

**SEWER STUDY  
FOR  
SAN DIEGO STATE UNIVERSITY  
MISSION VALLEY**

**Job Number 18150  
April 17, 2019**

**RICK ENGINEERING COMPANY**



[rickengineering.com](http://rickengineering.com)



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MISSION VALLEY**

**April 17, 2019**

**Prepared for:  
San Diego State University**

**Prepare by:  
Rick Engineering Company  
5620 Friars Road  
San Diego, CA 92110**

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# SDSU Mission Valley West Project Sewer Study

## A. OVERVIEW

### 1. Purpose of Study

The purpose of this study for SDSU Mission Valley West Project is to present an analysis of the proposed sewer system that will serve the Project. This Project consists of proposing a stadium, parks and trails, SDSU campus buildings, residential housing and hotel and conference centers, all located within Mission Valley in the City of San Diego, California. The sewer design shown on the Civil Engineering Design Development drawings are preliminary. For final plans the engineer of work shall finalize the sewer study per the City of San Diego Sewer Design Manual and the SDSU Standards.

### 2. Project Location

The Project is located on the existing San Diego County Credit Union Stadium Site. The Project is bounded by the San Diego River to the south, Friars Road and San Diego Mission Road to the north and by I-15 to the East. Sewer services for the Project will be provided by the City of San Diego.

### 3. Project Description

The proposed SDSU Mission Valley West Campus project consists of a 35,000 seated stadium, 400 hotel rooms, approximately 1,565,808 square foot of commercial and office space, 4,538 residential units, parking garages and shared a SDSU/Community active park. The sanitary sewer system will be an "engineered sewer system", and the design criteria used for this study is the City of San Diego Sewer Design Manual, dated May 2015 and the City of San Diego Regional Standard Drawings for on-site sewer mains. The sewer mains are proposed to be private. The sewer mains will vary in size from 8" to 18", are to be PVC, and manhole spacing shall follow the design guidelines per the Sewer Design Manual.

The project proposes three sewer systems; 1) System 100 (west), 2) System 200 (central) and 3) System 300 (east), which ultimately connect to the existing 84"/96" Mission Valley Trunk sewer which is located at the south end of the project. Systems 100 and 300 propose new connections to the existing 84"/96" trunk sewer, which will mimic the current existing 18" sewer connection south of Node 218.

#### 4. Off-Site Flows

Fire Station 45 and 35 SF Residential homes from the Serra Mesa neighborhood to the north of the site, currently sewer to the existing 8" sewer line within the SDCCU Stadium site. It was evaluated whether the 35 homes could sewer to the north, however the northerly sewer invert elevation is approximately 40' above the sewer for the 35 homes, so the 35 homes will continue to drain through the proposed SDSU MV site. Since the proposed SDSU MV sewer system will be private, a Memo of Understanding will be required between the City and SDSU.

### B. SEWER SUPPLY

On site sewer mains range from 12" to 18" PVC throughout the project. This "engineered sewer system" is a gravity system which centrally flows south, to the existing 84"/96" Mission Valley Trunk sewer and has modifications from the standards that are required, which are stated in the Design Criteria section on this study.

#### 1. Design Criteria

The design and sizing criteria for the analysis of the proposed sewer system is based on the City of San Diego Sewer Design Manual and summarized below.

##### a) Sewage Generation Factors

Flows for residential, hotels/commercial and campus building populations shall be based upon the following:

- Residential:
  - 1 residential unit = 1 EDU
  - 1 EDU = 280 Gallons Per Day
- Commercial/Hotels:
  - Maximum density = 12.5 DU/AC
  - 1 EDU = 280 Gallons Per Day
- Campus:
  - Maximum density = 10.9 DU/AC
  - 1 EDU = 280 Gallons Per Day

##### b) Peaking Factor

The peaking factor used for this study references the City of San Diego Sewer Design Manual. Figure 1-1, "Peaking Factor For Sewer Flows" has been incorporated in calculating the total peak flow for the project.

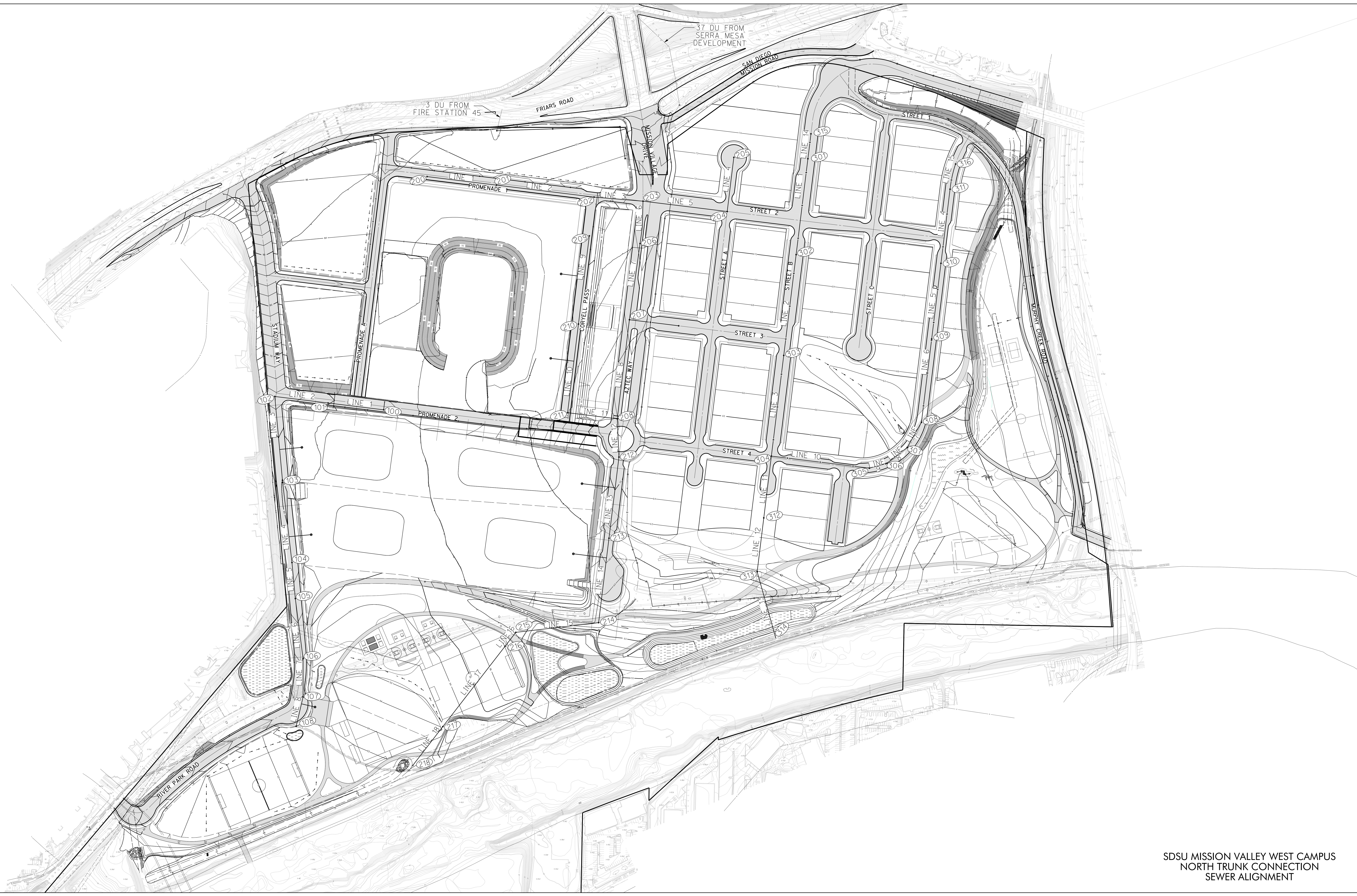
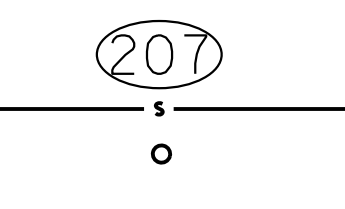
c) Sewer Pipe

- The proposed gravity sewer pipe on the site is intended to convey the peak wet weather flow without exceeding the maximum allowable depth of flow in the pipe (see below).
  - 50% full design flow for pipes  $\leq 15''$  in diameter
  - 75% full design flow for pipes  $\geq 18''$  in diameter
- Gravity sewer main shall be designed with a minimum pipe slope of 0.3% maintaining a velocity of 2 feet/second in peak flows, or with a minimum pipe slope of 1%. The final engineering for the sewer system shall be designed to maximize the sewer slopes in all mains where applicable.
- No drops across the sewer manhole shall be constructed. To facilitate the sewer manhole transitions, PVC lined sewer manhole bases shall be implemented to minimize flow disruptions.

2. Conclusion

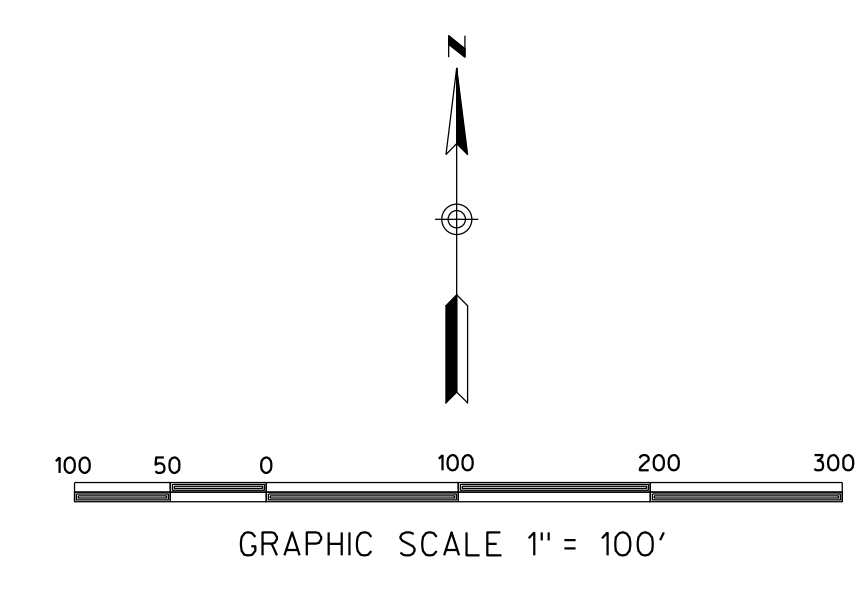
This study was performed to ensure that the proposed onsite private sewer system has the capacity for the proposed project. The results show that the proposed sewer meets the design requirements of minimum slope of 0.3%, or minimum velocity of 2 fps, as well as meeting the pipe capacity requirements.

LEGEND  
NODE NUMBER  
SEWER MAIN  
SEWER MANHOLE



3 DU FROM  
FIRE STATION 45

37 DU FROM  
SERRA MESA  
DEVELOPMENT



**RICK**  
3420 FRIARS ROAD  
SAN DIEGO, CA 92110  
619.291.4757  
P:619.291.4165

SDSU MISSION VALLEY WEST CAMPUS  
NORTH TRUNK CONNECTION  
SEWER ALIGNMENT