

SEWER STUDY
For
UNIVERSITY SELF STORAGE
5150 UNIVERSITY AVE.
SAN DIEGO, CA

February, 2022



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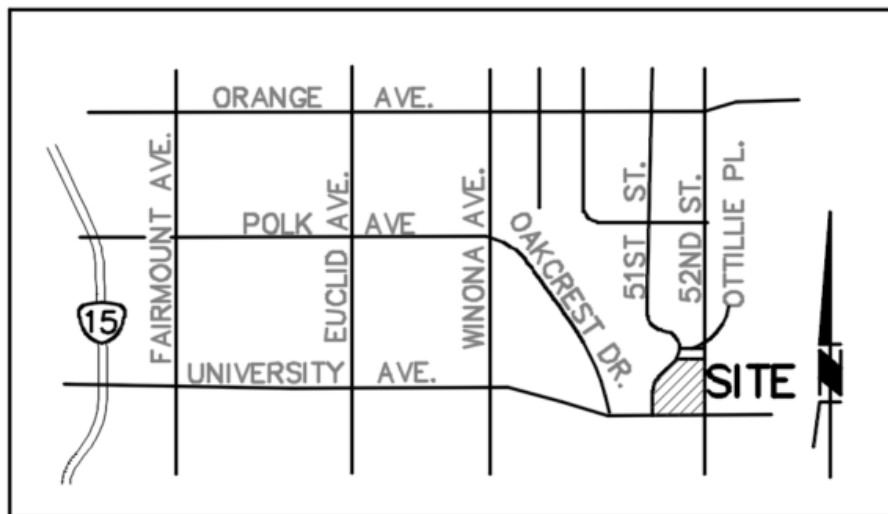
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Project Description

This sewer study has been prepared to analyze the effect of the redevelopment project on the downstream system and its ability to accommodate the effluent service load from the proposed project described hereon. The project site is located at 5150 University Ave. (APN 472-383-04). This sewer study estimates the preliminary sewer flow rates anticipated from the proposed development and presents hydraulic calculations for the proposed sewer facilities.

The 2.145-acre site is located at the northwest corner of University Ave. and 52nd Street. The site has an abandoned commercial building with associated parking and landscape areas. The proposed development will be an approximately 141,000 two-story self-storage building with a basement.

Currently, the project site contains two abandoned 10-inch VC sewer mains crossing the property at the southwest corner and from west to east in the southern part of the property; said abandoned sewer mains will be removed and the existing easements vacated. The abandoned commercial building is being served by an existing 6-inch sewer lateral, which will remain in service and discharges into a 10-inch PVC public main flowing east to west along University Ave; an additional 6-inch sewer lateral is being proposed on the east side of the property fronting 52nd street which will discharge into the existing 8-inch PVC main, said main flows north to south and eventually confluences with the 10-inch PVC main located on University Ave. The private sewer system will be designed per the City of San Diego Sewer Guidelines.



VICINITY MAP

N.T.S

Design Criteria

The design for this sewer study was completed per the design criteria listed in the City of San Diego's Sewer Design Guide, dated May, 2015. All gravity sewers have been designed to convey peak wet weather flow. Per the City of San Diego Sewer Design Guide, all sewer laterals have been designed to convey this flow when flowing half full. Manning's Equation with an "n" value of 0.013 was used to size all gravity sewer laterals. All sewer laterals were designed to maintain a minimum velocity of 2 feet per second (ft/sec) and a maximum velocity of 10 feet per second at design capacity, or a minimum slope of 1%, per the design manual.

Sewer Flow Projections

The on-site sewer flows projections were determined using the zone density conversion and the city of San Diego Municipal Code, Chapter 13, §131.0507. Project property will not be deviating from the existing CC-5-4 zoning; said zone permits a maximum of 1 dwelling unit per 1,500 square feet. See Appendix A – Sewer Study Exhibit University Ave and 52nd Street

Conclusions

Sewer lateral 1 located on 52nd Street is expected to create a peak wet weather flow of 0.055 cfs, at a velocity of 4.0 fps, with a depth ratio (dn/D) of 0.11. Said flows will discharge into the existing 8" main that will convey flows in a southerly direction and eventually comingle with the existing 10" sewer main located on University Avenue, where flows will continue in an easterly direction. The existing 6" sewer lateral 2, located along the frontage of University Avenue, is expected to create a peak wet weather flow of 0.055 cfs, at a velocity of 3.9 fps, with a depth ratio (dn/D) of 0.12, said flows discharge to into the existing 10" main within University Avenue and will confluence with flows created from lateral 1 and off-site flows before continuing in a westerly direction.

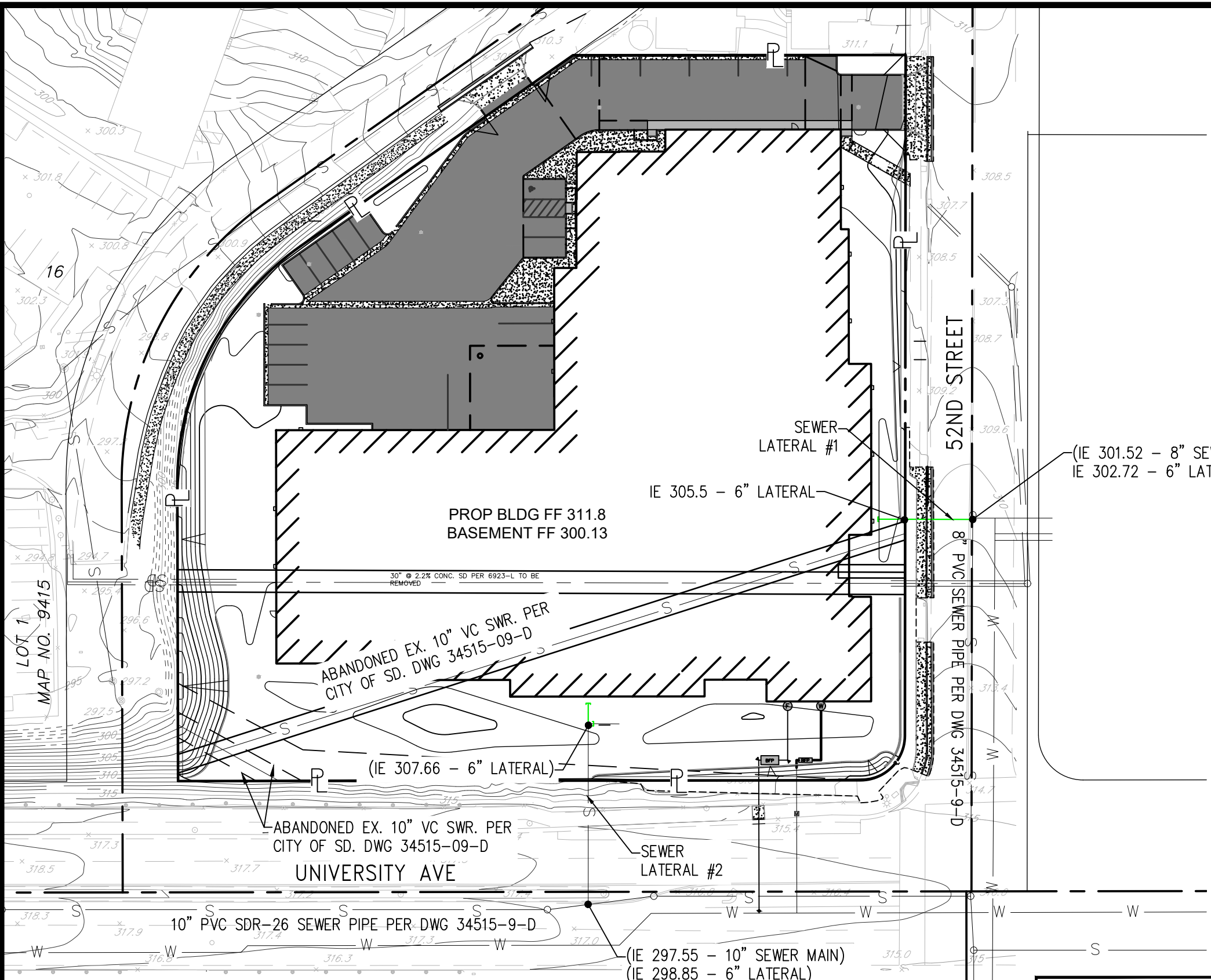
This report assumes the sewer master plan considered the maximum allowed dwelling units based on the zoning when determining the maximum peak wet weather flow created in the sewer influence area when designing the public sewer main. Because this project does not intend to request a deviation to its current zoning, and the property is not increasing in size, the peak wet weather flows will not increase within the existing 10" main along University Ave.

References

"Sewer Design Guide", revised May 2015, City of San Diego Public Utilities Department.

Appendix A – Sewer Study
Exhibit University Ave and 52nd Street

C:\Users\Jose Sanchez\Documents\257.12 51st & University\Sewer Study\Sewer Exhibit.dwg



(IE 301.52 - 8" SEWER MAIN)
IE 302.72 - 6" LATERAL

IE 305.5 - 6" LATERAL

PROP BLDG FF 311.8
BASEMENT FF 300.13

ABANDONED EX. 10" VC SWR. PER
CITY OF SD. DWG 34515-09-D

(IE 307.66 - 6" LATERAL)

ABANDONED EX. 10" VC SWR. PER
CITY OF SD. DWG 34515-09-D

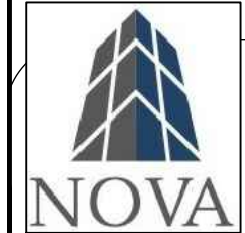
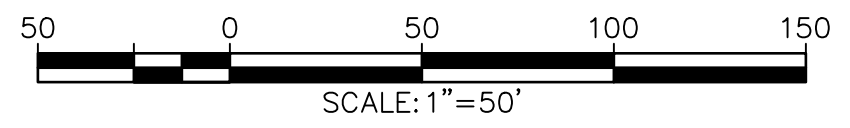
UNIVERSITY AVE

10" PVC SDR-26 SEWER PIPE PER DWG 34515-9-D

(IE 297.55 - 10" SEWER MAIN)
(IE 298.85 - 6" LATERAL)

52ND STREET

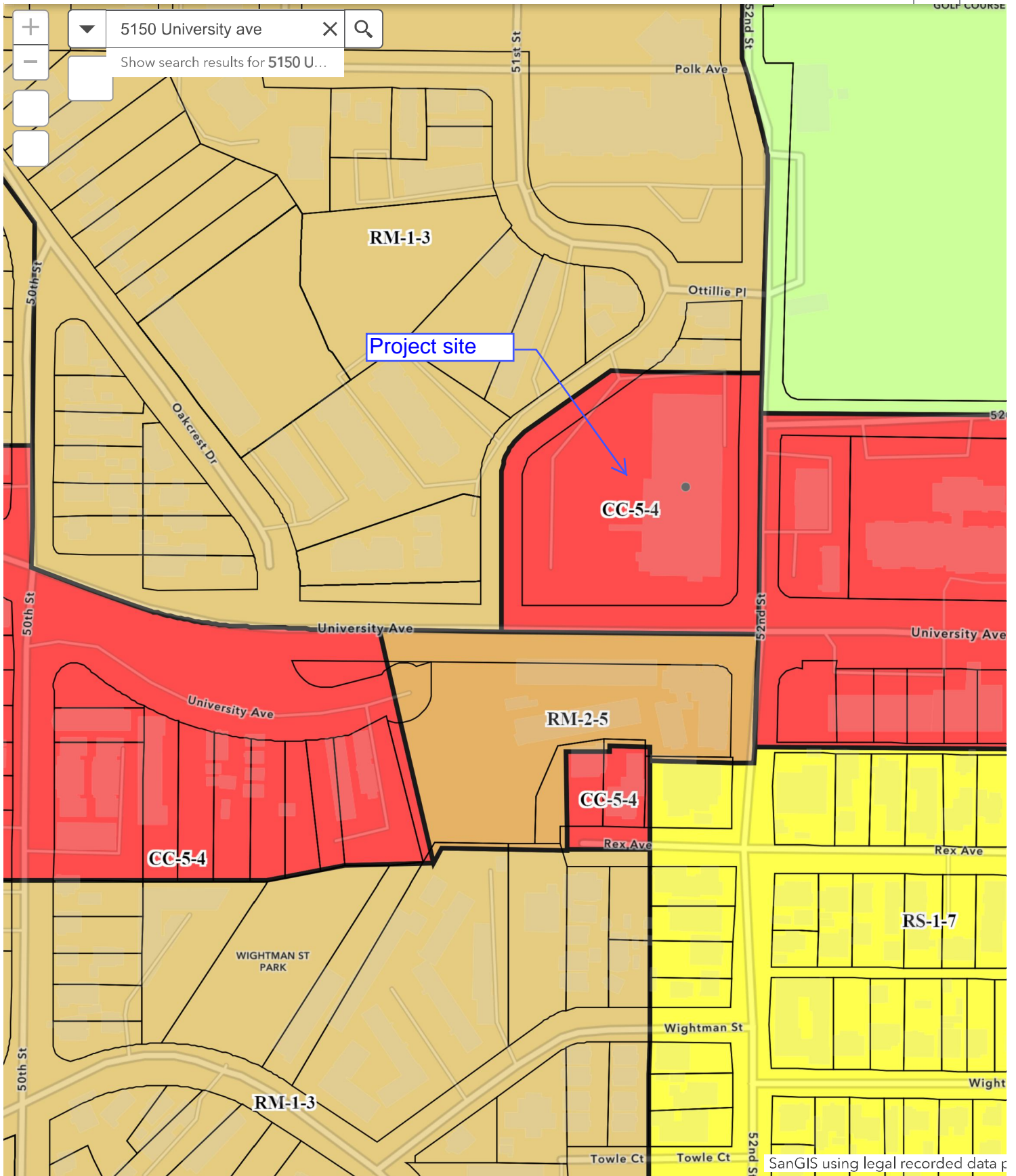
8" PVC SEWER PIPE PER DWG 34515-9-D



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5150 UNIVERSITY AVE. UNIVERSITY SELF STORAGE SEWER EXHIBIT	
DATE: 2/8/22	DRAWING: SHEET 1 OF 1

Zoning and Parcel Information Portal (ZAPP)



200ft
 -117.083 32.750 Degrees

SanGIS using legal recorded data p

Appendix B – Sewer Study Summary and Design Criteria

**SEWER LATERAL SUMMARY
UNIVERSITY SELF STORAGE
PREPARED BY NOVA ENGINEERING INC.**

2/9/2022

LINE NO.	FROM PL	TO Ex. Main	POPULATION PER D.U.	CUMM. EDU UPSTREAM MANHOLE	POPULATION SERVED		CUMM. POP SERVED	PEAK/AVG RATIO	PEAK DESIGN FLOW		LINE SIZE (INCHES)	DESIGN SLOPE (%)	dn(FT) n= 0.013	dn/D	VELOCITY (fps)
					IN LINE D.U.'S	CUMM. DU's			M.G.D.	CFS					
Lat 2	PL	10" Main	3.5	0	32	32	112.0	4.00	0.036	0.055	6	9.20	0.06	0.12	3.9

Per City of San Diego Municipal Code

CC-5-4 is intended to accommodate *development* with a pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*

Gross Site Area = 94,731 sf

DU=94731/1500

DU=63.15

Channel Report

SEWER LAT. 1

Circular

Diameter (ft) = 0.50

Invert Elev (ft) = 1.00

Slope (%) = 10.80

N-Value = 0.013

Calculations

Compute by: Known Q

Known Q (cfs) = 0.055

Highlighted

Depth (ft) = 0.07

Q (cfs) = 0.055

Area (sqft) = 0.02

Velocity (ft/s) = 3.55

Wetted Perim (ft) = 0.38

Crit Depth, Yc (ft) = 0.12

Top Width (ft) = 0.35

EGL (ft) = 0.27

Elev (ft)

Section

2.00

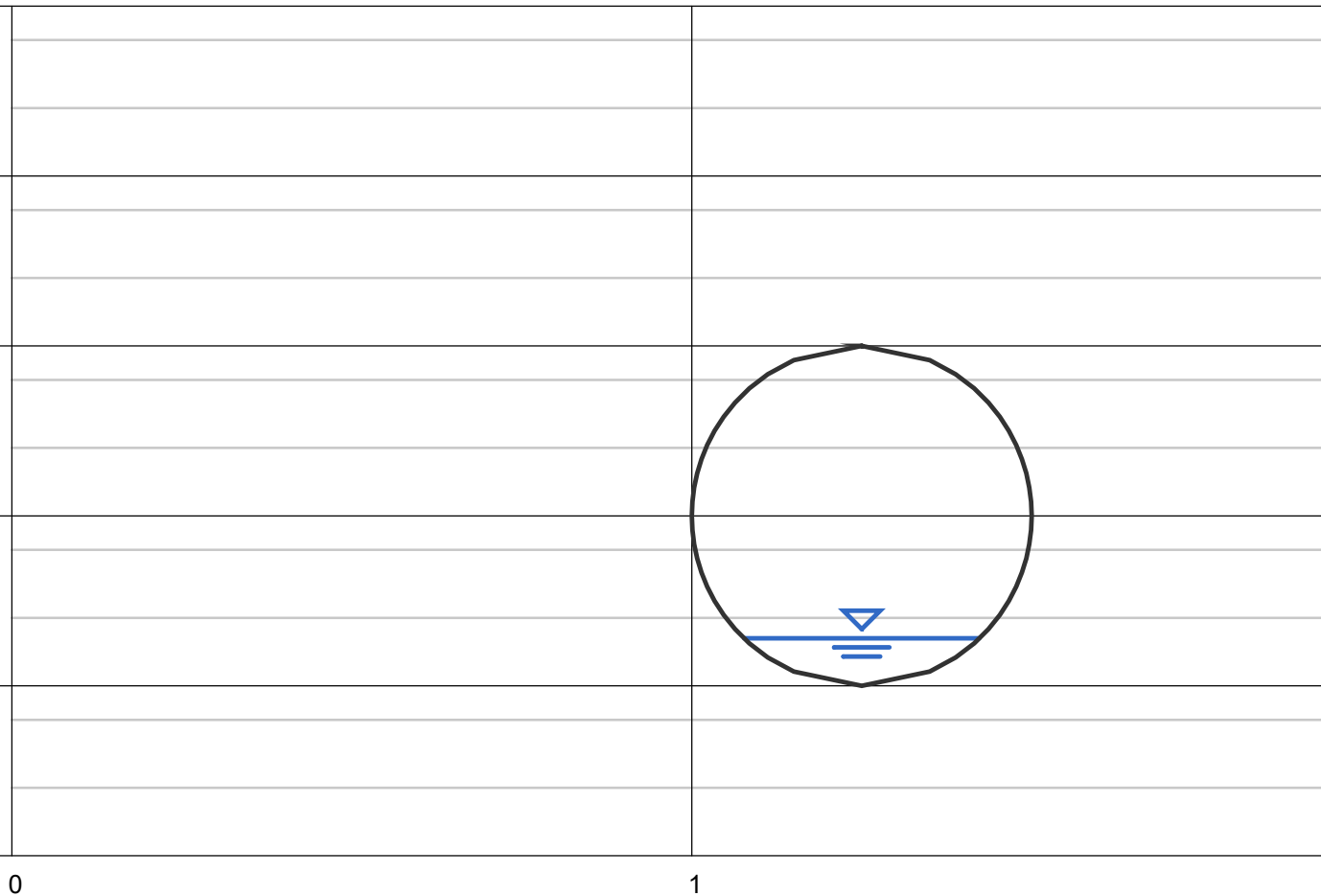
1.75

1.50

1.25

1.00

0.75



Reach (ft)

Channel Report

SEWER LAT. 2

Circular

Diameter (ft) = 0.50

Invert Elev (ft) = 1.00

Slope (%) = 9.20

N-Value = 0.013

Calculations

Compute by: Known Q

Known Q (cfs) = 0.055

Highlighted

Depth (ft) = 0.07

Q (cfs) = 0.055

Area (sqft) = 0.02

Velocity (ft/s) = 3.55

Wetted Perim (ft) = 0.38

Crit Depth, Yc (ft) = 0.12

Top Width (ft) = 0.35

EGL (ft) = 0.27

Elev (ft)

Section

2.00

1.75

1.50

1.25

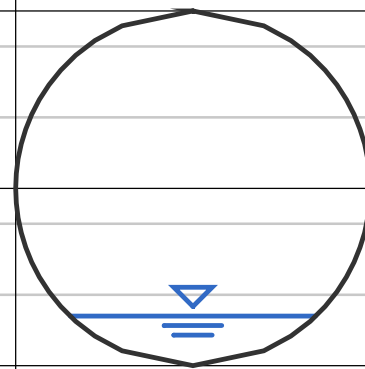
1.00

0.75

0

1

Reach (ft)



streets, in accordance with Council Policies 400-13 and 400-14 (ATTACHMENT 1).

- c. As development or redevelopment occurs, existing sewers in environmentally-sensitive areas shall be relocated to streets or other appropriate areas where possible (Ref. Municipal Code §144.0240(a)).
- d. Where an existing canyon sewer main has capacity to serve a new development, the number of sewer mains penetrating the canyon from a new development shall be limited. This shall require coordination with other new developments wanting to access the same canyon sewer main. Sewer main access roads shall be provided to the point of connection and to the extent of all new manholes, and shall be coordinated with other access requirements, such as equestrian, pedestrian, multiple-use recreational trails, or storm water detention/retention/remediation facilities. However, all sewer access in canyons or other environmentally-sensitive lands shall be designed in conformance with Council Policies 400-13 and 400-14 (ATTACHMENT 1).
- e. To assist in determining where to direct sewer flow or where new sewer facilities may be located within canyons and environmentally-sensitive lands, a cost-benefit analysis shall be conducted per Council Policy 400-14 (ATTACHMENT 1).
- f. Sewer access roads that penetrate into canyons shall not exceed the maximum allowable slope (Ref. Subsection 3.2.3.4c) and shall be aligned along the centerline of the sewer main as much as practicable.
- g. To assist in determining where new sewer facilities and sewer access roads may be located within canyons and environmentally-sensitive lands, a sewer maintenance plan shall be prepared in accordance with Council Policy 400-13 (ATTACHMENT 1).

1.3 PLANNING STUDY

1.3.1 General Requirements

For a new development and/or redevelopment, a sewer planning study for new sewer facilities shall be prepared, as directed by the Senior Civil Engineer, to demonstrate that there are no negative impacts on the existing sewer system. A minimum of three (3) copies of the planning study shall be submitted, each stamped and wet/electronically signed by a Civil Engineer registered in the State of California. Each study shall be bound and formatted in accordance with this *Sewer Design Guide* and/or the *Clean Water Program (CWP) Guidelines*.

The final approved sewer study shall also be submitted electronically in PDF format.

For new development, the planning study must be approved prior to approval of the tentative map. The study shall include all items listed in the minimum intake standards for sewer studies and subsequent reviews shall include an explanation for each review comment.

1.3.1.1 **Capacity**

For new development and/or redevelopment, the planning study shall address the capacity of all sewer collection and trunk sewer systems that will be impacted downstream of the new development and/or redevelopment and shall demonstrate that sewer capacity is available in those systems to accommodate the new development and/or redevelopment (refer to Section 1.7). Authorization and approval to impact any downstream sewer system must be obtained from the reviewing Senior Civil Engineer. If such downstream sewer system has already been identified as critical or sub-critical in a monitoring report, the Senior Civil Engineer may require additional field monitoring to determine if adequate capacity is available.

For an existing development and/or redevelopment, the planning study shall address the existing capacity within the existing sewer collection system, and identify all existing facilities whose capacity will be exceeded by projected sewage flows.

Where available capacity will be exceeded, the planning study shall propose upsizing of sewer facilities in accordance with Subsection 1.3.3.

Where applicable, the DESIGN ENGINEER shall incorporate into the community's existing master sewer plan, including zoning changes and other specific plans, the proposed sewer system amendments resulting from the drainage basin evaluation.

1.3.1.2 **Drainage Basin**

The planning study shall address the sewage generating potential of the entire drainage basin where the development is located. It shall also include current topographic maps of the entire drainage basin and any and all adjacent new developments for which a planning study has not yet been submitted and/or approved. The maps shall demonstrate that no adjacent development, including potential and existing pumped lands outside of the drainage basin and any lands outside of the incorporated boundaries of the City of San Diego with potential to be served but where no current master sewerage plan exists, will be precluded from obtaining sewer service. The planning study shall also show all proposed sewer system alignments (superimposed on planned

street alignments) and all potential points of entry of sewage from surrounding lands.

1.3.1.3 **Depth of Mains**

The planning study shall clearly identify all existing and/or proposed facilities which will exceed standard depths for sewer mains as defined in Subsection 2.2.1.5. In cases where proposed sewers will exceed 15 feet in depth, a request for design deviation (ATTACHMENT 2) must be submitted to the Water and Sewer Development Review Senior Civil Engineer with the Sewer Planning Study. A design deviation will only be approved in exceptional cases and when adequate justification is provided. Mains more than 20 feet deep shall also require approval from the Wastewater Collection Division Senior Civil Engineer.

1.3.1.4 **Existing Studies**

The City of San Diego maintains an extensive library of sewer planning studies which were prepared for lands throughout the City. These studies are available for review at the Water and Sewer Development Section, Public Utilities Department. All studies are catalogued by subdivision or trunk sewer name. Logs of sewer flow study analyses for recently monitored trunk sewers and a map of sewers which meet the Regional Water Quality Control Board (RWQCB) criteria for being critical or sub-critical may also be viewed. In addition, information regarding proposed CIP projects within the vicinity of a given project may be requested. In many cases, an addendum or reference to one of the existing planning studies may be acceptable in lieu of an independent study. Concurrent with the preparation of planning studies for sewers proposed to connect to existing canyon sewer mains, a study of flow redirection per Council Policy 400-13 and a cost-benefit analysis per Council Policy 400-14 shall be prepared (Refer to ATTACHMENT 1). An existing analysis of redirection of flows and a cost-benefit analysis, as required by Council Policies 400-13 and 400-14 respectively, may be available for reference for various existing canyon sewers.

1.3.2 **Flow Estimation**

1.3.2.1 **Land Use**

Present or future allowable land use, whichever results in higher equivalent population, shall be used to generate potential sewage flows.

1.3.2.2 **Flow Determination**

Flow definitions and calculation procedures are listed below. All calculations shall be tabulated for each sewer main section (manhole to manhole) in the

format shown on Figure 1-2.

Equivalent Population: The equivalent population shall be calculated from zoning information (Ref. Section 1.6). For major new facilities such as high rise apartment buildings, flow rates (assuming one lateral) shall be checked based on the most current, adopted edition of the Uniform Plumbing Code. The most conservative flow rate shall govern.

Daily Per Capita Sewer Flow: The sewer flow for the equivalent population shall be 80 gallons per capita per day (gpcd).

Average Dry Weather Flow (ADWF): Equivalent populations shall be used to calculate the average dry weather flow. The average dry weather flow for each sewer main reach (manhole to manhole) shall be determined by multiplying the total accumulated equivalent population contributing to that reach by 80 gallons per capita per day:

$$\text{Average Dry Weather Flow} = (80 \text{ gpcpd}) \times (\text{Equivalent Population})$$

Peaking Factor for Dry Weather Flow (PFDWF): The peaking factor is the ratio of peak dry weather flow to average dry weather flow. It is dependent upon the equivalent population within a tributary area. The tributary area is the area upstream of, and including, the current reach for the total flow in each reach of pipe. Figure 1-1, consisting of the table prepared by Holmes and Narver in 1960, shall be used to determine peaking factors for each tributary area. In no instance shall the dry weather flow peaking factor be less than 1.5.

Peak Dry Weather Flow (PDWF): The peak dry weather flow for each sewer main reach shall be determined by multiplying the average dry weather flow by the appropriate peaking factor (Note that peak dry weather flows are not algebraically cumulative as routed through the sewer system, i.e. the peak dry weather flow at any point shall be based on the equivalent population in the basin to that point (Ref. Figure 1-2).

$$\text{Peak Dry Weather Flow} = (\text{Average Dry Weather Flow}) \times (\text{Dry Weather Flow Peaking Factor})$$

Peaking Factor for Wet Weather Flow (PFWWF): The peaking factor for wet weather flow is the ratio of peak wet weather flow to peak dry weather flow. It is basin-specific and shall be based on essential information available at the time of the planning study. Information such as historical rainfall/sewage flow data, land use, soil data, pipe/manhole age, materials and conditions, groundwater elevations (post development), inflow and infiltration (I/I) studies, size, slope and densities of the drainage basin, etc., should be utilized in the wet weather analysis to estimate the peaking factor for wet weather. Upward adjustments shall be made in areas with expected high inflow and

infiltration (i.e. high ground water or in areas with lush landscaping schemes). Flow meters are installed throughout the City's sewer system. Flow data collected from these meters are available upon request. The objective of this analysis is to quantify the magnitude of peak wet weather flow with a 10-year return period on a statistical basis.

The Senior Civil Engineer overseeing the preparation of the planning study shall coordinate with the City Sewer Modeling Group for approval of the peaking factors to be used for design.

Peak Wet Weather Flow (PWWF): The peak wet weather flow (or design flow) for a gravity sewer main reach shall be determined by multiplying the peak dry weather flow (ref. Figure 1-2) by the appropriate wet weather peaking factor. The peak wet weather flow is the design flow for a gravity sewer main. It is determined at any point in the system based on the associated upstream average dry weather flow in the basis to that point times the peaking factor for wet weather.

$$\text{Peak Wet Weather Flow} = (\text{Peak Dry Weather Flow}) \times (\text{Wet Weather Peaking Factor})$$

1.3.3 Pipe Sizing Criteria

1.3.3.1 Hydraulic Requirements

Manning's formula for open-channel flows shall be used to calculate flows in gravity sewer mains. Manning's coefficient of roughness "n" shall be assumed to be 0.013 for all types of sewer pipe. Sewer grades shall be designed for velocities of 3 to 5 feet per second (fps) where possible. This is extremely important in areas where peak flow will not be achieved for many years. The minimum allowable velocity is 2 fps at calculated peak dry weather flow, excluding infiltration. Sewer mains that do not sustain 2 fps at peak flows shall be designed to have a minimum slope of 1 percent. Additional slope may be required by the Senior Civil Engineer where fill of varied depth is placed below the pipe in order to provide adequate slope after expected settlement occurs. The maximum allowable velocity shall be 10 fps and shall be avoided by adjusting slopes, by increasing the pipe diameter, or by utilizing a vertical curve transition to lower velocities per subsections 2.2.4 and 2.2.9.4. If the Senior Civil Engineer approves a velocity greater than 10 fps, the pipe shall be upgraded to SDR 18 PVC (standard dimension ratio polyvinyl chloride), concrete-encased VC (vitrified clay), or PVC sheet-lined reinforced concrete pipe.

1.3.3.2 **Slope**

Slope shall be calculated as the difference in elevation at each end of the pipe divided by the horizontal length of the pipe, and shall be a constant value between manholes.

1.3.3.3 **Ratio of Depth of Flow to Pipe Diameter (d_n/D)**

New sewer mains 15 inches and smaller in diameter shall be sized to carry the projected peak wet weather flow at a depth not greater than half of the inside diameter of the pipe (d_n/D not to exceed 0.5). New sewer mains 18 inches and larger shall be sized to carry the projected peak wet weather flow at a depth of flow not greater than 3/4 of the inside diameter of the pipe (d_n/D not to exceed 0.75).

1.3.3.4 **Minimum Pipe Sizes**

The size of a sewer pipe is defined as the inside diameter of the pipe. Sewer mains shall be a minimum of 8 inches in diameter in residential areas, and a minimum of 10 inches in commercial, industrial, and high-rise building areas.

1.3.4 **Sewer Study Exhibit Criteria**

The DESIGN ENGINEER's sewer study exhibits shall be used to evaluate hydraulics and to establish minimum street and easement widths. Therefore, these documents need to reflect depths and separation of mains from other utilities and improvements. Refer to the Minimum Intake Standards for Sewer Studies in Subsection 1.8.

1.3.5 **Private On-Site Wastewater Treatment and Reuse**

Refer to Attachment 6 for permitting guidelines of private on-site wastewater treatment and reuse in the City of San Diego.

1.4 **SEPARATION OF MAINS**

1.4.1 **Horizontal Separation**

1.4.1.1 **Wet Utilities**

The separation of water, sewer, reclaimed water mains, and storm drains shall comply with the *State of California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Sewers*. At least 10 feet of horizontal separation shall be maintained between the nearest outer surfaces of sewer lines and potable water mains. More stringent separation requirements

may be necessary if unusual conditions, such as high groundwater levels or large diameter mains, exist (Ref. State of California “Blue Book”). If a horizontal separation of 10 feet or other requirement is not possible, a deviation from standards may be permitted by the City provided the structural integrity of both the pipe and the pipe joints is upgraded in accordance with the *State of California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Sewers - Special Provisions*, and provided it has been reviewed and written approval has been obtained from the California Department of Health Services, Drinking Water Field Operations Branch. This deviation is not applicable for subdivisions, or where sewers are placed in new streets. Lateral connections to sewer mains typically do not meet the upgraded joint requirements for reduced separation. All installations of sewer mains which fail to comply with the basic separation standards must be reviewed and approved by the State of California Department of Health Services. For separation from curbs, see Subsection 2.2.5.2. For separation from structures, see Subsections 2.2.5.8 and 2.2.5.9.

1.4.1.2 Separation for Dry Utility Pipes and Cable Conduits

Other utility pipes, conduits, and cable lines shall be governed by their respective franchise agreement with the City of San Diego. A minimum 10-foot horizontal separation is desirable between sewer mains and any other utility infrastructure. Separations of less than 10 feet must be approved by the Senior Civil Engineer of Water and Sewer Development Section, Public Utilities Department. Additional separation may be required for sewer mains which exceed 10 feet in depth. The DESIGN ENGINEER shall consider the relative depth of adjacent utilities and the stability of the soils where the sewer shall be constructed when designing the separation from other utilities. Refer to San Diego Regional Standard Drawing (SDRSD) M-22 and City of San Diego Drawing SDM-111 for standard locations of utilities in streets.

1.4.2 Vertical Separation

1.4.2.1 Shallow Mains, General

Shallow mains require a special design. Review and written approval is required from the California Department of Health Services, Drinking Water Field Operations Branch for deviations from vertical separation requirements for water and sewer utilities. For mains less than 4 feet deep, special design shall be required for live and dead loads and vertical cyclical deflections which shall include an evaluation to demonstrate zero deflection in the pavement.

1.4.2.2 Parallel Mains

Potable water, reclaimed water, and sewer mains shall be located at various

depths below the ground surface, in order of descending water quality. Potable water pipelines shall be located above both reclaimed water pipes and sewer mains, and reclaimed water mains shall be located above sewer mains. A minimum vertical separation of one foot shall be provided between the top and bottom surfaces of the pipes in the same street or easement.

1.4.2.3 **Crossing Mains**

A minimum vertical separation of 12 inches shall be provided between the top and bottom surfaces of crossing utility conduits and shall comply with the *State of California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Sewers*. Separation measurements shall be taken from the outer most surface of any pipeline protection (i.e. concrete encasement or steel sleeve) which may be installed. Where the vertical separation is less than 12 inches, a request for design deviation (ATTACHMENT 2), with justification, shall be submitted for review. If approved, for pipes 12 inches or less in diameter, a 12-inch sand cushion, or alternatively a minimum 6-inch sand cushion with 1 inch neoprene pad shall be used. Separations of less than 7 inches will not be allowed by the City. For skewed main crossings, see Subsection 2.2.6. Mains crossing large facilities shall evaluate deflection across the span, changes in hydraulics due to change of slope, shear forces, and special joint designs to account for pipe movement.

1.5 **PUMP STATION PLANNING CRITERIA**

If at all possible, the construction of a sewer pump station is to be avoided. However, in cases where constraints such as topography and environmentally sensitive habitat dictate, a pump station may be necessary (Ref. Council Policies 400-13 and 400-14 – ATTACHMENT 1). The DESIGN ENGINEER shall analyze the planning area for the sewer system to minimize the number of units to be pumped and to design the shortest possible force main. In cases where only a small tributary area is to be served by a pump station, the City will accept the facility as public only if it can be shown that the capitalized cost of facility replacement and maintenance will not exceed 50 percent of the standard sewer fees for the area to be served. Otherwise, the pump station must be privately owned, maintained and operated. In cases where a pump station will be a public facility, specific criteria for the design, construction, and operational testing of sewer pump stations are given in Chapter 7.

1.5.1 **Pump Station Design Capacity**

The Pump Station Design Capacity shall be calculated as follows:

Pump Station Design Capacity (PSDC): Pump stations shall be designed to pump the calculated peak wet weather flow from the upstream tributary area.

Pump Station Reserve Capacity Factor (PSRCF): This is a safety factor that takes into account that service pumps will generally not be operating at their

full intended design capacity due to mechanical wear and the subsequent loss of efficiency, and increases in force main friction loss due to the deposition of solids and grit. The reserve capacity factor shall be 1.0 if two (2) hours emergency storage (Ref. Subsection 7.2.6.7) or six hours emergency storage (Ref. Subsection 7.2.7) are provided. Where this storage is not provided in design, then a reserve capacity factor greater than 1.0 shall be used and an appropriate factor shall be evaluated for approval, on a case-by-case basis, by the Wastewater Collections Division Senior Civil Engineer.

$$\text{Pump Station Design Capacity} = (\text{Peak Wet Weather Flow}) \times (\text{Pump Station Reserve Capacity Factor})$$

1.5.2 Private Pump Stations

Private pump stations (privately-owned and operated) serving more than one lot shall not be located in the public right-of-way. The capacity for private pump stations shall be determined in the same manner as for public pump stations. Station wet well detention times shall not exceed 4 hours. A planning study for the pump station outlining capacity of the pumps, equivalent dwelling units (EDU) served, capacity of the wet well, detention times, length and size of the force main, and provision of any odor control equipment shall be submitted for review to Water and Sewer Development Review, Public Utilities Department. Private pump stations shall require separate structural, mechanical, and electrical permits from the City of San Diego, Development Services Department, Building Review Division. However, private pump station plans are not reviewed for compliance with City of San Diego Sewer Design Guide Chapter 7 criteria. As such, it shall be the responsibility of the DESIGN ENGINEER to ensure that all private pump stations are adequately sized, have sufficient redundant measures (dual force mains, back-up power supply, auto dialer alarm system to a licensed plumber with 24-hour response, etc.), and comply with all applicable local, state, and federal regulations. In the design of such facilities, the DESIGN ENGINEER shall utilize sound engineering judgment to provide for an adequate design for any potential failure during the service life of the pump station. If a developer elects to construct a private sewer system including a sewer pump station, then a letter of agreement must be executed over all lots served in the subdivision if the pump station will serve two or more lots. A copy of this agreement is available at the City Plan Check Counter and the City Website <http://www.sandiego.gov/mwwd/business/sewer>. Also required is a recorded copy of the CC&R's for the home or business owners association, outlining the responsibility and maintenance requirements for the shared private improvements.

1.6 ZONE - DENSITY CONVERSIONS

Table 1-1 shall be used in planning studies to determine the equivalent

population for a given land use. These tabulated figures represent a general case analysis. When more accurate or detailed information, such as fixture unit counts, is available, Table 1-1 shall not be used. For more information on the requirements of the zones shown in Table 1-1, refer to Chapter 13 of the City of San Diego Municipal Code.

1.7 **REQUIRED CAPACITY IN EXISTING SEWER SYSTEMS DOWNSTREAM OF NEW FACILITIES**

1.7.1 **Required Capacity Downstream of New Gravity Sewers**

For a new development, the projected peak wet weather flow from the proposed system (ref. Subsection 1.3.2.2) will be added to the field measured maximum flow in the downstream sewer to determine if the projected d_n/D is in compliance with the depth criterion described in Subsection 1.3.3.3. If this criterion is not met, a comprehensive sewer study of the area shall be prepared.

The downstream system shall be studied to the point in the system where the projected peak wet weather flow from the proposed new development is less than 10% of the total flow. All sewers to this point are required to carry the total flow per the depth criterion described in the above paragraph. The existing system to be studied shall not be less than two pipe reaches (i.e. manhole to manhole) from the point of discharge of the new development into the existing system.

1.7.2 **Required Capacity Downstream of New Pump Stations**

In developed lands, the discharge of the pump station design capacity from the proposed new development will be added to the field measured maximum flow in the existing downstream sewer to determine if the projected d_n/D will comply with the depth criteria described in Subsection 1.3.3.3. If these criteria are not met, a comprehensive sewer study of the area shall be prepared.

The sewer system downstream of the pump station shall be designed for cyclical pumping operation (i.e. on-off pumping). Use the design discharge capacity of the pump station for the tributary area. As a rule of thumb, the cyclical effect in single family residential may be considered negligible when the pump station's discharge is less than 10% of the total flow. For other density types consult with the Senior Engineer. All sewers to this point are required to carry the total flow per the depth criterion described in the above paragraph. The proposed new system shall discharge at a point not less than two pipe reaches (i.e. manhole to manhole) away the existing system.

1.7.3 **Odor Control**

The DESIGN ENGINEER shall design the wastewater system so that objectionable odors are not discharged into the atmosphere or through plumbing vents. Odors are caused by organic biologic activity and the location of the problematic area in the system is not always predictable.

The DESIGN ENGINEER shall account for the possibility of odors developing as the subdivisions build out including setting right of way aside that has good access for the locations of odor control equipment. The developer will modify the system up to one year after final occupancy of the drainage basin.

Some of the properties that impact odor may include the following:

- sewage detention times
- force main discharge points
- submerged flow at siphons
- locations with turbulent flow
- flat slopes
- type of discharge content including industrial waste discharge
- temperature and weather conditions

Odor control may include chemical injection such as calcium nitrate or other approved chemicals, or installation of an activated carbon system, or both.

1.8 **MINIMUM INTAKE STANDARDS FOR SEWER STUDIES**

At a minimum, include the following items on the exhibit and within the body of all wastewater planning studies for new sewer development projects:

- a. Internal order numbers, tentative map numbers, and any discretionary permit numbers [i.e. Conditional Use Permit (CUP), Planned Residential Development (PRD), or Planned Industrial Development (PID)].
- b. Project name.
- c. Vicinity map.
- d. Scale of sufficient size to accommodate the details required by this list. Minimum Scale will be 1 inch = 100 feet.
- e. Reference drawing numbers for existing sewer mains.
- f. Limits of the project area.

- g. Streets with names or distinguishing labels and dimensions.
- h. All existing and proposed utilities with adequate separation, whether in streets, side yards, or canyon slopes. Cross sections shall show dry and wet utilities.
- i. Existing and proposed sewer mains labeled as public or private.
- j. Deviation requests for all sewer mains which exceed standard depths.
- k. All existing and proposed “sewer access” easements. Indicate whether these will be permanent, to be abandoned after construction, or will be dedicated.
- l. Paved width of all easements and connections to streets and manholes.
- m. Typical bench section for limits of easement width and paving.
- n. Topography of the entire drainage basin and the proposed development.
- o. Elevations for existing and proposed grades throughout the project area. A reference copy of the proposed grading plans may be provided instead, if applicable.
- p. Manhole numbers and reach or pipe segment numbers for ease of comparison with the flow data in the Sewer Study Summary (Figure 1-2). Label all points of connection where project flows discharge to existing facilities and, where applicable, to the terminus of the study area. For off-site sewer mains, show information for a minimum of two reaches upstream and downstream in accordance with Subsection 1.7.1. Also identify all existing sewer mains in the Remarks column of Figure 1-2 - Sewer Study Summary.
- q. Pipes labeled with size, type, flow direction, and slope.
- r. Manholes, within the limits of the project area, shown with rim elevation and invert elevation. Note that sewer depth information is more critical where the mains are not at standard depths (refer to section 2.2.1.5), where they are located in easements, where off-site flows join the project area, or where grading is proposed over existing facilities.
- s. Number of Dwelling Units per Pipe Reach. Equivalent dwelling units per each reach shall be identified from the most upstream manhole to the downstream end of the project boundary.

- t. Land use areas labeled as single family residential, multi-family residential, commercial, industrial, schools, parks, open space, multiple habitat preservation area (MHPA), multiple species conservation program area (MSCP), stream beds or 100-year flood area.
- u. Location of all proposed pump stations. Label all pump stations as public or private. For public pump stations, show access roads and lots as dedicated in fee title to the City of San Diego. All pipe systems upstream of private pump stations shall be clearly labeled “private”.
- v. Location of any sewer facilities proposed in canyons and environmentally sensitive lands. Show any required sewer access roads in order to implement the Sewer Maintenance Plan to be developed as part of the planning study (refer to Council Policy 400-13 - ATTACHMENT 1).
- w. List any documents or studies that are incorporated by reference into the report. Do not include copies of the reports in the sewer study if they are part of the Public Utilities Department’s Library.
- x. Master plan of the project area, when requested.
- y. As-built plans of existing facilities where any point of connection is planned.
- z. Flow metering data, when requested.

**TABLE 1-1
CITY OF SAN DIEGO SEWER DESIGN GUIDE
DENSITY CONVERSIONS**

Zone	Maximum Density (DU/Net Ac)	Population per DU	Equivalent Population (Pop/Net Ac)
AR-1-1, RE-1-1	0.1	3.5	0.4
RE-1-2	0.2	3.5	0.7
AR-1-2, RE-1-3	1	3.5	3.5
RS-1-1, RS-1-8	1	3.5	3.5
RS-1-2, RS-1-9	2	3.5	7.0
RS-1-3, RS-1-10	3	3.5	10.5
RS-1-4, RS-1-11	4	3.5	14.0
RS-1-5, RS-1-12	5	3.5	17.5
RS-1-6, RS-1-13	7	3.5	24.5
RS-1-7, RS-1-14	9	3.5	31.5
RX-1-1	11	3.4	37.4
RT-1-1	12	3.3	39.6
RX-1-2, RT-1-2, RU-1-1	14	3.2	44.8
RT-1-3, RM-1-2	17	3.1	52.7
RT-1-4	20	3.0	60.0
RM-1-3	22	3.0	66.0
RM-2-4	25	3.0	75.0
RM-2-5	29	3.0	87.0
RM-2-6	35	2.8	98.0
RM-3-7, RM-5-12	43	2.6	111.8
RM-3-8	54	2.4	129.6
RM-3-9	73	2.2	160.6
RM-4-10	109	1.8	196.2
RM-4-11	218	1.5	327.0

**TABLE 1-1
CITY OF SAN DIEGO SEWER DESIGN GUIDE
DENSITY CONVERSIONS (Continued)**

Zone	Maximum Density (DU / Net Ac)	Population Per DU	Equivalent Population (Pop/Net Ac)
Schools/Public	8.9	3.5	31.2
Offices	10.9	3.5	38.2*
Commercial/Hotels	12.5	3.5	43.7*
Industrial	17.9	3.5	62.5*
Hospital	42.9	3.5	150.0*

Figures with asterisk (*) represent equivalent population per floor of the building.

Definitions:

DU = Dwelling Units

Ac = Acreage

Pop = Population

Net Acreage is the developable lot area excluding areas that are dedicated as public streets in acres. Gross Area is the entire area in acres of the drainage basin, including lots, streets, etc.

For undeveloped areas, assume Net Acreage = 0.8 x Gross Area in Acres

For developed areas, calculate actual Net Acreage.

Tabulated figures are for general case. The tabulated figures shall not be used if more accurate figures are available.

Population is based on actual equivalent dwelling units (EDU) or the maximum estimate obtained from zoning.

Conversion of Fixture Units to Equivalent Dwelling Units (EDU): The Water Meter Data Card, maintained by the Development Services Department, contains a table of plumbing fixtures that should be used for determining the equivalent dwelling units (EDU's) for the purpose of estimating the rate of wastewater generation in residential, commercial, or industrial areas. Currently, the basis for conversion is: 20 fixtures = 1 EDU and 1 EDU = 280 gallons of wastewater per day.

In high rise building areas, flow rates shall be based on the most current, adopted edition of the applicable Plumbing Code, assuming one lateral per area. The most conservative flow rate shall govern.

PUBLIC UTILITIES DEPARTMENT
PEAKING FACTOR FOR SEWER FLOWS
(Dry Weather)

Ratio of Peak to Average Flow*
Versus Tributary Population

<u>Population</u>	<u>Ratio of Peak to Average Flow</u>	<u>Population</u>	<u>Ratio of Peak to Average Flow</u>
200	4.00	4,800	2.01
500	3.00	5,000	2.00
800	2.75	5,200	1.99
900	2.60	5,500	1.97
1,000	2.50	6,000	1.95
1,100	2.47	6,200	1.94
1,200	2.45	6,400	1.93
1,300	2.43	6,900	1.91
1,400	2.40	7,300	1.90
1,500	2.38	7,500	1.89
1,600	2.36	8,100	1.87
1,700	2.34	8,400	1.86
1,750	2.33	9,100	1.84
1,800	2.32	9,600	1.83
1,850	2.31	10,000	1.82
1,900	2.30	11,500	1.80
2,000	2.29	13,000	1.78
2,150	2.27	14,500	1.76
2,225	2.25	15,000	1.75
2,300	2.24	16,000	1.74
2,375	2.23	16,700	1.73
2,425	2.22	17,400	1.72
2,500	2.21	18,000	1.71
2,600	2.20	18,900	1.70
2,625	2.19	19,800	1.69
2,675	2.18	21,500	1.68
2,775	2.17	22,600	1.67
2,850	2.16	25,000	1.65
3,000	2.14	26,500	1.64
3,100	2.13	28,000	1.63
3,200	2.12	32,000	1.61
3,500	2.10	36,000	1.59
3,600	2.09	38,000	1.58
3,700	2.08	42,000	1.57
3,800	2.07	49,000	1.55
3,900	2.06	54,000	1.54
4,000	2.05	60,000	1.53
4,200	2.04	70,000	1.52
4,400	2.03	90,000	1.51
4,600	2.02	100,000+	1.50

*Based on formula: Peak Factor = 6.2945 x (pop)^{-0.1342}
(Holmes & Narver, 1960)

FIGURE 1-1

§131.0506 Purpose of the CP (Commercial--Parking) Zone

The purpose of the CP zone is to provide off-street parking areas for passenger automobiles. The CP zone is intended to be applied in conjunction with established commercial areas to provide needed or required off-street parking.

(Added 12-9-1997 by O-18451 N.S.; effective 1-1-2000.)

§131.0507 Purpose of the CC (Commercial--Community) Zones

- (a) The purpose of the CC zones is to accommodate community-serving commercial services, retail uses, and limited industrial uses of moderate intensity and small to medium scale. The CC zones are intended to provide for a range of *development* patterns from pedestrian-friendly commercial *streets* to shopping centers and auto-oriented strip commercial *streets*. Some of the CC zones may include residential *development*. Property within the CC zones will be primarily located along collector *streets*, major *streets*, and public transportation lines.
- (b) The CC zones are differentiated based on the uses allowed and regulations as follows:
- (1) The following zones allow a mix of community-serving commercial uses and residential uses:
- CC-1-1 is intended to accommodate *development* with strip commercial characteristics and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot* area
 - CC-1-2 is intended to accommodate *development* with high intensity, strip commercial characteristics and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot* area
 - CC-1-3 is intended to accommodate *development* with an auto orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot* area
- (2) The following zones allow community-serving uses with limited residential uses:
- CC-2-1 is intended to accommodate *development* with strip commercial characteristics

- CC-2-2 is intended to accommodate *development* with high intensity, strip commercial characteristics
 - CC-2-3 is intended to accommodate *development* with an auto orientation
 - CC-2-4 is intended to accommodate *development* with a pedestrian orientation
 - CC-2-5 is intended to accommodate *development* with a high intensity, pedestrian orientation
- (3) The following zones allow a mix of pedestrian-oriented, community-serving commercial uses and residential uses:
- CC-3-4 is intended to accommodate *development* with a pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-3-5 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-3-6 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,000 square feet of *lot area*
 - CC-3-7 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 800 square feet of *lot area*
 - CC-3-8 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 600 square feet of *lot area*
 - CC-3-9 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 400 square feet of *lot area*

- (4) The following zones allow heavy commercial uses and residential uses:
- CC-4-1 is intended to accommodate *development* with strip commercial characteristics and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-4-2 is intended to accommodate *development* with high intensity, strip commercial characteristics and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-4-3 is intended to accommodate *development* with an auto orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-4-4 is intended to accommodate *development* with a pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-4-5 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-4-6 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,000 square feet of *lot area*
- (5) The following zones allow a mix of heavy commercial and limited industrial uses and residential uses:
- CC-5-1 is intended to accommodate *development* with strip commercial characteristics and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-5-2 is intended to accommodate *development* with high intensity, strip commercial characteristics and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
 - CC-5-3 is intended to accommodate *development* with an auto orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*

- CC-5-4 is intended to accommodate *development* with a pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
- CC-5-5 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,500 square feet of *lot area*
- CC-5-6 is intended to accommodate *development* with a high intensity, pedestrian orientation and permits a maximum *density* of 1 *dwelling unit* for each 1,000 square feet of *lot area*

(Added 12-9-1997 by O-18451 N.S.; effective 1-1-2000.)
(Amended 7-10-2015 by O-20512 N.S.; effective 8-9-2015.)
(Amended 1-8-2020 by O-21164 N.S.; effective 2-9-2020.)

§131.0515 Where Commercial Zones Apply

On the effective date of Ordinance O-18692, all commercial zones that were established in Municipal Code Chapter 10, Article 1, Division 4 were amended and replaced with the base zones established in this division.

(Added 12-9-1997 by O-18451 N.S.; effective 1-1-2000.)
(Amended 11-13-2008 by O-19801 N.S.; effective 12-13-2008.)

§131.0520 Use Regulations of Commercial Zones

The regulations of Section 131.0522 apply in the commercial zones where indicated in Table 131-05B.

- (a) The uses permitted in any commercial zone may be further limited by the following:
 - (1) Section 131.0540 (Maximum permitted residential *density* and other residential regulations);
 - (2) Use limitations applicable to the Airport Land Use Compatibility Overlay Zone (Chapter 13, Article 2, Division 15);

Appendix C – As-Built Plan

SEWER & WATER GROUP 781

LIMITS OF WORK

WORK TO BE DONE

CONSTRUCTION OF SEWER AND WATER MAIN REPLACEMENT GROUP 781 CONSISTS OF: REMOVAL OF EXISTING SEWER MAINS AND MANHOLES, INSTALLATION OF NEW 18" EIGHT (8") INCH, 15' FIFTEEN INCH SEWER MAINS, CONCRETE MANHOLES, (4") FOUR INCH & (6") SIX INCH SEWER LATERALS, SEWER LATERAL REPLUMB & SEWER LATERAL REPLUMB WITH PUMP EX SEWER MAIN AND MANHOLE ABANDONMENT, TRENCH SHORING, TRENCH RESURFACING, CURB RAMP, REMOVAL OF EXISTING WATER MAINS, INSTALLATION OF 18" EIGHT INCH WATER MAINS, WATER SERVICES, TEES, CROSS, REDUCER, GATE VALVES, AND ALL OTHER WORK AND APPURTENANCES IN ACCORDANCE WITH THE SPECIFICATIONS AND THESE DRAWINGS NUMBERED 3455-0-D THROUGH 3455-4-D

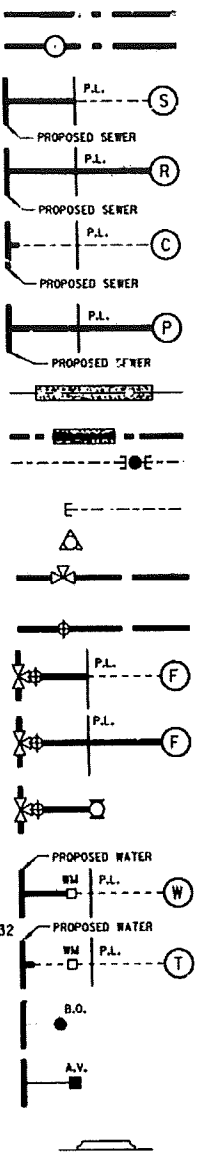
LEGEND

IMPROVEMENTS

TRENCH RESURFACING
SEWER MAIN
SEWER MANHOLE/PVC LINED
REPLUMB SEWER LATERAL WITH C.O.
SEWER LATERAL CONNECTION
SEWER PUMP INCLUDING REPLUMB SEWER LATERAL WITH C.O.
CONCRETE PROTECTION FOR EXIST SEWER PIPE
CONCRETE ENCASUREMENT
ABANDON EX MANHOLE
CUTTING AND PLUGGING ABANDONED WATER/SEWER MAIN
SURVEY MONUMENT
WATER MAIN & APPURTENANCES
VALVES WITH CAPS AND WELLS
FIRE SERVICE ASSEMBLY CONNECTION
FIRE SERVICE ASSEMBLY WITH BACKFLOW PREVENTER
6" FIRE HYDRANT ASSEMBLY & MARKER 2-PORT UNLESS SPECIFIED AS 3-PORT
F WATER SERVICE UNLESS OTHERWISE SPECIFIED
WATER SERVICE TRANSFER
BLOW-OFF ASSEMBLY
AIR & VACUUM VALVE
CROSS CUTTER

SDC-107, SDC-108
TRENCH RESURFACING FOR ASPHALT CONCRETE SURFACED STREETS SEE DETAIL SHEET 12
SDS-100, SDS-101, SDS-108, SDS-10 (TYPE C)
SDS-106, SDS-107, SDM-13, M-3, SM-03, SM-04, SM-07
SDS-100, SDS-102, SDS-103, SDS-104, SDS-105, SDS-108, SDS-10 (TYPE C), SDS-118
SDS-100, SDS-102, SDS-103, SDS-104, SDS-105, SDS-108, SDS-10 (TYPE C), SDS-118
SEE PLANS & SPECS
SDS-100, SDS-102, SDS-103, SDS-104, SDS-105, SDS-108, SDS-10 (TYPE C), SDS-118
SDS-106
SDS-102
SM-08
WP-03
M-10
SDW-100, WP-01, WT-01, FOR PIPE BEDDING & TRENCH BACKFILL DETAIL, SEE SHEET 32
SDW-100, SDW-109, WV-01, WV-02, WV-03, WV-04, WV-5
SDW-109, SDW-118, WV-01, WV-02
SDW-109, SDW-118, SDW-119, SDW-120, SDW-141, WF-05, WS-04, WV-01, WV-02
SDW-100, SDW-109, M-19, WF-04, WP-01, WV-01, WV-02, 6" FIRE HYDRANT SEE DETAIL SHEET 32
SDW-100, SDW-134, SDW-135, SDW-136, SDW-137, SDW-138, WP-01, WS-01, WS-02, WS-03, NARROW TRENCH FOR 1" & 2" WATER SERVICES, SEE DETAIL SHEET 32
SDW-100, WS-01, WS-02
SDW-100, SDW-106, WB-01, WB-02, WB-03, WB-04, WB-05,
SDW-100, SDW-117, WA-01, WA-02, WA-04, WA-06
G-12

SYMBOL



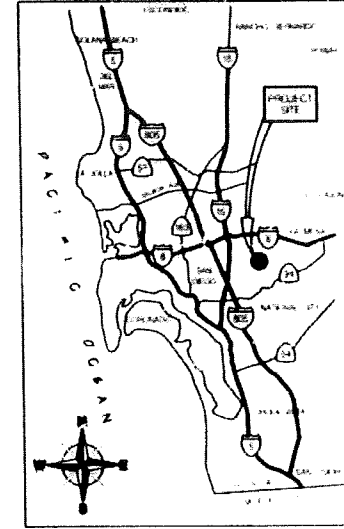
UNDERGROUND UTILITIES

AT LEAST THREE (3) WORKING DAYS PRIOR TO EXCAVATION, THE CONTRACTOR SHALL REQUEST A MARKOUT OF UNDERGROUND UTILITIES BY CALLING THE BELOW LISTED REGIONAL NOTIFICATION CENTER FOR AN INQUIRY IDENTIFICATION NUMBER: UNDERGROUND SERVICE ALERT (U.S.A.) 1-800-422-4133

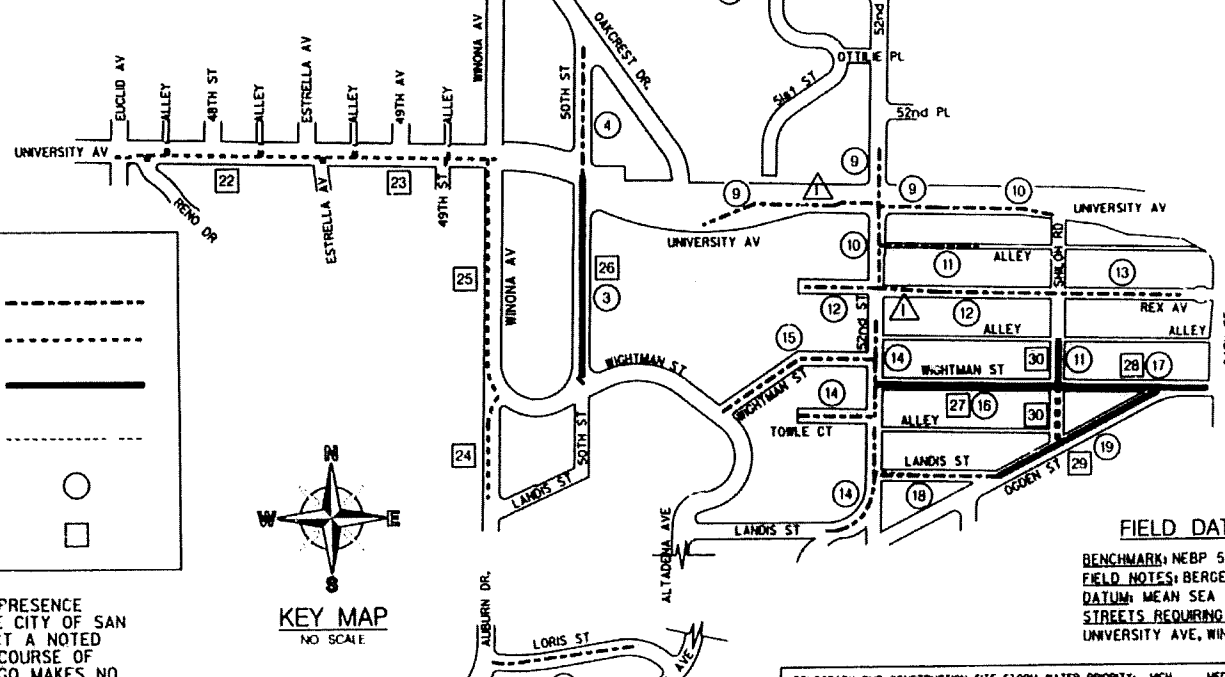
CONTRACTOR'S RESPONSIBILITIES

- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND RECONNECT ALL SEWER LATERALS. LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. LATERAL RECORDS ARE AVAILABLE TO THE CONTRACTOR AT THE WATER DEPARTMENT, 3757 CAMINITO CHOLLAS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE THE IMPROVEMENTS THAT WILL BE AFFECTED BY LATERAL REPLACEMENTS. ALL IMPROVEMENTS DISTURBED BY CONTRACTOR SHALL BE REPLACED IN KIND TO ORIGINAL CONDITION OR BETTER.
- CONTRACTOR TO EXCAVATE AROUND WATER METER BOX (CITY PROPERTY SIDE) TO DETERMINE IN ADVANCE, THE EXACT SIZE OF EACH SERVICE BEFORE TAPPING MAIN.
- CITY FORCES, WHEN CALLED OUT SHALL MAKE PERMANENT CUTS & PLUGS, CONNECTIONS, ETC.
- EXISTING MAINS SHALL BE KEPT IN SERVICE IN LIEU OF HIGH-LINING, UNLESS OTHERWISE SHOWN ON PLANS.
- THE LOCATION OF EXISTING BUILDINGS AS SHOWN ON THE PLAN ARE APPROXIMATE.
- STORM DRAIN INLETS ARE TO REMAIN FUNCTIONAL/OPERATIONAL AT ALL TIMES DURING CONSTRUCTION
- UNLESS OTHERWISE NOTED AS PREVIOUSLY POTHOLED (PH), ALL ELEVATIONS SHOWN ON THE PROFILE FOR EXISTING UTILITIES ARE BASED ON A SEARCH OF THE AVAILABLE RECORD INFORMATION ONLY AND ARE SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THE CITY IN NO WAY GUARANTEES OR WARRANTS THAT IT HAS REVIEWED ALL AVAILABLE DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO POTHOLE ALL EXISTING UTILITIES (EITHER SHOWN ON THE PLANS OR MARKED IN THE FIELD) IN ACCORDANCE WITH THE SPECIFICATIONS (SECTION 5-D)
- CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER IMMEDIATELY IF A ONE FOOT VERTICAL SEPARATION (FROM OUTSIDE PIPE WALL TO OUTSIDE PIPE WALL) BETWEEN SEWER AND WATER MAINS CANNOT BE MAINTAINED.
- CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER IMMEDIATELY IF A FOUR FOOT HORIZONTAL SEPARATION (FROM OUTSIDE PIPE WALL TO OUTSIDE PIPE WALL) BETWEEN SEWER AND WATER MAINS CANNOT BE MAINTAINED.
- CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER IMMEDIATELY IF A 6-INCH VERTICAL SEPARATION (FROM OUTSIDE PIPE WALL TO OUTSIDE PIPE WALL) BETWEEN UTILITIES OTHER THAN SEWER AND WATER MAINS CANNOT BE MAINTAINED.
- EXISTING UTILITY CROSSING AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT REPRESENTATIVE OF ACTUAL LENGTH AND LOCATION OF CONFLICT AREAS. (SEE PLAN VIEW)
- CONTRACTOR TO MAINTAIN A MINIMUM 3' OF COVER OVER TOP OF WATER MAIN.
- CONTRACTOR SHALL APPLY COAL TAR EMULSION ON EXTERIOR WALLS OF MANHOLES LOCATED IN THE CANYON, BELOW WATER TABLE, OR FOR MANHOLES MORE THAN 7' IN DEPTH.
- ORDER OF WORK: CONTRACTOR TO WORK ON SEWER FIRST.

SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS OF WORK	PIPE		LENGTH (FT)
				SIZE	MATERIAL	
1	0-1	COVER SHEET				
2	C-1	LORIS ST	ALBURN DR TO ALTADENA AV	8	PVC	656.17
3	C-2	50TH ST	WIGHTMAN ST. TO UNIVERSITY AVE.	8	PVC	600.00
4	C-3	50TH ST	UNIVERSITY AV. TO DAKCREST DR.	8	PVC	545.30
5	C-4	ALLEY BLK 27, ALTADENA AV.	SWR EASEMENT TO ORANGE AVE	15	PVC	622.23
6	C-5	ORANGE AV.	ALLEY W/O ALTADENA TO ALLEY E/O ALTADENA	8	PVC	214.48
7	C-6	ALLEY E. OF ALTADENA AV.	ALLEY S. OF ORANGE TO TROJAN AV.	8	PVC	98.26
8	C-7	POLK AV.	51st ST. TO ALTADENA AV.	8	PVC	246.20
9	C-7	ALLEY E. OF 51st ST.	ALLEY NORTH TO ORANGE AV.	8	PVC	372.47
10	C-8	UNIVERSITY AV.	EASEMENT TO 260' EAST OF 52ND ST	8	PVC	850.00
11	C-8	52nd ST	UNIVERSITY AVE TO 140' S/O 52ND PL	8	PVC	171.36
12	C-9	UNIVERSITY AV.	STA. 9+50 TO SHLOH RD	8	PVC	364.89
13	C-9	52nd ST.	UNIVERSITY AV. TO REX AV.	8	PVC	281.83
14	C-10	ALLEY S. OF UNIVERSITY AV	52nd ST. TO STA 2+33	8	PVC	341.87
15	C-10	SHLOH RD.	WIGHTMAN ST. TO ALLEY	8	PVC	153.42
16	C-10	REX AV.	270' W END OF REX AV TO 530' E OF 52ND ST	8	P/C	800.00
17	C-12	REX AV.	SHLOH RD. TO END OF REX AV.	8	PVC	515.41
18	C-12	TOWLE CT	265' W/O 52nd ST TO 52nd ST	8	PVC	264.61
19	C-13	52nd ST.	S. OF LANDIS TO N. OF WIGHTMAN	8	PVC	837.59
20	C-14	WIGHTMAN ST.	52nd ST. TO SHLOH RD.	8	PVC	615.00
21	C-15	WIGHTMAN ST.	52nd ST. TO SHLOH RD.	8	PVC	600.00
22	C-16	WIGHTMAN ST.	SHLOH RD. TO OGDEN ST.	8	PVC	531.64
23	C-17	LANDIS ST.	52nd ST. TO OGDEN ST.	8	PVC	439.31
24	C-18	OGDEN ST	LANDIS ST. TO WIGHTMAN AV.	8	PVC	564.67
				TOTAL SWR = 14,499.91		
20	C-19	ORANGE AV.	WINONA AV. TO ALTADENA AV.	12	PVC	700.00
21	C-20	ORANGE AV.	ALTADENA AV. TO 52nd ST.	12	PVC	656.30
22	C-21	UNIVERSITY AV.	EUCIID AV. TO ESTRELLA AV.	12	PVC	700.00
23	C-22	UNIVERSITY AV.	ESTRELLA AV. TO 52nd ST.	12	PVC	644.68
24	C-23	WINONA AV.	LANDIS ST TO WIGHTMAN ST	12	PVC	370.26
25	C-23	WINONA AV.	WIGHTMAN ST 330' N/O WIGHTMAN ST	12	PVC	229.74
26	C-24	WINONA AV.	WIGHTMAN ST TO UNIVERSITY AV.	12	PVC	607.34
27	C-25	50th ST.	52nd ST. TO SHLOH RD.	8	PVC	717.64
28	C-26	WIGHTMAN ST.	SHLOH RD. TO CUL-DE-SAC	8	PVC	600.00
29	C-27	WIGHTMAN ST.	SHLOH RD. TO OGDEN ST.	8	PVC	540.51
30	C-28	OGDEN ST.	LANDIS ST. TO WIGHTMAN ST.	8	PVC	642.94
31	C-29	SHLOH RD.	OGDEN ST. TO ALLEY N. OF WIGHTMAN ST.	8	PVC	338.80
				TOTAL WTR = 6,758.21		
31	C-30		CITY FORCES SHEET			
32	C-31		WATER CONSTRUCTION & AC TRENCH DETAILS			
33	C-32		RESURFACING SHEET			
34	C-33		CURB RAMP LOCATION & TYPE			
35	C-34		ABANDONMENT SHEET			
36-38	C-35 - C-37		REPLUMB DETAIL SHEET			
39	C-38		WATER POLLUTION CONTROL SITE PLAN			
40-41	C-39 - C-40		COORDINATE POINT INDEX			
TOI-TII	TI-TII		TRAFFIC PLANS			



VICINITY MAP NOT TO SCALE



KEY MAP NO SCALE

FIELD DATA

BENCHMARK: NEBP 52nd REX 449,437 ELEV: 339.46
FIELD NOTES: BERGEN, 210-1740, 9/09/2004, WO 178671
DATUM: MEAN SEA LEVEL
STREETS REQUIRING 9" TRENCH CAP:
UNIVERSITY AVE, WINONA AVE, 52nd ST

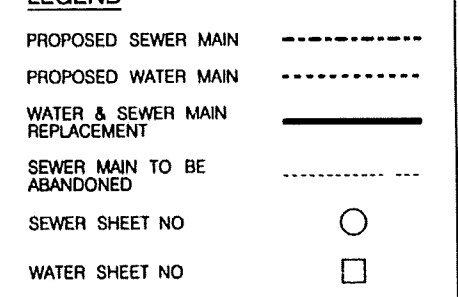
ABBREVIATIONS

ABAND	ABANDON	EB	ENCASED BURIED	OVHD	OVER HEAD
ABANDD	ABANDONED	EL	ELEV ELEVATION	PVC	POLYVINYL CHLORIDE
AC	ASBESTOS CEMENT	ELEC	ELECTRIC	PROP	PROPOSED
	PIPE	EX, EXIST	EXISTING	RED	REDUCER
AHD	AHEAD	E/O	EAST OF	RT	RIGHT
ASSY	ASSEMBLY	F	FLANGE	S	SURVEY LINE
BK	BACK	GV	GATE VALVE	SO	STUB OUT
BTWN	BETWEEN	HDPE	HIGH-DENSITY	S/O	SOUTH OF
CATV	CABLE TV	PE	POLYETHYLENE	SWR	SEWER
CI	CAST IRON PIPE	HP	HIGH PRESSURE	TEL	TELEPHONE
C	CENTER LINE	IE	INVERT ELEVATION	TOP	TOP OF PIPE
COND	CONDUIT	LT	LEFT	UNK	UNKNOWN
CONT	CONTINUED	MJ	MECHANICAL JOINT	VC	VITRIFIED CLAY PIPE
CONTR	CONTRACTOR	MTD	MULTIPLE TELEPHONE	WM	WATER METER
DB	DIRECT BURIED	N/O	NORTH OF	WTR	WATER
				W/O	WEST OF

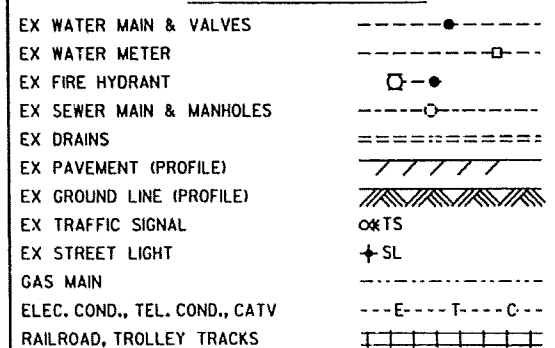
DISCIPLINE CODE

G	GENERAL
C	CIVIL

LEGEND



EXISTING STRUCTURES



NOTE: WHERE THIS AS-BUILT DRAWING INDICATES THE PRESENCE OF UTILITIES NOT OWNED OR OPERATED BY THE CITY OF SAN DIEGO, SUCH INDICATIONS SHALL MERELY REFLECT A NOTED ENCOUNTER WITH THOSE UTILITIES DURING THE COURSE OF PROJECT CONSTRUCTION. THE CITY OF SAN DIEGO MAKES NO WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THIS INFORMATION AND NO SUBSEQUENT USERS MAY RELY THEREON FOR ANY PURPOSE WHATSOEVER

CONSTRUCTION CHANGE / ADDENDUM			
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO PUBLIC WORKS PROJECT



AS-BUILT INFORMATION	
MATERIALS	MANUFACTURER
PIPE CL 235 (WATER)	C-900 NORTH AMERICAN
PIPE SDR 35 (SEWER)	SDR35 VINYLTECH
GATE VALVES	CLOW
FIRE HYDRANTS	CLOW
SEWER MANHOLES	OLD CASTLE PRECAST
REHABILITATE SEWER MANHOLES	OLD CASTLE PRECAST
REHABILITATE SEWER MAIN	

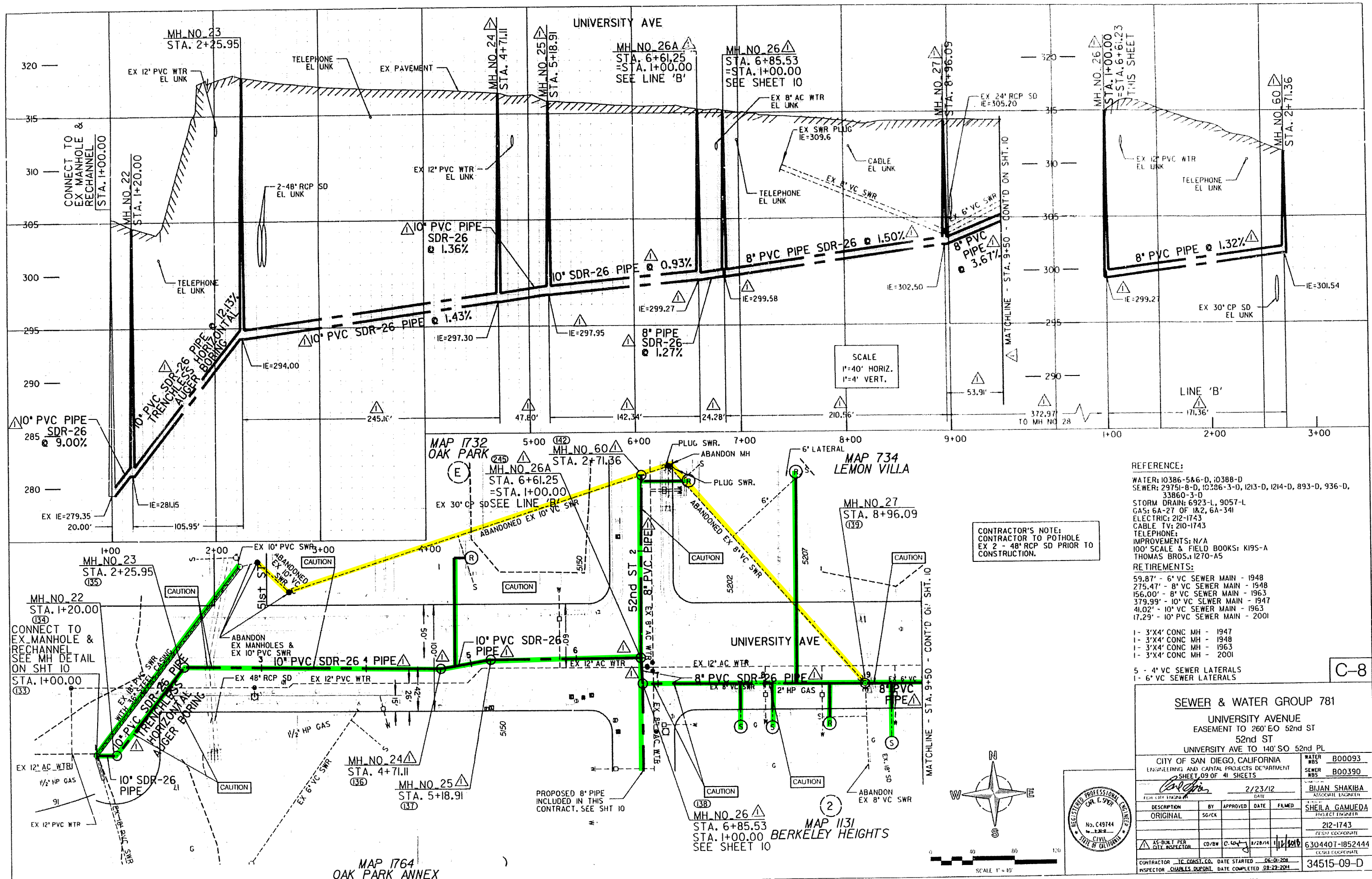


PLANS FOR THE CONSTRUCTION OF SEWER & WATER GROUP 781 COVER SHEET

CITY OF SAN DIEGO, CALIFORNIA SHEET 01 OF 41 SHEETS		APPROVAL NO. B-00093 DATE 2/23/12
FOR CITY ENGINEER		PROJECT ENGINEER BIJAN SHAKIBA ASSOCIATE ENGINEER
DESCRIPTION	BY	APPROVED
ORIGINAL	SO/CK	DATE
AS-BUILT PER CITY INSPECTOR		FILED
DATE	DATE	DATE
04-09-2011	04-29-2011	04-29-2011
CONTRACTOR: TC CONST. CO. CHARLES DUPONT		PROJECT NO. 04-09-2011
		34515-01-D

SEWER & WATER GROUP 781

UNIVERSITY AVENUE & 52nd STREET

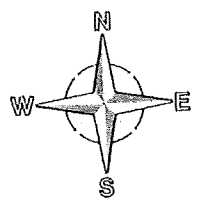


SCALE
1"=40' HORIZ.
1"=4' VERT.

CONTRACTOR'S NOTE:
CONTRACTOR TO POI-HOLE
EX 2 - 48" RCP SD PRIOR TO
CONSTRUCTION.

- REFERENCE:
- WATER: 10386-5A6-D, 10388-D
 - SEWER: 29751-8-D, 10286-3-D, 1213-D, 1214-D, 893-D, 936-D, 33860-3-D
 - STORM DRAIN: 6923-L, 9057-L
 - GAS: 6A-27 OF 1&2, 6A-34I
 - ELECTRIC: 212-1743
 - CABLE TV: 210-1743
 - TELEPHONE: IMPROVEMENTS: N/A
 - 100' SCALE & FIELD BOOKS: K195-A THOMAS BROS., 1270-A5
- RETIREMENTS:
- 59.87' - 6" VC SEWER MAIN - 1948
 - 275.47' - 8" VC SEWER MAIN - 1948
 - 156.00' - 8" VC SEWER MAIN - 1963
 - 379.99' - 10" VC SLWER MAIN - 1947
 - 41.02' - 10" VC SEWER MAIN - 1963
 - 17.29' - 10" PVC SEWER MAIN - 2001
- 1 - 3'x4' CONC MH - 1947
 - 1 - 3'x4' CONC MH - 1948
 - 1 - 3'x4' CONC MH - 1963
 - 1 - 3'x4' CONC MH - 2001
- 5 - 4" VC SEWER LATERALS
 - 1 - 6" VC SEWER LATERALS

SEWER & WATER GROUP 781			
UNIVERSITY AVENUE EASEMENT TO 260' E/O 52nd ST 52nd ST UNIVERSITY AVE TO 140' SO 52nd PL			
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 09 OF 41 SHEETS		WATER WBS B00093 SEWER WBS B00390	
DATE: 2/23/12		PROJECT ENGINEER: BIJAN SHAKIBA	
DESCRIPTION: ORIGINAL		DATE: 2/23/12	PROJECT ENGINEER: SHEILA GAMUEDA
AS-BUILT PER CITY INSPECTOR	CD/BW: C. G. 1/28/14	DATE: 1/28/14	PROJECT NO: 212-1743
CONTRACTOR: JC CONST. CO. DATE STARTED: 06-01-2011		PROJECT NO: 6304407-1852444	
INSPECTOR: CHARLES DUPONT DATE COMPLETED: 08-29-2011		PROJECT NO: 34515-09-D	



C-8

AC PLINT

