353 x 250
ETWU = 2,572 gal / yr

HYDROZONE 4
ETWU = (Eto) (0.62) x ETAF x AREA
ETWU = (47) (0.62) x 0.353 x 40
ETWU = 412 gal / yr

ESTIMATED TOTAL WATER USE (ETWU)
ETWU = (Eto) (0.62) x ETAF x AREA
ETWU = 16,619 gal/ yr

Total project ETWU = 16,619 gal/ yr
The ETWU (16,619 gal / yr) is less than the MAWA (52,202 gal / yr)

PERCENT = ETWU / MAWA x 100 = 16,619 gal / 52,202 gal x 100 = 32%
The annual water savings is 68% (35,583 gallons per year)



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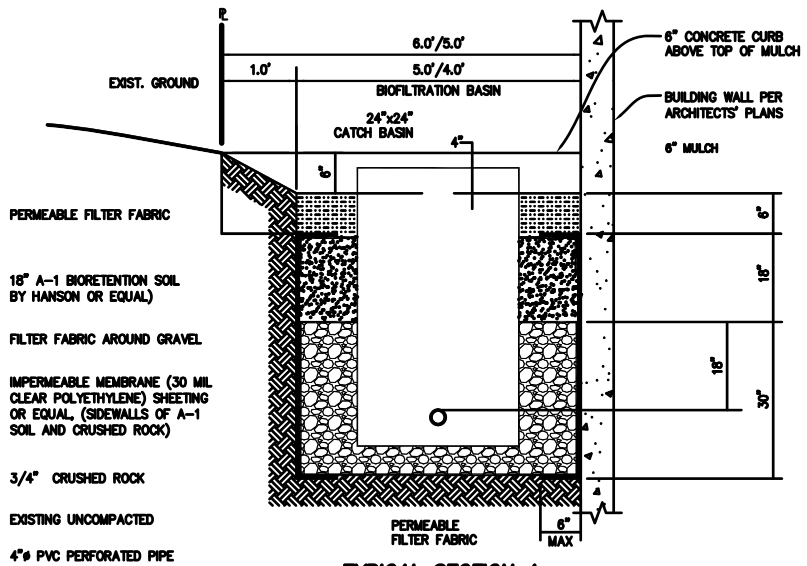
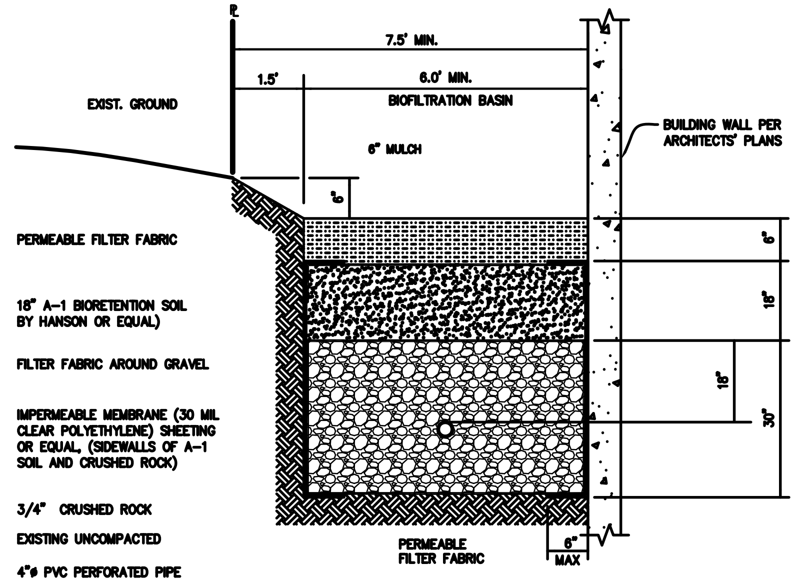
xx/xx/xx

Phase:
Date: 7/8/16
Reviewed by: JPB
Drawn: JVS/DRB
Job No.: 2016–32
Sheet Title: LANDSCAPE WATER CALCS
Sheet: LC-3
Of 4 Sheets



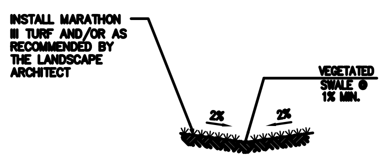
TYPICAL SECTION A

NO SCALE



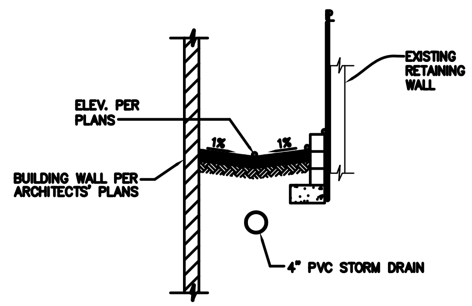
TYPICAL SECTION B

NO SCALE



VEGETATED SWALE DETAIL

NO SCALE



TYPICAL SECTION C

NO SCALE

S&S SEEDS

BASIC NATIVE EROSION CONTROL MIX

This mix of annual native California species has been formulated for rapid growth in the lower rainfall climates and varied soil types of Central and Southern California. For this reason, it is the best choice for permanent or temporary cover in areas that may not support perennial natives without the addition of irrigation or soil amendments. These seeds are adapted to our climates and plant communities and can be used around sensitive native habitat and in conjunction with other species, including wildflowers, without the fear of native gene contamination.

SPECIES	COMMON NAME	BULK #'s/ACRE	MIN % PLS*
Bromus carinatus 'Cucamonga'	Cucamonga brome	20.00	85
Festuca microstachys	Small fescue	8.00	85
Trifolium willdenovii	Tomcat clover	4.00	85
		32.00	

* MIN % PLS (Pure Live Seed) = Seed Purity x Germination Rate

If the site is hydraulically seeded, we suggest the following slurry components:

Conwed 1000 Wood Fiber Mulch 2,000 lbs/acre
Hydropost Premium Compost 1,000 lbs/acre
BioSol Forte 7-2-1 Organic Fertilizer 300 lbs/acre

Seed: 32 lbs per acre
Height: 24-36 inches
Emergence: 10-15 days
Establishment: 45 days to 90% cover after emergence

For additional plant characteristics visit the plant database portion of our website at www.ssseeds.com.

PO BOX 1275 CARPINTERIA, CA 93014 USA * PH: 805/684-0436 * FAX: 805/684-2798
E-MAIL:INFO@SSSEEDS.COM WEBSITE: WWW.SSSEEDS.COM

HYDROSEED MIX

ROOT BARRIER NOTE:

ALL TREES PLANTED WITHIN 5' OF ANY CURB, WALL, HARDSCAPE ELEMENT, BUILDING, FIRE HYDRANT, UTILITY VAULT, OR LIGHT FIXTURE SHALL RECEIVE A 10' LENGTH OF 19.5" DEEP ROOT BARRIER. NO ROOT BARRIER SHALL ENCIRCLE THE ROOT BALL.

Underground Service Alert
Call: TOLL FREE
1-800
227-2600
TWO WORKING DAYS BEFORE YOU DIG
"CAUTION": Remember that the USA Center notifies only those utilities belonging to the center. There could be other utilities present at the work site. The center will inform you of whom they will notify.

N

10 5 0 10 20 30
SCALE: 1"=10'-0"

JAMES P. BENEDETTI
LANDSCAPE ARCHITECT
4403 MANCHESTER AVE., SUITE 201
ENCINITAS, CA 92024
760/479-0644 FAX 760/479-0645
JPBLA

LICENSED LANDSCAPE ARCHITECT
JAMES P. BENEDETTI
Signature
Ren Date 3/30/16
Date 7/12/16
STATE OF CALIFORNIA

MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD
SAN DIEGO, CA 92115

REVISIONS

1ST SUBMITTAL
xx/xx/xx

Phase:

Date: 7/8/16
Reviewed by: JPB
Drawn: JVS/DRB
Job No.: 2016-32

Sheet Title:
LANDSCAPE DETAILS

Sheet:
LC-4
Of 4 Sheets

ATTACHMENT 5
DRAINAGE REPORT

Attach project's drainage report. Refer to Drainage Design Manual to determine the reporting requirements.

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JP ENGINEERING
■ CIVIL ENGINEERING
■ LAND PLANNING
■ SURVEYING

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Tel 858.569.7377
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Web www.jpeng.com
Email jp@jpeng.com

HYDROLOGY

AND

DRAINAGE CALCULATIONS

FOR

MONTEZUMA PDP/CUP

P.T.S. #501449

REGISTERED PROFESSIONAL ENGINEER
JORGE H. PALACIOS
No. 32031
12/31/18
CIVIL
STATE OF CALIFORNIA

J H Palacios

Jorge H. Palacios, RCE 32031

03-09-17

Date

PROJECT NO. 999-15

TABLE OF CONTENTS

SCOPE OF STUDY

The goal of this drainage study is to analyze the 50-year, 10-year storm and 2-year storm runoff for the Montezuma PDP/CUP, in the City of San Diego.

One-hundred percent of the site has been previously graded for construction of the existing buildings. Montezuma Road are fully improved with curb, gutters, concrete sidewalk, AC paving and underground utilities. The site drains northerly to the existing concrete curbs and gutters at the existing street. The surface runoff and private storm drains are designed to drain to the same locations.

There is no change in land use and therefore it will not increase the composite runoff coefficient of the project.

The runoff coefficient for the site that has been used for the runoff calculations is 0.70, which is the land use of the property. The soil type used is D for all areas. Runoff Calculations are based on the requirements outlined in the City of San Diego's Drainage Design Manual, 1984 Edition.

Rational Method runoff calculations were performed using the Rational Method. The method calculates times of concentration and runoff volumes using the criteria specified in the City of San Diego's Drainage Design Manual, 1984 Edition.

To comply with the California Water Quality Control requirements, Order No. 2001-01, we are proposing biolfiltration swales and erosion control construction BMP's.

The pre-development and post-development runoff summaries are as follows:

For:	**A (Acres)**	**Q_{pre} (cfs)**	**Q_{post} (cfs)**	**Q_{diff} (cfs)**
50-Year Storm	0.28	0.65	0.65	+0.00
10-Year Storm	0.28	0.51	0.51	+0.00
2-year Storm	0.28	0.35	0.35	+0.00
Priority Treatment Flows (Q_{wq})	0.28	0.11	0.11	+0.00

Conclusion

The post-development (Q_{post}) runoffs are the same as the pre-development (Q_{pre}) runoffs. No additional runoff will be generated from this development. Therefore, no adverse impacts are being caused to neighboring and downstream properties.

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

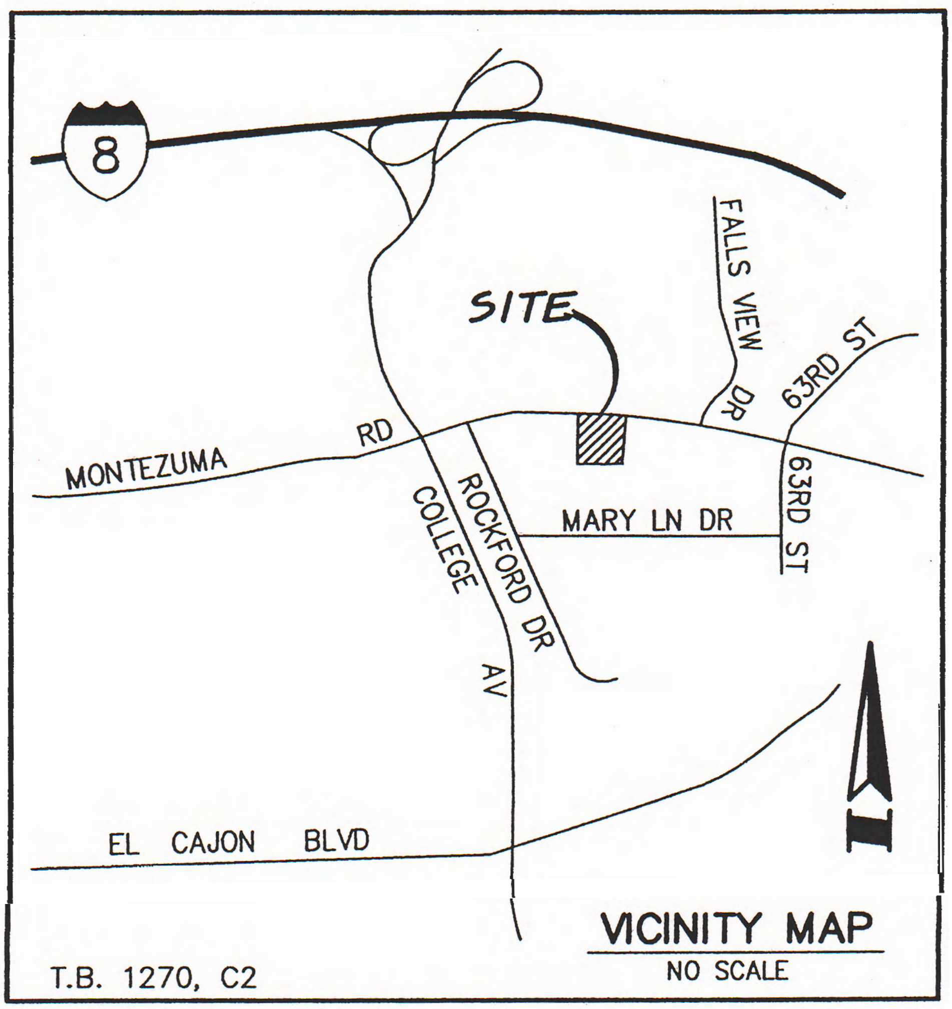
I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

JP ENGINEERING, INC.
4849 RONSON COURT, SUITE 105
SAN DIEGO, CA 92111
(858) 569-7377

BY: ______________________ DATE: 03-09-17

JORGE H. PALACIOS
R.C.E. 32031, EXP. 12-31-18

REGISTERED PROFESSIONAL ENGINEER
JORGE H. PALACIOS
No. 32031
12/31/18
CIVIL
STATE OF CALIFORNIA



8
SITE
FALLS VIEW DR
63RD ST
MONTEZUMA RD
ROCKFORD DR
COLLEGE AV
MARY LN DR
63RD ST
EL CAJON BLVD
VICINITY MAP
NO SCALE
T.B. 1270, C2

50-YEAR STORM

PRE-DEVELOPMENT

AND

POST-DEVELOPMENT

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San Diego, CA 92111
(858) 569-7377 Fax: (858) 569-0830

RATIONAL METHOD STUDY

SEE ATTACHED EXHIBITS "A" AND "B"

CITY OF SAN DIEGO DRAINAGE MANUAL	STUDY NAME: Montezuma PDP/CUP 50 YR. STORM RATIONAL METHOD STUDY	CALCULATED BY: JHP DATE: 03-09-17 CHECKED BY: ______ DATE: ______	JOB NO. 999-15 SHEET NO. 1 OF 1

A			B			C						
CONCEN-TRATION POINT ◯	AREA (ACRES)	REMARKS	RUNOFF COEFF. C	FLOW PATH LENGTH (FT)	FLOW PATH HEIGHT (FT)	TC (Min)	I in/hr	Q (cfs)	SIZE AND TYPE OF INLET	PIPE SIZE AND MATERIAL	SLOPE (%)	NOTES
1	0.02		0.70			10	3.3	0.05	24"x24" C.B.		1.0% min	Post-Development
2	0.22		0.70			10	3.3	0.51	Trapezoidal Swale		1.0% min	Post-Development
3	0.01		0.70			10	3.3	0.02	24"x24" C.B.		5.0% max	Post-Development
4	0.02		0.70			10	3.3	0.05	24"x24" C.B.		8.3% max	Post-Development
5	0.01		0.70			10	3.3	0.02			10.0 % max	Post-Development
TOTAL	**0.28**							0.65				
6	0.14		0.70			10	3.3	0.32			0.02	Pre-Development
7	0.14		0.70			10	3.3	0.33			0.03	Pre-Development
TOTAL	**0.28**							**0.65**				

The Post-Development Q50 is the same as the Pre-Development Q50

10-YEAR STORM

PRE-DEVELOPMENT

AND

POST-DEVELOPMENT

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RATIONAL METHOD STUDY **SEE ATTACHED EXHIBITS "A" AND "B"**

CITY OF SAN DIEGO DRAINAGE MANUAL	STUDY NAME: Montezuma PDP/CUP 10 YR. STORM RATIONAL METHOD STUDY	CALCULATED BY: JHP DATE: 03-09-17 CHECKED BY: DATE:	JOB NO. 999-15 SHEET NO. 1 OF 1

A			B			C						
CONCEN-TRATION POINT	AREA (ACRES)	REMARKS	RUNOFF COEFF. C	FLOW PATH LENGTH (FT)	FLOW PATH HEIGHT (FT)	TC (Min)	I in/hr	Q (cfs)	SIZE AND TYPE OF INLET	PIPE SIZE AND MATERIAL	SLOPE (%)	NOTES
Post-D	0.28	= 1+2+3+4+5	0.70			10	2.6	0.51			1% min.	Post-Development
Pre-D	0.28	= 6+7	0.70			10	2.6	0.51			2% min.	Pre-Development

The Post-Development Q10 is the same as the Pre-Development Q10

2-YEAR STORM

PRE-DEVELOPMENT

AND

POST-DEVELOPMENT

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San Diego, CA 92111
(858) 569-7377 Fax: (858) 569-0830

RATIONAL METHOD STUDY **SEE ATTACHED EXHIBITS "A" AND "B"**

CITY OF SAN DIEGO DRAINAGE MANUAL	STUDY NAME: Montezuma PDP/CUP 2 YR. STORM RATIONAL METHOD STUDY					CALCULATED BY: JHP CHECKED BY:		DATE: 03-09-17 DATE:				JOB NO. 999-15 SHEET NO. 1 OF 1
A			B			C						
CONCEN-TRATION POINT ○	AREA (ACRES)	REMARKS	RUNOFF COEFF. C	FLOW PATH LENGTH (FT)	FLOW PATH HEIGHT (FT)	TC (Min)	I in/hr	Q (cfs)	SIZE AND TYPE OF INLET	PIPE SIZE AND MATERIAL	SLOPE (%)	NOTES
Post-D	0.28	= 1+2+3+4+5	0.70			10	1.8	0.35			1% min.	Post-Development
Pre-D	0.28	= 6+7	0.70			10	1.8	0.35			2% min.	Post-Development

The Post-Development Q2 is the same as the Pre-Development Q2

PRIORITY

PROJECT TREATMENT

CALCULATIONS

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SEE ATTACHED EXHIBITS 'A' AND 'B'

RATIONAL METHOD STUDY

SAN DIEGO COUNTY HYDROLOGY MANUAL	STUDY NAME: Montezuma PDP/CUP PRIORITY TREATMENT - RATIONAL METHOD STUDY	CALCULATED BY: JHP DATE: 03/09/2017 CHECKED BY: DATE:	JOB NO. 999-15 SHEET NO. 1 OF 2

CONCEN-TRATION POINT	AREA ACRES	REMARKS TABLE 3.1 *SOIL GROUP 'A'	SOIL TYPE C	FLOW PATH LENGTH (FT)	FLOW PATH HEIGHT (FT)	TC (Min)	I in/hr	Q (cfs)	SIZE AND TYPE OF INLET	PIPE SIZE AND MATERIAL	SLOPE (%)	NOTES
1	0.02		0.70				0.55	0.01	24"X24" C.B.	4" PVC	1.0 % min	POST-DEVELOPMENT
2	0.22		0.70				0.55	0.08	Trapezoidal Channel		1.0 % min	POST-DEVELOPMENT
3	0.01		0.70				0.55	0.005	24"X24" C.B.	4" PVC	5.0% max	POST-DEVELOPMENT
4	0.02		0.70				0.55	0.01	24"x24" C.B	2" Force Main	8.3% max	POST-DEVELOPMENT
5	0.01		0.70				0.55	0.005				
TOTAL	**0.28**						**TOTAL**	**0.11**				
6	0.14		0.70				0.55	0.05				PRE-DEVELOPMENT
7	0.14		0.70				0.55	0.06				PRE-DEVELOPMENT
TOTAL	**0.28**						**TOTAL**	**0.11**				

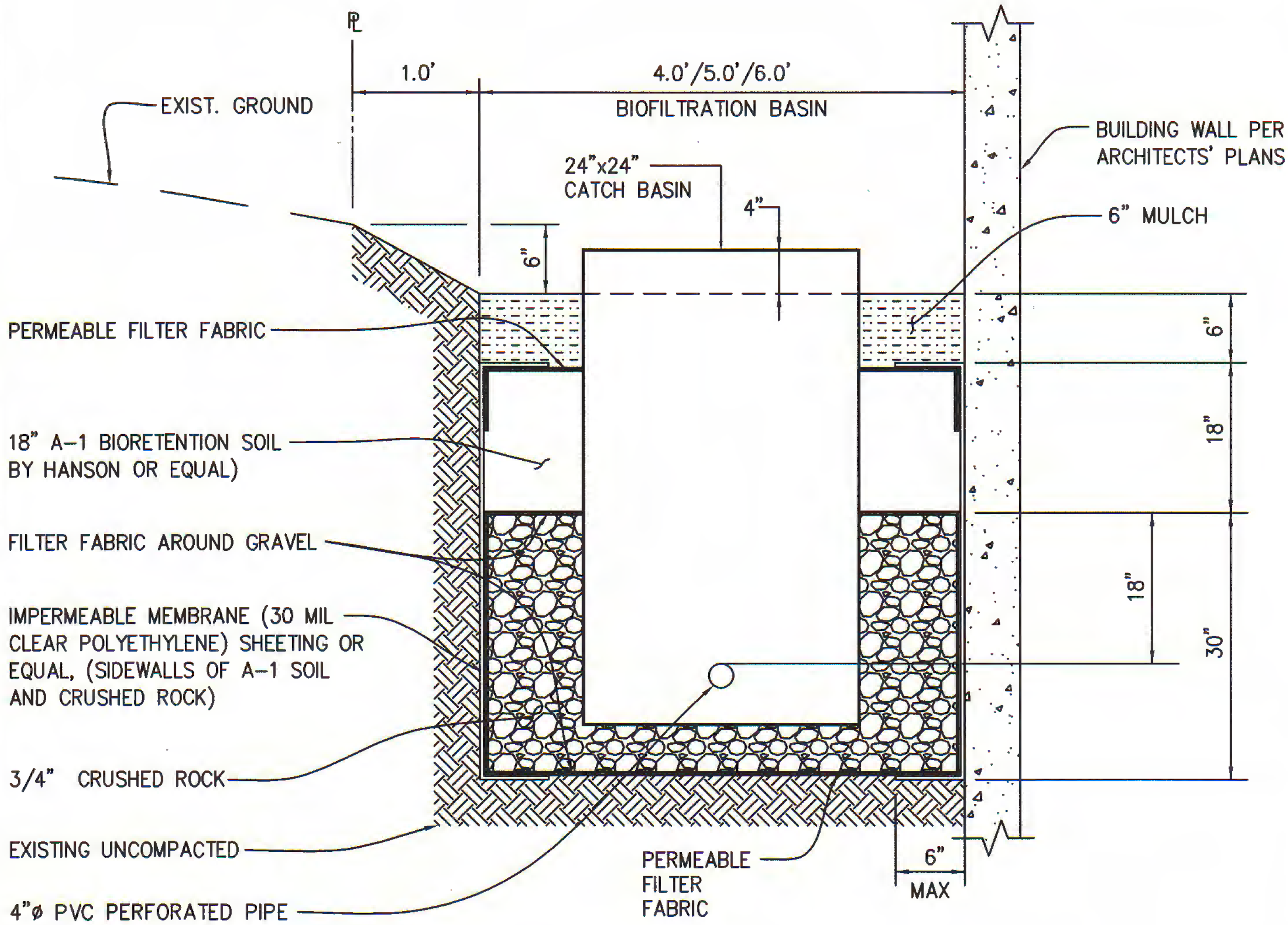
* APPENDIX 'A', SAN DIEGO COUNTY HYDROLOGY MANUAL

THE POST-DEVELOPMENT Q_{WQ} IS THE SAME AS THE PRE-DEVELOPMENT Q_{WQ}

PRIORITY TREATMENT FOR:

1, 2, 3, 4 BIOFILTRATION SWALE

TREATMENT VOLUME CALCULATIONS - BMP 1



BIOFILTRATION BASIN-BMP 1

NO SCALE
CASQA STD. TC-32

NOTE: GRADATION OF A-1 SOIL AND SIZE OF GRAVEL TO BE APPROVED BY SOILS ENGINEER. PRIOR TO BACKFILLING, CALL FOR INSPECTION

d= depth of filter media + 0.50' rock / compost + 1.50' A-1 soil
d= 2.00'
h= 0.50'

TREATMENT VOLUME CALCULATIONS - BMP 1

% Imperviousness (i) :

BMP 1	=	12,009 SQ. FT.
Impervious Area	=	9,470 SQ. FT.

$$i = \frac{9{,}470}{12{,}009} = 0.79 = 79\%$$

Average Runoff Coefficient (C) : 0.70

P_{WQ} Water Quality Precipitation : $P_{WQ} = 0.55$ IN

Event Capture Ratio (a) :

48 Hours $= a = 1.545$

Water Quality Volume :

$P_o = aCP_{WQ} = 1.545\ (0.70)\ (0.55)$

$P_o = 0.59'' = 0.050'$

California Stormwater Quality Association Stormwater Best Management Practices Handbook :

Required Area of Filter Bed A_f :

A_f = WQV d / [Kt (h+d)]

Where:

WQV = Water Quality Volume
A_f = Area of the filter bed (ft^2)
d = depth of the filter bed
K = coefficient of permeability of the filtering medium (ft/day)
t = time of the water quality volume to filter through the system (days). Assume 1.67 days
h = average water height above A-1 soil

Filter Bed :

A-1 SOIL = 3.5 ft/day
COMPOST = 8.7 ft/day

d = depth of filter media = 0.50' compost + 1.50' A-1 Soil
d = 2.00'

K = use weighted value $K = \frac{8.7\,(0.50) + 3.5\,(1.50)}{2.00} = 4.80$

h ⇒ Use h = 0.50'

BMP 1 CALCULATIONS

Media Filter Treatment Control BMP

- Volume based BMP

Water Quality Volume (WQV)

$WQV = Po\ A$

$Po = 0.05'$ from treatment volume calculations

$A = 0.28\ Ac = 12{,}009$ SQ. FT.

$WQV = (0.05)\ (12{,}009)$

$\therefore\ WQV = 600$ CU. FT.

Filter Area Required :

$$A_f = WQV\ d \,/\, [\,Kt\ (h+d)\,]$$

$$= \frac{(600)\ (2.00)}{(4.80)\ (1.67)\ (0.50 + 2.00)}$$

$\therefore\ A_f = 60$ SQ. FT.

Filter Area Provided:

$A = 970$ SQ. FT.

$\therefore\ A > A_f$ OK

Volume Provided = 970 (2.00) = 1,940 CU. FT. > 60 CU. FT.

CIRCULAR CHANNEL

AND

TRAPEZOIDAL CHANNEL

ANALYSIS

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San Diego, CA 92111
(858) 569-7377 Fax: (858) 569-0830

SEE ATTACHED EXHIBIT 'A'
RATIONAL METHOD STUDY

SAN DIEGO COUNTY HYDROLOGY MANUAL	STUDY NAME: Montezuma PDP/CUP (POST-DEVELOPMENT) PRIORITY TREATMENT		CALCULATED BY: JHP DATE: 03/09/2017 CHECKED BY: DATE:			JOB NO. 999-15 SHEET NO. 2 OF 2
CONCEN-TRATION POINT	REMARKS	Q (cfs)	SIZE AND TYPE OF INLET	PIPE SIZE AND MATERIAL	SLOPE (%)	NOTES
P-1	= 1	0.05	24" X 24" C.B.	4" PVC PIPE	1.0% MIN.	DN= 0.11', V= 2.07 fps
P-2	= 1 + 2	0.56	Trapezoidal Swale		1.0% MIN.	DN= 0.18', V= 0.51 fps
P-3	= 4	0.02	24"x24" C.B.	2" FORCE MAIN	8.3% MIN.	
P-4	= 1 + 2 + 3 + 4	0.63	24"X24" C.B.	Trapezoidal Swale	5% MIN.	DN=0.12' V=0.88 fps
P-5	= P-4	0.63	24"x24" C.B.	4" PVC	10% MIN.	DN=0.25' V=9.18 fps
P-6	= P-5	0.63	Trapezoidal Channel	Type 'A' curb outlet	1.5% MIN.	DN=0.06' V=3.53 fps

G:\project docs\999-15\Hydrology Drainage Calc Report\RMS-50YR.wpd

CIRCULAR CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

March 17, 2017

PROGRAM INPUT DATA

DESCRIPTION	VALUE
Flow Rate (cfs)	0.05
Channel Bottom Slope (ft/ft)	0.01
Manning's Roughness Coefficient (n-value)	0.011
Channel Diameter (ft)	0.33

COMPUTATION RESULTS

DESCRIPTION	VALUE
Normal Depth (ft)	0.11
Flow Velocity (fps)	2.07
Froude Number	1.31
Velocity Head (ft)	0.07
Energy Head (ft)	0.17
Cross-Sectional Area of Flow (sq ft)	0.02
Top Width of Flow (ft)	0.31

HYDROCALC Hydraulics for Windows, Version 1.2a Copyright (c) 1996
Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069
Phone:(281)440-3787, Fax:(281)440-4742, Email:software@dodson-hydro.com

P-1

TRAPEZOIDAL CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

March 17, 2017

PROGRAM INPUT DATA

DESCRIPTION	VALUE
Flow Rate (cfs)	0.56
Channel Bottom Slope (ft/ft)	0.01
Manning's Roughness Coefficient (n-value)	0.09
Channel Left Side Slope (horizontal/vertical)	0.0
Channel Right Side Slope (horizontal/vertical)	0.0
Channel Bottom Width (ft)	6.0

COMPUTATION RESULTS

DESCRIPTION	VALUE
Normal Depth (ft)	0.18
Flow Velocity (fps)	0.51
Froude Number	0.211
Velocity Head (ft)	0.0
Energy Head (ft)	0.19
Cross-Sectional Area of Flow (sq ft)	1.09
Top Width of Flow (ft)	6.0

P-2

TRAPEZOIDAL CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

March 17, 2017

PROGRAM INPUT DATA

DESCRIPTION	VALUE
Flow Rate (cfs)	0.63
Channel Bottom Slope (ft/ft)	0.05
Manning's Roughness Coefficient (n-value)	0.09
Channel Left Side Slope (horizontal/vertical)	0.0
Channel Right Side Slope (horizontal/vertical)	0.0
Channel Bottom Width (ft)	6.0

COMPUTATION RESULTS

DESCRIPTION	VALUE
Normal Depth (ft)	0.12
Flow Velocity (fps)	0.88
Froude Number	0.446
Velocity Head (ft)	0.01
Energy Head (ft)	0.13
Cross-Sectional Area of Flow (sq ft)	0.72
Top Width of Flow (ft)	6.0

P-4

CIRCULAR CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

March 17, 2017

PROGRAM INPUT DATA

DESCRIPTION	VALUE
Flow Rate (cfs)	0.63
Channel Bottom Slope (ft/ft)	0.1
Manning's Roughness Coefficient (n-value)	0.011
Channel Diameter (ft)	0.33

COMPUTATION RESULTS

DESCRIPTION	VALUE
Normal Depth (ft)	0.25
Flow Velocity (fps)	9.18
Froude Number	3.307
Velocity Head (ft)	1.31
Energy Head (ft)	1.56
Cross-Sectional Area of Flow (sq ft)	0.07
Top Width of Flow (ft)	0.29

P-5

TRAPEZOIDAL CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

March 17, 2017

PROGRAM INPUT DATA

DESCRIPTION	VALUE
Flow Rate (cfs)	0.63
Channel Bottom Slope (ft/ft)	0.05
Manning's Roughness Coefficient (n-value)	0.014
Channel Left Side Slope (horizontal/vertical)	0.0
Channel Right Side Slope (horizontal/vertical)	0.0
Channel Bottom Width (ft)	3.0

COMPUTATION RESULTS

DESCRIPTION	VALUE
Normal Depth (ft)	0.06
Flow Velocity (fps)	3.53
Froude Number	2.557
Velocity Head (ft)	0.19
Energy Head (ft)	0.25
Cross-Sectional Area of Flow (sq ft)	0.18
Top Width of Flow (ft)	3.0

P-6

HYDRAULIC REFERENCES

AND

GRAPHS

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.

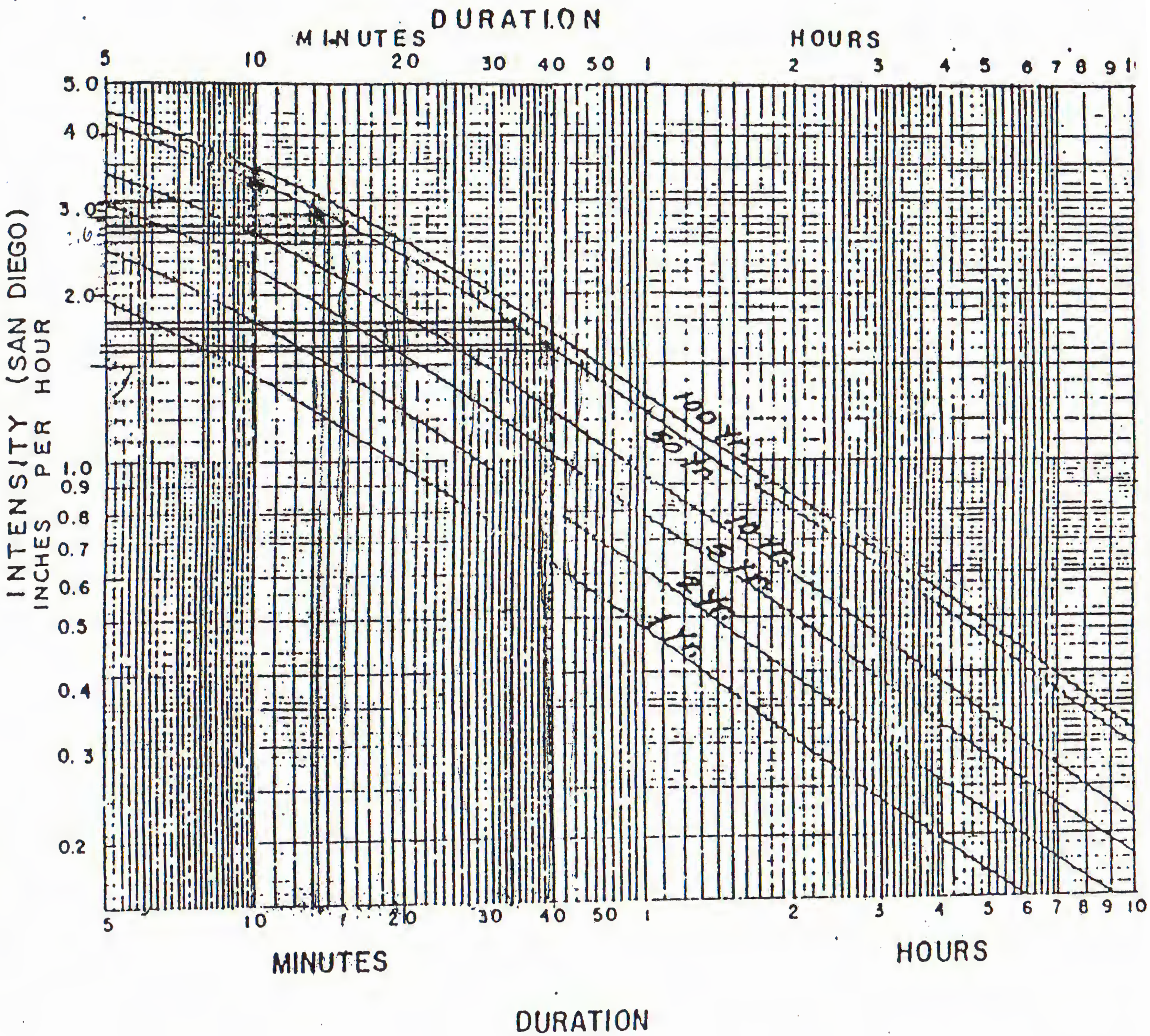
Actual imperviousness = 50%

Tabulated imperviousness = 80%

Revised C = $\frac{50}{80} \times 0.85$ = 0.53

ELEV.	FACTOR
0–1500	1.00
1500–3000	1.25
3000–4000	1.42
4000–5000	1.60
5000–6000	1.70
DESERT	1.25

To obtain correct intensity, multiply intensity on chart by factor for design elevation.



RAINFALL
INTENSITY-DURATION-FREQUEN
CURVES
for
COUNTY OF SAN DIEGO

APPENDIX XI

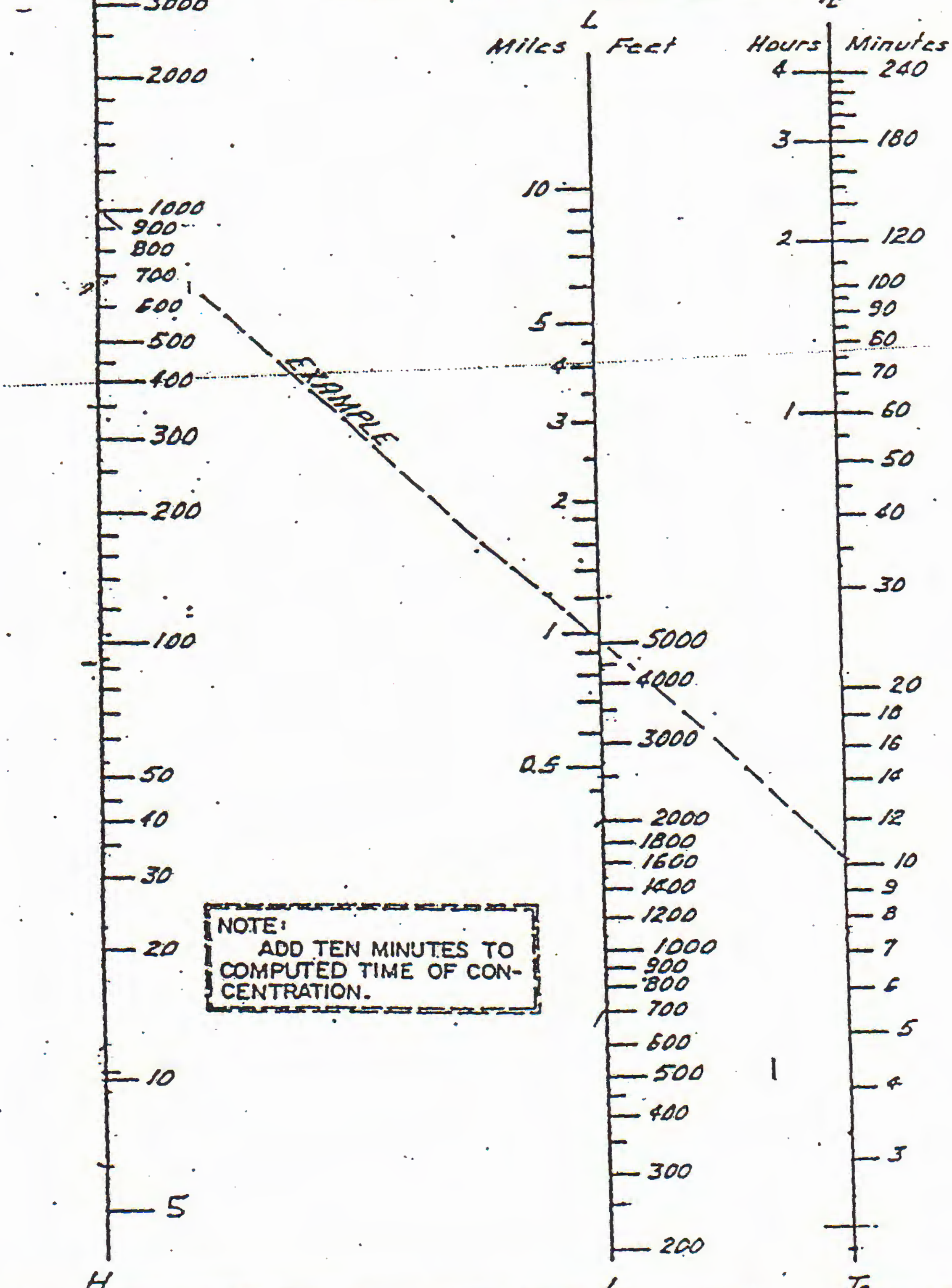
83

26

EQUATION

$$T_c = \left(\frac{11.9L^3}{H}\right)^{.385}$$

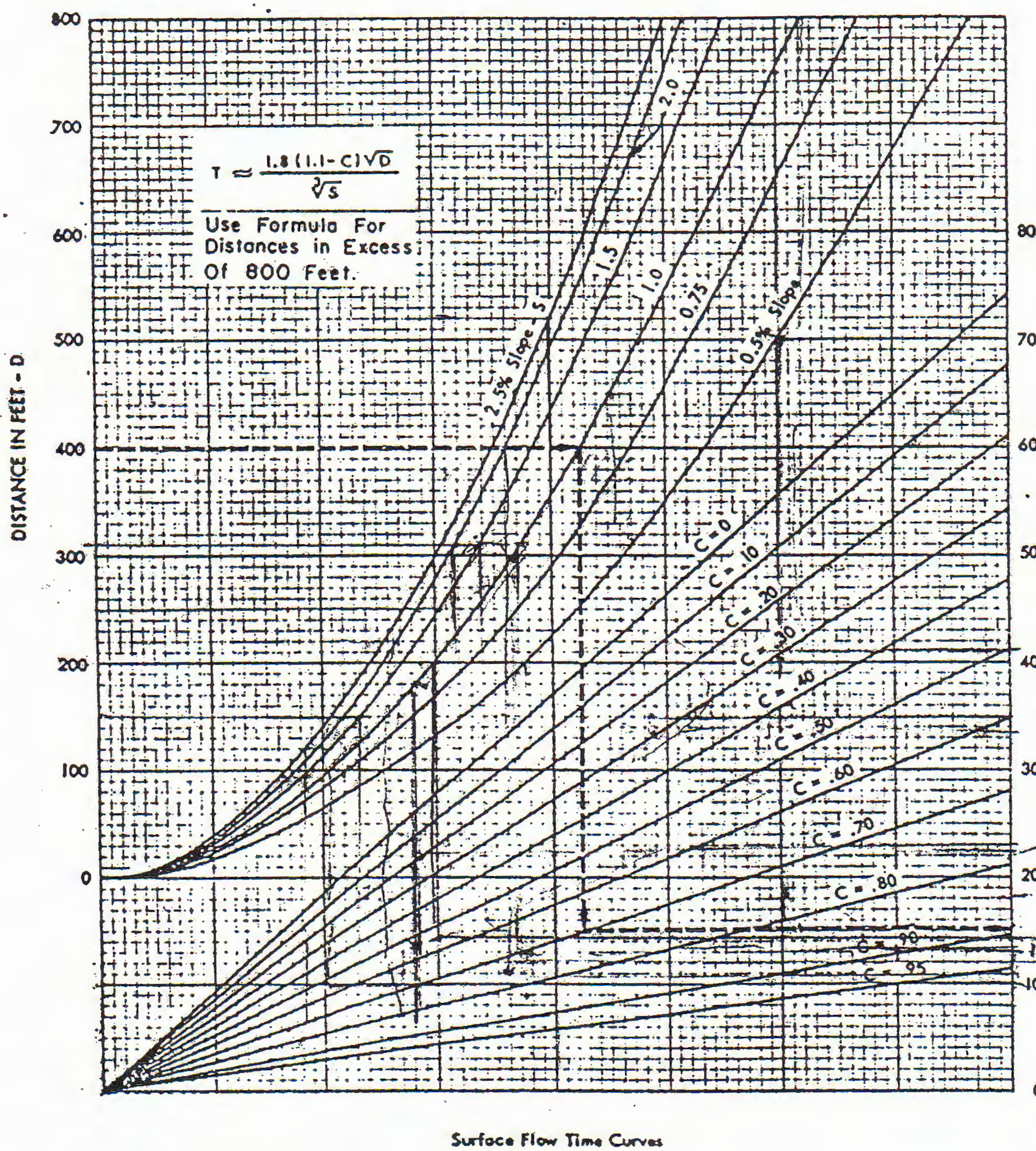
T_c = Time of concentration (in hours)
L = Length of watershed (in miles)
H = Difference in elevation along effective slope line (See Appendix X-B) (in feet)



SAN DIEGO COUNTY DEPARTMENT OF SPECIAL DISTRICT SERVICES DESIGN MANUAL	NOMOGRAPH FOR DETERMINATION OF TIME OF CONCENTRATION (Tc) FOR NATURAL WATERSHEDS	
APPROVED [illegible signature]	DATE	APPENDIX X-A

URBAN AREAS OVERLAND TIME OF FLOW CURVES

D= feet
S= %



Surface Flow Time Curves

EXAMPLE:

GIVEN: LENGTH OF FLOW = 400 FT.

SLOPE = 1.0 %

COEFFICIENT OF RUNOFF C = .70

READ: OVERLAND FLOWTIME = 15 MINUTES

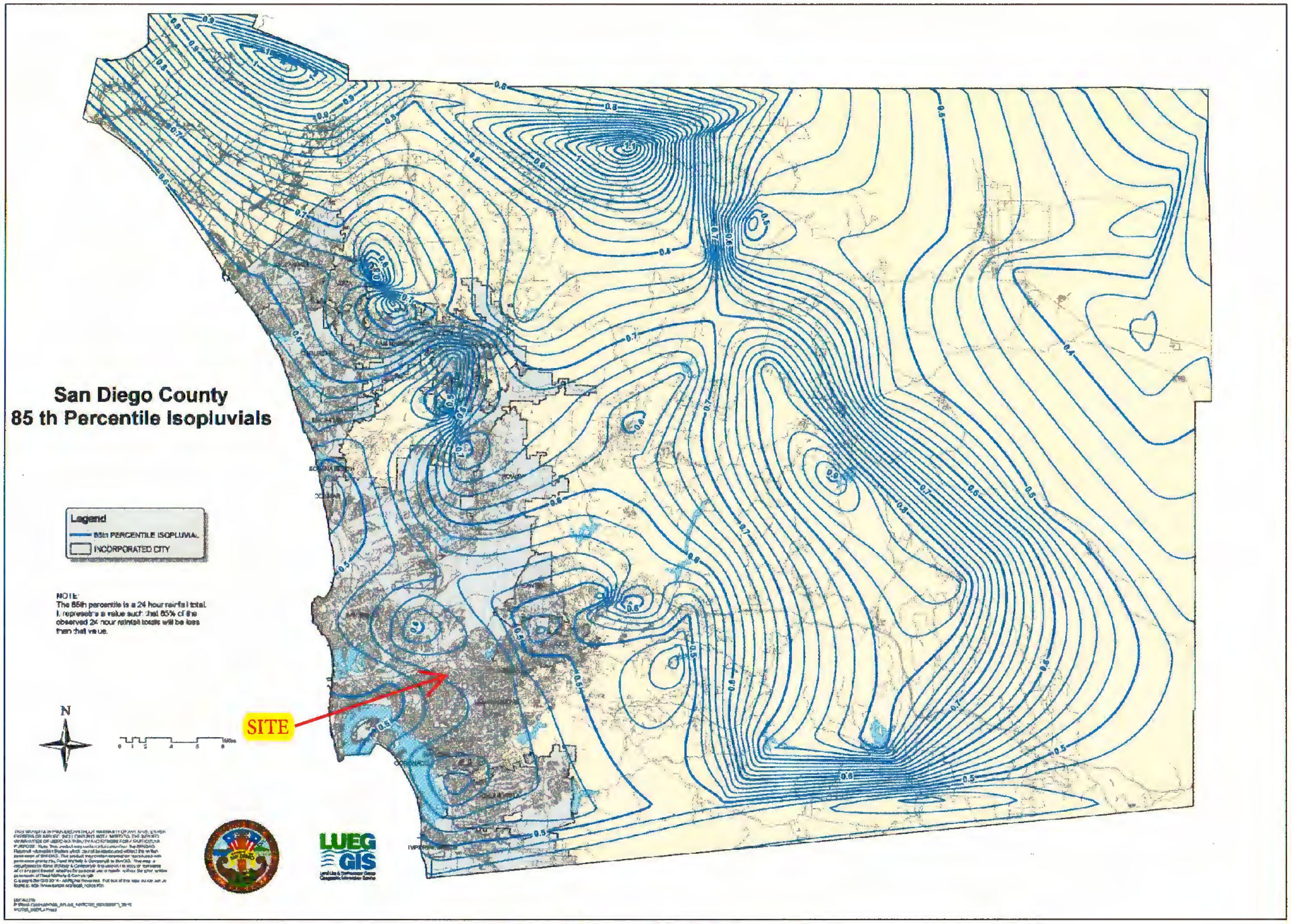


Figure B.1-1: 85th Percentile 24-hour Isopluvial Map

A-1 Bio-Retention Soil

(Soil Medium for Bio-Swales & Bio-Retention Basins)

PRODUCT DESCRIPTION:

A-1 Bioswale Soil is a blend of **80% washed coarse sand** and ***20% sandy loam topsoil.*** The blended material is low in silt and clay which allows the material to perform at the required minimum drainage properties of > 5" per hour KSat Perc Rate @ 85% relative compaction. This satisfies civil engineering requirements while maintaining the agronomical properties of a well graded sand with silt to satisfy the landscape architect's desire to support growth of plant material. Clay content is limited to provide a minimum cation exchange capacity for healthy plant material if desired.

The uniform sand sizes of A-1 Bio-Retention Soil results in long lasting pore space and moisture capacity for a reasonably priced, readily available, consistent source of an appropriate soil medium to comply with State Water Quality requirements.

(***NOTE;** Organic matter may be incorporated by volume percentage when requested by the customer for an additional cost that will vary depending on the desired type and percentage requested. It is recommended that organic matter be incorporated into the soil medium's top six inches after installation to relieve compaction or in the planting hole for trees or shrubs to concentrated the amendment where it will benefit the plants and restrict water movement.)

PRODUCT USES:

A-1 Bio-Retention Soil is a soil medium for Bio-Retention Basins and Swales which helps remove contaminants from storm water runoff as required by the State of California Regional Water Quality Control Board and other government agencies charged with enforcement of these requirements. The ultimate goal is to help prevent contamination of the downstream beneficial water sources of the State.

(***NOTE:** All materials should be sampled, submitted, and approved prior to shipment or installation as job plans and specifications **VARY GREATLY!** It is the customer's responsibility to assure the soil is approved **BEFORE** installation!

INSTALLATION:

A-1 Bio-Retention Soil should be installed per construction plans or engineers specifications. Compaction should be avoided and ideally the soil should be installed at less than optimum moisture.

Specification data subject to change. Additional data available upon request.

Limitation of Warranties: Seller makes no warranty of any kind, express or implied, regarding the materials; and all warranties, including any implied warranty of merchantability and any implied warranty of fitness for a particular purpose, are hereby excluded.

A-1 Bio-Retention Soil

(Soil Medium for Bio-Swales and Bio-Retention Basins)

A-1 Bioswale Soil is a locally available mix that is a reasonably priced solution for architects and engineers designing project to achieve LEED credits and certification as well as compliance with local and state storm drain requirements.

- Sustainable Sites Credit 5.1 Site Development - Protect / Restore Habitat
- Sustainable Sites Credit 6.1 Storm Water Design - Quality Control
- Sustainable Sites Credit 6.2 Storm Water Design - Quality Control
- Water Effiiency Prerequisite Water Use Reduction - 20% Reduction
- Water Efficiency Credit 1 - Water Efficiency Landscaping
- Material and Resources Credit 5 - Regional Materials
- Innovation in Design - Protect & Restore Habitat

PRODUCT ANALYSIS: (Unameded A-1 Bioswale) - Product can be amended per specification

Passing
3/8” 100%
#4 .... 90%-100%
#8 .... 40%-60%
#200 .... <15%

USDA Soil Classification .... Very Gravelly Sand

PH Range .... 6.5 - 8.5
ECe (Salinity) .... < 3.0

KSat (Perc Rate) .... >5.0 inches/hr @ 85% Compaction (Compaction affects permeability)
Sand 80%-90%
Topsoil .... 20% added topsoil (sand component in topsoil shows up in final mix evaluation)
Silt & Clay .... 10% - 20% (from added topsoil)

***Analysis based on UN-AMENDED soil. Amendments added by volume and type requested.**

Specification data subject to change. Additional data available upon request.

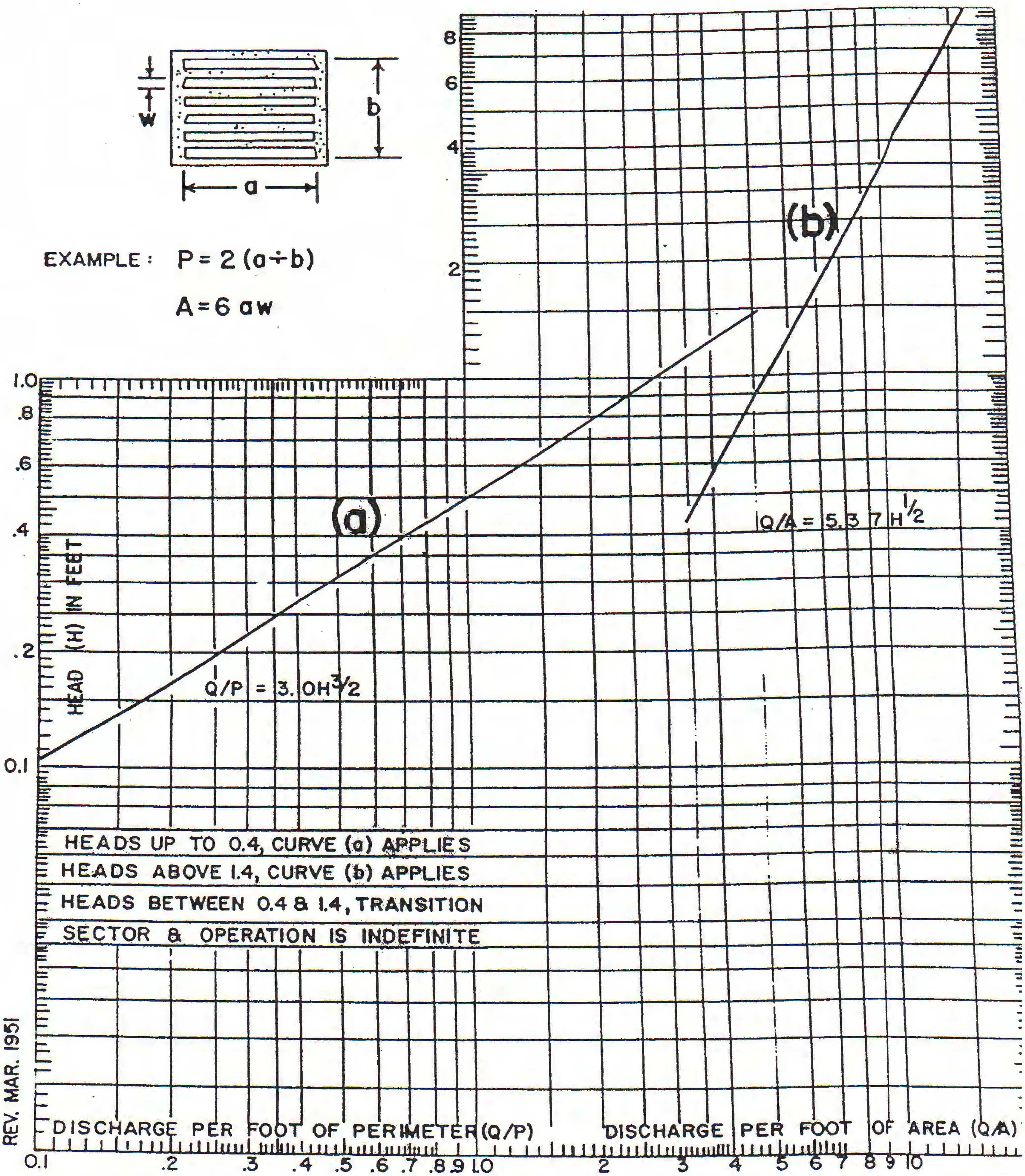
Limitation of Warranties: Seller makes no warranty of any kind, express or implied, regarding the materials; and all warranties, including any implied warranty of merchantability and any implied warranty of fitness for a particular purpose, are hereby excluded.

Table 1.—Manning roughness coefficients, *n* [1]

	Manning's *n* range [2]
I. Closed conduits:	
A. Concrete pipe	0.011–0.013
B. Corrugated-metal pipe or pipe-arch:	
1. 2⅔ by ½-in. corrugation (riveted pipe): [3]	
a. Plain or fully coated	0.024
b. Paved invert (range values are for 25 and 50 percent of circumference paved):	
(1) Flow full depth	0.021–0.018
(2) Flow 0.8 depth	0.021–0.016
(3) Flow 0.6 depth	0.019–0.013
2. 6 by 2-in. corrugation (field bolted)	0.03
C. Vitrified clay pipe	0.012–0.014
D. Cast-iron pipe, uncoated	0.013
E. Steel pipe	0.009–0.011
F. Brick	0.014–0.017
G. Monolithic concrete:	
1. Wood forms, rough	0.015–0.017
2. Wood forms, smooth	0.012–0.014
3. Steel forms	0.012–0.013
H. Cemented rubble masonry walls:	
1. Concrete floor and top	0.017–0.022
2. Natural floor	0.019–0.025
I. Laminated treated wood	0.015–0.017
J. Vitrified clay liner plates	0.015
II. Open channels, lined [4] (straight alinement): [5]	
A. Concrete, with surfaces as indicated:	
1. Formed, no finish	0.013–0.017
2. Trowel finish	0.012–0.014
3. Float finish	0.013–0.015
4. Float finish, some gravel on bottom	0.015–0.017
5. Gunite, good section	0.016–0.019
6. Gunite, wavy section	0.018–0.022
B. Concrete, bottom float finished, sides as indicated:	
1. Dressed stone in mortar	0.015–0.017
2. Random stone in mortar	0.017–0.020
3. Cement rubble masonry	0.020–0.025
4. Cement rubble masonry, plastered	0.016–0.020
5. Dry rubble (riprap)	0.020–0.030
C. Gravel bottom, sides as indicated:	
1. Formed concrete	0.017–0.020
2. Random stone in mortar	0.020–0.023
3. Dry rubble (riprap)	0.023–0.033
D. Brick	0.014–0.017
E. Asphalt:	
1. Smooth	0.013
2. Rough	0.016
F. Wood, planed, clean	0.011–0.013
G. Concrete-lined excavated rock:	
1. Good section	0.017–0.020
2. Irregular section	0.022–0.027
III. Open channels, excavated [4] (straight alinement, [5] natural lining):	
A. Earth, uniform section:	
1. Clean, recently completed	0.016–0.018
2. Clean, after weathering	0.018–0.020
3. With short grass, few weeds	0.022–0.027
4. In gravelly soil, uniform section, clean	0.022–0.025
B. Earth, fairly uniform section:	
1. No vegetation	0.022–0.025
2. Grass, some weeds	0.025–0.030
3. Dense weeds or aquatic plants in deep channels	0.030–0.035
4. Sides clean, gravel bottom	0.025–0.030
5. Sides clean, cobble bottom	0.030–0.040
C. Dragline excavated or dredged:	
1. No vegetation	0.028–0.033
2. Light brush on banks	0.035–0.050
D. Rock:	
1. Based on design section	0.035
2. Based on actual mean section:	
a. Smooth and uniform	0.035–0.040
b. Jagged and irregular	0.040–0.045
E. Channels not maintained, weeds and brush uncut:	
1. Dense weeds, high as flow depth	0.08–0.12
2. Clean bottom, brush on sides	0.05–0.08
3. Clean bottom, brush on sides, highest stage of flow	0.07–0.11
4. Dense brush, high stage	0.10–0.14
IV. Highway channels and swales with maintained vegetation [6,7] (values shown are for velocities of 2 and 6 f.p.s.):	
A. Depth of flow up to 0.7 foot:	
1. Bermudagrass, Kentucky bluegrass, buffalograss:	
a. Mowed to 2 inches	0.07–0.045
b. Length 4–6 inches	0.09–0.05
2. Good stand, any grass:	
a. Length about 12 inches	0.18–0.09
b. Length about 24 inches	0.30–0.15
3. Fair stand, any grass:	
a. Length about 12 inches	0.14–0.08
b. Length about 24 inches	0.25–0.13
B. Depth of flow 0.7–1.5 feet:	
1. Bermudagrass, Kentucky bluegrass, buffalograss:	
a. Mowed to 2 inches	0.05–0.035
b. Length 4 to 6 inches	0.06–0.04
2. Good stand, any grass:	
a. Length about 12 inches	0.12–0.07
b. Length about 24 inches	0.20–0.10
3. Fair stand, any grass:	
a. Length about 12 inches	0.10–0.06
b. Length about 24 inches	0.17–0.09
V. Street and expressway gutters:	
A. Concrete gutter, troweled finish	0.012
B. Asphalt pavement:	
1. Smooth texture	0.013
2. Rough texture	0.016
C. Concrete gutter with asphalt pavement:	
1. Smooth	0.013
2. Rough	0.015
D. Concrete pavement:	
1. Float finish	0.014
2. Broom finish	0.016
E. For gutters with small slope, where sediment may accumulate, increase above values of *n* by	*0.002*
VI. Natural stream channels: [8]	
A. Minor streams [9] (surface width at flood stage less than 100 ft.):	
1. Fairly regular section:	
a. Some grass and weeds, little or no brush	0.030–0.035
b. Dense growth of weeds, depth of flow materially greater than weed height	0.035–0.05
c. Some weeds, light brush on banks	0.035–0.05
d. Some weeds, heavy brush on banks	0.05–0.07
e. Some weeds, dense willows on banks	0.06–0.08
f. For trees within channel, with branches submerged at high stage, increase all above values by	*0.01–0.02*
2. Irregular sections, with pools, slight channel meander; increase values given in 1a–e about	*0.01–0.02*
3. Mountain streams, no vegetation in channel, banks usually steep, trees and brush along banks submerged at high stage:	
a. Bottom of gravel, cobbles, and few boulders	0.04–0.05
b. Bottom of cobbles, with large boulders	0.05–0.07
B. Flood plains (adjacent to natural streams):	
1. Pasture, no brush:	
a. Short grass	0.030–0.035
b. High grass	0.035–0.05
2. Cultivated areas:	
a. No crop	0.03–0.04
b. Mature row crops	0.035–0.045
c. Mature field crops	0.04–0.05
3. Heavy weeds, scattered brush	0.05–0.07
4. Light brush and trees: [10]	
a. Winter	0.05–0.06
b. Summer	0.06–0.08
5. Medium to dense brush: [10]	
a. Winter	0.07–0.11
b. Summer	0.10–0.16
6. Dense willows, summer, not bent over by current	0.15–0.20
7. Cleared land with tree stumps, 100–150 per acre:	
a. No sprouts	0.04–0.05
b. With heavy growth of sprouts	0.06–0.08
8. Heavy stand of timber, a few down trees, little undergrowth:	
a. Flood depth below branches	0.10–0.12
b. Flood depth reaches branches	0.12–0.16
C. Major streams (surface width at flood stage more than 100 ft.): Roughness coefficient is usually less than for minor streams of similar description on account of less effective resistance offered by irregular banks or vegetation on banks. Values of *n* may be somewhat reduced. Follow recommendation in publication cited [8] if possible. The value of *n* for larger streams of most regular section, with no boulders or brush, may be in the range of	0.028–0.033

Footnotes to table 1 appear at the top of page 101.

32

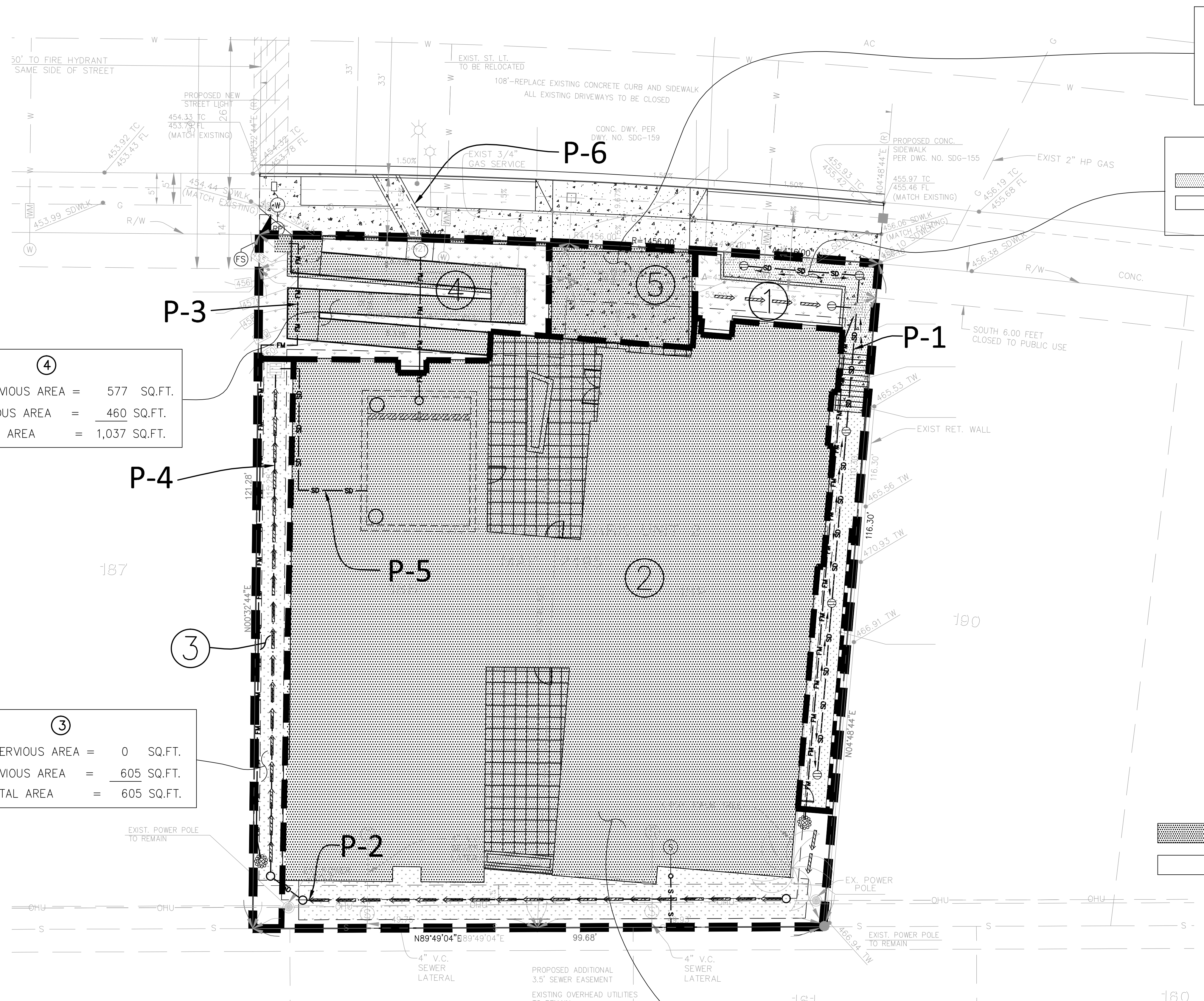


BUREAU OF PUBLIC ROADS
DIVISION TWO WASH., D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

ASSUME 25% CLOGGING

TABLE F



5

= IMPERVIOUS AREA =	407	SQ.FT.
= PERVIOUS AREA =	0	SQ.FT.
TOTAL AREA =	407	SQ.FT.

1

= IMPERVIOUS AREA =	342	SQ.FT.
= PERVIOUS AREA =	568	SQ.FT.
TOTAL AREA =	910	SQ.FT.

4

= IMPERVIOUS AREA =	577	SQ.FT.
= PERVIOUS AREA =	460	SQ.FT.
TOTAL AREA =	1,037	SQ.FT.

3

= IMPERVIOUS AREA =	0	SQ.FT.
= PERVIOUS AREA =	605	SQ.FT.
TOTAL AREA =	605	SQ.FT.

2

= IMPERVIOUS AREA =	8,535	SQ.FT.
= PERVIOUS AREA =	922	SQ.FT.
TOTAL AREA =	9,457	SQ.FT.

REGISTERED PROFESSIONAL ENGINEER
JORGE H. PALACIOS
No. 32031
12/31/18
CIVIL
STATE OF CALIFORNIA

0 10 20 40

SCALE: 1"=20'

= IMPERVIOUS AREA =	9,861	SQ.FT.
= PERVIOUS AREA =	2,555	SQ.FT.
TOTAL AREA =	12,416	SQ.FT.

EXHIBIT 'A'

POST–DEVELOPMENT

SHEET 1 OF 2

Project No. 999-15

SHEET TITLE: *DRAINAGE PLAN EXHIBIT 'A'*

PROJECT NAME: *6213 MONTEZUMA MULTI-FAMILY*

A.P.N. 467-171-28-00 & 467-171-29-00

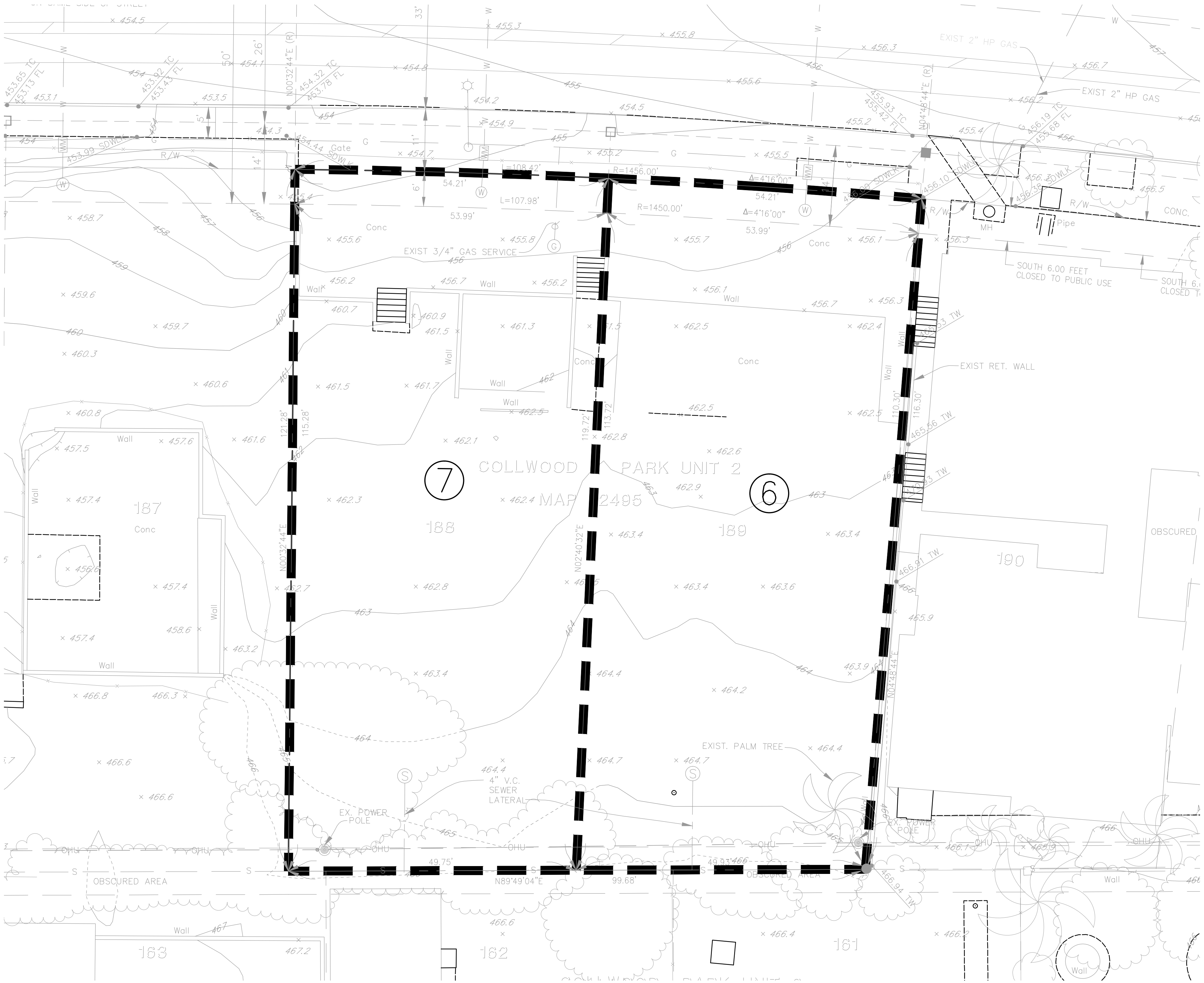
DESIGNER JL
DRAWN AL
CHECKED JHP
DATE 03-09-17

JORGE H. PALACIOS
R.C.E. 32031
DATE: 03-09-17

NO. | DATE | BY

CIVIL ENGINEERING • LAND PLANNING • SURVEYING • 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111 • (858)569-7377 FAX (858)569-0830

F:\PROJECT\999\999-DRNG-EX-A.dwg, 3/22/2017 11:34:39 AM



REGISTERED PROFESSIONAL ENGINEER
JORGE H. PALACIOS
No. 32031
12/31/18
CIVIL
STATE OF CALIFORNIA

0 10 20 40

SCALE: 1"=20'

EXHIBIT 'B'

PRE-DEVELOPMENT

SHEET 2 OF 2

Project No. 999-15

SHEET TITLE: EXISTING IMPERVIOUS AREA EXHIBIT 'B'

PROJECT NAME: 6213 MONTEZUMA MULTI-FAMILY

A.P.N. 467-171-28-00 & 467-171-29-00

DESIGNER JHP
DRAWN AL
CHECKED JHP
DATE 03-09-17

JORGE H. PALACIOS
R.C.E. 32031
DATE: 03-09-17

NO. | DATE | BY

CIVIL ENGINEERING • LAND PLANNING • SURVEYING • 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111 • (858)569-7377 FAX (858)569-0830

ATTACHMENT 6
GEOTECHNICAL AND GROUNDWATER INVESTIGATION REPORT

Attach project's geotechnical and groundwater investigation report. Refer to Appendix C.4 to determine the reporting requirements.

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CHRISTIAN WHEELER
ENGINEERING

December 14, 2016

Elsey Partners CWE 2150650.02
1532 College Avenue F19
Manhattan, Kansas 66502
Attention: Chris Elsey

Subject: Response to City of San Diego LDR-Geology Cycle 2 Review of Geotechnical Documents Proposed Apartment Building, 6213-6219 Montezuma Road, San Diego, California

References: 1) City of San Diego LDR-Geology Cycle 2 Review of Geotechnical Documents, October 3, 2016, Project No. 501449
2) Christian Wheeler Engineering, Report 2150650.01, dated November 17, 2015

Ladies and Gentlemen:

In accordance with your request, Christian Wheeler Engineering has prepared this letter to address the review comments presented in the referenced City of San Diego review memorandum. The geotechnical comments and our responses are presented below.

City Comment 4: This proposed development is a Priority Development Project (PDP). The project's geotechnical consultant must submit an addendum geotechnical report that provides the information required in the Storm Water Standards, Part 1, BMP Design Manual and Appendix F of the City's Guidelines for Geotechnical Reports.

CWE Response: This report has been prepared as an addendum to our referenced geotechnical report. Based on our review of the referenced plans, it is our opinion that all the recommendations contained in our previous geotechnical report for the proposed project remain applicable.

The soil underlying the project site and the surrounding area is classified as Type D soils based on the Web Soil Survey mapping of soil hydrologic properties and the findings from our subsurface investigation. As such, the project should be designed using BMP's that will incorporate partial infiltration. Infiltration testing can be performed at a later date if requested.

3980 Home Avenue ✦ San Diego, CA 92105 ✦ 619-550-1700 ✦ FAX 619-550-1701

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 BMPs 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 exploratory borings, the existing soils in the area of the proposed BMPs consist of slightly permeable, clayey sand (SC) and silty sand (SM). Groundwater was not encountered within our subsurface investigation and is expected to be greater than 40 feet below grade.

C2.2 SETTLEMENT AND VOLUME CHANGE

Settlement and volume change can occur when water is introduced below grade. Based upon the soil conditions observed in our borings, the site is underlain by competent colluvium, very old paralic deposits and Mission Valley formation. In in our opinion these competent soils are not subject to collapse or heave upon wetting.

C2.3 SLOPE STABILITY

Infiltration of water has the potential to increase the risk of failure to nearby slopes. The site is currently sloping. Setbacks from descending slopes are discussed on page 3.

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, or geotechnical hazards can occur within the utility trenches when water is introduced. Care should be taken when planning proposed utility trench and BMP siting. Cutoff walls are recommended 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 increases in lateral 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 BMPs, retaining walls and foundations for the site. Recommendations are provided herein to mitigate for this hazard.

Based on our experience with similar projects, we anticipate that, as long as the recommendations contained herein are followed, infiltration of stormwater utilizing the proposed onsite storm water infiltration BMP will not result in soil piping, daylight water seepage, or slope instability for the property or project sites down-gradient of the site.

For the proposed BMPs, we recommend that infiltration occurs within either colluvium, very old paralic deposits or Mission Valley formation. It is also recommended that the infiltration BMPs be setback a minimum of 50 feet from descending slopes, or extend below the base of any slope within 50 feet of the BMP. Where BMP basins are located within 10 feet of the proposed basement retaining wall, the wall designer should increase the equivalent fluid pressure by 13 per square foot for potential saturated soil conditions. Where BMP basins are located within 10 feet of settlement sensitive improvements we recommended that a cut-off wall be constructed around the perimeter of the BMP. The cut-off wall should extend a minimum of 5 feet below proposed pad grade or at least 2 feet below the bottom of the BMP whichever is greater.

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

"Worksheet C.4-1: Categorization of Infiltration Feasibility Criteria," has been completed and signed for the subject project, and is included in Appendix A of this report.

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.

City Comment 5: The geotechnical consultant must comment whether or not the proposed construction as recommended will measurably destabilize neighboring properties or induce the settlement of adjacent properties.

CWE Response: It is our professional opinion and judgement that the proposed construction as recommended will not measurably destabilize neighboring properties or induce the settlement of adjacent properties.

City Comment 6: Submit original quality prints and digital copies of the geotechnical investigation report listed as "references" and the requested addendum for our records.

CWE Response: Original quality prints and a digital copy of the referenced geotechnical report will be submitted with this report.

If you have any questions regarding this response to the City review, please do not hesitate to contact our office. This opportunity to be of continuing service on this project is sincerely appreciated.

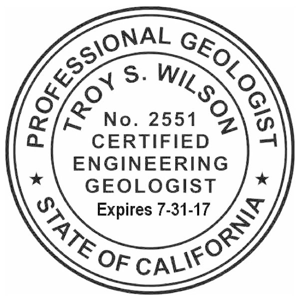
Respectfully submitted,
CHRISTIAN WHEELER ENGINEERING

Troy S. Wilson, C.E.G. #2551

Shawn C. Caya, R.G.E. #2748

TSW:tsw;scc

encl: Appendix A
ec: chris@myprimeplace.com
brad@myprimedesign.com
jp@jpeng.com



Appendix A

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

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

CWE Project Name: Proposed Apartment Building, 6213-6219 Montezuma Road
CWE Project Number: 2150650.01

Categorization of Infiltration Feasibility Condition		Worksheet C.4-1	
Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: The infiltration rate of the on-site soils has not been measured. However, based on our soil classification and grain-size analysis, the soils are expected to be classified as hydrologic soil type D. As such, it is our professional opinion that soil does not allow for a reliable infiltration rate greater than 0.5 inches per hour.			
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: C.2.1 A site specific geotechnical investigation was performed. C.2.2 Based upon the soil conditions observed in our borings, the site is underlain by fill, colluvium, very old paralic deposits and Mission Valley formation. In in our opinion the colluvium, very old paralic deposits and Mission Valley formation are not subject to significant collapse or heave upon wetting. C.2.3 The site is sloping and descending slopes, if saturated, can become unstable. In addition, nuisance seepage issues can occur. As such, it is recommended that the storm water BMPs be setback a minimum of 50 feet from descending slopes. C.2.4 It is recommended that a vertical liner will be used to prevent lateral migration of water into nearby utility trenches. C.2.5 Groundwater mounding is not expected to be a concern. C.2.6 Recommendations are provided in the report to mitigate this hazard.			

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.	X	
Provide basis: The risk of groundwater contamination has not been evaluated at this time; however, we do not anticipate any groundwater related concerns at the subject site.			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: The risk of causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters has not been evaluated at this time; however, we do not anticipate any issues.			
Part 1 Result*	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		NO

*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 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	
Provide basis: The infiltration rate of the on-site soils has not been measured. However, based on soil mapping, our soil classification and grain-size analysis, the soils are expected to be classified as hydrologic soil type D. As such, the soil is expected to have an infiltration rate greater than 0.01 inches per hour and less than 0.5 inches per hour.			
6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: C.2.1 A site specific geotechnical investigation was performed. C.2.2 Based upon the soil conditions observed in our borings, the site is underlain by fill, colluvium, very old paralic deposits and Mission Valley formation. In in our opinion the colluvium, very old paralic deposits and Mission Valley formation are not subject to significant collapse or heave upon wetting. C.2.3 The site is sloping and descending slopes, if saturated, can become unstable. In addition, nuisance seepage issues can occur. As such, it is recommended that the storm water BMPs be setback a minimum of 50 feet from descending slopes. C.2.4 It is recommended that a vertical liner will be used to prevent lateral migration of water into nearby utility trenches. C.2.5 Groundwater mounding is not expected to be a concern. C.2.6 Recommendations are provided in the report to mitigate this hazard.			

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: The risk of groundwater contamination has not been evaluated at this time; however, we do not anticipate any groundwater related concerns at the subject site.			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: The risk of causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters has not been evaluated at this time; however, we are unaware of any water rights in this area of San Diego.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration. If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.	Partial	

Troy S. Wilson, CEG #2551

CHRISTIAN WHEELER
ENGINEERING

REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

PREPARED FOR

ELSEY PARTNERS
1532 COLLEGE AVENUE F19
MANHATTAN, KANSAS 66502

PREPARED BY

CHRISTIAN WHEELER ENGINEERING
3980 HOME AVENUE
SAN DIEGO, CALIFORNIA 92105

CHRISTIAN WHEELER
ENGINEERING

November 17, 2015

Elsey Partners
1532 College Avenue F19
Manhattan, Kansas 66502
Attention: Chris Elsey

CWE 2150650.01

Subject: **Report of Preliminary Geotechnical Investigation**
Proposed Apartment Building, 6213-6219 Montezuma Road, San Diego, California

Ladies and Gentlemen:

In accordance with your request, and our proposal and agreement dated October 28, 2015, we have completed a geotechnical investigation for the subject project. We are presenting herewith a report of our findings and recommendations.

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.

If you have any 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

Shawn C. Caya, R.G.E. #2748

Troy S. Wilson, C.E.G. #2551

TSW:jdb;tsw;scc

cc: chris@myprimeplace.com

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REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

INTRODUCTION AND PROJECT DESCRIPTION

This report presents the results of a geotechnical investigation performed for a proposed apartment building to be constructed at 6213-6219 Montezuma Road, in the city of San Diego, California. The following Figure No. 1 presents a site vicinity map showing the location of the property.

We have not been provided with project plans; however, we understand that it is proposed to construct a four-story apartment structure over three levels of subterranean garage and associated improvements. The parking garage is expected to consist of masonry, concrete or shotcrete construction with concrete floor slabs. Site retaining walls may be necessary along the north, east and west property lines. We understand that the parking garage will be about 30 feet below the level of Montezuma Road. Grading is expected to be limited to making the excavation for the subterranean parking garage and associated driveways. The anticipated cuts will be about 30 feet at the front of the property, and about 43 feet at the rear. Shoring will be required for all sides of the excavation.

To assist in the preparation of this report, we were provided with a topographic survey map of the site prepared by JP Engineering, Inc., dated November 6, 2015. A copy of this plan was used as a base map for our geologic mapping, and is included herein as Plate No. 1. We have also reviewed our previous report by our firm for the project site. The borings logs from our previous subsurface investigation are provided in Appendix A.

This report has been prepared for the exclusive use of Elsey Partners and its 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

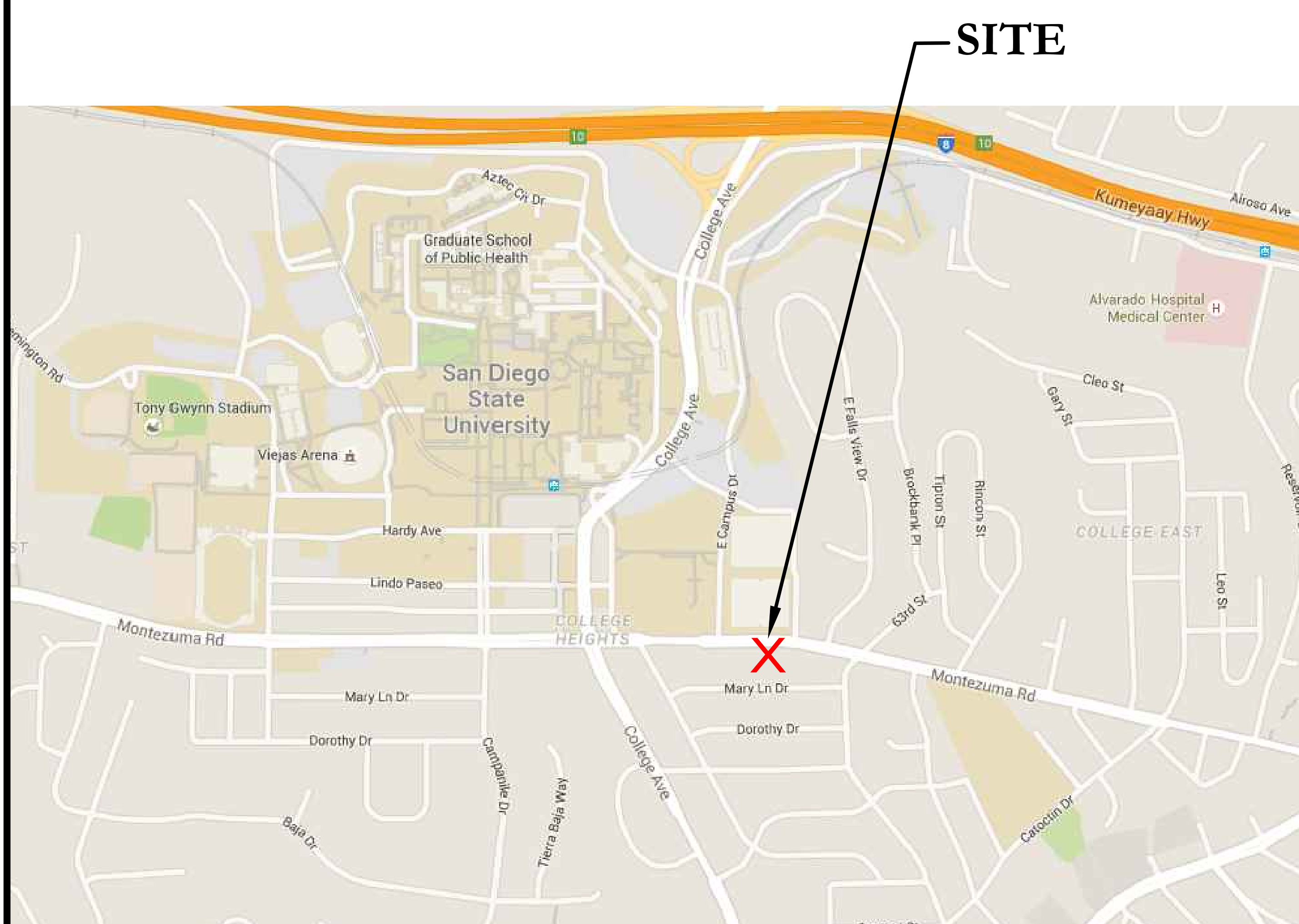
Site Vicinity Map

(Adapted from Google Maps)

PROPOSED APARTMENT BUILDING

6213-6219 MONTEZUMA ROAD

SAN DIEGO, CALIFORNIA



CWE 2150650.01 NOVEMBER 2015 FIGURE 1

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.

PROJECT SCOPE

Our preliminary geotechnical investigation included site reconnaissance analysis of the field and laboratory data from our previous investigation, and review of relevant literature. Our scope of services does not include additional subsurface exploration, additional laboratory testing, assessment of hazardous substance contamination, recommendations to prevent floor slab moisture intrusion or the formation of mold within the structure, or providing an evaluation or design of storm water infiltration facilities, or any other services not specifically described in the scope of services presented below. More specifically, our services included the following items.

- Review the previous preliminary geotechnical report prepared for the subject site.
- Describe the general geology at the site including possible geologic hazards that could have an effect on the proposed construction, and provide the seismic design parameters as required by the 2013 edition of the California Building Code.
- Address potential construction difficulties that may be encountered due to soil conditions, groundwater or geologic hazards, and provide recommendations concerning these problems.
- Provide site preparation recommendations for the anticipated work, as necessary.
- Provide design recommendations for temporary shoring.
- Prepare two cross sections that include the limits of grading.
- Recommend an appropriate foundation system for the type of structures anticipated and develop soil engineering design criteria for the recommended foundation design.
- Provide geotechnical design parameters for the construction of restrained and unrestrained retaining walls.
- Prepare this report, which includes, in addition to our conclusions and recommendations, a plan showing the aerial extent of the geological units and the locations of our exploratory borings, exploration logs, and a summary of the laboratory test results.

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 our previous investigation, it should be understood Christian Wheeler Engineering does not practice corrosion engineering. If such an 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 the test should only be used as a guideline to determine whether additional testing and analysis is necessary.

FINDINGS

SITE DESCRIPTION

The subject site is a rectangular shaped property located at 6213-6219 Montezuma Road, in the College area of San Diego. The property includes two parcels identified by Assessor's Parcel Numbers 467-171-28, and -29. The parcels cover about 0.3 acre in area, have about 110 feet of frontage along Montezuma Road, and extend back from the street about 120 feet. Topographically, the property slopes upward and southward from Montezuma Road, rising a vertical distance of about 13 feet. Various old foundations, retaining walls, concrete stairways and sidewalks from the previous structures and improvements exist on the property, along with a few small- to medium-size trees. The adjacent project to the east has below grade parking levels that are expected to extend up to 15 feet below grade.

GENERAL GEOLOGY AND SUBSURFACE CONDITIONS

GEOLOGIC SETTING AND SOIL DESCRIPTION: The subject site is located within the Coastal Physiographic Province of San Diego County. Based on our subsurface explorations, and analysis of readily available, pertinent geologic literature, the area of the site investigated was found to be underlain by artificial fill, colluvium, very old paralic deposits, and Mission Valley Formation deposits. Each of these units is discussed below in order of increasing age.

ARTIFICIAL FILL (Qaf): Fill materials were encountered in borings B-1 and B-2, extending to a depth of about four feet and two feet below existing grade, respectively. The fill encountered consists of light brown, reddish-brown, and dark brown, damp and moist, silty sand with clay and some cobble (SM). The maximum cobble size was about six inches. In general, the fill is loose. However, in boring B-1, the fill becomes medium dense at a depth of about two feet below existing grade. The fill soils encountered were judged to have a low expansive potential (EI < 50).

COLLUVIUM (Qcol): Colluvial deposits were encountered in borings B-1, B-2, and B-3 underlying the site to a depth of about ten feet, nine feet, and five feet below existing grade, respectively. These materials consist of light reddish-brown and reddish-brown, moist to very moist, medium dense, silty sand with clay and some gravel and cobble (SM). The maximum cobble size noted was about five inches. These materials were judged to have a low expansion potential (EI < 50).

VERY OLD PARALIC DEPOSITS (Qvop): Very old paralic deposits were encountered underlying the colluvium in all the borings. These materials consist of interbedded light reddish-brown, reddish-brown, dark brown, and light gray, moist to very moist, medium dense to very dense, silty sand with some gravel and cobble (SM), and sandy gravel with silt and cobble (GM). The maximum cobble size noted was about six inches. These materials were judged to have a low expansion potential (EI < 50).

MISSION VALLEY FORMATION (Tmv): Mission Valley Formation deposits were encountered underlying the very old paralic deposits in borings B-1, B-2, and B-3 at a depth of about 27 feet, 32 feet, and 25 feet, below existing grade, respectively. These materials consist of light gray and gray, moist, dense, silty sand and silty sand with clay. These materials were judged to have a low expansion potential (EI < 50).

GROUNDWATER: No groundwater or seepage was encountered in our subsurface explorations and we do not expect any groundwater related conditions during or after the proposed construction provided that proper drainage is maintained at the site.

It should, however be recognized that minor groundwater seepage problems might occur after development of a site even where none were present before development. These are usually minor phenomena and are often the result of an alteration in drainage patterns and/or an increase in irrigation water.

TECTONIC SETTING: No active or potentially active faults are known to traverse the subject site. However, it should be noted that 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 nearest active fault zone is the Rose Canyon Fault Zone located approximately 5½ miles to the southwest of the site. Other active fault zones in the region that could possibly affect the site include the Newport-Inglewood Fault Zone to the northwest; the Palos Verde and Coronado Bank Fault Zones to the west; and the Elsinore, San Jacinto, and San Andreas Fault Zones to the northeast.

GEOLOGIC HAZARDS

GEOLOGIC HAZARDS CATEGORY: The site is located in Geologic Hazards Category 53 according to the most recent edition of the City of San Diego Seismic Safety Study. Hazards Category 53 is assigned to level or sloping terrain with unfavorable geologic structure where the risks are considered to be low to moderate. Based on the results of our study, it is our opinion that the potential risks can be considered to be low.

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. According to this publication, the site is mapped within Relative Landslide Susceptibility Area 2, which is considered to be "marginally susceptible" to landsliding. Based on our findings, it is our professional opinion that the potential for slope failures within the site is low.

SEISMIC DESIGN HAZARD: A likely geologic hazard to affect the site is ground shaking as a result of movement along one of the major active fault zones mentioned in the "Tectonic Setting" section of this report. Per Chapter 16 of the 2013 California Building Code (CBC), the Maximum Considered Earthquake (MCE) ground motion is that considered to have a two percent probability of being exceeded in 50 years. Figures 1613.5(3) and 1614.5(4) of the CBC present regional MCE spectral accelerations for short (0.2 sec.) and long (1.0 sec.) periods, respectively, based on a soil Site Class B (CBC Table 1613.5.2) and a structural damping of five percent. For the subject site, we expect that correlation with field penetration resistance values will indicate that the upper 100 feet of geologic subgrade can be characterized as Site Class C. In this case, the mapped MCE spectral accelerations are modified using the Site Coefficients presented in Tables 1613.5.3(1) and (2). The modified MCE spectral accelerations are then multiplied by two-thirds in order to obtain the design spectral accelerations. These seismic design parameters for the subject site (32.770 °, -117.066°), based on Chapter 16 of the CBC, are presented in Table I below.

TABLE I: CBC 2013 EDITION – SEISMIC DESIGN PARAMETERS

CBC – Chapter 16 Section	Seismic Design Parameter	Recommended Value
Table 1613.5.2	Soil Site Class	C
Figure 1613.5 (3)	Mapped Spectral Acceleration for Short Periods (0.2 sec), S_s	0.924 g
Figure 1613.5 (4)	Mapped Spectral Acceleration for 1.0 Sec Periods (1.0 sec), S_1	0.354 g
Table 1613.5.3 (1)	Site Coefficient, F_a	1.030
Table 1613.5.3 (2)	Site Coefficient, F_v	1.446
Section 1613.5.3	S_{MS} = MCE Spectral Response at 0.2 sec. = $(S_s)(F_a)$	0.952 g
Section 1613.5.3	S_{M1} = MCE Spectral Response at 1.0 sec. = $(S_1)(F_v)$	0.512 g
Section 1613.5.4	S_{DS} = Design Spectral Response at 0.2 sec. = $2/3(S_{MS})$	0.635 g
Section 1613.5.4	S_{D1} = Design Spectral Response at 1.0 sec. = $2/3(S_{M1})$	0.341 g
Section 1803.2.12	PGA_M per Section 11.8.3 of ASCE 7	0.368 g

LIQUEFACTION: The near-surface soils encountered at the site are not considered susceptible to liquefaction due to such factors as depth to the groundwater table, soil density and grain-size distribution.

FLOODING: The site is located outside the boundaries of both the 100-year and the 500-year floodplains according to the maps prepared by the Federal Emergency Management Agency.

TSUNAMIS: Tsunamis are great sea waves produced by submarine earthquakes or volcanic eruptions. Due to the site's elevation and location, the site will not be affected by tsunamis.

SEICHES: Seiches are periodic oscillations in large bodies of water such as lakes, harbors, bays or reservoirs. Due to the site's location, it will not be affected by seiches.

CONCLUSIONS

It is our professional opinion and judgment that no geotechnical conditions exist within the subject site that would preclude the construction of the proposed apartment structure, provided the recommendations presented herein are followed.

The findings of our investigation indicate that most of the site is underlain by a relatively thin layer of potentially compressible fill soils. As encountered in our borings, these deposits do not exceed four feet in thickness. The fill materials are considered unsuitable, in their present condition, for the support of settlement sensitive improvements. Based on the proposed development scheme, it is anticipated that the majority of the existing fill will be removed in order to achieve finished pad grade. Any remaining fill underlying proposed settlement sensitive improvements will require removal and replacement as compacted fill.

An additional consideration is the temporary cut slopes proposed adjacent or near to property lines. The slopes will extend to a maximum depth of about 43 feet. We anticipate that these slopes will require shoring.

The adjacent property to the east supports a structure that has a subterranean parking component. We anticipate that the lowest level extends up to 15 feet below grade; however, the depth should be verified prior to designing foundations and shoring.

The site is located in an area that is relatively free of geologic hazards that will have a significant effect on the proposed construction. The most likely geologic hazard that could affect the site is ground shaking due to seismic activity along one of the regional active faults. However, construction in accordance with the requirements of the most recent edition of the California Building Code and the local governmental agencies should provide a level of life-safety suitable for the type of development proposed.

The final project plans should be submitted to this office for review in order to ascertain that the geotechnical recommendations remain applicable to the final plan and that no additional recommendations are needed due to changes in the anticipated development.

RECOMMENDATIONS

GRADING AND EARTHWORK

GENERAL: All grading should conform to the guidelines presented in Appendix J of the California Building Code, the minimum requirements of the City of San Diego, and the recommended Grading Specifications and Special Provisions attached hereto, except where specifically superseded in the text of this report. Prior to grading, a representative of Christian Wheeler Engineering should be present at the pre-construction meeting to provide additional grading guidelines, if necessary, and to review the earthwork schedule.

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.

SITE PREPARATION: Site preparation should begin with the removal of all existing construction debris, and the demolition of the remnants of the previous structures that existed at the site. The resulting debris as well as any vegetation and deleterious matter in areas of the site to be graded or receive proposed improvements should be removed and disposed of off-site at a legal dump site. Existing fill materials underlying settlement-sensitive improvements should be removed and replaced as compacted fill. Based on the proposed grading scheme, it is anticipated that the majority of these materials will be removed to achieve finished pad grade, and the extent of this operation will be very minor. The bottoms of all excavations should be approved by our representative prior to placing fills or constructing improvements, and all areas to receive fill should be processed as described below in the "Processing of Fill Areas and Building Pad" section of this report. The soils removed may be replaced as compacted fill. It is anticipated that the building pad will be underlain by competent formational soils. However, the upper few inches of these materials will likely be disturbed during grading operations. It is recommended that the proposed building pad be prepared as described in the following paragraph.

PROCESSING OF FILL AREAS AND BUILDING PAD: Prior to placing any new fill soils or constructing any new improvements in areas that have been cleaned out to receive fill and approved by the geotechnical consultant or his representative, any exposed soils should be scarified to a depth of 12 inches, moisture conditioned, and compacted to at least 90 percent relative compaction. If the building pad is disturbed during grading operations, it is recommended that it be scarified to a depth of six inches, moisture-conditioned, and compacted to at least 95 percent relative compaction. This requirement will be determined by the Geotechnical Engineer after the building pad finished grade is reached.

COMPACTION AND METHOD OF FILLING: All structural fill and backfill material placed at the site should be compacted to a relative compaction of at least 90 percent of maximum dry density as determined by ASTM Laboratory Test D1557. Fills should be placed at or slightly above optimum moisture content, in lifts six to eight 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 our soil technicians or project geologist. Fill material should be free of rocks or lumps of soil in excess of six inches in maximum dimension; however, in the upper two feet of pad grade, no rocks or lumps of soil in excess of three inches should be allowed.

All utility trench backfill should be compacted to a minimum of 90 percent of its maximum dry density. The upper twelve inches of subgrade beneath paved areas should be compacted to 95 percent of the materials maximum dry density. This compaction should be obtained by the paving contractor just prior to placing the aggregate base material and should not be part of the mass grading requirements or operation.

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 structures into controlled drainage devices are recommended.

The ground around the proposed structures should be graded so that surface water flows rapidly away from the structure without ponding. In general, we suggest that the ground adjacent to structure slope away at a gradient of at least 2 percent. Densely vegetated areas where runoff can be impaired should have a minimum gradient of 5 percent within the first 5 feet from the structure. In our opinion, the project site is not suitable for storm water infiltration BMPs. We recommend that pervious pavements, bio retention areas, and bio swales be lined in such a manner as to prevent the storm water from infiltrating into the underlying soils and should be connected via pipes to the storm drain system.

TEMPORARY CUT SLOPES

Temporary cut slopes of up to about 43 feet in height are anticipated to be required during the construction of the proposed structure. The contractor is solely responsible for designing and constructing stable, temporary excavations and will need to shore, slope, or bench the sides of trench excavations as required to maintain the stability of the excavation sides. The contractor's "competent person", as defined in the OSHA Construction Standards for Excavations, 29 CFR, Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety process. We anticipate that the existing on-site soils will consist of Type B material. Our firm should be contacted to observe all temporary cut slopes during grading to ascertain that no unforeseen adverse conditions exist. No surcharge loads such as foundation loads, or soil or equipment stockpiles, vehicles, etc. should be allowed within a distance from the top of temporary slopes equal to half the slope height.

SHORED SLOPES

GENERAL: It will be necessary to use shoring to support the sides most of the proposed excavation. Typically, cantilevered soldier pile walls with wood lagging are used for the conditions anticipated. Included herein are design parameters for such cantilevered walls. A specialty contractor with experience in shoring and bracing should provide shoring recommendations and plans. The subterranean level of the structure to the east of the project and underground utilities within Montezuma Road will need to be clearly identified prior to designing the tieback locations.

SHORING DESIGN AND LATERAL PRESSURES: A triangular distribution of lateral earth pressure equal to that developed by a fluid with a density of 40 pounds per cubic foot may be used for the design of cantilevered shoring. Cantilevered shoring is normally limited to excavations that do not exceed approximately 15 feet in depth in order to limit the deflection at the tops of the soldier piles. For heights of shoring greater than about 15 feet, the use of braced or tied-back shoring should be considered to limit deflection of the shoring system. The recommended pressure distributions for the design of tied-back or braced shoring are presented in Plate No. 4. Other loads should be analyzed on an individual basis.

DESIGN OF SOLDIER PILES: Soldier piles should be spaced at least two diameters on center each way. The allowable lateral bearing value (passive value) of the formational soils below the level of the excavation may be assumed to be 350 pounds per square foot per foot of depth from the excavated surface, up to a maximum of 4,500 pounds per square foot. The allowable lateral bearing value (passive value) of compacted fill and/or colluvium below the level of excavation may be assumed to be 300 pounds per square foot per foot of depth from the excavated surface, up to a maximum of 2,500 pounds per square foot. To develop the full lateral value, provisions should be taken to assure firm contact between the soldier piles and the undisturbed soils. The concrete placed in the soldier pile excavations may be a lean mix concrete. However, the concrete used in that portion of the soldier pile that is below the planned excavation level should be of sufficient strength to adequately transfer the imposed loads to the surrounding soils.

LAGGING: Continuous lagging will be required between the soldier piles. The soldier piles and anchors should be designed for the full anticipated lateral pressure. However, the pressure on the lagging will likely be somewhat less due to arching in the soils. We recommend that the lagging be designed for a semi-circular distribution of earth pressure where the maximum pressure is 400 pounds per square foot at the mid-point between soldier piles, and zero pounds per square foot at the soldier piles. This value does not include any surcharge pressures.

TIEBACK ANCHOR DESIGN: Tieback friction anchors may be used to resist lateral loads. For preliminary design purposes, it may be assumed that the active wedge adjacent to the shoring is defined by a plane drawn at 32 degrees from the vertical through the bottom of the excavation. The anchors should extend at least 20 feet beyond the potential active wedge; this provision is to provide global stability for the shored wall as opposed to adequate friction for the anchors.

The capacities of anchors should be determined by testing of the initial anchors as outlined by the anchor designer. For preliminary design purposes, it may be estimated that for conventionally drilled, gravity-grouted anchors the average allowable (FOS=2) bond stress between the grout and soil will be 1,000 pounds per square foot. Only the bond stress developed beyond the active wedge should be used in resisting lateral loads. If the anchors are spaced at least 4 feet on centers, no reduction in the capacity of the anchors need be considered due to group action. In no event should the anchors extend less than the minimum length beyond the potential active wedge as given above.

ANCHOR TESTING: Since the actual load-carrying capacity of tieback anchors will depend on various site-specific factors, the tieback capacity should be verified by load testing. The load testing program should be specified by the design engineer and be approved by the Geotechnical Consultant.

Christian Wheeler Engineering shall observe the tieback anchor installation and testing of the completed anchors. The shoring contractor should provide all appropriate testing equipment, including properly calibrated hydraulic jacking equipment, pressure gauges, and dial gauges for measuring tieback anchor movement. All anchor testing shall be performed under the observation of our firm.

INTERNAL BRACING: Rakers may be used to internally brace the soldier piles. The raker bracing may be supported laterally by temporary concrete footings (deadmen). Temporary footings founded in compacted fill or competent natural soils poured with the bearing surface normal to rakers inclined at 45 to 60 degrees with the vertical, may be designed for a bearing value of 4,000 pounds per square foot (psf). This value assumes that the footings are at least 12 inches deep and 24 inches wide. To reduce the movement of the shoring, the rakers should be preloaded or at least tightly wedged between the footings and the soldier piles.

MONITORING: Monitoring of the performance of the shoring system is recommended. One option would be to install a slope inclinometer pipe within the concrete soldier pile approximately every 50 lineal feet, with at least 2 inclinometer pipes for each shoring wall section. The inclinometer pipe should extend full depth of the soldier pile. Monitoring should consist of periodic measurements using a slope inclinometer instrument. Another option would be to periodically survey the lateral and vertical locations of the tops of the soldier piles approximately every 50 lineal feet.

FOUNDATIONS

GENERAL: It is our opinion that the proposed structure and site retaining walls may be supported on conventional shallow foundations, provided that the site preparation recommendations contained in this geotechnical report are implemented. It is anticipated that the footings supporting the proposed structure will be founded in sandstones of the Mission Valley Formation. Footings supporting site retaining walls will likely be founded on a combination of soils including compacted fill, colluvium, and/or very old paralic deposits. The following recommendations are based on the soil conditions exposed in our borings, and are not intended to be in lieu of structural considerations. All foundations should be designed by a qualified structural engineer.

DIMENSIONS: Conventional footings supporting the proposed structure and exterior site retaining walls exceeding ten feet in height should have a minimum embedment depth of 24 inches below lowest adjacent finish grade. For site retaining walls less than ten feet high, a minimum embedment of 18 inches is recommended. Continuous and isolated footings should have a minimum width of 18 inches and 24 inches, respectively. All retaining wall footings should be at least 24 inches wide.

BEARING CAPACITY: Footings supporting the proposed structure and exterior site walls founded in very old paralic deposits or formational soil with a minimum embedment of 24 inches and a minimum width of 18 inches may be designed for an allowable soil bearing pressure of 5,000 pounds per square foot. This value may be increased by 900 pounds per square foot for each additional foot of embedment and 600 pounds per square foot for each additional foot of width up to a maximum of 10,000 pounds per square foot. Footings supporting proposed exterior site retaining walls founded in compacted fill or colluvium with a minimum embedment of 18 inches and a minimum width of 24 inches may be designed for an allowable soil bearing pressure of 2,500 pounds per square foot. This value may be increased by 600 pounds per square foot for each additional foot of embedment and 400 pounds per square foot for each additional foot of width up to a maximum of 4,000 pounds per square foot. The bearing values may also be increased by one-third for combinations of temporary loads such as those due to wind or seismic loads.

FOOTING REINFORCING: The project structural engineer should provide reinforcement requirements for the proposed building and site retaining wall foundations. However, based on soil conditions, we recommend that the minimum reinforcing for continuous footings supporting the building should consist of at least two No. 5 bars positioned near the bottom of the footing and two 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 0.35. The passive resistance may be considered to be equal to an equivalent fluid weight of 350 pounds per cubic foot. This assumes 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 foundation settlement is expected to be less than about 1 inch and 1 inch over 40 feet respectively, provided the recommendations presented in our report are followed. It should be recognized that minor cracks normally occur in concrete slabs and foundations due to shrinkage during curing or redistribution of stresses, therefore some cracks should be anticipated. Such cracks are not necessarily an indication of excessive vertical movements.

EXPANSIVE CHARACTERISTICS: The foundation soils are expected to have a low expansive potential (EI < 50). The recommendations presented in this report reflect this condition.

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.

FOUNDATION EXCAVATION OBSERVATION: All foundation excavations should be observed by the geotechnical consultant prior to placing reinforcing steel or formwork in order to determine if the foundation recommendations presented herein are followed. All footing excavations should be excavated neat, level, and square. All loose or unsuitable material should be removed prior to the placement of concrete.

SOLUBLE SULFATES

The water soluble sulfate content of a randomly selected soil sample from the site was determined in accordance with California Test Method 417. The results of this test indicate that the representative soil sample had a soluble sulfate content of 0.006 percent. Soils with a soluble sulfate content of less than 0.1 percent are considered to be negligible and no special recommendations are considered necessary for this condition. Nevertheless, Type II modified Portland cement is recommended for concrete in contact with soil.

ON-GRADE SLABS

INTERIOR FLOOR SLABS: We recommend that the interior slab-on-grade floor be at least 5 inches thick (actual) and be reinforced with at least No. 4 bars spaced at 18 inches on center each way. The reinforcing bars should extend at least 12 inches into the foundations and should be supported by chairs and be positioned in the center of the slab. The slab reinforcement should extend down into the perimeter grade beams or foundations at least 12 inches.

UNDER-SLAB VAPOR RETARDERS: Where floor coverings are installed, 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. We recommend that the owner/contractor follow national standards for the installation of vapor retarders below interior slabs as presented in currently published standards including ACI 302, “Guide to Concrete Floor and Slab Construction” and ASTM

E1643, "Standard Practice for Installation of Water Vapor Retarder Used in Contact with Earth or Granular Fill Under Concrete Slabs". If sand is placed above or below the vapor retarding material, it should have a sand equivalent of at least 30 and contain less than 20% passing the Number 100 sieve and less than 10% passing the Number 200 sieve.

We recommend that the flooring installer perform standard moisture vapor emission tests prior to the installation of all moisture-sensitive floor coverings in accordance with ASTM F1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride".

EXTERIOR CONCRETE FLATWORK: Exterior concrete on-grade slabs 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. All slabs should be provided with weakened plane joints in accordance with the American Concrete Institute (ACI) guidelines. Alternative patterns consistent with ACI guidelines can also be used. A concrete mix with a 1-inch maximum aggregate size and a water/cement ratio of less than 0.6 is recommended for exterior slabs. Lower water content will decrease the potential for shrinkage cracks. Both coarse and fine aggregate should conform to the latest edition of the "Standard Specifications for Public Works Construction" ('Greenbook").

Special attention should be paid to the method of concrete curing to reduce the potential for excessive shrinkage and resultant random 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.

EARTH RETAINING WALLS

BACKFILL: All retaining wall backfill should be compacted in accordance with the "Compaction and Method of Filling" section of this report. Expansive or clayey soils should not be used for backfill material. Retaining walls should not be backfilled until the masonry/concrete has reached an adequate strength.

FOUNDATIONS: Foundations for retaining walls can be designed in accordance with the foundation recommendations previously presented.

PASSIVE PRESSURES: The passive pressure for the prevailing soil conditions may be considered to be 300 pounds per square foot per foot of depth for foundations in compacted fill or colluvium. The passive pressure in very old paralic deposits or formational soil may be considered to be 350 pounds per square foot per foot. The upper foot of embedment should be neglected when calculating passive pressures, unless the foundation abuts a hard surface such as a concrete slab. The passive pressure may be increased by one-third for seismic loading. The coefficient of friction for concrete to soil may be assumed to be 0.30 and 0.35 for the resistance to lateral movement for fill or colluvium, and paralic or formational material, respectively. When combining frictional and passive resistance, the friction should be reduced by one-third.

ACTIVE PRESSURES: The active soil pressure for the design of unrestrained earth retaining structures with level backfill surface may be assumed to be equivalent to the pressure of a fluid weighing 38 pounds per cubic foot. In the design of walls restrained from movement at the top (non-yielding walls), the at-rest soil pressure may be assumed to be equivalent to the pressure of a fluid weighing 59 pounds per cubic foot, provided there is a level backfill surface.

Alternative active pressure design recommendations are provided in Plate No. 4. Non-yielding building retaining walls braced by multiple floor levels should be designed to resist a uniform horizontal soil pressure of 25H (in pounds per square foot), where “H” is the wall height in feet. Thirty percent of any area surcharge placed adjacent to the retaining wall may be assumed to act as a uniform horizontal pressure against the wall. Where vehicles will be allowed within ten feet of the retaining wall, a uniform horizontal pressure of 100 pounds per square foot should be added to the upper 10 feet of the retaining wall to account for the effects of adjacent traffic. Special cases such as a combination of shored and sloping temporary slopes, or other surcharge loads not described above, may require an increase in the design values recommended above. These conditions should be evaluated by the project geotechnical engineer on a case-by-case basis. If any other loads are anticipated, the Geotechnical Consultant should be contacted for the necessary increase in soil pressure. All values are based on a drained backfill condition.

Seismic lateral earth pressures may be assumed to equal an inverted triangle starting at the bottom of the wall with the maximum pressure equal to 6H pounds per square foot (where H = wall height in feet) occurring at the top of the wall.

WATERPROOFING AND WALL DRAINAGE SYSTEMS: The need for waterproofing should be evaluated by others. If required, the project architect should provide (or coordinate) waterproofing details for the retaining walls. The design values presented above are based on a drained backfill condition and do not consider hydrostatic pressures. Unless hydrostatic pressures are incorporated into the design, the retaining wall designer should provide a detail for a wall drainage system. Typical retaining wall drain system details are presented as Plate Nos. 5 and 6 of this report for informational purposes. Additionally, outlets points for the retaining wall drain system should be coordinated with the project civil engineer. For subterranean walls, it may be necessary to collect the subdrain water in sumps and then pump it to an appropriate outlet.

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 test pits, 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 client's responsibility, 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

Three subsurface explorations were made on July 1, 2011 at the locations indicated on the attached Plate Number 1. These explorations consisted of borings drilled utilizing a Unimog Marl M-5 truck mounted drill rig using both hollow stem and air-rotary drilling methods. The fieldwork was conducted under the observation of our engineering geology personnel.

The explorations were carefully logged when made. The logs are presented Appendix A. The soils are described in accordance with the Unified Soils Classification System. In addition, a verbal textural description, the wet color, the apparent moisture and the density or consistency are 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.

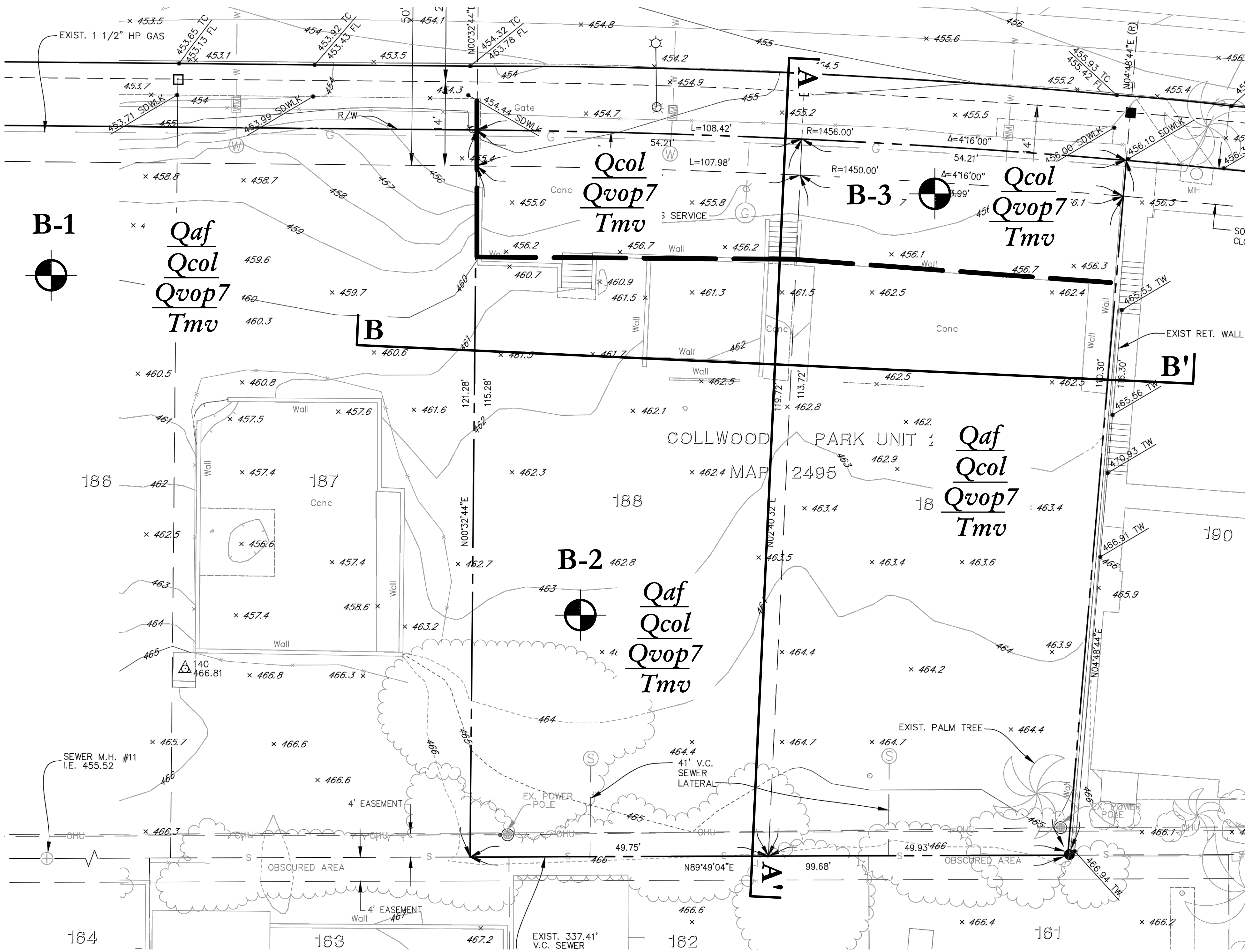
Relatively undisturbed drive samples were collected using a modified California sampler. The sampler, with an external diameter of 3.0 inches, is lined with 1-inch-long, thin, brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a 140-pound hammer falling 30 inches in general accordance with ASTM D3550. The driving weight is permitted to fall freely. The number of blows per foot of driving, or as indicated, is presented on the boring logs as an index to the relative resistance of the sampled materials. The samples were removed from the sample barrel in the brass rings, and sealed. Bulk and chunk samples of the encountered earth materials were also collected. Samples were transported to our laboratory for testing.

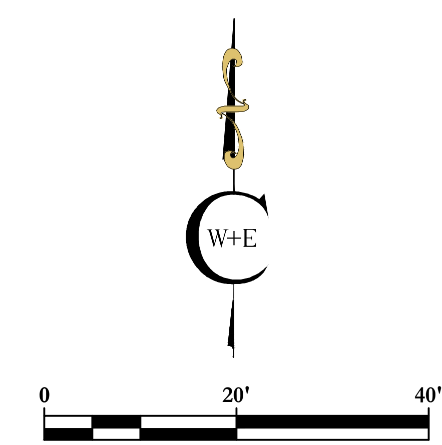
LABORATORY TESTING

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 is presented in Appendix B.

CWE LEGEND

B-3	APPROXIMATE BORING LOCATION
	GEOLOGIC CONTACT
B B'	GEOLOGIC CROSS SECTION
Qaf / Qcol / Qvop7 / Tmv	ARTIFICIAL FILL UNDERLAIN BY COLLUVIUM UNDERLAIN BY VERY OLD PARALIC DEPOSITS UNDERLAIN BY MISSION VALLEY FORMATION
Qcol / Qvop7 / Tmv	COLLUVIUM UNDERLAIN BY VERY OLD PARALIC DEPOSITS UNDERLAIN BY MISSION VALLEY FORMATION





SCALE: 1" = 20'

BENCH MARK	
DESCRIPTION:	BRASS PLUG
LOCATION:	NORTHWEST CORNER OF MONTEZUMA ROAD AND E. FALLS VIEW DR.
RECORD FROM:	CITY OF SAN DIEGO
ELEVATION: 459.201	DATUM: M.S.L.

REGISTERED PROFESSIONAL ENGINEER · JORGE H. PALACIOS · No. 32031 · 12/31/16 · CIVIL · STATE OF CALIFORNIA

JP

NO.	DATE		BY	NO.	DATE		BY

JORGE H. PALACIOS
R.C.E. 32031
DATE: 11-06-15

DESIGNER: JHP
DRAWN: AL
CHECKED: JHP
DATE: 11-06-15

SHEET TITLE: *TOPOGRAPHY AND BOUNDARY*
PROJECT NAME: *6213-6219 MONTEZUMA ROAD SAN DIEGO, CA. 92115*
SHEET 1 OF 1
Project No. 999-15

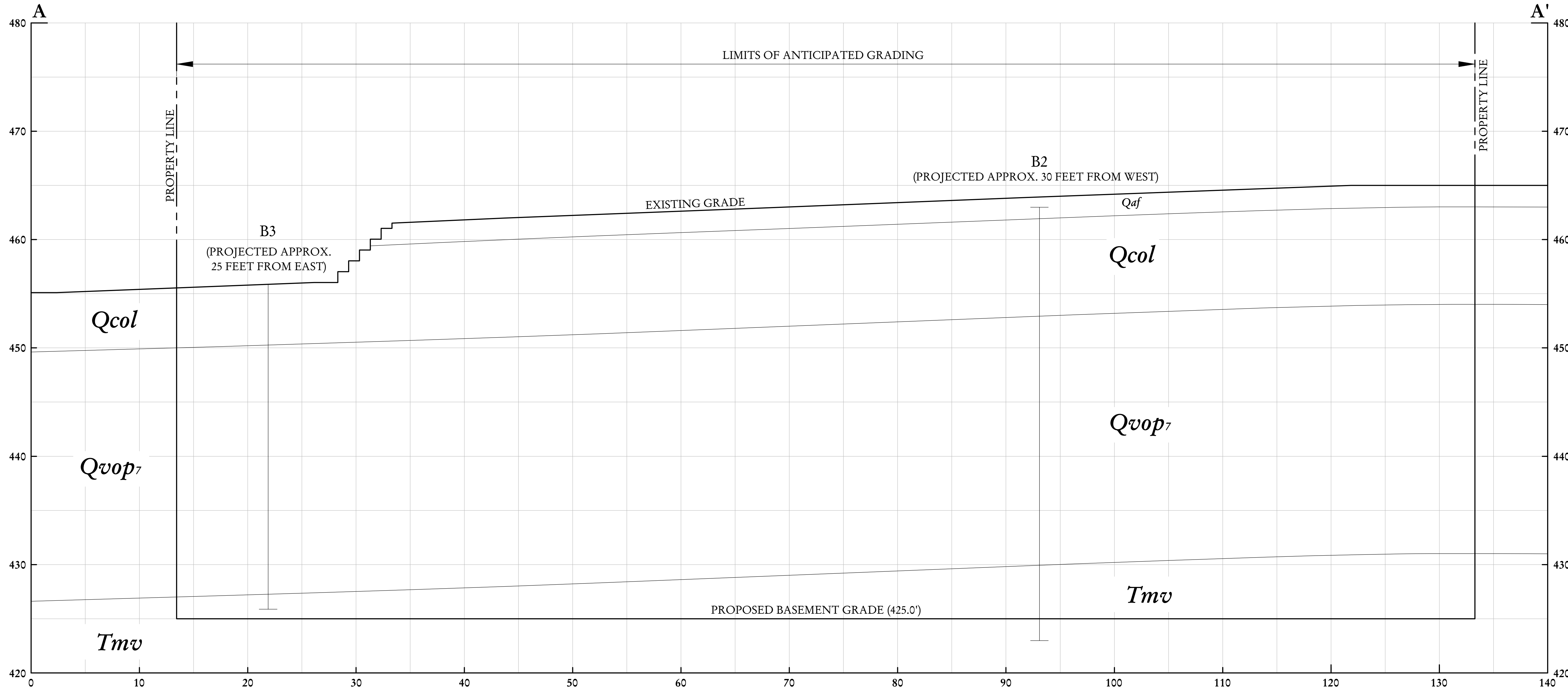
CIVIL ENGINEERING ▪ LAND PLANNING ▪ SURVEYING ▪ 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111 ▪ (858)569-7377 FAX (858)569-0830

SITE PLAN AND GEOTECHNICAL MAP

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2015	JOB NO.:	2150650.01
BY:	JDB	PLATE NO.:	1

CHRISTIAN WHEELER ENGINEERING



CWE LEGEND

Qaf	ARTIFICIAL FILL
Qcol	COLLUVIUM
Qvop7	VERY OLD PARALIC DEPOSITS
Tmv	MISSION VALLEY FORMATION

0 10' 20'

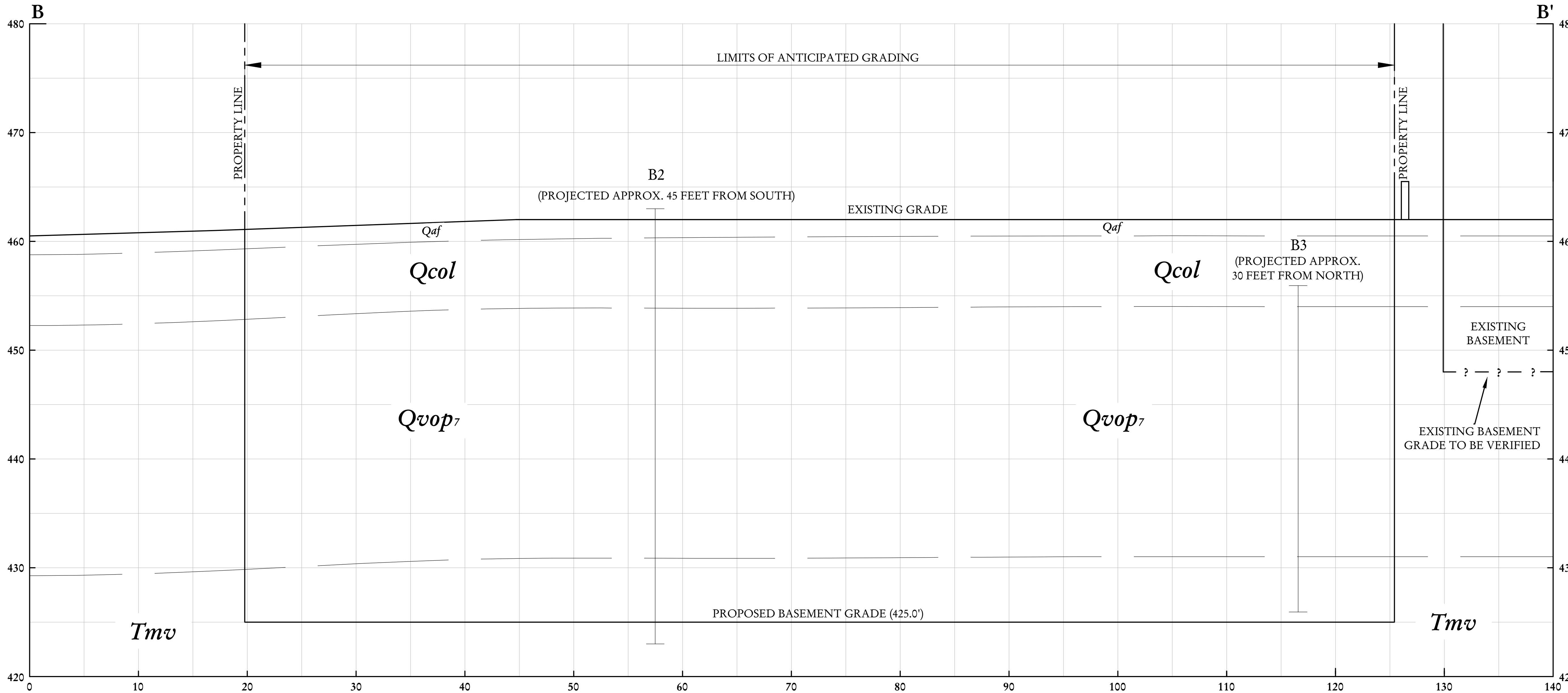
SCALE: 1" = 10'

GEOLOGIC CROSS SECTION A-A'

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2015	JOB NO.:	2150650.01
BY:	JDB	PLATE NO.:	2

CHRISTIAN WHEELER
ENGINEERING



CWE LEGEND

Qaf	ARTIFICIAL FILL
Qcol	COLLUVIUM
Qvop7	VERY OLD PARALIC DEPOSITS
Tmv	MISSION VALLEY FORMATION

0 10' 20'

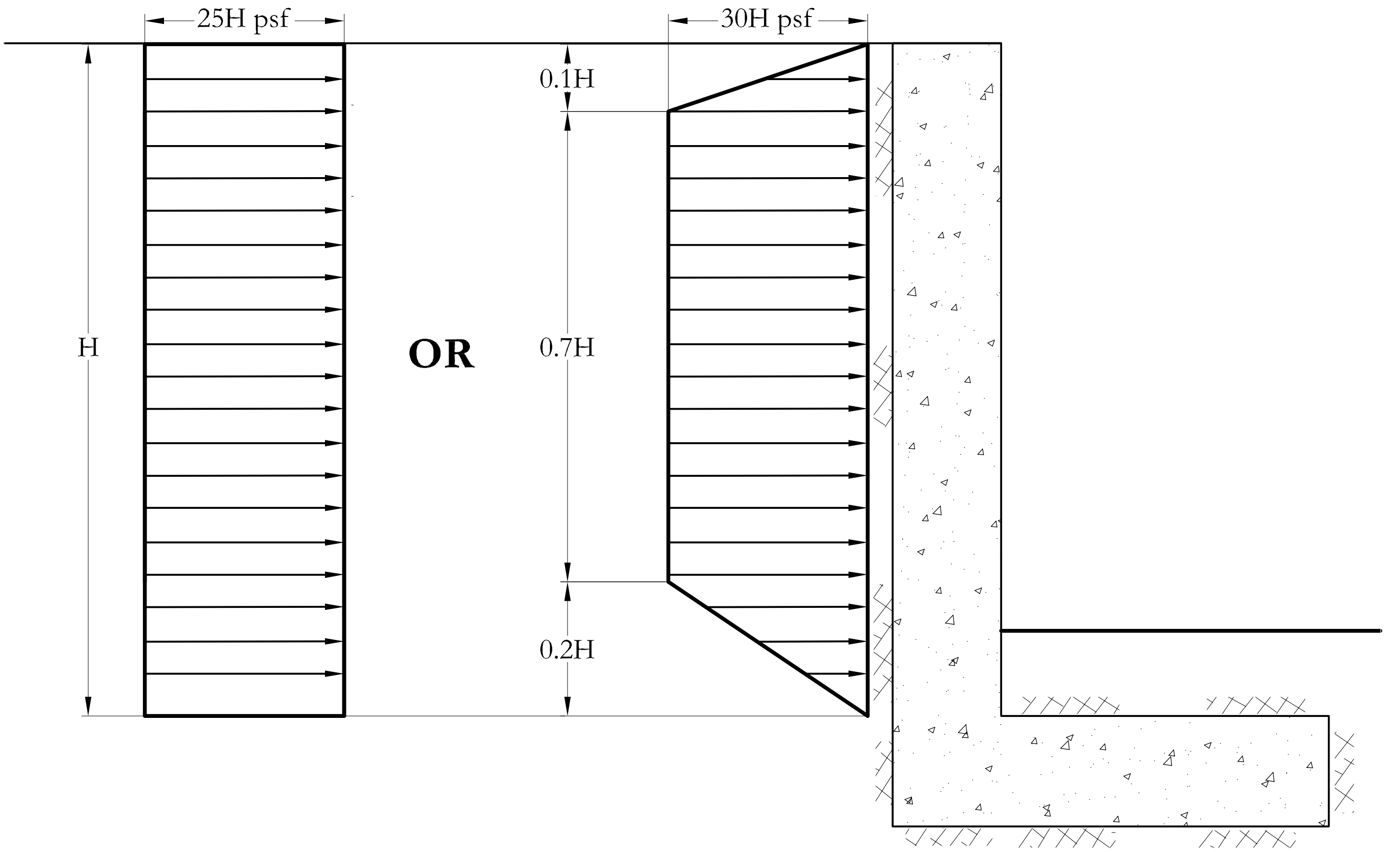
SCALE: 1" = 10'

GEOLOGIC CROSS SECTION B-B'

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2015	JOB NO.:	2150650.01
BY:	JDB	PLATE NO.:	3

CHRISTIAN WHEELER
ENGINEERING



ACTIVE LATERAL PRESSURES

NO SCALE

CHRISTIAN WHEELER ENGINEERING

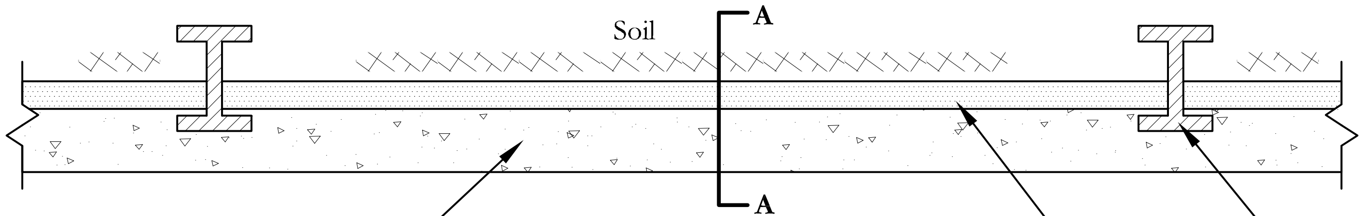
3980 HOME AVENUE
SAN DIEGO, CALIFORNIA

TEL. (619) 550-1700
FAX. (619) 550-1701

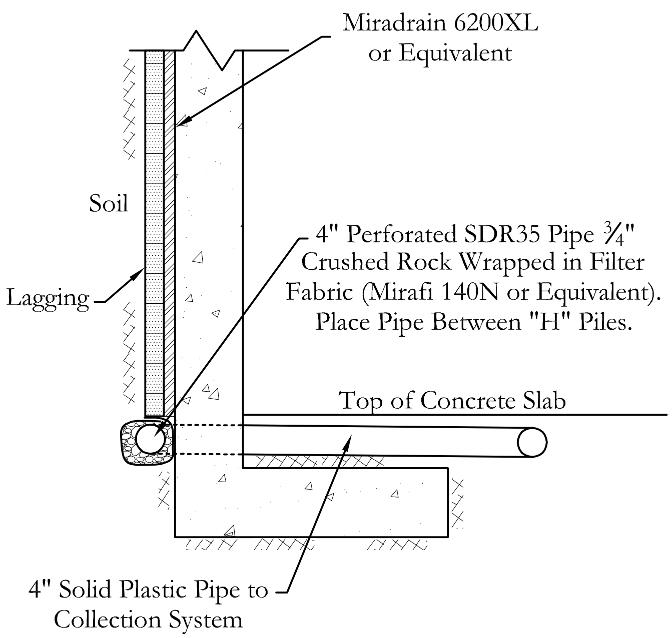
PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	JDB	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	PLATE NO.:	4

PLAN VIEW



SECTION A-A



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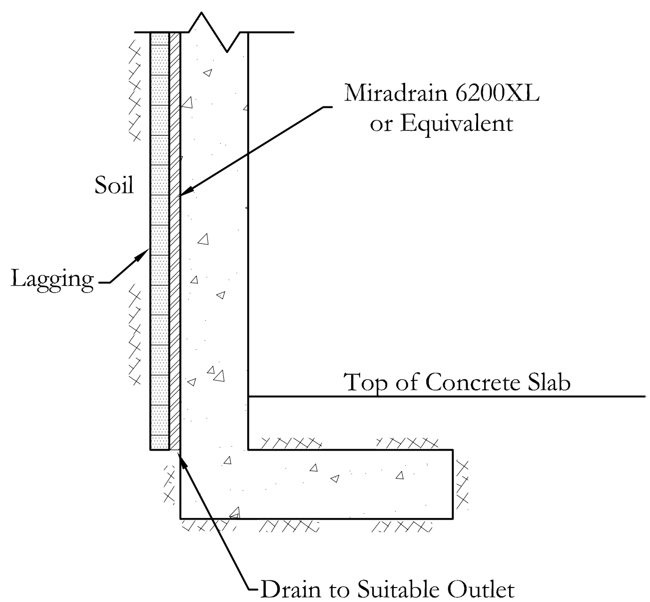

RETAINING WALL SUBDRAIN DETAILS

NO SCALE

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3980 HOME AVENUE
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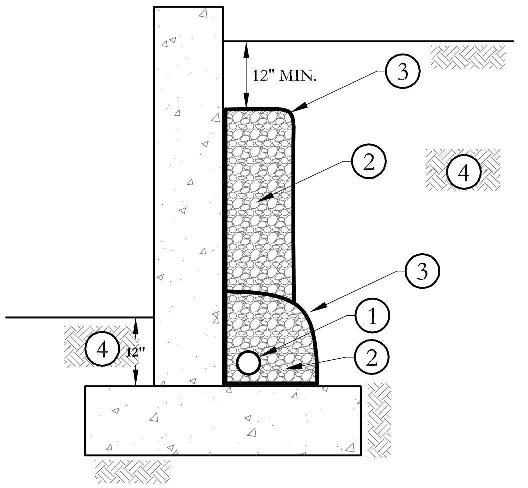
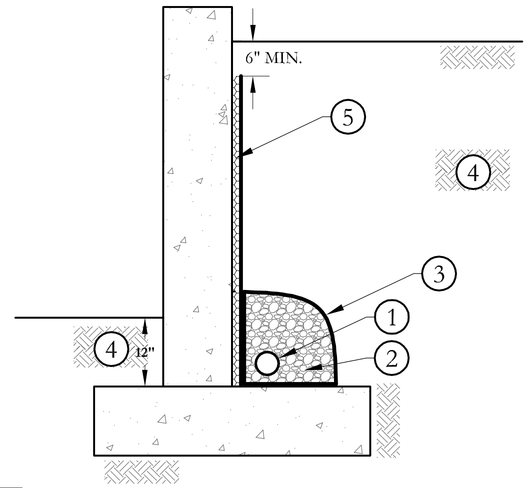
PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

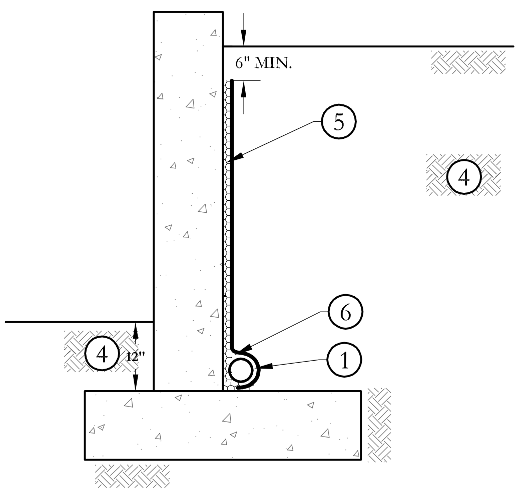
BY:	JDB	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	PLATE NO.:	5



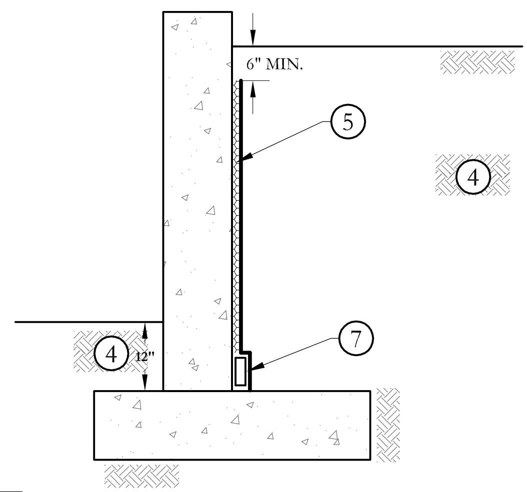
1 DETAIL



2 DETAIL



3 DETAIL



4 DETAIL

NOTES AND DETAILS

GENERAL NOTES:

1) THE NEED FOR WATERPROOFING SHOULD BE EVALUATED BY OTHERS.
2) WATERPROOFING TO BE DESIGNED BY OTHERS (CWE CAN PROVIDE A DESIGN IF REQUESTED).
3) EXTEND DRAIN TO SUITABLE DISCHARGE POINT PER CIVIL ENGINEER.
4) DO NOT CONNECT SURFACE DRAINS TO SUBDRAIN SYSTEM.

DETAILS:

1. 4-INCH PERFORATED PVC PIPE ON TOP OF FOOTING, HOLES POSITIONED DOWNWARD (SDR 35, SCHEDULE 40, OR EQUIVALENT).
2. ¾ INCH OPEN-GRADED CRUSHED AGGREGATE.
3. GEOFABRIC (MIRAFI 140N OR APPROVED EQUIVALENT) WRAPPED COMPLETELY AROUND ROCK.
4. PROPERLY COMPACTED BACKFILL SOIL.
5. WALL DRAINAGE PANELS (MIRADRAIN OR EQUIVALENT) PLACED PER MANUFACTURER'S REC'S.
6. UNDERLAY SUBDRAIN WITH AND CUT FABRIC BACK FROM DRAINAGE PANELS AND WRAP FABRIC AROUND PIPE.
7. COLLECTION DRAIN (TOTAL DRAIN OR EQUIVALENT) LOCATED AT BASE OF WALL DRAINAGE PANEL PER MANUFACTURER'S RECOMMENDATIONS.

CANTILEVER RETAINING WALL DRAINAGE SYSTEMS

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2015	JOB NO.:	2150650.01
BY:	JDB	PLATE NO.:	6

CHRISTIAN WHEELER
ENGINEERING

Appendix A

Boring and CPT Logs

LOG OF BORING B-1

Sample Type and Laboratory Test Legend

Cal Modified California Sampler
SPT Standard Penetration Test
ST Shelby Tube
CK Chunk Sample
DR Density Ring

MD	Maximum Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity

Date Excavated:	7/1/2011	Equipment:	Unimog-Marl M5
Logged by:	TSW	Auger Size:	7"
Existing Elevation:	460 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	460		SC	**Artificial Fill (Qaf):** Light to medium reddish-brown, moist, loose, fine- to medium-grained CLAYEY SAND with rock. Becomes medium dense at about 2 feet.							
5	455		SC	**Colluvium (Qcol):** Medium reddish-brown, moist, medium dense, fine-grained CLAYEY SAND with rock.	68	Cal		8.9	108.2		
					50/6"	Cal					
10	450		SM	**Very Old Paralic Deposits (Qvop):** Light to medium reddish-brown, moist, medium dense to dense, very fine- to fine-grained SILTY SAND.							
15	445				35	Cal		12.1	111.2		DS SA SO_4
20	440		GM	Light brown to light gray, moist, dense to very dense, SANDY GRAVEL with silt and rock.							
			SM	Light red brown, moist, medium dense to dense, fine-grained SILTY SAND with rock.							
25	435		GM	Red brown, moist, dense to very dense, SANDY GRAVEL with rock. Practical drill refusal with auger, switched to air-rotary drilling.	50/3"	SPT					
			SM	**Mission Valley Formation (Tmv):** Light to medium gray, moist, dense, fine- to medium-grained SILTY SAND with clay.							SA
30	430										

Boring continued on APPENDIX A-2.

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonrepresentative Blow Count (rocks present)

CHRISTIAN WHEELER
ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX.:	A-1

LOG OF BORING B-1

Sample Type and Laboratory Test Legend

Cal Modified California Sampler — CK Chunk Sample
SPT Standard Penetration Test — DR Density Ring
ST Shelby Tube

MD Maximum Density — DS Direct Shear
SO4 Soluble Sulfates — Con Consolidation
SA Sieve Analysis — EI Expansion Index
HA Hydrometer — R-Val Resistance Value
SE Sand Equivalent — Chl Soluble Chlorides
PI Plasticity Index — Res pH & Resistivity

Date Excavated:	7/1/2011	Equipment:	Unimog-Marl M5
Logged by:	TSW	Auger Size:	7"
Existing Elevation:	460 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30	430		SM	**Mission Valley Formation (Tmv):** Light to medium gray, moist, dense, fine- to medium-grained SILTY SAND with clay.							SA
35	425										
40	420			Boring terminated at 40 feet. No groundwater or seepage encountered.							
45	415										
50	410										
55	405										
60	400										

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonreprestative Blow Count (rocks present)

CHRISTIAN WHEELER
ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX:	A-2

LOG OF BORING B-2

Date Excavated:	7/1/2011	Equipment:	Unimog-Marl M5
Logged by:	TSW	Auger Size:	7"
Existing Elevation:	463 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Sample
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube		
MD	Maximum Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	463		SC	**Artificial Fill (Qaf):** Dark brown, damp, loose, fine- to medium-grained CLAYEY SAND with rock.							
			SC	**Colluvium (Qcol):** Light reddish brown, very moist, medium dense, CLAYEY SAND with rock.							
5	458				30/3"	Cal		21.0	102.4		
10	453		SM	**Very Old Paralic Deposits ($Qvop_7$):** Light to medium reddish-brown, very moist, medium dense, very fine- to fine-grained and medium- to coarse-grained SILTY SAND with clay and rock.	50	Cal		18.5	100.5		
15	448				24	SPT					
20	443										
			GM	Reddish-brown to light gray, moist, medium dense to dense, very fine- to fine-grained with rock up to about 2 inches.	66	Cal		8.1	105.8		
			SM	Light to medium reddish-brown, moist, medium dense to dense, very fine- to fine-grained SILTY SAND with rock.							
25	438				24	SPT					
			GM	Light gray to orange, moist, dense, SANDY GRAVEL with silt and rock.							
			SM	Light to medium reddish brown, moist, dense, very fine- to fine-grained SILTY SAND with rock; Slightly micaceous.	35	SPT					
30	433										

Boring continued on APPENDIX A-4.

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonreprestative Blow Count (rocks present)

CHRISTIAN WHEELER
ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX:	A-3

LOG OF BORING B-2

Sample Type and Laboratory Test Legend

Cal Modified California Sampler
SPT Standard Penetration Test
ST Shelby Tube
CK Chunk Sample
DR Density Ring

MD Maximum Density
SO4 Soluble Sulfates
SA Sieve Analysis
HA Hydrometer
SE Sand Equivalent
PI Plasticity Index
DS Direct Shear
Con Consolidation
EI Expansion Index
R-Val Resistance Value
Chl Soluble Chlorides
Res pH & Resistivity

Date Excavated:	7/1/2011	Equipment:	Unimog-Marl M5
Logged by:	TSW	Bucket Size:	7"
Existing Elevation:	463 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30	433		SM	Light to medium reddish-brown, moist, dense, very fine- to fine-grained SILTY SAND; Slightly micaceous.							
			SM	**Mission Valley Formation (Tmv):** Light to medium gray, moist, dense, fine- to medium-grained SILTY SAND with clay.							
35	428				50/6"	Cal		14.1	111.9		DS
			SC	Light to medium gray with light red, moist, dense, fine- to medium-grained CLAYEY SAND.							
40	423			Boring terminated at 40 feet. No groundwater or seepage encountered.							
45	418										
50	413										
55	408										
60	403										

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonreprestative Blow Count (rocks present)

CHRISTIAN WHEELER ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX:	A-4

LOG OF BORING B-3

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Sample
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube		
MD	Maximum Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity

Date Excavated:	7/1/2011	Equipment:	Unimag-Mail M5
Logged by:	TSW	Bucket Size:	N/A
Existing Elevation:	456 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	456			6 inches of Portland Cement Concrete (PCC)							
			SC	**Colluvium (Qcol):** Light reddish brown, moist, medium dense, CLAYEY SAND with rock.							
5	451		SM	**Very Old Paralic Deposits (Qvop7):** Light to medium reddish-brown, moist, medium dense to dense, very fine- to fine-grained and medium- to coarse-grained SILTY SAND with clay and rock. Rock layer at about 9 to 10 feet.							
10	446		SM	Light to medium reddish-brown, moist, medium dense to dense, very fine- to fine-grained SILTY SAND with rock.							
15	441		GM	Reddish-brown and gray, moist, medium dense to dense, SANDY GRAVEL with silt. Practical refusal at 15 feet with auger, switch to air -rotary. Rock layer at about 15 to 17 feet.							
			SM	Light to medium reddish brown, moist, medium dense to dense, very fine- to fine-grained SILTY SAND with rock; Slightly micaceous.							
20	436										
			GM	Light gray to orange, moist, dense, SANDY GRAVEL with silt and rock.							
25	431		SM	**Mission Valley Formation (Tmv):** Light to medium gray, moist, dense, fine- to medium-grained SILTY SAND with clay.							
30	426										

Boring terminated at 30 feet.
No groundwater or seepage encountered.

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonreprestative Blow Count (rocks present)

CHRISTIAN WHEELER ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX:	A-5

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) **GRAIN SIZE DISTRIBUTION:** The grain size distributions of selected samples were determined in accordance with ASTM C136 and/or ASTM D422.

c) **DIRECT SHEAR:** Direct shear tests were performed to determine the failure envelope of selected soils based on yield shear strength. The shear box was designed to accommodate a sample having a diameter of 2.375 inches or 2.50 inches and a height of 1.0 inch. Samples were tested at different vertical loads and a saturated moisture content. The shear stress was applied at a constant rate of strain of approximately 0.05 inch per minute.

d) **SOLUBLE SULFATE TEST:** The soluble sulfate content was determined for a representative sample in accordance with California Test Method 417.

LABORATORY TEST RESULTS

PROPOSED APARTMENT BUILDING

6213-6219 MONTEZUMA ROAD

SAN DIEGO, CALIFORNIA

DIRECT SHEAR (ASTM D3080)

Sample Location	**Boring B-1 @ 15'**	**Boring B-2 @ 21½'**
Sample Type	Undisturbed	Undisturbed
Friction Angle	34°	36°
Cohesion	200 psf	200 psf

GRAIN SIZE DISTRIBUTION (ASTM D422)

Sample Location	**Boring B-1 @ 14'-19'**	**Boring B-2 @ 23'-28'**
Sieve Size	*Percent Passing*	*Percent Passing*
1"	100	
¾"	99	
½"	98	
⅜	96	
#4	90	
#8	85	100
#16	81	99
#30	78	96
#50	76	61
#100	60	29
#200	33	20

SOLUBLE SULFATES (CALIFORNIA TEST METHOD 417)

Sample Location	**Boring B-1 @ 14'-19'**
Soluble Sulfate	0.006 % (SO_4)

Appendix C

References

REFERENCES

Bryant, W. A. (compiler), 2005, Digital Database of Quaternary and Younger Faults from the Fault Activity Map of California, version 2.0: California Geological Survey Web Page, http://www.consrv.ca.gov/CGS/information/publications/QuaternaryFaults_ver2.htm

City of San Diego, 1995, Seismic Hazard Study, Geologic Hazards and Faults, Sheet 22, Scale 1" = 800'.

Kennedy, Michael P., 1975, Geology of the San Diego Metropolitan Area, California, California Division of Mines and Geology, Bulletin 200.

Kennedy, Michael P. and Tan, Siang S., 2008, Geologic Map of the San Diego 30'x60' Quadrangle, California, California Geologic Survey, Map No. 3.

Tan, S.S., 1995, Landslide Hazards in the Southern Part of the San Diego Metropolitan Area, San Diego County, California, California Division of Mines and Geology Open-File Report 95-03.

U.S. Geological Survey, U.S. Seismic Design Maps Web Application, http://geohazards.usgs.gov/designmaps/us/application.php

U.S. Geological Survey, Quaternary Faults in Google Earth, http://earthquake.usgs.gov/hazards/qfaults/google.php

TOPOGRAPHIC MAPS

City of San Diego, 1952, Revised 1988, 200-Scale Topographic Map, Sheet 218-1749.
City of San Diego, 1979, 200-Scale Orthographic Map, Sheet 218-1749.

PHOTOGRAPHS

San Diego County, 1928, Packet 60C; Scale: 1 inch = 1000 feet (approximate).

San Diego County, 1973, Flight 22, Photograph 22; Scale: 1 inch = 1000 feet (approximate).

San Diego County, 1978, Flight 26C, Photographs 3 and 4; Scale: 1 inch = 1000 feet (approximate).

San Diego County, 1978, Flight 27, Photograph C5 and C6; Scale: 1 inch = 1000 feet (approximate).

Appendix D

Recommended Grading Specifications – General Provisions

RECOMMENDED GRADING SPECIFICATIONS - GENERAL PROVISIONS

MONTEZUMA APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, 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 apprised 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 D6938

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 six 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 ASTM D 4829.

OVERSIZED MATERIAL: Oversized fill material is generally defined herein as rocks or lumps of soil over 6 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.

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May 9, 2017

Job #B70115N1

Prime Built
Chris Elsey
1532 College Avenue, F19
Manhattan, Kansas 66502

Subject: Response to Noise Cycle Issues for Montezuma PDP/CUP, City of San Diego Project No. 501449

This letter is in response to the City of San Diego's Cycle Issues letter for the project known as Montezuma PDP/CUP, City of San Diego Project No. 501449. Comments are found in the letter dated April 28, 2017 and are located in the Plan – Long Range Planning section. These comments have been addressed in a revised version of the report, dated May 9, 2017, and this letter will reference the location of each comment response or requested changes in the revised report.

Italics are added to indicate City of San Diego staff comments.

Plan – Long Range Planning Comments

18 According to the Acoustical Analysis Report prepared by Eilar Associates, Inc. for the proposed project, future traffic noise impacts were calculated to be 65 CNEL or less at outdoor use areas. According to Table NE-3 Land Use-Noise Compatibility Guidelines in the Noise Element of the General Plan, the proposed project falls under the Residential Category within the "Conditionally Compatible" noise environment and would need to attenuate exterior noise levels to an interior noise level of 45 CNEL (INFO ONLY). (New Issue) [Recommended]

19 According to the acoustical report, contemporary building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows opened (Continued). (New Issue) [Recommended]

20 Even with adequate ventilation, requiring that all windows be closed cannot be regulated. Therefore, the report should state what other noise attenuation methods should be used in addition to adequate ventilation such as those identified in Table NE-5 Typical Noise Attenuation Methods to Insulate the Noise Receiver on page NE-21 of the Noise Element of the General Plan. (New Issue)

RESPONSE: A statement has been added to the report in Sections 1.0, 5.2, and 6.0, on pages 1, 10, and 14, respectively, detailing that the typical sound attenuation methods shown in Table NE-5 of the City of San Diego Noise Element to the General Plan are expected to adequately control interior noise levels to below 45 CNEL.

21 The Executive Summary and Conclusion sections of the report also indicate that noise levels generated by anticipated HVAC systems are expected to meet applicable night time limits at surrounding property lines, but makes no mention of its effect on residents of the proposed project. Please indicate in the report how HVAC noise levels will also be attenuated to acceptable interior noise levels. (New Issue)

> **RESPONSE:** A statement has been added to the report in Sections 1.0, 5.3, and 6.0, on pages 1, 11, and 14, respectively, stating that noise impacts to residents of the proposed project will be negligible, due to noise shielding provided by the building. Additionally, if additional noise attenuation is required, the typical sound attenuation methods shown in Table NE-5 of the City of San Diego Noise Element to the General Plan are expected to adequately control interior noise levels to below 45 CNEL.

Please call if you have any questions or require additional information.

EILAR ASSOCIATES, INC.

Jonathan Brothers, Principal Acoustical Consultant

ACOUSTICAL ANALYSIS REPORT

Montezuma Road Multi-Family
6213 Montezuma Road
San Diego, California 92115

City of San Diego Project No. 501449

Prepared For

Prime Built
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Job #B70115N1

May 9, 2017

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FIGURES

APPENDICES

1.0 EXECUTIVE SUMMARY

The proposed project, Montezuma Road Multi-Family, consists of the construction of a new, five-story student dormitory building over three levels of underground parking. The project site is located at 6213 Montezuma Road in the City of San Diego, California.

The current and future noise environment primarily consists of traffic noise from Montezuma Road. Future traffic noise impacts at building facades will range from 27.7 CNEL at the west facade (facing the south courtyard) on the first floor to 67.6 CNEL at the north facade (facing Montezuma Road) on the first floor.

As per City of San Diego requirements, noise levels at outdoor use areas of the residential uses should be 65 CNEL or less. Future traffic noise impacts were calculated at common and private outdoor use areas to determine compliance with this requirement. Future traffic noise impacts were calculated to be 65 CNEL or less at all outdoor use areas, remaining in compliance with City of San Diego noise regulations. No project design features are deemed necessary for attenuating exterior noise impacts.

The City of San Diego and the State of California require interior noise levels not exceeding 45 CNEL in residential habitable space. Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows opened. Calculations show that future noise levels on site are expected to exceed 60 CNEL at the on-site building, and therefore, the developer shall have an exterior-to-interior noise analysis performed by an acoustical consultant when building plans become available, prior to the issuance of building permits, in order to demonstrate that the project will have interior noise levels that meet the noise standards of the City of San Diego and State of California. The required interior noise levels are feasible and can be achieved with readily available building materials and construction methods. Typical sound attenuation methods shown in Table NE-5 of the City of San Diego Noise Element to the General Plan are expected to adequately control interior noise levels to below 45 CNEL, including the incorporation of mechanical fresh air ventilation, dual pane glazing, and exterior doors with appropriate seals into the design.

Calculations show that noise levels generated by anticipated HVAC units are expected to meet the applicable nighttime noise limits at surrounding property lines. No added project design features are deemed necessary for attenuating these mechanical noise impacts. It should be noted that interior noise impacts from HVAC equipment to residents of the proposed project will be negligible, as the building itself (including parapet walls at the roof level) will provide adequate noise shielding of HVAC equipment, such that noise impacts from rooftop HVAC equipment will be well below 60 CNEL at all building facades. However, if additional noise attenuation is required, then project design features shown in Table NE-5 of the City of San Diego Noise Element to the General Plan are expected to adequately control interior noise levels to below 45 CNEL.

Noise from temporary construction activities is not expected to exceed the applicable construction noise limits of the City of San Diego at any surrounding residential property line. Construction is prohibited between the hours of 7 p.m. and 7 a.m. and on Sundays or legal holidays. Standard construction noise control methods including adhering to permissible hours of operation, maintaining equipment in proper operating condition, and placing staging areas at furthest locations from noise sensitive receivers, are expected to be sufficient for reducing noise impacts to surrounding receivers.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the City of San Diego Noise Element to the General Plan and Municipal Code. This analysis addresses noise impacts from nearby roadway traffic to determine project features necessary to achieve compliance with the City of San Diego noise regulations, which require exterior noise levels of 65 CNEL or less at outdoor use areas, and interior noise levels of 45 CNEL or less in residential spaces. This analysis will also address the potential permanent and temporary noise impacts caused by the project at surrounding noise-sensitive receivers and recommend mitigation to reduce impacts to be compliant with applicable noise limits, if necessary.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, for a specified duration. The Community Noise Equivalent Level (CNEL) is a calculated 24-hour weighted average, where sound levels during evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10 p.m. to 7 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, L_{DN}, which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and for enforcement of noise ordinances. Further explanation can be provided upon request.

2.1 Project Description

The proposed project, Montezuma Road Multi-Family, consists of the construction of a new, five-story student dormitory building over three levels of underground parking. The building will include 128 bedroom suites. Outdoor use areas for residents on site are provided as common balconies, a first floor terrace, and a rooftop garden. For further details, please refer to the project plans, provided as Appendix A.

2.2 Project Location

The project site is located at 6213 Montezuma Road in the City of San Diego, California. The Assessor's Parcel Numbers (APN) for the property are 467-171-28 and 467-171-29. The project location is shown on the Vicinity Map, Figure 1, following this report. An Assessor's Parcel Map, Satellite Aerial Photograph, and Topographic Map of this area are also provided as Figures 2 through 4, respectively.

2.3 Applicable Noise Regulations

This acoustical analysis report is submitted to satisfy the acoustical requirements of the City of San Diego Noise Element to the General Plan and Municipal Code. The City of San Diego Noise Element to the General Plan requires that at a multi-family residential property, indoor noise levels are attenuated to 45 CNEL for residential space, and noise levels at residential outdoor use areas do not exceed 65 CNEL.

Noise sources on the project site must also be evaluated to determine their impact on neighboring receivers. The City of San Diego Municipal Code gives noise limits for residential properties based on density. Section 59.5.0401 of the Municipal Code states that high density or mixed use properties have noise limits of 60 dBA between the hours of 7 a.m. and 7 p.m., 55 dBA between the hours of 7 p.m. and 10 p.m., and 50 dBA between the hours of 10 p.m. and 7 a.m., while single-family residential properties have noise limits of 50 dBA in daytime hours, 45 dBA in the evening hours, and 40 dBA in the nighttime hours. The subject property will be used for high-density multi-family residential with the development of the proposed project. The property to the east of the project site is also a high-density multi-family residential use, while the property to the west of the site is currently vacant but zoned for future high-density multi-family residential use. Properties to the south are single-family residential uses. Any noise-sensitive properties to the north are located at a greater distance from potential on-site noise sources and therefore are not considered in this analysis. The Municipal Code also contains a provision that states that the sound level limit on the boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. For this reason, noise limits applicable at single-family residential properties to the south will be the average of single-family and high-density multi-family residential noise limits.

In addition, Section 59.5.0404 of the City of San Diego Municipal Code states that construction activity is prohibited between the hours of 7 p.m. and 7 a.m. and on Sundays or legal holidays. During permissible hours of operation, noise levels from construction activity must be limited to a twelve-hour average of no greater than 75 dBA at any property line zoned for residential use.

Please refer to Appendix B for pertinent sections of the San Diego Noise Element to the General Plan and the City of San Diego Municipal Code.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

Exterior noise at the site will consist primarily of traffic noise from Montezuma Road. No other noise sources are considered to be significant.

3.1.1 Roadway Noise Sources

Current (2012) and future (2035) traffic volumes are given based on information from the San Diego Association of Governments (SanDAG) Series 13 Transportation Forecast Information Center, located on the SanDAG website at http://tfic.sandag.org/.

Montezuma Road is a two-lane, two-way Major Arterial running east-west along the north boundary of the project site. The posted speed limit is 35 mph. According to SanDAG, the current traffic volume is estimated to be approximately 12,600 Average Daily Trips (ADT) east of East Campus Drive, and 11,800 ADT west of East Campus Drive.

No current or future truck percentages were available for this roadway; however, based on neighboring and surrounding land use, roadway classification, professional experience and on-site observations, a truck percentage mix of 4.1% medium and 3.6% heavy trucks was used for Montezuma Road.

Without proposed project structures, the current proposed project site will be exposed to traffic noise levels ranging from 57.8 CNEL to 67.1 CNEL. For a graphical representation of these contours, please refer to Figure 5: Site Plan Showing Current Traffic CNEL Contours. For additional information, please refer to Appendix C: Traffic Noise Model (TNM) Data and Results.

3.1.2 Measured Noise Level

An on-site inspection and traffic noise measurement were made on the afternoon of Thursday, November 20, 2008 at the site adjacent to the proposed project site. The weather conditions were as follows: clear skies, low humidity, and temperature in the mid 70's with no measurable wind. A "one-hour" equivalent measurement was made at the northeast corner of the property. The microphone was placed at approximately five feet above the existing project site grade.

Traffic volumes were recorded for automobiles, medium-size trucks, and large trucks on Montezuma Road during the measurement period. After a continuous 15-minute sound level measurement, no changes in the L_{EQ} were observed and the results were recorded. The measured noise level and related weather conditions are found in Table 1. The calculated equivalent hourly vehicle traffic count adjustment and a complete tabular listing of all traffic data recorded during the on-site traffic noise measurement are found in Appendix C: Traffic Noise Model (TNM) Data and Results.

Table 1. On-Site Noise Measurement Conditions and Results	
Date	Thursday, November 20, 2008
Time	12:50 p.m. – 1:05 p.m.
Conditions	Clear skies, little to no measureable wind, temperature in the mid 70s with low humidity
Measured Noise Level	63.8 dBA L_{EQ}

3.1.3 Calculated Noise Level

Noise levels were calculated for the site using the methodology described in Section 4.1 for the location, conditions, and traffic volumes counted during the noise measurements. The calculated noise levels (L_{EQ}) were compared with the measured on-site noise level, to determine if adjustments or corrections (calibration) should be applied to the traffic noise prediction model in the Traffic Noise Model software (TNM). Adjustments are intended to account for site-specific variances in overall reflectivity or absorption, which may not be accurately represented by the default settings in the model.

The measured noise level of 63.8 dBA L_{EQ} at the northeastern corner of the adjacent property was compared to the calculated (modeled) noise level of 64.5 dBA L_{EQ}, for the same weather conditions and traffic flow. Despite the fact that the posted speed limit on Montezuma Road is 35 mph, traffic was observed moving at a speed closer to 30 mph, due to a nearby traffic signal and traffic flow from a parking garage and nearby roadways. This 30 mph traffic speed was incorporated into the traffic noise model for calibration only; for current and future models a traffic speed of 35 mph was used. According to the Federal Highway Administration's Highway Traffic Noise: Analysis and Abatement Guide (see reference), a traffic noise model is considered validated if the measured and calculated noise impacts differ by three decibels or less. No adjustment was deemed necessary to model future noise levels for this location as the difference between the measured and calculated levels was found to be less than three decibels. The Traffic Noise Model is assumed to be representative of actual traffic noise that is experienced on site. This information is presented in Table 2, and additional information is provided in Appendix C.

Table 2. Calculated versus Measured Traffic Noise Data				
Location	**Calculated**	**Measured**	**Difference**	**Correction**
45 feet South of Montezuma Road CL	64.5 dBA L_{EQ}	63.8 dBA L_{EQ}	0.7 dB	None Applied

3.2 Future Noise Environment

The future noise environment in the vicinity of the project site will be primarily a result of the same ambient noise sources, as well as the noise generated by the proposed uses at the project site.

3.2.1 Future Traffic Volumes

The future (year 2035) traffic volumes for surrounding roadways were provided by SanDAG. The traffic volume of Montezuma Road is expected to increase to approximately 19,300 ADT east of East Campus Drive, and 18,000 ADT west of East Campus Drive by the year 2035.

The same truck percentages from the current traffic volumes were used for future traffic volume modeling. The roadway alignment and roadbed grade elevations are expected to remain the same for this section of roadway. For further roadway details and projected future ADT traffic volumes, please refer to Appendix C: Traffic Noise Model (TNM) Data and Results.

Without proposed project structures, the entire proposed project site will be exposed to future traffic noise levels ranging from 59.7 CNEL to 69.0 CNEL due to the increase in traffic. For a graphical representation of these contours, please refer to Figure 6: Site Plan Showing Future Traffic CNEL Contours.

3.2.2 HVAC Noise Sources

The primary source of noise generated on site is expected to be HVAC operational noise. Residential units on the project site are expected to be serviced by small heat pump units that will be roof-mounted on the building. Although the exact make/model of the equipment is unknown, it is assumed that the units will be similar to a Carrier CH14NB018 unit, and therefore, noise levels for this piece of equipment were used in analysis. As the sum of octave band noise levels given for the Carrier unit were found to be slightly less than the given sound rating, the octave band noise levels were increased accordingly such that the total sum was equal to the sound rating. The resultant estimated sound power spectrum for the Carrier unit is shown below in Table 3. Please refer to Appendix D: Manufacturer Data Sheets for additional information.

Table 3. Sound Power Level of Carrier Heat Pump Unit (Typical of Expected)								
Source	**Sound Power Level at Octave Band Frequency (dBA)**							**Total (dBA)**
	125	**250**	**500**	**1K**	**2K**	**4K**	**8K**	
Carrier CH14NB018	51.8	52.8	60.8	65.8	59.8	56.8	50.8	68

3.2.3 Temporary Construction Equipment

Construction information was provided by Chris Elsey of Prime Built, with typical equipment assumptions made where necessary. Mr. Elsey provided information on the phases of construction expected to occur on site. Noise levels of typical construction equipment expected to be operational on site are shown in Table 4. All noise levels have been provided by the DEFRA Construction Equipment Noise Database (see reference), unless otherwise noted. Noise levels not taken from the DEFRA database are noise measurements made by Eilar Associates on March 25, 2010 for Brutoco Engineering & Construction, Inc. for the Orange Line Extension Project, Metro Contract #C0943, City of Los Angeles, California.

Table 4. Typical Construction Equipment Noise Levels

Equipment Description	Duty Cycle (%)	Noise Level at 50 feet (dBA)
Excavator	40	70
Dump Truck	40	75
Skid Steer Loader	40	65
Crane*	16	81
Concrete Mixer Truck	40	76
Concrete Pump	20	74
Backhoe*	40	73
Forklift*	40	74

*Eilar Associates noise measurements for Orange Line Extension project.

These noise levels have been incorporated into the temporary construction noise analysis for the site, provided in Section 5.3.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

4.1.1 Field Measurement

Typically, a “one-hour” equivalent sound level measurement (L_{EQ}, A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded, vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time is long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize. The vehicle counts are then converted to one-hour equivalent volumes by using the appropriate multiplier. Other field data gathered includes measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. This data is checked against the available maps and records.

4.1.2 Roadway Noise Calculation

The Traffic Noise Model, Version 2.5 program released by the U.S. Department of Transportation is used to calculate the current future daytime average hourly noise level (HNL) contours at the project site, taking into account surrounding buildings, elevation, and additional topography. The daytime average hourly traffic volume is calculated as 0.058 times the ADT, based on the studies made by Wyle Laboratories (see reference). The HNL is equivalent to the hourly L_{EQ}, and both are converted to the CNEL by adding 2.0 decibels, as shown in the Wyle Study. Future CNEL is calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be analyzed, tested, and planned with TNM, as required. Further explanation can be supplied on request.

4.1.3 Cadna Noise Modeling Software

Modeling of the outdoor noise environment is accomplished using Cadna Version 2017, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts.

4.1.4 Acoustical Formulas and Calculations

The following acoustical formulas and calculations have also been used in the preparation of this report.

Decibel Addition

To determine the combined logarithmic noise level of two known noise source levels, the values are converted to the base values, added together, and then converted back to the final logarithmic value, using the following formula:

$$L_C = 10\log(10^{L1/10} + 10^{L2/10} + \ldots 10^{LN/10})$$

where L_C = the combined noise level (dB), and
L_N = the individual noise sources (dB).

This procedure is also valid when used successively for each added noise source beyond the first two. The reverse procedure can be used to estimate the contribution of one source when the contribution of another concurrent source is known and the combined noise level is known. These methods can be used for L_{EQ} or other metrics (such as L_{DN} or CNEL), as long as the same metric is used for all components.

Attenuation Due To Distance

Attenuation due to distance is calculated by the equation:

$$SPL_2 = SPL_1 - 20\log(\frac{D_2}{D_1})$$

where SPL_1 = Known sound pressure level at known distance,
SPL_2 = Calculated sound pressure level at distance,
D_1 = Distance from source to location of known sound pressure level, and
D_2 = Distance from source to location of calculated sound pressure level.

This is identical to the more commonly used reference of 6 dB reduction for every doubling of distance. This equation does not take into account reduction in noise due to atmospheric absorption.

Hourly L_{EQ} Summation

To determine the hourly average noise levels (L_{EQ}) when the noise is created for less than the full hour, convert the logarithm values to the base energy value, multiply by the percentage of the hour that the noise occurs, and then convert the sum back to a logarithmic value. This is done with the following formula:

$$L_{EQ} = 10\log(P_H \times 10^{L_P/10})$$

where P_H = the percent or fraction of the hour noise is created, and
L_P = the partial hour noise level (dB).

4.2 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model 720 Sound Level Meter, Serial # 0263
- Larson Davis Model CA150 Calibrator, Serial # 0203
- Tripod, microphone with windscreen

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterward, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI S1.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 NOISE IMPACTS

5.1 Exterior

5.1.1 Noise Impacts to Outdoor Use Areas

As per the City of San Diego Noise Element to the General Plan, noise impacts at outdoor use areas of multi-family land uses should not exceed 65 CNEL. Future traffic noise levels were calculated at common outdoor use areas. Noise impacts at common outdoor use areas are shown in Table 5, and receiver locations are shown in Figure 7.

Table 5. Future Exterior Noise Levels at Common Outdoor Use Areas

Receiver	Description	Exterior Traffic Noise Level (CNEL)
B1	Balcony, Second Floor	58
B2	Balcony, Third Floor	58
B3	Balcony, Fourth Floor	58
B4	Balcony, Fifth Floor	58
OU1	Courtyard, First Floor	62
OU2	Courtyard, First Floor	29
OU3	Rooftop Terrace	54

As shown above, all common outdoor use areas are exposed to noise levels of less than 65 CNEL in the future noise environment, and therefore, are expected to be in compliance with City of San Diego noise regulations as currently designed. No project design features are deemed necessary for attenuating exterior noise impacts at common outdoor use areas.

5.1.2 Noise Impacts at Building Facades

Future traffic noise impacts were also calculated at building facades and showed that noise levels will range from 27.7 CNEL at the west facade (facing the south courtyard) on the first floor to 67.6 CNEL at the north facade (facing Montezuma Road) on the first floor. Noise levels are shown in Table 6 below, and receiver locations are shown in Figure 7.

Table 6. Future Exterior Noise Levels at Building Facades						
Receiver	Facade Location	Exterior Traffic Noise Level (CNEL)				
		1st Floor	2nd Floor	3rd Floor	4th Floor	5th Floor
F1	North	67	67	67	67	66
F2	East	61	61	61	60	60
F3	North	58	58	58	58	58
F4	West	61	61	61	61	61
F5	North	66	66	66	66	66
F6	North	68	68	67	67	67
F7	East	64	65	64	64	64
F8	East	61	62	62	62	62
F9	East	57	60	60	60	60
F10	South	33	37	37	37	39
F11	West	28	32	30	31	36
F12	South	35	33	32	32	35
F13	East	28	32	31	31	36
F14	South	35	39	39	39	40
F15	West	58	60	60	60	60
F16	West	61	61	62	61	61
F17	West	65	66	65	65	65

5.2 Interior

The State of California and the City of San Diego require buildings to be designed in order to attenuate, control, and maintain interior noise levels to 45 CNEL or less in habitable residential space. Current exterior building construction is generally expected to achieve at least 15 decibels of exterior-to-interior noise attenuation, with windows opened. Therefore, proposed project building structures exposed to exterior noise levels greater than 60 CNEL could be subject to interior noise levels exceeding the 45 CNEL noise limit for residential habitable space.

Calculations show that future noise levels on site are expected to exceed 60 CNEL at the on-site building, and therefore, the developer shall have an exterior-to-interior noise analysis performed by an acoustical consultant when building plans become available, prior to the issuance of building permits, in order to demonstrate that the project will have interior noise levels that meet the noise standards of the City of San Diego and State of California.

The required interior noise levels are feasible and can be achieved with readily available building materials and construction methods. Typical sound attenuation methods shown in Table NE-5 of the City of San Diego Noise Element to the General Plan are expected to adequately control interior noise levels to below 45 CNEL, including the incorporation of mechanical fresh air ventilation, dual pane glazing, and exterior doors with appropriate seals into the design.

5.3 Project-Related Noise Impacts on Surrounding Property Lines

5.3.1 HVAC Noise

Anticipated HVAC noise levels have been calculated using Cadna at surrounding noise-sensitive receivers considering noise limits detailed in Section 2.3. Calculations take into account the proposed building on which HVAC units will be roof-mounted. Receivers have been placed at five feet above grade at surrounding properties to the south, east, and west. An additional receiver has been added at 35 feet above grade at the property to the east to account for upper level receivers at the adjacent building. As any other noise-sensitive receivers are located at a greater distance from equipment than those evaluated herein, noise levels at any other receivers are expected to be less than those shown in this report, as receivers will receive additional attenuation due to distance and shielding from intervening structures. Calculations assume that all HVAC units will be operational for 100 percent of the time during all hours of the day, for a worst-case analysis, although actual operation would be expected to be intermittent and less frequent during the more sensitive nighttime hours.

Results of the analysis are shown in Table 7. More information is provided in Appendix E: Cadna Analysis Data and Results, and a graphical representation of evaluated source/receiver locations is shown in Figure 8.

Table 7. Mechanical Equipment Noise Levels at Surrounding Receivers

Receiver	Location	Noise Limit (dBA)	Equipment Noise Level (dBA)
R1	South Property Line	45	35
R2	East Property Line	50	34
R3	West Property Line	50	36
R4	East Property Line, Fourth Story	50	40

As shown above, noise levels from proposed HVAC equipment on site are expected to meet the applicable nighttime noise limits set by the City of San Diego without the implementation of added project design features. This evaluation is considered to be representative of actual HVAC noise generated on site, although noise levels may be further reduced due to units cycling on and off periodically. It should be noted that interior noise impacts from HVAC equipment to residents of the proposed project will be negligible, as the building itself (including parapet walls at the roof level) will provide adequate noise shielding of HVAC equipment, such that noise impacts from rooftop HVAC equipment will be well below 60 CNEL at all building facades. However, if additional noise attenuation is required, then project design features shown in Table NE-5 of the City of San Diego Noise Element to the General Plan are expected to adequately control interior noise levels to below 45 CNEL.

5.3.2 Temporary Construction Noise

A schedule of construction activity was evaluated to determine potential temporary noise impacts to the surrounding residential receivers, per City of San Diego Municipal Code requirements. The nearest surrounding residential properties are located to the east and south of the project site. The neighboring lot to the west of the project site is currently vacant, and the nearest sensitive receiver to the north of the project site is located approximately 210 feet away, across Montezuma Road and to the east of the SDSU parking garage. Any other potentially noise-sensitive receivers are located at a greater distance from construction activity and therefore, would be exposed to lesser noise impacts due to distance attenuation and shielding provided by intervening structures.

The anticipated construction schedule was provided by Chris Elsey of Prime Built. According to Mr. Elsey, the project will be constructed in an eight-month period. There will be some export of material required during the demolition phase, and therefore, a dump truck has been added to the anticipated activity list. A summary of construction activity is shown in Table 8.

Table 8. Anticipated Construction Activity

Scope of Work	Anticipated Large Equipment
Demolition and Excavation	Excavator, Backhoe, Dump Truck, Skid Steer Loader
Foundation and Concrete Work	Dump Truck, Skid Steer Loader, Concrete Mixer, Concrete Pump
Framing	Forklift, Crane, Skid Steer Loader
Finish Work	Forklift, Skid Steer Loader

Noise levels were calculated at the nearest receivers to the south and east and considered all large equipment to be located at the center of the site to evaluate typical impacts to the surrounding receivers as equipment moves around the property. Noise calculations consider typical duty cycles of equipment, to account for periods of activity and inactivity on the site.

Noise levels for each stage of construction are shown in Table 9. Detailed calculations can be found in Appendix F, and a graphical representation of noise source and receiver locations is provided as Figure 9.

Table 9. Temporary Construction Noise Levels at Neighboring Properties

Phase	Equipment Used	Receiver Location	Distance (feet)	Average Noise Level (dBA)
Demolition and Excavation	Excavator, Backhoe, Dump Truck, Skid Steer Loader	South (CR1)	60	73
		East (CR2)	50	74
Foundation and Concrete Work	Dump Truck, Skid Steer Loader, Concrete Mixer Truck, Concrete Pump Truck	South (CR1)	60	74
		East (CR2)	50	75
Framing	Forklift, Crane, Skid Steer Loader	South (CR1)	60	73
		East (CR2)	50	75
Finishing	Forklift, Skid Steer Loader	South (CR1)	60	69
		East (CR2)	50	71

It is determined that construction noise levels associated with this project will not create a significant impact at any surrounding property line with activity limited to the daytime hours of 7 a.m. to 7 p.m., as noise levels are expected at 75 dBA or less at the nearest surrounding residential receivers.

Although noise levels are shown to be in compliance with the construction noise limit of 75 dBA, the following measures should still be practiced as a courtesy to residential neighbors.

1. Staging areas should be placed as far from occupied receivers as possible on the project site to limit any additional unnecessary noise exposure at sensitive receivers.

2. Place stationary equipment in locations that will have a lesser noise impact on nearby sensitive receivers.

3. Turn off equipment when not in use.

4. Limit the use of enunciators or public address systems, except for emergency notifications.

5. Equipment used in construction should be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.

6. Schedule work to avoid simultaneous construction activities that both generate high noise levels.

7. Use equipment with effective mufflers.

8. Minimize the use of backup alarms.

With work limited to daytime hours permissible by the City of San Diego and adherence to the general good practice construction noise control techniques, temporary construction noise is expected to remain in compliance with City of San Diego noise limits.

6.0 CONCLUSION

Future traffic noise impacts were calculated to be 65 CNEL or less at all outdoor use areas, remaining in compliance with City of San Diego noise regulations. No project design features are deemed necessary for attenuating exterior noise impacts.

Calculations show that future noise levels on site are expected to exceed 60 CNEL at the on-site building, and therefore, the developer shall have an exterior-to-interior noise analysis performed by an acoustical consultant when building plans become available, prior to the issuance of building permits, in order to demonstrate that the project will have interior noise levels that meet the noise standards of the City of San Diego and State of California. The required interior noise levels are feasible and can be achieved with readily available building materials and construction methods. Typical sound attenuation methods shown in Table NE-5 of the City of San Diego Noise Element to the General Plan are expected to adequately control interior noise levels to below 45 CNEL, including the incorporation of mechanical fresh air ventilation, dual pane glazing, and exterior doors with appropriate seals into the design.

Calculations show that noise levels generated by anticipated HVAC units are expected to meet the applicable nighttime noise limits at surrounding property lines. No added project design features are deemed necessary for attenuating these mechanical noise impacts. It should be noted that interior noise impacts from HVAC equipment to residents of the proposed project will be negligible, as the building itself (including parapet walls at the roof level) will provide adequate noise shielding of HVAC equipment, such that noise impacts from rooftop HVAC equipment will be well below 60 CNEL at all building facades. However, if additional noise attenuation is required, then project design features shown in Table NE-5 of the City of San Diego Noise Element to the General Plan are expected to adequately control interior noise levels to below 45 CNEL.

Noise from temporary construction activities is not expected to exceed the applicable construction noise limits of the City of San Diego at any surrounding residential property line. Construction is prohibited between the hours of 7 p.m. and 7 a.m. and on Sundays or legal holidays. Standard construction noise control methods including adhering to permissible hours of operation, maintaining equipment in proper operating condition, and placing staging areas at furthest locations from noise sensitive receivers, are expected to be sufficient for reducing noise impacts to surrounding receivers.

7.0 CERTIFICATION

All recommendations for noise control are based on the best information available at the time our consulting services are provided. However, as there are many factors involved in sound and impact transmission, and Eilar Associates has no control over the construction, workmanship or materials, Eilar Associates is specifically not liable for final results of any recommendations or implementation of the recommendations.

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with 6213 Montezuma Road, to be located in the City of San Diego, California. This report was prepared by Jonathan Brothers and Amy Hool.

Amy Lynn Hool

Jonathan Brothers, Principal Acoustical Consultant

Amy Hool, Senior Acoustical Consultant

8.0 REFERENCES

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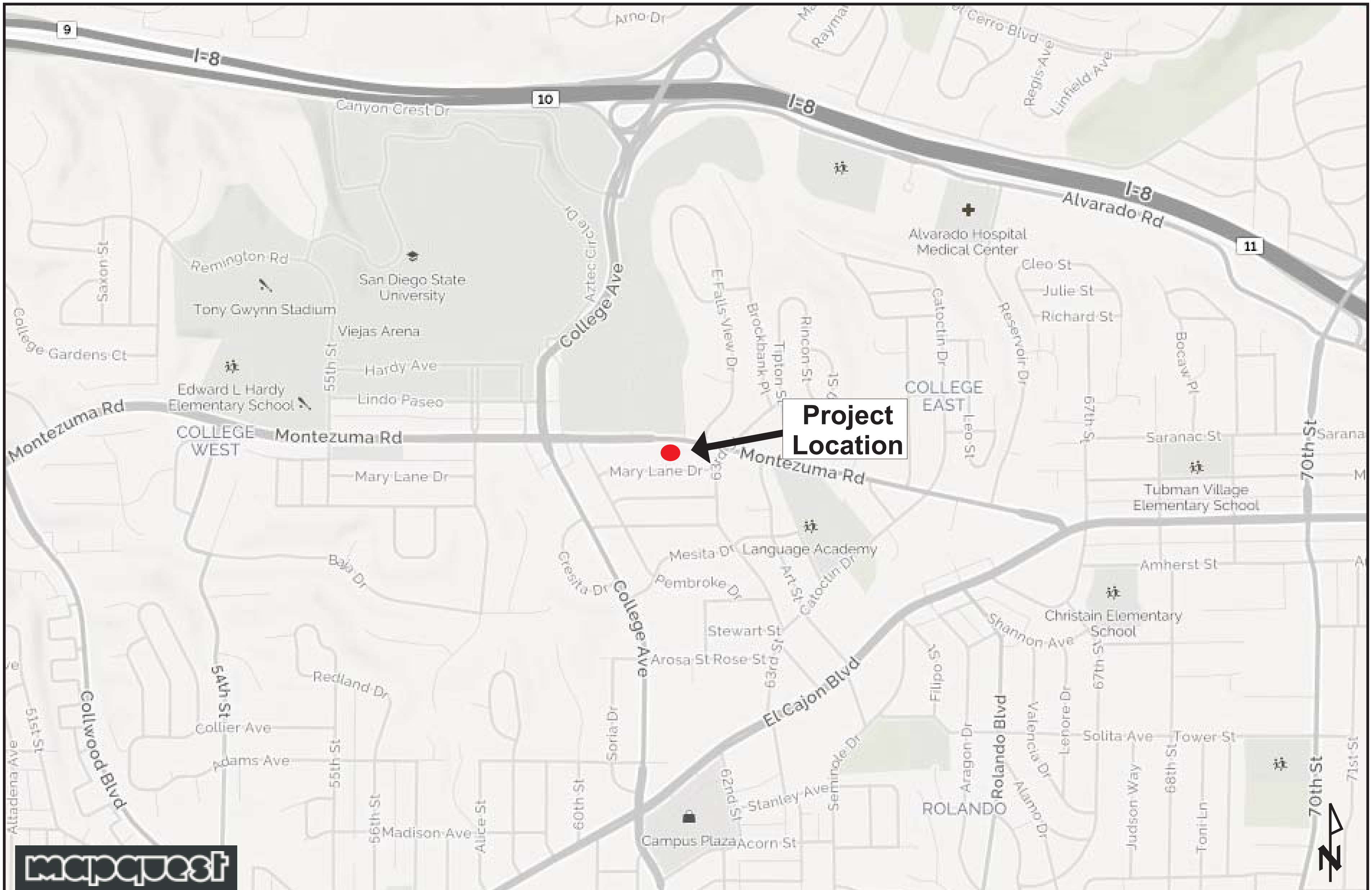
FIGURES



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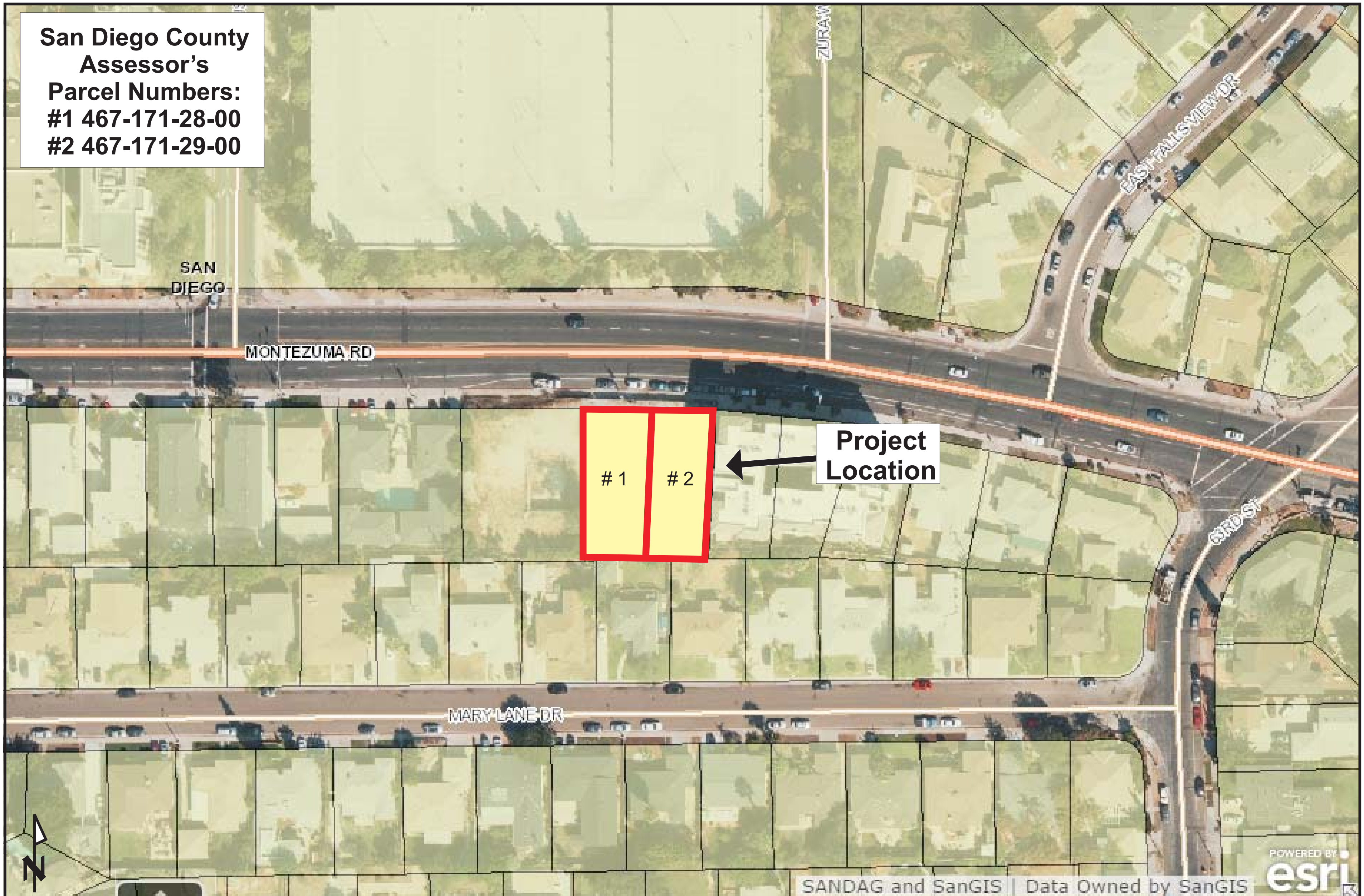
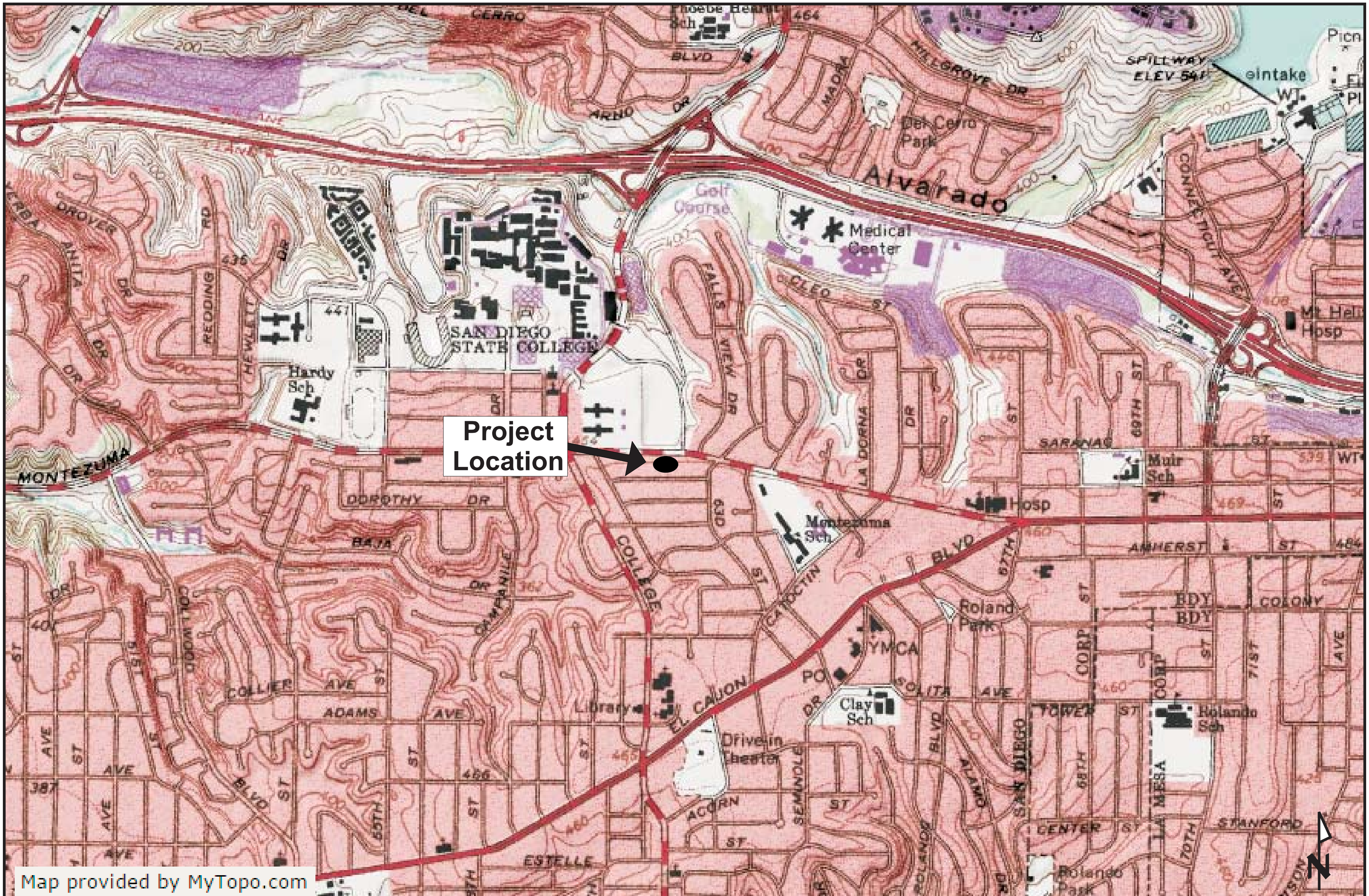
Vicinity Map
Job # B70115N1

Figure 1

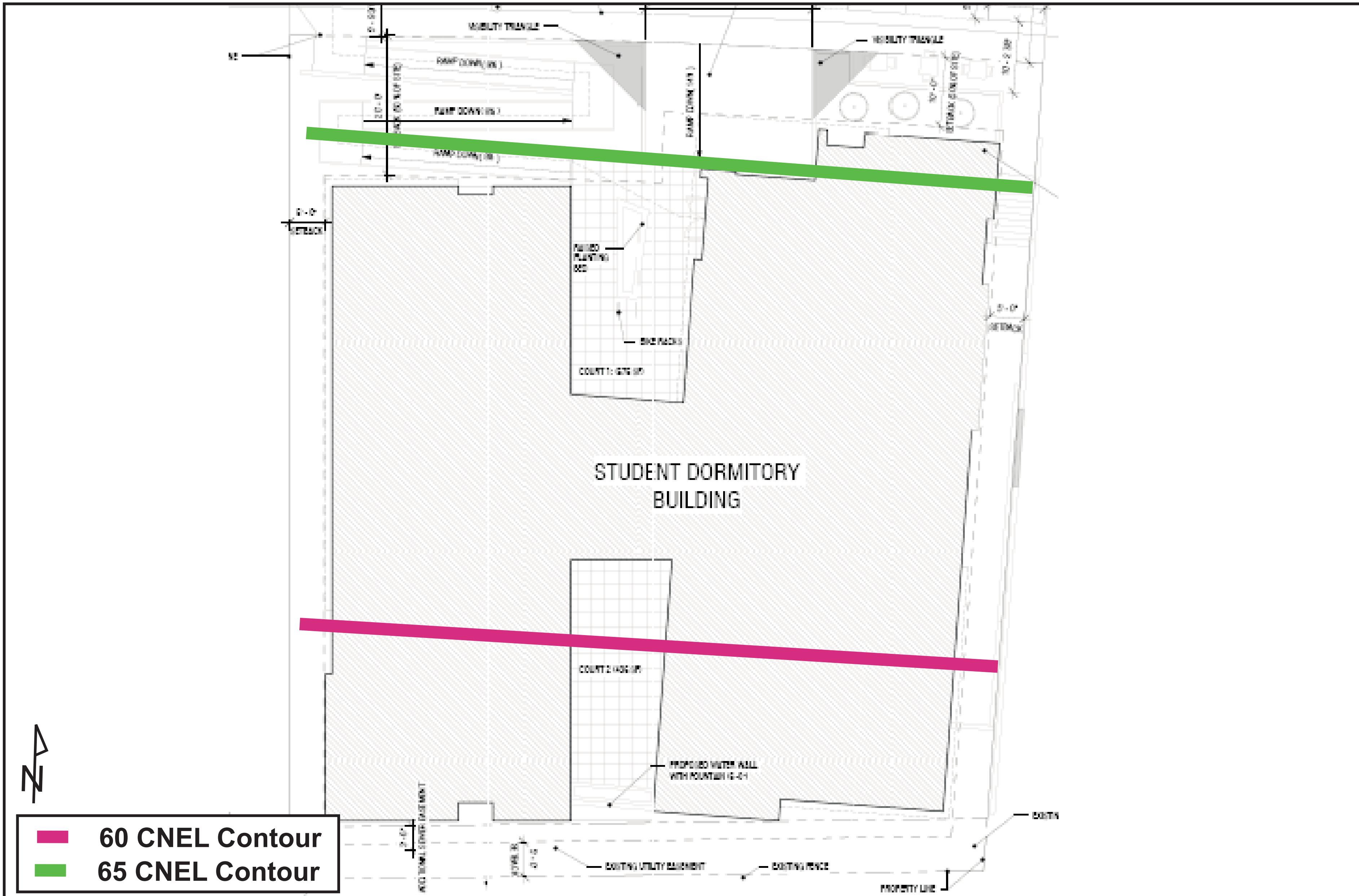


Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Assessor's Parcel Map Job # B70115N1	Figure 2

Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Satellite Aerial Photograph Job # B70115N1	Figure 3



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Topographic Map Job # B70115N1	Figure 4



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Site Plan Showing Current Traffic CNEL Contours
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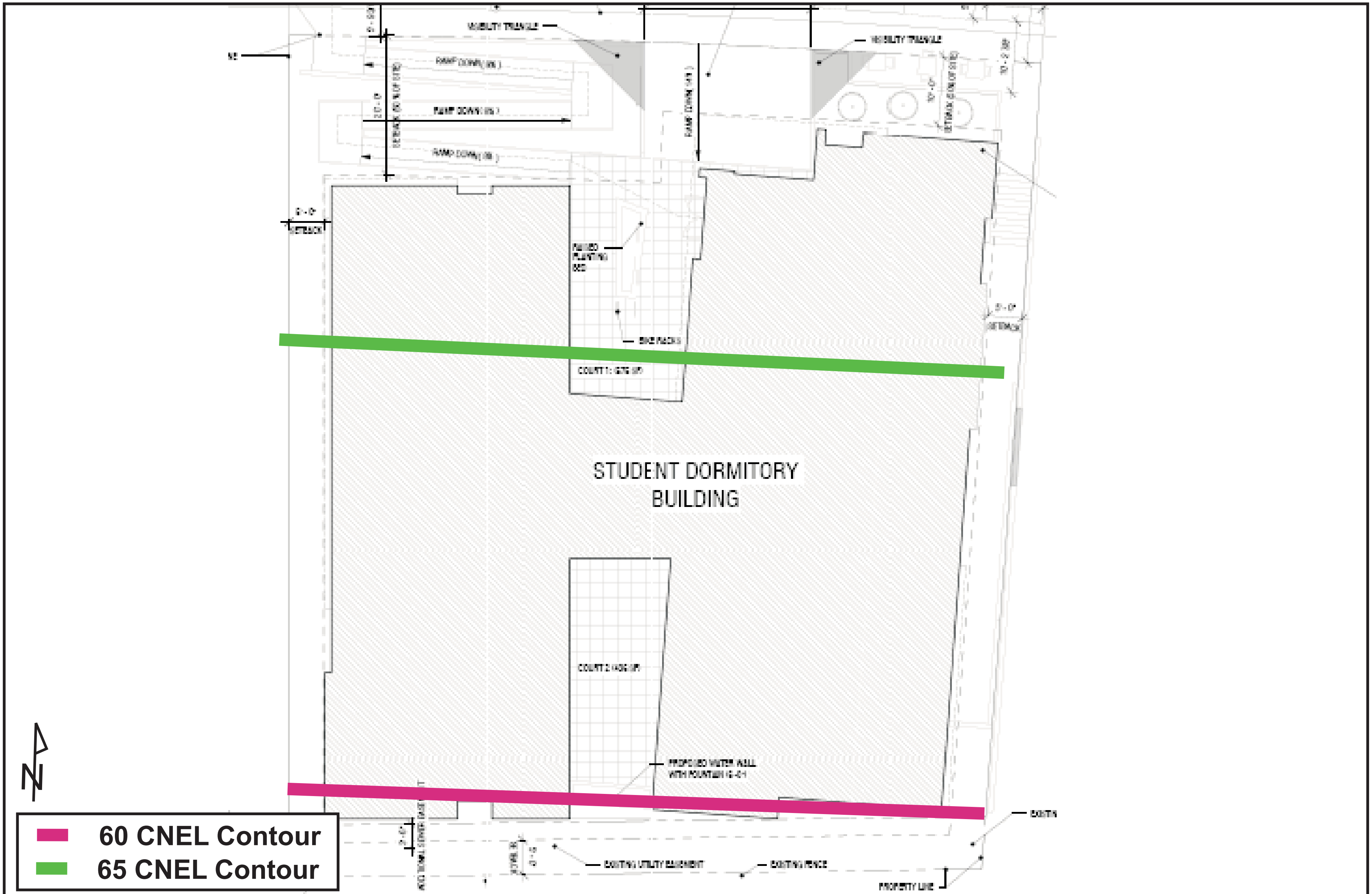
Figure 5



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Site Plan Showing Future Traffic CNEL Contours
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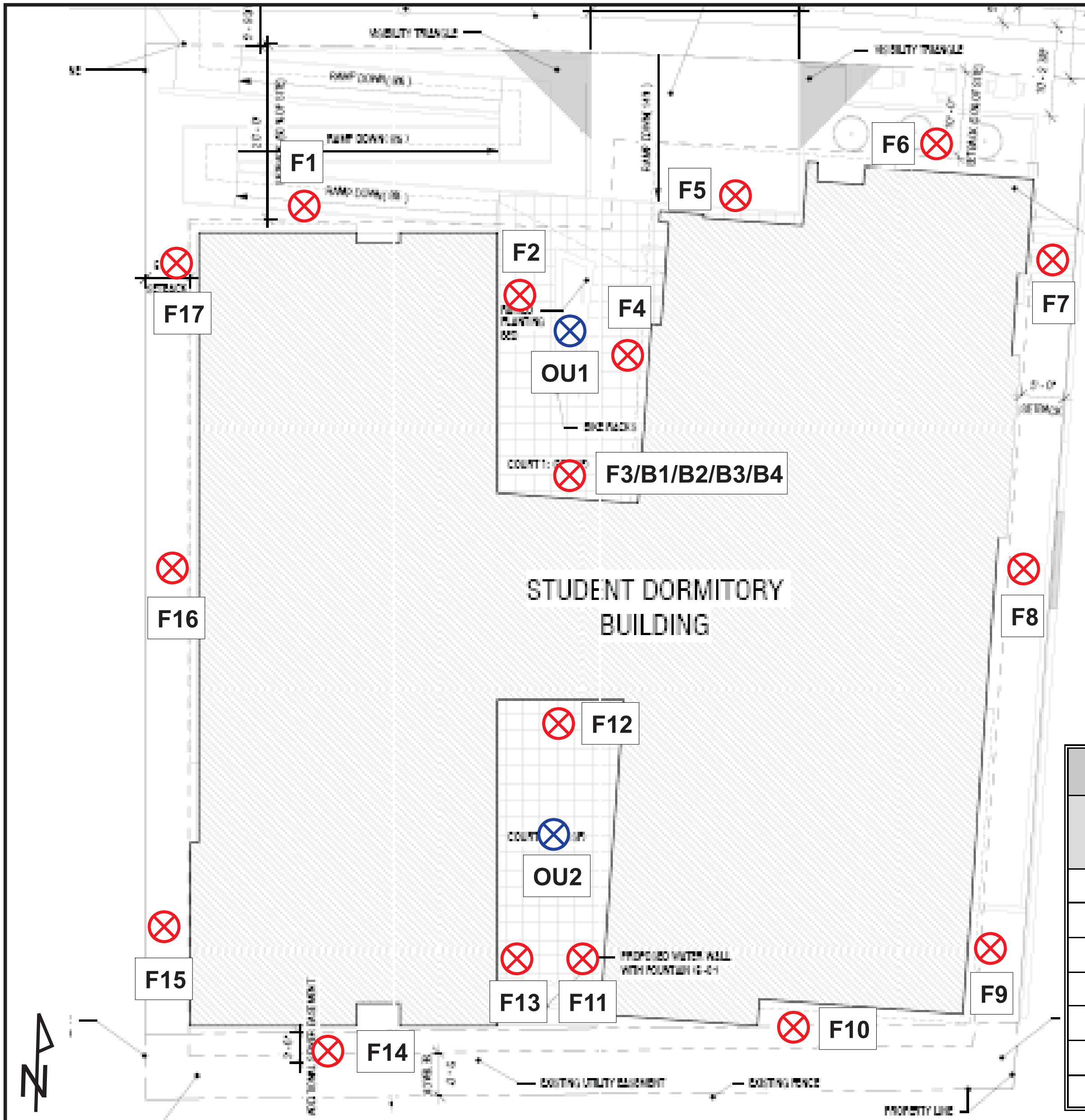
Figure 6



Future Exterior Noise Levels at Building Facades					
Receiver	Exterior Traffic Noise Level (CNEL)				
	1st Floor	2nd Floor	3rd Floor	4th Floor	5th Floor
F1	66.8	66.9	66.6	66.5	66.3
F2	60.9	61.2	60.7	60.4	60.3
F3	57.8	58.3	57.9	57.7	57.6
F4	61.1	61.4	60.9	60.6	60.5
F5	66.1	66.2	65.9	65.7	65.5
F6	67.6	67.5	67.3	67.2	67.0
F7	64.4	64.5	64.2	64.0	64.0
F8	61.0	61.9	61.9	61.6	61.6
F9	57.1	59.7	59.9	60.0	59.8
F10	33.4	37.3	37.4	37.4	39.2
F11	27.7	31.9	30.2	31.4	35.7
F12	34.6	32.8	31.5	32.0	35.3
F13	28.2	31.8	30.6	31.2	35.9
F14	34.8	38.8	38.9	39.2	40.3
F15	57.5	59.5	59.7	59.8	59.6
F16	60.7	61.4	61.5	61.3	61.3
F17	65.4	65.5	65.3	65.1	65.0

Future Exterior Noise Levels at Common Outdoor Use Areas		
Receiver	Description	Exterior Traffic Noise Level (CNEL)
B1	Balcony, Second Floor	58.3
B2	Balcony, Third Floor	57.9
B3	Balcony, Fourth Floor	57.7
B4	Balcony, Fifth Floor	57.6
OU1	Courtyard, First Floor	62.4
OU2	Courtyard, First Floor	29.3
OU3	Rooftop Terrace	53.5

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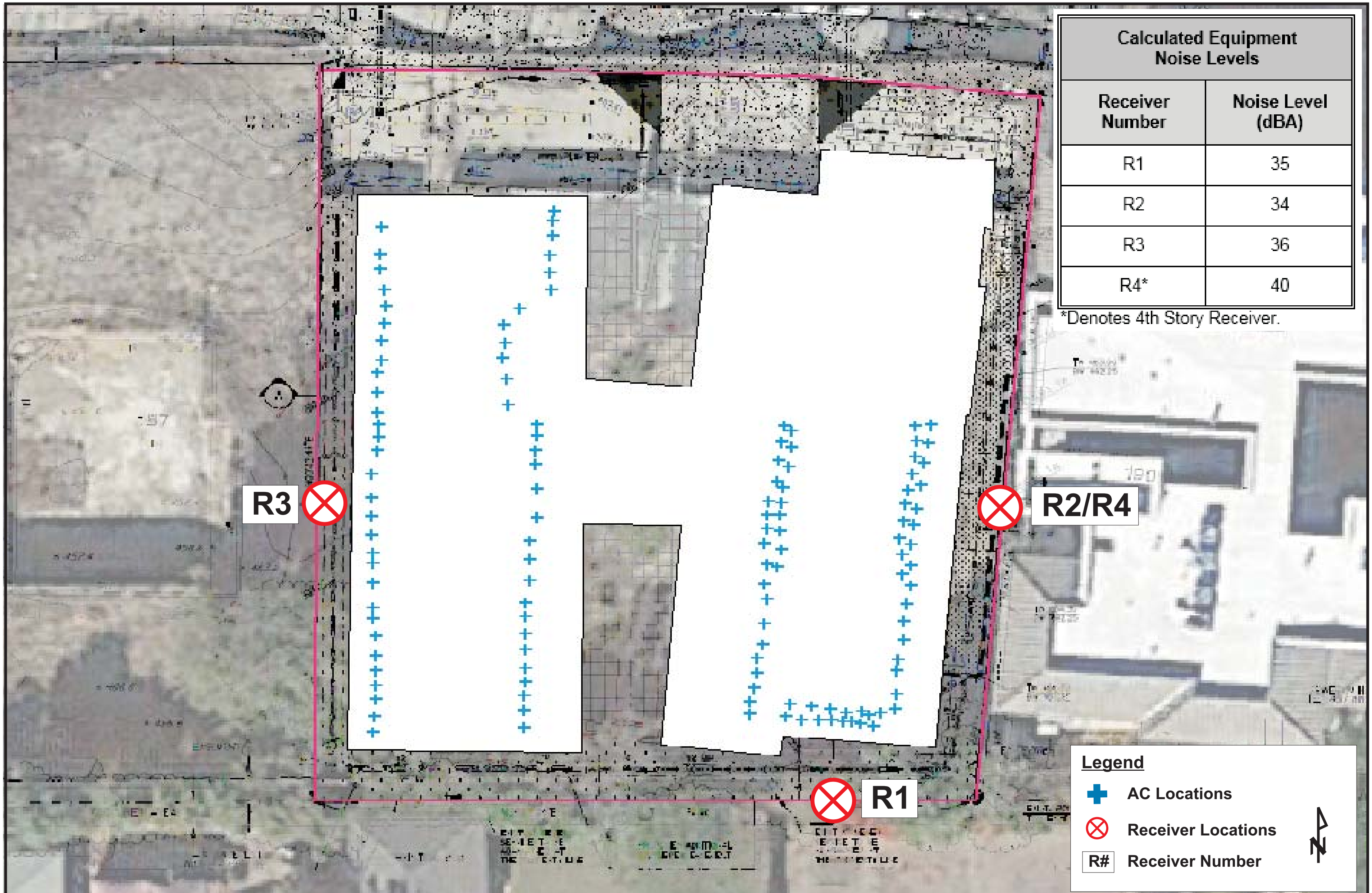
Site Plan Showing Outdoor Use Areas and Building Facade Receiver Locations
Job # B70115N1

Figure 7



Calculated Equipment Noise Levels	
Receiver Number	Noise Level (dBA)
R1	35
R2	34
R3	36
R4*	40

*Denotes 4th Story Receiver.

Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 760-738-5570	**Satellite Aerial Photograph Showing HVAC Noise Source and Receiver Locations** **Job # B70115N1**	**Figure 8**

Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California
760-738-5570

Satellite Aerial Photograph Showing
Temporary Construction Noise
Source and Receiver Locations
Job # B70115N1

Figure 9

APPENDIX A

Project Plans

DEVELOPMENT PROPOSAL FOR 6213 MONTEZUMA ROAD

SHEET INDEX

PROJECT DATA

DESCRIPTION
CONSTRUCTION OF A 58'-3" TALL (FIVE-STORY) STUDENT DORMITORY WITH ONE HUNDRED AND TWENTY EIGHT (128) BEDROOM SUITES OVER 3 LEVELS OF UNDERGROUND PARKING GARAGE (NO TRANSIT STOPS). THE PROJECT WILL CONSIST OF FIVE (5) DWELLING UNITS. SITE HAS BEEN PREVIOUSLY CLEARED, WITH A PARTIAL EXISTING FOUNDATION BEING REMOVED FOR NEW CONSTRUCTION.

SITE
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CA 92115

OWNER
ELSEY PARTNERS
1532 COLLEGE AVE. F19
MANHATTAN, KS 66502

ARCHITECT
PRIME DESIGN, LLC
1532 COLLEGE AVE. F19
MANHATTAN, KS 66502

CIVIL
JP ENGINEERING
4849 RONSON COURT, SUITE NO. 105
SAN DIEGO, CA 92111

STRUCTURAL
UNITED STRUCTURAL CONSULTANTS
7676 HILLMONT ST. SUITE 191
HOUSTON, TX 77040

CONSTRUCTION TYPE: TYPE 1A GARAGE, TYPE 3 DORMITORY

OCCUPANCY CLASS.
R-2 (CONGREGANT LIVING OR DORMITORY)
S-2 (ENCLOSED PARKING GARAGE)

ZONING
ZONE DESIGNATION: RM-3-9

COMMUNITY PLAN:
COLLEGE AREA COMMUNITY PLANNING AREA

OVERLAY ZONES:
AIRPORT INFLUENCE AREA (REVIEW AREA 2), CAMPUS PARKING IMPACT, THE COLLEGE COMMUNITY REDEVELOPMENT PROJECT MASTER PROJECT PLAN, AND ALUCOZ

ENVIRONMENTALLY SENSITIVE LANDS:
NOT APPLICABLE TO SITE

PERMITTED LAND USE: RESIDENTIAL

EXISTING USE: VACANT

PROPOSED USE: DORMITORY

PERMIT REQUESTED: CONDITIONAL USE PERMIT (PROCESS 3) FOR: STUDENT DORMITORY, SUBJECT TO SDMC SECTIONS 141.0304 AND 131.0422

PLANNED DEVELOPMENT PERMIT FOR: SIDEYARD SETBACKS AND PARKING DEVIATIONS

LEGAL DESCRIPTION

LOTS 188 AND 189 OF COLLWOOD PARK UNIT NO. 2, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP NO. 2495, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, AUGUST 12, 1948, TOGETHER WITH THAT PORTION OF THE SOUTH 6.00 FEET OF MONTEZUMA ROAD ADJOINING SAID LOTS ON THE NORTH AS CLOSED TO PUBLIC USE BY RESOLUTION NO. 184453, RECORDED AUGUST 06, 1965 AS INSTRUMENT NO. 141427 OF OFFICIAL RECORDS

APN(S) 467-171-28-00 AND 467-171-29-00

EXISTING SITE: NO STRUCTURES ON THE SITE (IN 6/2007 A DEMO PERMIT WAS ISSUED UNDER PTS 132053 FOR THREE STRUCTURES). DEMOLITION OF PARTIAL EXISTING FOUNDATION FROM PREVIOUS BUILDING WILL BE REQUIRED.

GEOLOGICAL HAZARD CATEGORY: CATEGORY 53

VARIANCES:

SIDE YARD:
BASE ZONE STATES REQUIREMENT OF 5'-0" OR 10% OF LOT WIDTH (10'-10"), WHICHEVER IS GREATER. THE PROJECT PROPOSES TO DEVIATE FROM THE REQUIREMENT FOR A SETBACK OF 5'-0".

PARKING:
THE COLLEGE AREA PLAN STATES REQUIREMENT OF 0.6 PARKING STALLS PER TENANT (78 SPACES). THE PROJECT PROPOSES TO DEVIATE FROM THE REQUIREMENT FOR A TOTAL OF 57 SPACES (0.45 PER TENANT).

BUILDING HEIGHT:
COLLEGE COMMUNITY REDEVELOPMENT PROJECT MASTER PROJECT PLAN STATES REQUIREMENT OF 56'-0" MAX. BUILDING HEIGHT. THE PROJECT PROPOSES TO DEVIATE FROM THE REQUIREMENT FOR A TOTAL MAX. BUILDING HEIGHT OF 58'-3" AT THE ELEVATOR PENTHOUSE ONLY. ALL OTHER PORTIONS OF THE BUILDING ARE BELOW THE 56'-0" HEIGHT.

ZONING CRITERIA RESIDENTIAL ZONE RAS4

	PROPOSED	REQUIRED/ALLOWED (PER TABLE 131-04G)
ALLOWABLE USES	STUDENT DORMITORY	STUDENT DORMITORY, CONDITIONAL USE
FRONT SETBACK	VARIES, 10'-0" MIN.	10'-0" MIN. FOR 50% OF BUILDING WIDTH (PROVIDING THE REMAINING PORTION FOLLOWS THE 20'-0" MIN.)
REAR SETBACK	7'-6" MIN.	5'-0" MIN.
SIDE	5'-0" MIN.	5'-0" MIN. OR 10% OF SITE WIDTH
BUILDING HEIGHT	58'-3" AT ELEVATOR PARAPET (56'-0" AT REST OF PROJECT)	60'-0" MAX. (56'-0" COLLEGE AREA PLAN)
BEDROOM SUITES	128 UNITS	N/A
EXPECTED RESIDENTS	128 RESIDENTS	N/A
DWELLING UNITS	5 DWELLING UNITS	1 UNIT PER 600 SF LOT AREA (20 DU)
GROSS SITE AREA	12,416 SF	NONE
GROSS FLOOR AREA	40,208 SF	NONE
FLOOR AREA RATIO	3.2	4.9 (2.7 F.A.R. LIMIT + 2.2 F.A.R. FOR GARAGE AS PER 131.0446 ITEM F)

FLOOR AREA RATIO SUMMARY

	AREA (SF)	F.A.R.
RESIDENTIAL	35,936 SF	2.9
VERTICAL CIRCULATION	3,134 SF	0.25
GARAGE	740 SF	0.06
BALCONIES	796 SF	0.06
TOTAL	40,208 SF	3.2

GARAGE - GROSS SF

GARAGE LEVEL 3	10,218 SF
GARAGE LEVEL 2	10,218 SF
GARAGE LEVEL 1	8,670 SF
TOTAL	29,106 SF

LOT COVERAGE SUMMARY

ITEM	AREA (SF)	% OF TOTAL
BUILDING AREA (FOOTRPRINT)	7,432 SF	60%
IMPERVIOUS AREA (WITH BUILDING)	10,167 SF	82%
LANDSCAPED AREA	2,249 SF	18%
TOTAL SITE AREA	12,416 SF	100%

OPEN SPACE SUMMARY

SPACE	AREA OF OPEN SPACE	AREA OF OPEN SPACE WITH LANDSCAPING
COURT 1	629	50
COURT 2	475	0
ROOFTOP	1710	760
TOTAL AREA	2814	810

LANDSCAPED SPACE SUMMARY

SPACE	AREA OF SPACE	PERCENTAGE
NORTHEAST PLANTER	209 SF	7%
NORTHWEST PLANTER	455 SF	15%
COURT 1 PLANTER	50 SF	2%
WEST EDGE LANDSCAPE	538 SF	18%
SOUTH EDGE LANDSCAPE	968 SF	32%
ROOF LANDSCAPE	760 SF	26%
TOTAL AREA	2,980 SF	100%

PARKING TABLE

PARKING TYPE	PROPOSED	REQUIRED/ALLOWED
PARKING RATIO	0.45 STALLS PER SLEEPING ROOM	0.6 STALLS PER SLEEPING ROOM
VEHICLE STALLS	57 STALLS	77 STALLS
VEHICLE STALLS (ACCESSIBILE)	2 STALLS	2 STALLS
VAN STALLS (ACCESSIBLE)	1 STALL	1 STALL
MOTORCYCLE STALLS	8 STALLS	6 STALLS
BICYCLE STALLS	40 STALLS	38 STALLS

VICINITY MAP

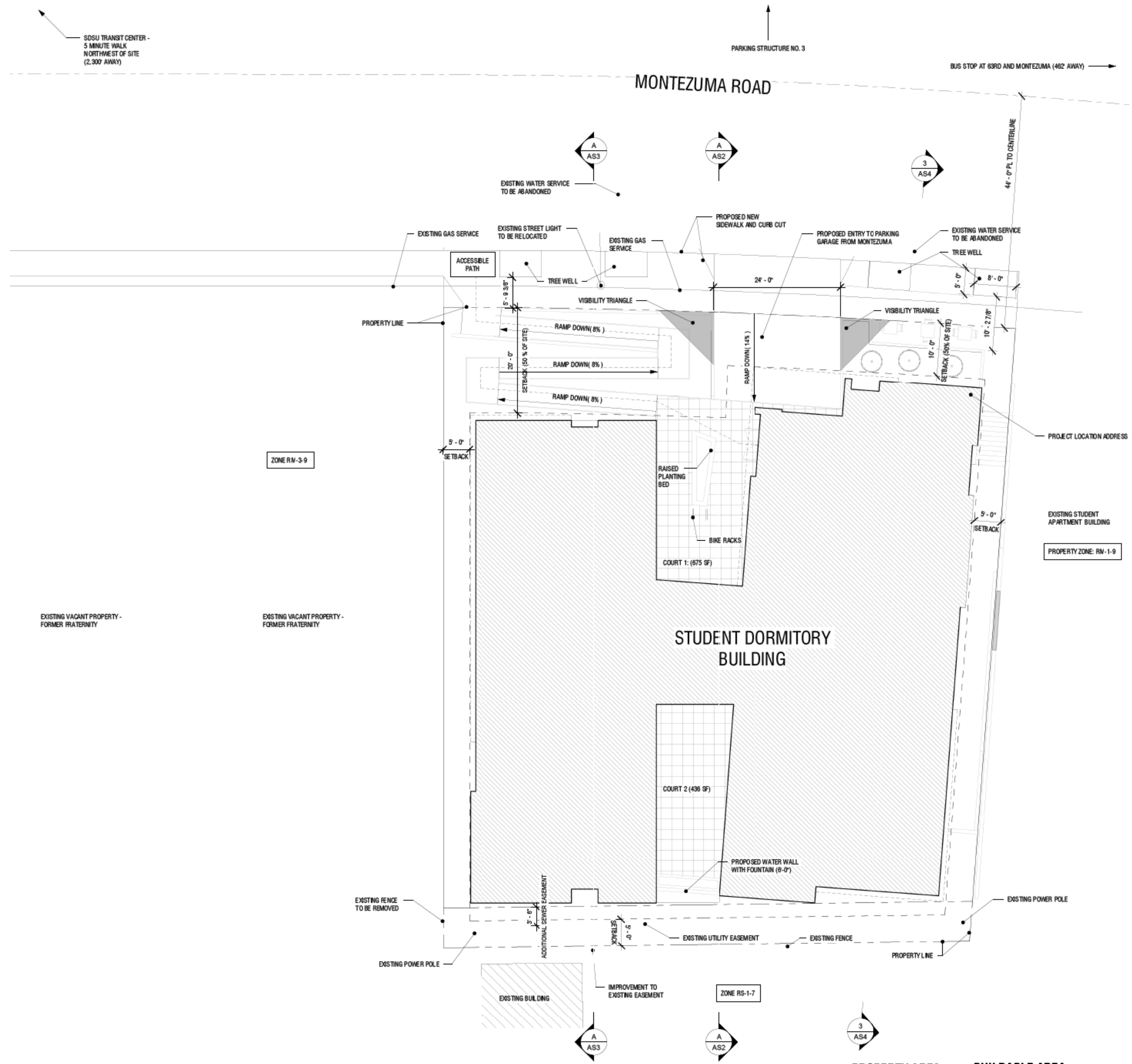
PRIME DESIGN
MANHATTAN, KS 66502
785.317.5725

REVISIONS

MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD SAN DIEGO, CA 92115
ELSEY PARTNERS

JOB NO.
02-2016

SHEET
COVER



PROPERTY AREA
12,416 SF

BUILDABLE AREA
9,311 SF

A AS1 ARCHITECTURAL SITE PLAN
1" = 10'-0"

NOTES

1. ALL DRIVEWAYS SHALL CONFORM TO MUNICIPAL CODE SECTION 142.0560 (j)(9)(c) AND DIAGRAM 142-05D. DRIVEWAY SLOPES GREATER THAN 14% SHALL HAVE TRANSITIONS FOR THE FIRST AND LAST 8 FEET OF THE RAMP. A DETAILED DRIVEWAY PROFILE WILL BE SHOWN IN THE FINAL CONSTRUCTION PLANS TO VERIFY THE PROPOSED DRIVEWAY WILL ADHERE TO THE MUNICIPAL CODE.

2. VISIBILITY AREA TRIANGLES DETAILS SHALL BE SHOWN IN THE FINAL CONSTRUCTION PLANS AT THE DRIVEWAYS PER MUNICIPAL CODE SECTION 113-0273, DIAGRAM 113-02SS. THE VISIBILITY AREA SHALL EXTEND 10 FEET INWARD ONTO PRIVATE PROPERTY ALONG THE DRIVEWAY AND ALONG THE PROPERTY LINE. NO OBSTRUCTION, INCLUDING LANDSCAPING OR SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGHT.

3. THE DEVELOPER SHALL UNDERGROUND PROPOSED PUBLIC UTILITY SYSTEMS AND SERVICE FACILITIES IN ACCORDANCE WITH THE SAN DIEGO MUNICIPAL CODE.

4. THE COLOR OF THE RETAINING WALLS SHALL BLEND WITH THE NATURAL TERRAIN AND THE COLOR OF THE STRUCTURES ON THE SITE.

5. THE MINIMUM TREE OR SHRUB SEPARATION DISTANCES SHALL BE AS FOLLOWS:
   - TRAFFIC SIGNAL, STOP SIGN - 20 FEET
   - UNDERGROUND UTILITY LINES (EXCEPT SEWER) - 5 FEET
   - SEWER LINES - 10 FEET
   - ABOVE GROUND UTILITY STRUCTURES - 10 FEET
   - DRIVEWAYS - 10 FEET
   - INTERSECTIONS (INTERSECTION CURB LINES OF TWO STREETS) - 25 FEET

6. BUILDING ADDRESS:
PROVIDE BUILDING ADDRESS NUMBERS, VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY PER SDMC SECTION 95.0209

7. BUS STOPS:
BUS STOPS ARE LOCATED IN THE VICINITY OF THE DEVELOPMENT.

8. TRASH RECEPTACLES:
TRASH RECEPTACLES WILL BE LOCATED IN EACH FLOOR.

9. OFF-STREET PARKING:
THERE WILL BE NO OFF-STREET PARKING PROVIDED OUTSIDE OF THE PARKING STRUCTURE.

10. ON-STREET PARKING:
CURRENTLY THERE ARE ZERO (0) ON-STREET PARKING STALLS. THE PROPOSED PROJECT HAS ZERO (0) ON-STREET PARKING STALLS. THE NET TOTAL ON-STREET PARKING STALLS IS ZERO (0).

PRIME DESIGN
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785.317.5725

REVISIONS

MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD SAN DIEGO, CA 92115
ELSEY PARTNERS

JOB NO.
02-2016

SHEET
AS1
ARCHITECTURAL SITE PLAN
SHEET 1 OF 7

RENDERED PERSPECTIVE OF ENTRY COURTYARD

RENDERED PERSPECTIVE OF TYP. COMMUNITY ROOM

1ST FLOOR - 7,220 SF
1/8" = 1'-0"

FUTURE CONVERSION OF PROJECT INTO FRATERNITY OR SORORITY HOUSING
WE BELIEVE THAT THE PROJECT CAN BE CONVERTED INTO FRATERNITY OR SORORITY HOUSING WITH MINIMAL RENOVATION. THE SLEEPING ROOMS CAN BE USED AS SUCH. EACH FLOOR HAS A COMMUNITY/LIVING SPACE THAT CAN FUNCTION AS THE PUBLIC SPACES IN THE FRATERNITY OR SORORITY. WE BELIEVE THAT THE KITCHENS CAN BE UTILIZED FOR COOKING FOOD, OR THE FRATERNITY/SORORITY CAN CATER IN MEALS AND USE THE KITCHENS FOR SERVING AND SNACKS.

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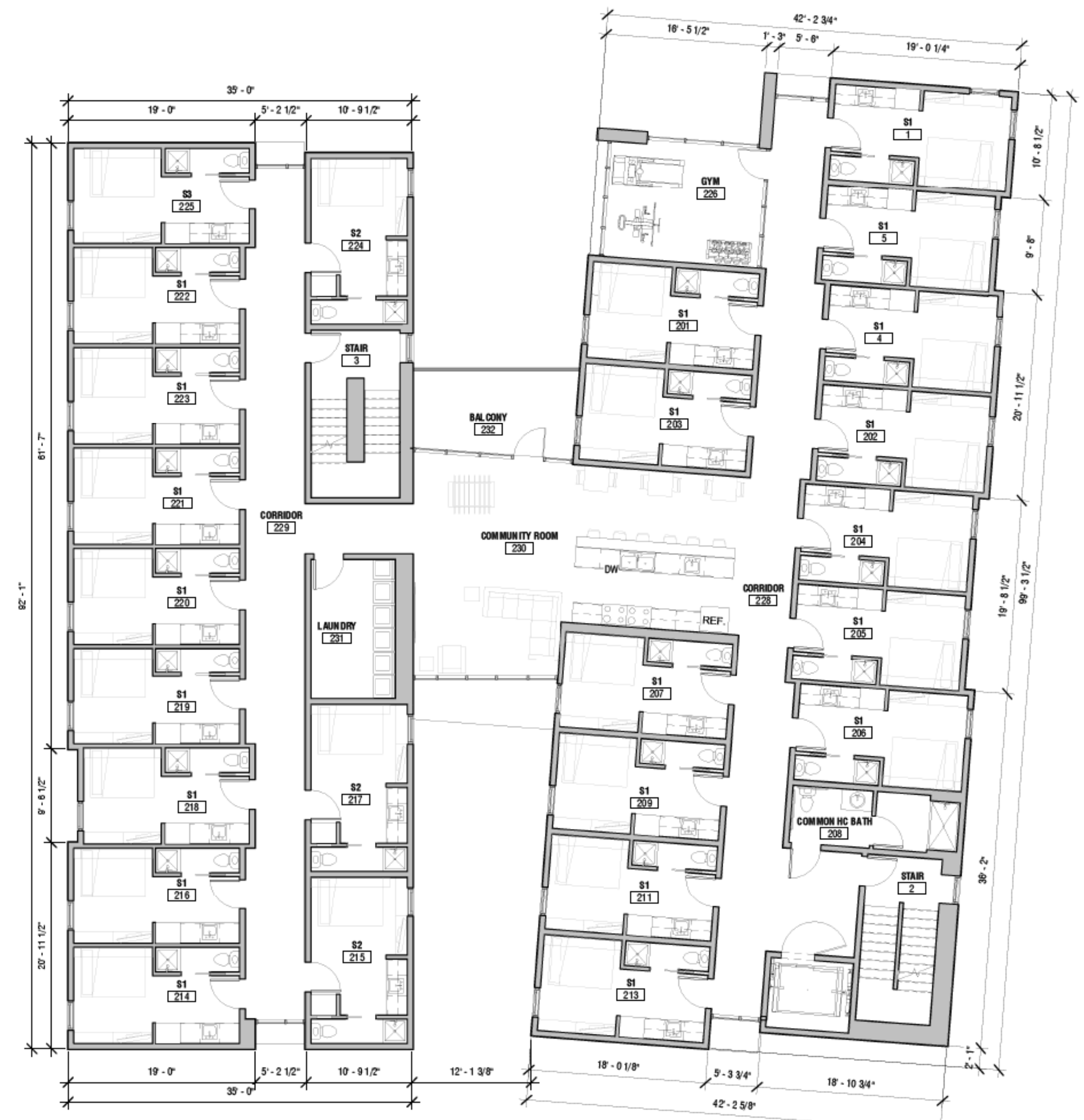
MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD SAN DIEGO, CA 92115
ELSEY PARTNERS

JOB NO.
02-2016

SHEET
A4



A A5 2ND FLOOR - 7,400 SF
1/8" = 1'-0"

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6213 MONTEZUMA ROAD SAN DIEGO, CA 92115

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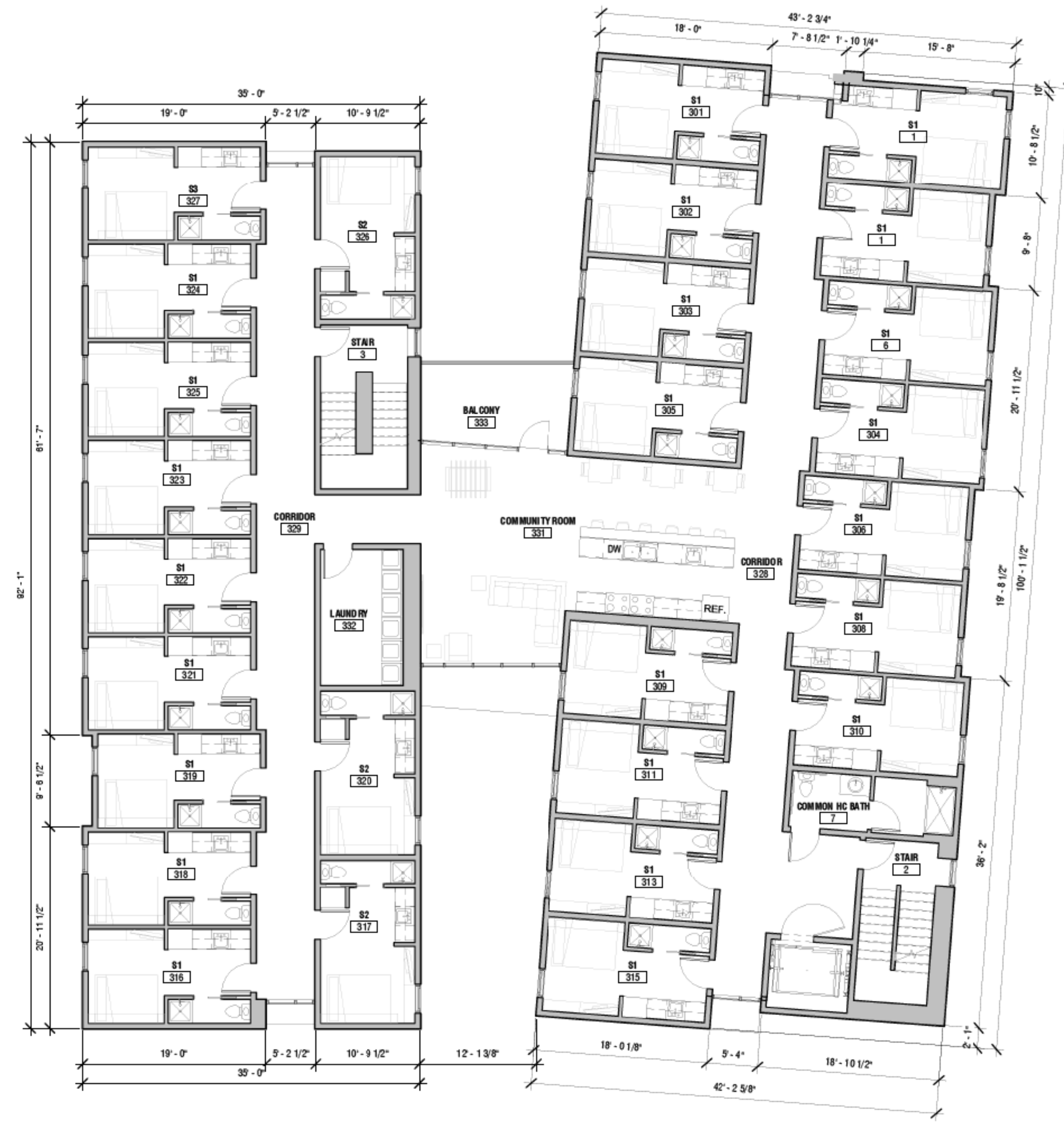
JOB NO.

02-2016

SHEET

A5



A
A6
3RD FLOOR - 7,400 SF
1/8" = 1'-0"

PRIME DESIGN
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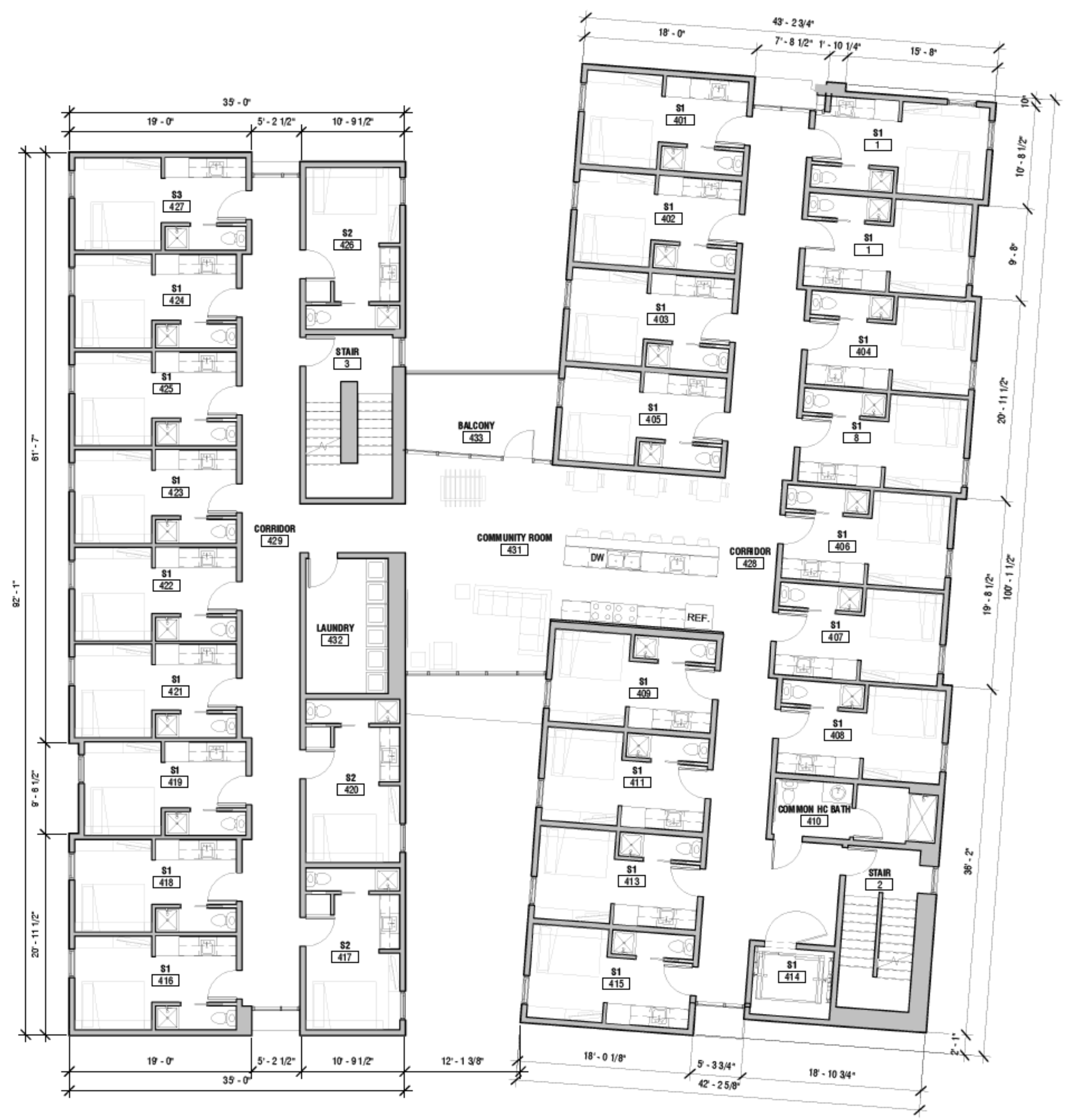
ELSEY PARTNERS

JOB NO.
02-2016

SHEET
A6



A
A7
4TH FLOOR - 7,400 SF
1/8" = 1'-0"

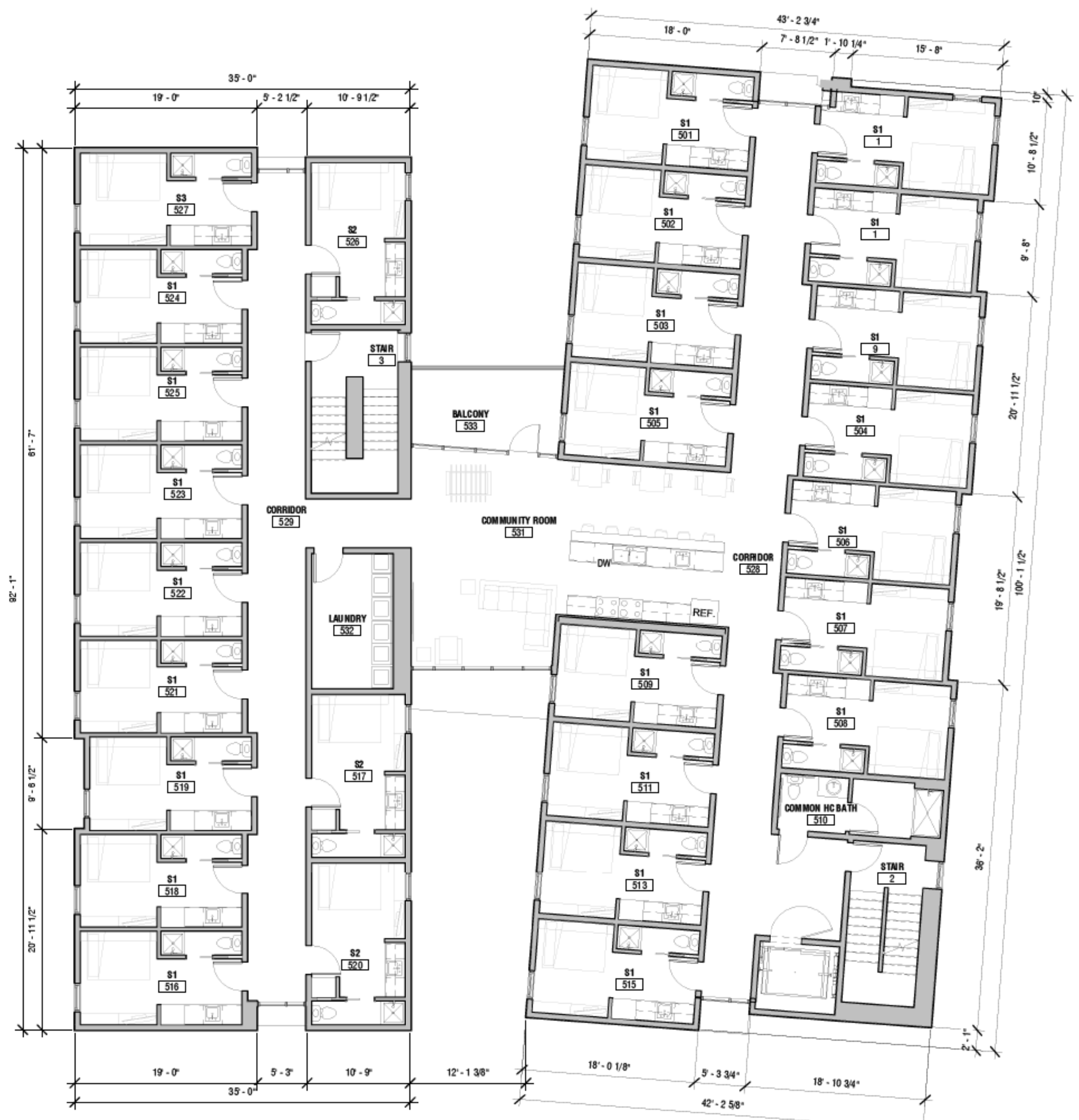
PRIME DESIGN
MANHATTAN, KS 66502
785.317.5725

REVISIONS

MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD SAN DIEGO, CA 92115
ELSEY PARTNERS

JOB NO.
02-2016

SHEET
A7



A 5TH FLOOR - 7,400 SF
A8 1/8" = 1'-0"

PRIME DESIGN
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785.317.5725

REVISIONS

MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD SAN DIEGO, CA 92115
ELSEY PARTNERS

JOB NO.
02-2016

SHEET
A8

A
A9
ROOF TERRACE
1/8" = 1'-0"

PRIME DESIGN
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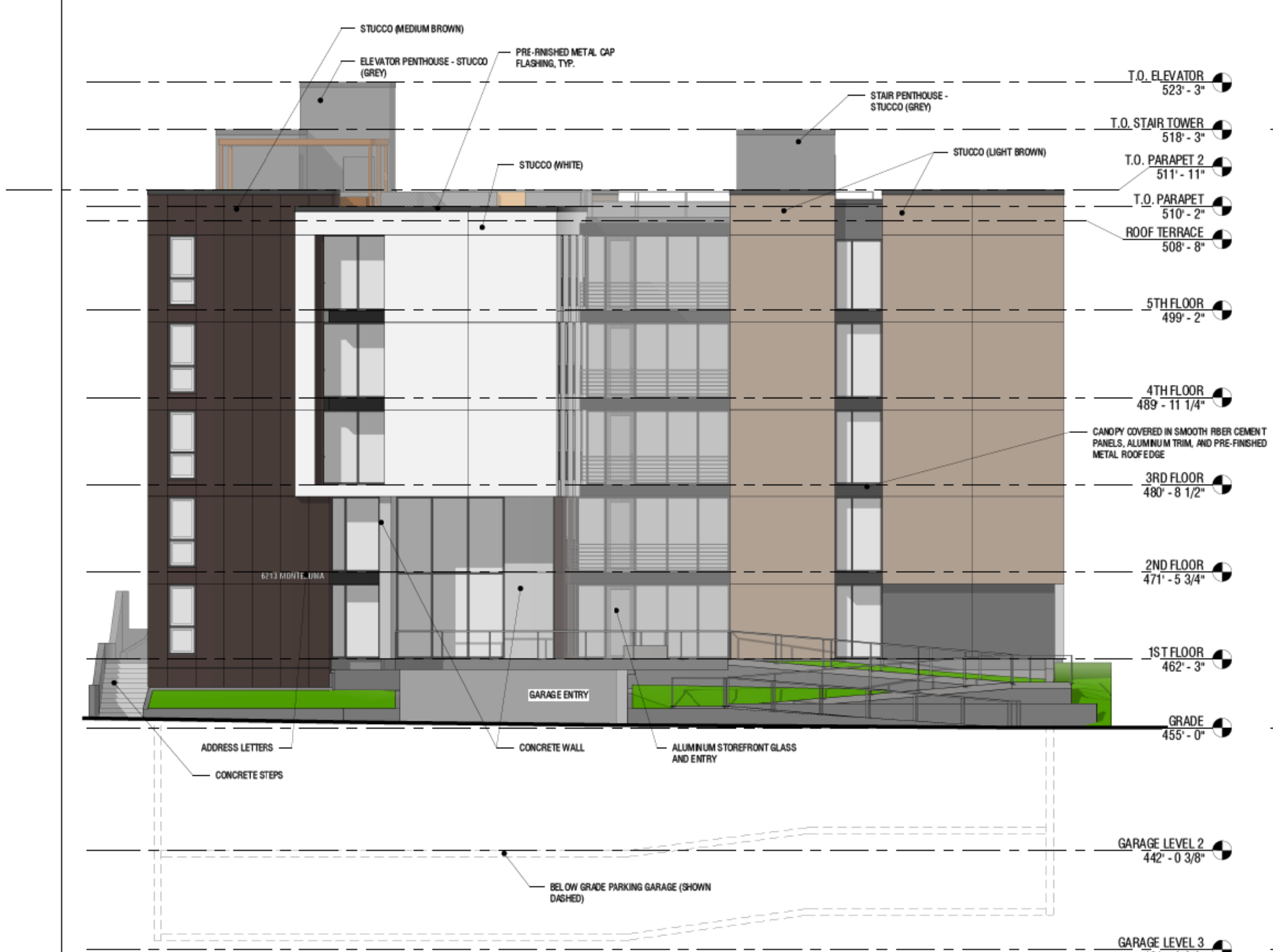
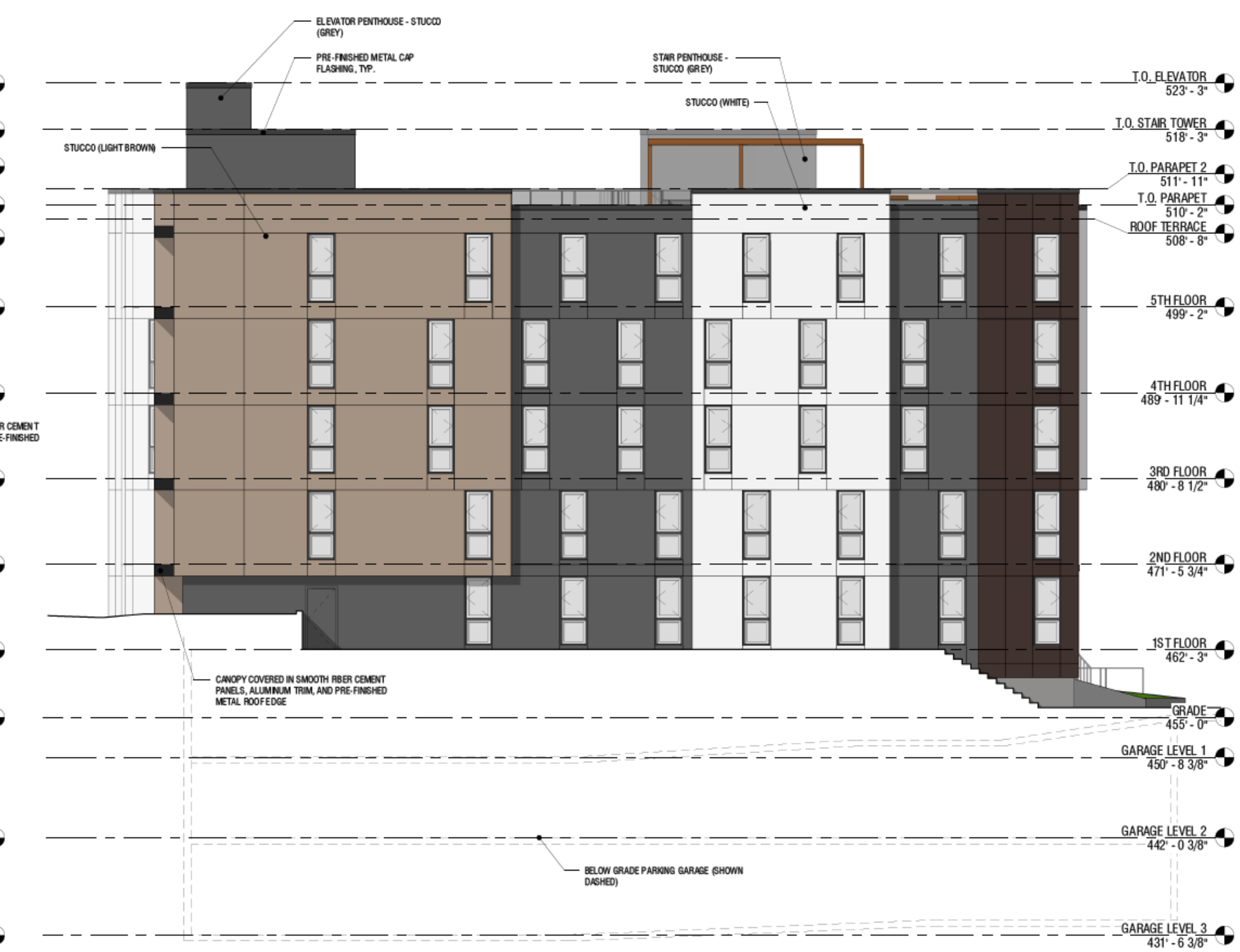
MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD SAN DIEGO, CA 92115
ELSEY PARTNERS

JOB NO.
02-2016

SHEET
A9



B
A11
NORTH ELEVATION
1/8" = 1'-0"



A
A11
EAST ELEVATION
1/8" = 1'-0"

PRIME DESIGN
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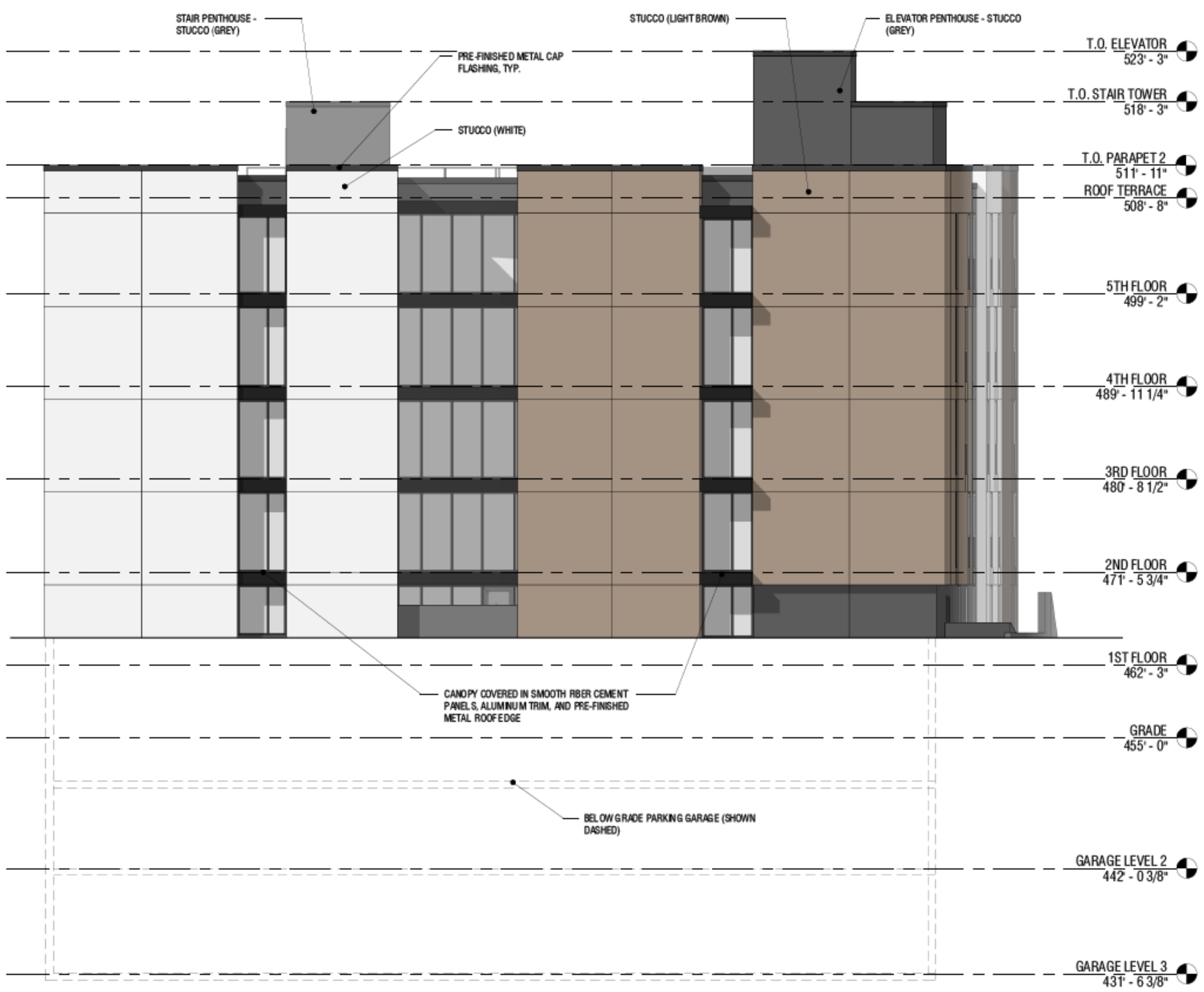
785.317.5725

REVISIONS

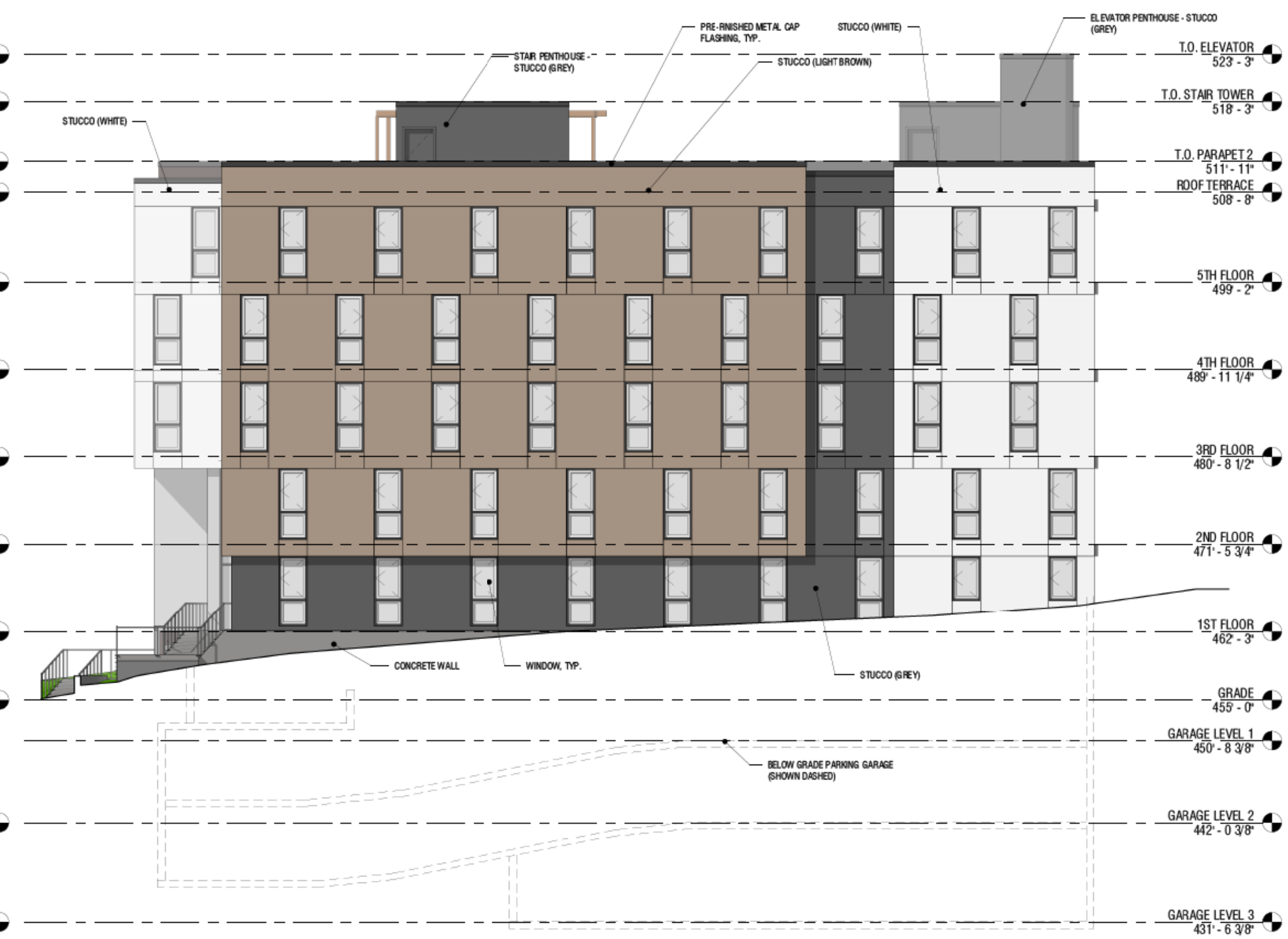
MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD SAN DIEGO, CA 92115
ELSEY PARTNERS

JOB NO.
02-2016

SHEET
A11



B A12 SOUTH ELEVATION 1/8" = 1'-0"



A A12 WEST ELEVATION 1/8" = 1'-0"

PRIME DESIGN
MANHATTAN, KS 66502
785.317.5725

REVISIONS

MULTI-FAMILY DEVELOPMENT
6213 MONTEZUMA ROAD SAN DIEGO, CA 92115
ELSEY PARTNERS

JOB NO. 02-2016

SHEET A12

APPENDIX B

Pertinent Sections of the City of San Diego Noise Element to the General Plan and Municipal Code

Noise Element

NE-A.2. Assure the appropriateness of proposed developments relative to existing and future noise levels by consulting the guidelines for noise-compatible land use (shown on Table NE-3) to minimize the effects on noise-sensitive land uses.

NE-A.3. Limit future residential and other noise-sensitive land uses in areas exposed to high levels of noise.

NE-A.4. Require an acoustical study consistent with Acoustical Study Guidelines (Table NE-4) for proposed developments in areas where the existing or future noise level exceeds or would exceed the “compatible” noise level thresholds as indicated on the Land Use - Noise Compatibility Guidelines (Table NE-3), so that noise mitigation measures can be included in the project design to meet the noise guidelines.

NE-A.5. Prepare noise studies to address existing and future noise levels from noise sources that are specific to a community when updating community plans.

TABLE NE-3 Land Use - Noise Compatibility Guidelines

Land Use Category	**Exterior Noise Exposure (dBA CNEL)**				
	60	**65**	**70**	**75**	
Parks and Recreational					
Parks, Active and Passive Recreation					
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities					
Agricultural					
Crop Raising & Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries & Greenhouses; Animal Raising, Maintain & Keeping; Commercial Stables					
Residential					
Single Dwelling Units; Mobile Homes		**45**			
Multiple Dwelling Units **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		**45**	**45***		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12Educational Facilities; Libraries; Museums; Child Care Facilities		**45**			
Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities		**45**	**45**		
Cemeteries					
Retail Sales					
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical, & Convenience Sales; Wearing Apparel & Accessories			**50**	**50**	

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	60	65	70	75	
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly & Entertainment (includes public and religious assembly); Radio & Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries					
Research & Development				50	

	Compatible	**Indoor Uses**	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.
45, 50	**Conditionally Compatible**	**Indoor Uses**	Building structure must attenuate exterior noise to the indoor noise level indicated by the number (45 or 50) for occupied areas. Refer to Section I.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated t make the outdoor activities acceptable. Refer to Section I.
	Incompatible	**Indoor Uses**	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

TABLE NE-4 Acoustical Study Guidelines

An acoustical study should include, but is not limited to the following analysis:
Provide noise level measurements to describe existing local conditions and the predominant noise sources.
Measure existing single event noise levels (SENEL, SEL, or Time Above) within airport influence areas.
Estimate existing and projected noise levels (CNEL) and compare them to levels on Table NE-3. For parks, may consider motor vehicle traffic noise measurements during the one-hour period where the worst-case traffic noise levels are expected to occur from dawn to dusk at a park.
Recommend appropriate mitigation measures to achieve acceptable noise levels on Table NE-3.
Estimate noise exposure levels with recommended mitigation measures.
Describe a post-project assessment to evaluate the effectiveness of the proposed mitigation measures.

B. Motor Vehicle Traffic Noise

Goal

- Minimal excessive motor vehicle traffic noise on residential and other noise-sensitive land uses.

Discussion

Motor vehicle traffic noise is a major contributor of noise within the City. Excessive noise levels along arterial roads, interstate freeways, and state highways affect much of the urban environment. Traffic noise level is dependent upon traffic volume, speed, flow, vehicle mix, pavement type and condition, the use of barriers, as well as distance to the receptor.

Local roadway design features and traffic management and calming techniques can minimize noise from traffic speed and frequent vehicle acceleration and deceleration, and innovative roadway paving material can further reduce traffic noise. Vehicles equipped with a properly functioning muffler system help to limit excessive exhaust noise. Future use of hybrid transit buses could help to reduce noise along mixed-use transit corridors.

At higher speeds, typically on freeways, highways and primary arterials, the noise from tire/pavement interaction can be greater than from vehicle exhaust and engine noise. The use of lower noise paving surfaces can reduce tire/pavement interaction noise. For noise-sensitive land uses adjacent to freeways and highways, these uses should be buffered from excessive noise levels by intervening, less sensitive, industrial-commercial uses or shielded by sound walls or landscaped berms. The City can, however, influence daily traffic volumes and reduce peak-hour

Article 9.5: Noise Abatement and Control

Division 4: Limits

("Noise Level Limits, Standards and Control"
added 9–18–1973 by O–11122 N.S.)
(Retitled to "Limits" on 9–22–1976 by O–11916 N.S.)

§59.5.0401 Sound Level Limits

(a) It shall be unlawful for any person to cause noise by any means to the extent that the one–hour average sound level exceeds the applicable limit given in the following table, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

TABLE OF APPLICABLE LIMITS

Land Use	Time of Day	One-Hour Average Sound Level (decibels)
1. Single Family Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
2. Multi-Family Residential (Up to a maximum density of 1/2000)	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
3. All other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
4. Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
5. Industrial or Agricultural	any time	75

(b) The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Sections 59.5.0404 of this article.

(c) Fixed–location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of Part A. of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

(d) This section does not apply to firework displays authorized by permit from the Fire Department.

(e) This section does not apply to noise generated by helicopters at heliports or helistops authorized by a conditional use permit, nor to any roller coaster operated on City–owned parkland.

(Amended 9–11–1989 by O–17337 N.S.)
(Amended 11-28-2005 by O-19446 N.S.; effective 2-9-2006.)

§59.5.0402 Motor Vehicles

(a) Off–Highway

(1) Except as otherwise provided for in this article, it shall be unlawful to operate any motor vehicle of any type on any site, other than on a public street or highway as defined in the California Vehicle Code, in any manner so as to cause noise in excess of those noise levels permitted for on– highway motor vehicles as specified in the table for "45 mile– per–hour or less speed limits" contained in Section 23130 of the California Vehicle Code, and as corrected for distances set forth in subsection A.2. below.

(2) Corrections

The maximum noise level as the off–highway vehicle passes may be measured at a distance of other than fifty (50) feet from the center line of travel, provided the measurement is further adjusted by adding algebraically the applicable correction as follows:

Distance (Feet)	Correction (decibels)
25	-6
28	-5
32	-4
35	-3
40	-2
45	-1
50 (preferred distance)	0
56	+1
63	+2
70	+3
80	+4
90	+5
100	+6

(3) A measured noise level thus corrected shall be deemed in violation of this section if it exceeds the applicable noise–level limit as specified above.

(b) Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations, including the blowing of sirens and/or horns.

("Motor Vehicles" renumbered from Sec. 59.5.0403 on 9–22–1976 by O–11916 N.S.)

§59.5.0403 Watercraft

Violations for excessive noise of watercraft operating in waters under the jurisdiction of The City of San Diego shall be prosecuted under applicable provisions of the California Harbors and Navigation Code. Permits issued by The City of San Diego for the operation of watercraft not in compliance with noise criteria of the Harbors and Navigation Code shall be reviewed and approved by the Administrator prior to issuance.

("Watercraft" renumbered from Sec. 59.5.0407 and amended 9–22–1976 by O–11916 N.S.)

§59.5.0404 Construction Noise

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

(b) Except as provided in subsection C. hereof, it shall be unlawful for any person, including The City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

(c) The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

(Amended 1–3–1984 by O–16100 N.S.)

§59.5.0406 Refuse Vehicles and Parking Lot Sweepers

No person shall operate or permit to be operated a refuse compacting, processing, or collection vehicle between the hours of 7:00 p.m. to 6:00 a.m. or a parking lot sweeper between the hours of 7:00 p.m. to 7:00 a.m. in any residential area unless a permit has been applied for and granted by the Administrator.

("Refuse Vehicles" added 9–18–1973 by O–11122 N.S.; amended 9–22–1976 by O–11916 N.S.)

(Amended 6-9-2010 by O-19960 N.S.; effective 7-9-2010.)

APPENDIX C

Traffic Noise Model (TNM) Data and Results

Eilar Associates 14 February 2017
JB TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: B70115N1
RUN: Calibration

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway		Points					Flow Control			Segment	
Name	Width	Name	No.	Coordinates (pavement) X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	m			m	m	m		km/h	%		
Montezuma EB	7.3	point1	1	129.8	265.3	139.00				Average	
		point2	2	218.8	265.3	140.00				Average	
		point3	3	290.2	266.2	140.00				Average	
		point4	4	371.3	266.2	139.00				Average	
		point5	5	390.9	267.0	139.00				Average	
		point6	6	438.9	268.0	139.00				Average	
		point7	7	477.2	268.0	140.00				Average	
		point8	8	506.7	266.5	140.00				Average	
		point9	9	525.4	264.9	140.00				Average	
		point10	10	583.8	252.7	141.00				Average	
		point11	11	628.8	240.7	141.00				Average	
		point12	12	753.1	213.0	141.00					
Montezuma WB	7.3	point13	13	754.2	221.6	141.00				Average	
		point14	14	652.0	244.7	141.00				Average	
		point15	15	611.9	253.6	141.00				Average	
		point16	16	583.5	259.7	141.00				Average	
		point17	17	550.6	266.4	140.00				Average	
		point18	18	528.9	270.3	140.00				Average	
		point19	19	513.5	272.4	140.00				Average	
		point20	20	496.9	273.9	139.00				Average	
		point21	21	481.9	274.7	139.00				Average	
		point22	22	459.4	275.0	139.00				Average	
		point23	23	375.5	276.5	139.00				Average	
		point24	24	328.0	276.7	139.00				Average	
		point25	25	258.0	276.8	140.00				Average	

			point26	26	202.7	277.3	140.00				Average	
			point27	27	126.0	278.2	140.00					

Eilar Associates				**14 February 2017**									
JB				**TNM 2.5**									
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	**B70115N1**												
RUN:	**Calibration**												
Roadway	**Points**												
Name	**Name**	**No.**	**Segment**										
			Autos		**MTrucks**		**HTrucks**		**Buses**		**Motorcycles**		
			V	**S**	**V**	**S**	**V**	**S**	**V**	**S**	**V**	**S**	
			veh/hr	km/h	veh/hr	km/h	veh/hr	km/h	veh/hr	km/h	veh/hr	km/h	
Montezuma EB	point1	1	444	48	18	48	16	48	0	0	0	0	
	point2	2	444	48	18	48	16	48	0	0	0	0	
	point3	3	444	48	18	48	16	48	0	0	0	0	
	point4	4	444	48	18	48	16	48	0	0	0	0	
	point5	5	444	48	18	48	16	48	0	0	0	0	
	point6	6	444	48	18	48	16	48	0	0	0	0	
	point7	7	444	48	18	48	16	48	0	0	0	0	
	point8	8	444	48	18	48	16	48	0	0	0	0	
	point9	9	444	48	18	48	16	48	0	0	0	0	
	point10	10	444	48	18	48	16	48	0	0	0	0	
	point11	11	444	48	18	48	16	48	0	0	0	0	
	point12	12											
Montezuma WB	point13	13	444	48	18	48	16	48	0	0	0	0	
	point14	14	444	48	18	48	16	48	0	0	0	0	
	point15	15	444	48	18	48	16	48	0	0	0	0	
	point16	16	444	48	18	48	16	48	0	0	0	0	
	point17	17	444	48	18	48	16	48	0	0	0	0	
	point18	18	444	48	18	48	16	48	0	0	0	0	
	point19	19	444	48	18	48	16	48	0	0	0	0	
	point20	20	444	48	18	48	16	48	0	0	0	0	
	point21	21	444	48	18	48	16	48	0	0	0	0	
	point22	22	444	48	18	48	16	48	0	0	0	0	
	point23	23	444	48	18	48	16	48	0	0	0	0	

		point24	24	444	48	18	48	16	48	0	0	0	0
		point25	25	444	48	18	48	16	48	0	0	0	0
		point26	26	444	48	18	48	16	48	0	0	0	0
		point27	27										

Eilar Associates						**14 February 2017**					
JB						**TNM 2.5**					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	**B70115N1**										
RUN:	**Calibration**										
Receiver											
Name	**No.**	**#DUs**	**Coordinates (ground)**			**Height**	**Input Sound Levels and Criteria**				**Active**
			X	**Y**	**Z**	**above**	**Existing**	**Impact Criteria**		**NR**	**in**
						Ground	**LAeq1h**	**LAeq1h**	**Sub'l**	**Goal**	**Calc.**
			m	m	m	m	dBA	dBA	dB	dB	
Calibration	1	1	539.0	250.6	141.00	1.52	0.00	66	10.0	8.0	Y

Eilar Associates | **14 February 2017**
JB | **TNM 2.5**
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: B70115N1
RUN: Calibration
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 20 deg C, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	No Barrier LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Calibration	1	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	1	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates, Inc. 14 February 2017
JB TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: B70115N1
RUN: Current Contours

Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	km/h	veh/hr	km/h	veh/hr	km/h	veh/hr	km/h	veh/hr	km/h
Montezuma EB	point1	1	316	56	14	56	12	56	0	0	0	0
	point2	2	316	56	14	56	12	56	0	0	0	0
	point3	3	316	56	14	56	12	56	0	0	0	0
	point4	4	337	56	15	56	13	56	0	0	0	0
	point5	5	337	56	15	56	13	56	0	0	0	0
	point6	6	337	56	15	56	13	56	0	0	0	0
	point7	7	337	56	15	56	13	56	0	0	0	0
	point8	8	337	56	15	56	13	56	0	0	0	0
	point9	9	337	56	15	56	13	56	0	0	0	0
	point10	10	337	56	15	56	13	56	0	0	0	0
	point11	11	337	56	15	56	13	56	0	0	0	0
	point12	12										
Montezuma WB	point13	13	337	56	15	56	13	56	0	0	0	0
	point14	14	337	56	15	56	13	56	0	0	0	0
	point15	15	337	56	15	56	13	56	0	0	0	0
	point16	16	337	56	15	56	13	56	0	0	0	0
	point17	17	337	56	15	56	13	56	0	0	0	0
	point18	18	337	56	15	56	13	56	0	0	0	0
	point19	19	337	56	15	56	13	56	0	0	0	0
	point20	20	337	56	15	56	13	56	0	0	0	0
	point21	21	337	56	15	56	13	56	0	0	0	0
	point22	22	337	56	15	56	13	56	0	0	0	0
	point23	23	316	56	14	56	12	56	0	0	0	0

		point24	24	316	56	14	56	12	56	0	0	0	0
		point25	25	316	56	14	56	12	56	0	0	0	0
		point26	26	316	56	14	56	12	56	0	0	0	0
		point27	27										

Eilar Associates, Inc. **14 February 2017**
JB **TNM 2.5**

INPUT: RECEIVERS
PROJECT/CONTRACT: **B70115N1**
RUN: **Current Contours**

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Sub'l	NR Goal	Active in Calc.
			m	m	m	m	dBA	dBA	dB	dB	
R1	1	1	460.1	258.0	139.00	1.52	0.00	66	10.0	8.0	Y
R2	3	1	464.3	257.9	139.00	1.52	0.00	66	10.0	8.0	Y
R3	4	1	468.3	257.7	139.00	1.52	0.00	66	10.0	8.0	Y
R4	5	1	472.4	257.5	139.00	1.52	0.00	66	10.0	8.0	Y
R5	6	1	476.5	257.3	140.00	1.52	0.00	66	10.0	8.0	Y
R6	7	1	480.6	257.1	140.00	1.52	0.00	66	10.0	8.0	Y
R7	8	1	484.7	257.0	140.00	1.52	0.00	66	10.0	8.0	Y
R8	9	1	488.9	256.8	140.00	1.52	0.00	66	10.0	8.0	Y
R9	10	1	493.0	256.6	140.00	1.52	0.00	66	10.0	8.0	Y
R10	11	1	460.1	253.9	140.00	1.52	0.00	66	10.0	8.0	Y
R11	12	1	464.3	253.7	140.00	1.52	0.00	66	10.0	8.0	Y
R12	13	1	468.3	253.6	140.00	1.52	0.00	66	10.0	8.0	Y
R13	14	1	472.5	253.4	140.00	1.52	0.00	66	10.0	8.0	Y
R14	15	1	476.6	253.3	140.00	1.52	0.00	66	10.0	8.0	Y
R15	16	1	480.7	253.1	140.00	1.52	0.00	66	10.0	8.0	Y
R16	17	1	484.8	252.9	140.00	1.52	0.00	66	10.0	8.0	Y
R17	18	1	488.9	252.8	140.00	1.52	0.00	66	10.0	8.0	Y
R18	19	1	492.9	252.6	140.00	1.52	0.00	66	10.0	8.0	Y
R19	20	1	460.1	249.9	141.00	1.52	0.00	66	10.0	8.0	Y
R20	21	1	464.3	249.7	141.00	1.52	0.00	66	10.0	8.0	Y
R21	22	1	468.4	249.5	141.00	1.52	0.00	66	10.0	8.0	Y
R22	23	1	472.5	249.3	141.00	1.52	0.00	66	10.0	8.0	Y

R23	24	1	476.6	249.1	141.00	1.52	0.00	66	10.0	8.0	Y
R24	25	1	480.7	249.0	141.00	1.52	0.00	66	10.0	8.0	Y
R25	26	1	484.9	248.8	141.00	1.52	0.00	66	10.0	8.0	Y
R26	27	1	489.0	248.6	141.00	1.52	0.00	66	10.0	8.0	Y
R27	28	1	492.8	248.5	141.00	1.52	0.00	66	10.0	8.0	Y
R28	29	1	460.0	245.4	141.00	1.52	0.00	66	10.0	8.0	Y
R29	30	1	464.4	245.3	141.00	1.52	0.00	66	10.0	8.0	Y
R30	31	1	468.4	245.1	141.00	1.52	0.00	66	10.0	8.0	Y
R31	32	1	472.5	244.9	141.00	1.52	0.00	66	10.0	8.0	Y
R32	33	1	476.5	244.7	141.00	1.52	0.00	66	10.0	8.0	Y
R33	34	1	480.7	244.6	141.00	1.52	0.00	66	10.0	8.0	Y
R34	35	1	484.8	244.4	141.00	1.52	0.00	66	10.0	8.0	Y
R35	36	1	489.0	244.3	141.00	1.52	0.00	66	10.0	8.0	Y
R36	37	1	492.6	244.1	141.00	1.52	0.00	66	10.0	8.0	Y
R37	38	1	460.2	241.4	141.50	1.52	0.00	66	10.0	8.0	Y
R38	39	1	464.3	241.2	141.50	1.52	0.00	66	10.0	8.0	Y
R39	40	1	468.4	241.1	141.50	1.52	0.00	66	10.0	8.0	Y
R40	41	1	472.5	240.9	141.50	1.52	0.00	66	10.0	8.0	Y
R41	42	1	476.6	240.7	141.50	1.52	0.00	66	10.0	8.0	Y
R42	43	1	480.7	240.6	141.50	1.52	0.00	66	10.0	8.0	Y
R43	44	1	484.9	240.4	141.50	1.52	0.00	66	10.0	8.0	Y
R44	45	1	489.0	240.2	141.50	1.52	0.00	66	10.0	8.0	Y
R45	46	1	492.4	240.1	141.50	1.52	0.00	66	10.0	8.0	Y
R46	47	1	460.3	237.2	142.00	1.52	0.00	66	10.0	8.0	Y
R47	48	1	464.3	237.1	142.00	1.52	0.00	66	10.0	8.0	Y
R48	49	1	468.4	236.9	142.00	1.52	0.00	66	10.0	8.0	Y
R49	50	1	472.5	236.8	142.00	1.52	0.00	66	10.0	8.0	Y
R50	51	1	476.6	236.5	142.00	1.52	0.00	66	10.0	8.0	Y
R51	52	1	480.8	236.4	142.00	1.52	0.00	66	10.0	8.0	Y
R52	53	1	484.9	236.3	142.00	1.52	0.00	66	10.0	8.0	Y
R53	54	1	488.9	236.0	142.00	1.52	0.00	66	10.0	8.0	Y
R54	55	1	492.2	235.9	142.00	1.52	0.00	66	10.0	8.0	Y
R55	56	1	460.2	233.1	142.00	1.52	0.00	66	10.0	8.0	Y
R56	57	1	464.4	232.9	142.50	1.52	0.00	66	10.0	8.0	Y
R57	58	1	468.4	232.8	142.50	1.52	0.00	66	10.0	8.0	Y
R58	59	1	472.6	232.6	142.50	1.52	0.00	66	10.0	8.0	Y

R59	60	1	476.7	232.4	142.50	1.52	0.00	66	10.0	8.0	Y
R60	61	1	480.8	232.2	142.50	1.52	0.00	66	10.0	8.0	Y
R61	62	1	484.9	232.1	142.50	1.52	0.00	66	10.0	8.0	Y
R62	63	1	489.0	231.9	142.50	1.52	0.00	66	10.0	8.0	Y
R63	64	1	492.1	231.7	142.50	1.52	0.00	66	10.0	8.0	Y
R64	65	1	460.2	229.0	142.50	1.52	0.00	66	10.0	8.0	Y
R65	66	1	464.3	228.7	143.00	1.52	0.00	66	10.0	8.0	Y
R66	67	1	468.5	228.6	143.00	1.52	0.00	66	10.0	8.0	Y
R67	68	1	472.6	228.4	143.00	1.52	0.00	66	10.0	8.0	Y
R68	69	1	476.7	228.2	143.00	1.52	0.00	66	10.0	8.0	Y
R69	70	1	480.8	228.0	143.00	1.52	0.00	66	10.0	8.0	Y
R70	71	1	485.0	227.8	143.00	1.52	0.00	66	10.0	8.0	Y
R71	72	1	489.0	227.6	143.00	1.52	0.00	66	10.0	8.0	Y
R72	73	1	491.9	227.6	143.00	1.52	0.00	66	10.0	8.0	Y
R73	74	1	460.2	224.8	143.00	1.52	0.00	66	10.0	8.0	Y
R74	75	1	464.5	224.6	143.00	1.52	0.00	66	10.0	8.0	Y
R75	76	1	468.5	224.4	143.00	1.52	0.00	66	10.0	8.0	Y
R76	77	1	472.6	224.2	143.00	1.52	0.00	66	10.0	8.0	Y
R77	78	1	476.7	224.1	143.00	1.52	0.00	66	10.0	8.0	Y
R78	79	1	480.9	223.9	143.00	1.52	0.00	66	10.0	8.0	Y
R79	80	1	485.0	223.7	143.00	1.52	0.00	66	10.0	8.0	Y
R80	81	1	489.0	223.5	143.00	1.52	0.00	66	10.0	8.0	Y
R81	82	1	491.8	223.3	143.00	1.52	0.00	66	10.0	8.0	Y
R82	83	1	460.3	220.5	143.00	1.52	0.00	66	10.0	8.0	Y
R83	84	1	464.5	220.3	143.00	1.52	0.00	66	10.0	8.0	Y
R84	85	1	468.5	220.1	143.00	1.52	0.00	66	10.0	8.0	Y
R85	86	1	472.7	220.0	143.00	1.52	0.00	66	10.0	8.0	Y
R86	87	1	476.8	219.7	143.00	1.52	0.00	66	10.0	8.0	Y
R87	88	1	480.8	219.6	143.00	1.52	0.00	66	10.0	8.0	Y
R88	89	1	485.1	219.5	143.00	1.52	0.00	66	10.0	8.0	Y
R89	90	1	489.1	219.3	143.00	1.52	0.00	66	10.0	8.0	Y
R90	91	1	491.6	219.2	143.00	1.52	0.00	66	10.0	8.0	Y

Eilar Associates, Inc. **14 February 2017**
JB **TNM 2.5**
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: **B70115N1**
RUN: **Current Contours**
BARRIER DESIGN: **INPUT HEIGHTS**

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: **20 deg C, 50% RH**

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1	1	1	0.0	65.1	66	65.1	10	----	65.1	0.0	8	-8.0
R2	3	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R3	4	1	0.0	64.9	66	64.9	10	----	64.9	0.0	8	-8.0
R4	5	1	0.0	64.8	66	64.8	10	----	64.8	0.0	8	-8.0
R5	6	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R6	7	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R7	8	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R8	9	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R9	10	1	0.0	65.1	66	65.1	10	----	65.1	0.0	8	-8.0
R10	11	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0
R11	12	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0
R12	13	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
R13	14	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
R14	15	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
R15	16	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R16	17	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R17	18	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R18	19	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
R19	20	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
R20	21	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R21	22	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R22	23	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R23	24	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R24	25	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0

R25	26	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R26	27	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R27	28	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R28	29	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
R29	30	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R30	31	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R31	32	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R32	33	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R33	34	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R34	35	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R35	36	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R36	37	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R37	38	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R38	39	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R39	40	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R40	41	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
R41	42	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R42	43	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R43	44	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R44	45	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R45	46	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
R46	47	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
R47	48	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
R48	49	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R49	50	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R50	51	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R51	52	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R52	53	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R53	54	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R54	55	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
R55	56	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R56	57	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R57	58	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R58	59	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R59	60	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R60	61	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R61	62	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R62	63	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R63	64	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R64	65	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
R65	66	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0

R66	67	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R67	68	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R68	69	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R69	70	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R70	71	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R71	72	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R72	73	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
R73	74	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R74	75	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R75	76	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R76	77	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R77	78	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R78	79	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R79	80	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
R80	81	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
R81	82	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
R82	83	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R83	84	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
R84	85	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
R85	86	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
R86	87	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
R87	88	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
R88	89	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
R89	90	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
R90	91	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	90	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates, Inc. **14 February 2017**
JB **TNM 2.5**

INPUT: TRAFFIC FOR LAeq1h Volumes
PROJECT/CONTRACT: **B70115N1**
RUN: **Future Contours**

Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles		
			V	S	V	S	V	S	V	S	V	S
			veh/hr	km/h	veh/hr	km/h	veh/hr	km/h	veh/hr	km/h	veh/hr	km/h
Montezuma EB	point1	1	482	56	21	56	19	56	0	0	0	0
	point2	2	482	56	21	56	19	56	0	0	0	0
	point3	3	482	56	21	56	19	56	0	0	0	0
	point4	4	517	56	23	56	20	56	0	0	0	0
	point5	5	517	56	23	56	20	56	0	0	0	0
	point6	6	517	56	23	56	20	56	0	0	0	0
	point7	7	517	56	23	56	20	56	0	0	0	0
	point8	8	517	56	23	56	20	56	0	0	0	0
	point9	9	517	56	23	56	20	56	0	0	0	0
	point10	10	517	56	23	56	20	56	0	0	0	0
	point11	11	517	56	23	56	20	56	0	0	0	0
	point12	12										
Montezuma WB	point13	13	517	56	23	56	20	56	0	0	0	0
	point14	14	517	56	23	56	20	56	0	0	0	0
	point15	15	517	56	23	56	20	56	0	0	0	0
	point16	16	517	56	23	56	20	56	0	0	0	0
	point17	17	517	56	23	56	20	56	0	0	0	0
	point18	18	517	56	23	56	20	56	0	0	0	0
	point19	19	517	56	23	56	20	56	0	0	0	0
	point20	20	517	56	23	56	20	56	0	0	0	0
	point21	21	517	56	23	56	20	56	0	0	0	0
	point22	22	517	56	23	56	20	56	0	0	0	0
	point23	23	482	56	21	56	19	56	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes B70115N1

		point24	24	482	56	21	56	19	56	0	0	0	0
		point25	25	482	56	21	56	19	56	0	0	0	0
		point26	26	482	56	21	56	19	56	0	0	0	0
		point27	27										

Eilar Associates, Inc. **14 February 2017**
JB **TNM 2.5**
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: **B70115N1**
RUN: **Future Contours**
BARRIER DESIGN: **INPUT HEIGHTS**

ATMOSPHERICS: **20 deg C, 50% RH**

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1	1	1	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0
R2	3	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
R3	4	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	8	-8.0
R4	5	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
R5	6	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
R6	7	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
R7	8	1	0.0	66.8	66	66.8	10	Snd Lvl	66.8	0.0	8	-8.0
R8	9	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
R9	10	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
R10	11	1	0.0	65.7	66	65.7	10	----	65.7	0.0	8	-8.0
R11	12	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
R12	13	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
R13	14	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
R14	15	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
R15	16	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
R16	17	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
R17	18	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
R18	19	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
R19	20	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R20	21	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R21	22	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R22	23	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R23	24	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R24	25	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0

R25	26	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R26	27	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R27	28	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
R28	29	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
R29	30	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
R30	31	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
R31	32	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
R32	33	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
R33	34	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
R34	35	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
R35	36	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
R36	37	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
R37	38	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R38	39	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R39	40	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R40	41	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
R41	42	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
R42	43	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
R43	44	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
R44	45	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
R45	46	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
R46	47	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R47	48	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R48	49	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
R49	50	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
R50	51	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
R51	52	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R52	53	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R53	54	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R54	55	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R55	56	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R56	57	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R57	58	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R58	59	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R59	60	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R60	61	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R61	62	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
R62	63	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
R63	64	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
R64	65	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R65	66	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0

R66	67	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R67	68	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R68	69	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R69	70	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R70	71	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
R71	72	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
R72	73	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R73	74	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R74	75	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R75	76	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R76	77	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
R77	78	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R78	79	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R79	80	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R80	81	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R81	82	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
R82	83	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
R83	84	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
R84	85	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
R85	86	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
R86	87	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R87	88	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R88	89	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R89	90	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R90	91	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	90	0.0	0.0	0.0
All Impacted	9	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Eilar Associates, Inc. 15 February 2017
JB TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: B70115N1
RUN: Future Facades

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria Existing LAeq1h	Impact Criteria LAeq1h	Sub'l	NR Goal	Active in Calc.
			m	m	m	m	dBA	dBA	dB	dB	
F1-1	1	1	466.9	251.0	141.00	1.52	0.00	66	10.0	8.0	Y
F2-1	3	1	473.0	245.7	141.00	1.52	0.00	66	10.0	8.0	Y
F3-1	4	1	474.8	240.6	141.00	1.52	0.00	66	10.0	8.0	Y
F4-1	5	1	477.5	245.3	141.00	1.52	0.00	66	10.0	8.0	Y
F5-1	6	1	480.9	250.9	141.00	1.52	0.00	66	10.0	8.0	Y
F6-1	7	1	487.3	253.0	141.00	1.52	0.00	66	10.0	8.0	Y
F7-1	8	1	491.6	249.5	141.00	1.52	0.00	66	10.0	8.0	Y
F8-1	9	1	490.6	238.1	141.00	1.52	0.00	66	10.0	8.0	Y
F9-1	10	1	489.3	222.9	141.00	1.52	0.00	66	10.0	8.0	Y
F10-1	11	1	483.0	220.7	141.00	1.52	0.00	66	10.0	8.0	Y
F11-1	12	1	475.8	223.5	141.00	1.52	0.00	66	10.0	8.0	Y
F12-1	13	1	474.6	232.0	141.00	1.52	0.00	66	10.0	8.0	Y
F13-1	14	1	472.7	223.9	141.00	1.52	0.00	66	10.0	8.0	Y
F14-1	15	1	467.0	220.0	141.00	1.52	0.00	66	10.0	8.0	Y
F15-1	16	1	461.0	223.0	141.00	1.52	0.00	66	10.0	8.0	Y
F16-1	17	1	461.3	236.6	141.00	1.52	0.00	66	10.0	8.0	Y
F17-1	18	1	461.3	249.5	141.00	1.52	0.00	66	10.0	8.0	Y
F1-2	19	1	466.9	251.0	141.00	4.27	0.00	66	10.0	8.0	Y
F2-2	20	1	473.0	245.7	141.00	4.27	0.00	66	10.0	8.0	Y
F3-2/B1	21	1	474.8	240.6	141.00	4.27	0.00	66	10.0	8.0	Y
F4-2	22	1	477.5	245.3	141.00	4.27	0.00	66	10.0	8.0	Y
F5-2	23	1	480.9	250.9	141.00	4.27	0.00	66	10.0	8.0	Y

F6-2	24	1	487.3	253.0	141.00	4.27	0.00	66	10.0	8.0	Y
F7-2	25	1	491.6	249.5	141.00	4.27	0.00	66	10.0	8.0	Y
F8-2	26	1	490.6	238.1	141.00	4.27	0.00	66	10.0	8.0	Y
F9-2	27	1	489.3	222.9	141.00	4.27	0.00	66	10.0	8.0	Y
F10-2	28	1	483.0	220.7	141.00	4.27	0.00	66	10.0	8.0	Y
F11-2	29	1	475.8	223.5	141.00	4.27	0.00	66	10.0	8.0	Y
F12-2	30	1	474.6	232.0	141.00	4.27	0.00	66	10.0	8.0	Y
F13-2	31	1	472.7	223.9	141.00	4.27	0.00	66	10.0	8.0	Y
F14-2	32	1	467.0	220.0	141.00	4.27	0.00	66	10.0	8.0	Y
F15-2	33	1	461.0	223.0	141.00	4.27	0.00	66	10.0	8.0	Y
F16-2	34	1	461.3	236.6	141.00	4.27	0.00	66	10.0	8.0	Y
F17-2	35	1	461.3	249.5	141.00	4.27	0.00	66	10.0	8.0	Y
F1-3	36	1	466.9	251.0	141.00	7.09	0.00	66	10.0	8.0	Y
F2-3	37	1	473.0	245.7	141.00	7.09	0.00	66	10.0	8.0	Y
F3-3/B2	38	1	474.8	240.6	141.00	7.09	0.00	66	10.0	8.0	Y
F4-3	39	1	477.5	245.3	141.00	7.09	0.00	66	10.0	8.0	Y
F5-3	40	1	480.9	250.9	141.00	7.09	0.00	66	10.0	8.0	Y
F6-3	41	1	487.3	253.0	141.00	7.09	0.00	66	10.0	8.0	Y
F7-3	42	1	491.6	249.5	141.00	7.09	0.00	66	10.0	8.0	Y
F8-3	43	1	490.6	238.1	141.00	7.09	0.00	66	10.0	8.0	Y
F9-3	44	1	489.3	222.9	141.00	7.09	0.00	66	10.0	8.0	Y
F10-3	45	1	483.0	220.7	141.00	7.09	0.00	66	10.0	8.0	Y
F11-3	46	1	475.8	223.5	141.00	7.09	0.00	66	10.0	8.0	Y
F12-3	47	1	474.6	232.0	141.00	7.09	0.00	66	10.0	8.0	Y
F13-3	48	1	472.7	223.9	141.00	7.09	0.00	66	10.0	8.0	Y
F14-3	49	1	467.0	220.0	141.00	7.09	0.00	66	10.0	8.0	Y
F15-3	50	1	461.0	223.0	141.00	7.09	0.00	66	10.0	8.0	Y
F16-3	51	1	461.3	236.6	141.00	7.09	0.00	66	10.0	8.0	Y
F17-3	52	1	461.3	249.5	141.00	7.09	0.00	66	10.0	8.0	Y
F1-4	53	1	466.9	251.0	141.00	9.91	0.00	66	10.0	8.0	Y
F2-4	54	1	473.0	245.7	141.00	9.91	0.00	66	10.0	8.0	Y
F3-4/B3	55	1	474.8	240.6	141.00	9.91	0.00	66	10.0	8.0	Y
F4-4	56	1	477.5	245.3	141.00	9.91	0.00	66	10.0	8.0	Y
F5-4	57	1	480.9	250.9	141.00	9.91	0.00	66	10.0	8.0	Y
F6-4	58	1	487.3	253.0	141.00	9.91	0.00	66	10.0	8.0	Y
F7-4	59	1	491.6	249.5	141.00	9.91	0.00	66	10.0	8.0	Y

F8-4	60	1	490.6	238.1	141.00	9.91	0.00	66	10.0	8.0	Y
F9-4	61	1	489.3	222.9	141.00	9.91	0.00	66	10.0	8.0	Y
F10-4	62	1	483.0	220.7	141.00	9.91	0.00	66	10.0	8.0	Y
F11-4	63	1	475.8	223.5	141.00	9.91	0.00	66	10.0	8.0	Y
F12-4	64	1	474.6	232.0	141.00	9.91	0.00	66	10.0	8.0	Y
F13-4	65	1	472.7	223.9	141.00	9.91	0.00	66	10.0	8.0	Y
F14-4	66	1	467.0	220.0	141.00	9.91	0.00	66	10.0	8.0	Y
F15-4	67	1	461.0	223.0	141.00	9.91	0.00	66	10.0	8.0	Y
F16-4	68	1	461.3	236.6	141.00	9.91	0.00	66	10.0	8.0	Y
F17-4	69	1	461.3	249.5	141.00	9.91	0.00	66	10.0	8.0	Y
F1-5	70	1	466.9	251.0	141.00	12.73	0.00	66	10.0	8.0	Y
F2-5	71	1	473.0	245.7	141.00	12.73	0.00	66	10.0	8.0	Y
F3-5/B4	72	1	474.8	240.6	141.00	12.73	0.00	66	10.0	8.0	Y
F4-5	73	1	477.5	245.3	141.00	12.73	0.00	66	10.0	8.0	Y
F5-5	74	1	480.9	250.9	141.00	12.73	0.00	66	10.0	8.0	Y
F6-5	75	1	487.3	253.0	141.00	12.73	0.00	66	10.0	8.0	Y
F7-5	76	1	491.6	249.5	141.00	12.73	0.00	66	10.0	8.0	Y
F8-5	77	1	490.6	238.1	141.00	12.73	0.00	66	10.0	8.0	Y
F9-5	78	1	489.3	222.9	141.00	12.73	0.00	66	10.0	8.0	Y
F10-5	79	1	483.0	220.7	141.00	12.73	0.00	66	10.0	8.0	Y
F11-5	80	1	475.8	223.5	141.00	12.73	0.00	66	10.0	8.0	Y
F12-5	81	1	474.6	232.0	141.00	12.73	0.00	66	10.0	8.0	Y
F13-5	82	1	472.7	223.9	141.00	12.73	0.00	66	10.0	8.0	Y
F14-5	83	1	467.0	220.0	141.00	12.73	0.00	66	10.0	8.0	Y
F15-5	84	1	461.0	223.0	141.00	12.73	0.00	66	10.0	8.0	Y
F16-5	85	1	461.3	236.6	141.00	12.73	0.00	66	10.0	8.0	Y
F17-5	86	1	461.3	249.5	141.00	12.73	0.00	66	10.0	8.0	Y
OU1	87	1	475.0	246.3	141.00	1.52	0.00	66	10.0	8.0	Y
OU2	88	1	474.4	227.7	141.00	1.52	0.00	66	10.0	8.0	Y
OU3	89	1	486.1	246.9	141.00	15.33	0.00	66	10.0	8.0	Y

Eilar Associates, Inc. **14 February 2017**
JB **TNM 2.5**

INPUT: BARRIERS
PROJECT/CONTRACT: **B70115N1**
RUN: **Future Facades**

Barrier									Points											
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment					
		Min	Max	$ per Unit Area	$ per Unit Vol.	Top Width	Run:Rise	$ per Unit Length			X	Y	Z	at Point	Seg Ht Incre-ment	Perturbs #Up	#Dn	On Struct?	Important Reflec-tions?
		m	m	$/sq m	$/cu m	m	m:m	$/m			m	m	m	m	m				
Montezuma Apts	W	0.00	30.48	0.00				0.00	point1	1	478.4	250.7	141.00	15.10	0.00	0	0		
									point2	2	483.2	250.1	141.00	15.10	0.00	0	0		
									point3	3	483.3	252.6	141.00	15.10	0.00	0	0		
									point4	4	491.3	252.0	141.00	15.10	0.00	0	0		
									point5	5	491.3	248.3	141.00	15.10	0.00	0	0		
									point6	6	490.8	248.4	141.00	15.10	0.00	0	0		
									point7	7	490.6	245.3	141.00	15.10	0.00	0	0		
									point8	8	490.9	245.3	141.00	15.10	0.00	0	0		
									point9	9	490.2	238.4	141.00	15.10	0.00	0	0		
									point10	10	490.0	238.3	141.00	15.10	0.00	0	0		
									point11	11	488.6	220.6	141.00	15.10	0.00	0	0		
									point12	12	481.6	221.2	141.00	15.10	0.00	0	0		
									point13	13	481.5	220.1	141.00	15.10	0.00	0	0		
									point14	14	476.0	220.7	141.00	15.10	0.00	0	0		
									point15	15	476.9	232.5	141.00	15.10	0.00	0	0		
									point16	16	472.4	232.6	141.00	15.10	0.00	0	0		
									point17	17	472.3	220.3	141.00	15.10	0.00	0	0		
									point18	18	461.5	220.4	141.00	15.10	0.00	0	0		
									point19	19	462.0	250.2	141.00	15.10	0.00	0	0		
									point20	20	472.6	250.0	141.00	15.10	0.00	0	0		
									point21	21	472.5	240.3	141.00	15.10	0.00	0	0		
									point22	22	477.4	239.9	141.00	15.10	0.00	0	0		
									point23	23	478.4	250.7	141.00	15.10					

Eilar Associates, Inc. **15 February 2017**
JB **TNM 2.5**
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: **B70115N1**
RUN: **Future Facades**
BARRIER DESIGN: **INPUT HEIGHTS**

ATMOSPHERICS: **20 deg C, 50% RH**

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
F1-1	1	1	0.0	64.8	66	64.8	10	----	64.8	0.0	8	-8.0
F2-1	3	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
F3-1	4	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
F4-1	5	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
F5-1	6	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
F6-1	7	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
F7-1	8	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
F8-1	9	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
F9-1	10	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
F10-1	11	1	0.0	31.4	66	31.4	10	----	31.4	0.0	8	-8.0
F11-1	12	1	0.0	25.7	66	25.7	10	----	25.7	0.0	8	-8.0
F12-1	13	1	0.0	32.6	66	32.6	10	----	32.6	0.0	8	-8.0
F13-1	14	1	0.0	26.2	66	26.2	10	----	26.2	0.0	8	-8.0
F14-1	15	1	0.0	32.8	66	32.8	10	----	32.8	0.0	8	-8.0
F15-1	16	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
F16-1	17	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
F17-1	18	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
F1-2	19	1	0.0	64.9	66	64.9	10	----	64.9	0.0	8	-8.0
F2-2	20	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
F3-2/B1	21	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
F4-2	22	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
F5-2	23	1	0.0	64.2	66	64.2	10	----	64.2	0.0	8	-8.0
F6-2	24	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
F7-2	25	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0

F8-2	26	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
F9-2	27	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
F10-2	28	1	0.0	35.3	66	35.3	10	----	35.3	0.0	8	-8.0
F11-2	29	1	0.0	29.9	66	29.9	10	----	29.9	0.0	8	-8.0
F12-2	30	1	0.0	30.8	66	30.8	10	----	30.8	0.0	8	-8.0
F13-2	31	1	0.0	29.8	66	29.8	10	----	29.8	0.0	8	-8.0
F14-2	32	1	0.0	36.8	66	36.8	10	----	36.8	0.0	8	-8.0
F15-2	33	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
F16-2	34	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
F17-2	35	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
F1-3	36	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0
F2-3	37	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
F3-3/B2	38	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
F4-3	39	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
F5-3	40	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0
F6-3	41	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
F7-3	42	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
F8-3	43	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
F9-3	44	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
F10-3	45	1	0.0	35.4	66	35.4	10	----	35.4	0.0	8	-8.0
F11-3	46	1	0.0	28.2	66	28.2	10	----	28.2	0.0	8	-8.0
F12-3	47	1	0.0	29.5	66	29.5	10	----	29.5	0.0	8	-8.0
F13-3	48	1	0.0	28.6	66	28.6	10	----	28.6	0.0	8	-8.0
F14-3	49	1	0.0	36.9	66	36.9	10	----	36.9	0.0	8	-8.0
F15-3	50	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
F16-3	51	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
F17-3	52	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0
F1-4	53	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
F2-4	54	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
F3-4/B3	55	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
F4-4	56	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
F5-4	57	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
F6-4	58	1	0.0	65.2	66	65.2	10	----	65.2	0.0	8	-8.0
F7-4	59	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
F8-4	60	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
F9-4	61	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
F10-4	62	1	0.0	35.4	66	35.4	10	----	35.4	0.0	8	-8.0
F11-4	63	1	0.0	29.4	66	29.4	10	----	29.4	0.0	8	-8.0
F12-4	64	1	0.0	30.0	66	30.0	10	----	30.0	0.0	8	-8.0
F13-4	65	1	0.0	29.2	66	29.2	10	----	29.2	0.0	8	-8.0
F14-4	66	1	0.0	37.2	66	37.2	10	----	37.2	0.0	8	-8.0

F15-4	67	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
F16-4	68	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
F17-4	69	1	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
F1-5	70	1	0.0	64.3	66	64.3	10	----	64.3	0.0	8	-8.0
F2-5	71	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
F3-5/B4	72	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
F4-5	73	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
F5-5	74	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
F6-5	75	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
F7-5	76	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
F8-5	77	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
F9-5	78	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
F10-5	79	1	0.0	37.2	66	37.2	10	----	37.2	0.0	8	-8.0
F11-5	80	1	0.0	33.7	66	33.7	10	----	33.7	0.0	8	-8.0
F12-5	81	1	0.0	33.3	66	33.3	10	----	33.3	0.0	8	-8.0
F13-5	82	1	0.0	33.9	66	33.9	10	----	33.9	0.0	8	-8.0
F14-5	83	1	0.0	38.3	66	38.3	10	----	38.3	0.0	8	-8.0
F15-5	84	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
F16-5	85	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
F17-5	86	1	0.0	63.0	66	63.0	10	----	63.0	0.0	8	-8.0
OU1	87	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
OU2	88	1	0.0	27.3	66	27.3	10	----	27.3	0.0	8	-8.0
OU3	89	1	0.0	51.5	66	51.5	10	----	51.5	0.0	8	-8.0

Dwelling Units		**# DUs**	**Noise Reduction**		
			Min	**Avg**	**Max**
			dB	**dB**	**dB**
All Selected		88	0.0	0.0	0.0
All Impacted		0	0.0	0.0	0.0
All that meet NR Goal		0	0.0	0.0	0.0

APPENDIX D

Manufacturer Data Sheets

CH14NB
Single−Stage Heat Pump with Puron® Refrigerant 1−1/2 To 5 Tons

Carrier
turn to the experts

Product Data

NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.

INDUSTRY LEADING FEATURES / BENEFITS

Efficiency

- 14 SEER / 11.5 - 11.7 EER / 8.2 HSPF
- Microtube Technology™ refrigeration system
- Indoor air quality accessories available

Sound

- Sound level as low as 69 dBA
- Sound levels as low as 68 dBA with accessory sound blanket

Comfort

- System supports CôR™, Edge® or standard thermostat controls

Reliability

- Puron® refrigerant - environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- High pressure switch
- Loss of charge switch
- Filter drier
- Balanced refrigeration system for maximum reliability

Durability

WeatherArmor™ protection package:

- Solid, durable sheet metal construction
- Dense wire coil guard

Applications

- Long-line - up to 250 feet (76.20 m) total equivalent length, up to 200 feet (60.96 m) condenser above evaporator, or up to 80 ft. (24.38 m) evaporator above condenser (See Longline Guide for more information.)
- Low ambient (down to -20°F/-28.9°C) with accessory kit

ELECTRICAL DATA

UNIT SIZE	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MAX FUSE** or CKT BRK AMPS
		MAX	MIN	LRA	RLA	FLA		
18	208/230/1	253	197	48.0	9.0	0.50	11.8	20
24				62.9	10.9	0.60	14.2	25
30				72.5	13.5	1.40	18.3	30
36				75.0	15.1	1.10	20.0	30
42				105.5	15.5	1.40	24.0	40
48				108.0	19.0	1.40	25.2	40
60				144.2	24.4	1.52	32.0	50

* Permissible limits of the voltage range at which the unit will operate satisfactorily
** Time–Delay fuse.
FLA – Full Load Amps
LRA – Locked Rotor Amps
MCA – Minimum Circuit Amps
RLA – Rated Load Amps
NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit.
All motors/compressors contain internal overload protection.
Complies with 2007 requirements of ASHRAE Standards 90.1

A-WEIGHTED SOUND POWER

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18	69	45	48	56	62	55	53	47
24	76	46	56	59	63	63	60	55
30	77	52	62	67	68	65	62	55
36	77	51	62	66	69	64	61	53
42	76	49	61	63	65	62	60	52
48	79	53	66	69	71	67	64	57
60	73	50	63	62	63	60	58	52

NOTE: Tested in accordance with AHRI Standard 270–08 (not listed in AHRI).

A-WEIGHTED SOUND POWER WITH SOUND HOOD

UNIT SIZE	STANDARD RATING	TYPICAL OCTAVE BAND SPECTRUM (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18	68	47	48	56	61	55	52	46
24	74	47	57	59	62	61	58	51
30	77	52	62	67	67	65	62	54
36	76	52	62	66	67	64	60	52
42	74	50	61	63	64	61	58	49
48	79	54	66	69	70	67	64	56
60	73	51	64	62	63	59	56	49

NOTE: Tested in accordance with AHRI Standard 270–08 (not listed in AHRI).

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–SERIES	REQUIRED SUBCOOLING °F (°C)
18	11 (6.1)
24	11 (6.1)
30	10 (5.6)
36	10 (5.6)
42	10 (5.6)
48	14 (7.8)
60	15 (8.3)

HP ONLY REPLACEMENT WITH PISTON INDOORS

When the CH14NB is used as a replacement component in a system with a piston fan coil, use the indoor piston size specified below:

UNIT SIZE	PISTON SIZE		
	FB4CNF	FFM	FPMA
18	0.052	0.050	0.050
24	0.057	0.057	0.056
30	0.067	0.070	0.067
36	0.070	0.072	0.069
42	0.078		
48	0.084		
60			

= N/A

APPENDIX E

Cadna Analysis Data and Results

Cadna Noise Model - Sound Levels														
Name	ID	Type	Oktave Spectrum (dB)											Source
			Weight	63	125	250	500	1000	2000	4000	8000	A	lin	
Carrier CH14NB018	L1	Lw	A		51.8	52.8	60.8	65.8	59.8	56.8	50.8	68.4	71.8	Mfr

Cadna Noise Model - Point Sources (1 of 4)								
Name	ID	Result. PWL	Lw / Li		Height	Coordinates		
		Day	Type	Value		X	Y	Z
		(dBA)			(m)	(m)	(m)	(m)
AC 1	S_1	68.4	Lw	L1	17.98	481.99	237.48	17.98
AC 2	S_2	68.4	Lw	L1	17.98	481.98	236.65	17.98
AC 3	S_3	68.4	Lw	L1	17.98	481.85	235.6	17.98
AC 4	S_4	68.4	Lw	L1	17.98	481.6	234.47	17.98
AC 5	S_5	68.4	Lw	L1	17.98	481.5	233.68	17.98
AC 6	S_6	68.4	Lw	L1	17.98	481.48	233.04	17.98
AC 7	S_7	68.4	Lw	L1	17.98	481.52	231.18	17.98
AC 8	S_8	68.4	Lw	L1	17.98	481.32	230.25	17.98
AC 9	S_9	68.4	Lw	L1	17.98	487.04	230.9	17.98
AC 10	S_10	68.4	Lw	L1	17.98	487.08	229.83	17.98
AC 11	S_11	68.4	Lw	L1	17.98	486.96	231.74	17.98
AC 12	S_12	68.4	Lw	L1	17.98	488.38	237.86	17.98
AC 13	S_13	68.4	Lw	L1	17.98	488.25	236.87	17.98
AC 14	S_14	68.4	Lw	L1	17.98	488.05	235.81	17.98
AC 15	S_15	68.4	Lw	L1	17.98	487.92	234.62	17.98
AC 16	S_16	68.4	Lw	L1	17.98	487.58	232.51	17.98
AC 17	S_17	68.4	Lw	L1	17.98	487.45	231.45	17.98
AC 18	S_18	68.4	Lw	L1	17.98	487.45	230.32	17.98
AC 19	S_19	68.4	Lw	L1	17.98	487.45	229.26	17.98
AC 20	S_20	68.4	Lw	L1	17.98	487.25	228.27	17.98
AC 21	S_21	68.4	Lw	L1	17.98	487.12	227.35	17.98
AC 22	S_22	68.4	Lw	L1	17.98	487.12	226.35	17.98
AC 23	S_23	68.4	Lw	L1	17.98	486.86	225.3	17.98
AC 24	S_24	68.4	Lw	L1	17.98	486.79	224.7	17.98
AC 25	S_25	68.4	Lw	L1	17.98	486.79	223.44	17.98
AC 26	S_26	68.4	Lw	L1	17.98	486.72	222.65	17.98
AC 27	S_27	68.4	Lw	L1	17.98	487.72	233.37	17.98
AC 28	S_28	68.4	Lw	L1	17.98	481.46	232.15	17.98
AC 29	S_29	68.4	Lw	L1	17.98	483.78	222.63	17.98
AC 30	S_30	68.4	Lw	L1	17.98	484.51	222.41	17.98
AC 31	S_31	68.4	Lw	L1	17.98	481.9	222.92	17.98
AC 32	S_32	68.4	Lw	L1	17.98	486.05	222.4	17.98

Cadna Noise Model - Point Sources (2 of 4)								
Name	ID	Result. PWL	Lw / Li		Height	Coordinates		
		Day	Type	Value		X	Y	Z
		(dBA)			(m)	(m)	(m)	(m)
AC 33	S_33	68.4	Lw	L1	17.98	487.17	232.7	17.98
AC 34	S_34	68.4	Lw	L1	17.98	482.89	222.73	17.98
AC 35	S_35	68.4	Lw	L1	17.98	485.2	222.51	17.98
AC 36	S_36	68.4	Lw	L1	17.98	487.67	237.74	17.98
AC 37	S_37	68.4	Lw	L1	17.98	487.74	237	17.98
AC 38	S_38	68.4	Lw	L1	17.98	487.64	236.1	17.98
AC 39	S_39	68.4	Lw	L1	17.98	487.52	235.22	17.98
AC 40	S_40	68.4	Lw	L1	17.98	487.31	234.31	17.98
AC 41	S_41	68.4	Lw	L1	17.98	487.22	233.6	17.98
AC 42	S_42	68.4	Lw	L1	17.98	485.55	222.27	17.98
AC 43	S_43	68.4	Lw	L1	17.98	481.63	237.8	17.98
AC 44	S_44	68.4	Lw	L1	17.98	481.5	236.94	17.98
AC 45	S_45	68.4	Lw	L1	17.98	481.37	235.95	17.98
AC 46	S_46	68.4	Lw	L1	17.98	481.3	234.82	17.98
AC 47	S_47	68.4	Lw	L1	17.98	480.9	233.76	17.98
AC 48	S_48	68.4	Lw	L1	17.98	480.84	233.04	17.98
AC 49	S_49	68.4	Lw	L1	17.98	480.84	232.31	17.98
AC 50	S_50	68.4	Lw	L1	17.98	480.7	231.51	17.98
AC 51	S_51	68.4	Lw	L1	17.98	480.84	230.39	17.98
AC 52	S_52	68.4	Lw	L1	17.98	480.84	228.54	17.98
AC 53	S_53	68.4	Lw	L1	17.98	480.7	227.21	17.98
AC 54	S_54	68.4	Lw	L1	17.98	480.64	226.09	17.98
AC 55	S_55	68.4	Lw	L1	17.98	480.37	225.36	17.98
AC 56	S_56	68.4	Lw	L1	17.98	480.37	224.57	17.98
AC 57	S_57	68.4	Lw	L1	17.98	480.24	223.77	17.98
AC 58	S_58	68.4	Lw	L1	17.98	480.04	223.05	17.98
AC 59	S_59	68.4	Lw	L1	17.98	480.04	222.39	17.98
AC 60	S_60	68.4	Lw	L1	17.98	480.7	229.33	17.98
AC 61	S_61	68.4	Lw	L1	17.98	481.7	222.25	17.98
AC 62	S_62	68.4	Lw	L1	17.98	482.42	222.05	17.98
AC 63	S_63	68.4	Lw	L1	17.98	483.22	222.05	17.98
AC 64	S_64	68.4	Lw	L1	17.98	483.81	222.05	17.98

Cadna Noise Model - Point Sources (3 of 4)								
Name	**ID**	**Result. PWL**	**Lw / Li**		**Height**	**Coordinates**		
		Day	**Type**	**Value**		**X**	**Y**	**Z**
		(dBA)			**(m)**	**(m)**	**(m)**	**(m)**
AC 65	S_65	68.4	Lw	L1	17.98	484.34	221.99	17.98
AC 66	S_66	68.4	Lw	L1	17.98	484.74	221.99	17.98
AC 67	S_67	68.4	Lw	L1	17.98	485.14	221.86	17.98
AC 68	S_68	68.4	Lw	L1	17.98	485.73	221.72	17.98
AC 69	S_69	68.4	Lw	L1	17.98	471.05	249.31	17.98
AC 70	S_70	68.4	Lw	L1	17.98	470.98	248.78	17.98
AC 71	S_71	68.4	Lw	L1	17.98	470.98	247.99	17.98
AC 72	S_72	68.4	Lw	L1	17.98	470.85	246.93	17.98
AC 73	S_73	68.4	Lw	L1	17.98	470.85	246	17.98
AC 74	S_74	68.4	Lw	L1	17.98	470.91	245.07	17.98
AC 75	S_75	68.4	Lw	L1	17.98	469.46	244.07	17.98
AC 76	S_76	68.4	Lw	L1	17.98	468.72	243.21	17.98
AC 77	S_77	68.4	Lw	L1	17.98	468.8	242.18	17.98
AC 78	S_78	68.4	Lw	L1	17.98	468.71	241.39	17.98
AC 79	S_79	68.4	Lw	L1	17.98	468.87	240.29	17.98
AC 80	S_80	68.4	Lw	L1	17.98	468.92	238.9	17.98
AC 81	S_81	68.4	Lw	L1	17.98	470.25	237.86	17.98
AC 82	S_82	68.4	Lw	L1	17.98	470.25	237.27	17.98
AC 83	S_83	68.4	Lw	L1	17.98	470.19	236.48	17.98
AC 84	S_84	68.4	Lw	L1	17.98	470.19	235.75	17.98
AC 85	S_85	68.4	Lw	L1	17.98	470.25	234.42	17.98
AC 86	S_86	68.4	Lw	L1	17.98	470.25	232.9	17.98
AC 87	S_87	68.4	Lw	L1	17.98	469.92	231.65	17.98
AC 88	S_88	68.4	Lw	L1	17.98	469.92	230.65	17.98
AC 89	S_89	68.4	Lw	L1	17.98	469.92	229.53	17.98
AC 90	S_90	68.4	Lw	L1	17.98	469.72	228.34	17.98
AC 91	S_91	68.4	Lw	L1	17.98	469.72	227.61	17.98
AC 92	S_92	68.4	Lw	L1	17.98	469.72	226.68	17.98
AC 93	S_93	68.4	Lw	L1	17.98	469.72	225.82	17.98
AC 94	S_94	68.4	Lw	L1	17.98	469.72	224.83	17.98
AC 95	S_95	68.4	Lw	L1	17.98	469.72	224.11	17.98
AC 96	S_96	68.4	Lw	L1	17.98	469.66	223.38	17.98

Cadna Noise Model - Point Sources (4 of 4)								
Name	ID	Result. PWL	Lw / Li		Height	Coordinates		
		Day	Type	Value		X	Y	Z
		(dBA)			(m)	(m)	(m)	(m)
AC 97	S_97	68.4	Lw	L1	17.98	469.66	222.58	17.98
AC 98	S_98	68.4	Lw	L1	17.98	469.66	221.66	17.98
AC 99	S_99	68.4	Lw	L1	17.98	462.71	221.39	17.98
AC 100	S_100	68.4	Lw	L1	17.98	462.78	222.25	17.98
AC 101	S_101	68.4	Lw	L1	17.98	462.84	223.18	17.98
AC 102	S_102	68.4	Lw	L1	17.98	462.84	223.91	17.98
AC 103	S_103	68.4	Lw	L1	17.98	462.84	224.7	17.98
AC 104	S_104	68.4	Lw	L1	17.98	462.84	225.49	17.98
AC 105	S_105	68.4	Lw	L1	17.98	462.84	226.55	17.98
AC 106	S_106	68.4	Lw	L1	17.98	462.71	227.48	17.98
AC 107	S_107	68.4	Lw	L1	17.98	462.71	228.07	17.98
AC 108	S_108	68.4	Lw	L1	17.98	462.71	229.4	17.98
AC 109	S_109	68.4	Lw	L1	17.98	462.71	230.46	17.98
AC 110	S_110	68.4	Lw	L1	17.98	462.71	230.98	17.98
AC 111	S_111	68.4	Lw	L1	17.98	462.65	231.98	17.98
AC 112	S_112	68.4	Lw	L1	17.98	462.65	232.97	17.98
AC 113	S_113	68.4	Lw	L1	17.98	462.65	233.96	17.98
AC 114	S_114	68.4	Lw	L1	17.98	462.65	235.22	17.98
AC 115	S_115	68.4	Lw	L1	17.98	462.98	237.2	17.98
AC 116	S_116	68.4	Lw	L1	17.98	462.91	236.48	17.98
AC 117	S_117	68.4	Lw	L1	17.98	462.98	237.86	17.98
AC 118	S_118	68.4	Lw	L1	17.98	462.91	238.53	17.98
AC 119	S_119	68.4	Lw	L1	17.98	462.91	239.58	17.98
AC 120	S_120	68.4	Lw	L1	17.98	463.11	241.3	17.98
AC 121	S_121	68.4	Lw	L1	17.98	463.11	242.36	17.98
AC 122	S_122	68.4	Lw	L1	17.98	463.24	243.29	17.98
AC 123	S_123	68.4	Lw	L1	17.98	463.31	244.21	17.98
AC 124	S_124	68.4	Lw	L1	17.98	463.24	245.07	17.98
AC 125	S_125	68.4	Lw	L1	17.98	463.04	246.2	17.98
AC 126	S_126	68.4	Lw	L1	17.98	463.04	246.99	17.98
AC 127	S_127	68.4	Lw	L1	17.98	463.11	248.45	17.98
AC 128	S_128	68.4	Lw	L1	17.98	462.91	240.64	17.98

Cadna Noise Model - Building				
Name	ID	Coordinates		
		X	Y	Z
		(m)	(m)	(m)
On-Site Building	BL_1	478.36	250.71	16.76
		483.19	250.11	16.76
		483.31	252.61	16.76
		491.31	252.03	16.76
		491.27	248.28	16.76
		490.81	248.4	16.76
		490.61	245.27	16.76
		490.9	245.27	16.76
		490.19	238.44	16.76
		489.98	238.31	16.76
		488.59	220.58	16.76
		481.58	221.15	16.76
		481.48	220.12	16.76
		475.95	220.72	16.76
		476.88	232.49	16.76
		472.41	232.56	16.76
		472.31	220.29	16.76
		461.52	220.41	16.76
		462.02	250.17	16.76
		472.61	250.04	16.76
		472.52	240.29	16.76
		477.36	239.87	16.76
		478.36	250.67	16.76

Cadna Noise Model - Noise Levels at Receivers						
Name	**ID**	**Level Lr**	**Height**	**Coordinates**		
		Day		**X**	**Y**	**Z**
		(dBA)	**(m)**	**(m)**	**(m)**	**(m)**
South	R_1	35.4	1.52	483.98	217.83	1.52
East	R_2	33.7	1.52	491.60	233.54	1.52
West	R_3	35.9	1.52	460.48	233.63	1.52
East (4th)	R_4	40.2	10.67	491.69	233.54	10.67

APPENDIX F

Temporary Construction Noise Calculations

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Excavator
Receiver: South-Demo

Noise Source

Noise Level (dBA)	70	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance: **60** feet

Sound Pressure Level	**68.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**64.4**			

Summation

Number of Sources: 4

Level during 12 hour day: **72.5**

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Backhoe
Receiver: South-Demo

Noise Source

Noise Level (dBA)	73	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**71.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**67.4**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Dump Truck
Receiver: South-Demo

Noise Source

Noise Level (dBA)	75	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**73.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**69.4**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Skid Steer Loader
Receiver: South-Demo

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**63.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**59.4**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Excavator
Receiver: East-Demo

Noise Source

Noise Level (dBA) 70 at 50 feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance: **50** feet

Sound Pressure Level **70.0** at 50 feet

Hours of Use:	**12**
Duty Cycle (%):	**40**
Level During 12 Hour day:	**66.0**

Summation

Number of Sources: 4

Level during 12 hour day: **74.1**

Noise Attenuation by Distance Calculation

Job:	Montezuma
Job #:	B70115N1
Date:	2/17/2017
Source:	Backhoe
Receiver:	East-Demo

Noise Source

Noise Level (dBA)	73	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**73.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**69.0**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Dump Truck
Receiver: East-Demo

Noise Source

Noise Level (dBA)	75	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**75.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**71.0**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Skid Steer Loader
Receiver: East-Demo

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**65.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**61.0**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Dump Truck
Receiver: South-Foundation

Noise Source

Noise Level (dBA)	75	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance: **60** feet

Sound Pressure Level	**73.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**69.4**			

Summation

Number of Sources: 4

Level during 12 hour day: **73.8**

Noise Attenuation by Distance Calculation

Job:	Montezuma
Job #:	B70115N1
Date:	2/17/2017
Source:	Skid Steer Loader
Receiver:	South-Foundation

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**63.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**59.4**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Concrete Mixer
Receiver: South-Foundation

Noise Source

Noise Level (dBA)	76	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**74.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**70.4**			

Noise Attenuation by Distance Calculation

Job:	Montezuma
Job #:	B70115N1
Date:	2/17/2017
Source:	Concrete Pump
Receiver:	South-Foundation

Noise Source

Noise Level (dBA)	74	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**72.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**20**			
Level During 12 Hour day:	**65.4**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Dump Truck
Receiver: East-Foundation

Noise Source

Noise Level (dBA)	75	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**75.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**71.0**			

Summation

Number of Sources:	4
Level during 12 hour day:	**75.4**

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Skid Steer Loader
Receiver: East-Foundation

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**65.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**61.0**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Concrete Mixer
Receiver: East-Foundation

Noise Source

Noise Level (dBA)	76	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**76.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**72.0**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Concrete Pump
Receiver: East-Foundation

Noise Source

Noise Level (dBA)	74	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**74.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**20**			
Level During 12 Hour day:	**67.0**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Forklift
Receiver: South-Framing

Noise Source

Noise Level (dBA) 74 at 50 feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance: **60** feet

Sound Pressure Level	**72.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**68.4**			

Summation

Number of Sources: 3

Level during 12 hour day: **73.4**

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Skid Steer Loader
Receiver: South-Framing

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**63.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**59.4**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Crane
Receiver: South-Framing

Noise Source

Noise Level (dBA)	81	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**79.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**16**			
Level During 12 Hour day:	**71.5**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Forklift
Receiver: East-Framing

Noise Source

Noise Level (dBA) 74 at 50 feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance: **50** feet

Sound Pressure Level	**74.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**70.0**			

Summation

Number of Sources: 3

Level during 12 hour day: **75.0**

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Skid Steer Loader
Receiver: East-Framing

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**65.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**61.0**			

Noise Attenuation by Distance Calculation

Job:	Montezuma
Job #:	B70115N1
Date:	2/17/2017
Source:	Crane
Receiver:	East-Framing

Noise Source

Noise Level (dBA)	81	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**81.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**16**			
Level During 12 Hour day:	**73.0**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Forklift
Receiver: South-Finishing

Noise Source

Noise Level (dBA) 74 at 50 feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance: **60** feet

Sound Pressure Level	**72.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**68.4**			

Summation

Number of Sources: 2

Level during 12 hour day: **69.0**

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Skid Steer Loader
Receiver: South-Finishing

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	60	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**60**	feet

Sound Pressure Level	**63.4**	at	60	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**59.4**			

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Forklift
Receiver: East-Finishing

Noise Source

Noise Level (dBA)	74	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance: **50** feet

Sound Pressure Level	**74.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**70.0**			

Summation

Number of Sources: 2

Level during 12 hour day: **70.5**

Noise Attenuation by Distance Calculation

Job: Montezuma
Job #: B70115N1
Date: 2/17/2017
Source: Skid Steer Loader
Receiver: East-Finishing

Noise Source

Noise Level (dBA)	65	at	50	feet

Distances

Source Elevation	0	feet	at	5	feet above grade
Receiver Elevation:	0	feet	at	5	feet above grade
Source to Receiver Distance:	50	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**50**	feet

Sound Pressure Level	**65.0**	at	50	feet
Hours of Use:	**12**			
Duty Cycle (%):	**40**			
Level During 12 Hour day:	**61.0**			

CHRISTIAN WHEELER
ENGINEERING

REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED APARTMENT BUILDING

6213-6219 MONTEZUMA ROAD

SAN DIEGO, CALIFORNIA

PREPARED FOR

ELSEY PARTNERS

1532 COLLEGE AVENUE F19

MANHATTAN, KANSAS 66502

PREPARED BY

CHRISTIAN WHEELER ENGINEERING

3980 HOME AVENUE

SAN DIEGO, CALIFORNIA 92105

CHRISTIAN WHEELER
ENGINEERING

November 17, 2015

Elsey Partners
1532 College Avenue F19
Manhattan, Kansas 66502
Attention: Chris Elsey

CWE 2150650.01

Subject: **Report of Preliminary Geotechnical Investigation**
Proposed Apartment Building, 6213-6219 Montezuma Road, San Diego, California

Ladies and Gentlemen:

In accordance with your request, and our proposal and agreement dated October 28, 2015, we have completed a geotechnical investigation for the subject project. We are presenting herewith a report of our findings and recommendations.

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.

If you have any 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

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TSW:jdb;tsw;scc
cc: chris@myprimeplace.com

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REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

INTRODUCTION AND PROJECT DESCRIPTION

This report presents the results of a geotechnical investigation performed for a proposed apartment building to be constructed at 6213-6219 Montezuma Road, in the city of San Diego, California. The following Figure No. 1 presents a site vicinity map showing the location of the property.

We have not been provided with project plans; however, we understand that it is proposed to construct a four-story apartment structure over three levels of subterranean garage and associated improvements. The parking garage is expected to consist of masonry, concrete or shotcrete construction with concrete floor slabs. Site retaining walls may be necessary along the north, east and west property lines. We understand that the parking garage will be about 30 feet below the level of Montezuma Road. Grading is expected to be limited to making the excavation for the subterranean parking garage and associated driveways. The anticipated cuts will be about 30 feet at the front of the property, and about 43 feet at the rear. Shoring will be required for all sides of the excavation.

To assist in the preparation of this report, we were provided with a topographic survey map of the site prepared by JP Engineering, Inc., dated November 6, 2015. A copy of this plan was used as a base map for our geologic mapping, and is included herein as Plate No. 1. We have also reviewed our previous report by our firm for the project site. The borings logs from our previous subsurface investigation are provided in Appendix A.

This report has been prepared for the exclusive use of Elsey Partners and its 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

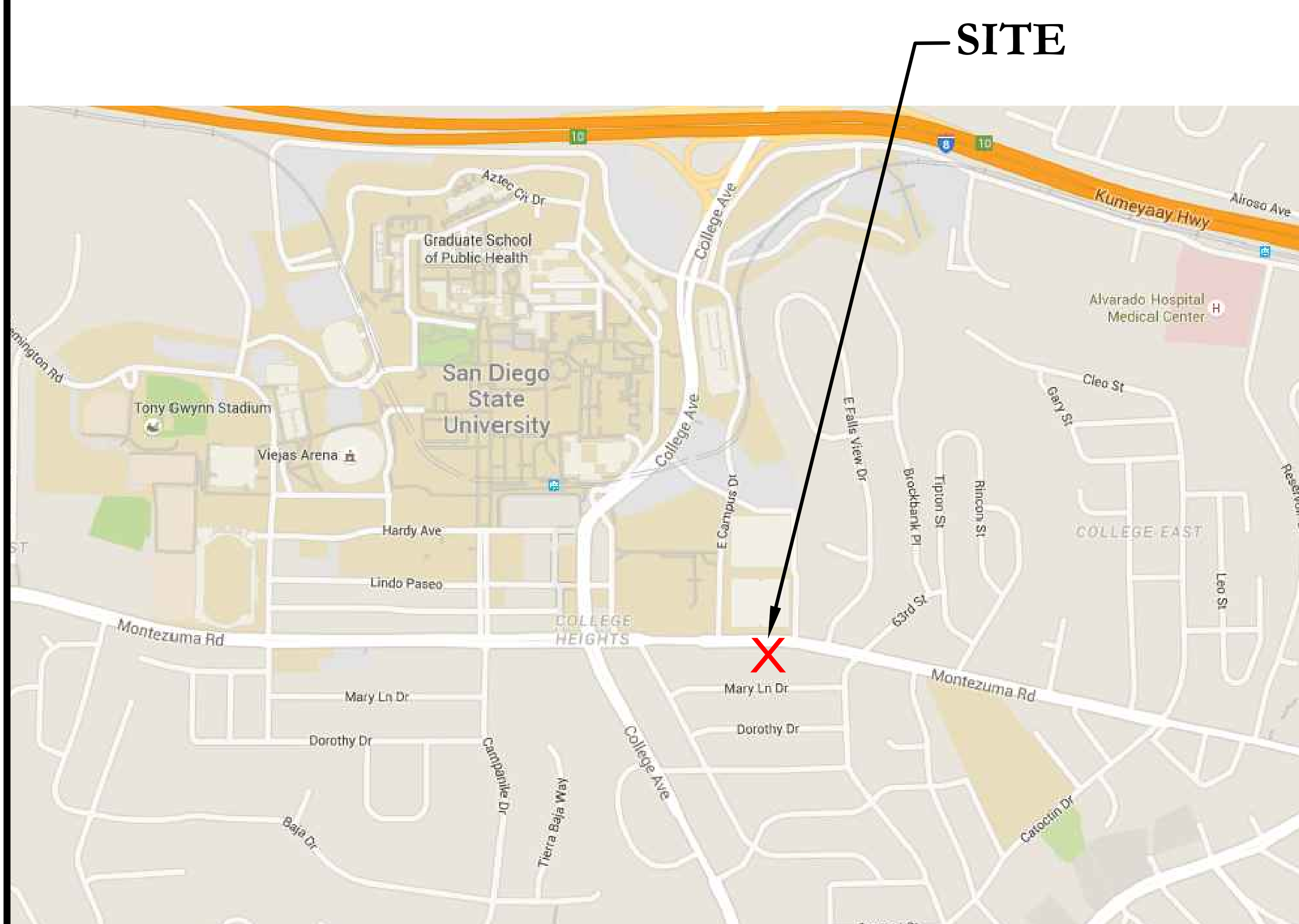
Site Vicinity Map

(Adapted from Google Maps)

PROPOSED APARTMENT BUILDING

6213-6219 MONTEZUMA ROAD

SAN DIEGO, CALIFORNIA



CWE 2150650.01 NOVEMBER 2015 FIGURE 1

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.

PROJECT SCOPE

Our preliminary geotechnical investigation included site reconnaissance analysis of the field and laboratory data from our previous investigation, and review of relevant literature. Our scope of services does not include additional subsurface exploration, additional laboratory testing, assessment of hazardous substance contamination, recommendations to prevent floor slab moisture intrusion or the formation of mold within the structure, or providing an evaluation or design of storm water infiltration facilities, or any other services not specifically described in the scope of services presented below. More specifically, our services included the following items.

- Review the previous preliminary geotechnical report prepared for the subject site.
- Describe the general geology at the site including possible geologic hazards that could have an effect on the proposed construction, and provide the seismic design parameters as required by the 2013 edition of the California Building Code.
- Address potential construction difficulties that may be encountered due to soil conditions, groundwater or geologic hazards, and provide recommendations concerning these problems.
- Provide site preparation recommendations for the anticipated work, as necessary.
- Provide design recommendations for temporary shoring.
- Prepare two cross sections that include the limits of grading.
- Recommend an appropriate foundation system for the type of structures anticipated and develop soil engineering design criteria for the recommended foundation design.
- Provide geotechnical design parameters for the construction of restrained and unrestrained retaining walls.
- Prepare this report, which includes, in addition to our conclusions and recommendations, a plan showing the aerial extent of the geological units and the locations of our exploratory borings, exploration logs, and a summary of the laboratory test results.

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 our previous investigation, it should be understood Christian Wheeler Engineering does not practice corrosion engineering. If such an 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 the test should only be used as a guideline to determine whether additional testing and analysis is necessary.

FINDINGS

SITE DESCRIPTION

The subject site is a rectangular shaped property located at 6213-6219 Montezuma Road, in the College area of San Diego. The property includes two parcels identified by Assessor's Parcel Numbers 467-171-28, and -29. The parcels cover about 0.3 acre in area, have about 110 feet of frontage along Montezuma Road, and extend back from the street about 120 feet. Topographically, the property slopes upward and southward from Montezuma Road, rising a vertical distance of about 13 feet. Various old foundations, retaining walls, concrete stairways and sidewalks from the previous structures and improvements exist on the property, along with a few small- to medium-size trees. The adjacent project to the east has below grade parking levels that are expected to extend up to 15 feet below grade.

GENERAL GEOLOGY AND SUBSURFACE CONDITIONS

GEOLOGIC SETTING AND SOIL DESCRIPTION: The subject site is located within the Coastal Physiographic Province of San Diego County. Based on our subsurface explorations, and analysis of readily available, pertinent geologic literature, the area of the site investigated was found to be underlain by artificial fill, colluvium, very old paralic deposits, and Mission Valley Formation deposits. Each of these units is discussed below in order of increasing age.

> **ARTIFICIAL FILL (Qaf):** Fill materials were encountered in borings B-1 and B-2, extending to a depth of about four feet and two feet below existing grade, respectively. The fill encountered consists of light brown, reddish-brown, and dark brown, damp and moist, silty sand with clay

and some cobble (SM). The maximum cobble size was about six inches. In general, the fill is loose. However, in boring B-1, the fill becomes medium dense at a depth of about two feet below existing grade. The fill soils encountered were judged to have a low expansive potential (EI < 50).

COLLUVIUM (Qcol): Colluvial deposits were encountered in borings B-1, B-2, and B-3 underlying the site to a depth of about ten feet, nine feet, and five feet below existing grade, respectively. These materials consist of light reddish-brown and reddish-brown, moist to very moist, medium dense, silty sand with clay and some gravel and cobble (SM). The maximum cobble size noted was about five inches. These materials were judged to have a low expansion potential (EI < 50).

VERY OLD PARALIC DEPOSITS (Qvop): Very old paralic deposits were encountered underlying the colluvium in all the borings. These materials consist of interbedded light reddish-brown, reddish-brown, dark brown, and light gray, moist to very moist, medium dense to very dense, silty sand with some gravel and cobble (SM), and sandy gravel with silt and cobble (GM). The maximum cobble size noted was about six inches. These materials were judged to have a low expansion potential (EI < 50).

MISSION VALLEY FORMATION (Tmv): Mission Valley Formation deposits were encountered underlying the very old paralic deposits in borings B-1, B-2, and B-3 at a depth of about 27 feet, 32 feet, and 25 feet, below existing grade, respectively. These materials consist of light gray and gray, moist, dense, silty sand and silty sand with clay. These materials were judged to have a low expansion potential (EI < 50).

GROUNDWATER: No groundwater or seepage was encountered in our subsurface explorations and we do not expect any groundwater related conditions during or after the proposed construction provided that proper drainage is maintained at the site.

It should, however be recognized that minor groundwater seepage problems might occur after development of a site even where none were present before development. These are usually minor phenomena and are often the result of an alteration in drainage patterns and/or an increase in irrigation water.

TECTONIC SETTING: No active or potentially active faults are known to traverse the subject site. However, it should be noted that 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 nearest active fault zone is the Rose Canyon Fault Zone located approximately 5½ miles to the southwest of the site. Other active fault zones in the region that could possibly affect the site include the Newport-Inglewood Fault Zone to the northwest; the Palos Verde and Coronado Bank Fault Zones to the west; and the Elsinore, San Jacinto, and San Andreas Fault Zones to the northeast.

GEOLOGIC HAZARDS

GEOLOGIC HAZARDS CATEGORY: The site is located in Geologic Hazards Category 53 according to the most recent edition of the City of San Diego Seismic Safety Study. Hazards Category 53 is assigned to level or sloping terrain with unfavorable geologic structure where the risks are considered to be low to moderate. Based on the results of our study, it is our opinion that the potential risks can be considered to be low.

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. According to this publication, the site is mapped within Relative Landslide Susceptibility Area 2, which is considered to be "marginally susceptible" to landsliding. Based on our findings, it is our professional opinion that the potential for slope failures within the site is low.

SEISMIC DESIGN HAZARD: A likely geologic hazard to affect the site is ground shaking as a result of movement along one of the major active fault zones mentioned in the "Tectonic Setting" section of this report. Per Chapter 16 of the 2013 California Building Code (CBC), the Maximum Considered Earthquake (MCE) ground motion is that considered to have a two percent probability of being exceeded in 50 years. Figures 1613.5(3) and 1614.5(4) of the CBC present regional MCE spectral accelerations for short (0.2 sec.) and long (1.0 sec.) periods, respectively, based on a soil Site Class B (CBC Table 1613.5.2) and a structural damping of five percent. For the subject site, we expect that correlation with field penetration resistance values will indicate that the upper 100 feet of geologic subgrade can be characterized as Site Class C. In this case, the mapped MCE spectral accelerations are modified using the Site Coefficients presented in Tables 1613.5.3(1) and (2). The modified MCE spectral accelerations are then multiplied by two-thirds in order to obtain the design spectral accelerations. These seismic design parameters for the subject site (32.770 °, -117.066°), based on Chapter 16 of the CBC, are presented in Table I below.

TABLE I: CBC 2013 EDITION – SEISMIC DESIGN PARAMETERS

CBC – Chapter 16 Section	Seismic Design Parameter	Recommended Value
Table 1613.5.2	Soil Site Class	C
Figure 1613.5 (3)	Mapped Spectral Acceleration for Short Periods (0.2 sec), S_s	0.924 g
Figure 1613.5 (4)	Mapped Spectral Acceleration for 1.0 Sec Periods (1.0 sec), S_1	0.354 g
Table 1613.5.3 (1)	Site Coefficient, F_a	1.030
Table 1613.5.3 (2)	Site Coefficient, F_v	1.446
Section 1613.5.3	S_{MS} = MCE Spectral Response at 0.2 sec. = $(S_s)(F_a)$	0.952 g
Section 1613.5.3	S_{M1} = MCE Spectral Response at 1.0 sec. = $(S_1)(F_v)$	0.512 g
Section 1613.5.4	S_{DS} = Design Spectral Response at 0.2 sec. = $2/3(S_{MS})$	0.635 g
Section 1613.5.4	S_{D1} = Design Spectral Response at 1.0 sec. = $2/3(S_{M1})$	0.341 g
Section 1803.2.12	PGA_M per Section 11.8.3 of ASCE 7	0.368 g

LIQUEFACTION: The near-surface soils encountered at the site are not considered susceptible to liquefaction due to such factors as depth to the groundwater table, soil density and grain-size distribution.

FLOODING: The site is located outside the boundaries of both the 100-year and the 500-year floodplains according to the maps prepared by the Federal Emergency Management Agency.

TSUNAMIS: Tsunamis are great sea waves produced by submarine earthquakes or volcanic eruptions. Due to the site's elevation and location, the site will not be affected by tsunamis.

SEICHES: Seiches are periodic oscillations in large bodies of water such as lakes, harbors, bays or reservoirs. Due to the site's location, it will not be affected by seiches.

CONCLUSIONS

It is our professional opinion and judgment that no geotechnical conditions exist within the subject site that would preclude the construction of the proposed apartment structure, provided the recommendations presented herein are followed.

The findings of our investigation indicate that most of the site is underlain by a relatively thin layer of potentially compressible fill soils. As encountered in our borings, these deposits do not exceed four feet in thickness. The fill materials are considered unsuitable, in their present condition, for the support of settlement sensitive improvements. Based on the proposed development scheme, it is anticipated that the majority of the existing fill will be removed in order to achieve finished pad grade. Any remaining fill underlying proposed settlement sensitive improvements will require removal and replacement as compacted fill.

An additional consideration is the temporary cut slopes proposed adjacent or near to property lines. The slopes will extend to a maximum depth of about 43 feet. We anticipate that these slopes will require shoring.

The adjacent property to the east supports a structure that has a subterranean parking component. We anticipate that the lowest level extends up to 15 feet below grade; however, the depth should be verified prior to designing foundations and shoring.

The site is located in an area that is relatively free of geologic hazards that will have a significant effect on the proposed construction. The most likely geologic hazard that could affect the site is ground shaking due to seismic activity along one of the regional active faults. However, construction in accordance with the requirements of the most recent edition of the California Building Code and the local governmental agencies should provide a level of life-safety suitable for the type of development proposed.

The final project plans should be submitted to this office for review in order to ascertain that the geotechnical recommendations remain applicable to the final plan and that no additional recommendations are needed due to changes in the anticipated development.

RECOMMENDATIONS

GRADING AND EARTHWORK

GENERAL: All grading should conform to the guidelines presented in Appendix J of the California Building Code, the minimum requirements of the City of San Diego, and the recommended Grading Specifications and Special Provisions attached hereto, except where specifically superseded in the text of this report. Prior to grading, a representative of Christian Wheeler Engineering should be present at the pre-construction meeting to provide additional grading guidelines, if necessary, and to review the earthwork schedule.

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.

SITE PREPARATION: Site preparation should begin with the removal of all existing construction debris, and the demolition of the remnants of the previous structures that existed at the site. The resulting debris as well as any vegetation and deleterious matter in areas of the site to be graded or receive proposed improvements should be removed and disposed of off-site at a legal dump site. Existing fill materials underlying settlement-sensitive improvements should be removed and replaced as compacted fill. Based on the proposed grading scheme, it is anticipated that the majority of these materials will be removed to achieve finished pad grade, and the extent of this operation will be very minor. The bottoms of all excavations should be approved by our representative prior to placing fills or constructing improvements, and all areas to receive fill should be processed as described below in the "Processing of Fill Areas and Building Pad" section of this report. The soils removed may be replaced as compacted fill. It is anticipated that the building pad will be underlain by competent formational soils. However, the upper few inches of these materials will likely be disturbed during grading operations. It is recommended that the proposed building pad be prepared as described in the following paragraph.

PROCESSING OF FILL AREAS AND BUILDING PAD: Prior to placing any new fill soils or constructing any new improvements in areas that have been cleaned out to receive fill and approved by the geotechnical consultant or his representative, any exposed soils should be scarified to a depth of 12 inches, moisture conditioned, and compacted to at least 90 percent relative compaction. If the building pad is disturbed during grading operations, it is recommended that it be scarified to a depth of six inches, moisture-conditioned, and compacted to at least 95 percent relative compaction. This requirement will be determined by the Geotechnical Engineer after the building pad finished grade is reached.

COMPACTION AND METHOD OF FILLING: All structural fill and backfill material placed at the site should be compacted to a relative compaction of at least 90 percent of maximum dry density as determined by ASTM Laboratory Test D1557. Fills should be placed at or slightly above optimum moisture content, in lifts six to eight 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 our soil technicians or project geologist. Fill material should be free of rocks or lumps of soil in excess of six inches in maximum dimension; however, in the upper two feet of pad grade, no rocks or lumps of soil in excess of three inches should be allowed.

All utility trench backfill should be compacted to a minimum of 90 percent of its maximum dry density. The upper twelve inches of subgrade beneath paved areas should be compacted to 95 percent of the materials maximum dry density. This compaction should be obtained by the paving contractor just prior to placing the aggregate base material and should not be part of the mass grading requirements or operation.

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 structures into controlled drainage devices are recommended.

The ground around the proposed structures should be graded so that surface water flows rapidly away from the structure without ponding. In general, we suggest that the ground adjacent to structure slope away at a gradient of at least 2 percent. Densely vegetated areas where runoff can be impaired should have a minimum gradient of 5 percent within the first 5 feet from the structure. In our opinion, the project site is not suitable for storm water infiltration BMPs. We recommend that pervious pavements, bio retention areas, and bio swales be lined in such a manner as to prevent the storm water from infiltrating into the underlying soils and should be connected via pipes to the storm drain system.

TEMPORARY CUT SLOPES

Temporary cut slopes of up to about 43 feet in height are anticipated to be required during the construction of the proposed structure. The contractor is solely responsible for designing and constructing stable, temporary excavations and will need to shore, slope, or bench the sides of trench excavations as required to maintain the stability of the excavation sides. The contractor's "competent person", as defined in the OSHA Construction Standards for Excavations, 29 CFR, Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety process. We anticipate that the existing on-site soils will consist of Type B material. Our firm should be contacted to observe all temporary cut slopes during grading to ascertain that no unforeseen adverse conditions exist. No surcharge loads such as foundation loads, or soil or equipment stockpiles, vehicles, etc. should be allowed within a distance from the top of temporary slopes equal to half the slope height.

SHORED SLOPES

GENERAL: It will be necessary to use shoring to support the sides most of the proposed excavation. Typically, cantilevered soldier pile walls with wood lagging are used for the conditions anticipated. Included herein are design parameters for such cantilevered walls. A specialty contractor with experience in shoring and bracing should provide shoring recommendations and plans. The subterranean level of the structure to the east of the project and underground utilities within Montezuma Road will need to be clearly identified prior to designing the tieback locations.

SHORING DESIGN AND LATERAL PRESSURES: A triangular distribution of lateral earth pressure equal to that developed by a fluid with a density of 40 pounds per cubic foot may be used for the design of cantilevered shoring. Cantilevered shoring is normally limited to excavations that do not exceed approximately 15 feet in depth in order to limit the deflection at the tops of the soldier piles. For heights of shoring greater than about 15 feet, the use of braced or tied-back shoring should be considered to limit deflection of the shoring system. The recommended pressure distributions for the design of tied-back or braced shoring are presented in Plate No. 4. Other loads should be analyzed on an individual basis.

DESIGN OF SOLDIER PILES: Soldier piles should be spaced at least two diameters on center each way. The allowable lateral bearing value (passive value) of the formational soils below the level of the excavation may be assumed to be 350 pounds per square foot per foot of depth from the excavated surface, up to a maximum of 4,500 pounds per square foot. The allowable lateral bearing value (passive value) of compacted fill and/or colluvium below the level of excavation may be assumed to be 300 pounds per square foot per foot of depth from the excavated surface, up to a maximum of 2,500 pounds per square foot. To develop the full lateral value, provisions should be taken to assure firm contact between the soldier piles and the undisturbed soils. The concrete placed in the soldier pile excavations may be a lean mix concrete. However, the concrete used in that portion of the soldier pile that is below the planned excavation level should be of sufficient strength to adequately transfer the imposed loads to the surrounding soils.

LAGGING: Continuous lagging will be required between the soldier piles. The soldier piles and anchors should be designed for the full anticipated lateral pressure. However, the pressure on the lagging will likely be somewhat less due to arching in the soils. We recommend that the lagging be designed for a semi-circular distribution of earth pressure where the maximum pressure is 400 pounds per square foot at the mid-point between soldier piles, and zero pounds per square foot at the soldier piles. This value does not include any surcharge pressures.

TIEBACK ANCHOR DESIGN: Tieback friction anchors may be used to resist lateral loads. For preliminary design purposes, it may be assumed that the active wedge adjacent to the shoring is defined by a plane drawn at 32 degrees from the vertical through the bottom of the excavation. The anchors should extend at least 20 feet beyond the potential active wedge; this provision is to provide global stability for the shored wall as opposed to adequate friction for the anchors.

The capacities of anchors should be determined by testing of the initial anchors as outlined by the anchor designer. For preliminary design purposes, it may be estimated that for conventionally drilled, gravity-grouted anchors the average allowable (FOS=2) bond stress between the grout and soil will be 1,000 pounds per square foot. Only the bond stress developed beyond the active wedge should be used in resisting lateral loads. If the anchors are spaced at least 4 feet on centers, no reduction in the capacity of the anchors need be considered due to group action. In no event should the anchors extend less than the minimum length beyond the potential active wedge as given above.

ANCHOR TESTING: Since the actual load-carrying capacity of tieback anchors will depend on various site-specific factors, the tieback capacity should be verified by load testing. The load testing program should be specified by the design engineer and be approved by the Geotechnical Consultant.

Christian Wheeler Engineering shall observe the tieback anchor installation and testing of the completed anchors. The shoring contractor should provide all appropriate testing equipment, including properly calibrated hydraulic jacking equipment, pressure gauges, and dial gauges for measuring tieback anchor movement. All anchor testing shall be performed under the observation of our firm.

INTERNAL BRACING: Rakers may be used to internally brace the soldier piles. The raker bracing may be supported laterally by temporary concrete footings (deadmen). Temporary footings founded in compacted fill or competent natural soils poured with the bearing surface normal to rakers inclined at 45 to 60 degrees with the vertical, may be designed for a bearing value of 4,000 pounds per square foot (psf). This value assumes that the footings are at least 12 inches deep and 24 inches wide. To reduce the movement of the shoring, the rakers should be preloaded or at least tightly wedged between the footings and the soldier piles.

MONITORING: Monitoring of the performance of the shoring system is recommended. One option would be to install a slope inclinometer pipe within the concrete soldier pile approximately every 50 lineal feet, with at least 2 inclinometer pipes for each shoring wall section. The inclinometer pipe should extend full depth of the soldier pile. Monitoring should consist of periodic measurements using a slope inclinometer instrument. Another option would be to periodically survey the lateral and vertical locations of the tops of the soldier piles approximately every 50 lineal feet.

FOUNDATIONS

GENERAL: It is our opinion that the proposed structure and site retaining walls may be supported on conventional shallow foundations, provided that the site preparation recommendations contained in this geotechnical report are implemented. It is anticipated that the footings supporting the proposed structure will be founded in sandstones of the Mission Valley Formation. Footings supporting site retaining walls will likely be founded on a combination of soils including compacted fill, colluvium, and/or very old paralic deposits. The following recommendations are based on the soil conditions exposed in our borings, and are not intended to be in lieu of structural considerations. All foundations should be designed by a qualified structural engineer.

DIMENSIONS: Conventional footings supporting the proposed structure and exterior site retaining walls exceeding ten feet in height should have a minimum embedment depth of 24 inches below lowest adjacent finish grade. For site retaining walls less than ten feet high, a minimum embedment of 18 inches is recommended. Continuous and isolated footings should have a minimum width of 18 inches and 24 inches, respectively. All retaining wall footings should be at least 24 inches wide.

BEARING CAPACITY: Footings supporting the proposed structure and exterior site walls founded in very old paralic deposits or formational soil with a minimum embedment of 24 inches and a minimum width of 18 inches may be designed for an allowable soil bearing pressure of 5,000 pounds per square foot. This value may be increased by 900 pounds per square foot for each additional foot of embedment and 600 pounds per square foot for each additional foot of width up to a maximum of 10,000 pounds per square foot. Footings supporting proposed exterior site retaining walls founded in compacted fill or colluvium with a minimum embedment of 18 inches and a minimum width of 24 inches may be designed for an allowable soil bearing pressure of 2,500 pounds per square foot. This value may be increased by 600 pounds per square foot for each additional foot of embedment and 400 pounds per square foot for each additional foot of width up to a maximum of 4,000 pounds per square foot. The bearing values may also be increased by one-third for combinations of temporary loads such as those due to wind or seismic loads.

FOOTING REINFORCING: The project structural engineer should provide reinforcement requirements for the proposed building and site retaining wall foundations. However, based on soil conditions, we recommend that the minimum reinforcing for continuous footings supporting the building should consist of at least two No. 5 bars positioned near the bottom of the footing and two 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 0.35. The passive resistance may be considered to be equal to an equivalent fluid weight of 350 pounds per cubic foot. This assumes 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 foundation settlement is expected to be less than about 1 inch and 1 inch over 40 feet respectively, provided the recommendations presented in our report are followed. It should be recognized that minor cracks normally occur in concrete slabs and foundations due to shrinkage during curing or redistribution of stresses, therefore some cracks should be anticipated. Such cracks are not necessarily an indication of excessive vertical movements.

EXPANSIVE CHARACTERISTICS: The foundation soils are expected to have a low expansive potential (EI < 50). The recommendations presented in this report reflect this condition.

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.

FOUNDATION EXCAVATION OBSERVATION: All foundation excavations should be observed by the geotechnical consultant prior to placing reinforcing steel or formwork in order to determine if the foundation recommendations presented herein are followed. All footing excavations should be excavated neat, level, and square. All loose or unsuitable material should be removed prior to the placement of concrete.

SOLUBLE SULFATES

The water soluble sulfate content of a randomly selected soil sample from the site was determined in accordance with California Test Method 417. The results of this test indicate that the representative soil sample had a soluble sulfate content of 0.006 percent. Soils with a soluble sulfate content of less than 0.1 percent are considered to be negligible and no special recommendations are considered necessary for this condition. Nevertheless, Type II modified Portland cement is recommended for concrete in contact with soil.

ON-GRADE SLABS

INTERIOR FLOOR SLABS: We recommend that the interior slab-on-grade floor be at least 5 inches thick (actual) and be reinforced with at least No. 4 bars spaced at 18 inches on center each way. The reinforcing bars should extend at least 12 inches into the foundations and should be supported by chairs and be positioned in the center of the slab. The slab reinforcement should extend down into the perimeter grade beams or foundations at least 12 inches.

UNDER-SLAB VAPOR RETARDERS: Where floor coverings are installed, 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. We recommend that the owner/contractor follow national standards for the installation of vapor retarders below interior slabs as presented in currently published standards including ACI 302, “Guide to Concrete Floor and Slab Construction” and ASTM

E1643, "Standard Practice for Installation of Water Vapor Retarder Used in Contact with Earth or Granular Fill Under Concrete Slabs". If sand is placed above or below the vapor retarding material, it should have a sand equivalent of at least 30 and contain less than 20% passing the Number 100 sieve and less than 10% passing the Number 200 sieve.

We recommend that the flooring installer perform standard moisture vapor emission tests prior to the installation of all moisture-sensitive floor coverings in accordance with ASTM F1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride".

EXTERIOR CONCRETE FLATWORK: Exterior concrete on-grade slabs 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. All slabs should be provided with weakened plane joints in accordance with the American Concrete Institute (ACI) guidelines. Alternative patterns consistent with ACI guidelines can also be used. A concrete mix with a 1-inch maximum aggregate size and a water/cement ratio of less than 0.6 is recommended for exterior slabs. Lower water content will decrease the potential for shrinkage cracks. Both coarse and fine aggregate should conform to the latest edition of the "Standard Specifications for Public Works Construction" ('Greenbook").

Special attention should be paid to the method of concrete curing to reduce the potential for excessive shrinkage and resultant random 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.

EARTH RETAINING WALLS

BACKFILL: All retaining wall backfill should be compacted in accordance with the "Compaction and Method of Filling" section of this report. Expansive or clayey soils should not be used for backfill material. Retaining walls should not be backfilled until the masonry/concrete has reached an adequate strength.

FOUNDATIONS: Foundations for retaining walls can be designed in accordance with the foundation recommendations previously presented.

PASSIVE PRESSURES: The passive pressure for the prevailing soil conditions may be considered to be 300 pounds per square foot per foot of depth for foundations in compacted fill or colluvium. The passive pressure in very old paralic deposits or formational soil may be considered to be 350 pounds per square foot per foot. The upper foot of embedment should be neglected when calculating passive pressures, unless the foundation abuts a hard surface such as a concrete slab. The passive pressure may be increased by one-third for seismic loading. The coefficient of friction for concrete to soil may be assumed to be 0.30 and 0.35 for the resistance to lateral movement for fill or colluvium, and paralic or formational material, respectively. When combining frictional and passive resistance, the friction should be reduced by one-third.

ACTIVE PRESSURES: The active soil pressure for the design of unrestrained earth retaining structures with level backfill surface may be assumed to be equivalent to the pressure of a fluid weighing 38 pounds per cubic foot. In the design of walls restrained from movement at the top (non-yielding walls), the at-rest soil pressure may be assumed to be equivalent to the pressure of a fluid weighing 59 pounds per cubic foot, provided there is a level backfill surface.

Alternative active pressure design recommendations are provided in Plate No. 4. Non-yielding building retaining walls braced by multiple floor levels should be designed to resist a uniform horizontal soil pressure of 25H (in pounds per square foot), where "H" is the wall height in feet. Thirty percent of any area surcharge placed adjacent to the retaining wall may be assumed to act as a uniform horizontal pressure against the wall. Where vehicles will be allowed within ten feet of the retaining wall, a uniform horizontal pressure of 100 pounds per square foot should be added to the upper 10 feet of the retaining wall to account for the effects of adjacent traffic. Special cases such as a combination of shored and sloping temporary slopes, or other surcharge loads not described above, may require an increase in the design values recommended above. These conditions should be evaluated by the project geotechnical engineer on a case-by-case basis. If any other loads are anticipated, the Geotechnical Consultant should be contacted for the necessary increase in soil pressure. All values are based on a drained backfill condition.

Seismic lateral earth pressures may be assumed to equal an inverted triangle starting at the bottom of the wall with the maximum pressure equal to 6H pounds per square foot (where H = wall height in feet) occurring at the top of the wall.

WATERPROOFING AND WALL DRAINAGE SYSTEMS: The need for waterproofing should be evaluated by others. If required, the project architect should provide (or coordinate) waterproofing details for the retaining walls. The design values presented above are based on a drained backfill condition and do not consider hydrostatic pressures. Unless hydrostatic pressures are incorporated into the design, the retaining wall designer should provide a detail for a wall drainage system. Typical retaining wall drain system details are presented as Plate Nos. 5 and 6 of this report for informational purposes. Additionally, outlets points for the retaining wall drain system should be coordinated with the project civil engineer. For subterranean walls, it may be necessary to collect the subdrain water in sumps and then pump it to an appropriate outlet.

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 test pits, 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 client's responsibility, 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

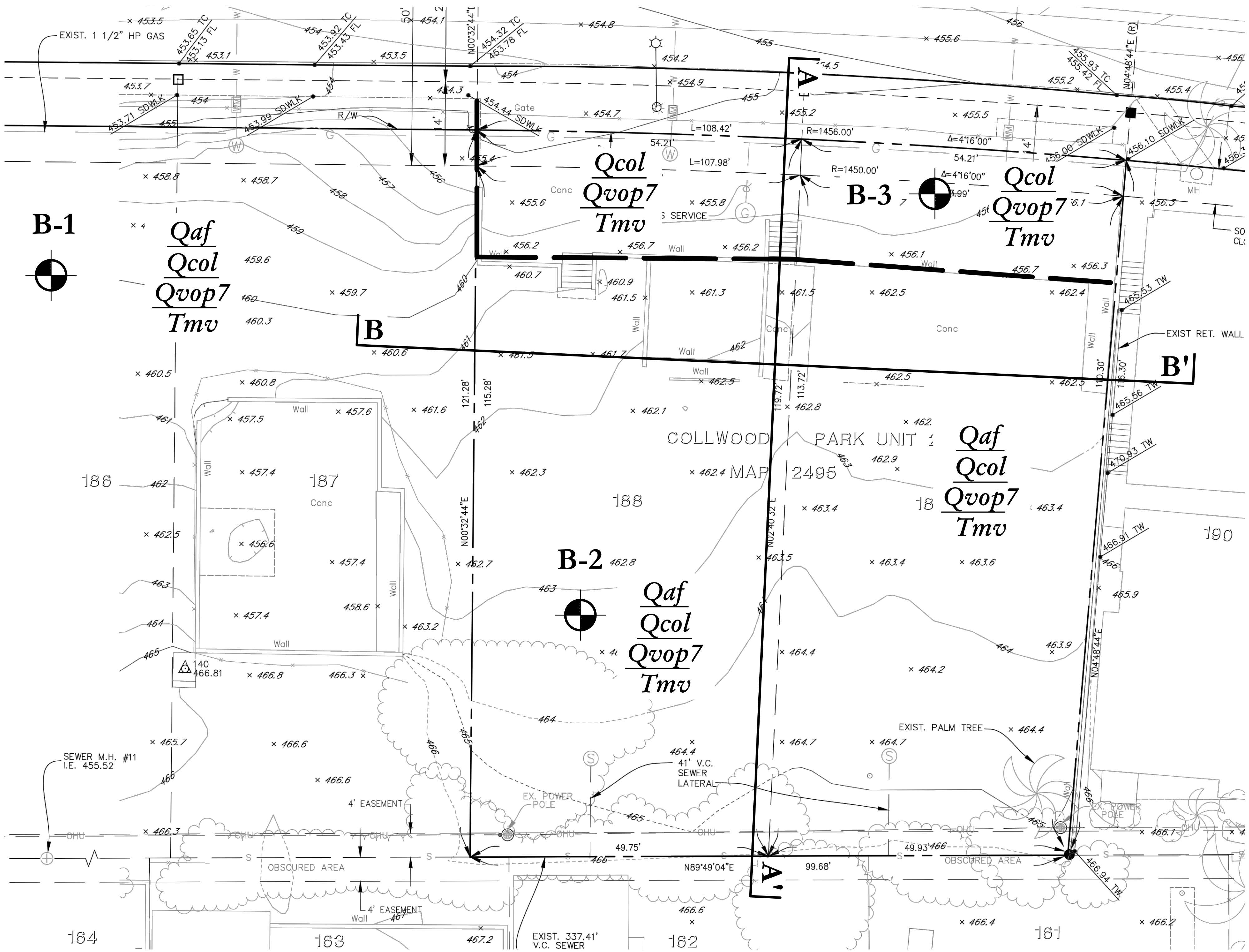
Three subsurface explorations were made on July 1, 2011 at the locations indicated on the attached Plate Number 1. These explorations consisted of borings drilled utilizing a Unimog Marl M-5 truck mounted drill rig using both hollow stem and air-rotary drilling methods. The fieldwork was conducted under the observation of our engineering geology personnel.

The explorations were carefully logged when made. The logs are presented Appendix A. The soils are described in accordance with the Unified Soils Classification System. In addition, a verbal textural description, the wet color, the apparent moisture and the density or consistency are 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.

Relatively undisturbed drive samples were collected using a modified California sampler. The sampler, with an external diameter of 3.0 inches, is lined with 1-inch-long, thin, brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a 140-pound hammer falling 30 inches in general accordance with ASTM D3550. The driving weight is permitted to fall freely. The number of blows per foot of driving, or as indicated, is presented on the boring logs as an index to the relative resistance of the sampled materials. The samples were removed from the sample barrel in the brass rings, and sealed. Bulk and chunk samples of the encountered earth materials were also collected. Samples were transported to our laboratory for testing.

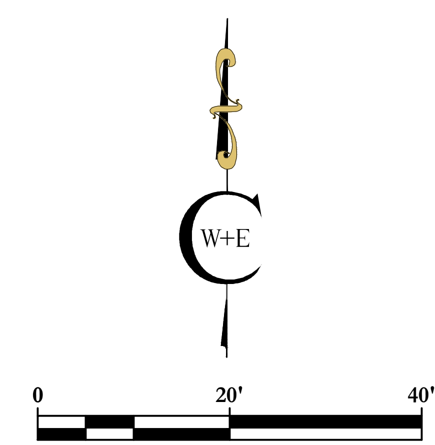
LABORATORY TESTING

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 is presented in Appendix B.



CWE LEGEND

B-3	APPROXIMATE BORING LOCATION
	GEOLOGIC CONTACT
B B'	GEOLOGIC CROSS SECTION
Qaf / Qcol / Qvop7 / Tmv	ARTIFICIAL FILL UNDERLAIN BY COLLUVIUM UNDERLAIN BY VERY OLD PARALIC DEPOSITS UNDERLAIN BY MISSION VALLEY FORMATION
Qcol / Qvop7 / Tmv	COLLUVIUM UNDERLAIN BY VERY OLD PARALIC DEPOSITS UNDERLAIN BY MISSION VALLEY FORMATION



SCALE: 1" = 20'

BENCH MARK
DESCRIPTION: BRASS PLUG
LOCATION: NORTHWEST CORNER OF MONTEZUMA ROAD AND E. FALLS VIEW DR.
RECORD FROM: CITY OF SAN DIEGO
ELEVATION: 459.201 DATUM: M.S.L.

REGISTERED PROFESSIONAL ENGINEER JORGE H. PALACIOS No. 32031 12/31/16 CIVIL STATE OF CALIFORNIA

JORGE H. PALACIOS
R.C.E. 32031
DATE: 11-06-15

DESIGNER JHP
DRAWN AL
CHECKED JHP
DATE 11-06-15

SHEET TITLE: TOPOGRAPHY AND BOUNDARY
PROJECT NAME: 6213-6219 MONTEZUMA ROAD SAN DIEGO, CA. 92115
SHEET 1 OF 1
Project No. 999-15

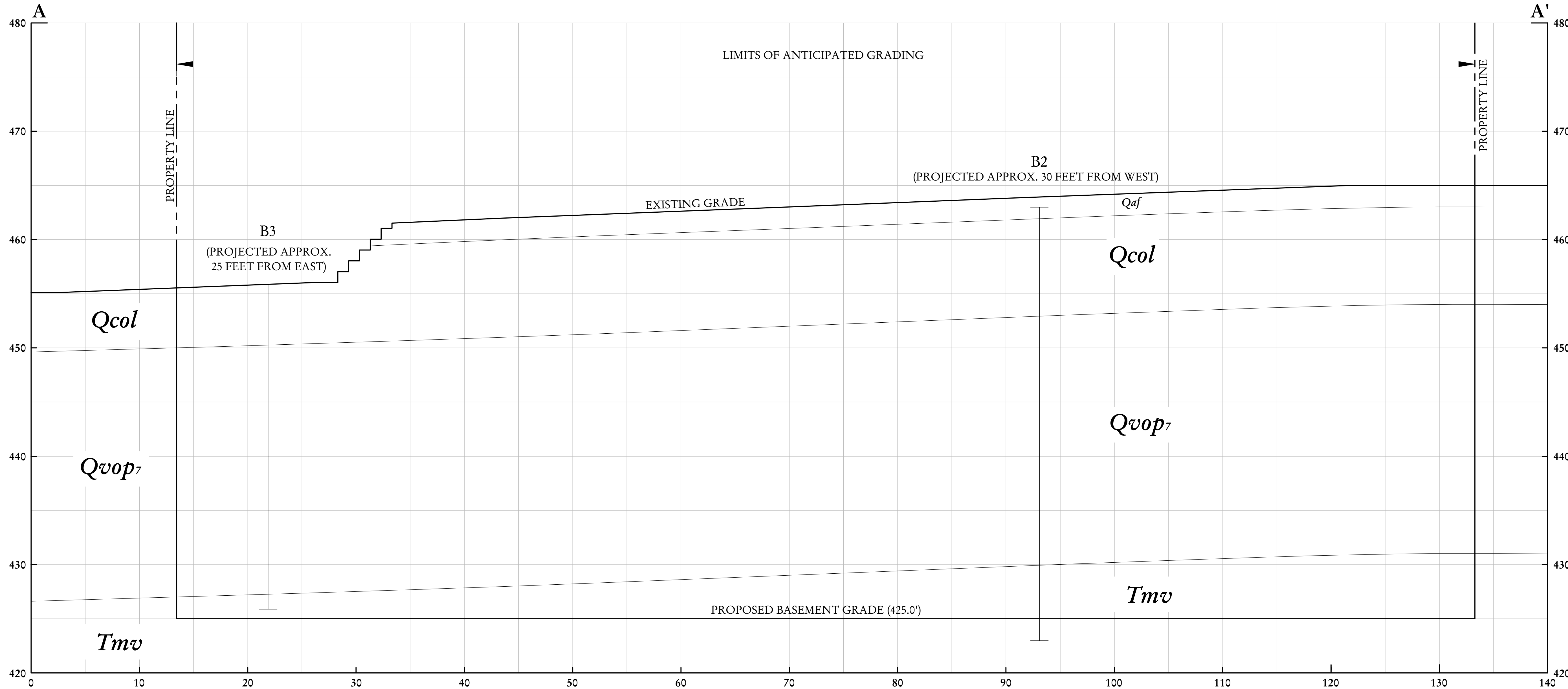
CIVIL ENGINEERING • LAND PLANNING • SURVEYING • 4849 RONSON COURT, SUITE 105, SAN DIEGO, CA 92111 • (858)569-7377 FAX (858)569-0830

SITE PLAN AND GEOTECHNICAL MAP

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2015	JOB NO.:	2150650.01
BY:	JDB	PLATE NO.:	1

CHRISTIAN WHEELER ENGINEERING



CWE LEGEND

Qaf	ARTIFICIAL FILL
Qcol	COLLUVIUM
Qvop₇	VERY OLD PARALIC DEPOSITS
Tmv	MISSION VALLEY FORMATION

0 10' 20'

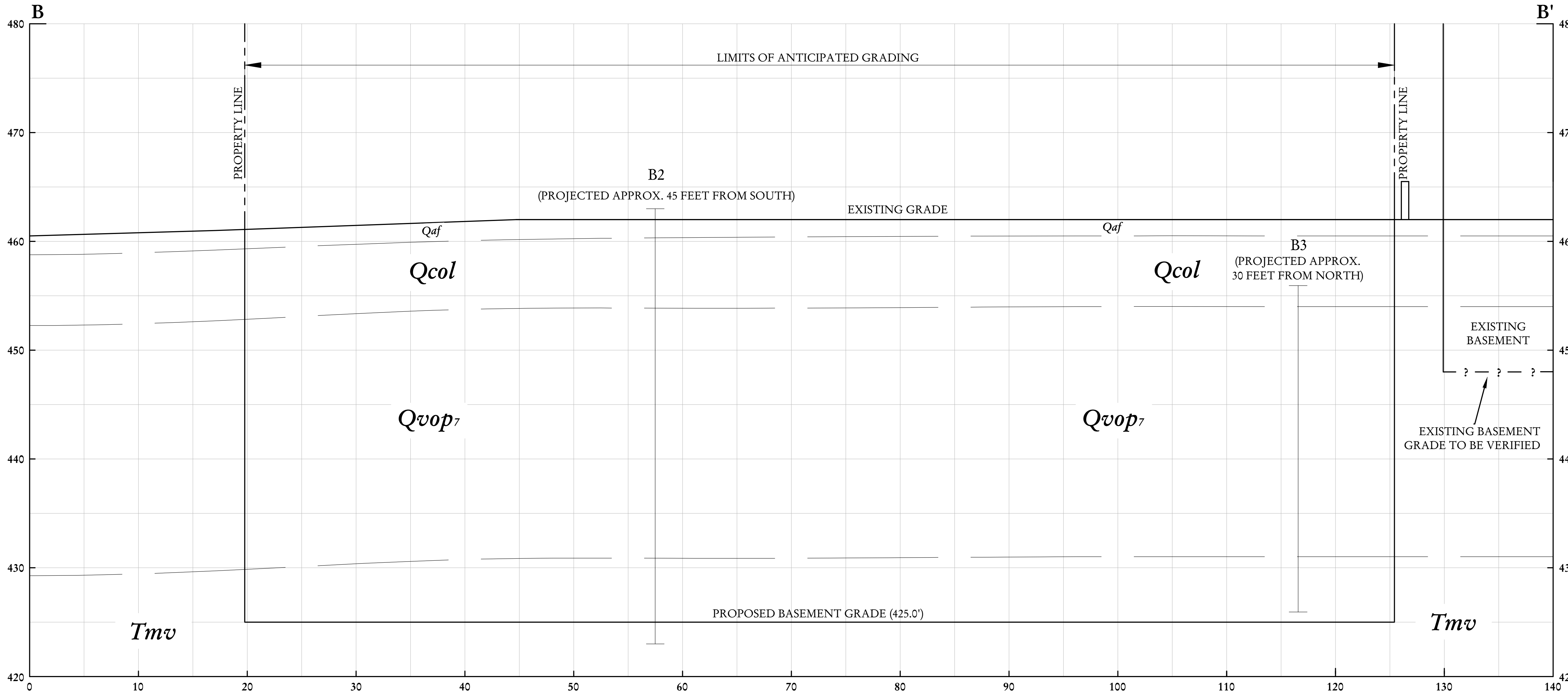
SCALE: 1" = 10'

GEOLOGIC CROSS SECTION A-A'

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2015	JOB NO.:	2150650.01
BY:	JDB	PLATE NO.:	2

CHRISTIAN WHEELER
ENGINEERING



CWE LEGEND

Qaf	ARTIFICIAL FILL
Qcol	COLLUVIUM
$Qvop_7$	VERY OLD PARALIC DEPOSITS
Tmv	MISSION VALLEY FORMATION

0 10' 20'

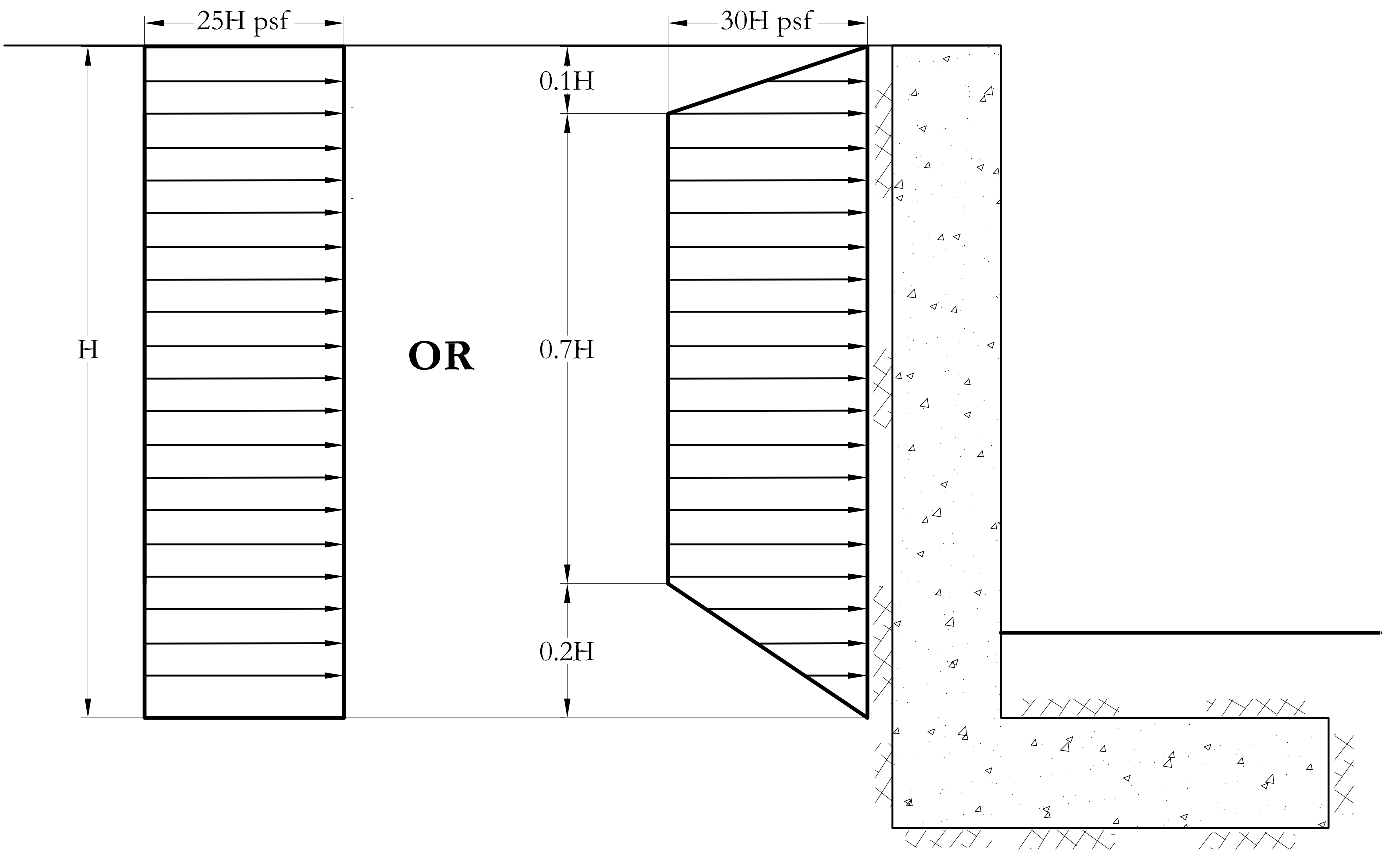
SCALE: 1" = 10'

GEOLOGIC CROSS SECTION B-B'

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2015	JOB NO.:	2150650.01
BY:	JDB	PLATE NO.:	3

CHRISTIAN WHEELER
ENGINEERING



ACTIVE LATERAL PRESSURES

NO SCALE

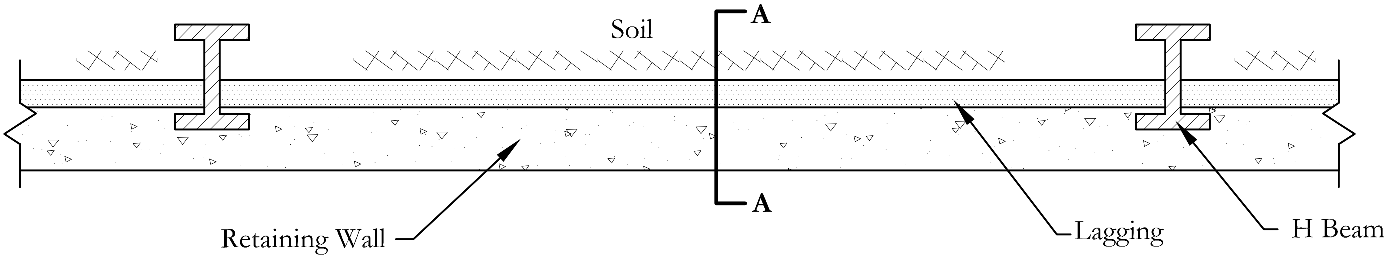
CHRISTIAN WHEELER
ENGINEERING

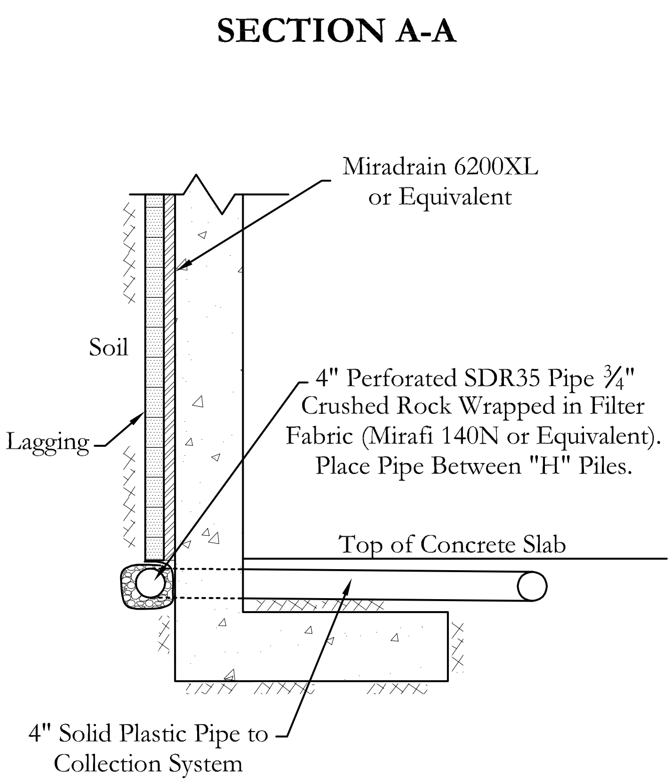
3980 HOME AVENUE
SAN DIEGO, CALIFORNIA
TEL. (619) 550-1700
FAX. (619) 550-1701

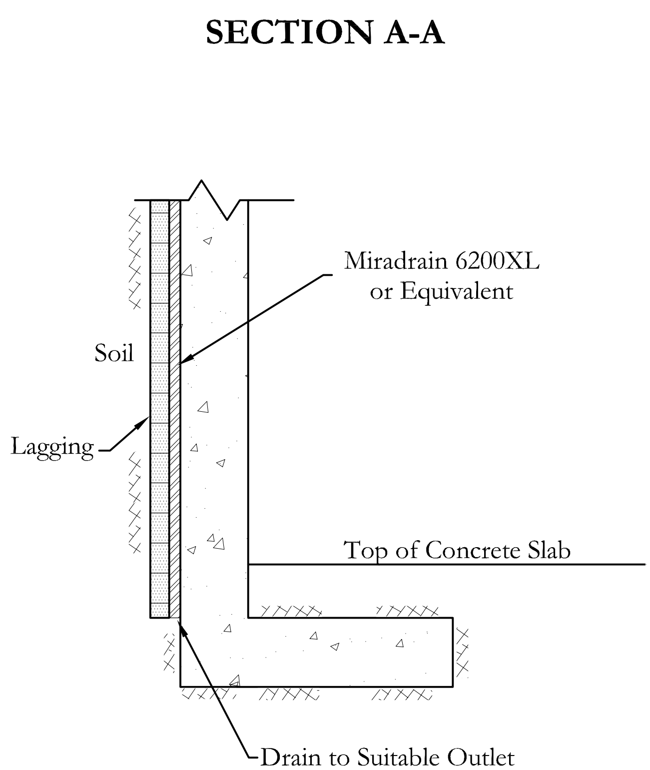
PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	JDB	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	PLATE NO.:	4

PLAN VIEW







RETAINING WALL SUBDRAIN DETAILS

NO SCALE

CHRISTIAN WHEELER ENGINEERING

3980 HOME AVENUE
SAN DIEGO, CALIFORNIA

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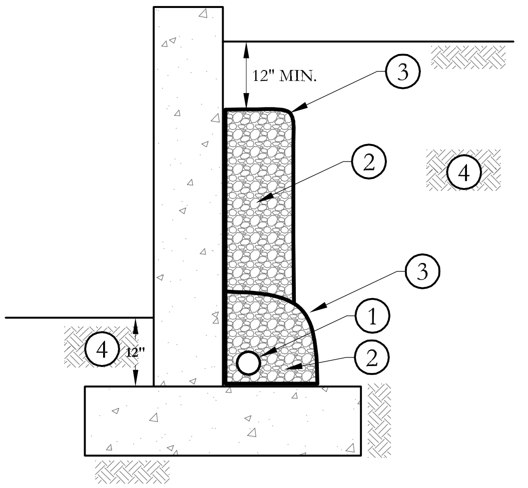
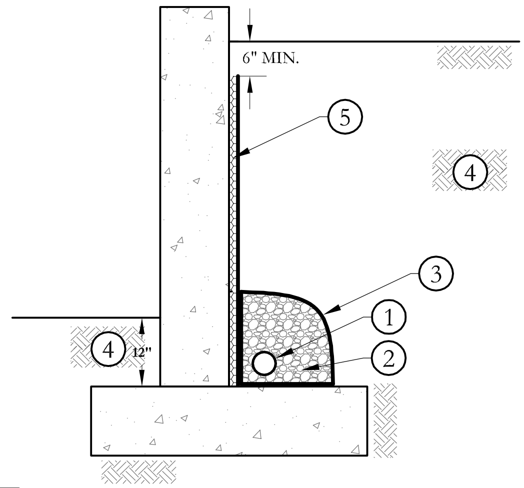
FAX. (619) 550-1701

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

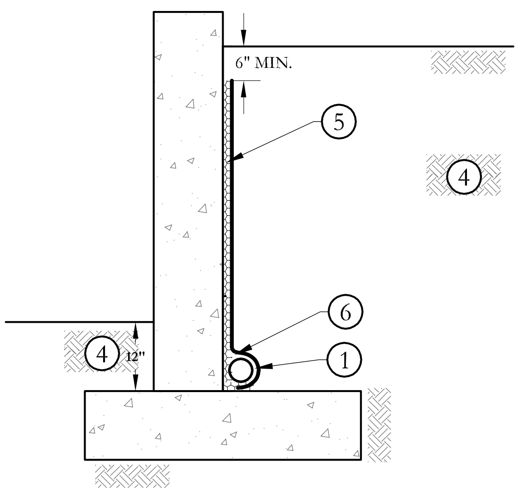
BY:	JDB	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	PLATE NO.:	5



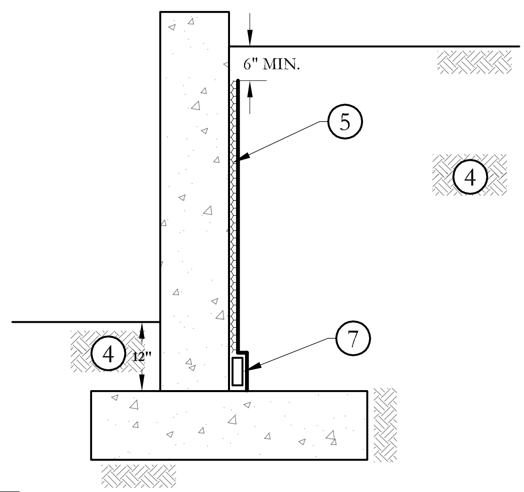
1 DETAIL



2 DETAIL



3 DETAIL



4 DETAIL

NOTES AND DETAILS

GENERAL NOTES:

1) THE NEED FOR WATERPROOFING SHOULD BE EVALUATED BY OTHERS.
2) WATERPROOFING TO BE DESIGNED BY OTHERS (CWE CAN PROVIDE A DESIGN IF REQUESTED).
3) EXTEND DRAIN TO SUITABLE DISCHARGE POINT PER CIVIL ENGINEER.
4) DO NOT CONNECT SURFACE DRAINS TO SUBDRAIN SYSTEM.

DETAILS:

1. 4-INCH PERFORATED PVC PIPE ON TOP OF FOOTING, HOLES POSITIONED DOWNWARD (SDR 35, SCHEDULE 40, OR EQUIVALENT).
2. ¾ INCH OPEN-GRADED CRUSHED AGGREGATE.
3. GEOFABRIC (MIRAFI 140N OR APPROVED EQUIVALENT) WRAPPED COMPLETELY AROUND ROCK.
4. PROPERLY COMPACTED BACKFILL SOIL.
5. WALL DRAINAGE PANELS (MIRADRAIN OR EQUIVALENT) PLACED PER MANUFACTURER'S REC'S.
6. UNDERLAY SUBDRAIN WITH AND CUT FABRIC BACK FROM DRAINAGE PANELS AND WRAP FABRIC AROUND PIPE.
7. COLLECTION DRAIN (TOTAL DRAIN OR EQUIVALENT) LOCATED AT BASE OF WALL DRAINAGE PANEL PER MANUFACTURER'S RECOMMENDATIONS.

CANTILEVER RETAINING WALL DRAINAGE SYSTEMS

PROPOSED APARTMENT BUILDING
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

DATE:	NOVEMBER 2015	JOB NO.:	2150650.01
BY:	JDB	PLATE NO.:	6

CHRISTIAN WHEELER
ENGINEERING

Appendix A

Boring and CPT Logs

LOG OF BORING B-1

Sample Type and Laboratory Test Legend

Cal Modified California Sampler; SPT Standard Penetration Test; ST Shelby Tube; CK Chunk Sample; DR Density Ring

MD Maximum Density; SO4 Soluble Sulfates; SA Sieve Analysis; HA Hydrometer; SE Sand Equivalent; PI Plasticity Index; DS Direct Shear; Con Consolidation; EI Expansion Index; R-Val Resistance Value; Chl Soluble Chlorides; Res pH & Resistivity

Date Excavated:	7/1/2011	Equipment:	Unimog-Marl M5
Logged by:	TSW	Auger Size:	7"
Existing Elevation:	460 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

DEPTH (ft)	ELEVATION (ft)	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	460	SC	**Artificial Fill (Qaf):** Light to medium reddish-brown, moist, loose, fine- to medium-grained CLAYEY SAND with rock. Becomes medium dense at about 2 feet.							
5	455	SC	**Colluvium (Qcol):** Medium reddish-brown, moist, medium dense, fine-grained CLAYEY SAND with rock.	68	Cal		8.9	108.2		
				50/6"	Cal					
10	450	SM	**Very Old Paralic Deposits (Qvop):** Light to medium reddish-brown, moist, medium dense to dense, very fine- to fine-grained SILTY SAND.							
15	445			35	Cal		12.1	111.2		DS
										SA SO_4
20	440	GM	Light brown to light gray, moist, dense to very dense, SANDY GRAVEL with silt and rock.							
		SM	Light red brown, moist, medium dense to dense, fine-grained SILTY SAND with rock.							
25	435	GM	Red brown, moist, dense to very dense, SANDY GRAVEL with rock. Practical drill refusal with auger, switched to air-rotary drilling.	50/3"	SPT					
		SM	**Mission Valley Formation (Tmv):** Light to medium gray, moist, dense, fine- to medium-grained SILTY SAND with clay.							SA
30	430									

Boring continued on APPENDIX A-2.

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonreprestative Blow Count (rocks present)

CHRISTIAN WHEELER ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX.:	A-1

LOG OF BORING B-1

Date Excavated:	7/1/2011	Equipment:	Unimog-Marl M5
Logged by:	TSW	Auger Size:	7"
Existing Elevation:	460 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Sample
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube		
MD	Maximum Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30	430		SM	**Mission Valley Formation (Tmv):** Light to medium gray, moist, dense, fine- to medium-grained SILTY SAND with clay.							SA
35	425										
40	420			Boring terminated at 40 feet. No groundwater or seepage encountered.							
45	415										
50	410										
55	405										
60	400										

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonrepreslative Blow Count (rocks present)

CHRISTIAN WHEELER ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX:	A-2

LOG OF BORING B-2

Sample Type and Laboratory Test Legend

Cal Modified California Sampler; SPT Standard Penetration Test; ST Shelby Tube; CK Chunk Sample; DR Density Ring

MD Maximum Density; SO4 Soluble Sulfates; SA Sieve Analysis; HA Hydrometer; SE Sand Equivalent; PI Plasticity Index; DS Direct Shear; Con Consolidation; EI Expansion Index; R-Val Resistance Value; Chl Soluble Chlorides; Res pH & Resistivity

Date Excavated:	7/1/2011	Equipment:	Unimog-Marl M5
Logged by:	TSW	Auger Size:	7"
Existing Elevation:	463 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	463		SC	**Artificial Fill (Qaf):** Dark brown, damp, loose, fine- to medium-grained CLAYEY SAND with rock.							
			SC	**Colluvium (Qcol):** Light reddish brown, very moist, medium dense, CLAYEY SAND with rock.							
5	458				30/3"	Cal		21.0	102.4		
10	453		SM	**Very Old Paralic Deposits (Qvop₇):** Light to medium reddish-brown, very moist, medium dense, very fine- to fine-grained and medium- to coarse-grained SILTY SAND with clay and rock.	50	Cal		18.5	100.5		
15	448				24	SPT					
20	443										
			GM	Reddish-brown to light gray, moist, medium dense to dense, very fine- to fine-grained with rock up to about 2 inches.	66	Cal		8.1	105.8		
			SM	Light to medium reddish-brown, moist, medium dense to dense, very fine- to fine-grained SILTY SAND with rock.							
25	438				24	SPT					
			GM	Light gray to orange, moist, dense, SANDY GRAVEL with silt and rock.							
			SM	Light to medium reddish brown, moist, dense, very fine- to fine-grained SILTY SAND with rock; Slightly micaceous.	35	SPT					
30	433										

Boring continued on APPENDIX A-4.

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonrepestative Blow Count (rocks present)

CHRISTIAN WHEELER ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX:	A-3

LOG OF BORING B-2

Sample Type and Laboratory Test Legend

Cal Modified California Sampler; CK Chunk Sample
SPT Standard Penetration Test; DR Density Ring
ST Shelby Tube

MD Maximum Density; DS Direct Shear
SO4 Soluble Sulfates; Con Consolidation
SA Sieve Analysis; EI Expansion Index
HA Hydrometer; R-Val Resistance Value
SE Sand Equivalent; Chl Soluble Chlorides
PI Plasticity Index; Res pH & Resistivity

Date Excavated:	7/1/2011	Equipment:	Unimog-Marl M5
Logged by:	TSW	Bucket Size:	7"
Existing Elevation:	463 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
30	433		SM	Light to medium reddish-brown, moist, dense, very fine- to fine-grained SILTY SAND; Slightly micaceous.							
			SM	**Mission Valley Formation (Tmv):** Light to medium gray, moist, dense, fine- to medium-grained SILTY SAND with clay.							
35	428				50/6"	Cal		14.1	111.9		DS
			SC	Light to medium gray with light red, moist, dense, fine- to medium-grained CLAYEY SAND.							
40	423			Boring terminated at 40 feet. No groundwater or seepage encountered.							
45	418										
50	413										
55	408										
60	403										

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonreprestative Blow Count (rocks present)

CHRISTIAN WHEELER ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX:	A-4

LOG OF BORING B-3

Date Excavated:	7/1/2011	Equipment:	Unimag-Mail M5
Logged by:	TSW	Bucket Size:	N/A
Existing Elevation:	456 feet	Drive Weight:	140 lbs @ 30"
Proposed Elevation:	442 feet	Depth to Water:	N/A

Sample Type and Laboratory Test Legend

Cal Modified California Sampler; CK Chunk Sample
SPT Standard Penetration Test; DR Density Ring
ST Shelby Tube

MD Maximum Density; DS Direct Shear
SO4 Soluble Sulfates; Con Consolidation
SA Sieve Analysis; EI Expansion Index
HA Hydrometer; R-Val Resistance Value
SE Sand Equivalent; Chl Soluble Chlorides
PI Plasticity Index; Res pH & Resistivity

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	456			6 inches of Portland Cement Concrete (PCC)							
			SC	**Colluvium (Qcol):** Light reddish brown, moist, medium dense, CLAYEY SAND with rock.							
5	451		SM	**Very Old Paralic Deposits (Qvop7):** Light to medium reddish-brown, moist, medium dense to dense, very fine- to fine-grained and medium- to coarse-grained SILTY SAND with clay and rock. Rock layer at about 9 to 10 feet.							
10	446		SM	Light to medium reddish-brown, moist, medium dense to dense, very fine- to fine-grained SILTY SAND with rock.							
15	441		GM	Reddish-brown and gray, moist, medium dense to dense, SANDY GRAVEL with silt. Practical refusal at 15 feet with auger, switch to air -rotary. Rock layer at about 15 to 17 feet.							
			SM	Light to medium reddish brown, moist, medium dense to dense, very fine- to fine-grained SILTY SAND with rock; Slightly micaceous.							
20	436										
			GM	Light gray to orange, moist, dense, SANDY GRAVEL with silt and rock.							
25	431		SM	**Mission Valley Formation (Tmv):** Light to medium gray, moist, dense, fine- to medium-grained SILTY SAND with clay.							
30	426										

Boring terminated at 30 feet.
No groundwater or seepage encountered.

Symbol Legend

- Groundwater
- Apparent Seepage
- * No Sample Recovery
- ** Nonreprestative Blow Count (rocks present)

CHRISTIAN WHEELER
ENGINEERING

PROPOSED MONTEZUMA ROAD APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, CALIFORNIA

BY:	MWL	DATE:	NOVEMBER 2015
JOB NO.:	2150650.01	APPENDIX:	A-5

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) **GRAIN SIZE DISTRIBUTION:** The grain size distributions of selected samples were determined in accordance with ASTM C136 and/or ASTM D422.

c) **DIRECT SHEAR:** Direct shear tests were performed to determine the failure envelope of selected soils based on yield shear strength. The shear box was designed to accommodate a sample having a diameter of 2.375 inches or 2.50 inches and a height of 1.0 inch. Samples were tested at different vertical loads and a saturated moisture content. The shear stress was applied at a constant rate of strain of approximately 0.05 inch per minute.

d) **SOLUBLE SULFATE TEST:** The soluble sulfate content was determined for a representative sample in accordance with California Test Method 417.

LABORATORY TEST RESULTS

PROPOSED APARTMENT BUILDING

6213-6219 MONTEZUMA ROAD

SAN DIEGO, CALIFORNIA

DIRECT SHEAR (ASTM D3080)

Sample Location	**Boring B-1 @ 15'**	**Boring B-2 @ 21½'**
Sample Type	Undisturbed	Undisturbed
Friction Angle	34°	36°
Cohesion	200 psf	200 psf

GRAIN SIZE DISTRIBUTION (ASTM D422)

Sample Location	**Boring B-1 @ 14'-19'**	**Boring B-2 @ 23'-28'**
Sieve Size	*Percent Passing*	*Percent Passing*
1"	100	
¾"	99	
½"	98	
⅜	96	
#4	90	
#8	85	100
#16	81	99
#30	78	96
#50	76	61
#100	60	29
#200	33	20

SOLUBLE SULFATES (CALIFORNIA TEST METHOD 417)

Sample Location	**Boring B-1 @ 14'-19'**
Soluble Sulfate	0.006 % (SO_4)

Appendix C

References

REFERENCES

Bryant, W. A. (compiler), 2005, Digital Database of Quaternary and Younger Faults from the Fault Activity Map of California, version 2.0: California Geological Survey Web Page, http://www.consrv.ca.gov/CGS/information/publications/QuaternaryFaults_ver2.htm

City of San Diego, 1995, Seismic Hazard Study, Geologic Hazards and Faults, Sheet 22, Scale 1" = 800'.

Kennedy, Michael P., 1975, Geology of the San Diego Metropolitan Area, California, California Division of Mines and Geology, Bulletin 200.

Kennedy, Michael P. and Tan, Siang S., 2008, Geologic Map of the San Diego 30'x60' Quadrangle, California, California Geologic Survey, Map No. 3.

Tan, S.S., 1995, Landslide Hazards in the Southern Part of the San Diego Metropolitan Area, San Diego County, California, California Division of Mines and Geology Open-File Report 95-03.

U.S. Geological Survey, U.S. Seismic Design Maps Web Application, http://geohazards.usgs.gov/designmaps/us/application.php

U.S. Geological Survey, Quaternary Faults in Google Earth, http://earthquake.usgs.gov/hazards/qfaults/google.php

TOPOGRAPHIC MAPS

City of San Diego, 1952, Revised 1988, 200-Scale Topographic Map, Sheet 218-1749.
City of San Diego, 1979, 200-Scale Orthographic Map, Sheet 218-1749.

PHOTOGRAPHS

San Diego County, 1928, Packet 60C; Scale: 1 inch = 1000 feet (approximate).

San Diego County, 1973, Flight 22, Photograph 22; Scale: 1 inch = 1000 feet (approximate).

San Diego County, 1978, Flight 26C, Photographs 3 and 4; Scale: 1 inch = 1000 feet (approximate).

San Diego County, 1978, Flight 27, Photograph C5 and C6; Scale: 1 inch = 1000 feet (approximate).

Appendix D

Recommended Grading Specifications – General Provisions

RECOMMENDED GRADING SPECIFICATIONS - GENERAL PROVISIONS

MONTEZUMA APARTMENTS
6213-6219 MONTEZUMA ROAD
SAN DIEGO, 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 apprised 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 D6938

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 six 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 ASTM D 4829.

OVERSIZED MATERIAL: Oversized fill material is generally defined herein as rocks or lumps of soil over 6 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.

CHRISTIAN WHEELER
ENGINEERING

December 14, 2016

Elsey Partners | CWE 2150650.02
1532 College Avenue F19
Manhattan, Kansas 66502
Attention: Chris Elsey

Subject: Response to City of San Diego LDR-Geology Cycle 2 Review of Geotechnical Documents Proposed Apartment Building, 6213-6219 Montezuma Road, San Diego, California

References: 1) City of San Diego LDR-Geology Cycle 2 Review of Geotechnical Documents, October 3, 2016, Project No. 501449
2) Christian Wheeler Engineering, Report 2150650.01, dated November 17, 2015

Ladies and Gentlemen:

In accordance with your request, Christian Wheeler Engineering has prepared this letter to address the review comments presented in the referenced City of San Diego review memorandum. The geotechnical comments and our responses are presented below.

City Comment 4: This proposed development is a Priority Development Project (PDP). The project's geotechnical consultant must submit an addendum geotechnical report that provides the information required in the Storm Water Standards, Part 1, BMP Design Manual and Appendix F of the City's Guidelines for Geotechnical Reports.

CWE Response: This report has been prepared as an addendum to our referenced geotechnical report. Based on our review of the referenced plans, it is our opinion that all the recommendations contained in our previous geotechnical report for the proposed project remain applicable.

The soil underlying the project site and the surrounding area is classified as Type D soils based on the Web Soil Survey mapping of soil hydrologic properties and the findings from our subsurface investigation. As such, the project should be designed using BMP's that will incorporate partial infiltration. Infiltration testing can be performed at a later date if requested.

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 BMPs 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 exploratory borings, the existing soils in the area of the proposed BMPs consist of slightly permeable, clayey sand (SC) and silty sand (SM). Groundwater was not encountered within our subsurface investigation and is expected to be greater than 40 feet below grade.

C2.2 SETTLEMENT AND VOLUME CHANGE

Settlement and volume change can occur when water is introduced below grade. Based upon the soil conditions observed in our borings, the site is underlain by competent colluvium, very old paralic deposits and Mission Valley formation. In in our opinion these competent soils are not subject to collapse or heave upon wetting.

C2.3 SLOPE STABILITY

Infiltration of water has the potential to increase the risk of failure to nearby slopes. The site is currently sloping. Setbacks from descending slopes are discussed on page 3.

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, or geotechnical hazards can occur within the utility trenches when water is introduced. Care should be taken when planning proposed utility trench and BMP siting. Cutoff walls are recommended 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 increases in lateral 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 BMPs, retaining walls and foundations for the site. Recommendations are provided herein to mitigate for this hazard.

Based on our experience with similar projects, we anticipate that, as long as the recommendations contained herein are followed, infiltration of stormwater utilizing the proposed onsite storm water infiltration BMP will not result in soil piping, daylight water seepage, or slope instability for the property or project sites down-gradient of the site.

For the proposed BMPs, we recommend that infiltration occurs within either colluvium, very old paralic deposits or Mission Valley formation. It is also recommended that the infiltration BMPs be setback a minimum of 50 feet from descending slopes, or extend below the base of any slope within 50 feet of the BMP. Where BMP basins are located within 10 feet of the proposed basement retaining wall, the wall designer should increase the equivalent fluid pressure by 13 per square foot for potential saturated soil conditions. Where BMP basins are located within 10 feet of settlement sensitive improvements we recommended that a cut-off wall be constructed around the perimeter of the BMP. The cut-off wall should extend a minimum of 5 feet below proposed pad grade or at least 2 feet below the bottom of the BMP whichever is greater.

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

"Worksheet C.4-1: Categorization of Infiltration Feasibility Criteria," has been completed and signed for the subject project, and is included in Appendix A of this report.

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.

City Comment 5: The geotechnical consultant must comment whether or not the proposed construction as recommended will measurably destabilize neighboring properties or induce the settlement of adjacent properties.

CWE Response: It is our professional opinion and judgement that the proposed construction as recommended will not measurably destabilize neighboring properties or induce the settlement of adjacent properties.

City Comment 6: Submit original quality prints and digital copies of the geotechnical investigation report listed as “references” and the requested addendum for our records.

CWE Response: Original quality prints and a digital copy of the referenced geotechnical report will be submitted with this report.

If you have any questions regarding this response to the City review, please do not hesitate to contact our office. This opportunity to be of continuing service on this project is sincerely appreciated.

Respectfully submitted,
CHRISTIAN WHEELER ENGINEERING

Troy S. Wilson, C.E.G. #2551

Shawn C. Caya, R.G.E. #2748

TSW:tsw;scc

encl: Appendix A
ec: chris@myprimeplace.com
brad@myprimedesign.com
jp@jpeng.com

Appendix A

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

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

CWE Project Name: Proposed Apartment Building, 6213-6219 Montezuma Road
CWE Project Number: 2150650.01

Categorization of Infiltration Feasibility Condition			**Worksheet C.4-1**
Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: The infiltration rate of the on-site soils has not been measured. However, based on our soil classification and grain-size analysis, the soils are expected to be classified as hydrologic soil type D. As such, it is our professional opinion that soil does not allow for a reliable infiltration rate greater than 0.5 inches per hour.			
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: C.2.1 A site specific geotechnical investigation was performed. C.2.2 Based upon the soil conditions observed in our borings, the site is underlain by fill, colluvium, very old paralic deposits and Mission Valley formation. In in our opinion the colluvium, very old paralic deposits and Mission Valley formation are not subject to significant collapse or heave upon wetting. C.2.3 The site is sloping and descending slopes, if saturated, can become unstable. In addition, nuisance seepage issues can occur. As such, it is recommended that the storm water BMPs be setback a minimum of 50 feet from descending slopes. C.2.4 It is recommended that a vertical liner will be used to prevent lateral migration of water into nearby utility trenches. C.2.5 Groundwater mounding is not expected to be a concern. C.2.6 Recommendations are provided in the report to mitigate this hazard.			

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.	X	
Provide basis: The risk of groundwater contamination has not been evaluated at this time; however, we do not anticipate any groundwater related concerns at the subject site.			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: The risk of causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters has not been evaluated at this time; however, we do not anticipate any issues.			
Part 1 Result*	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		NO

*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 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	
Provide basis: The infiltration rate of the on-site soils has not been measured. However, based on soil mapping, our soil classification and grain-size analysis, the soils are expected to be classified as hydrologic soil type D. As such, the soil is expected to have an infiltration rate greater than 0.01 inches per hour and less than 0.5 inches per hour.			
6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	
Provide basis: C.2.1 A site specific geotechnical investigation was performed. C.2.2 Based upon the soil conditions observed in our borings, the site is underlain by fill, colluvium, very old paralic deposits and Mission Valley formation. In in our opinion the colluvium, very old paralic deposits and Mission Valley formation are not subject to significant collapse or heave upon wetting. C.2.3 The site is sloping and descending slopes, if saturated, can become unstable. In addition, nuisance seepage issues can occur. As such, it is recommended that the storm water BMPs be setback a minimum of 50 feet from descending slopes. C.2.4 It is recommended that a vertical liner will be used to prevent lateral migration of water into nearby utility trenches. C.2.5 Groundwater mounding is not expected to be a concern. C.2.6 Recommendations are provided in the report to mitigate this hazard.			

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 4 of 4</th></tr>
<tr><th>Criteria</th><th>Screening Question</th><th>Yes</th><th>No</th></tr>
<tr><td>7</td><td>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.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:

The risk of groundwater contamination has not been evaluated at this time; however, we do not anticipate any groundwater related concerns at the subject site.</td></tr>
<tr><td>8</td><td>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.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:

The risk of causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters has not been evaluated at this time; however, we are unaware of any water rights in this area of San Diego.</td></tr>
<tr><td>Part 2 Result*</td><td colspan="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.</td><td>Partial</td></tr>
</table>

Troy S. Wilson, CEG #2551

Technical Memorandum

To: Brad Buser, Prime Design, LLC

From: David Mizell, STC Traffic, Inc.

Date: May 22, 2017

Re: Montezuma PDP Student Housing Project
Project Access Assessment and Transportation Demand Management (TDM) Plan

---

As requested by City of San Diego staff, a project access analysis and Transportation Demand Management (TDM) Plan was prepared for the proposed Montezuma PDP Student Housing Project. The project access analysis evaluates operations, queuing and sight distance at the project entry driveway on Montezuma Road. The purpose of the TDM Plan is to address the proposed deviation from the City's minimum off-street parking requirements and identify strategies aimed at reducing parking demand and vehicular trips generated by the site.

1. Project Location

The proposed project is located at 6213 Montezuma Road within the College Area Community surrounding the San Diego State University (SDSU) campus in the City of San Diego. The project site, which is currently vacant, is located on the south side of Montezuma Road next to the existing Zuma Student Apartments, and is located directly across from SDSU Parking Structure #4. The nearest signalized intersection to the west is Montezuma Road & East Campus Drive, located approximately 300 feet west of the site. The signalized intersection of Montezuma Road / 63rd Street is located approximately 450 feet east of the site.

The regional project vicinity map is shown in **Figure 1,** and **Figure 2** illustrates the project location

2. Project Description

The proposed project consists of a five-story student dormitory building that will provide a total of 128 bedroom suites. Each bedroom would house one student; therefore, the proposed project would house a total of 128 student residents. A three-level underground parking garage will be constructed that will provide a total of 57 parking spaces. The project will also provide a total of six (6) motorcycle parking stalls and bicycle parking racks that will accommodate up to 108 bicycles. Day and overnight parking will also be available within SDSU Parking Structure #3 across the street from the project site for tenants who have purchased an SDSU 24-hour parking permit.

Access to the underground parking garage will be provided from one driveway on Montezuma Road. The project proposes full access (left and right turns) at the Montezuma Road & Project Driveway intersection. The driveway approach of the intersection will be stop-sign controlled, and the Montezuma Road intersection approaches will be uncontrolled.

The project site plan is shown in **Figure 3**.

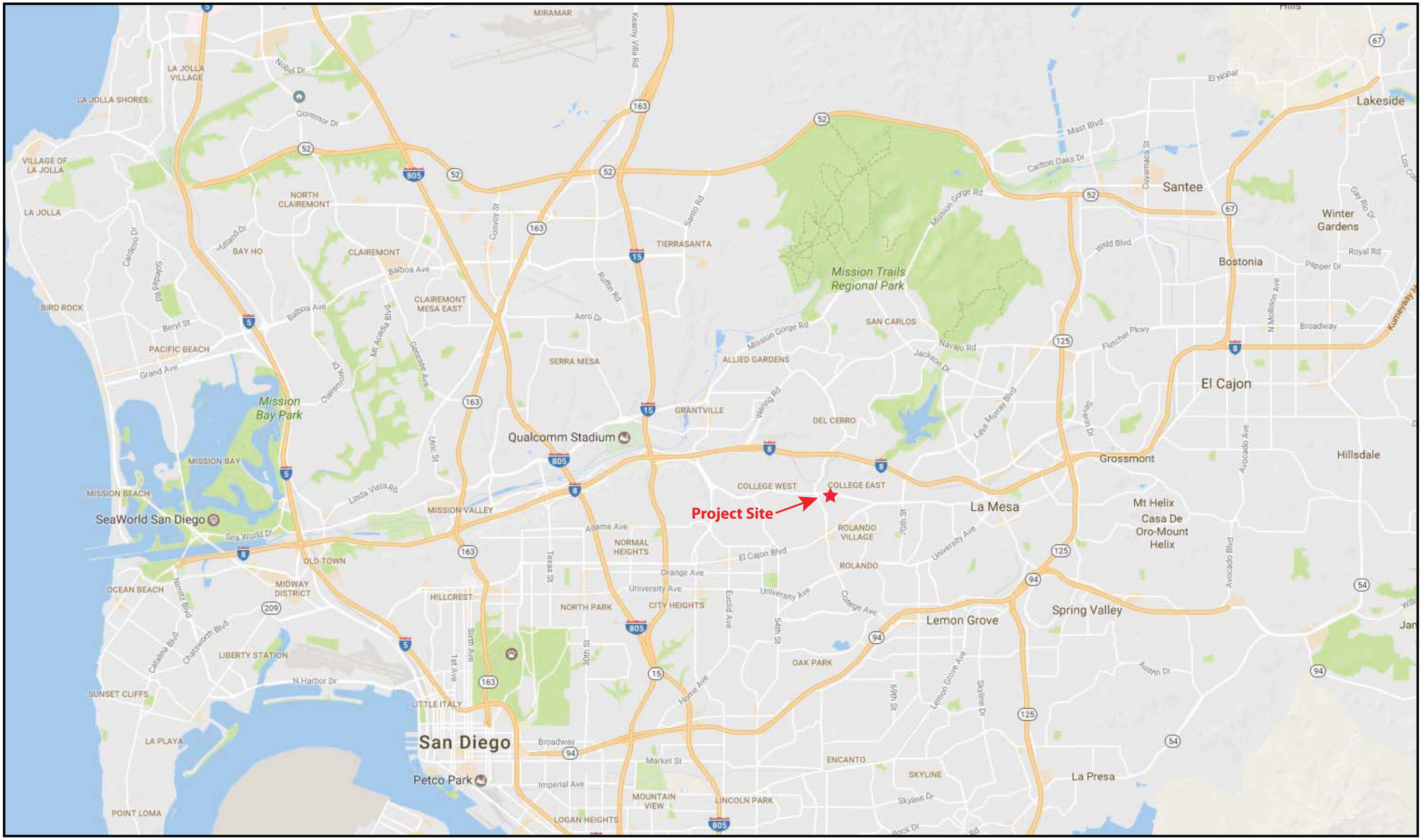
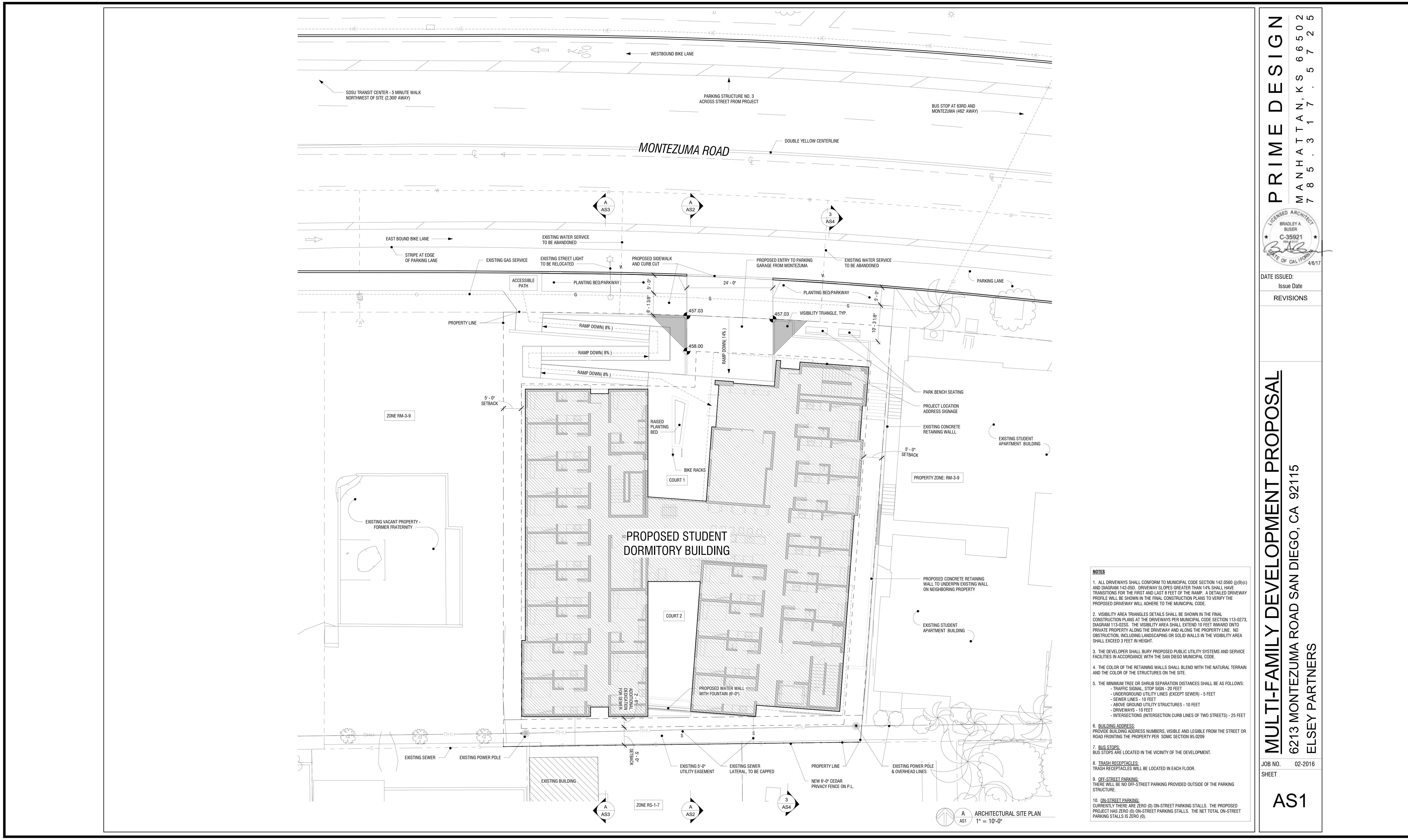


Figure 1
Regional Vicinity Map

File Path

Figure 2
Project Location



File Path

Figure 3
Project Site Plan

3. Existing Conditions

This section includes a detailed description of existing roadway conditions and volumes on Montezuma Road, and an assessment of existing transit, bicycle and pedestrian access from the project site.

Data Collection

Traffic counts were collected on Montezuma Road in front of the project site over a 24-hour period on Thursday, February 9, 2017 during the Spring Semester at SDSU. Vehicular gap data was also collected on the same day at the same location on Montezuma Road. The 24-hour counts were used to determine the existing AM and PM peak hour traffic volumes on Montezuma Road in front of the project site. The traffic count data is provided in **Appendix A** following this report.

Existing Traffic Volumes

Table 1 below summarizes the existing traffic data that was collected on Montezuma Road in front of the project site.

Table 1
Existing Traffic Volumes

Direction	Daily	AM Peak Hour	PM Peak Hour
Eastbound	9,867	370	924
Westbound	10,164	889	561
Total	**20,031**	**1,259**	**1,485**

Existing Roadway Conditions

Montezuma Road extends from Fairmount Avenue to El Cajon Boulevard and is classified as a four-lane Major Street in the College Area Community Plan. In this area it functions as a four lane collector. The posted speed limit is 35 mph. Raised medians or two-way left-turn lanes are present along most of the corridor except for a 750-foot segment between East Campus Drive and 63rd Street where only a double-yellow line separates the two eastbound and two westbound lanes. The proposed project site is located along the segment between East Campus Drive and 63rd Street. Vehicles along this segment of Montezuma Road currently make a left-turn from the inside through lane to access the existing driveways and intersections along this segment. Left-turning vehicles exiting driveway and intersections along this segment currently enter the inside through lane to accelerate to the speed of free-flow traffic.

A double yellow line separates the two eastbound and two westbound lanes on Montezuma Road in front of the project site. The presence of on-street parking along the south side of the street and buffered bike lanes on both sides of the street does not allow adequate width for a center median or two-way left-turn lane. This striping configuration exists along a 750-foot segment of Montezuma Road between the signalized intersections of East Campus Drive and 63rd Street.

Per California Vehicle Code (CVC) 21460(d)(1), a vehicle may cross a double yellow line to turn into or out of a private driveway. There is currently a total of 7 single-family residential driveways, one apartment complex driveway (Zuma Student Apartments) and one SDSU parking structure driveway (Zura Way) along this segment of Montezuma Road in which vehicles cross the existing double yellow line to make left-turn maneuvers. The double yellow line on Montezuma Road is broken for left-turn maneuvers onto and from East Falls View Drive; however, eastbound vehicles still make a left-turn maneuver from the inside through lane. Eastbound vehicles making a left-turn at the signalized Montezuma Road & 63rd Street intersection also make a left-turn maneuver from the inside through lane.

Existing Transit Access

The project site is within walking distance of two transit bus stops (one on each side of the street) along Montezuma Road at the intersection with 63rd Street that serve Metropolitan Transit System (MTS) Route 14. The transit bus stop along the south side of Montezuma Road is located approximately 400 feet east of the project site. The transit bus stop along the north side of Montezuma Road is located approximately 650 feet east of the project site.

Route 14, which operates Monday through Friday, provides service every 60 minutes, and extends from the Grantville Trolley Station to the Lake Murray Village Shopping Center in La Mesa. Transit riders on Route 14 can transfer to the San Diego Trolley Green Line at the Grantville Trolley Station, the Mission San Diego Trolley Station, the SDSU Transit Center, and the 70th Street Trolley Station. Major destinations along Route 14 include Mission Valley (via transfers at Grantville Trolley Station), Kaiser Hospital, and SDSU.

SDSU operates a free shuttle service called the Red & Black Shuttle, which operates Monday through Thursday from 5:00 PM to 10:00 PM during the Fall and Spring semesters and provides service every 10-15 minutes during operating hours. The shuttle stops at 13 locations on and near campus, including one stop along southbound East Campus Drive that is located approximately 500 feet from the project site.

The SDSU Transit Center, where transit riders can access the San Diego Trolley Green Line, is located approximately 2,300 feet by foot from the project site. The San Diego Trolley Green Line, which extends from 12th Street & Imperial Avenue in downtown San Diego to the Santee Town Center Station, operates between 4:00 AM and 1:00 AM seven days per week. The San Diego Trolley Green Line provides service every 15 minutes throughout most of the day, and provides service every 30 minutes during the evening hours. Major destinations along the San Diego Trolley Green Line include Grossmont Center, SDSU, Qualcomm Stadium, Mission Valley, Fashion Valley Shopping Center, Old Town, Little Italy, and Downtown San Diego.

Existing Bicycle and Pedestrian Access

Class II bike lanes are provided along Montezuma Road between College Avenue and El Cajon Boulevard, and several sections are striped with buffers between the bike lane and the outside through lane. The segment of Montezuma Road between East Campus Drive and 63rd Street, along which the project site is located, is striped with buffered Class II bike lanes in both directions of travel.

Sidewalks are provided along Montezuma Road on both sides of the street including in front of the proposed project site. Marked crosswalks are provided at the nearest signalized intersections of Montezuma Road & East Campus Drive and Montezuma Road & 63rd Street, and the signals at both intersections provide pedestrian phases to cross at the intersections.

The most direct non-vehicular route between the proposed project site and the central SDSU campus is via East Campus Drive and a pedestrian promenade located west of Parking Structure #3 that connects to a pedestrian bridge over College Avenue to the center of the SDSU campus. The total distance of the route is approximately 0.38 mile, or approximately 2,000 feet. The distance from the project site to the SDSU pedestrian promenade on the west side of Parking Structure #3 is approximately 800 feet.

4. Project Access Analysis

This section includes a detailed assessment of project trip generation and analysis of vehicular operations, gaps in traffic, queuing and sight distance at the proposed driveway on Montezuma Road.

Project Trip Generation

Neither the City of San Diego *Trip Generation Manual* (May 2003) nor the Institute of Transportation Engineers (ITE) Trip Generation (9th Edition, 2012) publication include a trip generation rate for a student housing use. Student dormitories located off-campus are typically built within walking distance of a university or college; therefore, a large percentage of school-related trips would be made by walking or bicycling. Most vehicular trips associated with a student housing use would be trips that are not school-related, and are most likely to occur outside of the primary peak traffic periods.

Due to the close proximity of San Diego State University (SDSU) to the project site, it is assumed that the majority of students residing at the proposed student housing project would walk or bicycle to the SDSU campus. As previously discussed, the distance of the most direct non-vehicular route between the project site and the SDSU campus is approximately 0.38 mile, or 2,000 feet.

Trip generation studies that have been performed for student housing apartments have shown that on average, a student housing apartment generates approximately one-third of the weekday trips generated by a typical apartment use. **Appendix B** provides a detailed trip generation study performed for six typical student housing apartments located near the University of Minnesota (*Private Student Housing Apartments Trip Generation Study*, Spack Consulting, 2012).

The results of the University of Minnesota student housing apartments trip generation study are shown below:

- Average Weekday Daily Trip Rate: 2.82 trips per unit
- Average Weekday AM Peak Hour Trip Rate: 5% of daily trips (39% In; 61% Out)
- Average Weekday PM Peak Hour Trip Rate: 9% of daily trips (54% In; 46% Out)

Based on the trip rates shown above, the proposed project is expected to generate a total of approximately 361 average weekday trips, including 17 AM peak hour trips and 31 PM peak hour trips.

However, because the student housing trip rates shown above have not been adopted by the City of San Diego, SANDAG, or the Institute of Transportation Engineers (ITE), the trip rates from the City of San Diego *Trip Generation Manual* (May 2003) for a multi-family residential use over 20 dwelling units per acre were used in this analysis, which provides a conservative estimate of trips generated by the proposed project. Table 2 below summarizes the vehicular trip generation of the proposed 128-unit student dormitory building based on the City's general multi-family dwelling unit trip rates. As shown in the table, the proposed project would generate approximately 768 daily trips, 61 AM peak hour trips and 69 PM peak hour trips based on the more conservative general multi-family residential trip rates.

Table 2
Proposed Project Trip Generation

Land Use		Unit	Daily (per unit)	AM Peak Hour			PM Peak Hour		
				AM Rate (per unit)	In (% AM)	Out (% AM)	PM Rate (per unit)	In (% PM)	Out (% PM)
Trip Generation Rates (City of San Diego)									
Multi-Family (over 20 DU/acre)		DU	6	8%	20%	80%	9%	70%	30%
Land Use	**Size**	**Unit**	**Daily Trips**	**AM Peak Hour**			**PM Peak Hour**		
				Total	**In**	**Out**	**Total**	**In**	**Out**
Proposed Project Trip Generation									
Student Dormitory	128	DU	768	61	12	49	69	48	21

Source: City of San Diego *Trip Generation Manual*, May 2003.

Project Trip Distribution and Assignment

The trip distribution at the project driveway assumes that most trips are not school-related trips. The trip distribution takes into account the surrounding land uses and the anticipated trip purposes such as work trips, shopping, dining or recreation trips.

It is assumed that approximately 60% of trips head west from the site toward College Avenue, and are primarily destined for Interstate 8 to Mission Valley and beyond. The remaining 40% are assumed to head east from the site toward commercial establishments along El Cajon Boulevard and in the City of La Mesa.

The assignment of trips at the project driveway during the peak hours was calculated using the trip generation shown in Table 2 and the assumed trip distribution from the project site.

Figure 4 illustrates the project trip distribution and trip assignment at the project driveway.

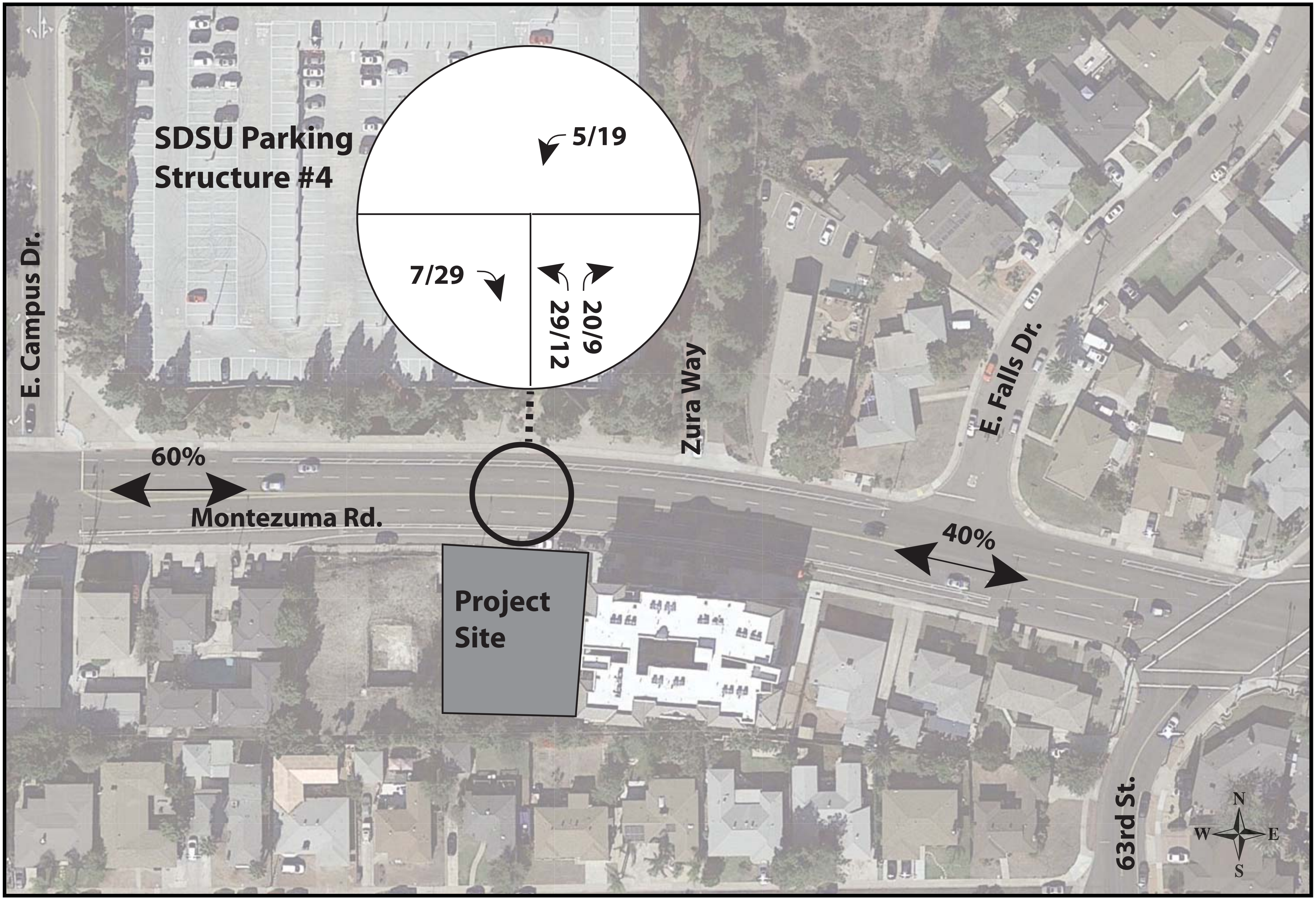


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Figure 4
Project Trip Distribution and Assignment
Montezuma Road & Project Driveway

Proposed Roadway and Intersection Conditions With Project

The driveway approach of the Montezuma Road & Project Driveway intersection will be stop-controlled and will consist of a single lane from which vehicles can turn either left or right onto Montezuma Road. Vehicles exiting the project driveway onto Montezuma Road would wait for sufficient gaps in traffic before making the left-turn or right-turn maneuver.

Vehicles entering the site from eastbound Montezuma Road would turn right from a shared through/right-turn lane on Montezuma Road. Westbound vehicles entering the site from Montezuma Road would make a left turn from the inside through lane, which would function as a shared left-turn/through lane. Vehicles entering the site from westbound Montezuma Road would need to wait for sufficient gaps in eastbound traffic before making a left-turn into the project driveway.

Westbound vehicles entering the project driveway would also have the option to continue approximately 1,100 feet west to the signalized Montezuma Road / College Avenue intersection, make a u-turn and head east to turn right into the project driveway. There are no u-turn options at signalized intersections to the east of the project site.

Proposed Pedestrian and Bicycle Conditions With Project

The proposed project will improve the existing sidewalk along the project frontage and construct ornamental landscaping in intervals that will separate the sidewalk from the street. The primary pedestrian-vehicle conflict would occur where the sidewalk crosses the project driveway/parking garage entrance.

The project would not be modifying or improving the existing bicycle facilities along Montezuma Road. The primary bicycle-vehicle conflict would also occur at the project driveway/parking garage entrance. To improve bicycle safety conditions, it is recommended that the areas within the sight triangles at the project driveway exit be kept clear of objects exceeding 36 inches in height. Red curb to prohibit parking is recommended within the driveway sight triangles so that parked vehicles do not obstruct the visibility of the adjacent bike lane to drivers exiting the driveway (as recommended in the Sight Distance Analysis section of the report).

Existing With Project Conditions Intersection Operations Analysis

An intersection level of service (LOS) analysis was conducted at the Montezuma Road & Project Driveway intersection during the AM and PM peak hours under existing conditions with the addition of project traffic at the proposed driveway. The traffic volumes collected on Montezuma Road as shown in Table 1 were applied to the eastbound and westbound volumes at the intersection. **Figure 5** illustrates the Existing With Project AM/PM peak hour traffic volumes and the proposed lane geometrics at the Montezuma Road & Project Driveway intersection.

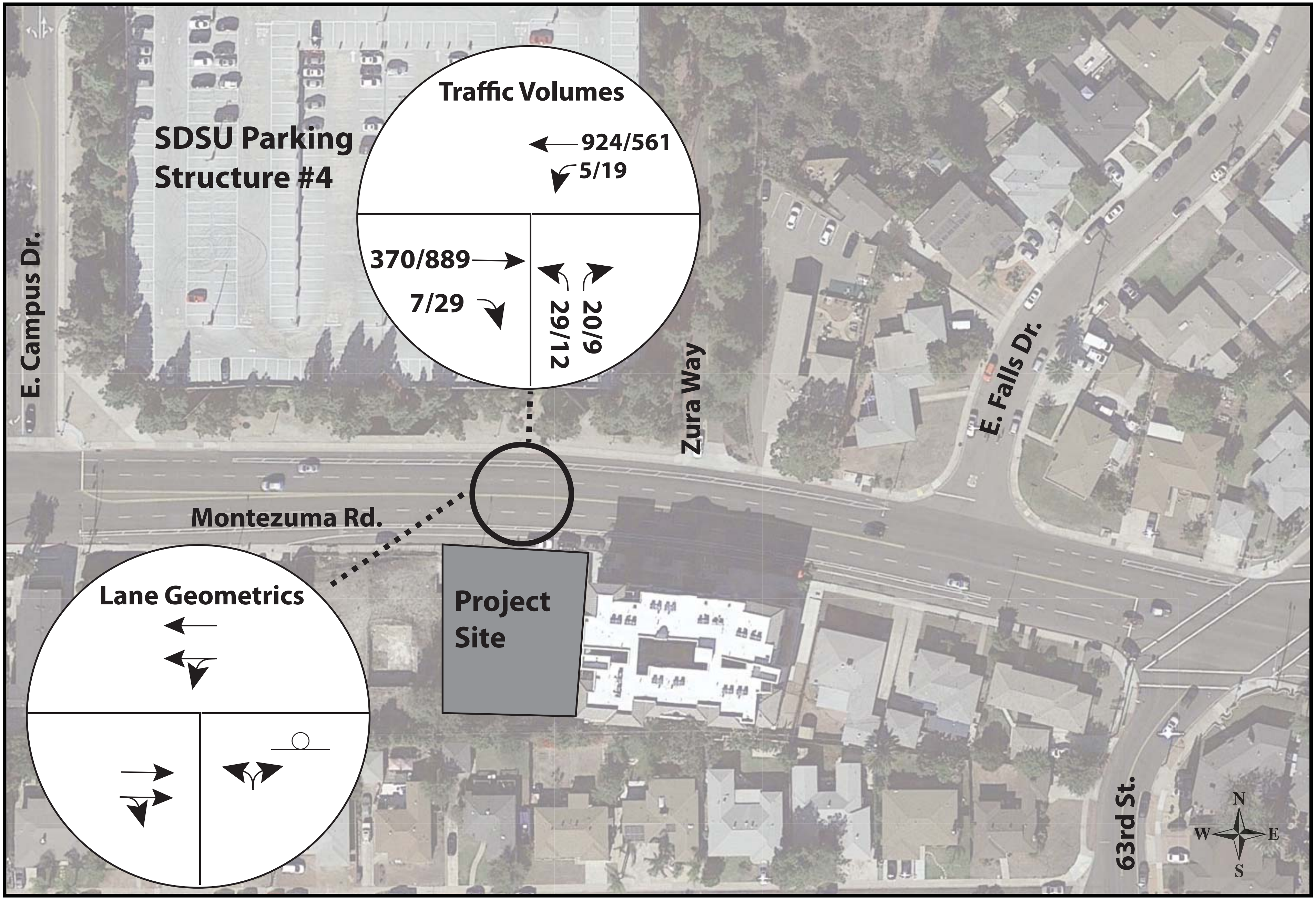

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Figure 5
Existing With Project Intersection Lane Geometrics and AM/PM Peak Hour Traffic Volumes
Montezuma Road & Project Driveway

The Highway Capacity Manual (HCM) 2010 methodology was used to analyze the intersection. The SYNCHRO software program was utilized as an interface to the HCM 2010 methodology. Delays reported refer to the average delay for the worst movement at the intersection, which corresponds with the stop-controlled northbound (driveway) approach of the intersection.

The criteria for the LOS grade designations are provided in **Table 3**. LOS provides a quick overview of how well an intersection is performing. As indicated in the City's *Significant Determination Thresholds* (January 2011), the City of San Diego accepts LOS D or better operations for all signalized and unsignalized intersections during peak traffic periods.

Table 3
LOS Criteria for Intersections

LOS	Control Delay (sec/veh)		Description
	Signalized Intersections	Unsignalized Intersections	
A	<u><</u>10	<u><</u>10	Operations with very low delay and most vehicles do not stop.
B	>10 and ≤20	>10 and ≤15	Operations with good progression but with some restricted movements.
C	>20 and ≤35	>15 and ≤25	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35 and ≤55	>25 and ≤35	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines.
E	>55 and ≤80	>35 and ≤50	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80	>50	Operations that are unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Source: Highway Capacity Manual (HCM) 2010.

Table 4 below summarizes the City of San Diego's significance thresholds for significant traffic impacts.

Table 4
Summary of Significance Thresholds

LOS	Allowable Increase Due to Project		
	Roadway and Freeway Segments		Intersection
	v/c ratio	Speed (mph)	Delay (sec)
E	0.02	1.0	2.0
F	0.01	0.5	1.0

Notes:
Based on the *City of San Diego's Significance Determination Thresholds Report, dated January 2011.*

Table 5 summarizes the findings of the Existing With Project conditions delay and level of service operations analysis at the Montezuma Road & Project Driveway intersection during the AM and PM peak hours. **Appendix C** contains the SYNCHRO HCM worksheets.

Table 5
Existing With Project Conditions Intersection Operations Analysis

#	Intersection	Traffic Control	Peak Hour	Existing With Project Conditions	
				Delay [(a)]	LOS
1	Montezuma Road & Project Driveway	OWSC	AM	16.3	C
			PM	22.8	C

Note:
OWSC = One-Way Stop Control
(a) Reported delay refers to the worst approach delay at the stop-controlled driveway approach of the intersection.

As shown in the table, the Montezuma Road & Project Driveway intersection is expected to operate at LOS C during the AM and PM peak hours based on the delay at the stop-controlled project driveway approach of the intersection. The City of San Diego considers LOS D or better to be acceptable intersection operations during peak hours.

Gap Analysis

A gap analysis was conducted at the Montezuma Road & Project Driveway intersection during the AM and PM peak periods to determine the availability of gaps under existing field observations. All available gaps in major street traffic (eastbound and westbound Montezuma Road) of 5.0 seconds or more were observed on a typical weekday during the AM and PM peak periods on Montezuma Road in front of the proposed project site. The observed gap data was then applied to the gap analysis using the methodology presented in Chapter 19 (Two-Way Stop-Controlled Intersections) of the 2010 Highway Capacity Manual (HCM).

Based on the 2010 HCM methodology, the minimum acceptable gap (critical headway) for a left-turn movement from a stop-controlled minor street onto an uncontrolled four-lane major street is 7.5 seconds for a single-stage maneuver (no refuge area provided). Critical headway is the minimum time needed for the first vehicle in the queue to complete the left-turn movement.

The minimum follow-up headway for a left-turn movement from a minor street onto a four-lane major street is 3.5 seconds. Follow-up headway is the minimum time needed for the second vehicle in the queue to follow the first vehicle when a gap in traffic occurs.

The gap data collected on Montezuma Road is provided in **Appendix D**.

Table 6 summarizes the results of the gap analysis for the northbound left-turn movement from the proposed project driveway onto Montezuma Road.

Only gaps of 7.5 seconds or more were considered in the gap analysis. As shown in Table 6, the observed gaps were grouped into the following ranges based on the number of left-turning vehicles allowed during each gap range:

- 7.5-10.9 seconds: 1 left-turning vehicle
- 11-14.4 seconds: 2 left-turning vehicles
- 14.5-17.9 seconds: 3 left-turning vehicles
- 18-21.4 seconds: 4 left-turning vehicles
- 21.5-24.9 seconds: 5 left-turning vehicles
- 25+ seconds: 6 or more left-turning vehicles

Based on the project trip generation and distribution of trips at the Montezuma Road & Project Driveway intersection, there are a total of 29 northbound left-turning vehicles during the AM peak hour, and during the PM peak hour there are a total of 12 northbound left-turning vehicles. The findings of the gap analysis based on the field gap data that was collected show that there are sufficient gaps currently available on Montezuma Road in front of the project site during both the AM and PM peak hours.

Table 6
Gap Analysis for Northbound Left-Turn Movement
Montezuma Road & Project Driveway

Peak Hour	7.5 - 10.9 Seconds (1 Vehicle at a Time)		11 - 14.4 Seconds (2 Vehicles at a Time)		14.5 - 17.9 Seconds (3 Vehicles at a Time)		18 - 21.4 Seconds (4 Vehicles at a Time)		21.5 - 24.9 Seconds (5 Vehicles at a Time)		25+ Seconds (6 Vehicles at a Time)		Total Vehicle Capacity for NB Left-Turn Movement (2)	NB Left-Turn Movement Volume (Project Driveway)
	# of Gaps	# of Vehicles (1)	# of Gaps	# of Vehicles (1)	# of Gaps	# of Vehicles (1)	# of Gaps	# of Vehicles (1)	# of Gaps	# of Vehicles (1)	# of Gaps	# of Vehicles (1)		
AM	54	54	40	80	8	24	3	12	1	5	1	6	**182**	29 (3)
PM	31	31	30	60	5	15	5	20	1	5	3	18	**149**	12 (3)

(1) Number of vehicles that the available gaps could potentially serve.

(2) Total number of vehicles per hour that could make left-turn based on available gaps.

(3) Left-turn volumes shown in this table are based on the City's trip rate for a typical multi-family residential use and are likely overestimated for a student dormitory use. When constructed and occupied, the left-turn volumes exiting the project driveway are expected to be much lower than the volumes shown in this table.

Queuing Analysis

A queuing analysis was performed under Existing With Project conditions for the AM and PM peak hours at the Montezuma Road / Project Driveway intersection to evaluate queuing associated with the left-turn movements both entering and exiting the project driveway. The driveway approach of the intersection would consist of a shared left-turn/right-turn lane. Left-turn access from Montezuma Road would be taken from the inside through lane on the westbound approach of the intersection.

The SYNCHRO SimTraffic software program was utilized to conduct the queuing analysis, and the maximum (95th percentile) queue lengths are reported in this analysis.

Table 7 summarizes the results of the queuing analysis for the Montezuma Road / Project Driveway intersection during the peak hours under Existing With Project conditions. The SYNCHRO SimTraffic queuing reports are provided in **Appendix E** following this report.

Table 7
Queuing Analysis for Montezuma Road & Project Driveway Intersection

Movement/Lane	# Lanes	Control	Existing With Project Conditions			
			AM Peak Hour		PM Peak Hour	
			Volume (vph)	*95% Queue (1)*	Volume (vph)	*95% Queue (1)*
NB Left-Turn/Right-Turn (Shared Lane)	1	Stop Sign	49	*55'*	21	*43'*
WB Left-Turn/Through (Shared Lane)	1	Uncontrolled	929	*9'*	580	*41'*

NB = Northbound; WB = Westbound

(1) Queue lengths expressed in feet. SYNCHRO assumes 25 feet per vehicle (including 5-foot headway between vehicles).

Table 7 shows that during the AM peak hour, the 95th percentile queue length for the project driveway northbound approach is approximately 55 feet, or approximately two (2) vehicles. The 95th percentile queue length for the shared left-turn/through lane on Montezuma Road is approximately 9 feet, which represents less than one vehicle during the AM peak hour.

During the PM peak hour, the 95th percentile queue length for the project driveway northbound approach is approximately 43 feet, which represents slightly less than two (2) vehicles. The 95th percentile queue length for the shared left-turn/through lane on Montezuma Road is approximately 41 feet, which also represents slightly less than two (2) vehicles during the PM peak hour.

Sight Distance Analysis

Line of sight was evaluated at the proposed project driveway intersection (Montezuma Road / Project Driveway) to ensure that adequate stopping and corner sight distance would be provided for vehicles exiting the project site. Along the project site frontage, Montezuma Road is striped with two travel lanes and buffered bike lanes in each direction. There is also a parking lane along the south side of Montezuma Road that begins approximately 110 feet west of the project driveway and extends to approximately 146 feet east of the project driveway in front of the adjacent Zuma Apartments.

Montezuma Road between College Avenue and 63rd Street has a posted speed limit of 35 miles per hour (mph). City of San Diego Traffic Engineering staff provided speed data for this segment of Montezuma Road from an Engineering and Traffic Survey, which revealed a prevailing (85th percentile) speed of 41 mph. The Engineering and Traffic Survey data provided by the City for Montezuma Road is contained in **Appendix F**.

Sight distance is measured along the direction of travel from a point on the minor road 10 feet from the edge of the major road travel way and is measured from a height of eye of 3.5 feet on the minor road to a height of object of 4.25 feet on the major road. The minimum stopping and intersection corner sight distance for a prevailing speed of 41 mph is approximately 310 feet and 450 feet, respectively, per the *Caltrans Highway Design Manual* (6th Edition, 2012).

A field survey was conducted to measure line of sight at the project driveway intersection location, at approximately 10 feet from the edge of the travel way on Montezuma Road, looking from a height of approximately 3.5 feet and looking toward an object at a height of approximately 4.25 feet from the ground. The edge of the travel way was determined to be the striped line separating the eastbound travel lane from the buffered bike lane along eastbound Montezuma Road (along project frontage).

The field survey results showed that looking west toward the eastbound lanes on Montezuma Road, the available line of sight is approximately **68 feet**. The presence of on-street parking currently obstructs line of sight looking toward the west.

The field survey results showed that looking east toward the westbound lanes on Montezuma Road, the available line of sight is approximately **130 feet**. The presence of on-street parking currently obstructs line of sight looking toward the east. There is also a slight curve along Montezuma Road to the east that further inhibits line of sight from the project driveway location.

Figure 6 shows the currently available sight distance looking in both directions of travel from the driver's approximate location at the project driveway intersection, approximately 10 feet back from the edge of the travel way on Montezuma Road. Also shown in Figure 6 are the minimum stopping and intersection sight distance lines from the project driveway location.

As shown in Figure 6, neither the minimum stopping sight distance (310 feet) nor the intersection corner sight distance (450 feet) can be accommodated under current conditions due to the presence of parked vehicles along the curb looking in both directions from the project driveway location.

Accommodating the minimum intersection corner sight distance would require prohibiting all on-street parking along the south side of Montezuma Road from approximately 110 feet west of the project driveway to approximately 146 feet east of the project driveway, including all on-street parking in front of the existing Zuma Apartments. Although the minimum intersection corner sight distance is recommended for vehicles to make a left-turn maneuver out of the project driveway based on the minimum 7.5-second gap criteria, it is not realistic to eliminate all on-street parking along properties adjacent to the project site.

At driveways where parked vehicles may obstruct line of sight, it is typical for vehicles to "inch" forward into the roadway to a point where more sight distance is available to make the turning maneuver onto the major street. Because of the presence of a buffered bike lane between the travel way and the parking lane, drivers exiting the project driveway can safely move slightly forward from the curb to improve their line of sight before making the turn onto Montezuma Road.

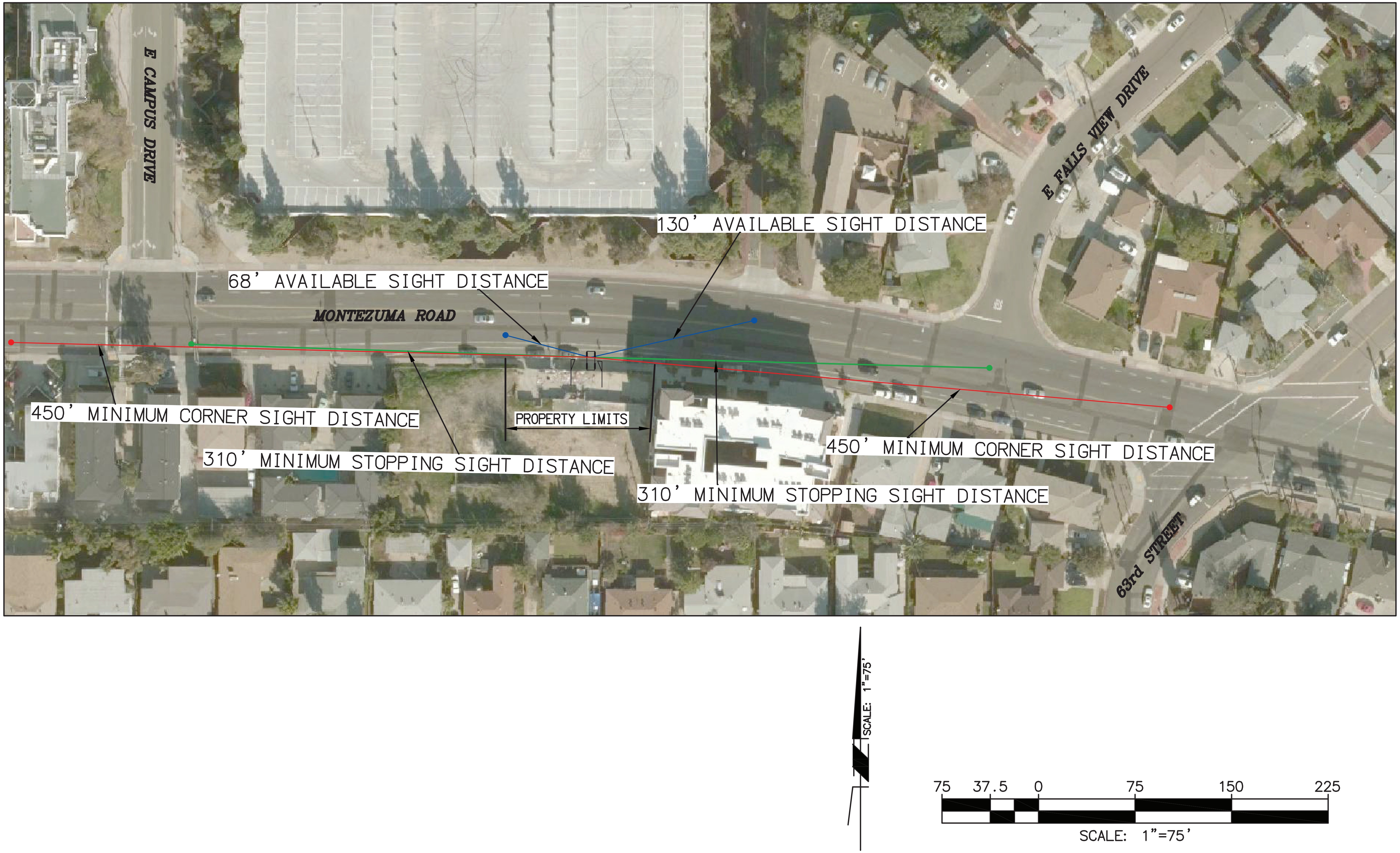

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Figure 6
Sight Distance at Montezuma Road/Project Driveway Intersection
Based on Existing Conditions

Due to the on-street parking impacts of accommodating the minimum intersection corner sight distance from the project driveway, it is recommended that the no parking (red curb) zones be based on the minimum stopping sight distance (310 feet) that is needed for vehicles on Montezuma Road approaching the project driveway.

To accommodate the minimum stopping sight distance to the west of the project driveway, it is recommended that a no parking (red curb) zone be provided for a total length of approximately **110 feet**. The no parking zone to the west would require red curb along **51 feet** of the project frontage and **59 feet** of red curb along the remaining existing parking lane from the western project boundary to the end of the existing parking lane.

To accommodate the minimum stopping sight distance to the east of the project driveway, it is recommended that a red curb zone be provided for a total length of approximately **80 feet**. The no parking zone to the west would require red curb along **34 feet** of the project frontage and **46 feet** of red curb in front of the adjacent Zuma Apartments. Approximately 66 feet of on-street parking would continue to be allowed in front of Zuma Apartments.

Figure 7 shows that with the recommended red curb zones, the minimum stopping distance can be accommodated at the Montezuma Road / Project Driveway intersection.

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Figure 7
Sight Distance at Montezuma Road / Project Driveway Intersection with Recommended Red Curb Areas

5. Parking Assessment

As discussed previously in this report, the project will construct a three-level underground parking garage that will provide a total of 57 parking spaces, which includes two (2) accessible parking spaces and one (1) van accessible parking space. The project will also provide a total of six (6) motorcycle parking stalls, and bicycle parking racks within the parking garage and central courtyard that will accommodate up to 108 bicycles.

The *College Community Redevelopment Project Master Plan*, which was approved by San Diego City Council in October 1993, includes specific parking requirements for a student dormitory use within the College Community Redevelopment Area. The City of San Diego utilizes this document to determine off-street parking requirements within the College Community Redevelopment Area.

Per the *College Community Redevelopment Project Master Plan*, the base parking rate for a student dormitory use is 0.58 spaces per bed or resident, plus 50% for guest parking. A 30% reduction in the number of required parking spaces is allowed for student dormitory projects exceeding a density of 143 residents per acre. The total size of the project site is 0.285 acres, which would result in a density of 449 residents per acre for the project site. Therefore, the 30% parking reduction is allowed for the project.

The above parking rate description results in the following calculation for the proposed student dormitory project: 128 x 0.58 x 1.5 x 0.7 = 77.95.

Therefore, a minimum of 78 parking spaces are required for the proposed project. The project is also required to provide a minimum of six (6) motorcycle parking stalls and 38 bicycle parking stalls. **Table 8** provides a comparison between the proposed parking and the City's minimum parking requirements.

Table 8
Comparison of Proposed Versus Required Parking

Parking Type	Proposed Parking	Required Parking	Difference (Proposed-Required)
Parking Ratio	0.45 spaces per bed/resident	0.61 spaces per bed/resident	-0.16 spaces per bed/resident
Total Vehicle Parking Stalls (1)	57	78	-21
Accessible Parking Stalls	2	2	0
Van Accessible Parking Stalls	1	1	0
Motorcycle Parking Stalls	6	6	0
Bicycle Parking Stalls	108	38	+70

(1) The total 57 vehicle stalls include the 3 accessible parking stalls.

As shown in Table 8, the proposed project will provide 21 fewer vehicle parking stalls than the minimum required parking stalls. The project will provide a surplus of 70 bicycle parking stalls.

To accommodate guest parking, the City requires that the proposed project provide a minimum of 16 complimentary visitor passes to park in an SDSU on-campus parking structure, which represents 20 percent of the total off-street parking stalls that are required for the project. The visitor passes would be provided by the property management for the proposed student dormitory. SDSU Parking Structures #3 and #4 are located directly across Montezuma Road from the proposed project site.

On-street parking in the neighborhoods surrounding the project site requires an Area B Residential Parking Permit. Enforcement is conducted Monday through Friday between 8:00 AM and 7:00 PM except for City observed holidays. An Area B Residential Parking Permit is not required along Montezuma Road except for a short section east of 63rd Street between Ewing Street and La Dorna Street.

On-street parallel parking is currently allowed on Montezuma Road in front of the project site. The project driveway will remove approximately two of the existing on-street parking spaces. As indicated in the findings of the Sight Distance Analysis (pages 16-20), it is recommended that the project designate no parking zones (red curb) for a total length of approximately **110 feet** to the west of the project driveway, and for a total length of approximately **80 feet** to the east of the project driveway.

Along the project frontage, the recommended red curb areas would extend for a length of approximately **51 feet** from the project driveway to the western project boundary, and for a length of approximately **34 feet** from the project driveway to the eastern project boundary.

Figure 8 illustrates the on-street parking recommendations along the project frontage.

To provide adequate parking for the proposed student dormitory, the project will require as part of their lease that all prospective tenants who own automobiles to either provide proof of purchase of an SDSU day and overnight permit to park in an on-campus parking structure, or to rent one of the on-site parking stalls in the underground parking garage at the same cost to purchase an SDSU 24-hour parking permit. SDSU Parking Structure #3, which is located along East Campus Drive approximately 1,000 feet by foot from the project site, allows students to park their vehicles 24 hours per day, 7 days per week.

Per Item L (page 20) of the *College Community Redevelopment Project Master Plan*, "…a study may be submitted to justify lowering the base and/or guest parking rate. Sound reasons for lowering the parking rates include but are not limited to: shared parking facilities, nearby parking lots, a nearby Light Rail Transit Station, or agreements to limit the number of cars kept or owned by residents of fraternity or sorority houses. "

Three out of the four reasons to justify lowering the base parking rate as described above apply to the proposed project. First and second, the project is proposing that parking for the proposed project may be shared with the nearby SDSU Parking Structure #3, which would require that student tenants purchase and possess an SDSU 24-hour parking permit. Third, the project site is located within a reasonable walking distance (2,300 feet) of the SDSU Transit Center, from where transit riders can access the San Diego Trolley Green Line.

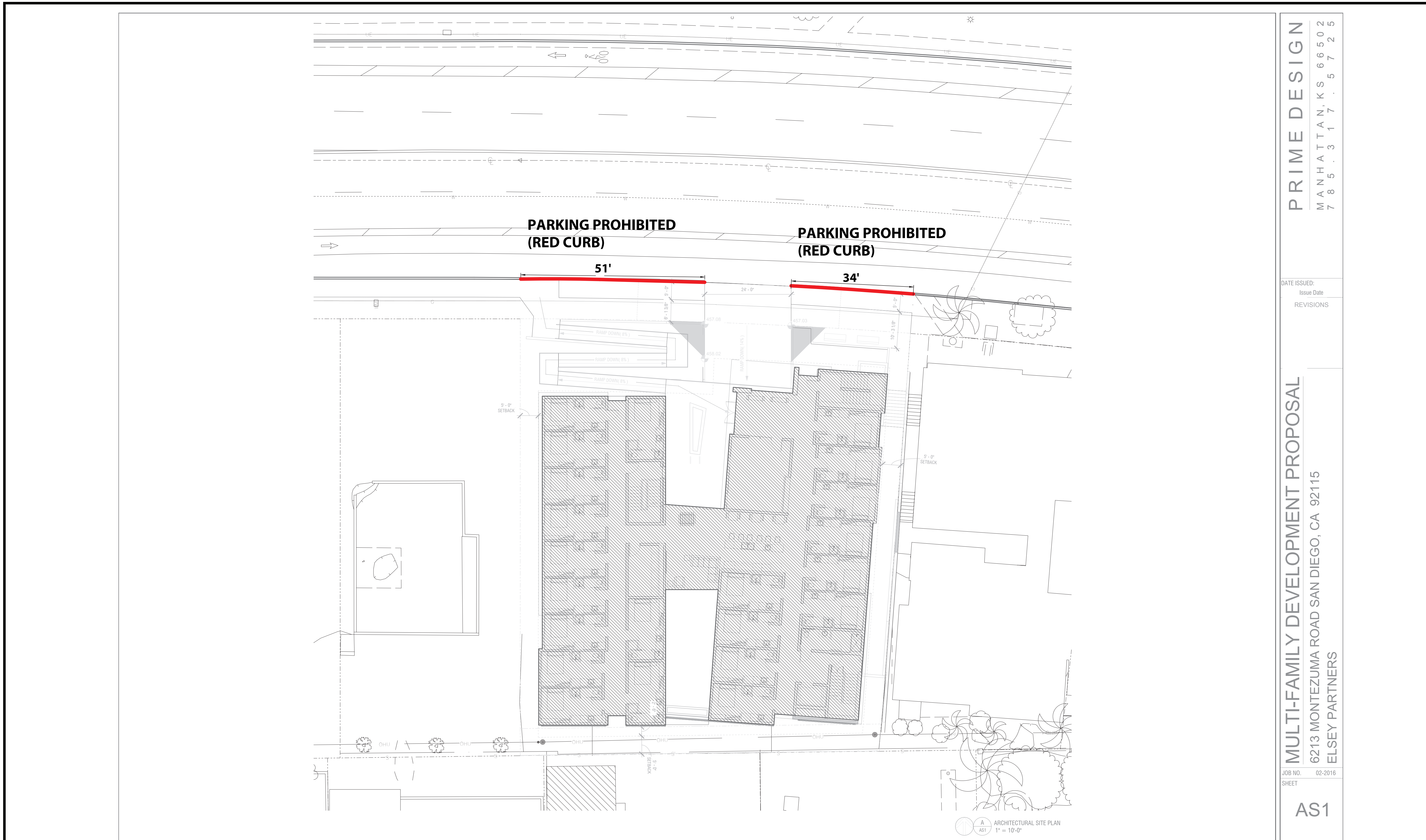

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Figure 8
On-Street Parking Recommendations Along Project Frontage

6. Transportation Demand Management (TDM) Plan

The City of San Diego requires that the project implement a Transportation Demand Management (TDM) Plan to address the project's deviation from the City's minimum off-street parking requirements, and to address the project's Climate Action Plan (CAP) checklist. This TDM Plan has been prepared to provide the project with programs and strategies to reduce the need for automobile trips and on-site parking.

Most TDM Plans are geared toward reducing automobile trips and parking demand for non-residential uses that generate work-related or school-related trips. As the proposed project is a student dormitory building located within walking distance of San Diego State University, it is expected that the majority of the school-related trips will not be automobile trips. However, this leads to a parking challenge that is the opposite of most development projects that develop and implement a TDM Plan. Student residents who would walk or bike to the SDSU campus from the proposed student dormitory building would reduce the parking impact on the SDSU campus, but by leaving their automobile at home, they would thereby increase the parking demand of the proposed student dormitory building. The peak parking demand for all types of residential uses is during the late night/early morning hours when most residents are home sleeping. Therefore, instead of providing incentives to reduce parking demand as with a "typical" TDM Plan, this TDM Plan for the proposed student dormitory is intended to provide incentives to not owning a car at all.

Realistically, the parking garage of the proposed student dormitory cannot accommodate more than 54 tenants who own automobiles. Out of the 57 parking spaces, two (2) parking spaces are accessible-only and are limited to those who require those spaces. A third accessible parking space within the parking garage is reserved for accessible vans and so is not available for resident parking.

As a first step toward reducing the on-site parking demand of the proposed student dormitory, the project is requiring that tenants who own an automobile rent an on-site parking space at an additional cost to the standard dormitory rent. Because the on-site parking garage is limited to only 54-56 tenants with automobiles, there will not always be parking spaces available to rent for new tenants who own automobiles. If all on-site parking spaces are rented, prospective tenants with automobiles will be required to provide proof of purchase of an SDSU day and overnight permit to park in an on-campus parking structure. SDSU Parking Structure #3, which is located along East Campus Drive approximately 1,000 feet by foot from the project site, allows students to park their vehicles 24 hours per day, 7 days per week.

It is recommended that the project implement strategies that would encourage students who do not own an automobile to live at the proposed student dormitory. Therefore, this TDM Plan is focused on strategies that will provide viable transportation options to driving an automobile for the proposed student dormitory tenants.

The recommended programs and strategies included in this TDM Plan are focused on the following four (4) alternative transportation modes to driving an automobile:

1) Transit;
2) Ridesharing/Carpooling;
3) Walking; and
4) Bicycling.

The following TDM strategies are recommended to incentivize the student dormitory tenants to not bring/have automobiles:

TDM Plan Programs and Strategies – Transit

Subsidized Transit Passes
It is recommended that the project owner provide 75% subsidized transit passes to tenants who do not own an automobile.

Information Kiosk
It is recommended that an information kiosk be provided in a central location within the student dormitory building that provides tenants with transit information for the nearby vicinity, such as the locations of nearby bus and shuttle stops, MTS bus routes and schedule, the free SDSU shuttle service, and the San Diego Trolley. An example of the information that could be provided is that the San Diego Trolley Green Line stops at the SDSU Transit Center, which can transport the proposed student dormitory residents between SDSU and many major destinations in the San Diego area.

TDM Plan Programs and Strategies – Ridesharing/Carpooling

Ridesharing/Carpooling Information
In addition to providing transit information, it is recommended that the information kiosk that will be established within the student dormitory building also provide information about ridesharing/carpooling services such as through the iCommute program. The iCommute program and website, which was established by SANDAG, provides assistance to commuters to ridesharing, carpooling and vanpooling services including the Guaranteed Ride Home Program, transit planning services, and assistance for bicycle commuters.

SDSU also provides ridesharing information such as Zimride on their website, which should also be provided at the recommended information kiosk. Zimride is a social network program that provides ridesharing services to SDSU students and staff. The Zipcar car sharing service is also provided at SDSU that should be advertised at the recommended information kiosk.

Uber and/or Lyft Discount Coupons
It is recommended that upon move-in, the project owner provide tenants without automobiles discounted coupons or free credits for both first-time users and existing users of Uber and/or Lyft. Riding with Uber and Lyft has emerged as the primary transportation mode alternative to driving an automobile for most young people under 30 in urban areas. Due to the immense popularity of Uber and Lyft, incentivizing tenants without automobiles to utilize Uber and Lyft on a regular basis is likely to be one of the most effective strategies identified in this TDM Plan. The project owner should also further encourage use of Uber and Lyft by providing discounted coupons or free credits once per month for a year to tenants without automobiles who have signed a one-year lease agreement at the student dormitory.

Although no on-street public parking will be allowed in front of the project site (based on findings of the sight distance analysis), approximately three (3) on-street public parking spaces will continue to be provided in front of the adjacent Zuma Apartments. Passenger drop-off and pick-up activities for the project site associated with Uber, Lyft or other ridesharing/carpooling services will be allowed to park in these 3 parking spaces in front of Zuma Apartments.

TDM Plan Programs and Strategies – Walking

Wayfinding Information

It is recommended that the information kiosk within the student dormitory building also provide wayfinding maps for tenants who will walk between the student dormitory and the SDSU campus. It will be important to let new tenants know to use the pedestrian promenade near SDSU Parking Structure #3 and the pedestrian bridge over College Avenue. Uninformed new tenants may walk along Montezuma Road to College Avenue to head to the SDSU campus, which would be a longer route. SDSU also provides safety escorts between campus and the parking structures and residence halls, and information on the safety escorts should also be provided in the recommended kiosk.

Wayfinding Signage

To assist new tenants of the student dormitory building as well as other new students in the immediate area, it is recommended that the project owner work with the City of San Diego to install signage on the south side of the Montezuma Road & East Campus Drive intersection near the crosswalk to direct pedestrians to cross the street and head north on East Campus Drive to access the pedestrian promenade and bridge across College Avenue to the central SDSU campus and SDSU Transit Center.

TDM Plan Programs and Strategies – Bicycling

The proposed student dormitory will provide bicycle racks within the underground parking garage and within the central courtyard that will accommodate parking for up to 108 bicycles. It should be emphasized that the high-density grid-style or low-profile parking racks may be adequate for temporary parking in a commercial center or school campus, but is not as desirable for overnight parking and primary storage at one's place of residence. Because the proposed project is a student dormitory building, the percentage of tenants who own bicycles is likely to be much higher than tenants in a typical apartment building. But despite the higher ownership rate, student dormitory tenants are not likely to have adequate space to store their bicycles inside their residence units.

For the reasons described above, the following strategy is recommended to accommodate the tenants who own bicycles and to encourage bicycling as a viable transportation alternative to driving an automobile:

Bicycling Parking Options

It is recommended that the project owner consider a variety of bicycle parking options to the traditional high-density grid-style bicycle parking rack, and avoid the low-profile bicycle racks. Bicycle lockers could be provided for tenants with higher-end bicycle who desire more secure bicycle parking. Another secure bicycle parking option is to provide one or more bicycle cages, in which bicycles are hung at intervals on a wall surrounded by a locked heavy-duty wire enclosure than can be accessed with either a key, fob or electronic card.

TDM Plan Monitoring Program

It is recommended that the project owner monitor the results of the TDM Plan strategies on an annual basis for a period of five (5) years. The annual monitoring reports are to be submitted for review and approval by the City Engineer.

7. Summary and Recommendations

The trip generation for the proposed 128-resident student dormitory building was calculated using the City of San Diego's trip rate for a typical multi-family residential use. Based on the City's trip generation rates, the project would generate approximately 768 daily trips, 61 AM peak hour trips, and 69 PM peak hour trips. However, it is expected that this trip generation is overestimated and provides a conservative analysis. Trip generation studies have revealed that the trip generation of a student dormitory use is about one-third of a typical apartment use.

The findings of the project access operations analysis revealed that the worst movement at the Montezuma Road & Project Driveway intersection (left-turns out) is expected to operate at LOS C during both the AM and PM peak hours.

The results of the gap analysis on Montezuma Road in front of the project site revealed that sufficient gaps in traffic are available. Based on the City's trip generation rates, it is estimated that on the northbound project driveway approach of the intersection, approximately 29 left-turn trips would occur during the AM peak hour, and 12 left-turn trips would occur during the PM peak hour.

The findings of the queuing analysis for the left-turn in and left-turn out movements at the Montezuma Road & Project Driveway intersection showed that the 95th percentile queue lengths during the peak hours would not exceed two vehicles.

The results of the sight distance analysis showed that the existing on-street parking along Montezuma Road would obstruct sight distance at the project driveway location.

To accommodate the minimum stopping sight distance to the west of the project driveway, it is recommended that a no parking (red curb) zone be provided for a total length of approximately **110 feet**. The no parking zone to the west would require red curb along **51 feet** of the project frontage and **59 feet** of red curb along the remaining existing parking lane from the western project boundary to the end of the existing parking lane.

To accommodate the minimum stopping sight distance to the east of the project driveway, it is recommended that a red curb zone be provided for a total length of approximately **80 feet**. The no parking zone to the west would require red curb along **34 feet** of the project frontage and **46 feet** of red curb in front of the adjacent Zuma Apartments. Approximately 66 feet of on-street parking would continue to be allowed in front of Zuma Apartments.

The project proposes to provide a total of 57 parking spaces, and a minimum of 78 parking spaces are required. To address the proposed parking deviation and provide adequate parking for the proposed student dormitory, the project is requiring that all prospective tenants who own automobiles to either provide proof of purchase of an SDSU day and overnight permit to park in an on-campus parking structure, or to rent one of the on-site parking stalls in the underground parking garage. SDSU Parking Structure #3, which is located along East Campus Drive approximately 1,000 feet by foot from the project site, allows students to park their vehicles 24 hours per day, 7 days per week as indicated on the SDSU website.

To address the project's proposed deviation from the City's minimum parking requirements and to address the project's Climate Action Plan (CAP) checklist, a Transportation Demand Management (TDM) Plan was prepared to provide viable transportation options to owning and driving an automobile for the proposed student dormitory tenants.

The following improvements, programs and strategies are recommended in the TDM Plan:

- It is recommended that the project provide a minimum of 16 complimentary visitor passes to park in an SDSU on-campus parking structure, to be administered by the property management.
- It is recommended that the project provide 75% subsidized transit passes for tenants who do not own automobile.
- It is recommended that the project provide an information kiosk located in a central location within the student dormitory building that provides information about nearby transit services, ridesharing/carpooling services (iCommute), wayfinding pedestrian maps, and assistance for bicycle commuters.
- It is recommended that the project provide Uber and/or Lyft discount coupons or free credits for tenants who do not own automobile, and additional credits or coupons once per month for tenants without automobiles who sign a year lease.
- It is recommended that the project work with the City of San Diego to install wayfinding signage near the crosswalk on the south side of the Montezuma Road & East Campus Drive intersection to direct pedestrians toward the pedestrian promenade and bridge across College Avenue to the SDSU campus and SDSU Transit Center.
- It is recommended that the project include a variety of bicycle parking and storage options such as bicycle lockers and cages to provide more secure bicycle parking.

The following recommendations were made in this report to improve the safety of all transportation modes in the immediate vicinity of the project site:

- It is recommended that the project install signage at the parking garage exit to warn drivers driving up the ramp to ground level to watch for pedestrians crossing the driveway.
- It is recommended that the project keep areas within the driveway sight triangles clear of objects exceeding 36 inches in height.
- To accommodate the minimum stopping sight distance at the Montezuma Road/Project Driveway intersection, it is recommended that the project provide a no parking (red curb) zone for a length of **51 feet** from the project driveway to the western project boundary, and provide a no parking (red curb) zone for a length of **34 feet** from the project driveway to the eastern project boundary.
- Beyond the project boundary, it is recommended that the no parking (red curb) zones be extended an additional **59 feet** to the west of the western project boundary, and an additional **46 feet** to the east of the eastern project boundary.

In conclusion, it should be emphasized that the proposed student dormitory would satisfy three of the overall objectives of the *College Community Redevelopment Master Plan*. These three objectives are provided below:

- *Mitigate traffic and parking congestion within the redevelopment project area and the surrounding neighborhoods through provision of high quality housing and retail services in pedestrian-oriented development directly adjacent to San Diego State University;*
- *Provide a living environment adjacent to the University which attracts University students who now commute to campus or reside in single-family homes in neighborhoods adjacent to campus which are ill suited for student living purposes; and*
- *Foster an environment which reflects a high level of concern for architecture, landscape, urban design, and land use principles appropriate to the objectives of the College Area Community Plan.*

APPENDIX A

Montezuma Road Traffic Count Data

Prepared by NDS/ATD

Prepared by National Data & Surveying Services

VOLUME

Montezuma Rd Bet. E Campus Dr & Sdsu Campus Parking

Day: Thursday
Date: 2/9/2017

City: San Diego
Project #: CA17_4035_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	9,867	10,164	20,031

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00	0	0	42		24		66		12:00	0	0	107		143		250	
00:15	0	0	37		27		64		12:15	0	0	188		155		343	
00:30	0	0	26		20		46		12:30	0	0	175		168		343	
00:45	0	0	22	127	10	81	32	208	12:45	0	0	127	597	130	596	257	1193
01:00	0	0	21		7		28		13:00	0	0	128		127		255	
01:15	0	0	19		15		34		13:15	0	0	143		135		278	
01:30	0	0	16		17		33		13:30	0	0	148		157		305	
01:45	0	0	12	68	4	43	16	111	13:45	0	0	166	585	189	608	355	1193
02:00	0	0	11		9		20		14:00	0	0	193		179		372	
02:15	0	0	12		10		22		14:15	0	0	151		118		269	
02:30	0	0	8		3		11		14:30	0	0	180		118		298	
02:45	0	0	6	37	4	26	10	63	14:45	0	0	158	682	142	557	300	1239
03:00	0	0	5		3		8		15:00	0	0	175		119		294	
03:15	0	0	6		3		9		15:15	0	0	209		169		378	
03:30	0	0	4		8		12		15:30	0	0	238		234		472	
03:45	0	0	4	19	5	19	9	38	15:45	0	0	236	858	184	706	420	1564
04:00	0	0	3		2		5		16:00	0	0	245		133		378	
04:15	0	0	2		8		10		16:15	0	0	232		133		365	
04:30	0	0	6		11		17		16:30	0	0	233		133		366	
04:45	0	0	3	14	19	40	22	54	16:45	0	0	238	948	130	529	368	1477
05:00	0	0	3		25		28		17:00	0	0	225		130		355	
05:15	0	0	4		28		32		17:15	0	0	221		159		380	
05:30	0	0	5		35		40		17:30	0	0	251		130		381	
05:45	0	0	15	27	67	155	82	182	17:45	0	0	227	924	142	561	369	1485
06:00	0	0	21		63		84		18:00	0	0	219		124		343	
06:15	0	0	14		99		113		18:15	0	0	230		137		367	
06:30	0	0	14		158		172		18:30	0	0	209		146		355	
06:45	0	0	31	80	207	527	238	607	18:45	0	0	205	863	182	589	387	1452
07:00	0	0	25		273		298		19:00	0	0	198		140		338	
07:15	0	0	47		289		336		19:15	0	0	174		114		288	
07:30	0	0	57		256		313		19:30	0	0	126		94		220	
07:45	0	0	79	208	229	1047	308	1255	19:45	0	0	136	634	104	452	240	1086
08:00	0	0	82		205		287		20:00	0	0	112		96		208	
08:15	0	0	83		214		297		20:15	0	0	191		112		303	
08:30	0	0	113		226		339		20:30	0	0	152		105		257	
08:45	0	0	92	370	244	889	336	1259	20:45	0	0	128	583	83	396	211	979
09:00	0	0	93		256		349		21:00	0	0	164		91		255	
09:15	0	0	85		186		271		21:15	0	0	140		97		237	
09:30	0	0	84		109		193		21:30	0	0	128		92		220	
09:45	0	0	64	326	98	649	162	975	21:45	0	0	124	556	96	376	220	932
10:00	0	0	79		94		173		22:00	0	0	99		71		170	
10:15	0	0	83		118		201		22:15	0	0	80		56		136	
10:30	0	0	76		154		230		22:30	0	0	93		45		138	
10:45	0	0	134	372	152	518	286	890	22:45	0	0	66	338	46	218	112	556
11:00	0	0	121		105		226		23:00	0	0	78		36		114	
11:15	0	0	86		109		195		23:15	0	0	51		37		88	
11:30	0	0	103		108		211		23:30	0	0	61		32		93	
11:45	0	0	104	414	118	440	222	854	23:45	0	0	47	237	37	142	84	379
TOTALS				2062		4434		**6496**	**TOTALS**				7805		5730		**13535**
SPLIT %				31.7%		68.3%		**32.4%**	**SPLIT %**				57.7%		42.3%		**67.6%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	9,867	10,164	20,031

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			11:45	07:00	**08:15**	**PM Peak Hour**			15:30	15:15	**15:15**
AM Pk Volume			574	1047	**1321**	**PM Pk Volume**			948	720	**1648**
Pk Hr Factor			0.493	0.906	**0.946**	**Pk Hr Factor**			0.967	0.792	**0.873**
7 - 9 Volume	0	0	578	1936	**2514**	**4 - 6 Volume**	0	0	1872	1090	**2962**
7 - 9 Peak Hour			08:00	07:00	**08:00**	**4 - 6 Peak Hour**			16:00	17:00	**17:00**
7 - 9 Pk Volume	0	0	370	1047	**1259**	**4 - 6 Pk Volume**	0	0	948	561	**1485**
Pk Hr Factor	0.000	0.000	0.819	0.906	**0.928**	**Pk Hr Factor**	0.000	0.000	0.967	0.882	**0.974**

APPENDIX B

Private Student Housing Apartments Trip Generation Study **(Spack Consulting, 2012)**

Spack CONSULTING THE TRAFFIC STUDY COMPANY

Technical Memorandum

From: Mike Spack, P.E., P.T.O.E., Lindsay deLeeuw
Date: April 12, 2012
Re: Trip Generation Study – Private Student Housing Apartments

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A recent spike in new construction surrounding the University of Minnesota led to an interest in determining how trips generated by student housing apartments vary from trips generated by a generic apartment building (as defined by ITE's *Trip Generation, 8th Edition* Code 220). This report provides trip generation data for six student housing apartment buildings. Weekday daily, a.m., and p.m. peak hour trip generation rates are provided. In additon to providing trip generation rates per Dwelling Unit (as in *Trip Generation*), trip generation data is also provided based on number of bedrooms and number of parking stalls.

Overall, it was found student housing apartments generate approximately a third the amount of traffic compared to a similarly sized, generic apartment building. Using ITE's guideline of preparing full traffic impact studies only if a development will generate more than 100 peak hour trips, a student housing apartment complex would need to have 416 dwelling units to trigger the need for a full traffic impact study.

Methodology

Data was collected on Thursday, March 29, 2012 (while school was in full session) at six typical student-housing apartment buildings near the University of Minnesota – Twin Cities using COUNTcam video recording systems. Each building is specifically designated for students by the property managers but none are directly associated with the university. The range of total apartment units is 44 to 253, with an average of 118, and the apartment types vary from studios to four-bedroom units. Additionally, all the buildings observed have parking with the number of stalls ranging from 40 to 135, with an average of 57 stalls.

The parking lot for each student housing apartment building was recorded for 24 hours on a weekday (multiple cameras were used for parking lots with more than one entrance or exit). The videos were watched at high speeds with the PC-TAS counting software and the vehicles in and out were tallied in 15-minute intervals.

Findings

Statistics and data plots for each trip generation period studied are attached. A summary of the student housing average trip generation rates is shown in Table 1 alongside the trip generation rates for Apartments from the Institute of Transportation Engineers' *Trip Generation, 8th Edition* (ITE Code 220).

Table 1 – Average Trip Generation Rates for Student Housing and Apartment per Number of Dwelling Units

	Student Housing Apartments	Apartment from *Trip Generation, 8th Edition*
Weekday	2.82	6.65
Weekday A.M. Peak Hour (between 7-9 a.m.)	0.13	0.51
Weekday P.M. Peak Hour (between 4-6 p.m.)	0.24	0.62

The results in Table 1 show that student-housing apartments generate approximately one-third of the trips generated by regular apartment buildings. The student housing data was consistent where the fitted curves often resulted in R^2 values greater than 0.8 (anything higher than 0.75 indicates the data fits the best fit line equation well).

Similar trip generation reports (attached) were created based on the number of parking stalls and the number of bedrooms. The results for the number of parking stalls were as statistically significant as the number of dwelling units. However, the trip generation based on the number of bedrooms was less statistically valid with R^2 values less than 0.55.

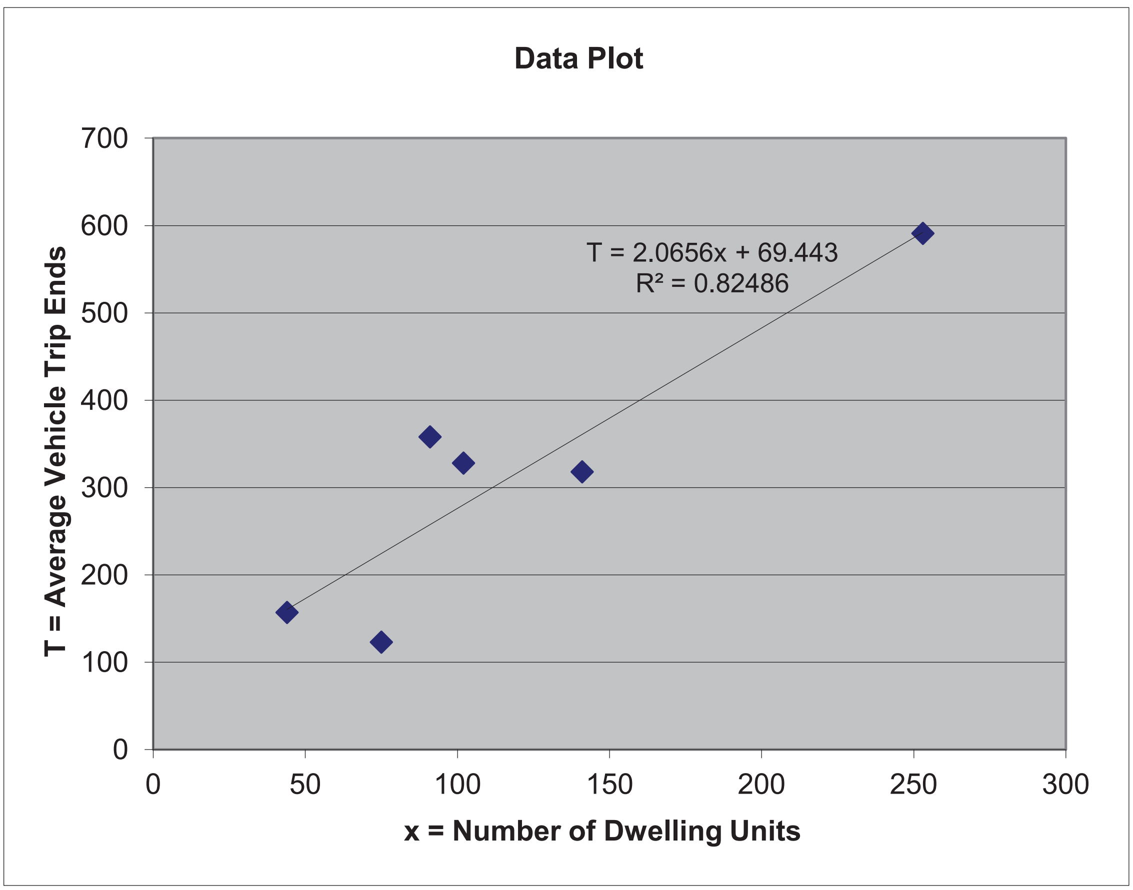
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Dwelling Units
On a: Weekday

Number of Studies: 6
Average Number of Units: 117.67
Directional Distribution: 50% Entering
50% Exiting

Trip Generation per Number of Dwelling Units

Average Rate	Range of Rates	Standard Deviation
2.82	1.64-3.93	0.88



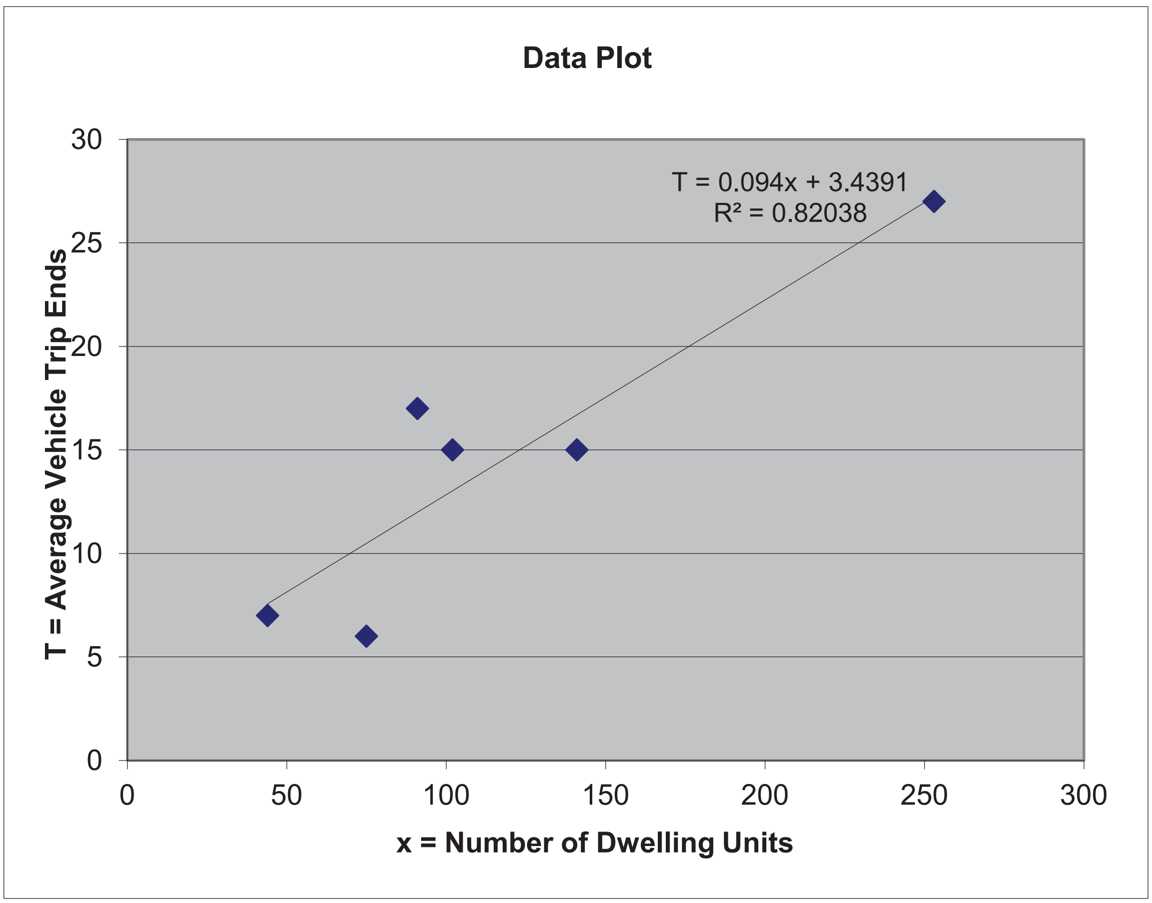
Student Housing Apartment Building

Average Vehicle Trip Ends vs:	Number of Dwelling Units
On a:	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 7 and 9 a.m.

Number of Studies:	6
Average Number of Units:	117.67
Directional Distribution:	39% Entering 61% Exiting

Trip Generation per Number of Dwelling Units

Average Rate	Range of Rates	Standard Deviation
0.13	0.08-0.19	0.04



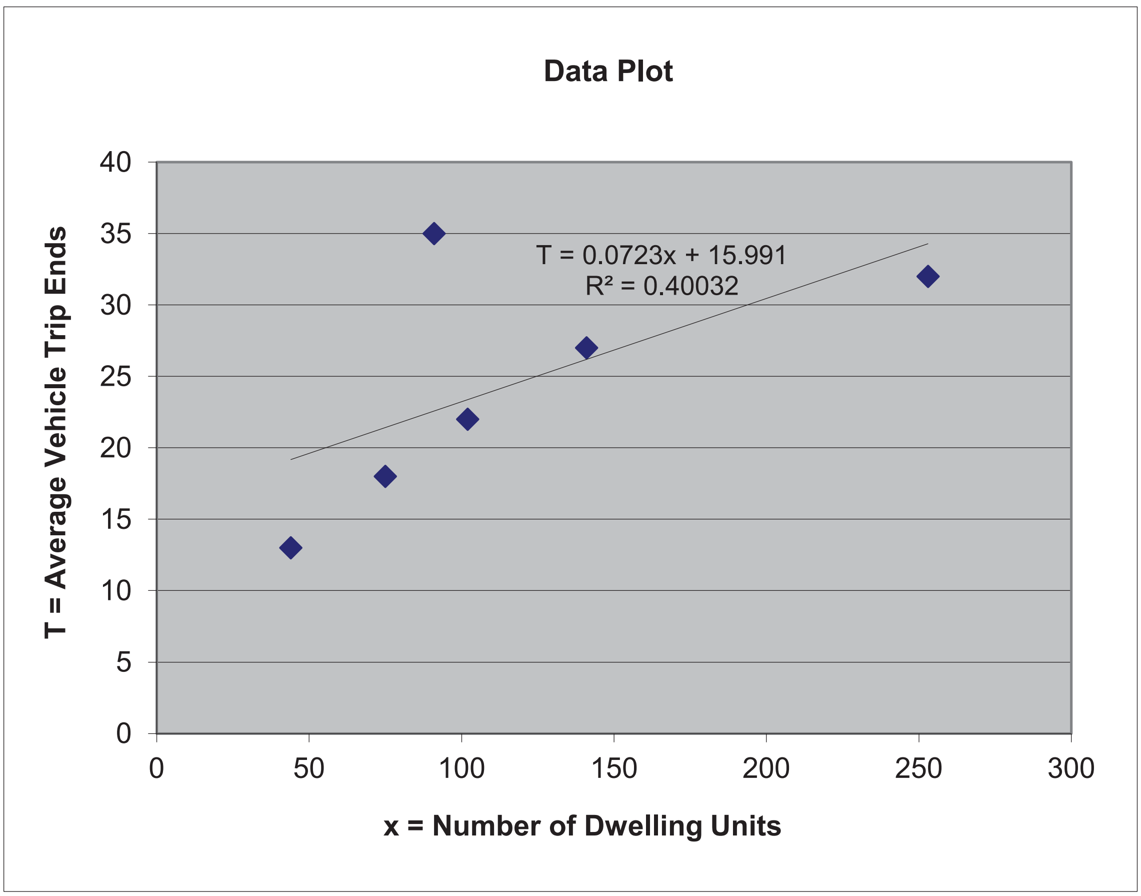
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Number of Studies: 6
Average Number of Units: 117.67
Directional Distribution: 54% Entering
46% Exiting

Trip Generation per Number of Dwelling Units

Average Rate	Range of Rates	Standard Deviation
0.24	0.13-0.38	0.09



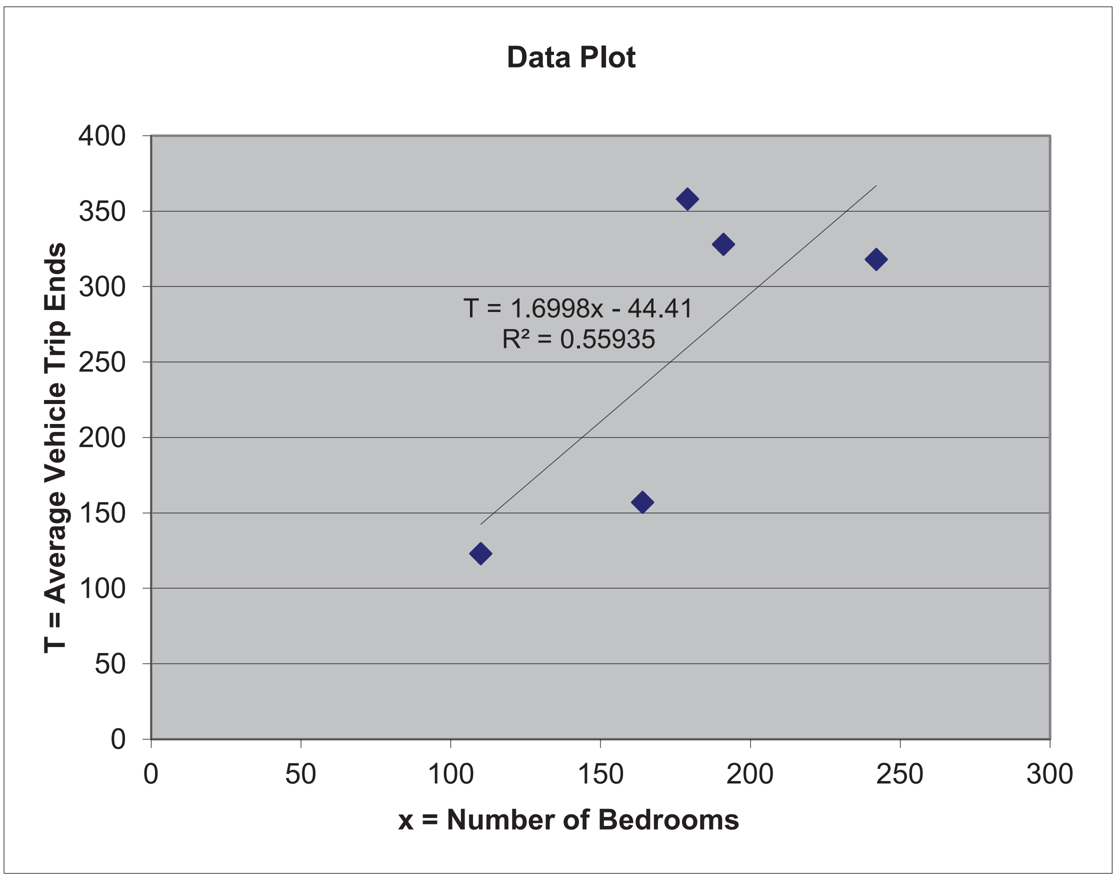
Student Housing Apartment Building

Average Vehicle Trip Ends vs:	Number of Bedrooms
On a:	Weekday

Number of Studies:	6	
Average Number of Units:	147.67	
Directional Distribution:	50%	Entering
	50%	Exiting

Trip Generation per Number of Bedrooms

Average Rate	Range of Rates	Standard Deviation
1.42	0.96-2.00	0.43

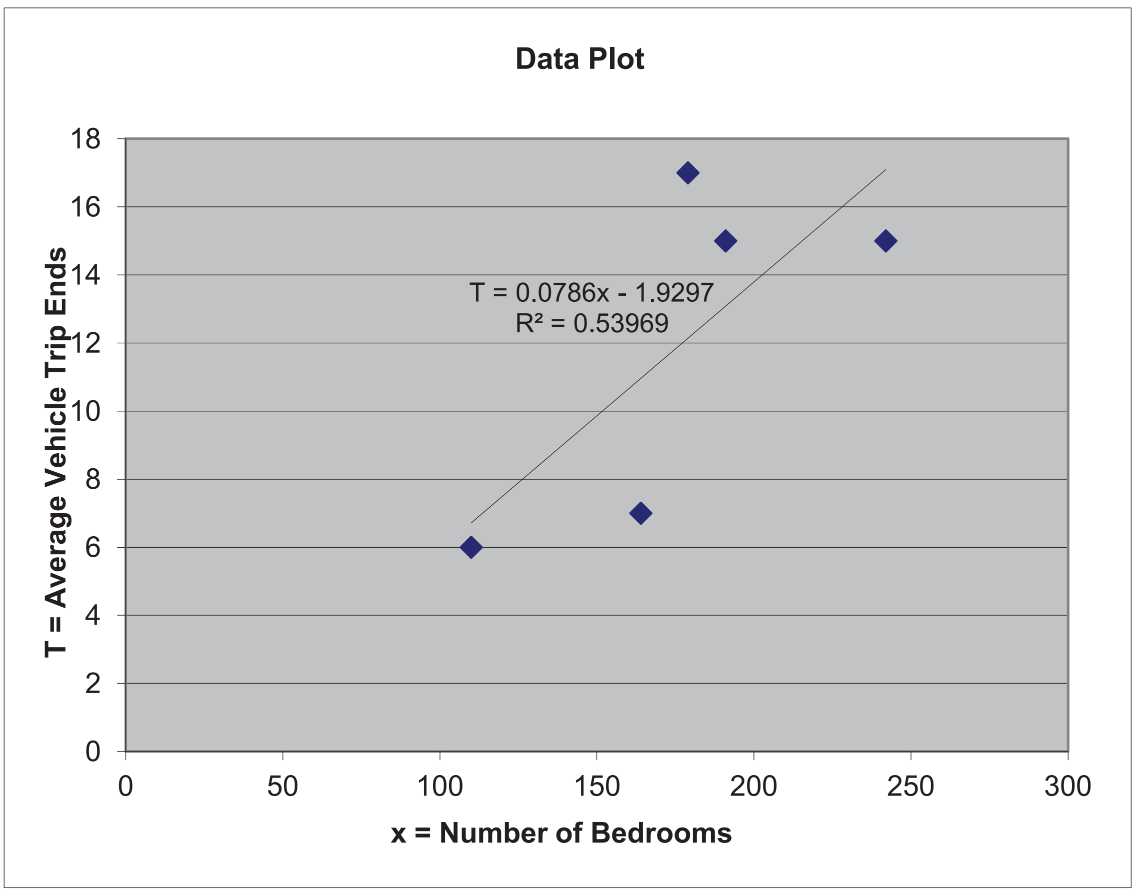


Student Housing Apartment Building

Average Vehicle Trip Ends vs:	Number of Bedrooms
On a:	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 7 and 9 a.m.
Number of Studies:	6
Average Number of Units:	147.67
Directional Distribution:	43% Entering 57% Exiting

Trip Generation per Number of Bedrooms

Average Rate	Range of Rates	Standard Deviation
0.07	0.04-0.09	0.02



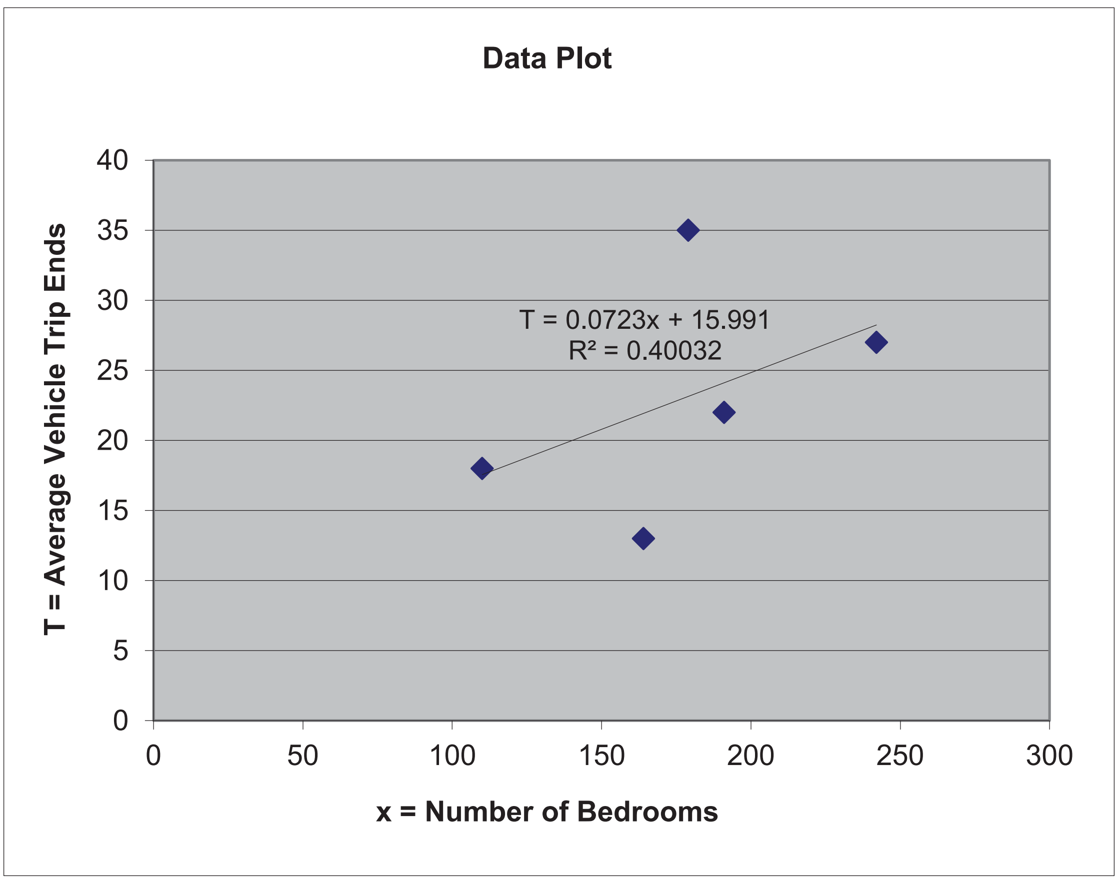
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Bedrooms
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Number of Studies: 6
Average Number of Units: 147.67
Directional Distribution: 53% Entering
47% Exiting

Trip Generation per Number of Bedrooms

Average Rate	Range of Rates	Standard Deviation
0.13	0.11-0.20	0.05



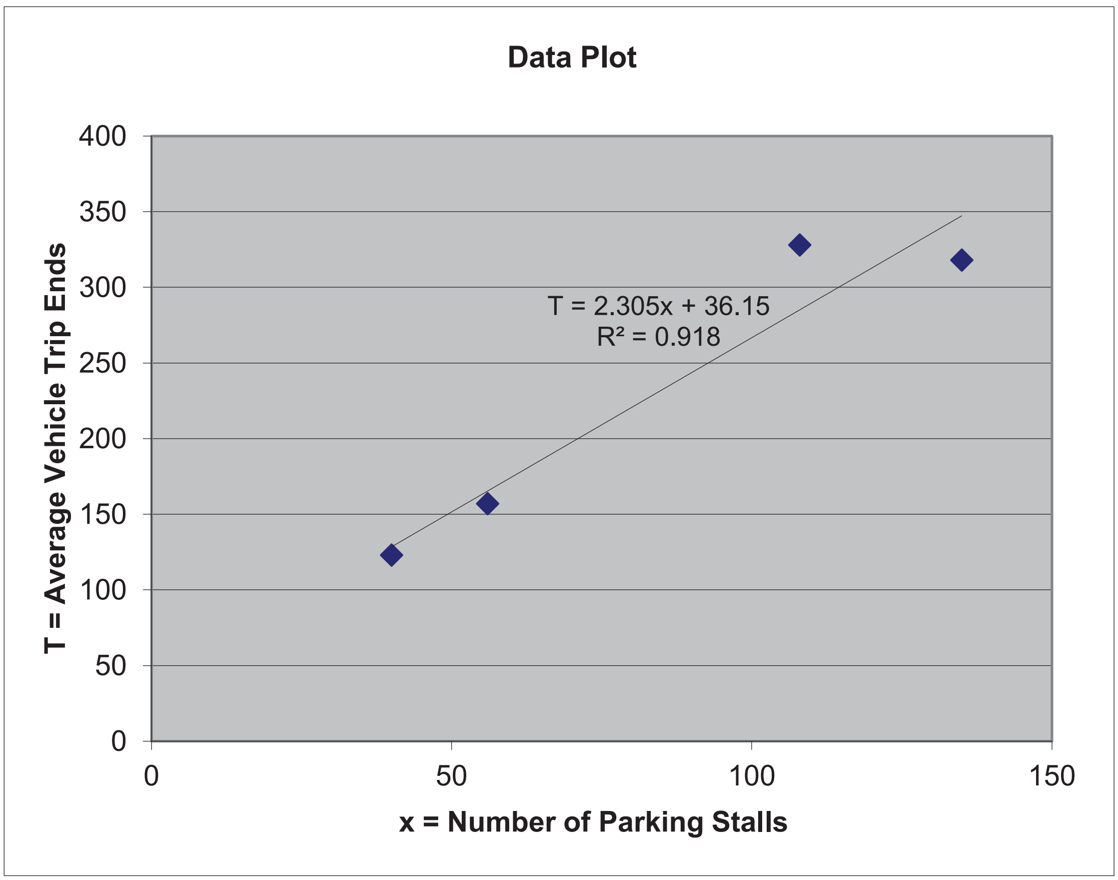
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Parking Stalls
On a: Weekday

Number of Studies: 6
Average Number of Units: 56.50
Directional Distribution: 50% Entering
50% Exiting

Trip Generation per Number of Parking Stalls

Average Rate	Range of Rates	Standard Deviation
2.82	2.36-3.08	0.33



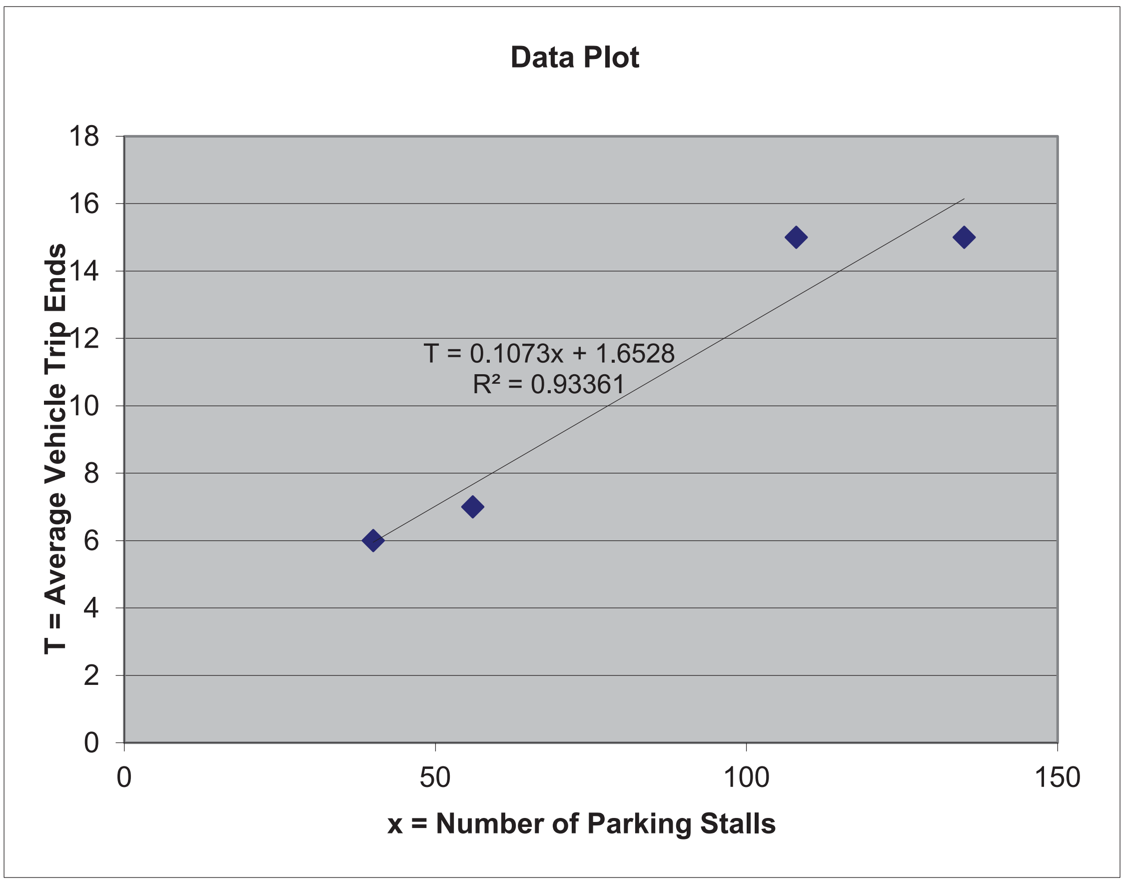
Student Housing Apartment Building

Average Vehicle Trip Ends vs: Number of Parking Stalls
On a: Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Number of Studies: 6
Average Number of Units: 56.50
Directional Distribution: 47% Entering
53% Exiting

Trip Generation per Number of Parking Stalls

Average Rate	Range of Rates	Standard Deviation
0.13	0.11-0.15	0.02



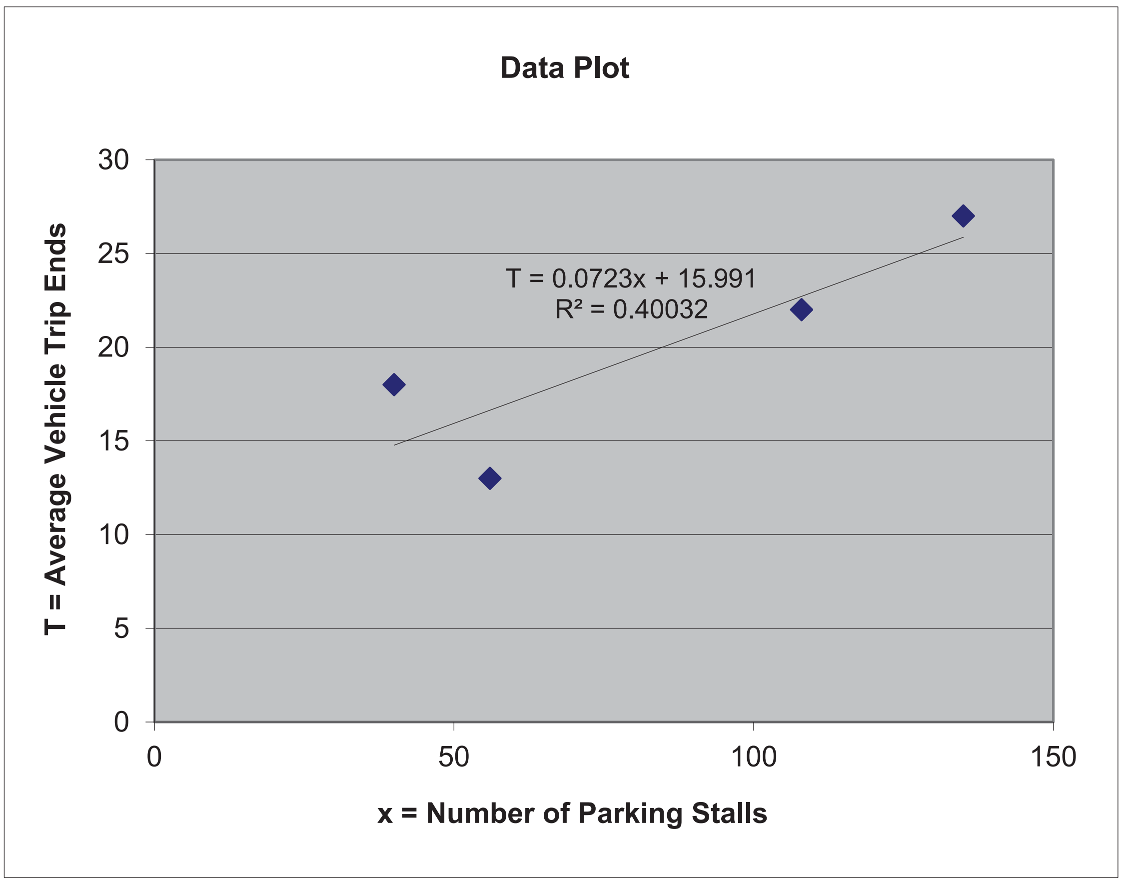
Student Housing Apartment Building

Average Vehicle Trip Ends vs:	Number of Parking Stalls
On a:	Weekday,
	Peak Hour of Adjacent Street Traffic
	One Hour Between 4 and 6 p.m.

Number of Studies:	6	
Average Number of Units:	56.50	
Directional Distribution:	54%	Entering
	46%	Exiting

Trip Generation per Number of Parking Stalls

Average Rate	Range of Rates	Standard Deviation
0.27	0.20-0.45	0.12



APPENDIX C

SYNCHRO HCM Worksheets

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	370	7	5	924	29	20
Future Vol, veh/h	370	7	5	924	29	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	398	8	5	994	31	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	405	0	910	203
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	508	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1150	-	274	804
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	569	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	271	804
Mov Cap-2 Maneuver	-	-	-	-	271	-
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	372	-	-	1150	-
HCM Lane V/C Ratio	0.142	-	-	0.005	-
HCM Control Delay (s)	16.3	-	-	8.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	889	29	19	561	12	9
Future Vol, veh/h	889	29	19	561	12	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	916	30	20	578	12	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	946	0	1259	473
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	328	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	721	-	163	538
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	721	-	156	538
Mov Cap-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	673	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	22.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	224	-	-	721	-
HCM Lane V/C Ratio	0.097	-	-	0.027	-
HCM Control Delay (s)	22.8	-	-	10.1	0.2
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

APPENDIX D

Montezuma Road Gap Data

Prepared by National Data & Surveying Services

Gap Study (AM)

Location: Montezuma Rd Between East Campus Dr & Zura Way **Day:** Thursday
City: San Diego **Date:** 2/9/2017

TIME	DURATION (in seconds)						
8:00	5	8	6	15			
8:01	9	5	5	5	13	7	
8:02	5	9	8				
8:03	20	8	16	9			
8:04	9	6	8				
8:05	7	14	12				
8:06	9	10	9				
8:07	5	9	8				
8:08	7	6	6	5			
8:09	12	9	8	5	7		
8:10	9	16					
8:11	5	6	13				
8:12	17	5	14	7	6		
8:13	8	5	11	7	8		
8:14	12	5					
8:15	10	7	5	9			
8:16	5	14	10	8	5		
8:17	6	9	8				
8:18	9	11	13	10	12		
8:19	8	6					
8:20	10	36					
8:21	5	6	6				
8:22	7	7	5	11			
8:23	5	5	13	5	5	5	
8:24	9	5	5	8	15		
8:25	11	13	12	5	7		
8:26	6	5	9	7			
8:27	12	6	6	5	10		
8:28	8	20	7				
8:29	11	12	5	6	5	5	
8:30	8	7	11				
8:31	6	6	5	11			
8:32	14	8	5	8			
8:33	6						
8:34	5	7	9	7			
8:35	11	7	5	5			
8:36	5	11	14				
8:37	23	15	9				
8:38	9	7	7	7			
8:39	5	8	5	13	5		
8:40	5	5	10				
8:41	7	9	5				
8:42	6	6	5				
8:43	9	19	13				
8:44	12	6	7				
8:45	11	5	11	12			
8:46	11	5	15	7			
8:47	9	6	5				
8:48	8	7	13	9			
8:49	10	13	5				
8:50	11	5					
8:51	11	6					
8:52	7	13	6	8			
8:53	9	11	10	5			
8:54	5						
8:55	8	7	10				
8:56	16	5	7	6	6		
8:57	7	5	14				
8:58	8	7	7	8	6		
8:59	10	5	5				

55	7.5-10.9
40	11-14.4
8	14.5-17.9
3	18-21.4
1	21.5-24.9
1	25+

Prepared by National Data & Surveying Services

Gap Study (PM)

Location: Montezuma Rd Between East Campus Dr & Zura Way **Day:** Thursday
City: San Diego **Date:** 2/9/2017

TIME	DURATION (in seconds)						
17:00	15	10	13				
17:01	7	12	6				
17:02	6	8	7				
17:03	7	13					
17:04	6						
17:05	26						
17:06	12						
17:07	11	7	6	22			
17:08							
17:09	7						
17:10	18						
17:11	12						
17:12	6	14					
17:13	14						
17:14	6						
17:15	11						
17:16	8	12	7				
17:17	30	26					
17:18							
17:19	11	6	7	7	6		
17:20	6						
17:21	6	20	10				
17:22	10	8	6	6			
17:23	6	11					
17:24	19						
17:25	9						
17:26	9	11					
17:27	6	8					
17:28	8	7	8	13			
17:29	7						
17:30	7	7	6				
17:31	15	9	6	8			
17:32	14						
17:33	7	14	7	6	10		
17:34	8						
17:35	7	6					
17:36	8	9					
17:37	6	6	10	18			
17:38	7	12	8				
17:39	12	7					
17:40	13						
17:41							
17:42	7	11	8				
17:43	6	9					
17:44	8	7	7	6			
17:45	7	16	19	7	6		
17:46	6						
17:47	8	7	8	7			
17:48	6						
17:49	9	6	6	6	13		
17:50							
17:51	13	11	14				
17:52	7	6	11				
17:53	9	6					
17:54	16	9					
17:55	9	12					
17:56	7	7	8	6	13		
17:57	6	12					
17:58	15	6	6	12			
17:59	11	9	8	7	6		

31	7.5-10.9
30	11-14.4
5	14.5-17.9
5	18-21.4
1	21.5-24.9
3	25+

APPENDIX E

SYNCHRO SimTraffic Queuing Analysis Worksheets

Intersection: 1: Project Driveway & Montezuma Rd

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	27	58
Average Queue (ft)	1	28
95th Queue (ft)	9	55
Link Distance (ft)	613	132
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Project Driveway & Montezuma Rd

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	52	31
Average Queue (ft)	12	20
95th Queue (ft)	41	43
Link Distance (ft)	612	93
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

APPENDIX F

Engineering and Traffic Survey Speed Data for Montezuma Road

CITY OF SAN DIEGO
ENGINEERING AND TRAFFIC SURVEY
Prepared in accordance with 627 CVC by methods determined by the California Department of Transportation

STREET	**MONTEZUMA**	**RD**	85th PERCENTILE 41 MPH
FROM	**COLLEGE**	**AV**	POSTED SPEED LIMIT 35 MPH
TO	**63**	**ST**	RADAR ENFORCEABLE YES

BLOCK RANGE: 06000 TO 06299

DIRECTION: BOTH

FEDERAL CLASSIFIED STREET: YES MAP PAGE

SURVEY DATA

DATE OF SURVEY 7/6/2011 85th PERCENTILE 41 MPH MEAN SPEED 36 MPH

10 MILE PER HOUR PACE 32-41 MPH PERCENT IN THE PACE 82 %

ACCIDENT HISTORY
Two Year Review

ACCIDENT RATE PER MILLION VEHICLE MILES FOR THIS SEGMENT 1.69 (Accidents/MVM)

ACCIDENT RATE PER MILLION VEHICLE MILES FOR SAME STREET CLASSIFICATION 0.53 (Accidents/MVM)

CONDITIONS REVIEWED WHEN SETTING SPEED LIMIT

- Accident History
- Profile Conditions
- Superelevation
- Shoulder Conditions
- Roadway Design Speed
- Safe Stopping Sight Distance
- Intersection Spacing and Offset
- Commercial Driveway Characteristics
- No sidewalk(s) (Pedestrian Traffic in Roadway)
- Residential Density (In accordance with Section 627 (c) (1) of the CVC)
- Pedestrian and Bicyclist Safety (In accordance with Section 627 (c) (2) of the CVC)

CONDITIONS FOUND:

ACCIDENT HISTORY

AUTHORITY FOR SETTING OF POSTED SPEED

IN ACCORDANCE WITH CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES THE SPEED LIMIT IS SET TO INCREASE/DECREASE ON LOCAL LIMITS PER CVC 22357/22358

Reviewed by TY PALUSKY, P.E.

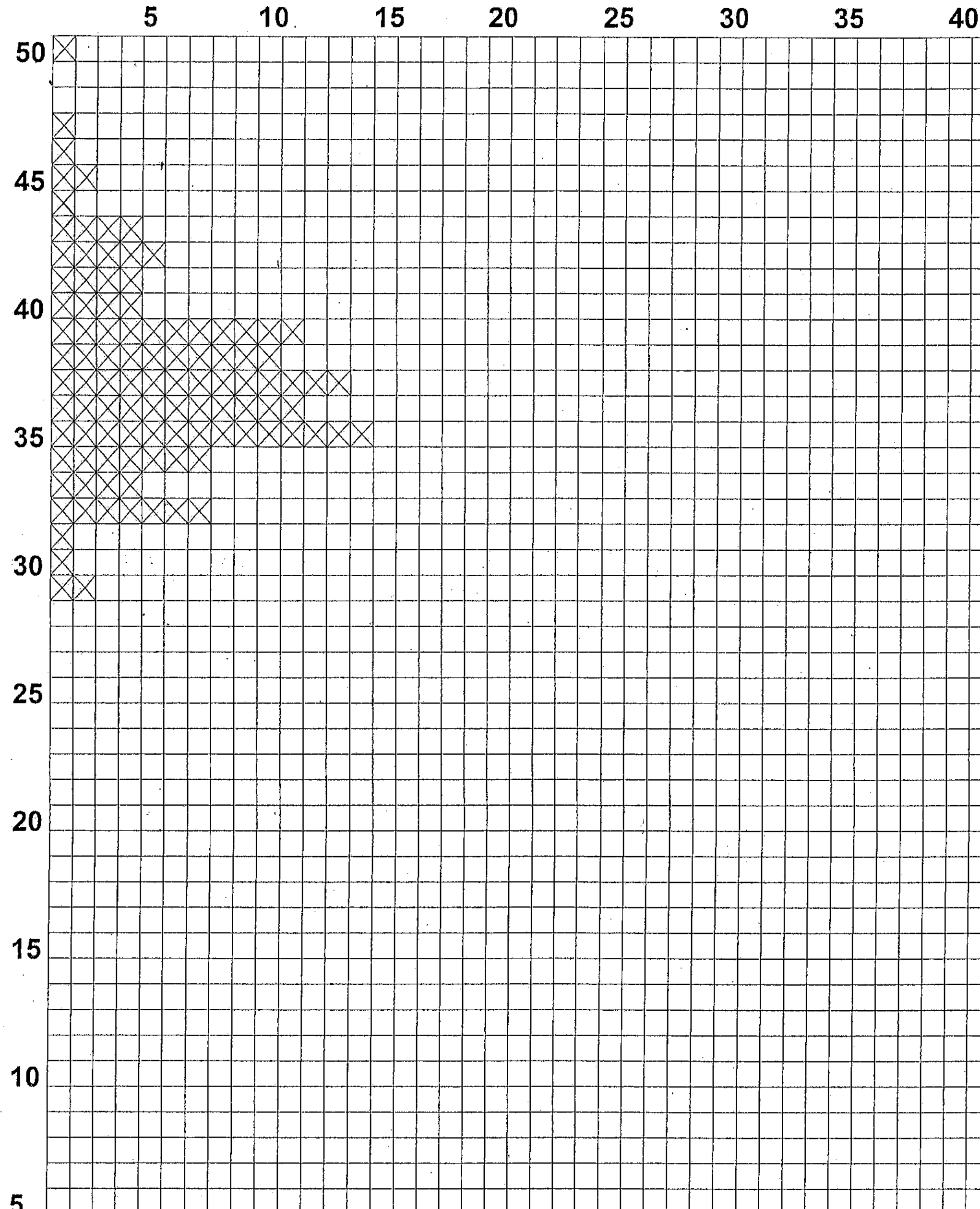
In the professional opinion of the San Diego City Traffic Engineer, the posted speed limit is fully justified when the speed survey and other factors are considered.

City of San Diego
Transportation Engineering Division

Street Name: MONTEZUMA RD
Limits: COLLEGE AV (06000) to 63 ST (06299)

Radar Survey Sheet

X=East/West



#	%ea	cum.%
1	1.0%	100%
1	1.0%	99.0%
1	1.0%	98.1%
2	1.9%	97.1%
1	1.0%	95.2%
4	3.8%	94.2%
5	4.8%	90.4%
4	3.8%	85.6%
4	3.8%	81.7%
11	10.6%	77.9%
10	9.6%	67.3%
13	12.5%	57.7%
11	10.6%	45.2%
14	13.5%	34.6%
7	6.7%	21.2%
4	3.8%	14.4%
7	6.7%	10.6%
1	1.0%	3.8%
1	1.0%	2.9%
2	1.9%	1.9%

Total Samples 104

85th Percentile Speed:	40.9
50th Percentile Speed:	36.4
15th Percentile Speed:	33.1
10 MPH Pace:	32- 41
Number in Pace:	85
Percent in Pace:	81.7%

Date of Survey:	7/6/2011	Start Time:	13:22
Weather:	Dry	End Time:	13:40
Road Condition:	Good	Posted Speed:	35
Street Class.:	COLLECTOR - MAJ	Observer:	LA5
Conditions not Apparent:	Accident History		

Waste Management Plan

6213 Montezuma Apartments

Project Description

General

The project site is located at 6213 Montezuma Road in San Diego, CA. The proposed development is a private dormitory marketed to students attending SDSU. The site is 12,416 square feet (0.285 acres) and is currently vacant property. The project proposes a three level underground parking garage with a total area of 29,106 sf with 5 stories of residential living above the garage for a total of 40,208 sf. The total project area is 69,314 sf. To construct the proposed project, the project is applying for a Planned Development Permit (PDP), Conditional Use Permit (CUP), and a Site Development Permit (SDP).

Grading

To construct the three level underground parking garage, an estimated excavation of 11,600 cubic yards will be required, with all of that soil being removed from the site.

Demolition

The project site is currently devoid of any existing buildings, as past property owners had cleared most of the site. However, previous removal efforts left portions of foundation/retaining walls, paving for parking areas, and stairways along the northern third of the site. Complete demolition of these features will remove approximately 4870 sf concrete slab and 209 linear feet of concrete wall.

Waste Generated by Construction Activities

Grading & Excavation

Excavation of the site will generate an estimated 11,600 cubic yards or 15,080 tons of soil to export off site. All exported soil would be diverted using the City of San Diego Fill Dirt program, or an approved clear fill dirt handler listed on the 2017 Certified Construction & Demolition Recycling Facility Directory from the City of San Diego, and be recycled at a 100% rate.

WASTE GENERATED BY GRADING & EXCAVATION ACTIVITIES						
Material	Quantity	Conversion Rate	Tons	Diversion	Tons Diverted	Tons Disposed
Clean Soil	11,600 cu yards	1.3 tons/cu yard	15,080	100%	15,080	0

The site is very poorly vegetated in its current condition. The limited amount of organic material removed during the initial scraping of the site would be diverted to a green waste facility listed on the 2017 Certified Construction & Demolition Recycling Facility Directory from the City of San Diego for a 100% diversion rate.

Demolition

As noted in the project description, the project has approximately 4,870 sf of concrete slab and 209 linear feet of concrete wall to be removed. The depth of the concrete slab can be estimated at an average of 6" in depth. This would equate to 90 cubic yards or 117 tons of concrete waste.

(4,870 sf x 0.5) / 27 = 90 cubic yards x 1.3 tons/cubic yard = 117 tons

The 209 linear feet of foundation wall averages 8" in thickness and 4'-6" in height. This would equate to 23 cubic yards or 30 tons of concrete waste.

(209 x .67 x 4.5) / 27 = 23 cubic yards x 1.3 tons/cubic yard = 30 tons

All of the demolished concrete can be diverted to a concrete recycling facility listed on the 2017 Certified Construction & Demolition Recycling Facility Directory from the City of San Diego and be recycled at a 100% rate.

WASTE GENERATED BY DEMOLITION ACTIVITIES				
Material	Quantity (tons)	Diversion Rate	Diverted (tons)	Disposed (tons)
Concrete slab	117	100%	117	0
Concrete wall	30	100%	30	0
Total	**147**	**100%**	**147**	**0**

New Construction

During the construction of the proposed project it can be estimated that approximately 3 pounds of waste would be generated for each square foot of constructed building. Based on this rate and a proposed building area of 69,314 sf, an estimated 207,942 pounds or 104 tons of waste can be anticipated.

69,314 sf x 3 lbs/sf = 207,942 lbs / 2000 = 104 tons

Since the project only slightly exceed the minimum threshold for preparation of a Waste Management Plan, a simplified plan has been prepared that considers all waste as "Mixed C&D Debris". Since all facilities listed in the on the 2017 Certified Construction & Demolition Recycling Facility Directory from the City of San Diego can divert a minimum of 67% of debris:

WASTE GENERATED BY CONSTRUCTION ACTIVITIES						
Material	Quantity	Generation	Tons	Diversion Rate	Diverted (tons)	Disposed (tons)
Mixed C&D	69,314 sf	3 lbs/sf	104	67%	70	34

Given the limited site area available for waste containers, this may be a desirable method of waste collection for the construction team while not preventing them from taking additional efforts to minimize landfilled waste.

Summary

Construction and Demolition activities are expected to generate the wastes quantities and diversion rates in the table below. As can be see in the totals line, the 34 tons of disposed waste lowers the project below the 60 ton threshold for a project having a significant impact.

SUMMARY OF WASTE GENERATED DURING CONSTRUCTION AND DEMOLITION			
Source	Quantity (tons)	Diverted (tons)	Disposed (tons)
Grading & Excavation	15,080	15,080	0
Demolition	147	147	0
Construction Waste	104	70	34
Total	**15,331**	**15,297 (99.8%)**	**34 (2.2%)**

Waste Generated During Ongoing Use

Annual Occupancy

For each year of on-going use of the proposed building, approximately 3 pounds of waste is typically generated for each square foot of building. Based on this rate, an annual estimation of 207,942 pounds, or 104 tons of waste can be anticipated.

69,314 sf x 3 lbs/sf = 207,942 lbs / 2000 = 104 tons

Referencing the City of San Diego Waste Management Guidelines, compliance with the municipal recycling ordinances is historically expected to divert 40% of waste to recycling facilities. With recent state legislation AB 1826 mandating future diversion of organic waste for multifamily properties of 5 units or more, it is helpful to consider that organic is not included in the historical 40% figure. Referencing the City of San Diego Waste Characterization Study (2014) we can see when sorting by material class approximately 7% of waste from multifamily properties is leaves and grass and another 3.1% is prunings and trimmings for an approximate 10% of "landscaping" waste. Based on this rate, an annual estimation of 10 tons of landscaping waste will be generated.

104 tons x 10% = 10 tons of landscaping waste per year

Achieving total recycling of landscape related wastes would be possible through contracting of landscaping companies that remove and haul all landscaping debris to facilities that receive green waste as listed in the 2017 Certified Construction & Demolition Recycling Facility Directory from the City of San Diego.

Summary

Annual occupancy is expected to generate the waste quantities and diversion rates indicated in the table below. As can be seen in the totals line, the 58 tons of disposed waste is below the 60 ton threshold of a project having a significant impact.

SUMMARY OF ANNUAL WASTE GENERATED DURING OCCUPANCY			
Source	Quantity (tons)	Diverted (tons)	Disposed (tons)
Annual Waste	97	39 (40%)	58 (60%)
Landscaping Waste	10	10 (100%)	0
Total	**104**	**49 (47%)**	**55 (53%)**

Summary

The contents of this Waste Management Plan have outlined the methods of compliance to reduce the landfilled waste to a level below significance for both the construction phase and long term occupancy. The construction phase is expected to produce 34 tons of landfilled waste with a total reduction of 99.8%. The waste generated from long term occupancy is expected to be 55 tons of waste with a total reduction of 47%.

2017 Certified Construction & Demolition Recycling Facility Directory

These facilities are certified by the City of San Diego to accept materials listed in each category. Hazardous materials are not accepted. The diversion rate for these materials shall be considered 100%, except mixed C&D debris which updates quarterly. The City is not responsible for changes in facility information. Please call ahead to confirm details such as accepted materials, days and hours of operation, limitations on vehicle types, and cost. For more information visit: www.recyclingworks.com.

Please note: In order to receive recycling credit, Mixed C&D Facility and transfer station receipts must: *-be coded as construction & demolition (C&D) debris* *-have project address or permit number on receipt* **Make sure to notify weighmaster that your load is subject to the City of San Diego C&D Ordinance.* *Note about landfills: Miramar Landfill and other landfills do not recycle mixed C&D debris.*	Mixed C&D Debris	Asphalt/Concrete	Brick/Block/Rock	Building Materials for Reuse	Cardboard	Carpet	Carpet Padding	Ceiling Tile	Ceramic Tile/Porcelain	Clean Fill Dirt	Clean Wood/Green Waste	Drywall	Industrial Plastics	Lamps/Light Fixtures	Metal	Mixed Inerts	Styrofoam Blocks
EDCO Recovery & Transfer 3660 Dalbergia St, San Diego, CA 92113 619-234-7774 | www.edcodisposal.com/public-disposal	67%											•					
EDCO Station Transfer Station & Buy Back Center 8184 Commercial St, La Mesa, CA 91942 619-466-3355 | www.edcodisposal.com/public-disposal	67%				•							•			•		
EDCO CDI Recycling & Buy Back Center 224 S. Las Posas Rd, San Marcos, CA 92078 760-744-2700 | www.edcodisposal.com/public-disposal	88%				•										•		
Escondido Resource Recovery 1044 W. Washington Ave, Escondido 760-745-3203 | www.edcodisposal.com/public-disposal	67%																
Fallbrook Transfer Station & Buy Back Center 550 W. Aviation Rd, Fallbrook, CA 92028 760-728-6114 | www.edcodisposal.com/public-disposal	67%				•										•		
Otay C&D/Inert Debris Processing Facility 1700 Maxwell Rd, Chula Vista, CA 91913 619-421-3773 | www.sd.disposal.com	69%																
Ramona Transfer Station & Buy Back Center 324 Maple St, Ramona, CA 92065 760-789-0516 | www.edcodisposal.com/public-disposal	67%				•										•		
SANCO Resource Recovery & Buy Back Center 6750 Federal Blvd, Lemon Grove, CA 91945 619-287-5696 | www.edcodisposal.com/public-disposal	67%				•										•		
All American Recycling 10805 Kenney St, Santee, CA 92071 619-508-1155 (Must call for appointment)						•											
Allan Company 6733 Consolidated Wy, San Diego, CA 92121 858-578-9300 | www.allancompany.com/facilities.htm					•										•		
Allan Company Miramar Recycling 5165 Convoy St, San Diego, CA 92111 858-268-8971 | www.allancompany.com/facilities.htm					•										•		
AMS 4674 Cardin St, San Diego, CA 92111 858-541-1977 | www.a-m-s.com								•									

	Mixed C&D Debris	Asphalt/Concrete	Brick/Block/Rock	Building Materials for Reuse	Cardboard	Carpet	Carpet Padding	Ceiling Tile	Ceramic Tile/Porcelain	Clean Fill Dirt	Clean Wood/Green Waste	Drywall	Industrial Plastics	Lamps/Light Fixtures	Metal	Mixed Inerts	Styrofoam Blocks
Armstrong World Industries, Inc. 300 S. Myrida St, Pensacola, FL 32505 877-276-7876 (Press 1, Then 8) www.armstrong.com/commceilingsna								•									
Cactus Recycling 8710 Avenida De La Fuente, San Diego, CA 92154 619-661-1283 | www.cactusrecycling.com					•								•		•		•
DFS Flooring 10178 Willow Creek Road, San Diego, CA 92131 858-630-5200 | www.dfsflooring.com						•	•										
Duco Metals 220 Bingham Drive Suite 100, San Marcos, CA 92069 760-747-6330 | www.ducometals.com															•		
Enniss Incorporated 12421 Vigilante Rd, Lakeside, CA 92040 619-443-9024 | www.ennissinc.com		•	•						•	•							
Escondido Sand and Gravel 500 N. Tulip St, Escondido, CA 92025 760-432-4690 | www.weirasphalt.com/esg		•															
Habitat for Humanity ReStore 10222 San Diego Mission Rd, San Diego, CA 92108 619-516-5267 | www.sdhfh.org/restore.php				•													
Hanson Aggregates West – Lakeside Plant 12560 Highway 67, Lakeside, CA 92040 858-547-2141		•															
Hanson Aggregates West – Miramar 9229 Harris Plant Rd, San Diego, CA 92126 858-974-3849		•								•							
HVAC Exchange 2675 Faivre St, Chula Vista, CA 91911 619-423-1855 | www.thehvacexchange.com															•		
IMS Recycling Services 2740 Boston Ave, San Diego, CA 92113 619-423-1564 | www.imsrecyclingservices.com					•								•				
IMS Recycling Services 2697 Main St, San Diego, CA 92113 619-231-2521 | www.imsrecyclingservices.com													•		•		
Inland Pacific Resource Recovery 12650 Slaughterhouse Canyon Rd, Lakeside, CA 92040 619-390-1418											•						
Lamp Disposal Solutions 1405 30th Street, San Diego, CA 92154 858-569-1807 | www.lampdisposalsolutions.com														•			
Los Angeles Fiber Company 4920 S. Boyle Ave, Vernon, CA 90058 323-589-5637 | www.lafiber.com						•	•										

	Mixed C&D Debris	Asphalt/Concrete	Brick/Block/Rock	Building Materials for Reuse	Cardboard	Carpet	Carpet Padding	Ceiling Tile	Ceramic Tile/Porcelain	Clean Fill Dirt	Clean Wood/Green Waste	Drywall	Industrial Plastics	Lamps/Light Fixtures	Metal	Mixed Inerts	Styrofoam Blocks
Miramar Greenery, City of San Diego 5180 Convoy St, San Diego, CA 92111 858-694-7000 | www.sandiego.gov/environmental-services/miramar/greenery.shtml											•						
Moody's 3210 Oceanside Blvd., Oceanside, CA 92056 760-433-3316		•								•						•	
Otay Valley Rock, LLC 2041 Heritage Rd, Chula Vista, CA 91913 619-591-4717 | www.otayrock.com		•															
Reclaimed Aggregates Chula Vista 855 Energy Wy, Chula Vista, CA 91913 619-656-1836		•														•	
Reconstruction Warehouse 3650 Hancock St., San Diego, CA 92110 619-795-7326 | www.recowarehouse.com				•													
Robertson's Ready Mix 2094 Willow Glen Dr, El Cajon, CA 92019 619-593-1856		•								•						•	
Romero General Construction Corp. 8354 Nelson Wy, Escondido, CA 92026 760-749-9312 | www.romerogc.com/crushing/nelsonway.htm		•															
SA Recycling 3055 Commercial St., San Diego, CA 92113 619-238-6740 | www.sarecycling.com															•		
SA Recycling 1211 S. 32nd St., San Diego, CA 92113 619-234-6691 | www.sarecycling.com															•		
Universal Waste Disposal 8051 Wing Avenue, El Cajon, CA 92020 619-438-1093 | www.universalwastedisposal.com														•			
Vulcan Carol Canyon Landfill and Recycle Site 10051 Black Mountain Rd, San Diego, CA 92126 858-530-9465 | www.vulcanmaterials.com		•	•							•						•	
Vulcan Otay Asphalt Recycle Center 7522 Paseo de la Fuente, San Diego, CA 92154 619-571-1945 | www.vulcanmaterials.com		•															

Franchise-collected Multifamily Substream

The field crew hand sorted 93 samples from the City's franchise-collected multifamily substream. The tonnage associated with this substream is shown in Table 21.

Table 21. Included Substream and Tons, Franchise-collected Multifamily

Included Substreams	Tons
Franchise Collected Multifamily	250,661
Total Disposal in Substream	**250,661**

Key Findings

The key recoverability and material class findings for the multifamily substream are shown in Figure 22 and Figure 23, respectively. Approximately 79% of the multifamily substream is recoverable (42% is Compostable/Potentially Compostable, 21% is Recyclable, and 16% is Potentially Recoverable). **Organics** (43%) and **Paper** (22%) are the two most prevalent material classes.

Figure 22. Composition by Recoverability Group, Franchise-collected Multifamily

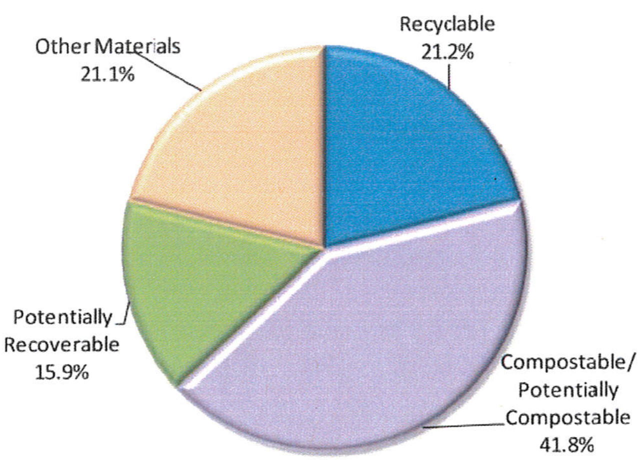
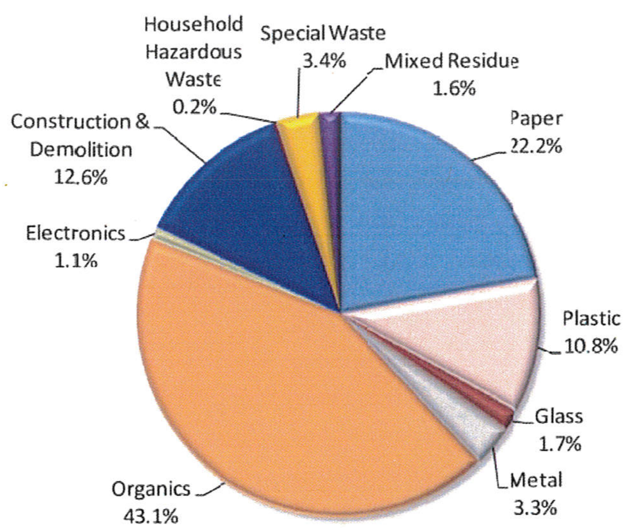


Figure 23. Composition by Material Class, Franchise-collected Multifamily



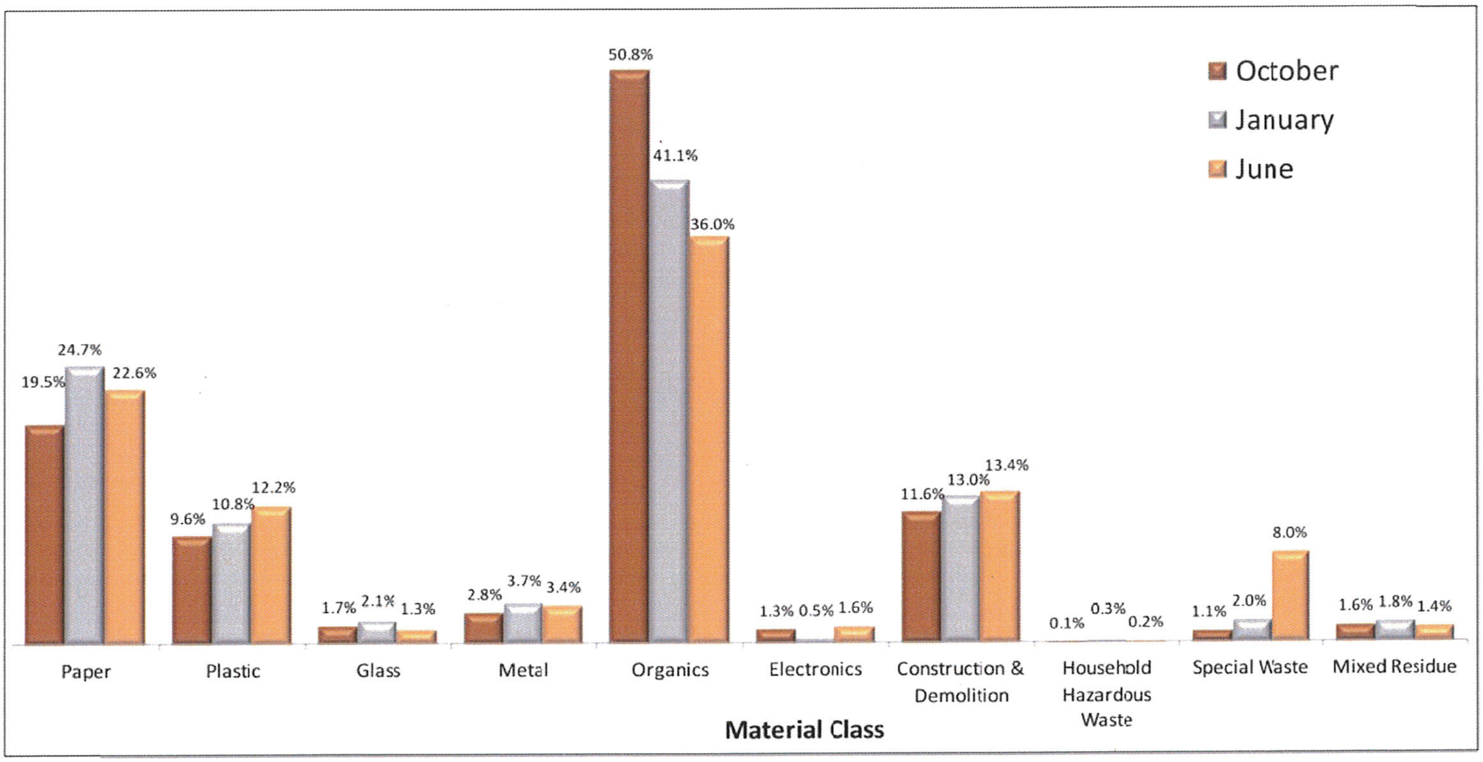
The ten most prevalent disposed materials can be found in Table 22. *Food* (20%), *leaves and grass* (7%), and *compostable/soiled paper* (7%) are the three most prevalent material types; together they represent approximately 34% of franchise-collected multifamily substream.

Table 22. Ten Most Prevalent Disposed Material Types, Franchise-collected Multifamily, 2012

Material Type	Estimated Percent	Cumulative Percent	Estimated Tons
Food	20.1%	20.1%	50,450
Leaves and Grass	7.0%	27.1%	17,539
Compostable/Soiled Paper	6.9%	34.0%	17,266
Uncoated Corrugated Cardboard	6.2%	40.2%	15,520
Textiles	4.1%	44.3%	10,319
Diapers	3.9%	48.2%	9,753
Mixed Waste Paper	3.8%	52.0%	9,553
Other Wood Waste	3.6%	55.7%	9,095
Prunings and Trimmings	3.1%	58.7%	7,712
Dirty Film Plastic	3.1%	61.8%	7,704
All other material types	38.2%		95,751
Total	**100.0%**		**250,661**

As illustrated in Figure 24, the prevalence of the **Organics** material class within the franchise-collected multifamily substream declined from October (51%) to June (36%).

Figure 24. Seasonal Composition by Material Class, Franchise-collected Multifamily, 2012



The detailed composition of the multifamily substream is shown in Table 23.

Table 23. Detailed Waste Composition, Franchise-collected Multifamily, 2012

Material	Estimated Percent	+/-	Estimated Tons	Material	Estimated Percent	+/-	Estimated Tons
Paper	**22.2%**		**55,761**	**Electronics**	**1.1%**		**2,728**
Uncoated Corrugated Cardboard	6.2%	1.1%	15,520	Brown Goods	0.5%	0.5%	1,376
Waxed Corrugated Cardboard	0.2%	0.1%	517	CRT	0.2%	0.3%	597
Paper Bags	0.5%	0.2%	1,270	Computer-Related Electronics	0.0%	0.0%	32
Newspaper	1.3%	0.3%	3,344	Other Consumer Electronics	0.3%	0.2%	724
White Ledger Paper	1.0%	0.3%	2,594	Video Display Devices (non-CRT devices)	0.0%	0.0%	0
Mixed Waste Paper	3.8%	0.4%	9,553				
Magazines	0.7%	0.2%	1,661	**Construction & Demolition**	**12.6%**		**31,641**
Phone Books and Directories	0.1%	0.1%	254	Concrete	1.4%	1.0%	3,611
Compostable/Soiled Paper	6.9%	0.8%	17,266	Asphalt Paving	0.0%	0.0%	0
Aseptic/Milk Containers	0.2%	0.0%	409	Asphalt Composition Shingles	0.0%	0.0%	0
Remainder/Composite Paper	1.3%	0.4%	3,373	Roofing Tar Paper/Felt	0.0%	0.0%	0
				Roofing Mastic	0.0%	0.0%	0
Plastic	**10.8%**		**27,062**	Built-Up Roofing	0.0%	0.0%	0
CRV HDPE Containers	0.0%	0.0%	90	Other Asphalt Roofing Material	0.0%	0.1%	107
Non-CRV HDPE Containers	0.8%	0.2%	1,963	Clean Dimensional Lumber	0.6%	0.4%	1,592
CRV PETE Containers	0.3%	0.0%	766	Clean Engineered Wood	0.4%	0.3%	989
Non-CRV PETE Containers	0.4%	0.1%	900	Clean Pallets and Crates	0.6%	0.6%	1,584
Compostable Biodegradable Plastic Containers	0.0%	0.0%	23	Other Wood Waste	3.6%	1.2%	9,095
Miscellaneous Plastic Containers	0.8%	0.1%	1,901	Clean Gypsum Board	0.3%	0.3%	738
Plastic Grocery and Merchandise Bags	0.4%	0.1%	941	Painted/Demolition Gypsum Board	0.4%	0.4%	1,048
Clean Film Plastic	0.4%	0.2%	1,093	Carpet & Carpet Padding	2.5%	1.4%	6,299
Dirty Film Plastic	3.1%	0.4%	7,704	Rock, Soil and Fines	0.5%	0.2%	1,134
Durable Plastic Items	2.8%	0.7%	7,091	Contaminated Soil, Street Sweepings, Drain Cleaning	0.3%	0.4%	641
Expanded Polystyrene	0.6%	0.1%	1,383	Remainder/Composite C&D	1.9%	0.9%	4,802
Remainder/Composite Plastic	1.3%	0.5%	3,206				
				Household Hazardous Waste	**0.2%**		**428**
Glass	**1.7%**		**4,252**	Oil-Based Paint	0.0%	0.0%	0
CRV Clear Glass Bottles	0.3%	0.1%	658	Water-Based Paint	0.0%	0.0%	24
Non-CRV Clear Glass Bottles and Containers	0.5%	0.1%	1,373	Vehicle and Equipment Fluids	0.0%	0.0%	0
CRV Brown Glass Bottles	0.3%	0.1%	734	Used Oil	0.0%	0.0%	0
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%	109	Lead-Acid Batteries	0.0%	0.0%	0
CRV Other Colored Glass Bottles	0.1%	0.0%	211	Household Batteries	0.0%	0.0%	35
Non-CRV other Colored Glass Bottles and Containers	0.3%	0.1%	665	Sharps	0.0%	0.0%	2
Flat Glass	0.0%	0.0%	38	Pharmaceuticals	0.0%	0.0%	37
Remainder/Composite Glass	0.2%	0.1%	466	CFL, Fluorescent Tube and Other Mercury-Containing	0.0%	0.0%	3
				Remainder/Composite Household Hazardous	0.1%	0.1%	328
Metal	**3.3%**		**8,211**				
Tin/Steel Cans	0.6%	0.1%	1,493	**Special Waste**	**3.4%**		**8,598**
Major Appliances	0.0%	0.0%	67	Ash	0.0%	0.0%	0
Other Ferrous Metal	1.0%	0.3%	2,427	Sewage Solids	0.0%	0.0%	0
CRV Aluminum & Tin Cans	0.2%	0.0%	386	Industrial Sludge	0.0%	0.0%	0
Non-CRV Aluminum Cans	0.1%	0.1%	145	Treated Medical Waste	0.0%	0.0%	29
Used Oil Filters	0.0%	0.0%	0	Bulky Items	2.7%	1.1%	6,656
Other Non-Ferrous Metal	0.4%	0.2%	1,021	Tire	0.7%	0.5%	1,706
Remainder/Composite Metal	1.1%	0.4%	2,673	Remainder/Composite Special Waste	0.1%	0.1%	207
Organics	**43.1%**		**107,924**	**Mixed Residue**	**1.6%**		**4,055**
Food	20.1%	2.2%	50,450	Mixed Residue	1.6%	0.5%	4,055
Palm, Succulent, Coral Tree	2.7%	0.9%	6,891				
Leaves and Grass	7.0%	2.0%	17,539	**Total**	**100.0%**		**250,661**
Prunings and Trimmings	3.1%	1.3%	7,712				
Branches and Stumps	0.4%	0.4%	1,121	Curbside Residential Recycling Processing Residuals			0
Agricultural Crop Residues	0.0%	0.0%	0	C&D Processing Residuals			0
Grass Sod	0.0%	0.0%	3				
Manures	0.0%	0.1%	104	**Total Including Residuals**			**250,661**
Diapers	3.9%	0.9%	9,753				
Textiles	4.1%	0.8%	10,319	**Sample Count**			**93**
Remainder/Composite Organics	1.6%	0.4%	4,033				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

CASCADIA CONSULTING GROUP

CLIMATE ACTION PLAN CONSISTENCY CHECKLIST INTRODUCTION

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

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

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

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

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

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CAP CONSISTENCY CHECKLIST SUBMITTAL APPLICATION

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

Application Information

Contact Information

Project No./Name: Montezuma PDP/CUP PTS. No. 501449

Property Address: 6213 Montezuma Road San Diego, CA 92115

Applicant Name/Co.: Chris Elsey

Contact Phone: 785-317-5265   Contact Email: chris@myprimeplace.com

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

Consultant Name: Bradley Buser   Contact Phone: 785-317-5725

Company Name: Prime Design, LLC   Contact Email: brad@myprimedesign.com

Project Information

1. What is the size of the project (acres)? 0.285 Acres
2. Identify all applicable proposed land uses:
   - ☐ Residential (indicate # of single-family units):
   - ■ Residential (indicate # of multi-family units): 5
   - ☐ Commercial (total square footage):
   - ☐ Industrial (total square footage):
   - ☐ Other (describe):
3. Is the project or a portion of the project located in a Transit Priority Area? ■ Yes ☐ No
4. Provide a brief description of the project proposed:

   Approval of a Planned Unit Development and Conditional Use Permit for the construction of a private student dormitory building

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

CAP CONSISTENCY CHECKLIST QUESTIONS

Step 1: Land Use Consistency

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

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

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

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

The project proposed at 6219 Montezuma Ave is consistent with the relevant goals and policies of the City's "College Community Redevelopment Project" Master Project Plan. The proposed project is a 128 bed student dormitory project that is 56' in height with 3 levels of underground parking. The project meets the Core Sub-Are three main objectives as described below by providing a high quality student dormitory within easy walking distance to the SDSU Campus.

1. "Mitigate traffic and parking congestion within the redevelopment project area within the surrounding neighborhoods through the provision of high quality housing and retail service in pedestrian-oriented development directly adjacent to San Diego State University"
2. "Provide a living environment adjacent to the University which attracts University students who now commute to campus or reside in single-family homes in neighborhoods adjacent to campus which are ill suited for student housing purposes"
3. "Foster an environment which reflects a high level of concern for architecture, landscape, urban design, and land use principles appropriate to the objectives of College Area Community Plan"

The pedestrian location of the proposed project will enable student to walk to campus rather than commuting in a vehicle, thereby mitigating traffic and parking congestion. The three levels of proposed underground parking will also reduce the parking congestion near the campus. The modern, high quality single bedroom suites with a community entertainment kitchen on each floor, on-site exercise room, and on-site management office will attract University Students who previously lived in ill-suited, converted single family home "mini-dorms" in the adjacent neighborhoods. In summary, the proposed student dormitory development's modern architecture design, robust landscaping, and pedestrian urban design principles meet the three main objectives of the "College Community Redevelopment Project Master Project Plan."

Additionally, the project is located in the RM-3-9 zoning area. A dormitory use is consistent with the allowable zoning of this area as a conditional use. Accordingly, the project has applied for a Conditional Use Permit (CUP).

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

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

Step 2: CAP Strategies Consistency

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

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

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

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

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. Electric Vehicle Charging – 3% of provided parking spaces (2 stalls) would be provided 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. Of the total listed cabinets, boxes or enclosures provided, 50% (1 stall) would have the necessary electrical vehicle supply equipment installed to provide active electric vehicle charging stations for us by tenants.	☑	☐	☐

Strategy 3: Bicycling, Walking, Transit & Land Use (Complete this section if project includes non-residential or mixed uses)			
4. *Bicycle Parking Spaces* Would the project provide more short- and long-term bicycle parking spaces than required in the City's Municipal Code (Chapter 14, Article 2, Division 5)?[6] Check "N/A" only if the project is a residential project. EXEMPT, the project is a residential project. The project is required by municipal code to provide 38 stalls. In an effort to reduce on-site automobile parking, the project's TDM (transportation demand management) plan proposes an additional 70 bicycle parking spaces. These are provided in a combination of spaces within an enclosed bike parking area and throughout the parking garage.	☐	☐	☑

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

5. *Shower facilities*

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

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

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

EXEMPT, the project is a residential project.

☐ ☐ ☑

6. *Designated Parking Spaces*

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

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

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

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

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

☐ ☐ ☑

EXEMPT, the project is a residential project

7. *Transportation Demand Management Program* If the project would accommodate over 50 tenant-occupants (employees), would it include a transportation demand management program that would be applicable to existing tenants and future tenants that includes: At least one of the following components: • Parking cash out program • Parking management plan that includes charging employees market-rate for single-occupancy vehicle parking and providing reserved, discounted, or free spaces for registered carpools or vanpools • Unbundled parking whereby parking spaces would be leased or sold separately from the rental or purchase fees for the development for the life of the development And at least three of the following components: • Commitment to maintaining an employer network in the SANDAG iCommute program and promoting its RideMatcher service to tenants/employees • On-site carsharing vehicle(s) or bikesharing • Flexible or alternative work hours • Telework program • Transit, carpool, and vanpool subsidies • Pre-tax deduction for transit or vanpool fares and bicycle commute costs • Access to services that reduce the need to drive, such as cafes, commercial stores, banks, post offices, restaurants, gyms, or childcare, either onsite or within 1,320 feet (1/4 mile) of the structure/use? Check "N/A" only if the project is a residential project or if it would not accommodate over 50 tenant-occupants (employees). EXEMPT, the project is a residential project The project has generated a TDM as a method of reducing on-site parking. The TDM document approaches this reduction in the following ways: Utilizing shared parking facilities at the adjacent SDSU parking garage, having guest parking permits on-hand for the same facility, maintaining information on-site related to mass transit and similar alternative transportation modes, additional bicycle parking (discussed above), and heavily subsidized transit passes. These measures will be monitored regularly by the City Engineer to evaluate and determine their effectiveness.	☐	☐	☑

Step 3: Project CAP Conformance Evaluation (if applicable)

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

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

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

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

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

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

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

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

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

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

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

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

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

CLIMATE ACTION PLAN CONSISTENCY CHECKLIST
ATTACHMENT A

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

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

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

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

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

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

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

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

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

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

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

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

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