

DEXTER WILSON ENGINEERING, INC.

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CONSULTING ENGINEERS

**SEWER STUDY
FOR THE
BDM MIXED USE PROJECT
IN THE CITY OF SAN DIEGO**

September 7, 2022

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9-7-2022

**Prepared by:
Dexter Wilson Engineering, Inc.
2234 Faraday Avenue
Carlsbad, CA 92008
(760) 438-4422**

Job No. 1125-002

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EXHIBIT A MANHOLE DIAGRAM

DEXTER S. WILSON, P.E.
ANDREW M. OVEN, P.E.
NATALIE J. FRASCHETTI, P.E.
STEVEN J. HENDERSON, P.E.
FERNANDO FREGOSO, P.E.
KATHLEEN L. HEITT, P.E.

September 7, 2022

1125-002

BDM Investments, LLC
9523 La Jolla Farms Road
San Diego, CA 92037

Attention: Michael Shoemaker

Subject: Sewer Study for the BDM Mixed Use Project in the City of San Diego

Introduction

This report provides a sewer study for the BDM Mixed Use project in the City of San Diego. The project site is located in the Otay Mesa area along the south side of Otay Mesa Road between Emerald Crest Court and Corporate Center Drive. Figure 1 provides a vicinity map for the project and Appendix A includes a preliminary site plan.

The project encompasses a total of approximately 14 acres and the existing property is currently vacant. The project proposes to develop the site to include 430 multi-family residential units and 6,000 square feet of retail commercial. Ground elevations on the project range from approximately 510 feet to 525 feet.

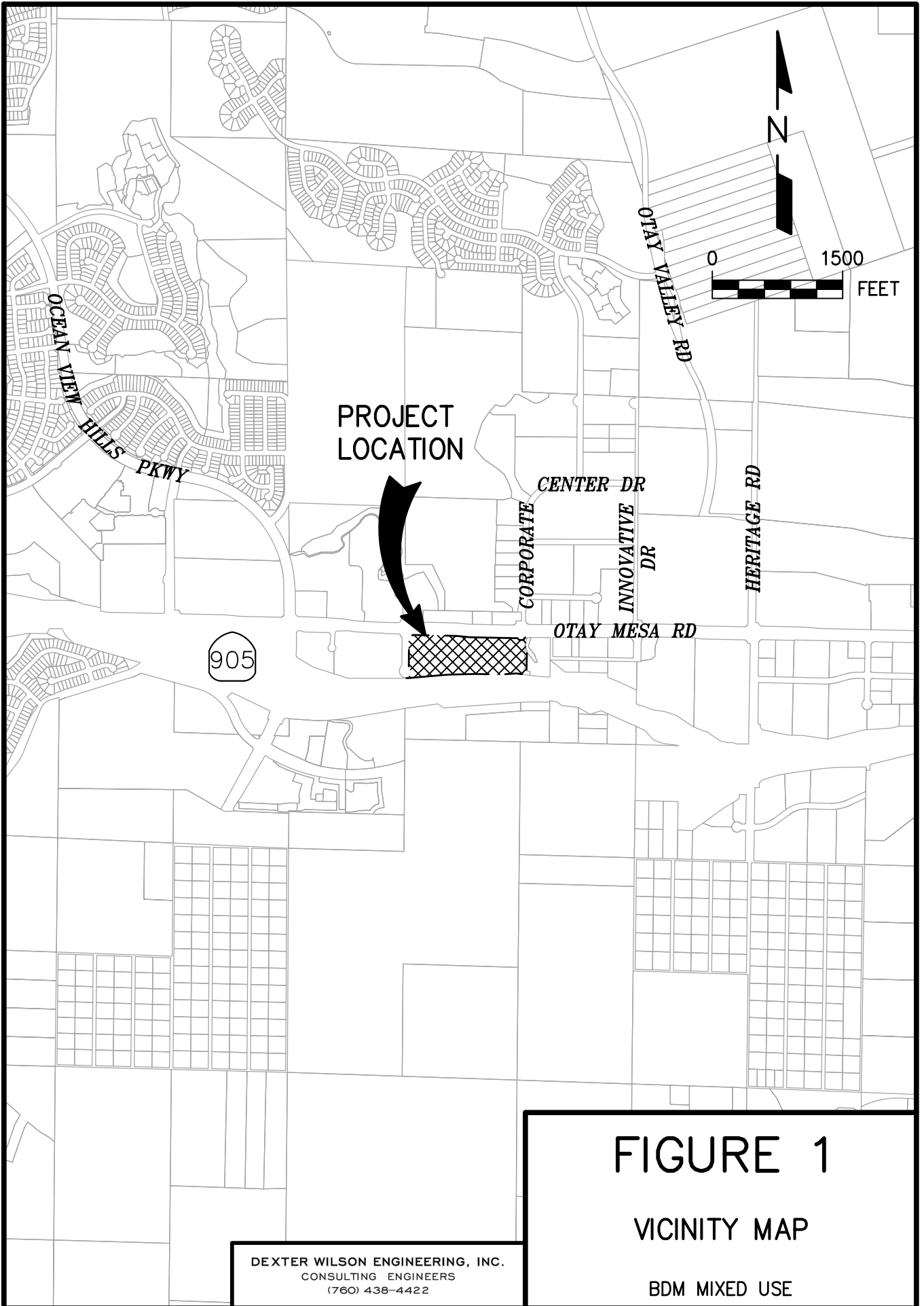


FIGURE 1

VICINITY MAP

BDM MIXED USE

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Purpose of Study

The purpose of this study is to determine if the existing public gravity sewer system is able to provide adequate capacity for the project. This report will address if any offsite (public) sewer system improvements are needed for the development of the project so that the offsite sewer system will be in conformance with the City of San Diego sewer system design standards.

The onsite sewer facilities for the project are proposed to be private. These facilities will be designed in accordance with the City's sewer system design standards.

Study Area

In general, the study area for this sewer study are the sewer lines in the vicinity of the project that are ultimately tributary to the Otay Valley Trunk Sewer system

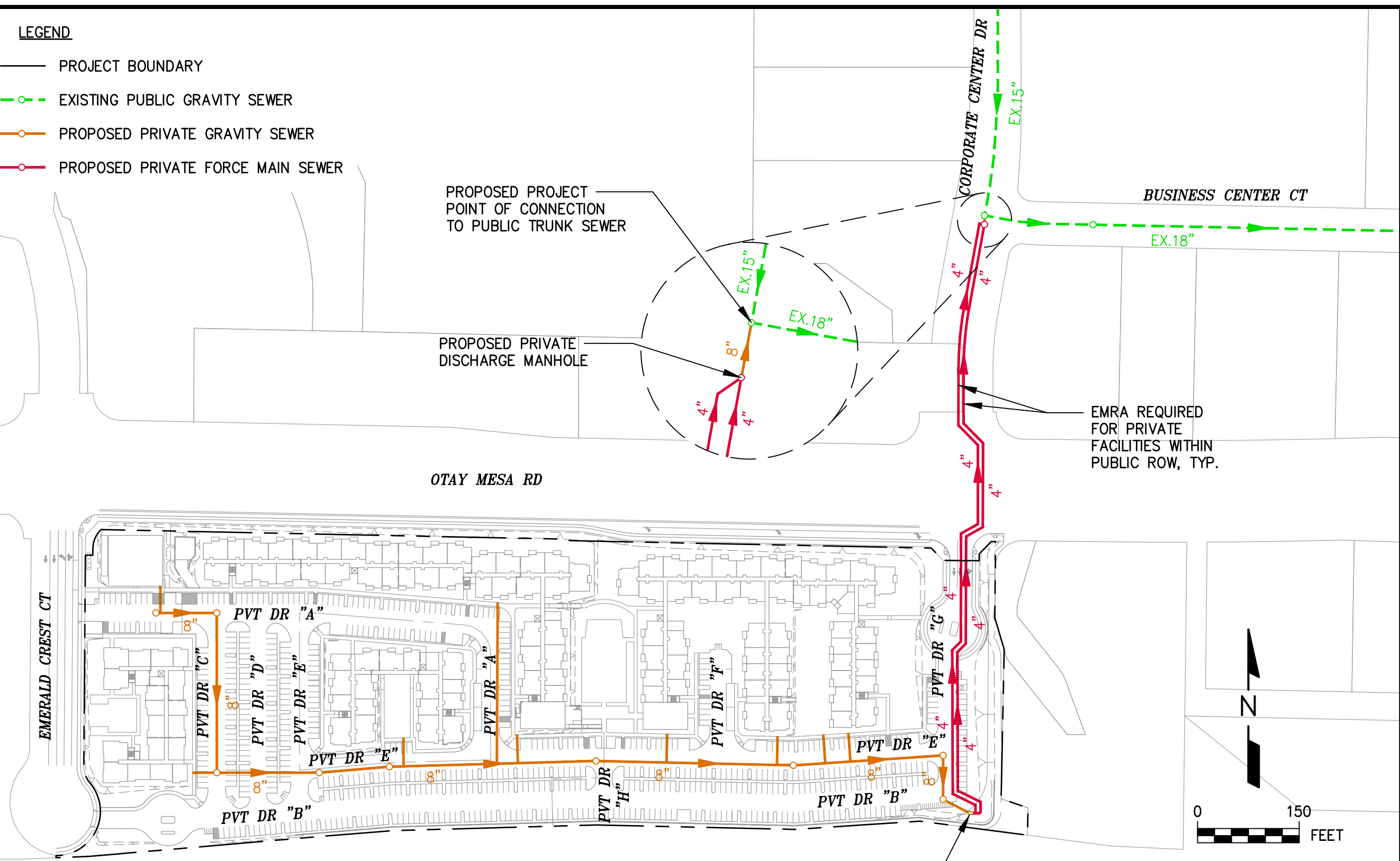
A City comment states that the sewer study's evaluation begin with the first manhole proposed and/or utilized by the development (or the first public manhole upstream of the private/public point of connection for those connections made via a private sewer lateral) and continues downstream to the point of connection with an existing public trunk sewer 18-inch in diameter or larger. Since the project is proposing to connect its private sewer system to an existing 18-inch diameter gravity sewer line, the analysis will only address this aforementioned gravity sewer line and its upstream development/tributary area.

These existing public sewer facilities in the Otay Mesa area can be seen on Figure 2 and Exhibit A at the end of this study.

\\ARTIC\DWG\1125002\REPORT\BMU_SWR_FIGURE-2_EX&PROSEWER.DWG 10/5/2022 1:51:39 PM LAYOUT: 11x17 USER: Donald

LEGEND

- PROJECT BOUNDARY
- EXISTING PUBLIC GRAVITY SEWER
- PROPOSED PRIVATE GRAVITY SEWER
- PROPOSED PRIVATE FORCE MAIN SEWER



PROPOSED PROJECT POINT OF CONNECTION TO PUBLIC TRUNK SEWER

PROPOSED PRIVATE DISCHARGE MANHOLE

OTAY MESA RD

EMERALD CREST CT

BUSINESS CENTER CT

CORPORATE CENTER DR

PVT DR "A"

PVT DR "C"

PVT DR "D"

PVT DR "E"

PVT DR "A"

PVT DR "F"

PVT DR "E"

PVT DR "G"

PVT DR "B"

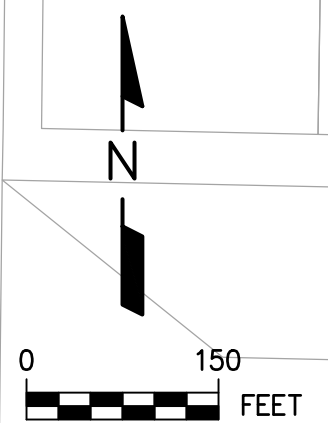
PVT DR "H"

PVT DR "B"

PROPOSED PRIVATE LIFT STATION

905

EMRA REQUIRED FOR PRIVATE FACILITIES WITHIN PUBLIC ROW, TYP.



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FIGURE 2
EXISTING AND PROPOSED SEWER SYSTEM
BDM MIXED USE

City of San Diego Sewer Design Criteria

Sewer system analyses criteria are based on the Sewer Design Guide, Revised May 2015, City of San Diego Public Utilities Department. This guideline is used for analysis and sizing of new gravity sewer lines and for analysis of existing gravity sewer lines. A summary of the design criteria from the Sewer Design Guide is presented in Table 1 below.

TABLE 1 CITY OF SAN DIEGO PUBLIC UTILITIES DEPARTMENT SEWER SYSTEM DESIGN CRITERIA		
Criterion	Design Requirement	Design Guide Reference
Sewage Flow Generation	80 gallons per capita	1.3.2.2
Industrial Sewage Flow Generation	5,000 gpd/net-acre	Table 1-1
Dry Weather Peaking Factor	Figure 1-1 based on population	1.3.2.2
Wet Weather Peaking Factor ¹	Basin specific – determined by City (2.3 for this Study)	1.3.2.2
Gravity Flow Hydraulic Formula	Manning’s Equation	1.3.3.1
Manning’s ‘n’	0.013	1.3.3.1
Desirable Gravity Flow Velocity	3 fps to 5 fps	1.3.3.1
Minimum Gravity Flow Velocity	2 fps	1.3.3.1
Where 2 fps is not achievable	Set min. slope at 1%	1.3.3.1
Maximum Gravity Flow Velocity	10 fps	1.3.3.1
Maximum Depth of Flow at Peak Wet Weather		
For 15” Pipe and Smaller	$d/D = 0.50$	1.3.3.3
For 18” and Larger	$d/D = 0.75$	1.3.3.3
Net Acreage	$= 0.80 \times \text{Gross Acres}$	Table 1-1

BDM Mixed Use Project Sewer Generation

The sewer generation for the project was developed in accordance with the City of San Diego Design Guidelines and Standards. Multi-family residential sewer generation is estimated based on dwelling unit density and a sewage generation of 80 gpd/person as presented in Table 1. The project proposes 430 residential units over 13.45 net-acres. A net area of 13.45 net acres equals a net-density for BDM Mixed Use of 31 units per acre. Table 1-1 in the City’s Sewer Design Guide, attached as Appendix B, indicates that 31 units per net-acre falls in the range of 3.0 persons per dwelling unit (equivalent to RM-2-5 Zoning). A dwelling unit density of 3.0 persons per dwelling unit and a unit sewage generation of 80 gpd/person results in a sewer generation rate of 240 gpd per multi-family dwelling unit for this project.

Table 2 presents the projected sewer generation for the project.

TABLE 2 BDM MIXED USE SEWER GENERATION			
Land Use	Quantity	Generation Factor	Average Sewer Generation, gpd
Multi-Family Residential (31 DUs/net acre)	430 Units	240 gpd/unit	103,200
Commercial	6,000 SF 0.2 Ac	3,500 gpd/Ac	700
TOTAL			103,900 = 72 gpm

From the City of San Diego’s Sewer Design Guide, Figure 1-1, the peak dry weather flow to average flow ratio is approximately 2.41 based on the formula presented in the figure, resulting in an estimated peak dry weather flow of 249,886 gpd (174 gpm).

Appendix B presents the backup data for determining the peaking factors. For estimating the peak flows, average flow was based on the project’s average sewer generation presented in Table 2.

Proposed Onsite Private Sewer Lift Station

The onsite private sewer lift station will provide service to the entire BDM Mixed Use project. The lift station will be a duplex submersible pump station with either precast concrete or fiberglass wet well, pump control panel, emergency generator, and odor control system (if needed).

The pumping capacity of the private lift station must account for the peak sewage flow into the station. From the flow calculations presented above, the peak dry weather flow to the lift station is 249,886 gpd (174 gpm). Using the previous lift station peaking factor of 1.3, the peak design flow is 324,852 gpd (226 gpm). In a 4-inch force main, this flow will achieve a velocity of 5.8 fps. This satisfies the City design criteria of 4 to 8 fps for sewer forcemains.

The private sewer lift station is proposed to include a permanent emergency power generator so that sewage pumping can be maintained during power outages. The lift station will be designed with two submersible pumps, each capable of handling the full flow from the project. It is unlikely that both pumps would be out of service at the same time.

The private onsite gravity sewer is designed to flow into the private onsite sewer lift station which is in the southeast area of the BDM Mixed Use project site. The private sewer lift station's preliminary site plan is shown on Figure 3.

BDM Mixed Use Sewer System Analysis

The offsite analysis completed for the project calculated the measured and projected sewer flows through the existing gravity sewer lines in the vicinity of the project's point of connection. These offsite sewer calculations/analyses are presented in Appendix C along with a summation of existing offsite sewage flows. Exhibit A in the back of this report presents the corresponding manhole number diagram.

\\ARTIC\DWG\1125002\REPORT\BMU_SWR_FIGURE-3_SITEPLAN.DWG 10/5/2022 1:52:14 PM LAYOUT:11x17 USER:Donald

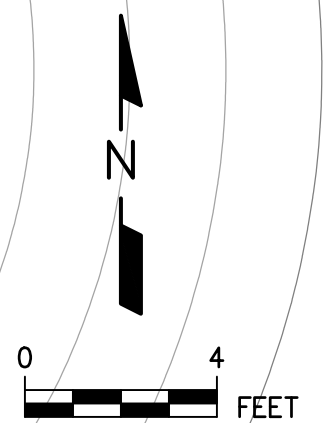
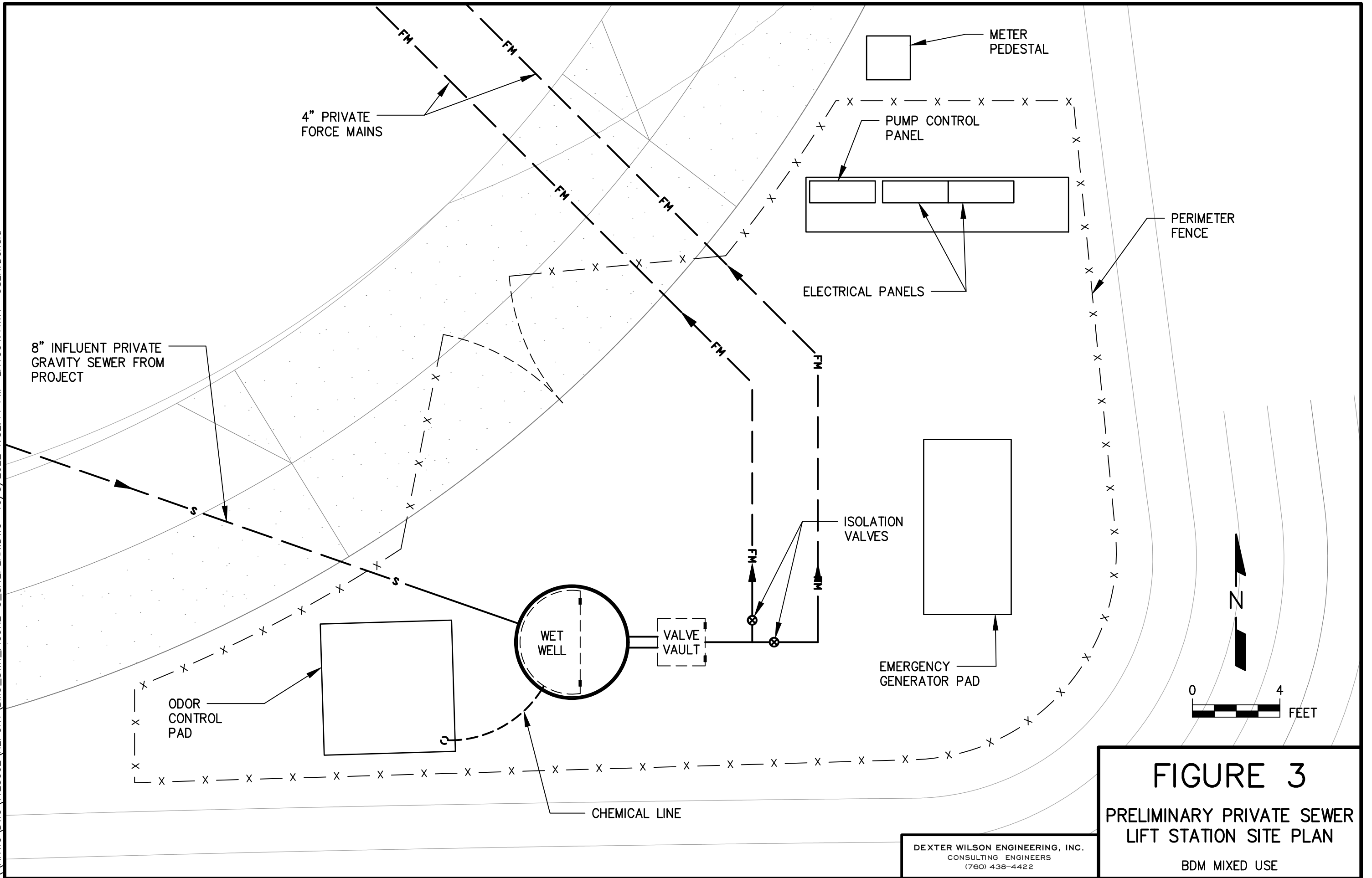


FIGURE 3
PRELIMINARY PRIVATE SEWER
LIFT STATION SITE PLAN
BDM MIXED USE

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The sewer system analysis for the BDM Mixed Use project will need to take into account sewage flows from existing development that is upstream of the project's point of connection. The BDM Mixed Use project will tie into this particular stretch of 18-inch diameter gravity sewer. Table 3 summarizes the parameters of the existing development and its corresponding sewer flow.

TABLE 3			
EXISTING SEWER FLOWS AT BDM MIXED USE PROJECT POINT OF CONNECTION (CORPORATE CENTER DRIVE AND BUSINESS CENTER COURT INTERSECTION)			
Description	Quantity	Sewer Generation Factor	Total Avg. Flow, gpd
Industrial	58 net-acres	5,000 gpd/net-acre	290,000

Parameters of the existing gravity sewer lines were obtained from the City to accurately model the existing gravity sewer infrastructure (size, invert elevations, location etc.). These are included in Appendix D.

As shown in Model 1 of the spreadsheet calculations in Appendix C, the existing sewer flow within the study area is shown to be well below three quarters full in the existing 18-inch diameter gravity sewer lines with a maximum d/D ratio of 0.33.

Existing Sewage Flow Plus Proposed and Project Flow. Model 2 of the spreadsheet calculations in Appendix C presents the results of the offsite sewer system analyses when including the estimated flows from the project. The project is proposing to sewer all 430 of its multi-family residential units to the existing 18-inch diameter gravity sewer line north of the site at the Corporate Center Drive and Business Center Court intersection. Since the project is proposing to connect its private sewer system to an existing 18-inch diameter gravity trunk sewer line, the model 2 analysis only addresses this particular gravity sewer line and its upstream development/tributary area.

The maximum d/D ratio increases from 0.33 to 0.44 when the proposed project is added to the existing 18-inch diameter gravity sewer line. These depths for the existing 18-inch diameter gravity sewer lines are below the City design criteria of 0.75 d/D.

Onsite Private Gravity Sewer System. The onsite gravity sewer facilities for the project are proposed to be private. These facilities will be designed in accordance with the City's sewer system design standards. The onsite gravity sewer facilities have not been formally designed at the time of this study. A preliminary sizing of the project's proposed private gravity sewer lines are included in Appendix C. The project will be connecting to the proposed private sewer lift station with either an 8-inch diameter private gravity sewer line at approximately a 0.5 percent slope or a 10-inch diameter private gravity sewer line at approximately a 0.3 percent slope.

Conclusions and Recommendations

The following conclusions and recommendations are summarized based on the sewer system analysis prepared for the proposed BDM Mixed Use project.

1. The proposed project consisting of 430 multi-family dwelling units and 6,000 square feet of commercial will gravity sewer to a proposed private sewer lift station located on the southeast corner of the proposed project. The proposed private sewer lift station's force mains will discharge into a proposed private manhole before connecting to the existing public manhole on the existing 18-inch diameter gravity sewer line at the Corporate Center Drive and Business Center Court intersection.
2. The development of the project is projected to result in average sewage flow of 103,900 gpd.
3. Existing gravity sewer lines are currently calculated to have a d/D of approximately 0.33 in the 18-inch diameter segments under existing peak flow. The addition of the project's peak sewage flow would increase the d/D to 0.44. These depths are below the City design criteria of 0.75 d/D for the 18-inch diameter segments.

4. Figure 2 presents the existing and proposed sewer system in the immediate project vicinity. Exhibit A presents the existing and proposed sewer system in the greater project vicinity.
5. The sewer system analysis conducted indicates that the existing 18-inch public gravity sewer lines downstream of the project site can accommodate both existing sewer flow and the sewer flows of the proposed project.
6. The proposed private onsite gravity sewer system will be designed according to City of San Diego Sewer Design Guide to comply with all design criteria (depth, velocity, minimum slope, etc.). For gravity sewer mains with depths not exceeding 15 feet, the project will use SDR-35 PVC sewer pipe.

If you have any questions regarding the information or conclusions and recommendations presented in this report, please do not hesitate to contact the undersigned.

Dexter Wilson Engineering, Inc.



Steven Henderson, P.E.

SH:ah

Attachments

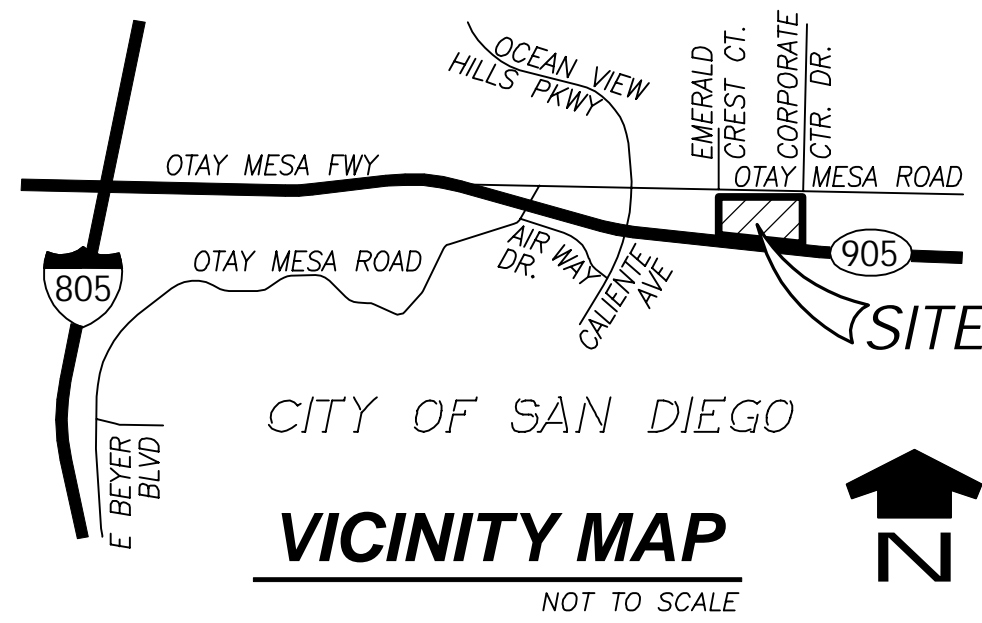
APPENDIX A

PRELIMINARY SITE PLAN

VESTING TENTATIVE MAP & SITE DEVELOPMENT PERMIT

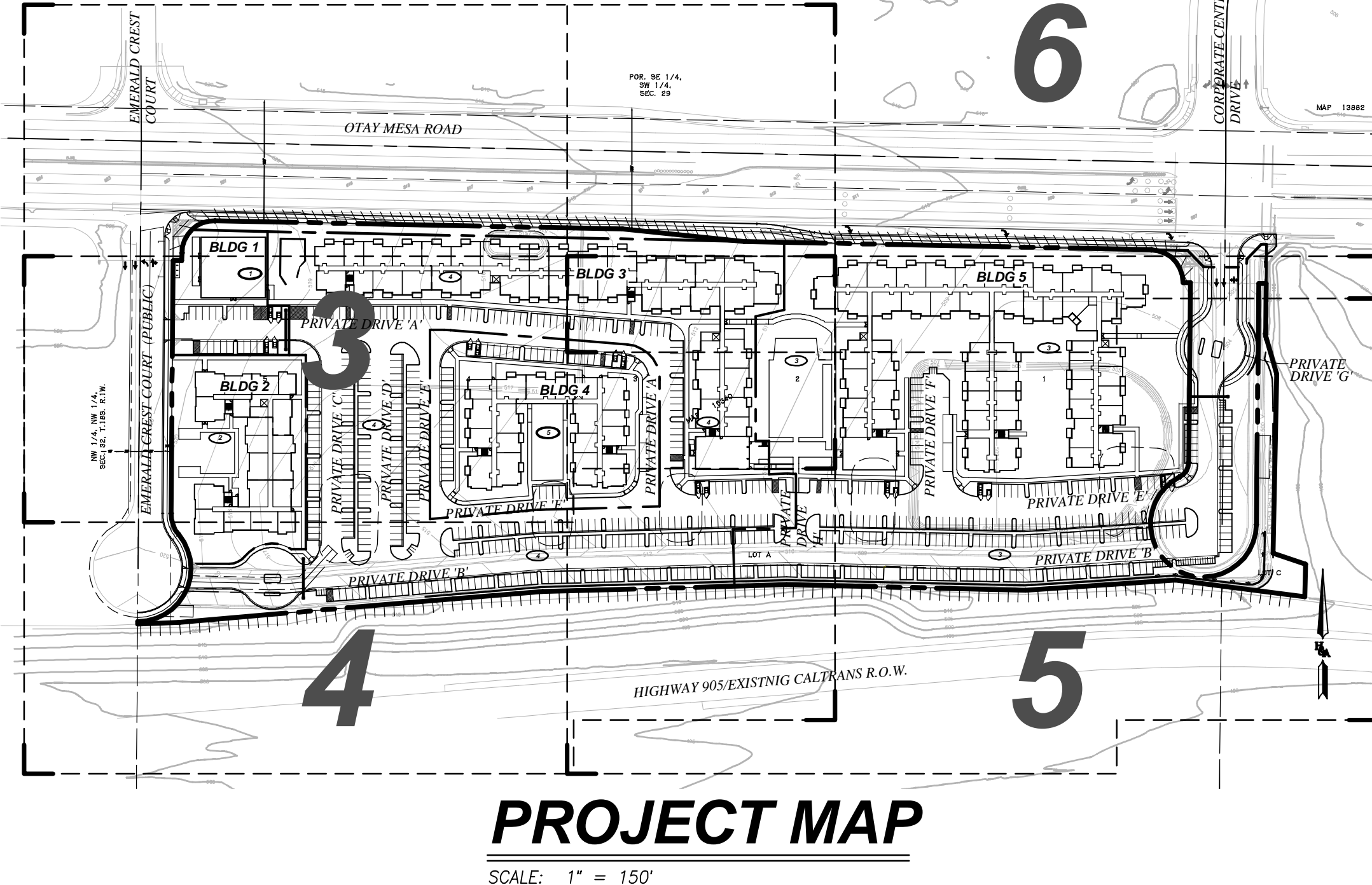
BDM MIXED USE

CITY OF SAN DIEGO, CALIFORNIA



LEGEND

PROPERTY LINE/ TM BOUNDARY	---
PROPOSED BUILDING NUMBER WITH PAD ELEVATION	BLDG 1 FF=521.0 P=520.2
PROPOSED LOT NUMBER	①
PROPOSED LOT LINE	-P-
PROPOSED EASEMENT LINE	-E-
EXISTING PUBLIC SEWER MAIN WITH MANHOLE	○
PROPOSED PRIVATE SEWER MAIN WITH MANHOLE	○
PROPOSED SEWER FORCE MAIN (PRIVATE ONSITE, PUBLIC OFFSITE)	FM
EXISTING PUBLIC WATER MAIN W/ FIRE HYDRANT	W
PROPOSED PRIVATE WATER MAIN (12" UNLESS OTHERWISE NOTED)	W
PROPOSED PRIVATE FIRE MAIN W/ FIRE HYDRANT & SERVICE (8" UNLESS OTHERWISE NOTED)	W
PROPOSED PRIVATE WATER LATERAL	W
PROPOSED PRIVATE SEWER LATERAL	W
PROPOSED CENTERLINE STREET ELEVATION	520.0
PROPOSED SPOT ELEVATION	521.0
EXISTING CONTOURS	522
PROPOSED SLOPE BANK (2:1 MAX)	2:1
PROPOSED RETAINING WALL	-R-
PROPOSED % OF STREET CENTERLINE GRADE	2%
EXISTING STREET LIGHT	○
PROPOSED STORM DRAIN (PRIVATE UNLESS OTHERWISE NOTED)	---○---
EXISTING PUBLIC STORM DRAIN SYSTEM	---○---
PROPOSED TRASH ENCLOSURE	[-]
LIMITS OF PROPOSED GRADING	-G-
SWALE	-S-



GENERAL DESIGN NOTES

- CUT/FILL SLOPES ARE 2:1 OR FLATTER UNLESS OTHERWISE SPECIFIED.
- GRADING SHOWN HEREON IS PRELIMINARY AND MAY BE SUBJECT TO MINOR REFINEMENTS IN FINAL DESIGN. FINAL GRADING PLANS WILL BE SUBMITTED TO THE APPROVED PERMIT AND EXHIBITS.
- DRAINAGE FACILITIES TO BE CONSTRUCTED PER CITY OF SAN DIEGO STANDARDS.
- PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT THE SUBDIVIDER SHALL ENTER INTO A MAINTENANCE AGREEMENT FOR THE ONGOING PERMANENT BMP MAINTENANCE SATISFACTORY TO THE CITY ENGINEER.
- PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT THE SUBDIVIDER 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. DRAINAGE EASEMENTS SHALL BE PROVIDED AS REQUIRED.
- ALL LENGTHS, DISTANCES, LOT DIMENSIONS AND CURVE RADII ARE APPROXIMATE.
- ALL UTILITIES SHALL BE UNDERGROUND AND EASEMENTS PROVIDED AS NECESSARY.
- ALL PROPOSED WATER (INCLUDING SERVICES AND METERS) AND SEWER FACILITIES (PUBLIC & PRIVATE, WITHIN THE PUBLIC ROW OR PUBLIC EASEMENT MUST BE DESIGNED, CONSTRUCTED, OR ABANDONED IN ACCORDANCE WITH ESTABLISHED CRITERIA WITHIN THE CITY OF SAN DIEGO'S CURRENT WATER & SEWER FACILITY DESIGN GUIDELINES, REGULATIONS, STANDARDS AND PRACTICES PERTAINING THERETO.
- ALL ON-SITE WATER AND SEWER FACILITIES SHOWN ON THIS DRAWING ARE PRIVATE AND SHALL BE DESIGNED TO MEET THE REQUIREMENTS OF THE CALIFORNIA UNIFORM PLUMBING CODE AND SHALL BE REVIEWED AS PART OF THE BUILDING PERMIT PLAN CHECK.
- ANY EXISTING WATER SERVICES TO BE KILLED AT THE MAIN UNLESS OTHERWISE NOTED.
- ANY EXISTING SEWER SERVICES TO BE ABANDONED AT THE PROPERTY LINE.
- THERE ARE NO PROPOSED OR EXISTING BUS/TRANSIT STATIONS OR STOPS.
- COMMUNAL TRASH PICKUP IS PROPOSED AS PART OF THIS PROJECT.
- AN ILLUMINATED DIRECTORY IN ACCORDANCE WITH THIS POLICY 00-6, SHALL BE PROVIDED.
- BUILDING ADDRESS NUMBERS SHALL BE VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY. (PER UFC 901.4.4)
- IMPROVEMENTS SUCH AS DRIVEWAYS, UTILITIES, DRAINS AND WATER AND SEWER LATERALS SHALL BE DESIGNED SO AS TO NOT PROHIBIT THE PLACEMENT OF STREET TREES, ALL TO THE SATISFACTION OF THE CITY MANAGER.
- CALIFORNIA BUILDING CODE CONSTRUCTION TYPE: V. FULLY SPRINKLED
- CALIFORNIA BUILDING CODE OCCUPANCY GROUP: R-2, A-2, A-3, M, B.
- MINIMUM 24 INCH OR 36 INCH BOX SIZE TREES SHALL BE INSTALLED WITHIN 10' OF THE FACE OF CURB AND IN OPENINGS BEING A MINIMUM 40 SQUARE FEET OF AIR AND WATER - PERMEABLE AREA AS INDICATED ON THE LANDSCAPE PLAN (SEE LANDSCAPE PLANS FOR DETAILS).
- IMPROVEMENT PLANS SHALL SHOW LABEL, AND DIMENSION A 40 SQUARE FOOT AREA FOR EACH STREET TREE WHICH IS UNENCUMBERED BY HARDSCAPE AND UTILITIES.
- NO TREES OR SHRUBS EXCEEDING THREE FEET IN HEIGHT AT MATURITY SHALL BE INSTALLED WITHIN TEN FEET OF ANY SEWER FACILITY AND FIVE FEET OF ANY WATER.
- ALL RESIDENTIAL BUILDINGS REQUIRE A FIRE SPRINKLER SYSTEM.
- FIRE ACCESS ROADWAY SIGNS OR RED CURBS WILL BE PROVIDED IN ACCORDANCE WITH BFLS POLICY A-96-1. TEMPORARY STREET SIGNS WILL BE PROVIDED IN ACCORDANCE WITH UFC 901.4.5
- ALL DRAIN SYSTEMS NOT LOCATED IN A PUBLIC STREET SHALL BE PRIVATE.
- WATER EASEMENTS WILL BE PROVIDED ADJACENT TO ALL ONSITE PUBLIC FIRE HYDRANTS, WATER METERS, BLOWOFFS AND VALVES, UPON FINAL LOCATION REVIEW BY THE CITY OF SAN DIEGO ENGINEERING AND FIRE DEPARTMENTS.
- ADJACENT NOISE ATTENUATION WILL BE PROVIDED TO ENSURE AN INTERIOR NOISE LEVEL OF 45 dB CNEL FOR ALL SLEEPING ROOMS AND AN INTERIOR NOISE LEVEL OF 50dB FOR ALL OTHER INDOOR AREAS.
- NO OBSTRUCTION INCLUDING SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGHT. PLANT MATERIAL, OTHER THAN TREES, WITHIN THE PUBLIC RIGHT-OF-WAY THAT IS LOCATED WITHIN VISIBILITY AREAS SHALL NOT EXCEED 24 INCHES IN HEIGHT
- PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS, THE SUBDIVIDER SHALL OBTAIN A LETTER OF PERMISSION FROM THE ADJACENT PROPERTY OWNER, FOR ANY PROPOSED OFFSITE GRADING, TO THE SATISFACTION OF THE CITY ENGINEER.
- PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITEE SHALL ENTER INTO A MAINTENANCE AGREEMENT FOR THE ONGOING PERMANENT BMP MAINTENANCE SATISFACTORY TO THE CITY ENGINEER.
- PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE OWNER/PERMITEE 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.
- PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMIT, THE APPLICANT SHALL SUBMIT A TECHNICAL REPORT THAT WILL BE SUBJECT TO FINAL REVIEW AND APPROVAL BY THE CITY ENGINEER, BASED ON THE STORM WATER STANDARDS IN EFFECT AT THE TIME OF THE CONSTRUCTION PERMIT ISSUANCE
- DEVELOPMENT OF THIS PROJECT SHALL COMPLY WITH ALL STORM WATER CONSTRUCTION REQUIREMENTS OF THE STATE CONSTRUCTION GENERAL PERMIT, ORDER NO. 2009-009DWO, OR SUBSEQUENT ORDER, AND THE MUNICIPAL STORM WATER PERMIT, ORDER NO. R9-2013-0001, OR SUBSEQUENT ORDER. IN ACCORDANCE WITH ORDER NO. 2009-009DWO, OR SUBSEQUENT ORDER, A RISK LEVEL DETERMINATION SHALL BE CALCULATED FOR THE SITE AND A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE IMPLEMENTED CONCURRENTLY WITH THE COMMENCEMENT OF GRADING ACTIVITIES.
- PRIOR TO THE ISSUANCE OF A GRADING OR A CONSTRUCTION PERMIT, A COPY OF THE NOTICE OF INTENT (NOI) WITH A VALID WASTE DISCHARGE ID NUMBER (WID#) SHALL BE SUBMITTED TO THE CITY OF SAN DIEGO AS A PROOF OF THE ENROLLMENT UNDER THE CONSTRUCTION GENERAL PERMIT. WHEN OWNERSHIP OF THE ENTIRE SITE OR PORTIONS OF THE SITE CHANGES PRIOR TO FILING OF THE NOTICE OF TERMINATION (NOT) A REVISED NOI SHALL BE SUBMITTED ELECTRONICALLY TO THE STATE WATER RESOURCES BOARD IN ACCORDANCE WITH THE PROVISIONS AS SET FORTH IN SECTION 11.C OF ORDER NO. 2009-0009-DWO AND A COPY SHALL BE SUBMITTED TO THE CITY.
- ALL BEARINGS AND DISTANCES ARE LOCATED AND SHOWN ON C8.
- NO PRIVATE IMPROVEMENTS (INCLUDING LANDSCAPING, ENHANCED PAVING, PRIVATE UTILITIES, OR STRUCTURES OF ANY KIND) THAT COULD INHIBIT THE MAINTENANCE, REPAIR, OR REPLACEMENT OF PUBLIC UTILITIES, MAY BE INSTALLED, CONSTRUCTED, OR LOCATED WITHIN THE LIMITS OF A PUBLIC WATER, SEWER OR GENERAL UTILITY EASEMENT WITHOUT A CITY APPROVED AND COUNTY RECORDED ENCROACHMENT AND MAINTENANCE REMOVAL AGREEMENT (EMRA).
- ALL WATER LINES SERVING THIS DEVELOPMENT (INCLUDING DOMESTIC, IRRIGATION, AND FIRE) MUST PASS THROUGH A PERMITTED, PRIVATE, ABOVE GROUND, BACKFLOW PREVENTION DEVICE (BFPD).
- THE OWNER/PERMITEE SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO CITY OF SAN DIEGO WATER AND SEWER FACILITIES IN THE VICINITY OF THE PROJECT SITE, DUE TO THE CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT, IN ACCORDANCE WITH MUNICIPAL CODE SECTION 142.0607. IN THE EVENT ANY SUCH FACILITY LOSES INTEGRITY THEN, THE OWNER/PERMITEE SHALL REPAIR OR RECONSTRUCT ANY DAMAGED PUBLIC WATER AND SEWER FACILITY IN A MANNER SATISFACTORY TO THE PUBLIC UTILITIES DIRECTOR AND CITY ENGINEER.
- NO PUBLIC WATER, SEWER OR GENERAL UTILITY EASEMENTS CURRENTLY EXIST ON THE SUBJECT PROPERTY.
- IN NO EVENT SHALL ANY TEMPORARY OR PERMANENT GRADING OR IMPROVEMENTS ASSOCIATED WITH THIS PROJECT EXTEND BEYOND THE PROJECT BOUNDARY INTO THE CITY OPEN SPACE PRESERVE LOCATED ADJACENT TO THE EAST.
- THE PROPOSED PROJECT WILL COMPLY WITH ALL THE REQUIREMENTS OF THE CURRENT CITY OF SAN DIEGO STORM WATER STANDARDS MANUAL BEFORE A GRADING OR BUILDING PERMIT IS ISSUED. IT IS THE RESPONSIBILITY OF THE OWNER/DESIGNER/APPLICANT TO ENSURE THAT THE CURRENT STORM WATER PERMANENT BMP DESIGN STANDARDS ARE INCORPORATED INTO THE PROJECT.
- THIS PROJECT WILL BE REQUIRED TO ADHERE TO THE CITY OF SAN DIEGO STORM WATER STANDARDS IN EFFECT AT THE TIME OF APPROVAL OF MINISTRIAL PERMIT. THE CURRENT STORM WATER DEVELOPMENT REGULATIONS BECAME EFFECTIVE ON FEBRUARY 16, 2016 AND THIS PROJECT WILL BE SUBJECT TO THOSE REGULATIONS.
- ALL STORM WATER RUN-OFF FROM THE PROPOSED DEVELOPMENT SHALL BE DIRECTED TO PROPOSED LANDSCAPE LOW-IMPACT DEVELOPMENT BMP'S.
- SEE ARCHITECTURAL SET FOR ADDITIONAL DETAILS REGARDING THE RESIDENTIAL PROJECT.
- EXISTING MAINTENANCE ASSESSMENT DISTRICT (MAD) OWNED IRRIGATION SHALL BE CAPPED AND TERMINATED AT THE PROPERTY LINE TO THE SATISFACTION OF THE PARKS AND RECREATION DEPARTMENT.
- ALL ON SITE SEWER IS PRIVATE AND AS SUCH PRIVATE SEWER WILL REQUIRE A PRIVATE PLUMBING PERMIT.
- DUAL PERPENDICULAR CURB RAMP PER CITY SD CURB RAMP DESIGN GUIDELINES (9/10/20).
- A FINAL MAP SHALL BE FILED AT THE COUNTY RECORDER'S OFFICE PRIOR TO THE EXPIRATION OF THE VESTING TENTATIVE MAP. IF APPROVED, A DETAILED PROCEDURE OF SURVEY SHALL BE SHOWN ON THE 4 LOT FINAL MAP AND ALL PROPERTY CORNERS SHALL BE MARKED WITH DURABLE SURVEY MONUMENTS.
- PLEASE REFER TO SHEET C6 FOR A DETAILED DESCRIPTION OF THE LOCATION AND AREAS PROPOSED TO BE VACATED AND TO BE DEDICATED ON THIS MAP.
- EXISTING TRAFFIC SIGNALS AT INTERSECTION OF OTAY MESA ROAD AND CORPORATE CENTER DRIVE ARE TO BE MODIFIED PER PROJECT TRAFFIC REPORT.
- THIS PROJECT IS A MULTIPLE "UNIT" SUBDIVISION. IT IS THE INTENT THAT MULTIPLE FINAL MAPS BE FILED PURSUANT TO SECTION 66456.1 OF THE SUBDIVISION MAP ACT. THE FINAL MAP MAY CONSIST OF ONE OR MORE MULTIPLE LOTS AS SHOWN ON THIS TENTATIVE MAP.
- PRIOR TO RECORDATION, EACH INDIVIDUAL RECORDED UNIT SHALL INSURE THAT ADEQUATE ACCESS AND UTILITY SERVICES ARE PROVIDED EITHER BY FEE OWNERSHIP OR BY COVENANT OF EASEMENT TO THE SATISFACTION OF THE CITY ENGINEER.

DEVELOPMENT SUMMARY

THE BDM MIXED-USE PROJECT IS PROPOSED FOR A 13.45-ACRE SITE, LOCATED ON THE SOUTH SIDE OF OTAY MESA ROAD, EAST OF EMERALD CREST COURT, WEST OF CORPORATE CENTER DRIVE AND NORTH OF STATE ROUTE 905, WITHIN THE OTAY MESA COMMUNITY PLAN AREA IN THE CITY OF SAN DIEGO. THE PROJECT SITE HAS BEEN GRADED IN ACCORDANCE WITH A PREVIOUSLY APPROVED VESTING TENTATIVE MAP.

THE PROJECT PROPOSES 430 TOTAL MULTI-FAMILY RESIDENTIAL DWELLING UNITS AND APPROXIMATELY 6,000 SQUARE FEET OF COMMERCIAL USE. THE MULTI-FAMILY RESIDENTIAL USE INCLUDES 378 MARKET-RATE DWELLING UNITS, SITUATED IN THE NORTHERN PORTION OF THE SITE, AND 52 AFFORDABLE DWELLING UNITS (AFFORDABLE TO LOW-INCOME HOUSEHOLDS) SITUATED IN THE WESTERN PORTION OF THE SITE. COMMERCIAL USES WOULD BE LOCATED IN THE NORTHWESTERN PORTION OF THE SITE. ACCESS TO THE PROJECT WOULD BE PROVIDED OFF EMERALD CREST COURT AND BY A NEW PRIVATE DRIVE OFF OTAY MESA ROAD. PARKING WOULD BE PROVIDED IN SURFACE PARKING AREAS LOCATED THROUGHOUT THE PROJECT. THE PROJECT REQUIRES AN AMENDMENT TO THE OTAY MESA PLAN TO CHANGE THE LAND USE DESIGNATION FROM COMMUNITY COMMERCIAL - RESIDENTIAL PROHIBITED TO COMMUNITY COMMERCIAL - RESIDENTIAL PERMITTED, REZONE FROM THE EXISTING CC-2-3 ZONE TO CC-3-6, VESTING TENTATIVE MAP, SITE DEVELOPMENT PERMIT, NEIGHBORHOOD DEVELOPMENT PERMIT, AND PUBLIC RIGHT-OF-WAY VACATION TO VACATE CORPORATE CENTER DRIVE SOUTH OF OTAY MESA ROAD.

GENERAL NOTES

- SITE AREA DATA:
GROSS SITE AREA: 12.74 ACRES
NET SITE AREA: 13.45 ACRES (GROSS + VACATION - DEDICATION)
- TOTAL NUMBER OF EXISTING/PROPOSED LOTS:
EXISTING LOTS: 7
PROPOSED LOTS: 5 (LOT 1: COMMERCIAL, LOT 2: AFFORDABLE RESIDENTIAL, LOTS 3, 4 & 5: MARKET-RATE RESIDENTIAL)
- TOTAL NUMBER OF PROPOSED UNITS: 430 (378 MARKET RATE & 52 AFFORDABLE)
- COMMUNITY PLAN: OTAY MESA
EXISTING COMMUNITY PLAN LAND USE: COMMUNITY COMMERCIAL - RESIDENTIAL PROHIBITED (0 DU/AC)
PROPOSED COMMUNITY PLAN LAND USE: RESIDENTIAL: COMMUNITY COMMERCIAL - RESIDENTIAL PERMITTED
- ZONING: EXISTING: CC-2-3
PROPOSED: CC-3-6
SITE IS ALSO WITHIN THE AIRPORT LANDUSE COMPATIBILITY OVERLAY ZONE; THE AIRPORT INFLUENCE AREAS OVERLAY ZONE, THE RESIDENTIAL TANDEM PARKING OVERLAY ZONE, THE PARKING STANDARDS TRANSIT PRIORITY AREAS, THE TRANSIT PRIORITY AREAS OVERLAY ZONE, AND CPIOZ-A OVERLAY ZONE.
- DENSITY: PROPOSED:
GROSS SITE DENSITY: 31.97/AC (430 UNITS/13.45 AC)
- APN #: 645-410-03 THRU 09.
- AVERAGE DAILY TRIPS: 4,497
- GEO HAZARD ZONE: 53 & 12
- TOTAL FLOOR AREA: 442,230 FLOOR AREA RATIO: 0.75
- NO TRANSIT STOPS ARE PROPOSED WITH THIS PROJECT.
- LAMBERT COORDINATES: 146-1765
- CCS83 COORDINATES 1786-6325

PROJECT TEAM

ENGINEER	ARCHITECT
HUNSAKER & ASSOCIATES SD, INC. CONTACT: DAN REHM 9707 MAPLES STREET SAN DIEGO, CA 92121 (858) 558-4500 EMAIL: DREHM@HUNSAKERSD.COM	JOSEPH WONG DESIGN ASSOC. CONTACT: SOPHIA DEL - MAR ENGLISH 3259 FOURTH AVE SAN DIEGO, CA, 92101 (619) 233-6777 EMAIL: SDELMARENGLISH@JWDAINC.COM
LANDSCAPE ARCHITECT	LAND USE
IN-SITE LANDSCAPE ARCHITECTURE CONTACT: TIM JACHLEWSKI 2850 WOMBLE RD SUITE 100-403 SAN DIEGO, CA 92106 (619) 795-7605 EMAIL: TIM@INSITELANDARCH.COM	ATLANTIS GROUP CONTACT: STEVE BOSSI (619) 523-1930 SBOSSI@ATLANTISSD.COM
DRY UTILITIES	ENVIRONMENTAL CONSULTANT
ENGINEERING PARTNERS INC. CONTACT: JANET STALEY 10159 MEANLEY DR. SUITE 200 SAN DIEGO, CA, 92131 (858) 824-1761 JANY@ENGINEERINGPARTNERS.COM	KLR PLANNING CONTACT: KAREN RUGGELS (619) 578-9505 KAREN@KLRPLANNING.COM
OWNER	APPLICANT
BDM INVESTMENTS, LLC CONTACT: MICHAEL SHOEMAKER (858) 245-5258 M.H.SHOEMAKER55@GMAIL.COM	BDM MIXED USE CONTACT: MICHAEL SHOEMAKER (858) 245-5258 M.H.SHOEMAKER55@GMAIL.COM

REPRESENTATIVE REPRESENTATIVE

LEGAL DESCRIPTION

LOTS 1, 2, 3, 4, 5, A AND C OF HANDLER COMMERCIAL, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 16340, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, MAY 7, 2019.

TOPOGRAPHY SOURCE

THE TOPOGRAPHY COMPILED BY RBF CONSULTING, DATED JULY 27, 2012. SUPPLEMENTAL FIELD SURVEY WAS PERFORMED ON NOVEMBER 7, 2017 BY RICK ENGINEERING COMPANY.

BENCHMARK

ELEVATIONS SHOWN HEREON ARE IN TERMS OF THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29) BASED LOCALLY UPON THE FOLLOWING STATION AS PUBLISHED BY THE CITY OF SAN DIEGO: CENTERLINE MONUMENT (SECTION CORNER) AT THE INTERSECTION OF OTAY MESA ROAD AND HERITAGE ROAD ELEVATION = 504.568 M.S.L.

UTILITIES & SERVICES

ONSITE WATER: PRIVATE
OFFSITE WATER: CITY OF SAN DIEGO (PUBLIC)
ONSITE SEWER: PRIVATE
OFFSITE SEWER: CITY OF SAN DIEGO (PUBLIC)
FIRE AND POLICE: CITY OF SAN DIEGO
GAS & ELECTRICITY: SDG&E
SCHOOL DISTRICT: SAN DIEGO UNIFIED SCHOOL DIST.

STREET TREES: ALL UTILITIES, HARDSCAPE AND OTHER SITE IMPROVEMENTS (PER LDC TABLE 142-04E "MINIMUM TREE SEPARATION DISTANCE" AND PER LDC 142.0403(b)(6) "MIN 40'-SOFT TREE ROOT ZONE") SHALL BE DESIGNED TO NOT PROHIBIT THE REQUIRED PLACEMENT AND QUANTITY OF REQUIRED STREET TREES.

MINIMUM TREE SEPARATION DISTANCE:
TRAFFIC SIGNALS / STOP SIGNS - 20 FEET
UNDERGROUND UTILITY LINE - 5 FEET (10' FOR SEWER)
ABOVE GROUND UTILITY STRUCTURES - 10 FEET
DRIVEWAY (ENTRIES) - 10 FEET (5' FOR RESIDENTIAL STREET < 25 MPH)
INTERSECTIONS (INTERSECTING CURB LINES OF TWO STREETS) - 25 FEET

CONDOMINIUM NOTE

THIS IS A MAP OF A CONDOMINIUM PROJECT AS DEFINED IN SECTION 4125 OF THE CIVIL STATE OF CALIFORNIA AND IS FILED PURSUANT TO THE SUBDIVISION MAP ACT. THERE IS A MAXIMUM OF 378 MARKET RATE RESIDENTIAL UNITS (MARKET RATE UNITS: LOTS 3, 4 & 5).

THIS IS ALSO A MAP OF A COMMERCIAL CONDOMINIUM PROJECT AS DEFINED IN SECTION 6531 OF THE CIVIL CODE OF THE STATE OF CALIFORNIA AND IS FILED PURSUANT TO THE SUBDIVISION ACT. THERE IS A MAXIMUM OF 6,000 COMMERCIAL UNITS. (LOT 1).

SHEET INDEX

- C1 TITLE SHEET
- C2 STREET SECTIONS
- C3 PROJECT DESIGN
- C4 PROJECT DESIGN
- C5 PROJECT DESIGN
- C6 PROJECT DESIGN
- C7 FIRE ACCESS PLAN
- C8 BOUNDARY, ENCUMBRANCE & EXISTING TOPO

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS MAP IS THE SOUTHELY SIDELINE OF OTAY MESA ROAD AS SHOWN ON MAP NO. 16340 (N88°48'54"W)

EXISTING EASEMENTS

REFER TO SHEET C8: "BOUNDARY, MONUMENTS, ENCUMBRANCES & EXISTING TOPO"

PROPOSED EASEMENTS

REFER TO SHEET C3-C6 FOR THE LOCATION AND LIMITS OF ALL NEW PROPOSED EASEMENTS

EARTHWORK NOTES

TOTAL GRADING VOLUME
AMOUNT OF CUT: APPROX. 2,193 CUBIC YARDS
AMOUNT OF FILL: APPROX. 65,467 CUBIC YARDS
AMOUNT OF IMPORT: APPROX. 63,274 CUBIC YARDS

PARKING SUMMARY

PARKING COUNT	NON-RESIDENTIAL							
	COMMERCIAL SPACE	COMMERCIAL SPACE ACCESS	COMMERCIAL CARPOOL/ZERO-EMISSION	COMMERCIAL EVCS	COMMERCIAL TOTAL	MOTORCYCLE	BICYCLE	
ON-SITE	10	1	1	1	13	2	8	
RESIDENTIAL- Market Rate							MOTO	BICYCLE
LEVEL	STANDARD	PARALLEL	ACCESSIBLE	EVCS	TOTAL	MOTO	BICYCLE	
ON-SITE	545	4	13	63	625	43	200	
RESIDENTIAL- AFFORDABLE							MOTO	BICYCLE
LEVEL	STANDARD	ACCESSIBLE	EVCS	**TOTAL	MOTO	BICYCLE		
ON-SITE	3	1	1	5	0	26		
***9 PARKING SPACES NORTH OF AFFORDABLE BLDG.								
TOTAL: RESIDENTIAL								
	**PARKING	630						
	MOTORCYCLE	43						
	BICYCLE	226						
TOTAL: NON-RESIDENTIAL + RESIDENTIAL								
	PARKING	643						
	MOTORCYCLE	45						
	BICYCLE	235						

ENGINEER



ALISA S. VIALPANDO R.C.E. 47945 DATE

VESTING TENTATIVE MAP & SITE DEVELOPMENT PERMIT

BDM MIXED USE

CITY OF SAN DIEGO, CALIFORNIA

SHEET
C1
OF
C8

APPENDIX B

CITY OF SAN DIEGO SEWER DESIGN CRITERIA

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.

**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: $\text{Peak Factor} = 6.2945 \times (\text{pop})^{-0.1342}$
(Holmes & Narver, 1960)

FIGURE 1-1

APPENDIX C

SEWER ANALYSIS

1. Existing Flows – Existing Public Sewer
 2. Existing Flow plus Project Flow – Existing Public Sewer and Proposed Private Sewer
- Reference Exhibit A for Manhole Diagram

DATE: 6/13/2022

SEWER STUDY SUMMARY

FOR: BDM Mixed Use City of San Diego (Existing Flows Only) Existing Public Sewer
 BY: Dexter Wilson Engineering, Inc.

SHEET 1 OF 2
 REFER TO PLAN SHEET: EXHIBIT A

JOB NUMBER: 1125-001

FROM	I.E. (ft)	TO	I.E. (ft)	LENGTH (ft)	IN-LINE FLOW	AVG. DRY WEATHER FLOW (gpd)	PDWF PEAKING FACTOR	PDWF (gpd)	LIFT STATION PEAKING FACTOR	PEAK PUMPED FLOW (gpd)	COMBINED PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' ⁽¹⁾	dn (feet)	dn/D ⁽²⁾	C _a for Velocity ⁽³⁾	VELOCITY (f.p.s.)	NOTES
											M.G.D.	C.F.S.								
5485063	509.08	5485061	507.61	621	290,000	290,000	2.10	607,715	1.0	607,715	0.608	0.940	15	0.24	0.138576	0.46250	0.37	0.2642	2.28	58 Net-Acres Commercial
5485063	507.61	5485061	507.12	155	0	290,000	2.10	607,715	1.0	607,715	0.608	0.940	18	0.32	0.073743	0.40500	0.27	0.1711	2.44	
5485061	507.12	5485060	506.09	691	0	290,000	2.10	607,715	1.0	607,715	0.608	0.940	18	0.15	0.107392	0.49500	0.33	0.2260	1.85	
5485060	506.09	5485058	505.78	69	0	290,000	2.10	607,715	1.0	607,715	0.608	0.940	18	0.45	0.061858	0.37500	0.25	0.1535	2.72	
5485058	505.78	5485056	505.29	192	0	290,000	2.10	607,715	1.0	607,715	0.608	0.940	18	0.26	0.082074	0.42000	0.28	0.1800	2.32	
5485056	505.29	5485054	505.05	29	0	290,000	2.10	607,715	1.0	607,715	0.608	0.940	18	0.83	0.045577	0.31500	0.21	0.1199	3.49	
5485054	505.05	5485052	504.41	294	0	290,000	2.10	607,715	1.0	607,715	0.608	0.940	18	0.22	0.088866	0.45000	0.30	0.1982	2.11	
5485052	504.41	5470506	504.02	125	0	290,000	2.10	607,715	1.0	607,715	0.608	0.940	18	0.31	0.074229	0.40500	0.27	0.1711	2.44	

Min Slope
0.15

Max dn/D
0.37

RES. = Residential
 COM. = Commercial
 INST. = Institutional
 Note: 1 Industrial Net Acre = 5,000 gpd

1 K' based on n = 0.013
 2 dn/D using K' in Brater King Table 7-14
 3 From Brater King Table 7-4 based on dn/D

DATE: 6/13/2022

SEWER STUDY SUMMARY

FOR: BDM Mixed Use City of San Diego (Existing Flows plus Project Flows) Existing Public Sewer plus Proposed Private Sewer SHEET 2 OF 2
 BY: Dexter Wilson Engineering, Inc. REFER TO PLAN SHEET: EXHIBIT A

JOB NUMBER: 1125-001

FROM	I.E. (ft)	TO	I.E. (ft)	LENGTH (ft)	IN-LINE FLOW	AVG. DRY WEATHER FLOW (gpd)	PDWF PEAKING FACTOR	PDWF (gpd)	LIFT STATION PEAKING FACTOR	PEAK PUMPED FLOW (gpd)	COMBINED PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' ⁽¹⁾	dn (feet)	dn/D ⁽²⁾	C _a for Velocity ⁽³⁾	VELOCITY (f.p.s.)	NOTES
											M.G.D.	C.F.S.								
5485063	509.08	5485061	507.61	621	290,000	290,000	2.10	607,715	1.0	607,715	0.608	0.940	15	0.24	0.138576	0.46250	0.37	0.2642	2.28	58 Net-Acres Commercial
5485063	507.61	5485061	507.12	155	103,900	393,900	2.01	792,211	1.3	1,029,875	1.030	1.594	18	0.32	0.124969	0.52500	0.35	0.2450	2.89	Proposed Project Point of Connection
5485061	507.12	5485060	506.09	691	0	393,900	2.01	792,211	1.3	1,029,875	1.030	1.594	18	0.15	0.181994	0.66000	0.44	0.3328	2.13	
5485060	506.09	5485058	505.78	69	0	393,900	2.01	792,211	1.3	1,029,875	1.030	1.594	18	0.45	0.104829	0.48000	0.32	0.2167	3.27	
5485058	505.78	5485056	505.29	192	0	393,900	2.01	792,211	1.3	1,029,875	1.030	1.594	18	0.26	0.139088	0.57000	0.38	0.2739	2.59	
5485056	505.29	5485054	505.05	29	0	393,900	2.01	792,211	1.3	1,029,875	1.030	1.594	18	0.83	0.077238	0.42000	0.28	0.1800	3.93	
5485054	505.05	5485052	504.41	294	0	393,900	2.01	792,211	1.3	1,029,875	1.030	1.594	18	0.22	0.150598	0.58500	0.39	0.2836	2.50	
5485052	504.41	5470506	504.02	125	0	393,900	2.01	792,211	1.3	1,029,875	1.030	1.594	18	0.31	0.125794	0.54000	0.36	0.2546	2.78	

Onsite Pvt.	103,900	103,900	2.41	249,886	1.0	249,886	0.250	0.387	8	0.45	0.220923	0.32667	0.49	0.3827	2.27	Proposed onsite pvt. gravity sewer will be confirmed during final design
	103,900	103,900	2.41	249,886	1.0	249,886	0.250	0.387	10	0.32	0.144492	0.31667	0.38	0.2739	2.03	

Min Slope
0.15

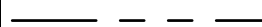






Max dn/D
0.44

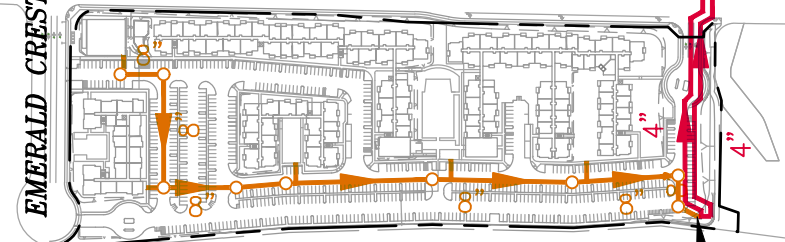
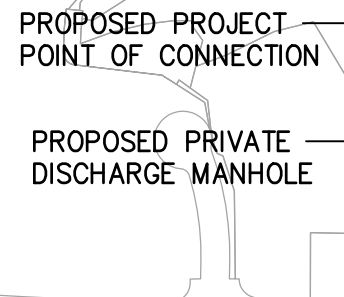
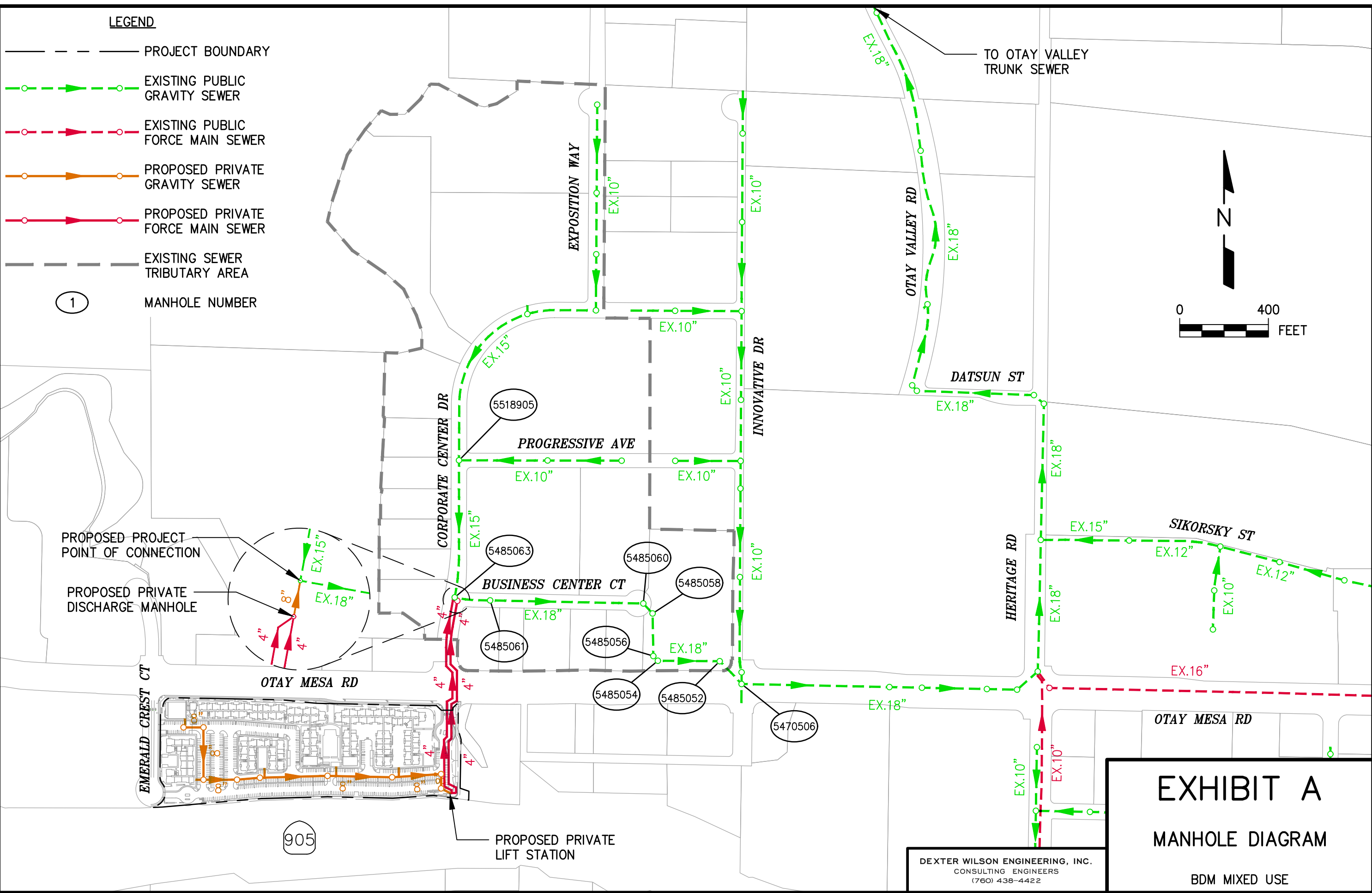
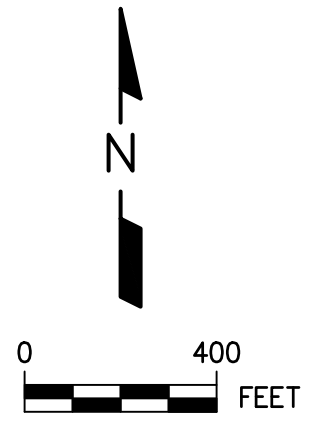
RES. = Residential
 COM. = Commercial
 INST. = Institutional
 Note: 1 Industrial Net Acre = 5,000 gpd

1 K' based on n = 0.013
 2 dn/D using K' in Brater King Table 7-14
 3 From Brater King Table 7-4 based on dn/D

\\ARTIC\DWG\1125002\REPORT\BMU_SWR_EXHIBIT-A_MH.DWG 9/7/2022 2:36:40 PM LAYOUT:11x17 USER:Donald

LEGEND

-  PROJECT BOUNDARY
-  EXISTING PUBLIC GRAVITY SEWER
-  EXISTING PUBLIC FORCE MAIN SEWER
-  PROPOSED PRIVATE GRAVITY SEWER
-  PROPOSED PRIVATE FORCE MAIN SEWER
-  EXISTING SEWER TRIBUTARY AREA
-  MANHOLE NUMBER



905

PROPOSED PRIVATE LIFT STATION

DEXTER WILSON ENGINEERING, INC.
 CONSULTING ENGINEERS
 (760) 438-4422

EXHIBIT A
MANHOLE DIAGRAM
 BDM MIXED USE

APPENDIX D

EXISTING SEWER REFERENCE INFORMATION

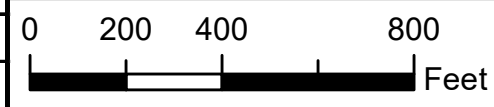
LEGEND

- Sewer MH - City of SD
- ➔ Sewer Pipeline - City of SD

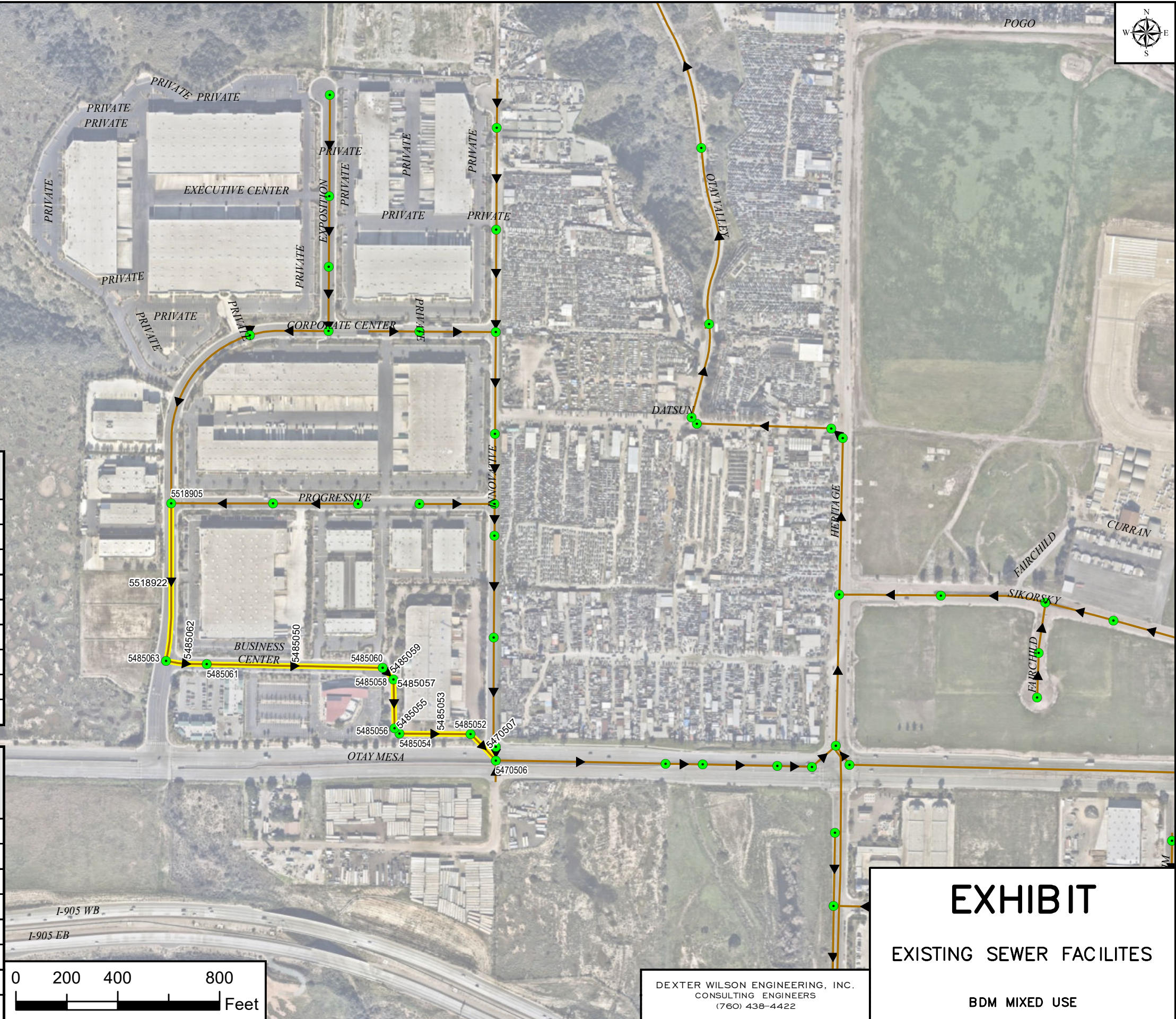


MH Number	RIM Elev (ft)	Invert Elev (ft)	Depth (ft)
5518905	517.96	509.08	8
5485063	513.03	507.61	5
5485061	512.13	507.12	5
5485060	513.97	506.09	7
5485058	515.79	505.78	10
5485056	517.21	505.29	11
5485054	517.50	505.05	12
5485052	519.43	504.41	15
5470506	516.44	504.02	12

Pipe Number	Length (ft)	Pipe Dia. (in)	Invert Elev. Up (ft)	Invert Elev. Dn (ft)
5518922	621	18	509.08	507.61
5485062	155	18	507.61	507.12
5485050	691	18	507.12	506.09
5485059	69	18	506.09	505.78
5485057	192	18	505.78	505.29
5485055	29	18	505.29	505.05
5485053	294	18	505.05	504.41
5470507	125	18	504.41	504.02



DEXTER WILSON ENGINEERING INC. Date Saved: 6/13/2022 2:14:00 PM Document Path: \\A:\GIS\1125001\Exhibit_Sewer.mxd

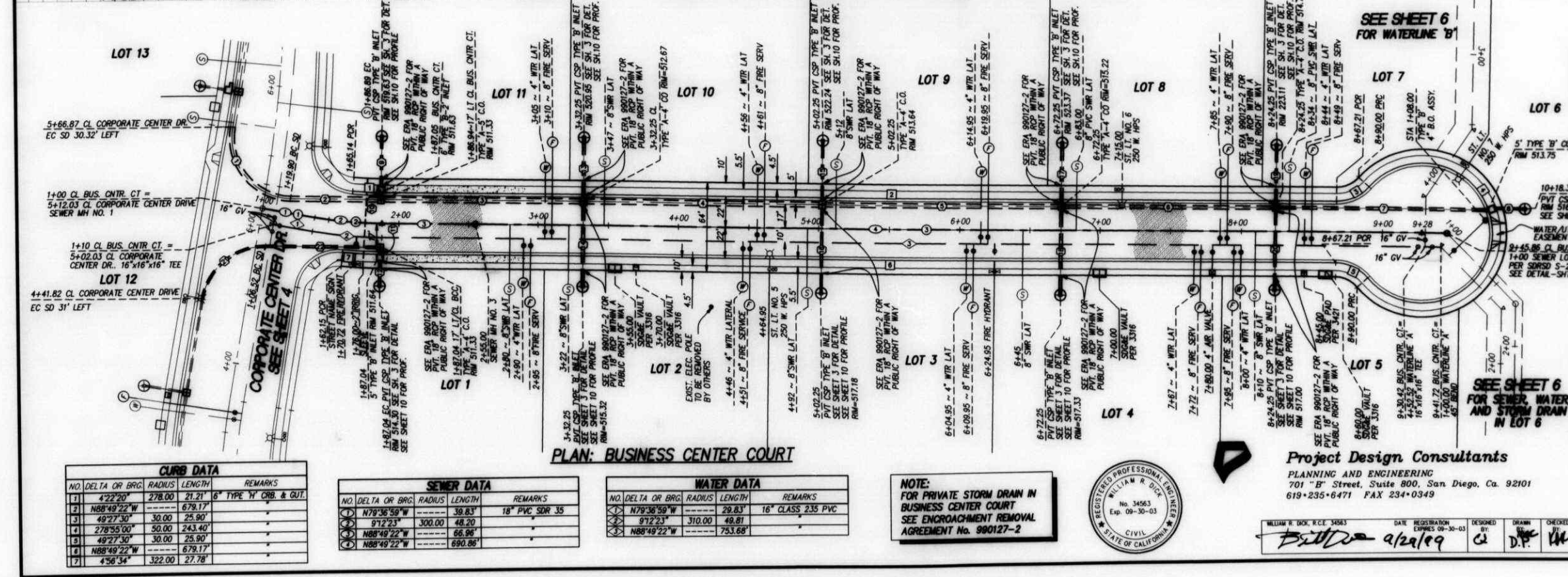
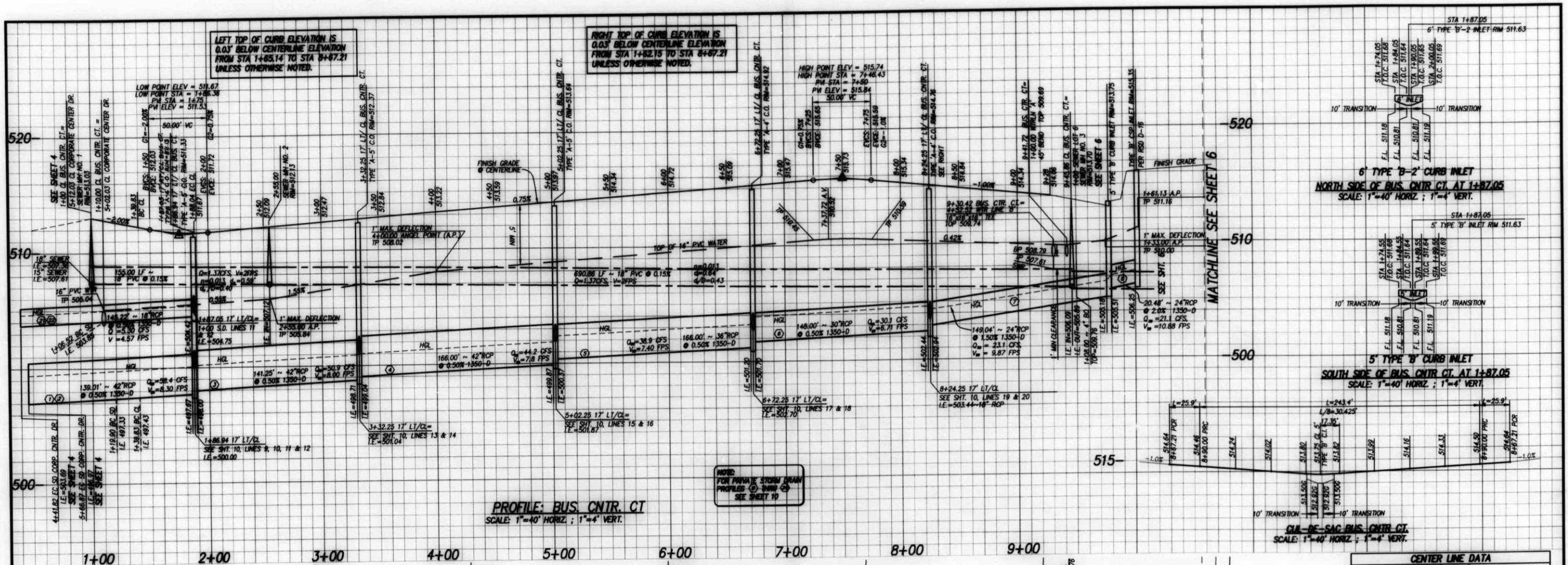


EXHIBIT

EXISTING SEWER FACILITIES

BDM MIXED USE

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422



CENTER LINE DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N79°36'59\"/>			

STORM DRAIN DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N88°49'22\"/>			

CURB DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	4°22'20\"/>			

SEWER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N79°36'59\"/>			

WATER DATA				
NO.	DELTA OR BRG.	RADIUS	LENGTH	REMARKS
1	N79°36'59\"/>			

NOTE: FOR PRIVATE STORM DRAIN IN BUSINESS CENTER COURT SEE ENCROACHMENT REMOVAL AGREEMENT No. 990127-2



Project Design Consultants
 PLANNING AND ENGINEERING
 701 "B" Street, Suite 800, San Diego, Ca. 92101
 619-235-6471 FAX 234-0349

IMPROVEMENT PLANS FOR:
BUSINESS CENTER COURT
 OCEAN VIEW HILLS
 CORPORATE CENTER-PHASE 1
 CITY OF SAN DIEGO, CALIFORNIA
 ENGINEERING DEPARTMENT
 SHEET 5 OF 34 SHEETS
 11/16/1999

DESCRIPTION	BY	APPROVED	DATE	FILED
ORIGINAL	PCD	SEE HW		

CONTRACTOR: 1786-6325
 146-1765
 29824-5-D