# Revised Draft SEIR Appendix 5.12c

VCC Sewer Area Study

# Revised Draft SEIR Appendix 5.12c-1

Approved VCC Sewer Area Study

# Sewer Area Study
# Proposed Conditions for
# VTPM 18108
# Newhall Ranch – Valencia Commerce Center

## County of Los Angeles

**Hunsaker Project No:**
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SEWER AREA STUDY
APPROVED

REVIEWED BY: Pedro Romero DATE 06/17/2025

APPROVED BY: Thong Ngov DATE 06/17/2025

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

THIS APPROVAL EXPIRES TWO YEARS FROM THE DATE OF APPROVAL

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## 1. INTRODUCTION

The purpose of this report is to provide sewer main sizing for the proposed Valencia Commerce Center (VTPM 18108) development.

The project is located in unincorporated Los Angeles County. The project is bounded roughly by the SR126 to the south, The Old Road to the east, Commerce Center Drive to the west, and east of new development and existing improvements PM26363, PM22261 & PM20839.

The proposed development does not receive offsite flow, and travels to the Santa Clarita Valley Sanitation District (SCVSD) Los Angeles County (LAC). The majority of the project site flows westerly on the proposed Franklin Parkway, and Hancock Parkway to existing 18" VCPs per PC11120 and PC11645. The northeasterly portion of the project site (PA-1) drains to the east, and connects into an existing 24" trunk sewer owned by LACSD (Los Angeles County Sanitation District) then drains south along The Old Road toward the Castaic Pumping Plan Lift Station (SCVSD 1 Valencia Water Reclamation Plant as shown in 32-p-0006).

In addition, phased upgrades to Hancock Parkway Pump Station (PS#2) made to accommodate PM 22261, 20839, 26363, and VTPM 18108 PA-4&7 will be discussed by Dexter Wilson Engineering, Inc (DWE Job No 721-470) in a separate memorandum (ESTU2022000625).

## 2. PROJECT LAND USE AND TOPOGRAPHY

The proposed Valencia Commerce Center (VTPM 18108) will include industrial, and commercial land uses. All areas that would contribute towards sewage generation were included in the sewer area study analysis. Sewage generation from future development in areas PA-4 and PA-7 are also accounted for the critical flow pipe sizing but these areas are not part of this study.

A breakdown of the various land use within the proposed development and its area can be found in Table 1 in Appendix A. Each land use type has a corresponding sewer generation coefficient which was used in the analysis that is found in Table 2. Where information is available, the building area is used to calculate the sewer flow. Otherwise, the acres zoned for a specific land use is used with the appropriate acre-based sewer generation factor. These calculations can be found in Table 3, Area A to C as part of appendix A.

## 3. METHODOLOGY

The project was divided into 3 tributary study areas, with most areas being further divided into sub-areas based on land use. Exhibit 1: Valencia Commerce Center Sewer Tributary Area Exhibit in Appendix B shows these study areas. Each tributary area was delineated based on the proposed topography of the site, and the proposed sewer drainage system.

Sewer flow rate for PM 22261, 20839 & 26363 were calculated per below table for the purpose of this study.

**SUMMARY OF PLANNING SEWAGE FLOW (EXISTING ONLY)**

| PM Number | Area (Acres) | Zoning coefficient | Flow by zoning, (cfs) |
|---|---|---|---|
| PM 22261 (Existing) | 59.50 | 0.021 | 1.250 |
| PM 20839 (Existing) | 65.93 | 0.021 | 1.385 |
| PM 26363 (Existing) | 50.20 | 0.021 | 1.054 |
| TOTAL EXISTING PEAK FLOW (PLANNING FACTOR BASED) | 175.63 | 0.021 | 3.689 |

Sewer discharge rates were computed as a product of the zoning coefficients and the land use data (acres, or occupancy). Land use data was compiled based on an area calculation of each tributary as shown in Exhibit 2: Valencia Commerce Center VTPM 18108 GIS Land Use in Appendix B. Sewage generation factors were based on the Los Angeles County Department of Public Works zoning coefficients for private contract sewer projects. Table 3 (Area A to Area C) from appendix 1 shows the calculations for the sewer discharges from each tributary area to be used in pipe sizing calculations.

Planning Area 7 (Area D) and Planning Area 7 (Area E) sewage generation is also calculated in table 3, Area D and E to be used for the purpose of this study as part of future developments.

Tabulated flows from each tributary area are combined and routed through the project site, see Exhibit 3: Valencia Commerce Center Sewer Area Study Map in Appendix B. The design flow rates required for a given sewer segment will be used for pipe sizing. This design flow rate is the higher of the zoning or occupancy flow rate. Minimum sizes and slopes are based upon the minimum street grade in a specific sewer reach. In some cases, the minimum sizes and slopes are based upon other design considerations such as utility conflicts, topography, or proposed grading. The design sizes and slopes for individual sewer segments are shown in Table 4 of Appendix A. Exhibit 3 in Appendix B identifies the nodes and subareas listed in the sewer routing system referred to within Table 4.

## 4. SEWER TRIBUTARY AREAS

Valencia Commerce Center (VTPM 18108) has 3 tributary areas: A, B and C. The capacity of each pipe segment was analyzed in Table 4.

Area A is located on the eastern side of the project. Flows from this area drain easterly into an existing sewer line-32-p-0006. Area A consists of commercial lots.

Area B is located on the southern side of the project. Flows from this area drain westerly then enter an existing sewer line-PC 11645. Area B consists of commercial lots.

Area C is located on the northwestern corner, and center portions of the project. Flows from this area drain southwesterly and westerly into an existing sewer line-PC 11120. Area C consists of industrial and commercial lots.

Area D and E are not part of PM 18108. However, the mentioned areas are part of this sewer area study because they will ultimately contribute flow to the sewer shed. Flows from Area D drain southerly then enter an existing 8" sewer line stub-PC 11645. Area D consists of commercial lots. Flows from Area E will be ultimately drained in to a 10" existing gravity sewer line from PC 11120. Area E consist of industrial lots.
Sewage generation from these areas are used for sizing new system and checking the capacity of the existing system.

## 5. CONCLUSIONS AND RECOMMENDATIONS

Pipe sizing and slopes for individual sewer segments are listed in Table 4: Sewer Flow Calculation Summary in Appendix A. An existing stub in PC 11645 located within the intersection of Commerce Center Drive and Hancock Parkway, connected to Manhole at Sta. 36+86.37 Per PC 11645 will need to be upsized. The existing stub is 8 inches in diameter and the proposed pipe upstream of it is 15 inches in diameter. This existing stub

was not sized to accommodate flow from Area B. Therefore, the existing stub will need to become 15 inches in diameter.

New 18-inch gravity VCP is proposed to discharge sewage from the proposed force main lines of Hancock pump station to the existing 24" LACSD Trunk sewer line along Turnberry Ln. Capacity of this line is also verified at table 4 from Appendix A. The Q design value calculations for this pipe is per "Hydraulic Outlet Study for TM18108 in Los Angeles County presented by Dexter Wilson Engineering, Inc.

## 6. REFERENCES

- Los Angeles County Design & Supporting Data Manual
  - Chapter 46: Private Contract Sewer General Notes
  - Chapter 47: Sewer Area Study

# APPENDIX A - TABLES

# TABLE 1: LAND USE STATISTICS

# TABLE 2: SEWAGE GENERATION COEFFICIENTS

# VTTM 0118108: Valencia Commerce Center, Sewer Area Study

## Table 1: Land Use Statistics

| Land Use | Area (ac) |
|---|---|
| Mixed Use-Commercial/Business Park | 93.4 |
| Industrial | 24.1 |

## Table 2. Los Angeles County Department of Public Works – Estimated Average Daily Sewage Flow for Various Occupancies and Zoning Coefficients.

**Estimated Average Daily Sewage Flows for Various Occupancies**

| Occupancy | Abbreviation | *Average daily flow | |
|---|---|---|---|
| Apartment Buildings: | | | |
| Bachelor or Single dwelling units | Apt | 150 | gal/D.U. |
| 1 bedroom dwelling units | Apt | 200 | gal/D.U. |
| 2 bedroom dwelling units | Apt | 250 | gal/D.U. |
| 3 bedroom or more dwelling units | Apt | 300 | gal/D.U. |
| Auditoriums, churches, etc. | Aud | 5 | gal/seat |
| Automobile parking | P | 25 | gal/1000 sq ft gross floor area |
| Bars, cocktails lounges, etc. | Bar | 20 | gal/seat |
| Commercial Shops & Stores | CS | 100 | gal/1000 sq ft gross floor area |
| Hospitals (surgical) | HS | 500 | gal/bed |
| Hospitals (convalescent) | HC | 85 | gal/bed |
| Hotels | H | 150 | gal/room |
| Medical Buildings | MB | 300 | gal/1000 sq ft gross floor area |
| Motels | MB | 150 | gal/unit |
| Office Buildings | Off | 200 | gal/1000 sq ft gross floor area |
| Restaurants, cafeterias, etc. | R | 50 | gal/seat |
| Schools: | | | |
| Elementary or Jr. High | S | 10 | gal/student |
| High Schools | HS | 15 | gal/student |
| Universities or Colleges | U | 20 | gal/student |
| College Dormitories | CD | 85 | gal/student |

*Multiply the average daily flow by 2.5 to obtain the peak flow

**Zoning Coefficients**

| Zone | Coefficient (cfs/Acre) |
|---|---|
| Agriculture ---------- | 0.001 |
| Residential*: | |
| R-1 ---------- | 0.004 |
| R-2 ---------- | 0.008 |
| R-3 ---------- | 0.012 |
| R-4 ---------- | 0.016* |
| Commercial: | |
| C-1 through C-4 ---------- | 0.015* |
| Heavy Industrial: | |
| M-1 through M-4 ---------- | 0.021* |

* Individual building, commercial or industrial plant capacities shall be the determining factor when they exceed the coefficients shown

* Use 0.001 (cfs/unit) for condominiums only

# TABLE 3: SEWAGE GENERATION CALCULATION

## Table 3: VTTM 0118108: Valencia Commerce Center, Sewer Area Study
## Area A

| TRIBUTARY AREA | LOT NUMBER | PLANNING AREA | LANDUSE | LOT AREA (ac) | COEFF BY ZONING (cfs/ac) | UNIT COUNT BY OCCUPANCY | | COEFF BY OCCUPANCY (gal/1000sf.day) | FLOW BY ZONING (cfs) | Q BY OCCUPANCY (cfs)[1] | Q DESIGN (cfs)[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Gross Floor Area (sf) | DWELLING UNITS (DU) | | | | |
| A1 | 92-97 | PA-1 | COMMERCIAL | 9.62 | 0.015 | 174,300 | | 200 | 0.144 | 0.135 | 0.144 |
| A2 | | | INDUSTRIAL | 5.20 | 0.021 | | | | 0.109 | 0.000 | 0.109 |
| A3 | | | INDUSTRIAL | 4.27 | 0.021 | | | | 0.090 | 0.000 | 0.090 |
| A4 | | | INDUSTRIAL | 7.00 | 0.021 | | | | 0.147 | 0.000 | 0.147 |

[1] Conversion from gal/day to cfs is 1.54723*10^-6, Conversion from average daily flow to peak flow is 2.5

[2] Q Design is the higher Q between Q zoning VS. Q occupancy

## Table 3: VTTM 0118108: Valencia Commerce Center, Sewer Area Study

## Area B

| TRIBUTARY AREA | LOT NUMBER | PLANNING AREA | LANDUSE | LOT AREA (ac) | COEFF BY ZONING (cfs/ac) | UNIT COUNT BY OCCUPANCY | | COEFF BY OCCUPANCY (gal/1000sf.day) | FLOW BY ZONING (cfs) | Q BY OCCUPANCY (cfs)[1] | Q DESIGN (cfs)[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Gross Floor Area (sf) | DWELLING UNITS (DU) | | | | |
| B1-OFFICE | 83-86,88,89 | PA-2.3 | COMMERCIAL | 17.43 | 0.015 | 649,800 | | 200 | 0.262 | 0.503 | |
| B1-PARKING | 87 | PA-2.3 | PARKING | | | 392,461 | | 25 | | 0.038 | |
| B1 | 83-89 | PA-2.3 | COMMERCIAL | 17.43 | | | | | 0.262 | 0.541 | 0.541 |
| B2-OFFICE | 77-80,82 | PA-2.2 | COMMERCIAL | 10.48 | 0.015 | 368,400 | | 200 | 0.157 | 0.285 | |
| B2-PARKING | 81 | PA-2.2 | PARKING | | | 210,936 | | 25 | | 0.020 | |
| B2 | 77-82 | PA-2.2 | COMMERCIAL | 10.48 | | | | | 0.157 | 0.305 | 0.305 |
| B3-OFFICE | 68,69,71-73 | PA-2.1 | COMMERCIAL | 13.25 | 0.015 | 302,600 | | 200 | 0.199 | 0.234 | |
| B3-PARKING | 70 | PA-2.1 | PARKING | | | 141,571 | | 25 | | 0.014 | |
| B3 | 68-73 | PA-2.1 | COMMERCIAL | 13.25 | | | | | 0.199 | 0.248 | 0.248 |

[1] Conversion from gal/day to cfs is 1.54723*10^-6, Conversion from average daily flow to peak flow is 2.5

[2] Q Design is the higher Q between Q zoning VS. Q occupancy

## Table 3: VTTM 0118108: Valencia Commerce Center, Sewer Area Study
## Area C

| TRIBUTARY AREA | LOT NUMBER | PLANNING AREA | LANDUSE | LOT AREA (ac) | COEFF BY ZONING (cfs/ac) | UNIT COUNT BY OCCUPANCY | | COEFF BY OCCUPANCY (gal/1000sf.day) | FLOW BY ZONING (cfs) | Q BY OCCUPANCY (cfs)[1] | Q DESIGN (cfs)[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Gross Floor Area (sf) | DWELLING UNITS (DU) | | | | |
| C1 | 29-35 | PA-3.3a | INDUSTRIAL | 13.84 | 0.021 | 247,800 | | 25 | 0.291 | 0.024 | 0.291 |
| C2 | 28, 38-39 | PA-3.3b | INDUSTRIAL | 10.28 | 0.021 | 224,500 | | 25 | 0.216 | 0.022 | 0.216 |
| C3 | 43-44 | PA-3.3c | COMMERCIAL | 4.16 | 0.015 | 66,300 | | 200 | 0.062 | 0.051 | 0.062 |
| C4-OFFICE | 48-59 | PA-3.3d | COMMERCIAL | 16.80 | 0.015 | 767,100 | | 200 | 0.252 | 0.593 | |
| C4-PARKING | 47 | PA-3.3d | COMMERCIAL | | | 585,300 | | 25 | | 0.057 | |
| C4 | 47-59 | PA-3.3d | COMMERCIAL | 16.80 | | | | | 0.252 | 0.650 | 0.650 |
| C5-OFFICE | 2-5,7-12 | PA-3.1 | COMMERCIAL | 19.06 | 0.015 | 581,200 | | 200 | 0.286 | 0.450 | |
| C5-PARKING | 6 | PA-3.1 | COMMERCIAL | | | 351,500 | | 25 | | 0.034 | |
| C5 | 2-12 | PA-3.1 | COMMERCIAL | 19.06 | | | | | 0.286 | 0.484 | 0.484 |
| C6 | 17, 20 | PA-3.2 | COMMERCIAL | 2.55 | 0.015 | 18,000 | | 100 | 0.038 | 0.007 | 0.038 |

[1] Conversion from gal/day to cfs is 1.54723*10^-6, Conversion from average daily flow to peak flow is 2.5

[2] Q Design is the higher Q between Q zoning VS. Q occupancy

## Table 3: VTTM 0118108: Valencia Commerce Center, Sewer Area Study
## Area D

| TRIBUTARY AREA | APN NUMBER | PLANNING AREA | LANDUSE | LOT AREA (ac) | COEFF BY ZONING (cfs/ac) | UNIT COUNT BY OCCUPANCY | | COEFF BY OCCUPANCY (gal/1000sf.day) | FLOW BY ZONING (cfs) | Q BY OCCUPANCY (cfs)[1] | Q DESIGN (cfs)[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Gross Floor Area (sf) | DWELLING UNITS (DU) | | | | |
| D1 | 3271-002-038 | PA-4 | COMMERCIAL | 27.1 | 0.015 | | | | 0.407 | 0.000 | 0.407 |

[1] Conversion from gal/day to cfs is 1.54723*10^-6, Conversion from average daily flow to peak flow is 2.5

[2] Q Design is the higher Q between Q zoning VS. Q occupancy

## Table 3: VTTM 0118108: Valencia Commerce Center, Sewer Area Study

## Area E

| TRIBUTARY AREA | APN NUMBER | PLANNING AREA | LANDUSE | LOT AREA (ac) | COEFF BY ZONING (cfs/ac) | UNIT COUNT BY OCCUPANCY | | COEFF BY OCCUPANCY (gal/1000sf.day) | FLOW BY ZONING (cfs) | Q BY OCCUPANCY (cfs)[1] | Q DESIGN (cfs)[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Gross Floor Area (sf) | DWELLING UNITS (DU) | | | | |
| E1 | | PA-7.1 | INDUSTRIAL | 4.87 | 0.021 | | | | 0.102 | 0.000 | 0.102 |
| E2 | | PA-7.2 | INDUSTRIAL | 6.09 | 0.021 | | | | 0.128 | 0.000 | 0.128 |

[1] Conversion from gal/day to cfs is 1.54723*10^-6, Conversion from average daily flow to peak flow is 2.5

[2] Q Design is the higher Q between Q zoning VS. Q occupancy

# TABLE 4: SEWER FLOW CALCULATION SUMMARY

**Table 4: VTTM 0118108: Valencia Commerce Center, Sewer Area Study**
**Sewer Flow Calculation Summary**

**AREA A**

| Tributary Area | LOT Number | Street | Segment | Prop Pipe Size (min)(in) | Pipe Design Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 92-97 | | | | | 0.144 | | | | | | | |
| | | Hancock Pkwy | A1- #1 | 8 | 0.0040 | | 0.144 | 0.013 | 0.349 | | 41% | 0.0044 | Gravity VCP |
| A2 | EXIST | | | | | 0.109 | | | | | | | |
| | | Hancock Pkwy | #1- #2 | 8 | 0.0040 | | 0.253 | 0.013 | 0.349 | | 73% | 0.0044 | Gravity VCP |
| A3 | EXIST | | | | | 0.090 | | | | | | | |
| A4 | EXIST | | | | | 0.147 | | | | | | | |
| | | Muifield Lane | #2-#3 | 12 | 0.0024 | | 0.490 | 0.013 | 0.829 | | 59% | 0.0024 | Gravity VCP |

Notes:
1) Pipe slope reflects the flattest segment of sewer pipe.
2) Calculated Q (cfs) is based on land use, see table 3.
3) Pipe capacity for new construction is calculated using Kutter's formula at half full condition (<15").
4) Minimum pipe slope is calculated based on the design Q and using Kutter's formula at half or 3/4 full condition based on the pipe size.
5) Pipe capacity for new construction is calculated using Kutter's formula at 3/4 full condition (≥15").

**AREA B**

| Tributary Area | LOT Number | Street | Segment | Prop Pipe Size (min) (in) | Prop Pipe Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B1 | 83-89 | | | | | 0.541 | | | | | | | |
| | | Hancock Pkwy | #20-#21 | 12 | 0.0032 | | 0.541 | 0.013 | 0.959 | | 56% | 0.0024 | Gravity VCP |
| B2 | 77-82 | | | | | 0.305 | | | | | | | |
| | | Hancock Pkwy | #21-#22 | 12 | 0.0032 | | 0.846 | 0.013 | 0.959 | | 88% | 0.0028 | Gravity VCP |
| B3 | 68-73 | | | | | 0.248 | | | | | | | |
| | | Hancock Pkwy | #22-#23 | 15 | 0.0032 | | 1.094 | 0.013 | 1.774 | | 62% | 0.0040 | Gravity VCP |

Notes:

1) Pipe slope reflects the flattest segment of sewer pipe.

2) Calculated Q (cfs) is based on land use, see table 3.

3) Pipe capacity for new construction is calculated using Kutter's formula at half full condition (<15").

4) Minimum pipe slope is calculated based on the design Q and using Kutter's formula at half or 3/4 full condition based on the pipe size.

5) Pipe capacity for new construction is calculated using Kutter's formula at 3/4 full condition (≥15").

**AREA C**

| Tributary Area | LOT Number | Street | Segment | Prop Pipe Size (min)(in) | Prop Pipe Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 29-35 | | | | | 0.291 | | | | | | | |
| | | "A" Street | #40-#41 | 8 | 0.0092 | | 0.291 | 0.013 | 0.530 | | 55% | 0.0040 | Gravity VCP |
| C2 | 28, 38-39 | | | | | 0.216 | | | | | | | |
| | | Franklin Pkwy | #41-#42 | 10 | 0.0092 | | 0.506 | 0.013 | 0.986 | | 51% | 0.0032 | Gravity VCP |
| | | Franklin Pkwy | #42-#43 | 10 | 0.0092 | | 0.506 | 0.013 | 0.986 | | 51% | 0.0032 | Gravity VCP |
| | | Franklin Pkwy | #43-#44 | 10 | 0.0092 | | 0.506 | 0.013 | 0.986 | | 51% | 0.0032 | Gravity VCP |
| C3 | 43-44 | | | | | 0.062 | | | | | | | |
| | | Franklin Pkwy | #44-#45 | 10 | 0.0092 | | 0.569 | 0.013 | 0.986 | | 58% | 0.0032 | Gravity VCP |
| C4 | 47-59 | | | | | 0.650 | | | | | | | |
| | | Franklin Pkwy | #45-#46 | 12 | 0.0092 | | 1.219 | 0.013 | 1.633 | | 75% | 0.0056 | Gravity VCP |
| C5 | 2-12 | | | | | 0.484 | | | | | | | |
| | | Franklin Pkwy | #46-#47 | 15 | 0.0096 | | 1.702 | 0.013 | 3.084 | | 55% | 0.0040 | Gravity VCP |
| C6 | 17, 20 | | | | | 0.038 | | | | | | | |
| | | Franklin Pkwy | #47-#48 | 15 | 0.0060 | | 1.741 | 0.013 | 2.435 | | 71% | 0.0040 | Gravity VCP |
| | | Franklin Pkwy | #48-#49 | 15 | 0.0060 | | 1.741 | 0.013 | 2.435 | | 71% | 0.0040 | Gravity VCP |

Notes:

1) Pipe slope reflects the flattest segment of sewer pipe.

2) Calculated Q (cfs) is based on land use, see table 3.

3) Pipe capacity for new construction is calculated using Kutter's formula at half full condition (<15").

4) Minimum pipe slope is calculated based on the design Q and using Kutter's formula at half or 3/4 full condition based on the pipe size.

5) Pipe capacity for new construction is calculated using Kutter's formula at 3/4 full condition (≥15").

**AREA D & E**

| Tributary Area | LOT Number | Street | Segment | Exist Pipe Size (min)(in) | Pipe Design Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E1 | PA-7.1 | | | | | 0.102 | | | | | | | |
| E2 | PA-7.2 | | | | | 0.128 | | | | | | | |
| PM22261& PM20839& PM26363 | | | | | | 3.689 | | | | | | | |
| | | Commerce Ctr Dr | #49-#61 | 18 | 0.0044 | | 5.660 | 0.013 | | 6.670 | 85% | | Gravity VCP |
| D1 | 3271-002-038 (PA4) | | | | | 0.407 | | | | | | | |
| | | Commerce Ctr Dr | #61-#62 | 18 | 0.0044 | | 6.066 | 0.012 | | 6.880 | 88% | | Gravity DIP |
| | | Commerce Ctr Dr | #62-EXMH | 2X18 | 0.0030 | | 6.066 | 0.012 | | 11.520 | 53% | | Gravity DIP |
| | | Commerce Ctr Dr | EXMH-#23 | 18 | 0.2464 | | 6.066 | 0.012 | | 52.450 | 12% | | Gravity DIP |
| | | Hancock Parkway | #23-PS | 18 | 0.0060 | | 7.160 | 0.013 | | 7.410 | 97% | | Gravity VCP |

Notes:
1) Pipe slope reflects the flattest segment of sewer pipe.
2) Calculated Q (cfs) is based on land use, see table 3.
3) Pipe capacity for new construction is calculated using Kutter's formula at half full condition (<15")
4) Minimum pipe slope is calculated based on the design Q and using Kutter's formula at half or 3/4 full condition based on the pipe size
5) Pipe capacity for new construction is calculated using Kutter's formula at 3/4 full condition ≥15").

**Turnberry Ln transfer Pipe Capacity Check**

| Tributary Area | LOT Number | Street | Segment | Prop Pipe Size (min)(in) | Pipe Design Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Turnberry Lane | #70-#71 | 18 | 0.0016 | 3.164 | 3.164 | 0.013 | | 3.800 | 83% | 0.0012 | Gravity VCP |

Notes:

1) Pipe slope reflects the flattest segment of sewer pipe.

2) Calculated Q (cfs) is based on Pump Station Pumpung rate.

3) Pipe capacity for new construction is calculated using Kutter's formula at half full condition (<15").

4) Minimum pipe slope is calculated based on the design Q and using Kutter's formula at half or 3/4 full condition based on the pipe size.

5) Pipe capacity for new construction is calculated using Kutter's formula at 3/4 full condition (≥15").

# APPENDIX B – EXHIBITS AND MAPS

# EXHIBIT 1: VALENCIA COMMERCE CENTER SEWER TRIBUTARY AREA EXHIBIT

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED: G.K. & W.L. | | | | | |
| DRAFTED: G.K. | | | | | |
| CHECKED: W.L. | NO. | REVISIONS | DATE | BY | |

OWNER/DEVELOPER:
FIVEPOINT
23134 SPRINGFIELD COURT SUITE 300
VALENCIA, CA 91355

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
L.P.L.S. A.L.A. INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Ste 23 • Valencia, Ca. 91355
PH (661) 294-2211 FX (661) 294-9890
JASON H. FURUMITSU DATE

COUNTY OF LOS ANGELES

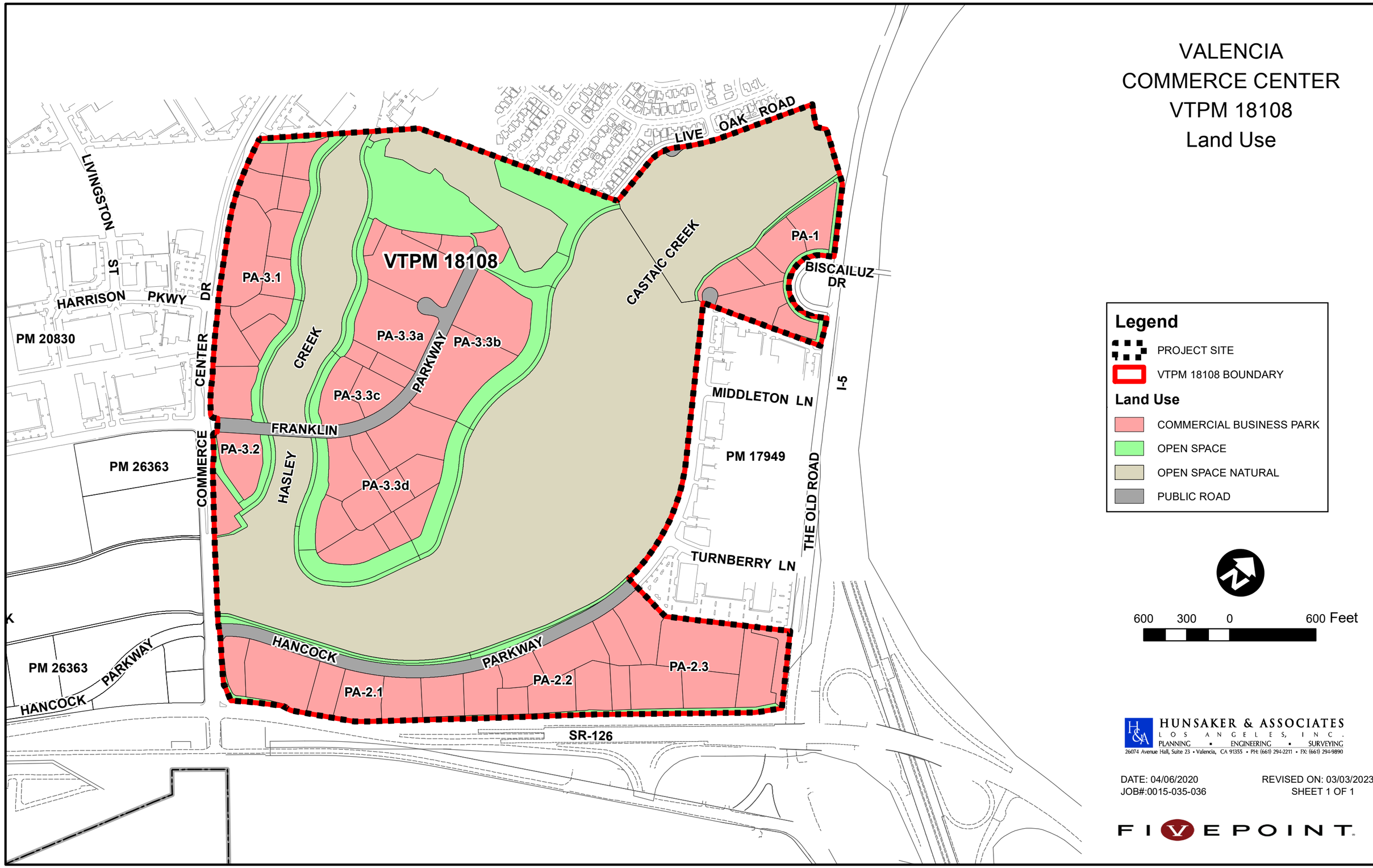
SEWER TRIBUTARY AREA EXHIBIT
VESTING TENTATIVE PARCEL MAP 18108

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 03/10/2020
JOB No. 0015-041-020
SHEET 1
OF 1 SHEETS

# EXHIBIT 2: VALENCIA COMMERCE CENTER
# VTPM 18108 GIS LAND USE

# VALENCIA COMMERCE CENTER VTPM 18108 Land Use



# EXHIBIT 3: VALENCIA COMMERCE CENTER SEWER AREA STUDY MAP

**Table 4: VTTM 0118108: Valencia Commerce Center, Sewer Area Study**
**Sewer Flow Calculation Summary**

AREA A

| Tributary Area | LOT Number | Street | Segment | Prop Pipe Size (min)(in) | Pipe Design Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 92-97 | | | | | 0.144 | | | | | | | |
| | | Hancock Pkwy | A1- #1 | 8 | 0.0040 | | 0.144 | 0.013 | 0.349 | | 41% | 0.0044 | Gravity VCP |
| A2 | EXIST | | | | | 0.109 | | | | | | | |
| | | Hancock Pkwy | #1- #2 | 8 | 0.0040 | | 0.253 | 0.013 | 0.349 | | 73% | 0.0044 | Gravity VCP |
| A3 | EXIST | | | | | 0.090 | | | | | | | |
| A4 | EXIST | | | | | 0.147 | | | | | | | |
| | | Muifield Lane | #2-#3 | 12 | 0.0024 | | 0.490 | 0.013 | 0.829 | | 59% | 0.0024 | Gravity VCP |

AREA B

| Tributary Area | LOT Number | Street | Segment | Prop Pipe Size (min) (in) | Prop Pipe Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B1 | 83-89 | | | | | 0.541 | | | | | | | |
| | | Hancock Pkwy | #20-#21 | 12 | 0.0032 | | 0.541 | 0.013 | 0.959 | | 56% | 0.0024 | Gravity VCP |
| B2 | 77-82 | | | | | 0.305 | | | | | | | |
| | | Hancock Pkwy | #21-#22 | 12 | 0.0032 | | 0.846 | 0.013 | 0.959 | | 88% | 0.0028 | Gravity VCP |
| B3 | 68-73 | | | | | 0.248 | | | | | | | |
| | | Hancock Pkwy | #22-#23 | 15 | 0.0032 | | 1.094 | 0.013 | 1.774 | | 62% | 0.0040 | Gravity VCP |

AREA C

| Tributary Area | LOT Number | Street | Segment | Prop Pipe Size (min)(in) | Prop Pipe Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 29-35 | | | | | 0.291 | | | | | | | |
| | | "A" Street | #40-#41 | 8 | 0.0092 | | 0.291 | 0.013 | 0.530 | | 55% | 0.0040 | Gravity VCP |
| C2 | 28, 38-39 | | | | | 0.216 | | | | | | | |
| | | Franklin Pkwy | #41-#42 | 10 | 0.0092 | | 0.506 | 0.013 | 0.986 | | 51% | 0.0032 | Gravity VCP |
| | | Franklin Pkwy | #42-#43 | 10 | 0.0092 | | 0.506 | 0.013 | 0.986 | | 51% | 0.0032 | Gravity VCP |
| | | Franklin Pkwy | #43-#44 | 10 | 0.0092 | | 0.506 | 0.013 | 0.986 | | 51% | 0.0032 | Gravity VCP |
| C3 | 43-44 | | | | | 0.062 | | | | | | | |
| | | Franklin Pkwy | #44-#45 | 10 | 0.0092 | | 0.569 | 0.013 | 0.986 | | 58% | 0.0032 | Gravity VCP |
| C4 | 47-59 | | | | | 0.650 | | | | | | | |
| | | Franklin Pkwy | #45-#46 | 12 | 0.0092 | | 1.219 | 0.013 | 1.633 | | 75% | 0.0056 | Gravity VCP |
| C5 | 2-12 | | | | | 0.484 | | | | | | | |
| | | Franklin Pkwy | #46-#47 | 15 | 0.0096 | | 1.702 | 0.013 | 3.084 | | 55% | 0.0040 | Gravity VCP |
| C6 | 17, 20 | | | | | 0.038 | | | | | | | |
| | | Franklin Pkwy | #47-#48 | 15 | 0.0060 | | 1.741 | 0.013 | 2.435 | | 71% | 0.0040 | Gravity VCP |
| | | Franklin Pkwy | #48-#49 | 15 | 0.0060 | | 1.741 | 0.013 | 2.435 | | 71% | 0.0040 | Gravity VCP |

AREA D & E

| Tributary Area | LOT Number | Street | Segment | Exist Pipe Size (min)(in) | Pipe Design Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E1 | PA-7.1 | | | | | 0.102 | | | | | | | |
| E2 | PA-7.2 | | | | | 0.128 | | | | | | | |
| PM22261& PM20839& PM26363 | | | | | | 3.689 | | | | | | | |
| | | Commerce Ctr Dr | #49-#61 | 18 | 0.0044 | | 5.660 | 0.013 | | 6.670 | 85% | | Gravity VCP |
| D1 | 3271-002-038 (PA4) | | | | | 0.407 | | | | | | | |
| | | Commerce Ctr Dr | #61-#62 | 18 | 0.0044 | | 6.066 | 0.012 | | 6.880 | 88% | | Gravity DIP |
| | | Commerce Ctr Dr | #62-EXMH | 2X18 | 0.0030 | | 6.066 | 0.012 | | 11.520 | 53% | | Gravity DIP |
| | | Commerce Ctr Dr | EXMH-#23 | 18 | 0.2464 | | 6.066 | 0.012 | | 52.450 | 12% | | Gravity DIP |
| | | Hancock Parkway | #23-PS | 18 | 0.0060 | | 7.160 | 0.013 | | 7.410 | 97% | | Gravity VCP |

Notes:
1) Pipe slope reflects the flattest segment of sewer pipe.
2) Calculated Q (cfs) is based on land use, see table 3.
3) Pipe capacity for new construction is calculated using Kutter's formula at half full condition (<15").
4) Minimum pipe slope is calculated based on the design Q and using Kutter's formula at half or 3/4 full condition based on the pipe size.
5) Pipe capacity for new construction is calculated using Kutter's formula at 3/4 full condition (≥15").

**Turnberry Ln transfer Pipe Capacity Check**

| Tributary Area | LOT Number | Street | Segment | Prop Pipe Size (min)(in) | Pipe Design Slope[1] (min) (ft/ft) | Subarea Q[2] (cfs) (Calculated Flow) | Design Q ($Q_{design}$) (cfs) (Cumulative Flow) | Kutter's n | Capacity of pipe flowing 1/2 full at pipe design slope[3] ($Q_{capacity}$ (cfs)) | Capacity of pipe flowing 3/4 full at pipe design slope[5] ($Q_{capacity}$ (cfs)) | % of capacity used by volume ($Q_{design}/Q_{capacity}$) | Minimum Pipe Slope[4] required (flowing 1/2 full) for design Q (ft/ft) | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Turnberry Lane | #70-#71 | 18 | 0.0016 | 3.164 | 3.164 | 0.013 | | 3.800 | 83% | 0.0012 | Gravity VCP |

Notes:
1) Pipe slope reflects the flattest segment of sewer pipe.
2) Calculated Q (cfs) is based on Pump Station Pumpung rate.
3) Pipe capacity for new construction is calculated using Kutter's formula at half full condition (<15").
4) Minimum pipe slope is calculated based on the design Q and using Kutter's formula at half or 3/4 full condition based on the pipe size.
5) Pipe capacity for new construction is calculated using Kutter's formula at 3/4 full condition (≥15").

* - PA-4, PA-7.1 AND PA-7.2 ARE NOT PART OF THIS STUDY.

| | | | | |
|---|---|---|---|---|
| DESIGNED: G.K. & W.L. | | | | |
| DRAFTED: G.K. | | | | |
| CHECKED: W.L. | | | | |
| NO. | | REVISIONS | DATE | BY |

OWNER/DEVELOPER: FIVEPOINT
25124 SPRINGFIELD COURT SUITE 300
VALENCIA, CA 91355

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Ste 23 ▪ Valencia, CA 91355
PH: (661) 294-2211 ▪ FX: (661) 294-9890
JASON H. FUKUMITSU DATE

COUNTY OF LOS ANGELES

SEWER AREA STUDY MAP
VESTING TENTATIVE PARCEL MAP 18108
IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 06/03/2020
JOB No. 0015-043-020
SHEET 1 OF 1 SHEETS

G:\Newhall Ranch\18108 VCC\Sewer\Study\HCC092-01_SAS.dwg Plotted On Jun 23, 2025-6:04pm by

# APPENDIX C – REFERENCE PLANS/REPORTS

# 1. LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS AREA STUDY ZONING COEFFICIENTS

**Estimated Average Daily Sewage Flows for Various Occupancies**

| Occupancy | Abbreviation | *Average daily flow | |
|---|---|---|---|
| Apartment Buildings: | | | |
| Bachelor or Single dwelling units | Apt | 150 | gal/D.U. |
| 1 bedroom dwelling units | Apt | 200 | gal/D.U. |
| 2 bedroom dwelling units | Apt | 250 | gal/D.U. |
| 3 bedroom or more dwelling units | Apt | 300 | gal/D.U. |
| Auditoriums, churches, etc. | Aud | 5 | gal/seat |
| Automobile parking | P | 25 | gal/1000 sq ft gross floor area |
| Bars, cocktails lounges, etc. | Bar | 20 | gal/seat |
| Commercial Shops & Stores | CS | 100 | gal/1000 sq ft gross floor area |
| Hospitals (surgical) | HS | 500 | gal/bed |
| Hospitals (convalescent) | HC | 85 | gal/bed |
| Hotels | H | 150 | gal/room |
| Medical Buildings | MB | 300 | gal/1000 sq ft gross floor area |
| Motels | MB | 150 | gal/unit |
| Office Buildings | Off | 200 | gal/1000 sq ft gross floor area |
| Restaurants, cafeterias, etc. | R | 50 | gal/seat |
| Schools: | | | |
| Elementary or Jr. High | S | 10 | gal/student |
| High Schools | HS | 15 | gal/student |
| Universities or Colleges | U | 20 | gal/student |
| College Dormitories | CD | 85 | gal/student |

*Multiply the average daily flow by 2.5 to obtain the peak flow

**Zoning Coefficients**

| Zone | Coefficient (cfs/Acre) |
|---|---|
| Agriculture ---------- | 0.001 |
| Residential*: | |
| R-1 ---------- | 0.004 |
| R-2 ---------- | 0.008 |
| R-3 ---------- | 0.012 |
| R-4 ---------- | 0.016* |
| Commercial: | |
| C-1 through C-4 ---------- | 0.015* |
| Heavy Industrial: | |
| M-1 through M-4 ---------- | 0.021* |

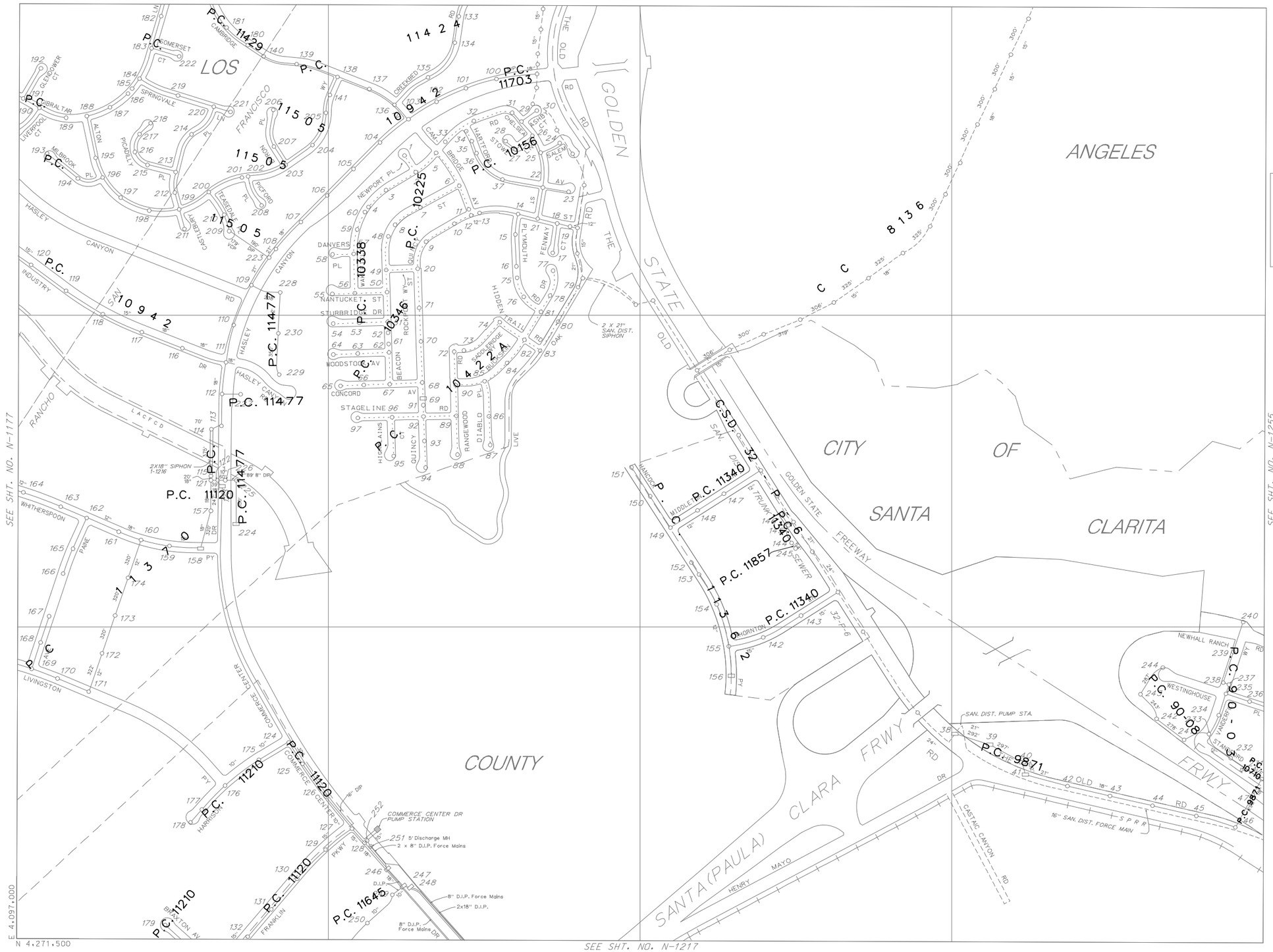
* Individual building, commercial or industrial plant capacities shall be the determining factor when they exceed the coefficients shown

* Use 0.001 (cfs/unit) for condominiums only

# 2. SMD MAPS: N-1216 and N-1217

# N-1216

A-68
A-87




THIS MAP IS INTENDED FOR USE ONLY AS OPERATIONS MAP BY LOS ANGELES COUNTY SEWER MAINTENANCE DISTRICTS. LOS ANGELES COUNTY EXPRESSLY DISCLAIMS ANY LIABILITY FOR ANY INACCURACIES WHICH MAY BE PRESENT IN THIS MAP.

AUTOMATED GRAPHICS

METERS: 0 50 100 200 250
FEET: 0 200 400 600 800

## LEGEND

- CLAY SEWERS MAINTAINED BY SMD. 8" UNLESS OTHERWISE NOTED
- PLASTIC SEWERS
- CONCRETE SEWERS
- CLAY SEWERS, LINED
- CEMENT SEWERS, LINED
- FORCE MAINS
- SEWERS NOT MAINTAINED BY SMD
- TRUNK SEWERS
- CITY BOUNDARY
- STANDARD MANHOLE
- DROP MANHOLE
- SHALLOW MANHOLE
- TRAP MANHOLE
- WEIR MANHOLE
- C.O. CLEANOUT
- L.H. LAMP HOLE
- PUMP STATION

TOTAL MH'S THIS MAP: 250

MAP REV. 07-18-17

N-1216

MAP REV 07-18-17

DATA BASE REV 05-12-93

CONSOLIDATED S.M.D.

N-1216

T: 4459 G-5

2607.2609.1216

# N-1217

A-65
A-68

THIS MAP IS INTENDED FOR USE ONLY AS OPERATIONS MAP BY LOS ANGELES COUNTY SEWER MAINTENANCE DISTRICTS. LOS ANGELES COUNTY EXPRESSLY DISCLAIMS ANY LIABILITY FOR ANY INACCURACIES WHICH MAY BE PRESENT IN THIS MAP.

N
AUTOMATED GRAPHICS

METERS
0 50 100 200 250
0 200 400 600 800
FEET

## LEGEND

- CLAY SEWERS MAINTAINED BY SMD. 8" UNLESS OTHERWISE NOTED
- PLASTIC SEWERS
- CONCRETE SEWERS
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- STANDARD MANHOLE
- DROP MANHOLE
- SHALLOW MANHOLE
- TRAP MANHOLE
- WEIR MANHOLE
- C.O. CLEANOUT
- L.H. LAMP HOLE
- PUMP STATION

TOTAL MH'S THIS MAP: 22

MAP REV.
07-18-17

N-1217

MAP REV
07-18-17

DATA BASE REV
05-12-93

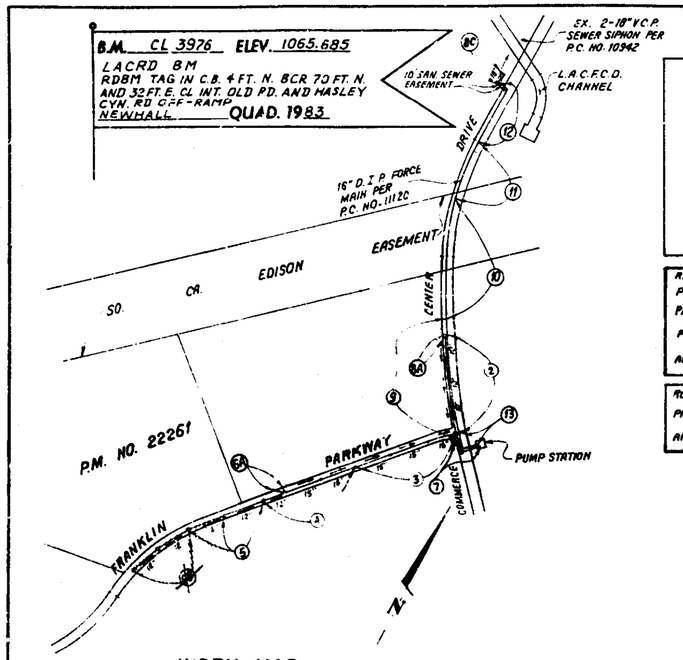
CONSOLIDATED S.M.D.

N-1217

T: 4550 A-1

2607.2609.1217

# 3. EXISTING SEWER PLANS




## INDEX MAP

SCALE: 1" = 600'
P.C. 11120

**PARCEL MAP NO. 22261**

T.G. 123-D6

NOTE: NUMBERS IN CIRCLES INDICATE PAGE NUMBERS.

DOUBLE SCALE

| REVISION NO. 1 | DATE: 11-28-95 |
|---|---|
| PAGE: 8 – ADDED THE NAME OF BLDG'S "A" & "B" | |
| PAGES: 10, 12, 13 – REVISED PUMPING BLDG. "A" & GENERATOR BLDG. "B" FROM CONCRETE BLOCK TO TILT-UP PANEL. | |
| PAGES: 14, 15 & 19 – VOIDED | |
| PAGES: 14A, 15A & 19A – ADDED SHEETS | |
| APPROVED BY: Sanjiv G. Hooda 3/20/96 OFFICE OF THE DIRECTOR OF PUBLIC WORKS | |

| REVISION NO. 2 | DATE: 05-14-96 |
|---|---|
| PAGE 1: REVISED KEY MAP. | |
| PAGE 5: VOIDED THE SEWER LINE FROM STA. 22+20.00 TO STA. 25+50.00 ON PLAN & PROFILE. NO UPSTREAM SERVICE REQ'D. | |
| PAGE 6B: VOIDED THE SEWER LINE ON PLAN & PROFILE. NO U/S SERVICE REQ'D. | |
| APPROVED BY: Sanjiv G. Hooda 9-9-96 OFFICE OF THE DIRECTOR OF PUBLIC WORKS DATE | |

| REVISION NO. 3 | DATE: 09-03-97 |
|---|---|
| PAGE 12: REVISED M.H. @ STA. 41+90.00 FROM S.M.H. TO M.H. | |
| APPROVED BY: Sanjiv G. Hooda 10-01-97 OFFICE OF THE DIRECTOR OF PUBLIC WORKS DATE | |

NO CONNECTION FOR THE DISPOSAL OF INDUSTRIAL WASTES SHALL BE MADE TO SEWERS SHOWN ON THESE DRAWINGS UNTIL A PERMIT FOR INDUSTRIAL WASTEWATER DISCHARGE HAS BEEN ISSUED BY THE SANITATION DISTRICTS FOR SAID CONNECTION.

BEFORE BREAKING INTO OR CONSTRUCTION ON A COUNTY SANITATION DISTRICT SEWER AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, SANITATION DISTRICT INSPECTOR SHALL BE NOTIFIED BY PHONE (805) 266-4683 SO THAT REQUIRED INSPECTION CAN BE MADE.

## GENERAL NOTES:

[illegible]

## CONSTRUCTION NOTES:

1. WORK SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1986 EDITION) AND DEPARTMENT OF PUBLIC WORKS SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWERS DATED JULY 31, 1989 AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE DEPARTMENT OF PUBLIC WORKS.
2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION DIVISION BY TELEPHONE (805) 257-7805 AT LEAST TWO WORKING DAYS BEFORE STARTING ANY WORK UNDER THIS CONTRACT.
3. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT PROPERTY LINE 6 FEET BELOW CURB GRADE EXCEPT AS NOTED.
4. WYE OR TEE BRANCHES MAY BE USED FOR SANITARY SEWER MAIN EXTENSIONS UNLESS OTHERWISE NOTED.
5. ALL STRUCTURES SHALL BE EITHER BRICK SEWER MANHOLES PER S-3 OR PRECAST CONCRETE SEWER MANHOLES PER S-1 OR S-2 AS NOTED.
6. [illegible]
7. MANHOLES TO BE SEWER MANHOLES UNLESS OTHERWISE SHOWN.
8. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "D" OR "E" PER STANDARD SPECIFICATIONS SECTION 2.2.
9. HANDWRITTEN PLANS THAT DEVIATE FROM THE STANDARD PLANS SHALL BE ENGINEER PENCIL [illegible] OF THE DEPARTMENT OF PUBLIC WORKS.
10. [illegible] HOUSE LATERAL, ALL SEWER MAIN EXTENSIONS, ALL LOCATIONS ON THE PLANS THAT DEVIATE FROM THE STANDARDS SHALL BE REVISED AND OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
11. [illegible] HOUSE LATERAL, ALL SEWER MAIN EXTENSIONS, ALL LOCATIONS ON THE PLANS THAT DEVIATE FROM THE STANDARDS SHALL BE REVISED AND OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
12. [illegible] HOUSE LATERAL, ALL SEWER MAIN EXTENSIONS, ALL LOCATIONS ON THE PLANS THAT DEVIATE FROM THE STANDARDS SHALL BE REVISED AND OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
13. [illegible] HOUSE LATERAL, ALL SEWER MAIN EXTENSIONS, ALL LOCATIONS ON THE PLANS THAT DEVIATE FROM THE STANDARDS SHALL BE REVISED AND OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
14. FULL COMPLIANCE WITH SECTION 306.1.1.4 OF THE STANDARD SPECIFICATIONS WILL BE REQUIRED FOR BACKFILL TESTS. CERTIFICATION OF BACKFILL COMPACTION AND SAND EQUIVALENTS BY A QUALIFIED REGISTERED TESTING LABORATORY SHALL BE PROVIDED BY THE PERMITTEE PRIOR TO THE ISSUANCE OF A CERTIFICATE OF PARTIAL ACCEPTANCE.
15. SPECIAL BACKFILL IN EASEMENT CONSTRUCTION: A. BACKFILL TRENCH AND REPLACE OTHER EARTH SURFACES AS NEEDED TO MATCH THE FINISHED GRADES AND SLOPES SHOWN ON THE GRADING PLAN APPROVED FOR THIS DEVELOPMENT BY THE LAND DEVELOPMENT DIVISION. B. ALL BACKFILL AND EARTH REPLACED SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY PER ASTM STD METHOD OF TESTS OR AS MODIFIED ACCEPTABLE CERTIFICATION OF COMPACTION SHALL BE SUBMITTED TO THE LAND DEVELOPMENT DIVISION, PUBLIC WORKS DEPARTMENT.

PROFILE, ALIGNMENT AND GRADE OF

PAGE 1

# SANITARY SEWERS

TO BE CONSTRUCTED IN

## PARCEL MAP NO. 22261

## PRIVATE CONTRACT NO. 11120

INDEX 1216

25 SHEETS; 31 PAGES

54362

SCALE: VERT. 1" = 8' HORIZ. 1" = 40'

FEB., 1994

PREPARED IN THE OFFICES OF
SIKAND ENGINEERING ASSOC.
15230 BURBANK BLVD. (818) 787-8550
VAN NUYS, CA. 91411

6-30-94 BY Ronald K. Hasson
REG. C.E. NO. 16913

[illegible]

| | |
|---|---|
| [illegible] SEWER MANHOLE | S-2 |
| CHIMNEY PIPE AND BASE | S-27 |
| CONCRETE THRUST BLOCKS | W-21 |
| REINFORCED PRECAST MANHOLE | S-6 |
| 30 INCH MANHOLE TYPE "E" | S-3.1-203 |

COUNTY OF LOS ANGELES, CALIFORNIA

HARRY W. STONE
ACTING DIRECTOR OF PUBLIC WORKS

APPROVED [signature] 6/9/94 DATE

CHARLES R. CADY
CHIEF ENGINEER
CIVIL ENGINEER NO. 32

APPROVED [signature] 6-14-94 DATE

CHECKED Tom Haugland 5/9/94 DATE

26273

SANTA CLARITA VALLEY AREA PLAN 8.2

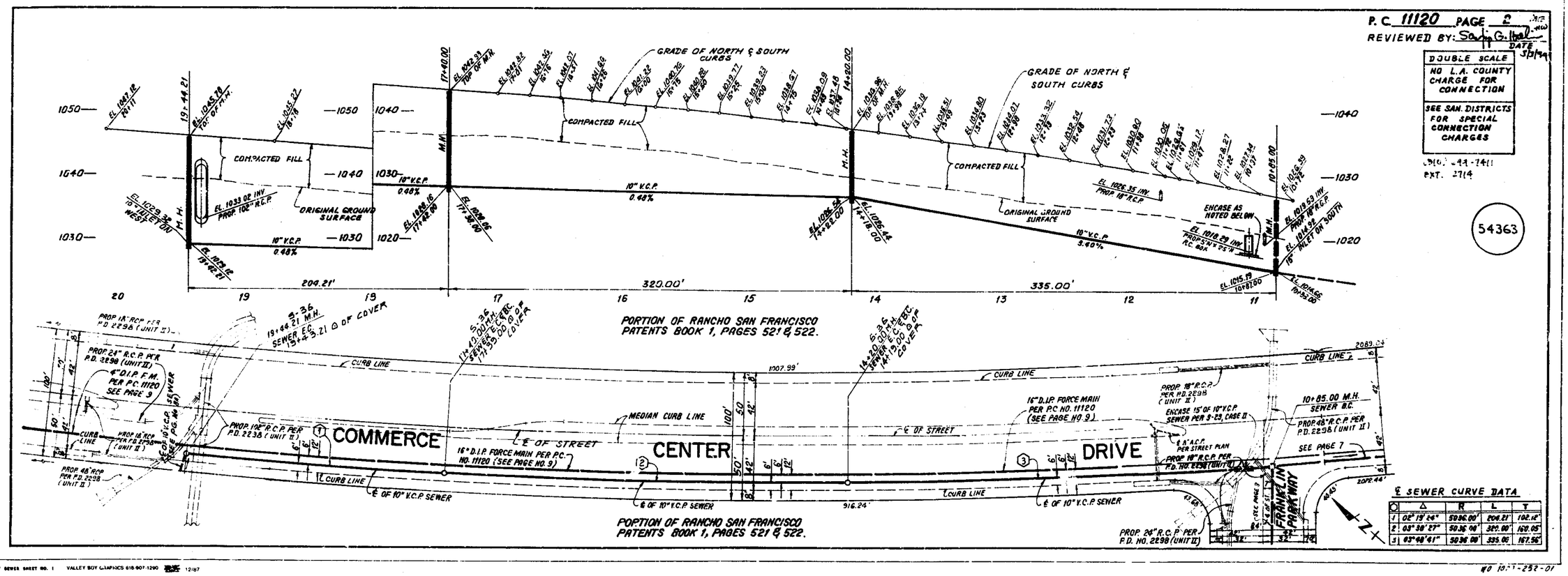
P.C. 11120 PAGE 2

REVIEWED BY: Sanjiv G. Hooda 5/9/94 DATE

DOUBLE SCALE
NO L.A. COUNTY CHARGE FOR CONNECTION
SEE SAN. DISTRICTS FOR SPECIAL CONNECTION CHARGES

(310) 699-7411
EXT. 2714

54363




PORTION OF RANCHO SAN FRANCISCO PATENTS BOOK 1, PAGES 521 & 522.

### ℄ SEWER CURVE DATA

| | Δ | R | L | T |
|---|---|---|---|---|
| 1 | 02° 19' 24" | 5036.00' | 204.21' | 102.16' |
| 2 | 03° 58' 27" | 5036.00' | 320.00' | 160.05' |
| 3 | 03° 48' 41" | 5036.00' | 335.00' | 167.56' |



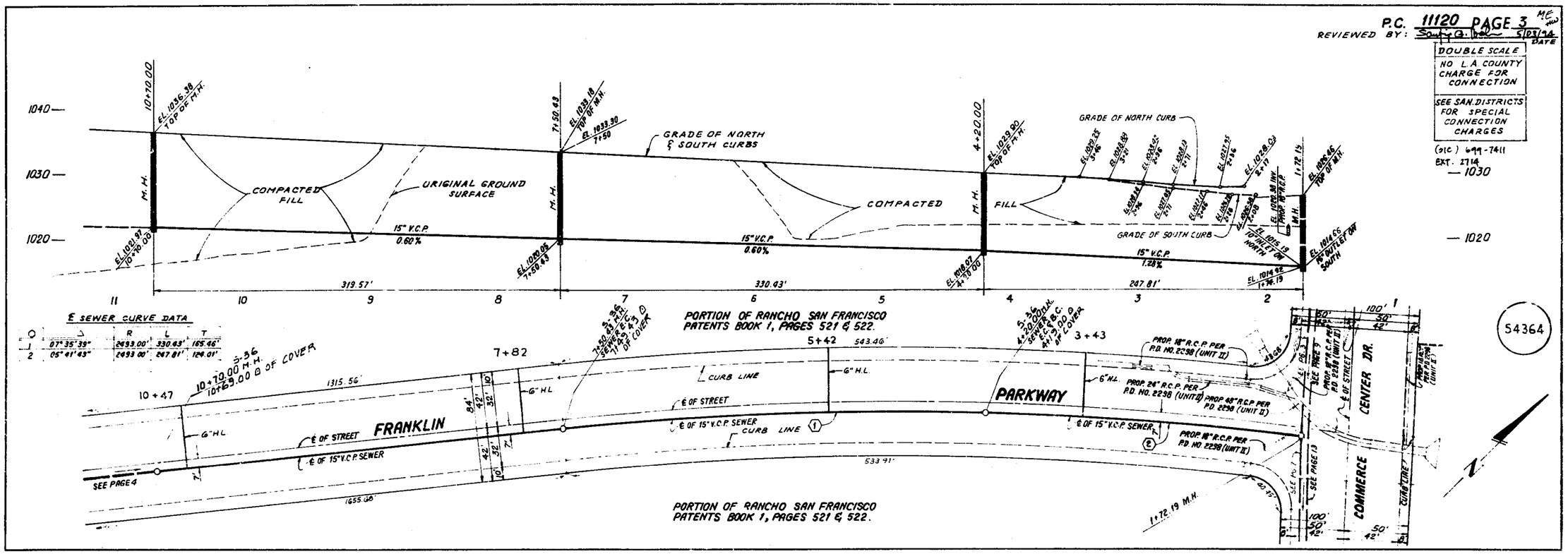


P.C. 11120 PAGE 2

P.C. 11120 PAGE 3 ME
REVIEWED BY: Sonny G. Hale 5/03/94 DATE

DOUBLE SCALE
NO L.A. COUNTY CHARGE FOR CONNECTION
SEE SAN. DISTRICTS FOR SPECIAL CONNECTION CHARGES
(310) 699-7411 EXT. 2714

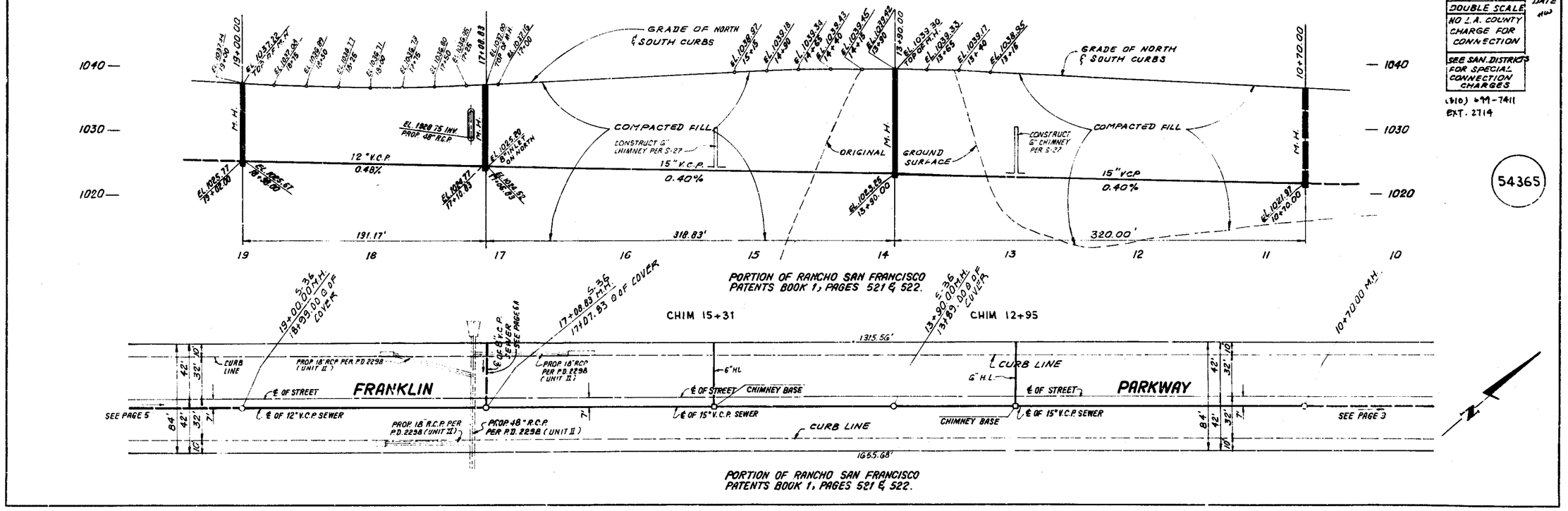
54364




P.C. 11120 PAGE 4 ME
REVIEWED BY: Sonny G. Hale 5/03/94 DATE

DOUBLE SCALE
NO L.A. COUNTY CHARGE FOR CONNECTION
SEE SAN. DISTRICTS FOR SPECIAL CONNECTION CHARGES
(310) 699-7411 EXT. 2714

54365




S

P.C. 11120

B.M. 5555 P.3



WO 1020-252.01

P.C. 11120 PAGE 5

REVIEWED BY: 5/03/94 DATE

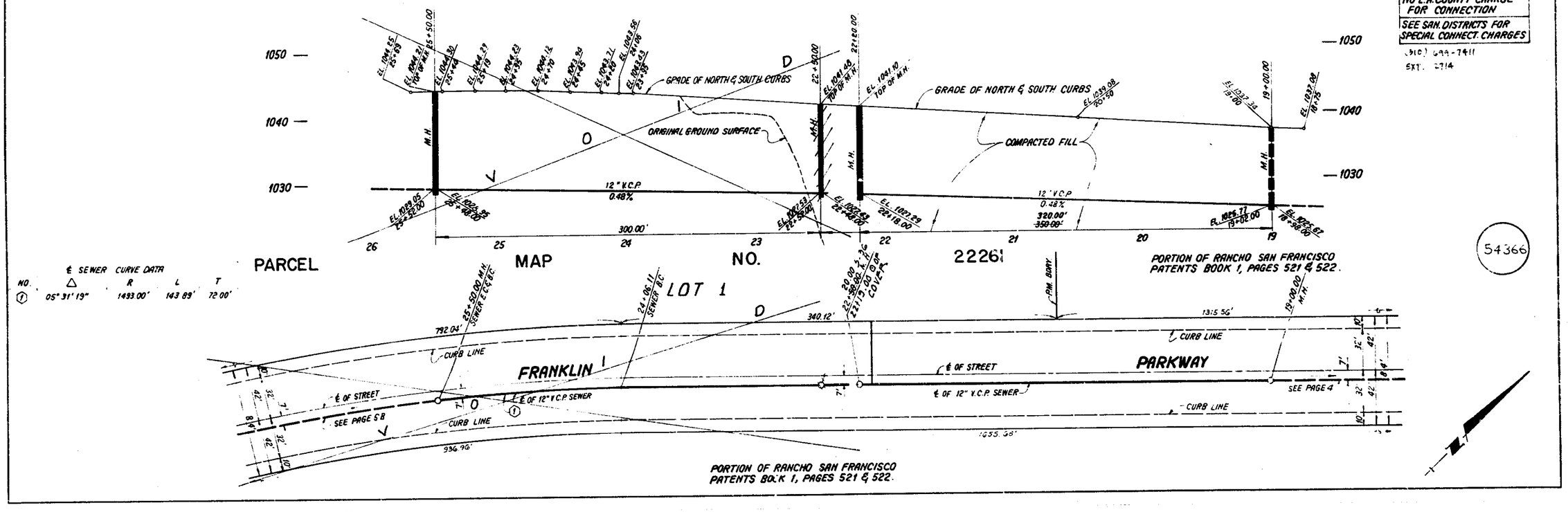
DOUBLE SCALE

NO L.A. COUNTY CHARGE FOR CONNECTION

SEE SAN. DISTRICTS FOR SPECIAL CONNECT. CHARGES

(310) 699-7411 EXT. 2714

54366




P.C. 11120 PAGE 6

REVIEWED BY: 5/03/94 DATE

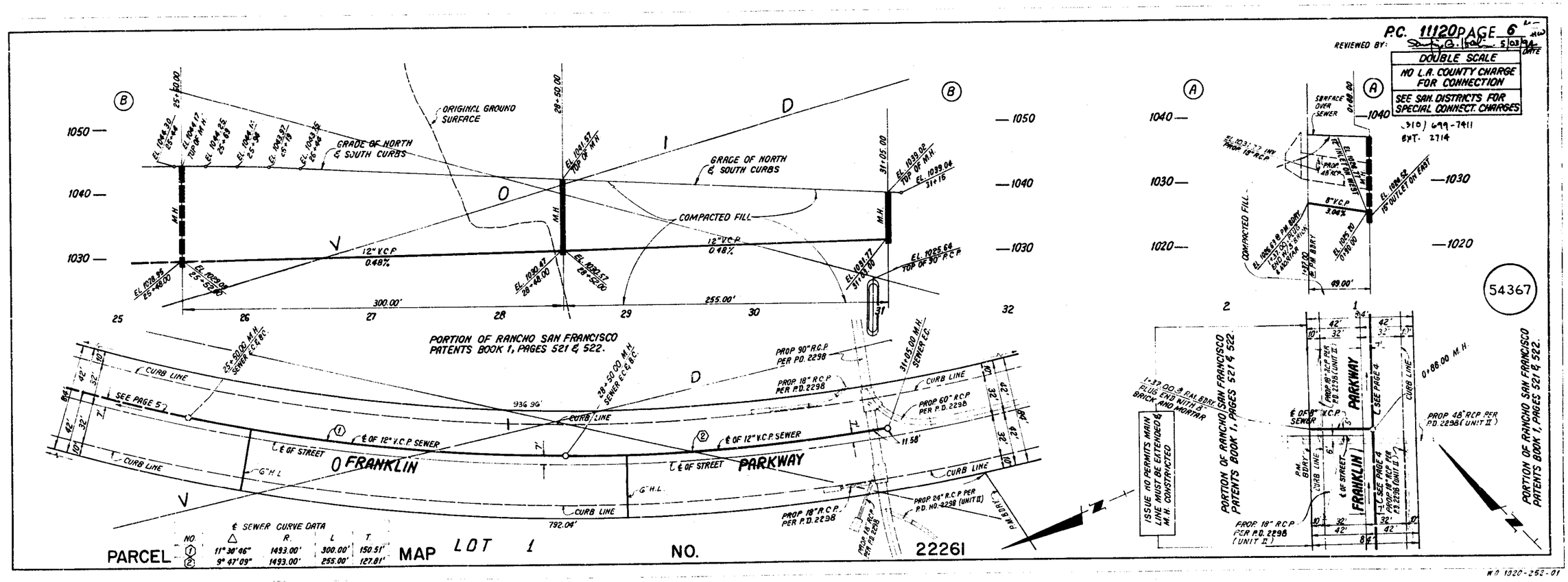
DOUBLE SCALE

NO L.A. COUNTY CHARGE FOR CONNECTION

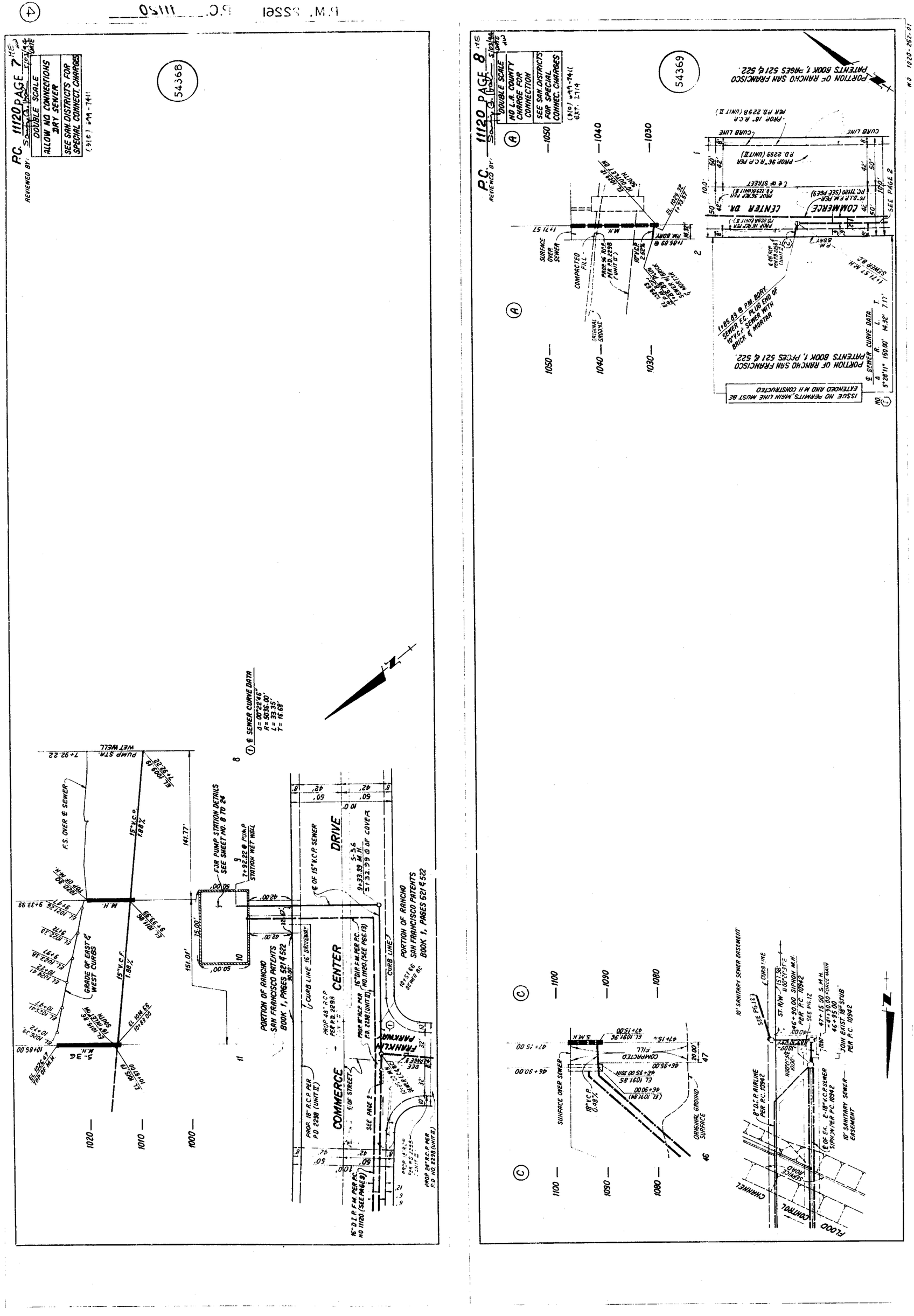
SEE SAN. DISTRICTS FOR SPECIAL CONNECT. CHARGES

(310) 699-7411 EXT. 2714

54367




W.O. 1020-252-01

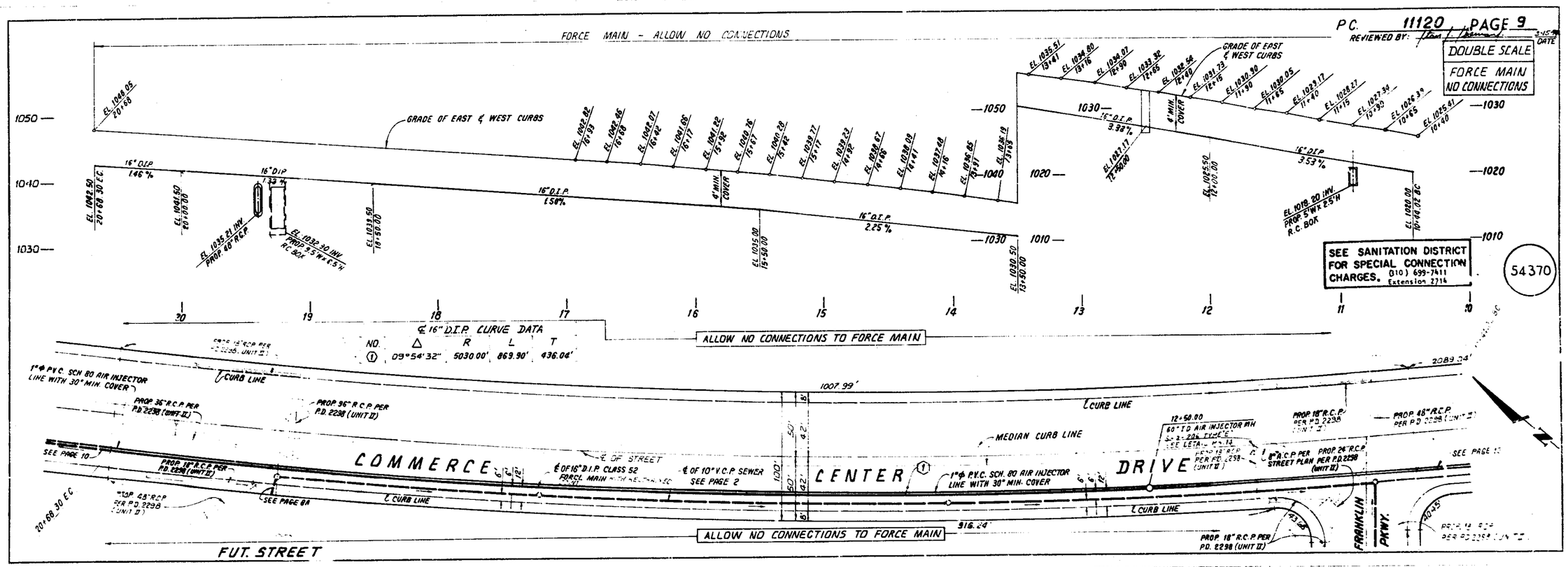

P.C. 11120 PAGE 7
REVIEWED BY:
DOUBLE SCALE
ALLOW NO CONNECTIONS DRY SEWER
SEE SAN. DISTRICTS FOR SPECIAL CONNECT. CHARGES
54368
COMMERCE CENTER DRIVE
PORTION OF RANCHO SAN FRANCISCO PATENTS BOOK 1, PAGES 521 & 522
FRANKLIN PARKWAY
F.S. OVER ℄ SEWER
GRADE OF EAST & WEST CURBS
PUMP STA. WET WELL
℄ SEWER CURVE DATA
Δ = 00°22'46"
R = 5036.00'
L = 33.35'
T = 16.68'
SEE PAGE 2
P.C. 11120 PAGE 8
REVIEWED BY:
DOUBLE SCALE
NO L.A. COUNTY CHARGE FOR CONNECTION
SEE SAN. DISTRICTS FOR SPECIAL CONNEC. CHARGES
54369
COMMERCE CENTER DR.
PORTION OF RANCHO SAN FRANCISCO PATENTS BOOK 1, PAGES 521 & 522
ISSUE NO PERMITS, MAIN LINE MUST BE EXTENDED AND M.H. CONSTRUCTED
℄ SEWER CURVE DATA
SEE PAGE 2
SURFACE OVER SEWER
COMPACTED FILL
ORIGINAL GROUND
SURFACE OVER SEWER
ORIGINAL GROUND SURFACE
10' SANITARY SEWER EASEMENT
FLOOD CONTROL CHANNEL
SERVICE ROAD
JOIN EXIST 18" STUB PER P.C. 10942
10' SANITARY SEWER EASEMENT

P.C. 11120 PAGE 9

REVIEWED BY: 3-15-94 DATE

DOUBLE SCALE

FORCE MAIN NO CONNECTIONS




P.C. 11120 PAGE 10

REVIEWED BY: 3-15-94 DATE

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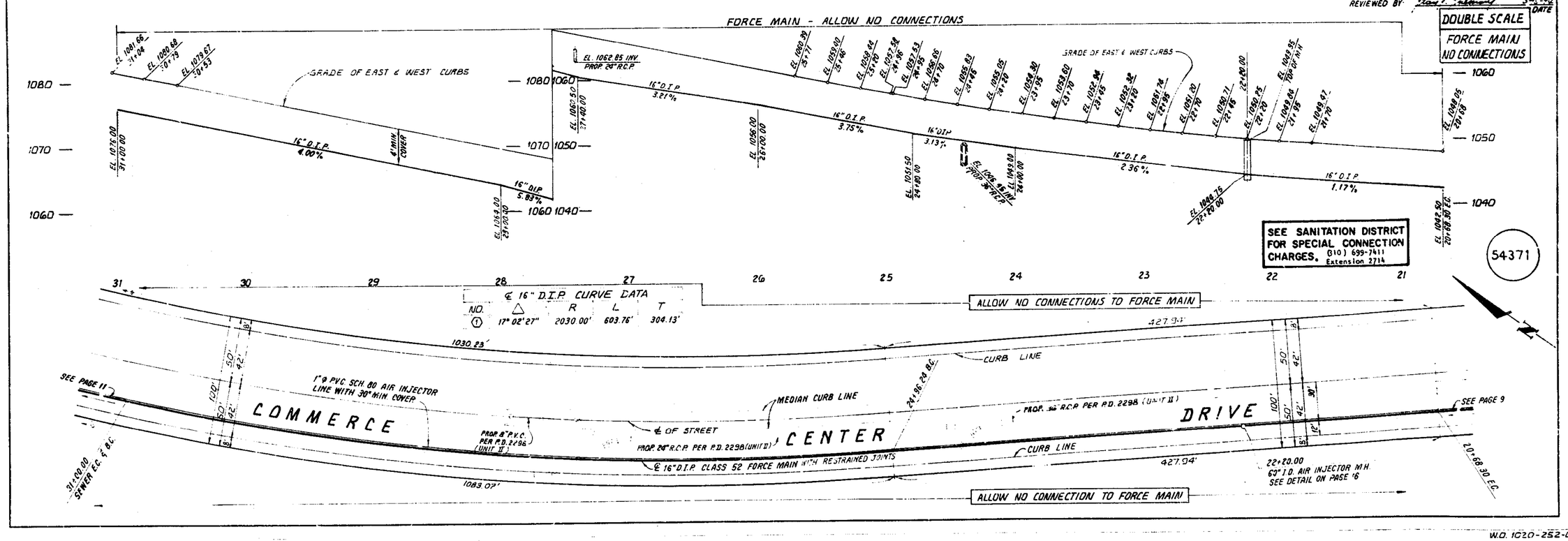


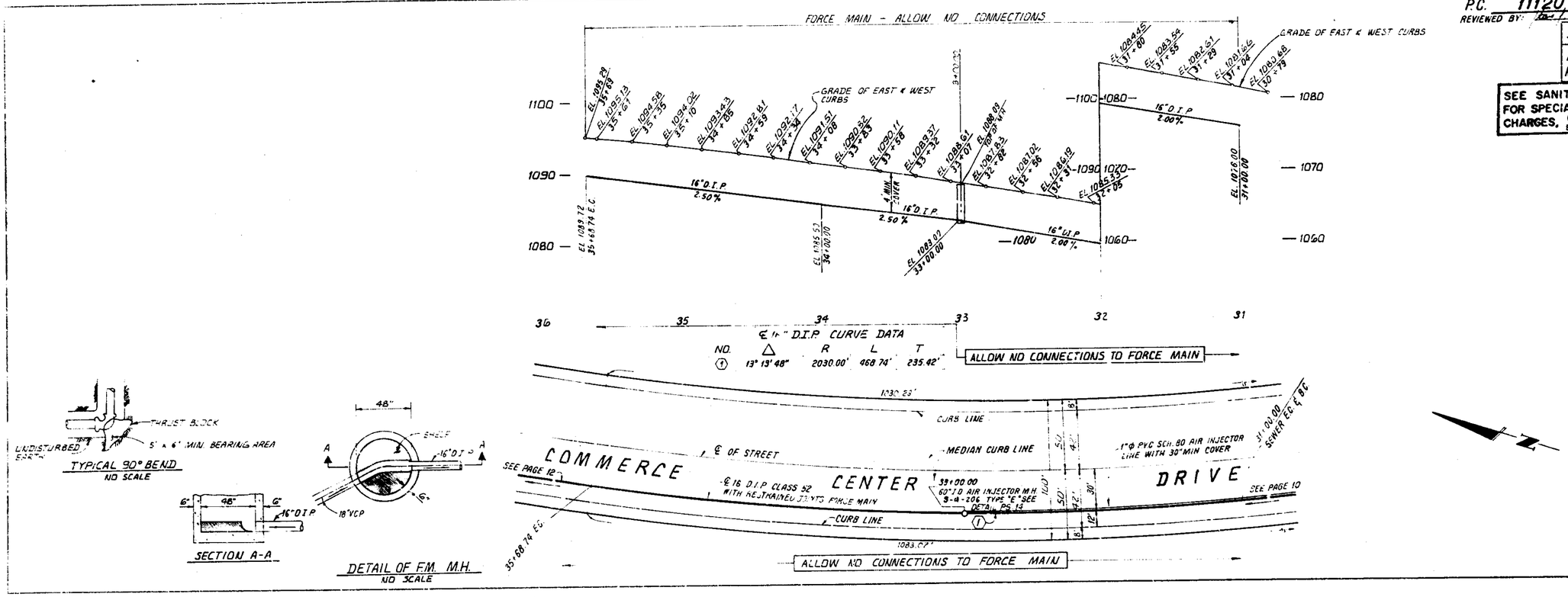

W.O. 1020-252-01

P.C. 11120 PAGE 11
REVIEWED BY [signature] 3-15-94 DATE

DOUBLE SCALE
FORCE MAIN
NO CONNECTIONS

SEE SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES, (310) 699-7411 Extension 2716

54372

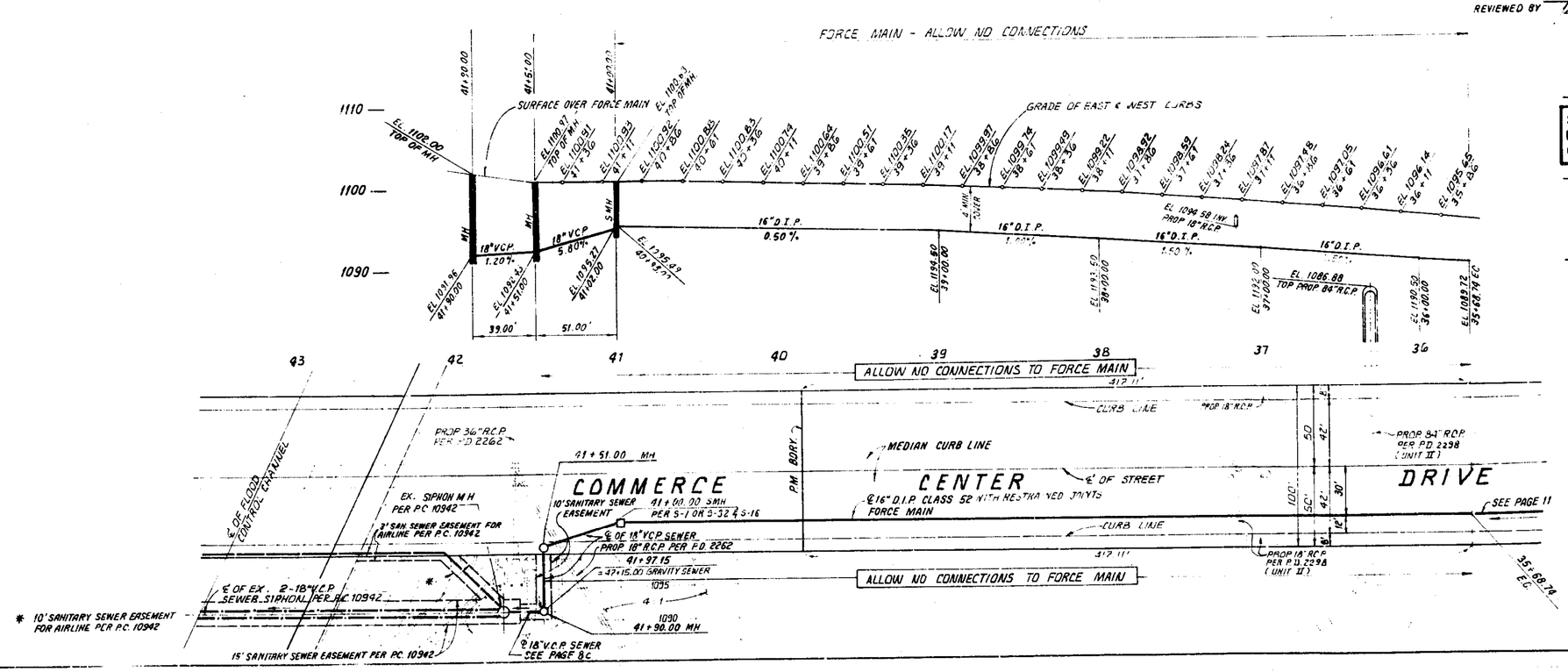



P.C. 11120 PAGE 12
REVIEWED BY [signature] 3-15-94 DATE

DOUBLE SCALE
FORCE MAIN
NO CONNECTIONS

SEE SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES, (310) 699-7411 Extension 2712

54373



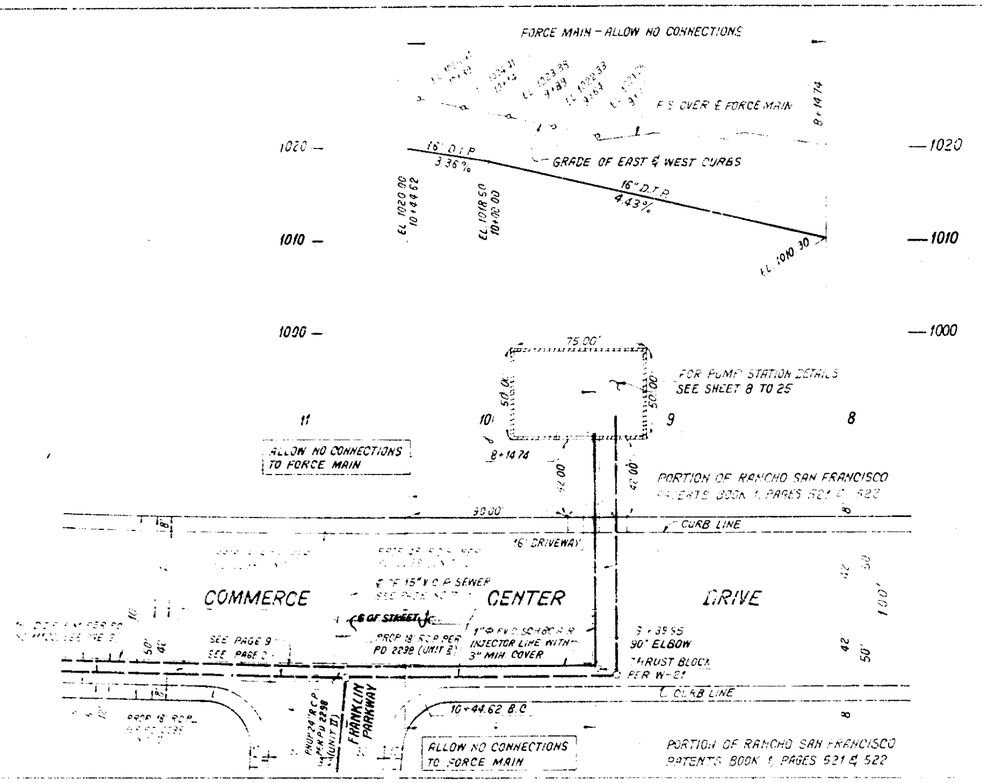

W.O. 1020-252-01

REVIEWED BY

DOUBLE SCALE
FORCE MAIN - ALLOW NO CONNECTIONS

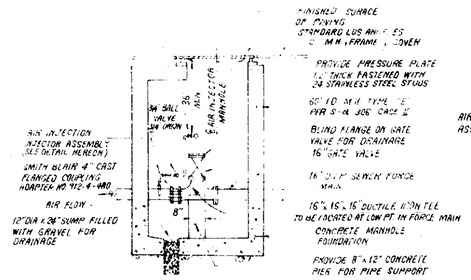
SEE SANITATION DISTRICT FOR SPECIAL CONNECTION CHARGES. (5 0) 699-7411 Extension 2712

54374



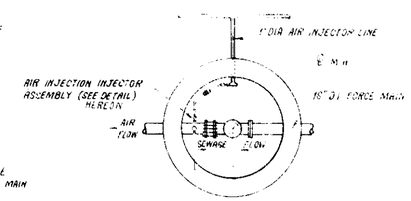



54375



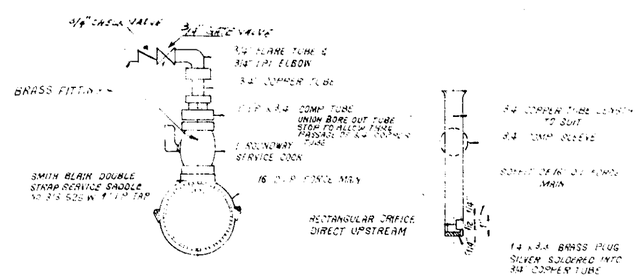

SECTION THROUGH MANHOLE SHOWING DRAINAGE VALVE

NOT TO SCALE




MANHOLE AIR DUCT DETAIL

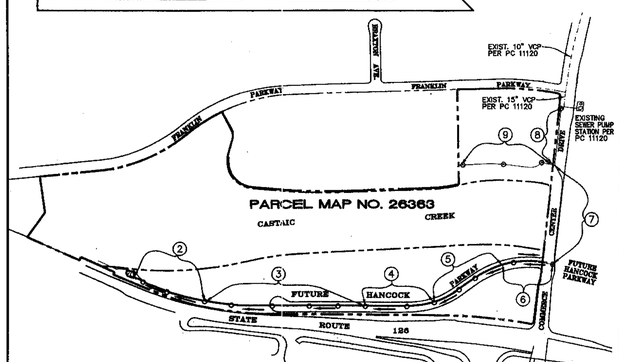
NOT TO SCALE




AIR INJECTION INJECTOR ASSEMBLY

NOT TO SCALE

BENCHMARK: L5402
DESCRIPTION: RND HD SPK IN LOWER CONC. HDWL.
LOCATION: NORTH END 24 FT. W/O C.L. THE CLD ROAD (W RDWY) & 0.6 MI S/O HENRY MAYO DR. @ MI MKR #6.25
RECORDED FROM: NEWHALL QUAD.
ELEVATION: 1031.881 AD.: 2003




NOTE: SEE NOTE ON PAGE 8 FOR CONNECTION TO PC 11120

SEWER VIDEO OF ALL SEGMENTS, FINAL MAP AND AS-BUILT SEWER PLANS SHALL BE SUBMITTED PRIOR TO PARTIAL FIELD ACCEPTANCE

NOTES: NUMBER IN CIRCLE INDICATES PAGE NUMBER. ALL MAINLINE SANITARY SEWERS ARE WITHIN THE SANITARY SEWER EASEMENT

ISSUE NO LATERAL CONNECTION PERMITS UNTIL OUTLET PUMP STATION PC 11645 PS IS ACCEPTED FOR PUBLIC USE.

## INDEX MAP

SCALE: 1" = 600' INDEX 1217
P.C. 11645 P.M. NO. 26363
THOMAS GUIDE PAGE: 4549 / G-1
BUILDING AND SAFETY OFFICE: SANTA CLARITA

| NO. | REVISION | REVISED BY | APPROVED BY | DATE |
|---|---|---|---|---|
| | | | | |

## STORMWATER POLLUTION PLAN NOTES

A. NOTES

1. ERODED SEDIMENTS AND OTHER POLLUTANTS MUST BE RETAINED ON SITE AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEETFLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES OR WIND.

2. STOCKPILES OF EARTH AND OTHER CONSTRUCTION RELATED MATERIALS MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY THE FORCES OF WIND OR WATER.

3. FUELS, OILS, SOLVENTS, AND OTHER TOXIC MATERIALS MUST BE STORED IN ACCORDANCE WITH THEIR LISTING AND ARE NOT TO CONTAMINATE THE SOIL AND SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM THE WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS MAY NOT BE WASHED INTO THE DRAINAGE SYSTEM.

4. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC WAY OR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.

5. TRASH AND CONSTRUCTION RELATED SOLID WASTES MUST BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND.

6. SEDIMENTS AND OTHER MATERIALS MAY NOT TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC WAY. ACCIDENTAL DEPOSITIONS MUST BE SWEPT UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR OTHER MEANS.

7. ANY SLOPES WITH DISTURBED SOILS DENUDED OF VEGETATION MUST BE STABILIZED SO AS TO INHIBIT EROSION BY WIND AND WATER.

B. THE FOLLOWING BMPs AS OUTLINED IN, BUT NOT LIMITED TO, THE "BEST MANAGEMENT PRACTICE HANDBOOK, CALIFORNIA STORMWATER QUALITY TASK FORCE, SACRAMENTO, CALIFORNIA 2003," OR THE LATEST REVISED EDITION, MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY COUNTY INSPECTORS):

NOTES:
NO CONNECTION FOR THE DISPOSAL OF INDUSTRIAL WASTES SHALL BE MADE TO SEWERS SHOWN ON THESE DRAWINGS UNTIL A PERMIT FOR INDUSTRIAL WASTE WATER DISCHARGE HAS BEEN ISSUED BY THE COUNTY SANITATION DISTRICTS FOR SAID CONNECTIONS.
BEFORE BREAKING INTO OR CONSTRUCTING ... A COUNTY SANITATION DISTRICTS SEWER AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, A COUNTY SANITATION DISTRICTS INSPECTOR SHALL BE NOTIFIED BY PHONE AT (661) 727-5320 SO THAT REQUIRED INSPECTION CAN BE MADE.

STANDARD PLANS:
THE FOLLOWING LATEST REVISED STANDARD PLANS ON FILE IN THE OFFICE OF THE FOLLOWING DEPARTMENT SHALL APPLY IN THE CONSTRUCTION OF THIS PROJECT.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
2000-0 LEGEND FOR SANITARY SEWER PLANS AND PROFILES AND DISTRICT MAPS
2002-1 PRECAST CONCRETE SHALLOW MANHOLE
2003-2 REINFORCED PRECAST CONCRETE MANHOLE
2014-1 RECTANGULAR MANHOLE FRAME AND COVER
2015-1 STANDARD MANHOLE STEP
2021-1 BEDDING FOR SEWER PIPE
2023-2 CRADLING AND ENCASEMENT
2024-1 WYE OR TEE SUPPORT
2026-1 EROSION PROTECTION IN STEEP SLOPES
2027-1 ALLOWABLE TRENCH WIDTHS
5008-1 MINIMUM PUBLIC SAFETY REQUIREMENTS

AMERICAN PUBLIC WORKS ASSOCIATION
207-1 PRECAST REINFORCED CONCRETE MANHOLE BASE
208-1 BREAKING INTO EXISTING MANHOLES
210-2 MANHOLE FRAME AND COVER LOCKING TYPE
220-2 CHIMNEYS
221-1 PIPE ANCHORS AND BACKFILL STABILIZERS
222-1 HOUSE CONNECTION SEWER
223-1 HOUSE CONNECTION REMODELING

EROSION CONTROL
EC1 – SCHEDULING
EC2 – PRESERVATION OF EXISTING VEGETATION
EC3 – HYDRAULIC MULCH
EC4 – HYDROSEEDING
EC5 – SOIL BINDERS
EC6 – STRAW MULCH
EC7 – GEOTEXTILES, PLASTIC COVERS, & EROSION CONTROL BLANKETS/MATS
EC8 – WOOD MULCHING
EC9 – EARTH DIKES/DRAINAGE SWALES & LINED DITCHES
EC10 – OUTLET PROTECTION/VELOCITY DISSIPATION DEVICES
EC11 – SLOPE DRAINS
EC12 – STREAMBANK STABILIZATION
EC13 – POLYACRYLAMIDE

TEMPORARY SEDIMENT CONTROL
SE1 – SILT FENCE
SE2 – SEDIMENT/DESILTING BASIN
SE3 – SEDIMENT TRAP
SE4 – CHECK DAM
SE5 – FIBER ROLLS
SE6 – GRAVEL BAG BERM
SE7 – STREET SWEEPING AND VACUUMING
SE8 – SANDBAG BARRIER
SE9 – STRAW BALE BARRIER
SE10 – STORM DRAIN INLET PROTECTION
SE11 – CHEMICAL TREATMENT

WIND EROSION CONTROL
WE1 – WIND EROSION CONTROL

EQUIPMENT TRACKING CONTROL
TR1 – STABILIZED CONSTRUCTION ENTRANCE/EXIT
TR2 – STABILIZED CONSTRUCTION ROADWAY
TR3 – ENTRANCE/OUTLET TIRE WASH

WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL
WM1 – MATERIAL DELIVERY AND STORAGE
WM2 – MATERIAL USE
WM3 – STOCKPILE MANAGEMENT
WM4 – SPILL PREVENTION AND CONTROL
WM5 – SOLID WASTE MANAGEMENT
WM6 – HAZARDOUS WASTE MANAGEMENT
WM7 – CONTAMINATED SOIL MANAGEMENT
WM8 – CONCRETE WASTE MANAGEMENT
WM9 – SANITARY/SEPTIC WASTE MANAGEMENT
WM10 – LIQUID WASTE MANAGEMENT

NON-STORMWATER MANAGEMENT
NS1 – WATER CONSERVATION PRACTICES
NS2 – DEWATERING OPERATIONS
NS3 – PAVING AND GRINDING OPERATIONS
NS4 – TEMPORARY STREAM CROSSING
NS5 – CLEAR WATER DIVERSION
NS6 – ILLICIT CONNECTION/ILLEGAL DISCHARGE DETECTION AND REPORTING
NS7 – POTABLE WATER/IRRIGATION
NS8 – VEHICLE AND EQUIPMENT CLEANING
NS9 – VEHICLE AND EQUIPMENT FUELING
NS10 – VEHICLE AND EQUIPMENT MAINTENANCE
NS11 – PILE DRIVING OPERATIONS
NS12 – CONCRETE CURING
NS13 – MATERIAL AND EQUIPMENT USE OVER WATER
NS14 – CONCRETE FINISHING
NS15 – STRUCTURE DEMOLITION/REMOVAL OVER OR ADJACENT TO WATER
NS16 – TEMPORARY BATCH PLANTS

NOTE:
FOR 18" DUCTILE IRON GRAVITY SEWER PIPING
18" DIAMETER GRAVITY SEWER SHALL BE DUCTILE IRON PIPE AND FITTINGS, MINIMUM CLASS 350.
JOINTS SHALL BE TR FLEX RESTRAINED JOINTS FOR ALL BURIED PIPE AND FITTINGS, OR EQUIVALENT. FOR ABOVE GROUND PIPING SUCH AS WHEN CROSSING THE COMMERCE CENTER DRIVE BRIDGE, JOINTS SHALL BE BOLTLESS RESTRAINED JOINTS SUCH AS THE TR FLEX JOINT SYSTEM, OR EQUIVALENT.

INTERNAL LINING OF PIPE AND FITTINGS SHALL BE PROTECTO 401 CERAMIC EPOXY BY US PIPE FACTORY APPLIED TO A NOMINAL THICKNESS OF 40 MILS, OR APPROVED EQUIVALENT. EACH PIECE OF PIPE AND EVERY FITTING SHALL BE HOLIDAY TESTED AND THICKNESS TESTED AT THE FACTORY AND CERTIFIED IN WRITING TO THE OWNER BY THE FACTORY TO BE HOLIDAY-FREE AND IN COMPLIANCE WITH THE NOMINAL THICKNESS REQUIREMENT.

EXTERNAL COATING SHALL BE STANDARD FACTORY BITUMINOUS COATING OF 2 MILS THICKNESS. ALL BURIED PIPE AND FITTING SHALL BE POLYETHYLENE WRAPPED IN ACCORDANCE WITH AWWA C105.

## PRIVATE CONTRACT SEWER GENERAL NOTES

THE FOLLOWING GENERAL NOTES ARE TO BE INCLUDED ON PAGE 1 OF ALL PRIVATE CONTRACT SEWER PLANS:

1. A SEWER CONSTRUCTION PERMIT SHALL BE OBTAINED AND A FEE PAID FOR CONSTRUCTION INSPECTION AND RECORD PLANS TO THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORK, CITY ENGINEER FOR THE CITY OF _____ AT THE PERMIT COUNTER, 900 SOUTH FREMONT AVENUE, 8TH FLOOR, ALHAMBRA, AT LEAST 72 HOURS PRIOR TO STARTING WORK UNDER THIS PERMIT. COPIES OF ALL REQUIRED PERMITS, SUCH AS ROAD EXCAVATION, CALTRANS, ECT., MUST BE FILED WITH THE PERMIT APPLICATION.
2. PRIOR TO ISSUANCE OF ANY PERMIT, THE CONTRACTOR SHALL FILE A PERMIT FOR EXCAVATIONS AND TRENCHES FROM THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY, AND A CERTIFICATE OF WORKER'S COMPENSATION INSURANCE WITH THE DEPARTMENT OF PUBLIC WORKS NAMED AS THE CERTIFICATE HOLDER. THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, CITY ENGINEER FOR THE CITY OF _____ SHALL BE NOTIFIED 30 DAYS PRIOR TO CANCELLATION OF THE INSURANCE POLICY.
3. IF WORK IS DONE IN A STATE HIGHWAY, A PERMIT MUST BE OBTAINED FROM THE STATE OF CALIFORNIA DIVISION OF HIGHWAYS, 120 SOUTH SPRING STREET, LOS ANGELES, CALIFORNIA.
4. WHEN WORK IS WITHIN A CONTRACT CITY, THE CONTRACTOR MUST CONTACT THE DIRECTOR OF PUBLIC WORKS OF THAT CITY, TO DETEMINE THE LOCATION TO PAY THE INSPECTION FEE.
5. THE CONTRACTOR SHALL CONTACT THE DISTRICT OFFICE LISTED ON THE "APPLICATION FOR CONSTRUCTION PERMIT" TO ARRANGE FOR AN ACCEPTABLE CONSTRUCTION START DATE.
6. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES, CITY ENGINEER FOR THE CITY OF _____ DOES NOT CONSTITUTE A REPRESENTATION AS TO ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE COMPLIES TO ALL PAGES.
7. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", INCLUDING SUPPLEMENTS (IF THERE IS ANY), THE LATEST "ADDITIONS AND AMENDMENTS TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" AND THE "SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWER" AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS.
8. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 7-10.4.1 OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" IN REGARD TO SAFETY ORDERS AND SHALL CONFORM TO THE "MINIMUM PUBLIC SAFETY REQUIREMENT" AS SHOWN ON LOS ANGELES DEPARTMENT OF PUBLIC WORKS' STANDARD PLAN 5008-1.
9. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. SEA LEVEL DATUM OF 1988.
10. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, CITY ENGINEER FOR THE CITY OF SANTA CLARITA.
11. NO REPRESENTATIVE OF THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, CITY ENGINEER FOR THE CITY OF SANTA CLARITA WILL SURVEY OR LAY OUT ANY PORTION OF THE WORK.
12. GRADES TO WHICH THIS IMPROVEMENT IS TO BE CONSTRUCTED ARE SHOWN ON PLANS AND PROFILES. GRADE POINTS FOR TOP OF CURBS, CENTERLINE OF STREETS, OR CENTERLINE OF ALLEYS, ARE SHOWN BY CIRCLES ON PROFILES AT ALL POINTS BETWEEN SAID DESIGNED POINTS. THE GRADE SHALL BE ESTABLISHED SO AS TO CONFORM TO A STRAIGHT LINE DRAWN BETWEEN SAID DESIGN POINTS.
13. THE PRIVATE ENGINEER SHALL FURNISH THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, CITY ENGINEER FOR THE CITY OF SANTA CLARITA WITH GRADE SHEETS AND STATIONING FOR ALL HOUSE LATERALS AND "Y" OR "T" BRANCHES AND SHALL PROVIDE STAKES FOR THEM AT THEIR PROPER LOCATIONS WITH STATIONING PLAINLY MARKED. ALL HOUSE LATERALS SHALL BE CONSTRUCTED IN A STRAIGHT ALIGNMENT AT RIGHT ANGLES FROM THE MAIN LINE SEWER EXCEPT AS SHOWN ON THE PLANS. HOUSE LATERALS FROM CHIMNEYS SHALL NOT HAVE AN ANGLE OF LESS THAN 45 DEGREES WITH THE M.L. SEWER. ANY CHANGE IN ALIGNMENT SHALL BE REQUESTED IN WRITING BY THE PRIVATE ENGINEER.
14. THE PRIVATE ENGINEER SHALL FURNISH THE HOUSE LATERAL DEPTH AT THE PROPERTY LINE BELOW THE TOP OF CURB ELEVATION FOR EACH HOUSE LATERAL ON THE GRADE SHEET.
15. AN APPROVED BACKWATER VALVE IS REQUIRED WHEN THE PAD IS LOWER IN ELEVATION THAN THE TOP OF THE NEXT UPSTREAM MANHOLE.

## CONSTRUCTION NOTES

1. PROVIDE SURVEY STAKES ON THE PROPERTY LINE OR PROPERTY LINES PRODUCED AT RIGHT ANGLES TO THE SEWER LINE AT THE CENTERLINE OF EACH MANHOLE.
2. VITRIFIED CLAY PIPE JOINTS SHALL BE TYPE "D" OR "O" PER "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" SECTION 208-2.
3. IF A POWERPOLE IS WITHIN THREE FEET OF THE SEWER, THE SEWER SHALL BE ENCASED PER LACDPW STANDARD PLAN 2023-2, CASE II, TWO FEET ON EACH SIDE FROM THE POINT OF INTERFERENCE.
4. ALL JOINTS BETWEEN CAST IRON PIPE AND VITRIFIED CRALY SHALL BE MADE WITH A RUBBER SLEEVE JOINT, TYPE "D" (WITH BUSHING IF NECESSARY) PER "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" SECTION 208-2.
5. HOUSE LATERALS TO BE CONSTRUCTED WITH INVERTS AT THE PROPERTY LINE 6 FEET BELOW CURB GRADE EXCEPT AS NOTED.
6. WYE OR TEE BRANCHES MAY BE USED FOR CONNECTIONS TO THE MAINLINE SEWERS EXCEPT AS NOTED.
7. IF DURING THE COURSE OF CONSTRUCTION, IT IS DETERMINED THAT THERE IS LESS THAN FOUR FEET OF COVER OVER THE TOP OF A MAINLINE OR HOUSE LATERAL V.C.P. SEWER WHICH IS NOT INDICATED ON THE PLANS, THE PIPES SHALL BE ENCASED PER LACDPW STANDARD PLAN 2023-2, CASE II, UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
8. ALL STRUCTURES SHALL BE EITHER BRICK SEWER MANHOLES PER LACDPW STANDARD PLAN S-3 (APWA 203-0), OR PRECAST CONCRETE SEWER MANHOLES PER LACDPW STANDARD PLAN S-36 (APWA 200-2), OR REINFORCED PRECAST CONCRETE MANHOLE PER LACDPW STANDARD PLAN 2003-2, EXCEPT AS NOTED.
9. RESURFACE ALL TRENCHES WITHIN PAVED AREAS TO MEET DEPARTMENT OF PUBLIC WORKS OR CALTRANS REQUIREMENTS IN ACCORDANCE WITH THE PERMITS.
10. FULL COMPLIANCE WITH SECTION 306-1.3.4 OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" WILL BE REQUIRED FOR BACKFILL IN STREET. CERTIFICATION OF BACKFILL COMPACTION, AND SAND EQUIVALENTS BY A QUALIFIED CIVEL ENGINEER SHALL BE PROVIDED BY THE PERMITEE PRIOR TO THE ISSUANCE OF A CERTIFICATE OF PARTIAL ACCEPTANCE.
11. ALL BACKFILL AND FILLS OUTSIDE OF THE STREET RIGHT OF WAY SHALL BE COMPACTED TO 90% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM SOIL COMPACTION TEST D 1557-78 METHOD "D" UNLESS OTHERWISE SPECIFIED. THIS SHALL BE CERTIFIED BY A QUALIFIED CIVIL ENGINEER. THIS CERTIFICATION SHALL BE SUBMITTED TO THE CONSTRUCTION DIVISION OF THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE ACCEPTANCE OF THE WORK BY THE COUNTY.
12. MANHOLE TOPS IN UNIMPROVED RIGHTS OF WAY TO BE SIX INCHES ABOVE FINISHED GRADE.
13. SEWERS TO BE TESTED FOR LEAKAGE PER SECTION 306-1.4 OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" AND "SPECIAL PROVISIONS FOR THE CONSTRUCTION OF SANITARY SEWER".
14. MANHOLE TOPS IN UNIMPROVED RIGHTS OF WAY TO BE LEVEL WITH FINISHED GRADE.
15. ALL WYES AND/OR HOUSE LATERALS ARE TO BE LOCATED AT LEAST 5' APART AND WHEN POSSIBLE NOT CLOSER THAN 8' TO ANY MANHOLE.

PROFILE, ALIGNMENT, AND GRADE OF

# SANITARY SEWERS

TO BE CONSTRUCTED IN

PARCEL MAP 26363 PC NO. 11645

13 SHEETS: 17 PAGES

COUNTY OF LOS ANGELES CALIFORNIA

INDEX 1217

DONALD L. WOLFE DIRECTOR OF PUBLIC WORKS

APPROVED BY LAND DEVELOPMENT DIVISION
BY _____ ASSISTANT DIVISION ENGINEER 10/25/07 DATE

SUBMITTED BY _____ SEWER AND WATER/LANDSCAPE SECTION 10/25/07 DATE

SANTA CLARITA VALLEY SANITATION DISTRICT
OF LOS ANGELES COUNTY, CALIFORNIA
STEPHEN R. MAGUIN, CHIEF ENGINEER AND GENERAL MANAGER
APPROVED BY: _____ for OFFICE ENGINEER DATE: 10/25/07

## PRIVATE ENGINEERS NOTICE TO CONTRACTORS:

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS IS REQUIRED BY A SEARCH OF AVAILABLE RECORDS TO THE BEST OF OUR KNOWLEDGE. THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THIS MAP. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THIS DRAWING. PRIOR TO EXCAVATION THE CONTRACTOR SHALL CALL TOLL FREE 1-800-422-4133 TO VERIFY THE UNDERGROUND LOCATION OF GAS AND TELEPHONE LINES. THE CONTRACTOR SHALL ALSO CALL MR. RAY CUMMINGS OF GENERAL TELEPHONE COMPANY AT 1-805-948 4871 SO THAT THEY CAN MARK THE LOCATION OF UNDERGROUND TELEPHONE LINES.

_____ PROJECT ENGINEER RCE NO 51929 10-24-07 DATE

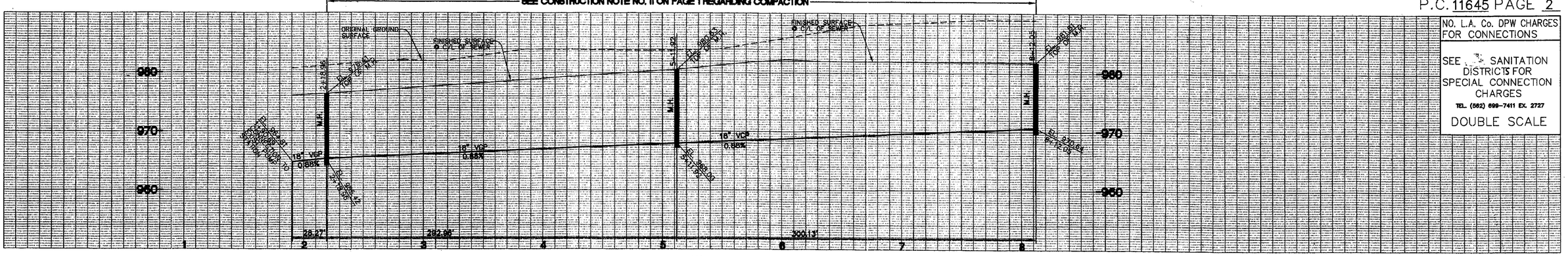
SEE CONSTRUCTION NOTE NO. 11 ON PAGE 1 REGARDING COMPACTION

P.C. 11645 PAGE 2

NO. L.A. Co. DPW CHARGES FOR CONNECTIONS

SEE S.A. SANITATION DISTRICTS FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

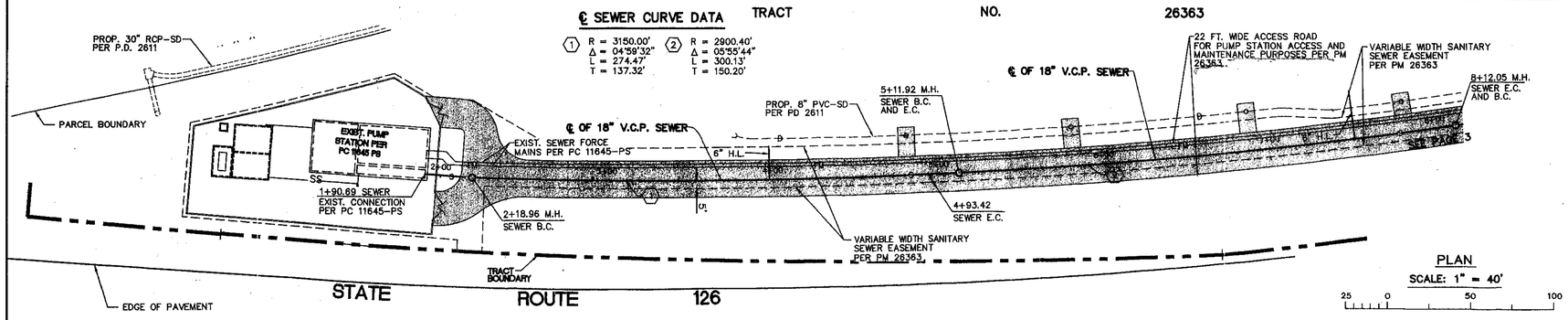
DOUBLE SCALE




℄ SEWER CURVE DATA

| ① | ② |
|---|---|
| R = 3150.00' | R = 2900.40' |
| Δ = 04°59'32" | Δ = 05°55'44" |
| L = 274.47' | L = 300.13' |
| T = 137.32' | T = 150.20' |

TRACT NO. 26363




PLAN
SCALE: 1" = 40'
25 0 50 100

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTAKER NO. 51929 EXP. 6-30-08 CIVIL STATE OF CALIFORNIA

_____ PROJECT ENGINEER 10-24-07 DATE

SANITARY SEWER PLANS IN
PARCEL NO. 26363 PC NO. 11645

REVIEWED BY LAND DEVELOPMENT DIVISION
BY _____ SEWER AND WATER/LANDSCAPING SECTION 10-25-07 DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802

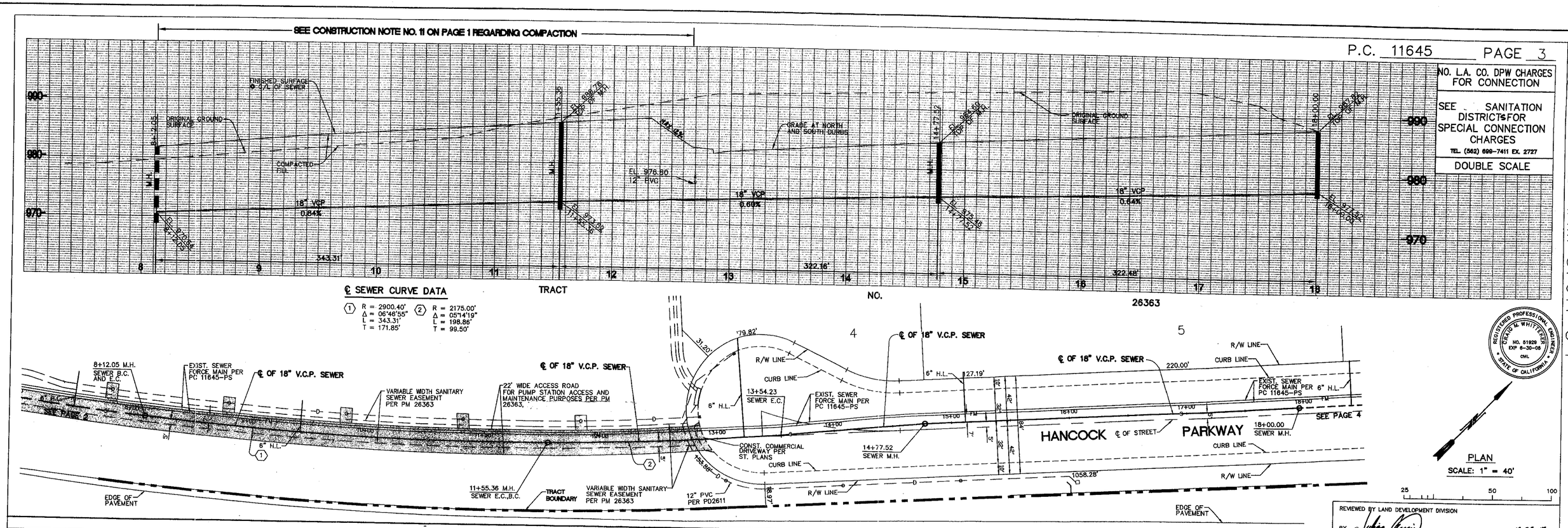
I:\CAD\0810\SEWER\SHEET-01.DWG JN 0810

OCT 31 2007

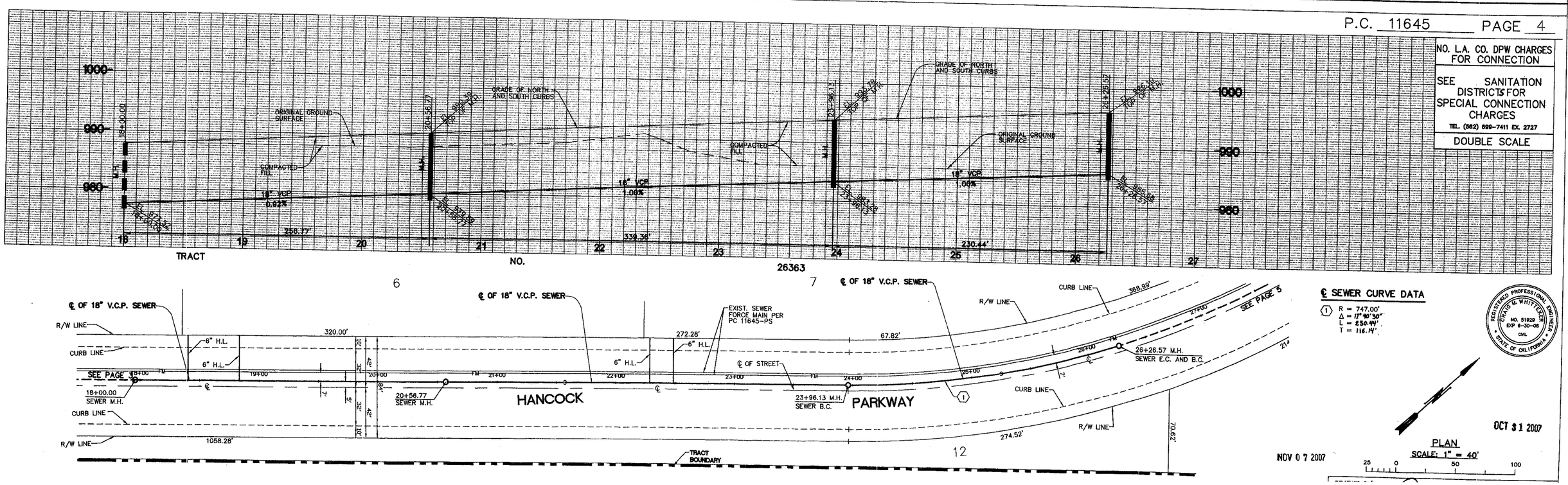
NOV 07 2007

APPROVED GS GRAVITY SEWER

PARCEL MAP NO. 26363



SEE CONSTRUCTION NOTE NO. 11 ON PAGE 1 REGARDING COMPACTION
P.C. 11645 PAGE 3
NO. L.A. CO. DPW CHARGES FOR CONNECTION
SEE SANITATION DISTRICTS FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727
DOUBLE SCALE
FINISHED SURFACE @ C/L OF SEWER
ORIGINAL GROUND SURFACE
COMPACTED FILL
GRADE AT NORTH AND SOUTH CURBS
EL. 976.80 12" PVC
18" VCP 0.84%
18" VCP 0.60%
18" VCP 0.64%
343.31'
322.16'
322.48'
TRACT NO. 26363
℄ SEWER CURVE DATA
① R = 2900.40' Δ = 06°46'55" L = 343.31' T = 171.85'
② R = 2175.00' Δ = 05°14'19" L = 198.86' T = 99.50'
8+12.05 M.H. SEWER B.C. AND E.C.
EXIST. SEWER FORCE MAIN PER PC 11645-PS
℄ OF 18" V.C.P. SEWER
VARIABLE WIDTH SANITARY SEWER EASEMENT PER PM 26363
22' WIDE ACCESS ROAD FOR PUMP STATION ACCESS AND MAINTENANCE PURPOSES PER PM 26363.
13+54.23 SEWER E.C.
CONST. COMMERCIAL DRIVEWAY PER ST. PLANS
14+77.52 SEWER M.H.
18+00.00 SEWER M.H.
11+55.36 M.H. SEWER E.C.,B.C.
TRACT BOUNDARY
12" PVC PER PD2611
EDGE OF PAVEMENT
R/W LINE
CURB LINE
HANCOCK ℄ OF STREET PARKWAY
SEE PAGE 2
SEE PAGE 4
PLAN
SCALE: 1" = 40'
REVIEWED BY LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPE SECTION
10-25-07 DATE

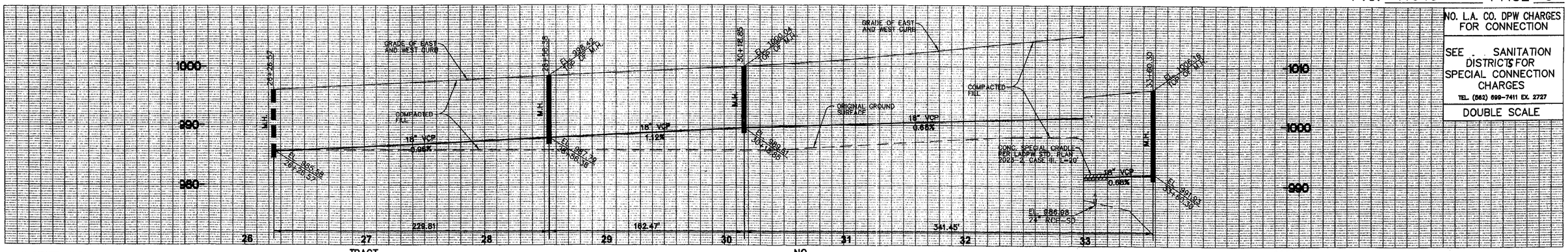



P.C. 11645 PAGE 4
NO. L.A. CO. DPW CHARGES FOR CONNECTION
SEE SANITATION DISTRICTS FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727
DOUBLE SCALE
GRADE OF NORTH AND SOUTH CURBS
ORIGINAL GROUND SURFACE
COMPACTED FILL
18" VCP 0.92%
18" VCP 1.00%
18" VCP 1.00%
256.77'
339.36'
230.44'
TRACT NO. 26363
℄ OF 18" V.C.P. SEWER
EXIST. SEWER FORCE MAIN PER PC 11645-PS
℄ OF STREET
18+00.00 SEWER M.H.
20+56.77 SEWER M.H.
23+96.13 M.H. SEWER B.C.
26+26.57 M.H. SEWER E.C. AND B.C.
HANCOCK PARKWAY
SEE PAGE 3
SEE PAGE 5
TRACT BOUNDARY
℄ SEWER CURVE DATA
① R = 747.00' Δ = 17°40'30" L = 230.44' T = 116.14'
PLAN
SCALE: 1" = 40'
OCT 31 2007
NOV 07 2007

NO. L.A. CO. DPW CHARGES FOR CONNECTION

SEE SANITATION DISTRICTS FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

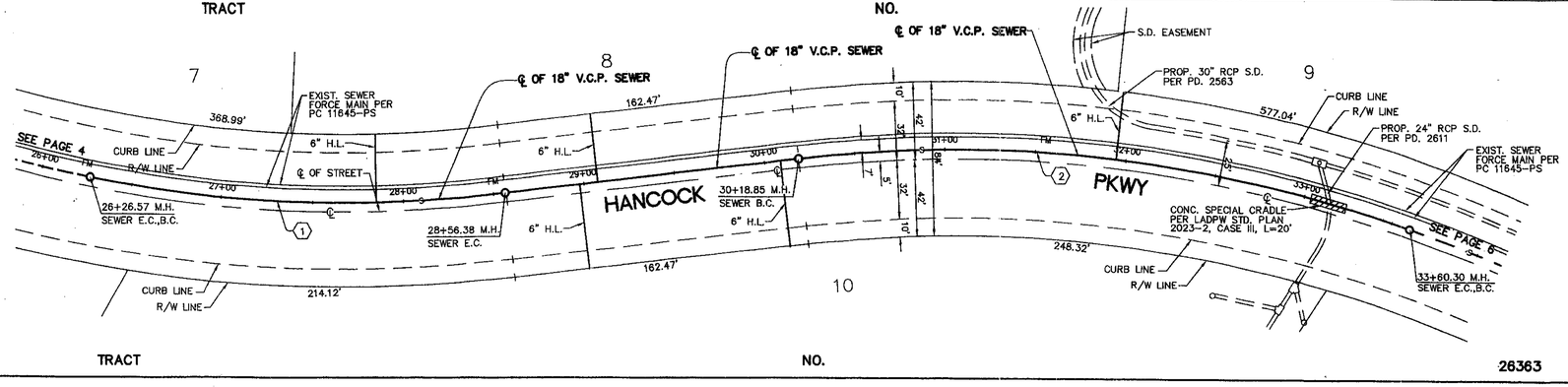
DOUBLE SCALE




℄ SEWER CURVE DATA

(1) R = 747.00'
Δ = 17°37'34"
L = 229.80'
T = 115.82'

(2) R = 755.00'
Δ = 25°54'44"
L = 341.45'
T = 173.70'




PLAN
SCALE: 1" = 40'

25 50 100

REVIEWED BY LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPE SECTION 10-25-07 DATE

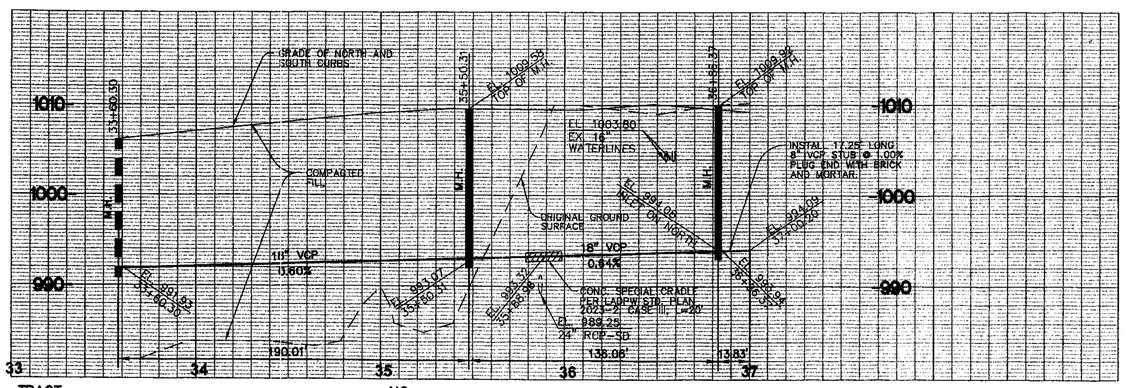
REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITFEER NO. 51929 EXP 6-30-08 CIVIL STATE OF CALIFORNIA

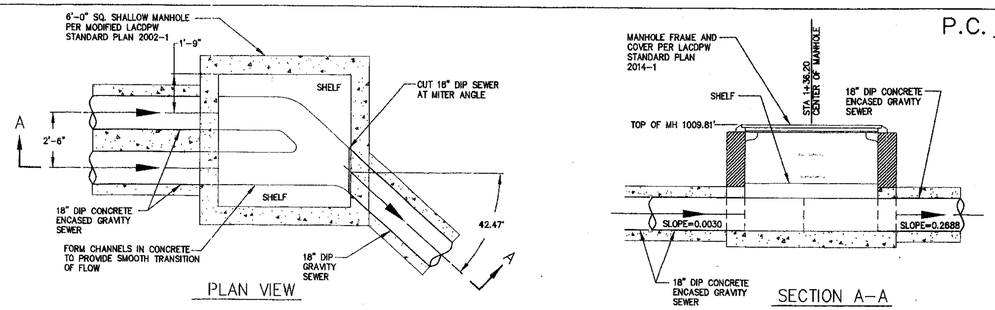


NO. L.A. CO. DPW CHARGES FOR CONNECTION

SEE SANITATION DISTRICTS FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

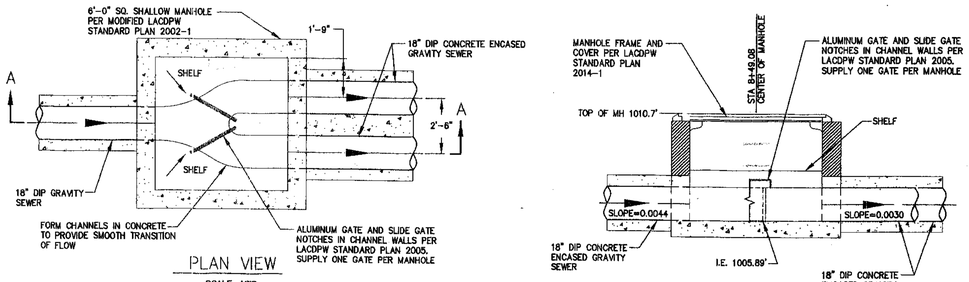
DOUBLE SCALE



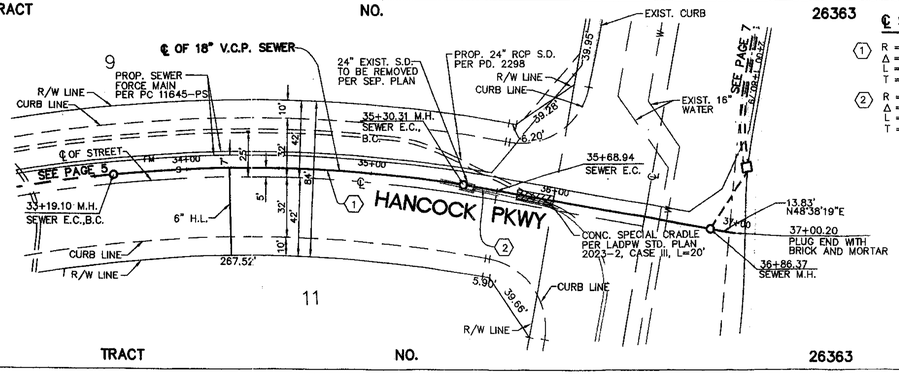

GRAVITY SEWER CONVERGENT MANHOLE AT STA 1+36.20 (A VAR)

NOT TO SCALE




GRAVITY SEWER DIVERGENT MANHOLE AT STA 8+49.08 (A VAR)

NOT TO SCALE




℄ SEWER CURVE DATA

(1) R = 755.00'
Δ = 14°25'10"
L = 190.01'
T = 95.51'

(2) R = 755.00'
Δ = 01°24'48"
L = 18.62'
T = 9.31'

PLAN
SCALE: 1" = 40'

25 0 50 100

REVIEWED BY LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPE SECTION 10-25-07 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITFEER NO. 51929 EXP 6-30-08 CIVIL STATE OF CALIFORNIA

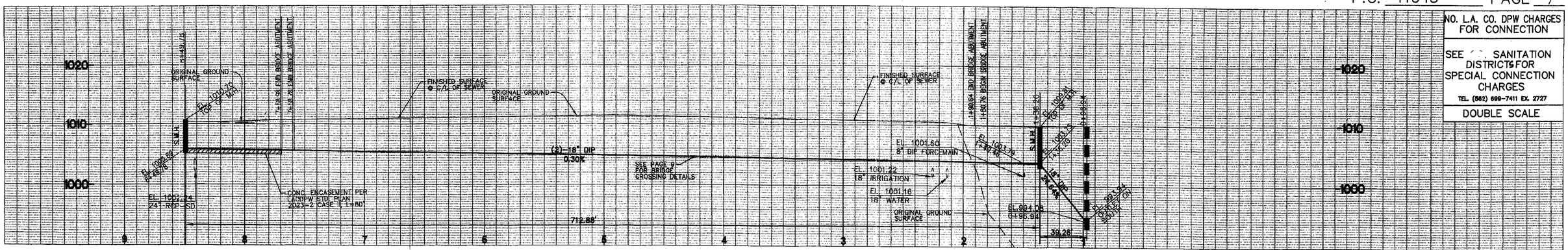
BC 1142 MAP 2023 ③

JN 0610
NOV 0 7 2007 OCT 3 1 2007 I:CAD\0610\SEWER\SHEET-03.dwg

NO. L.A. CO. DPW CHARGES FOR CONNECTION

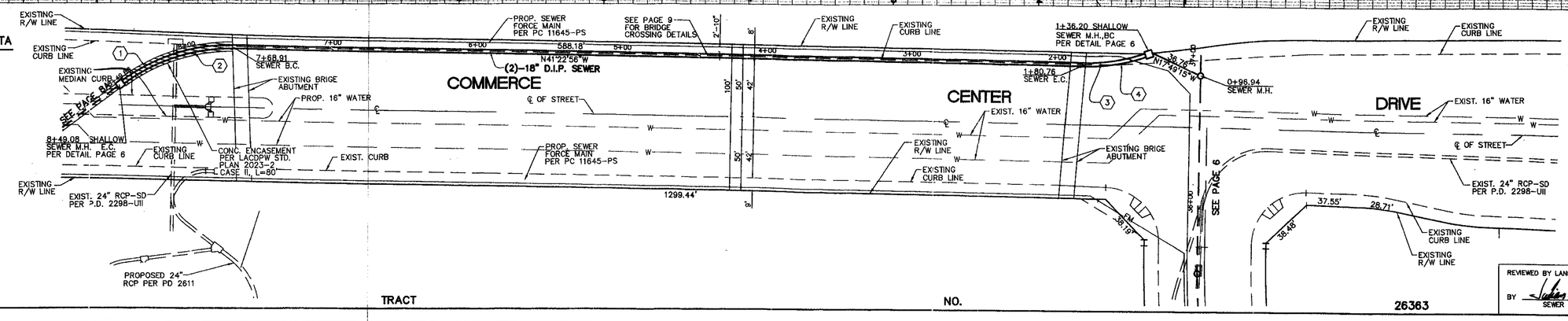
SEE SANITATION DISTRICTS FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

DOUBLE SCALE




## ℄ SEWER CURVE DATA

1. R = 122.50', Δ = 38°07'57", L = 81.53', T = 42.34'
2. R = 120.00', Δ = 38°07'57", L = 79.86', T = 41.47'
3. R = 120.00', Δ = 20°17'44", L = 42.51', T = 21.48'
4. R = 117.51', Δ = 20°17'44", L = 41.62', T = 21.03'




PLAN
SCALE: 1" = 40'

25 50 100

REVIEWED BY LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPE SECTION 10-25-07 DATE

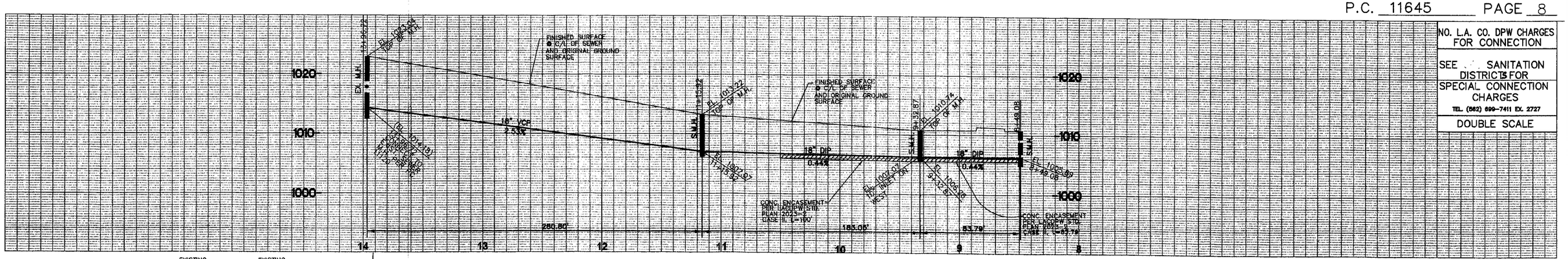
TRACT NO. 26363

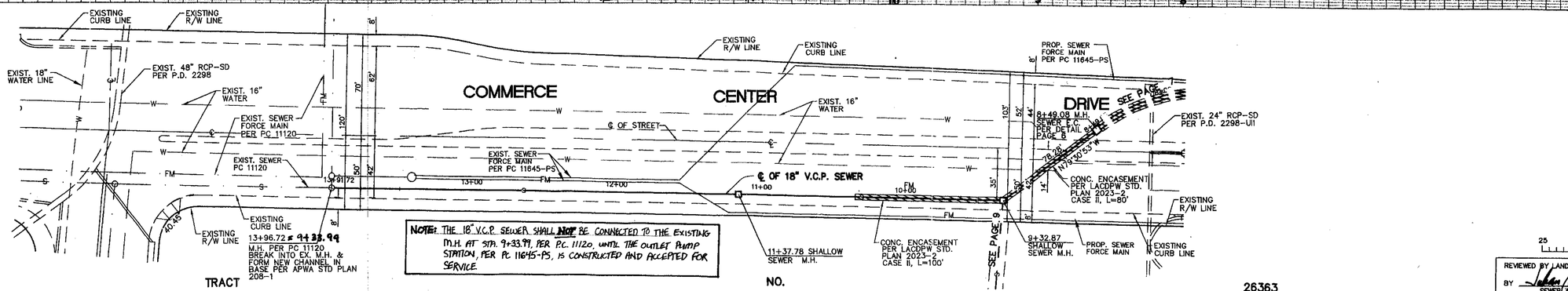


NO. L.A. CO. DPW CHARGES FOR CONNECTION

SEE SANITATION DISTRICTS FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

DOUBLE SCALE




NOTE: THE 18" V.C.P. SEWER SHALL NOT BE CONNECTED TO THE EXISTING M.H. AT STA. 9+33.99, PER P.C. 11120, UNTIL THE OUTLET PUMP STATION, PER P.C. 11645-PS, IS CONSTRUCTED AND ACCEPTED FOR SERVICE.

PLAN
SCALE: 1" = 40'

25 0 50 100

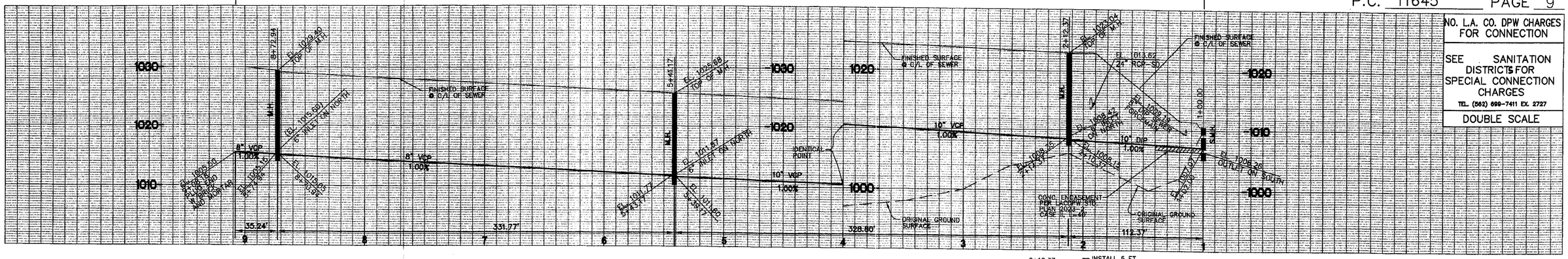
REVIEWED BY LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPE SECTION 10-25-07 DATE

TRACT NO. 26363

JN 0610 NOV 07 2007 OCT 31 2007 I:CAD\0610\SEWER\SHEET-04.DWG

SEE CONSTRUCTION NOTE NO. 11 ON PAGE 1 REGARDING COMPACTION

P.C. 11645 PAGE 9

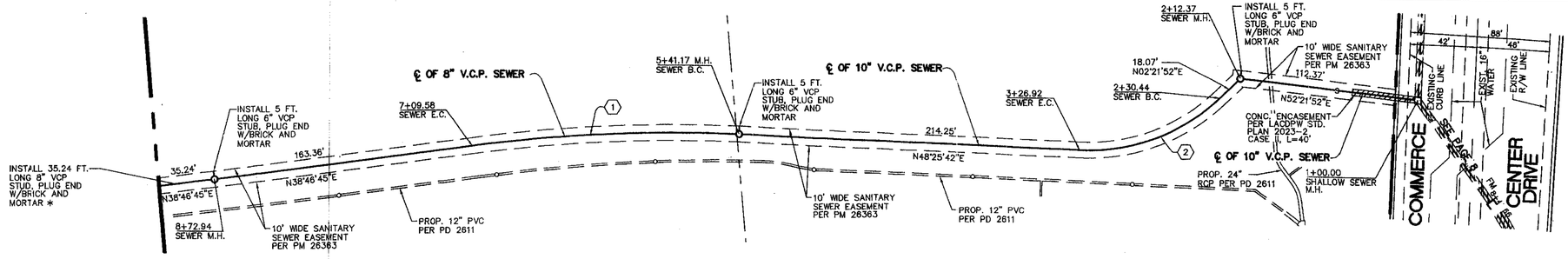



## ℄ SEWER CURVE DATA

(1) R = 1000.00'
Δ = 09°38'57"
L = 168.41'
T = 84.40'

(2) R = 120.00'
Δ = 46°03'50"
L = 96.48'
T = 51.02'

* ISSUE NO HOUSE LATERAL CONNECTION PERMITS. MAINLINE MUST BE EXTENDED AND MANHOLE CONSTRUCTED.




PLAN
SCALE: 1" = 40'

25 50 100

REVIEWED BY LAND DEVELOPMENT DIVISION
BY Julian Gomez 10-25-07
SEWER AND WATER/LANDSCAPE SECTION DATE

TRACT NO. 26363

I:CAD\0610\SEWER\SHEET-04.DWG

NO. L.A. CO. DPW CHARGES FOR CONNECTION

SEE SANITATION DISTRICTS FOR SPECIAL CONNECTION CHARGES
TEL. (562) 699-7411 EX. 2727

DOUBLE SCALE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-08 CIVIL STATE OF CALIFORNIA

PC 11645 MAP SCALE ②

P.C. 11645 PAGE

NO. L.A. CO. DPW CHARGES FOR CONNECTION

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DOUBLE SCALE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-08 CIVIL STATE OF CALIFORNIA

PLAN
SCALE: 1" = 40'

25 0 50 100

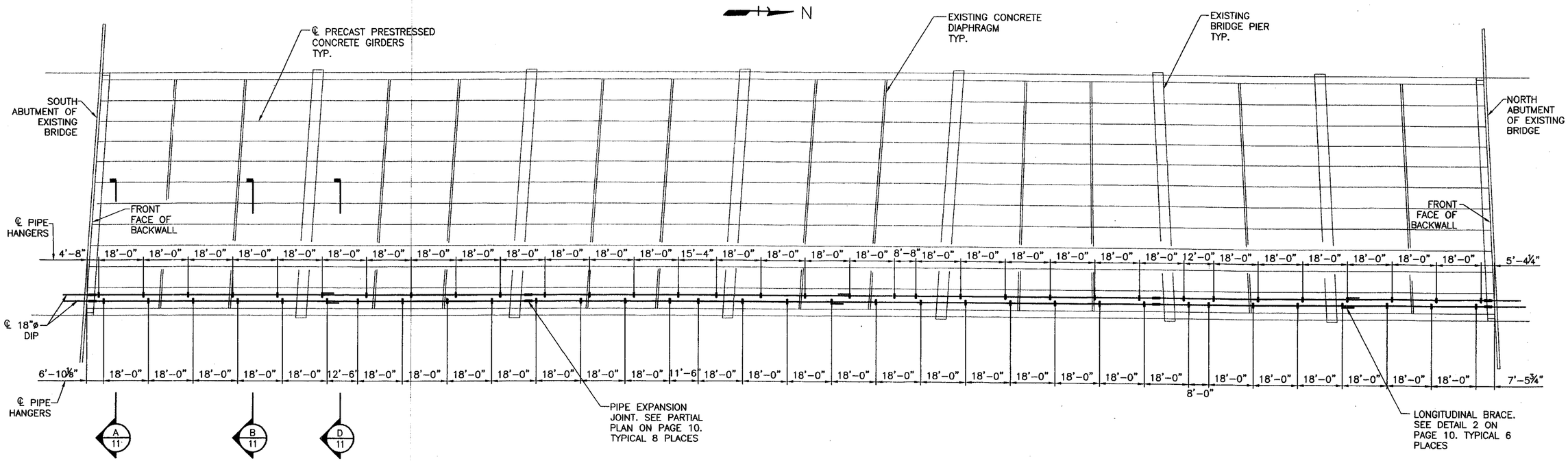
REVIEWED BY LAND DEVELOPMENT DIVISION
BY Julian Gomez 10-25-07
SEWER AND WATER/LANDSCAPE SECTION DATE

JN 0610

NOV 07 2007

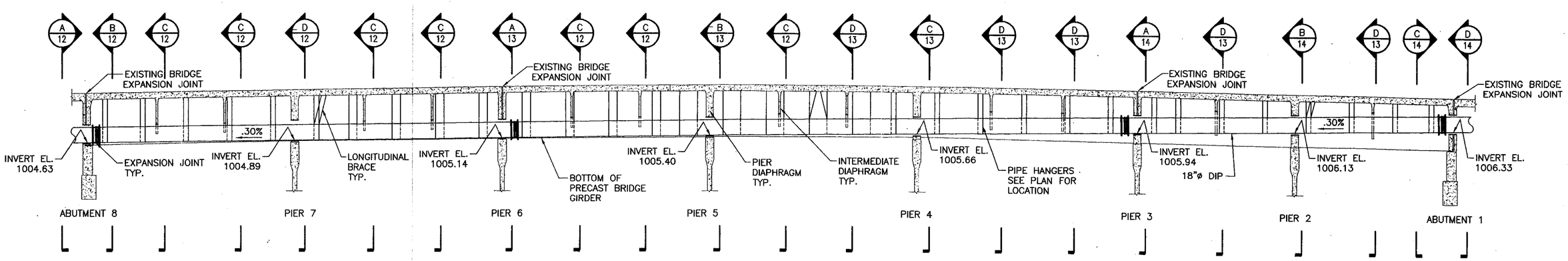
I:CAD\0610\SEWER\SHEET-05.DWG

OCT 31 2007




## PLAN EXISTING BRIDGE – COMMERCE CENTER DR. OVER CASTAIC CREEK

SCALE: 1" = 20'




## PROFILE 18"ø DUCTILE IRON PIPES

VERTICAL SCALE EXAGGERATED

CONSTRUCTION NOTES:

1. DO NOT DAMAGE EXISTING REINFORCEMENT BARS. EXISTING REINFORCEMENT BARS WITHIN NEW CONCRETE SHALL BE PROTECTED IN PLACE.
2. REINFORCEMENT BARS SHALL BE CUT FLUSH WITH THE SURFACE OF THE NEW OPENING AND THE EXPOSED END OF THE BARS SHALL BE BURNED OFF 1" BELOW THE SURFACE OF THE CONCRETE AND THE VOID SHALL BE FILLED WITH EPOXY.
3. IF REINFORCEMENT BARS ARE ENCOUNTERED DURING THE DRILLING FOR THE PIPE SUPPORT, THE SUPPORT BRACKET SHALL BE SHIFTED TO AVOID REINFORCEMENTS, AND THE PRIOR HOLE DRILLED SHALL BE FILLED WITH EPOXY.

GENERAL NOTES:

1. CONCRETE FOR EDGE BEAMS SHALL BE A 4000 PSI MIX WITH ⅜" MAXIMUM AGGREGATE SIZE. THE CONCRETE SHALL HAVE A MAXIMUM SLUMP OF 2". A SUPERPLASTICIZER SHALL BE ADDED BEFORE PLACING THE CONCRETE TO INCREASE THE SLUMP TO 8".
2. ALL REINFORCEMENT STEEL SHALL BE ASTM DESIGNATION A615 GRADE 60.


R2H ENGINEERING, INC.
CONSULTING STRUCTURAL ENGINEERS
17150 VIA DEL CAMPO, SUITE 306
SAN DIEGO, CA 92127
PHONE (858) 673-8416
FAX (858) 673-8418


REVIEWED DESIGN DIVISION
BY STRUCTURES I SECTION 10-25-07 DATE

REVIEWED LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPING SECTION 10-25-07 DATE

| NO. | REVISIONS | REVISED BY | APPROVED BY | DATE |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

REGISTERED PROFESSIONAL ENGINEER
DANIEL WEINGART
No. S3616
Exp. 6/30/09
STRUCTURAL
STATE OF CALIFORNIA
PROJECT ENGINEER 10/25/07 DATE

T.G.P.4549 GRID H1

# 18" DIP BRIDGE CROSSING

## SANITARY SEWER PLANS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS


PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACE CT.
SUITE 130
CARLSBAD, CA 92008
TEL: (760) 431-9896
E-MAIL: cwhitteker@allianceeng.com


TRACT NO. 26363



NOV 0 7 2007

OCT 3 1 2007

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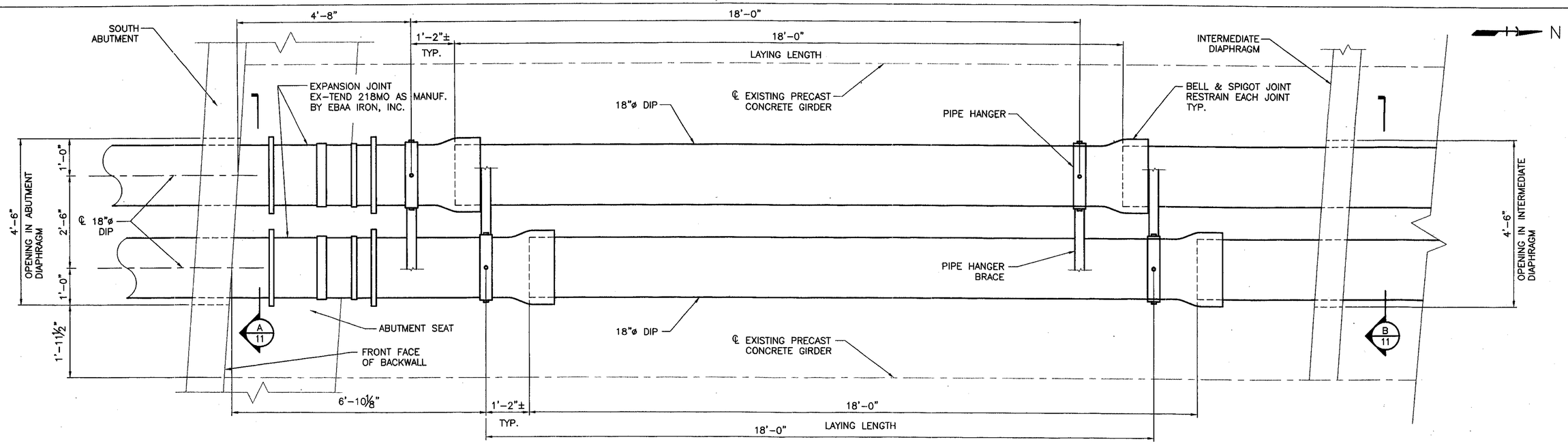
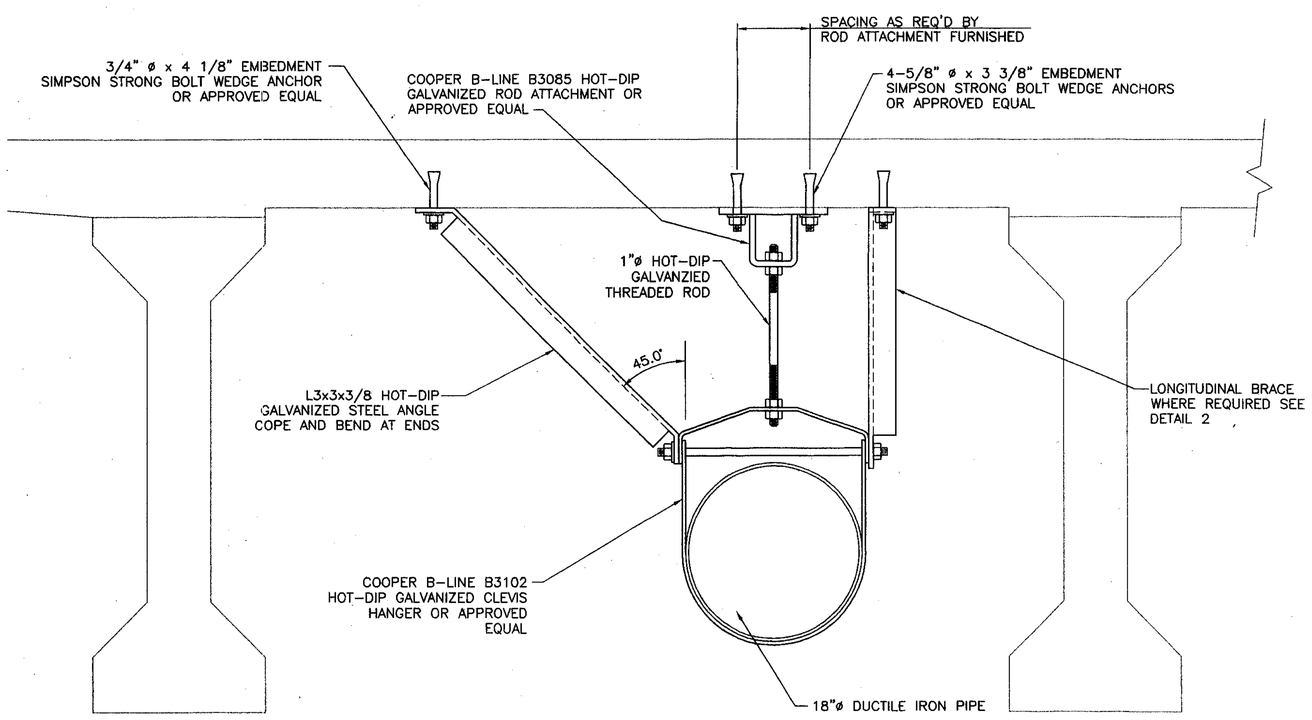


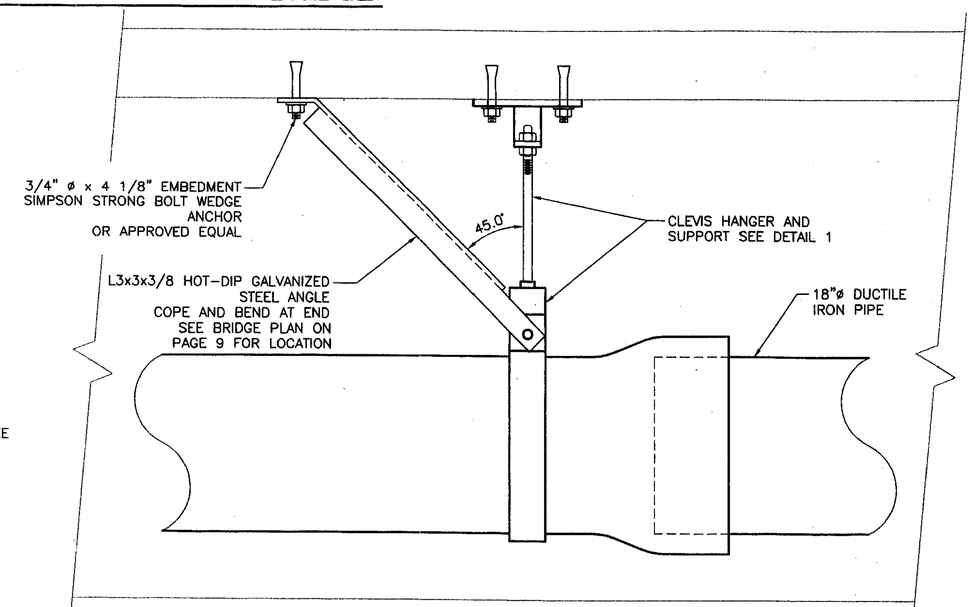

## PARTIAL PLAN AT SOUTHEAST CORNER OF BRIDGE

SCALE: 3/4" = 1'-0"




## TYPICAL PIPE SUPPORT AND HORIZONTAL BRACE DETAIL (1/10)

SCALE: 1 1/2" = 1'-0"




## TYPICAL LONGITUDINAL BRACE DETAIL (2/10)

SCALE: 1 1/2" = 1'-0"

T.G.P.4549 GRID H1

# 18" DIP BRIDGE CROSSING DETAILS

## SANITARY SEWER PLANS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS


$R_2H$ ENGINEERING, INC.
CONSULTING STRUCTURAL ENGINEERS
17150 VIA DEL CAMPO, SUITE 306
SAN DIEGO, CA 92127
PHONE (858) 673-8416
FAX (858) 673-8418


REVIEWED DESIGN DIVISION
BY [signature] STRUCTURES I SECTION 10-25-07 DATE

REVIEWED LAND DEVELOPMENT DIVISION
BY [signature] SEWER AND WATER/LANDSCAPING SECTION 10-25-07 DATE

| NO. | REVISIONS | REVISED BY | APPROVED BY | DATE |
|---|---|---|---|---|
| | | | | |

REGISTERED PROFESSIONAL ENGINEER DANIEL WEINGART No. S3616 Exp. 6/30/07 STRUCTURAL STATE OF CALIFORNIA

[signature] PROJECT ENGINEER 10/15/07 DATE

PLANS PREPARED BY:


ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACE CT.
SUITE 130
CARLSBAD, CA 92008
TEL: (760) 431-9896
E-MAIL: cwhitteker@allianceeng.com

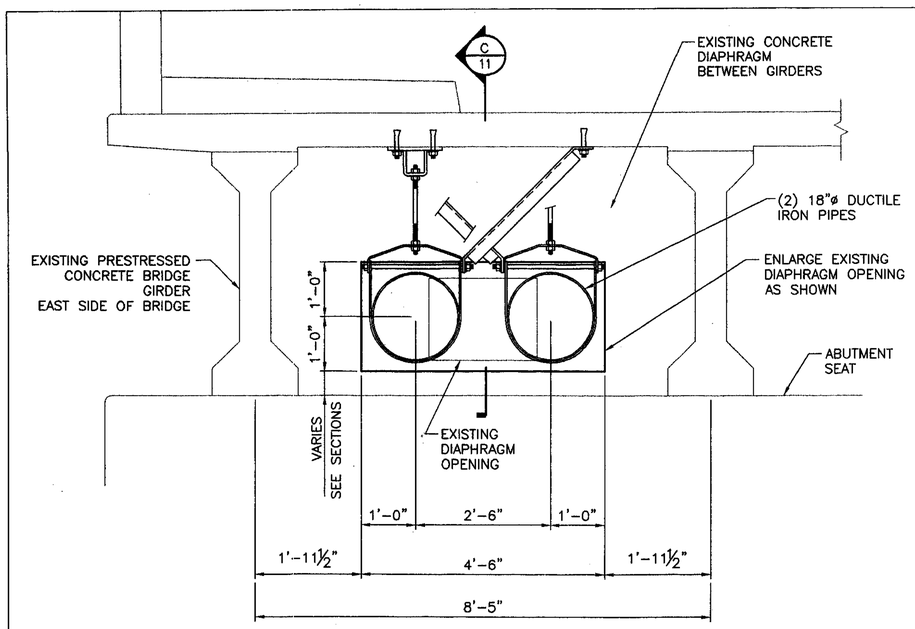

TRACT NO. 26363



NOV 07 2007

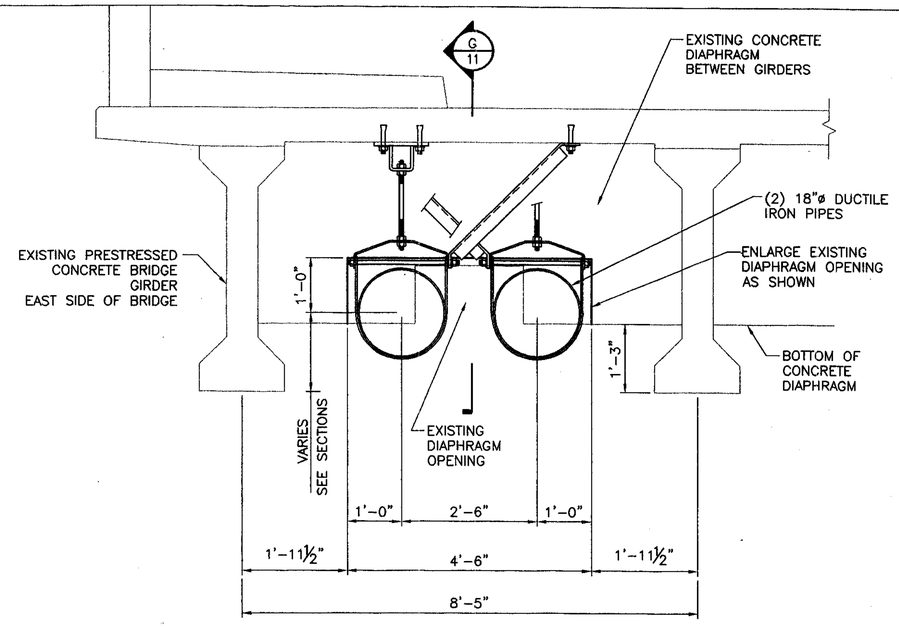
OCT 31 2007

P.C. 11645 PARCEL MAP NO. 28383



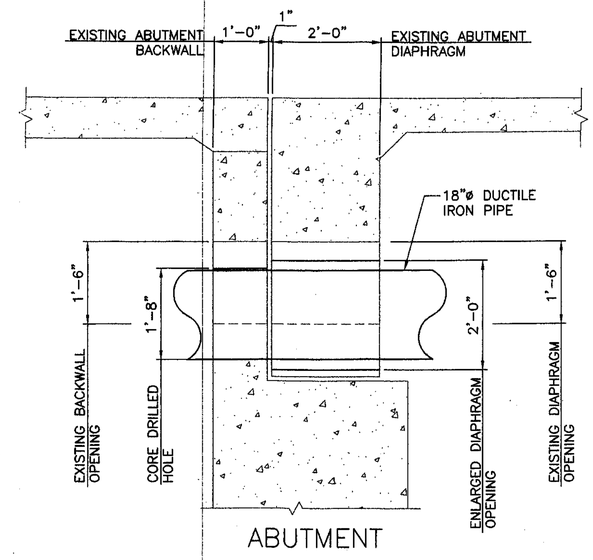

## TYPICAL SECTION AT ABUTMENTS (A/11)

SCALE: 3/4" = 1'-0"



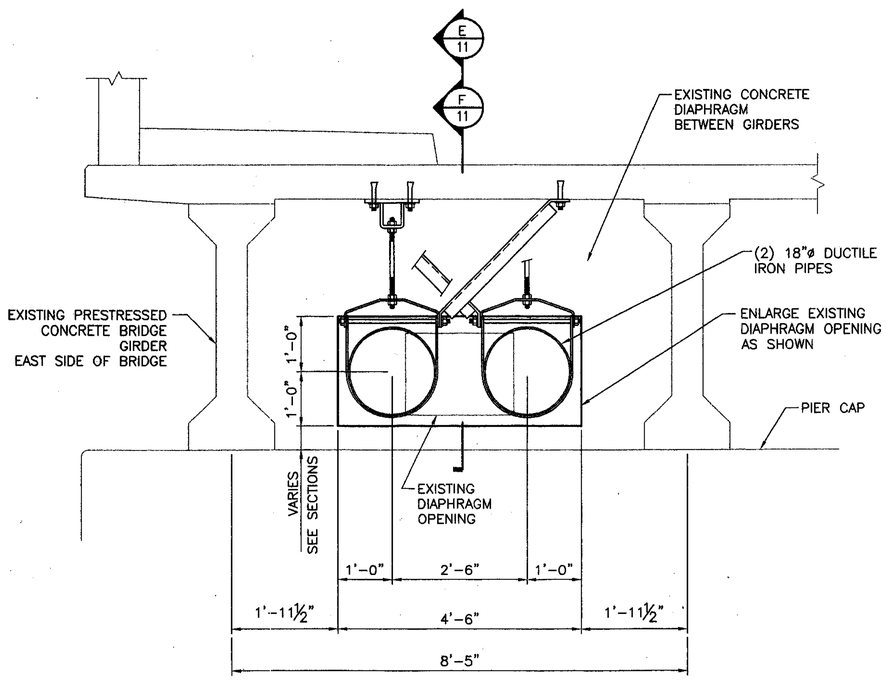

## TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS (B/11)

SCALE: 3/4" = 1'-0"



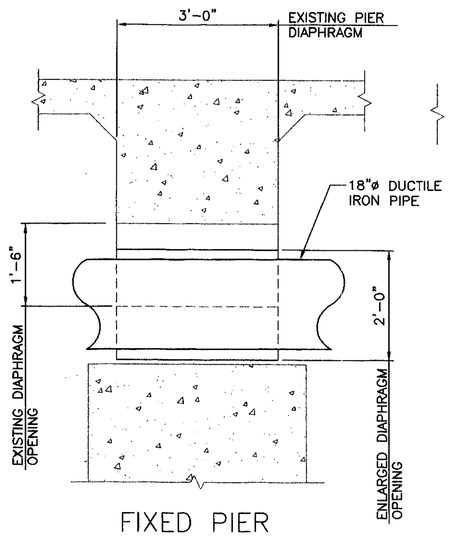

## SECTION (C/11)

SCALE: 3/4" = 1'-0"



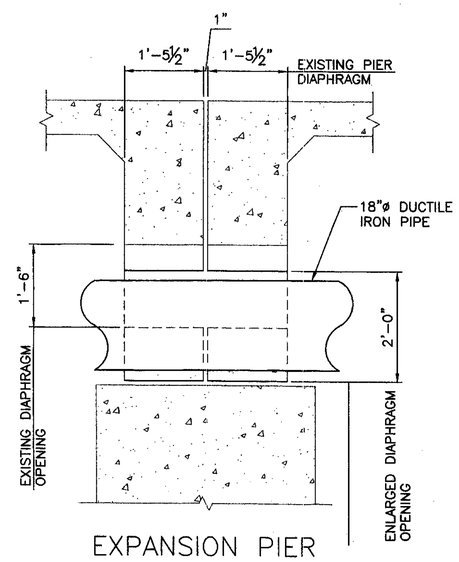

## TYPICAL SECTION AT PIERS (D/11)

SCALE: 3/4" = 1'-0"



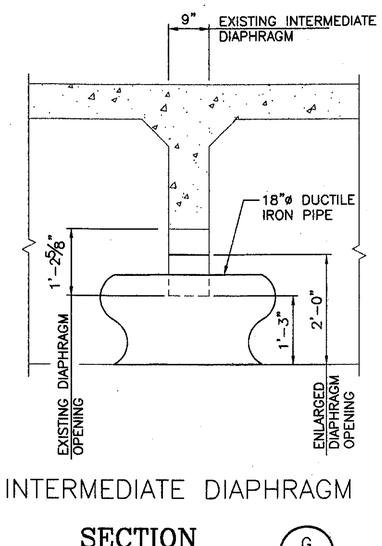

## SECTION (E/11)

SCALE: 3/4" = 1'-0"




## SECTION (F/11)

SCALE: 3/4" = 1'-0"




## SECTION (G/11)

SCALE: 3/4" = 1'-0"

T.G.P.4549 GRID H1


R2H ENGINEERING, INC.
CONSULTING STRUCTURAL ENGINEERS
17150 VIA DEL CAMPO, SUITE 306
SAN DIEGO, CA 92127
PHONE (858) 673-8416
FAX (858) 673-8418


REVIEWED DESIGN DIVISION
BY STRUCTURES I SECTION 10-25-07 DATE

REVIEWED LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPING SECTION 10-26-07 DATE

| NO. | REVISIONS | REVISED BY | APPROVED BY | DATE |
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REGISTERED PROFESSIONAL ENGINEER DANIEL WEINGART No. S3616 Exp. 6/30/08 STRUCTURAL STATE OF CALIFORNIA
PROJECT ENGINEER 10/15/07 DATE

# 18" DIP BRIDGE CROSSING DETAILS

SANITARY SEWER PLANS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

PLANS PREPARED BY:


ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACE CT.
SUITE 130
CARLSBAD, CA 92008
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TRACT NO. 26363



NOV 0 7 2007

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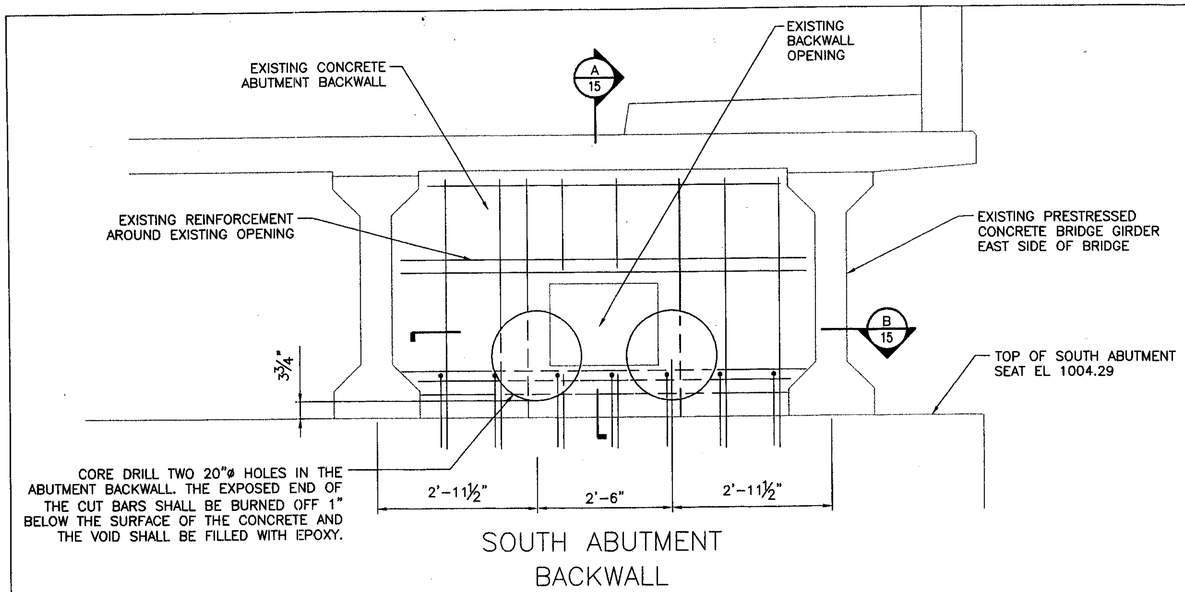
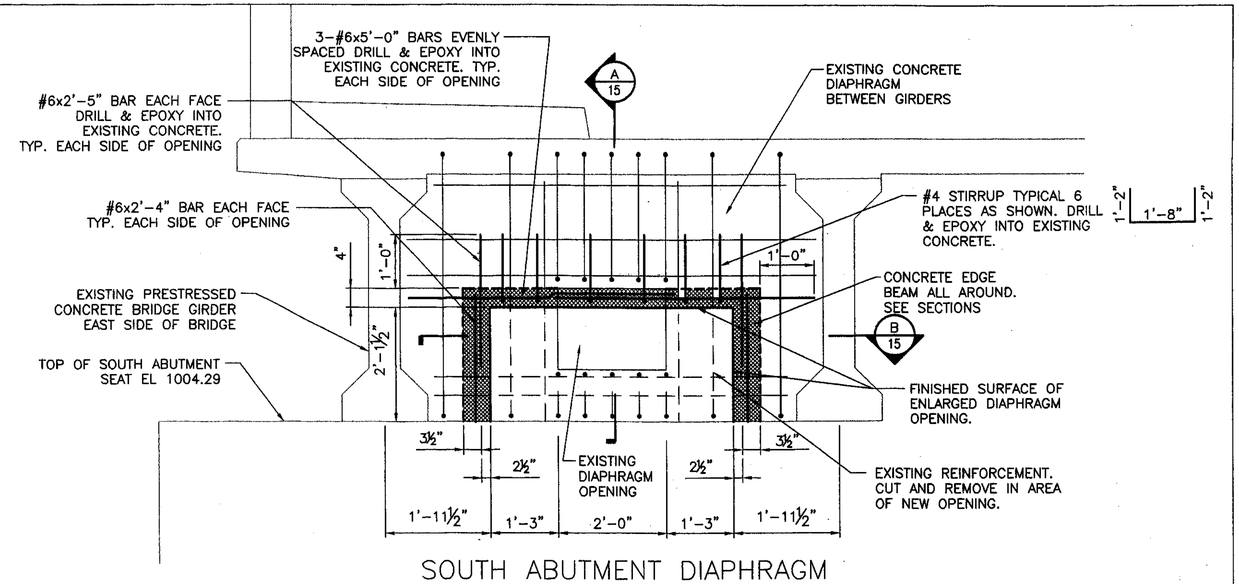
P.C. 11845 PARCEL MAP NO. 26363 (8)




SOUTH ABUTMENT BACKWALL

## SECTION A/12

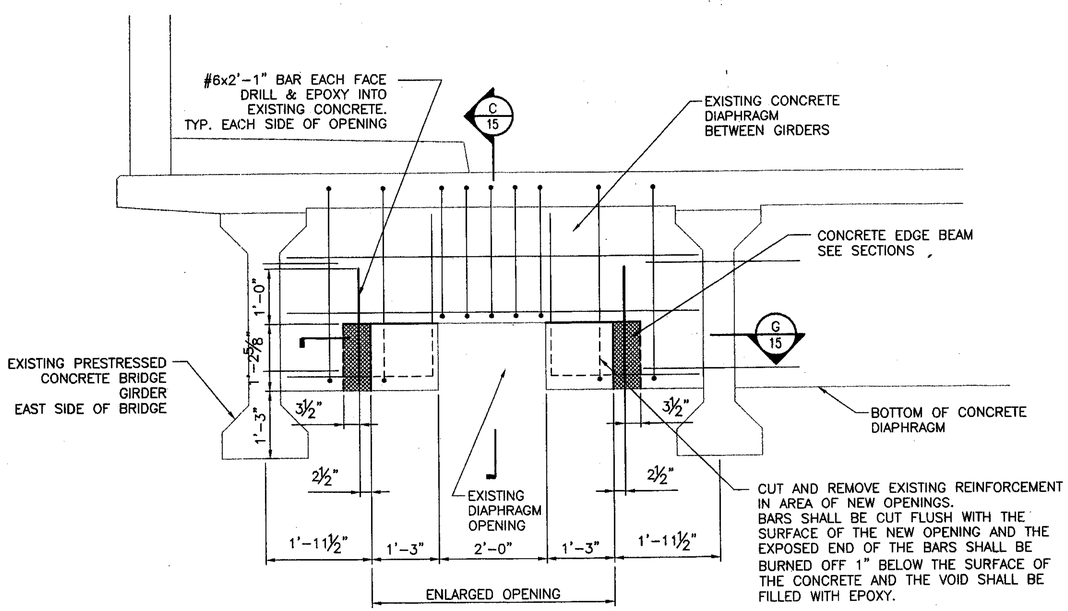
SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN




SOUTH ABUTMENT DIAPHRAGM

## SECTION B/12

SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN

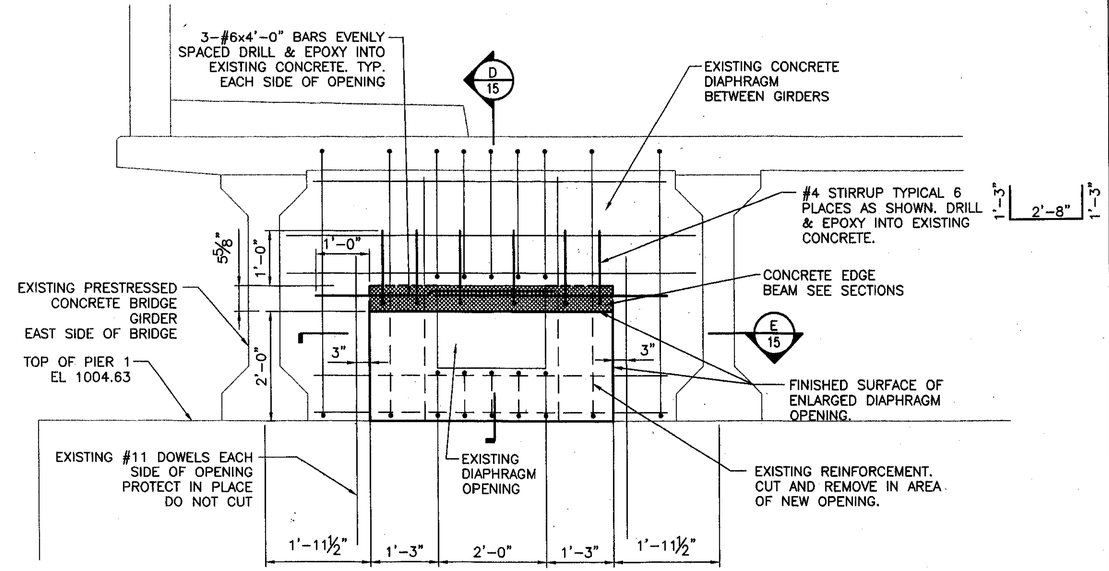



INTERMEDIATE DIAPHRAGM

(APPLIES TO INTERMEDIATE DIAPHRAGMS AT SECTIONS LOCATED AS SHOWN ON THE PIPE PROFILE ON PAGE 9)

## SECTION C/12

SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN




PIER 7 DIAPHRAGM

## SECTION D/12

SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN

T.G.P.4549 GRID H1

# 18" DIP BRIDGE CROSSING SECTIONS

## SANITARY SEWER PLANS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

PLANS PREPARED BY:

ALLIANCE
LAND PLANNING & ENGINEERING INC.
5962 LAPLACE CT.
SUITE 130
CARLSBAD, CA 92008
TEL: (760) 431-9896
E-MAIL: cwhitteker@allianceeng.com

TRACT NO. 26363 PAGE 13

| NO. | REVISIONS | REVISED BY | APPROVED BY | DATE |
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REVIEWED DESIGN DIVISION
BY STRUCTURES I SECTION 10-25-07 DATE

REVIEWED LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPING SECTION 10-25-07 DATE

REGISTERED PROFESSIONAL ENGINEER DANIEL WEINGART No. S3616 Exp. 6/30/09 STRUCTURAL STATE OF CALIFORNIA
PROJECT ENGINEER 10/15/07 DATE

R2H ENGINEERING, INC.
CONSULTING STRUCTURAL ENGINEERS
17150 VIA DEL CAMPO, SUITE 306
SAN DIEGO, CA 92127
PHONE (858) 673-8416
FAX (858) 673-8418

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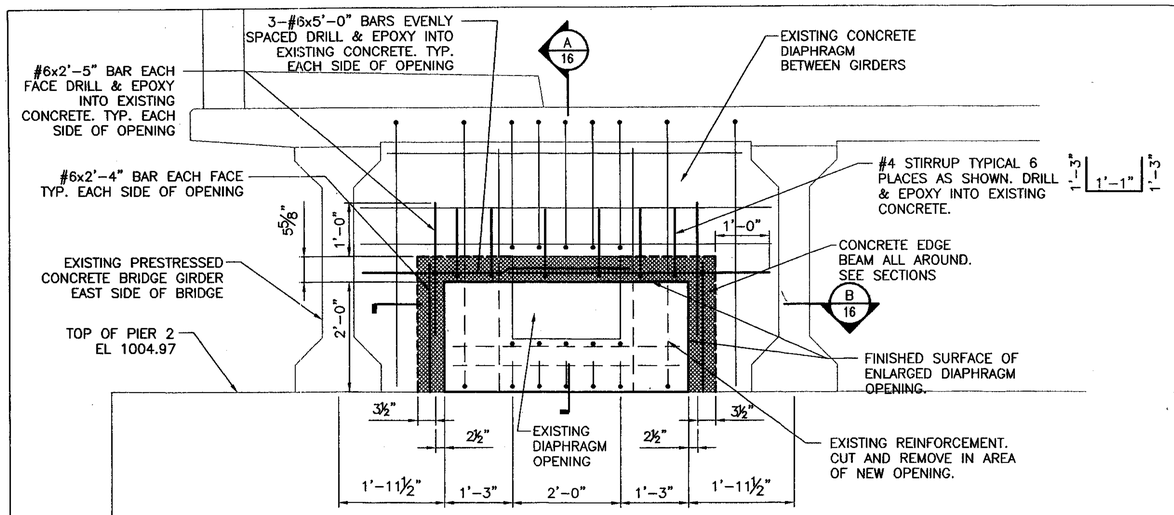
P.C. 11984 PAGE NO. 2383 ©

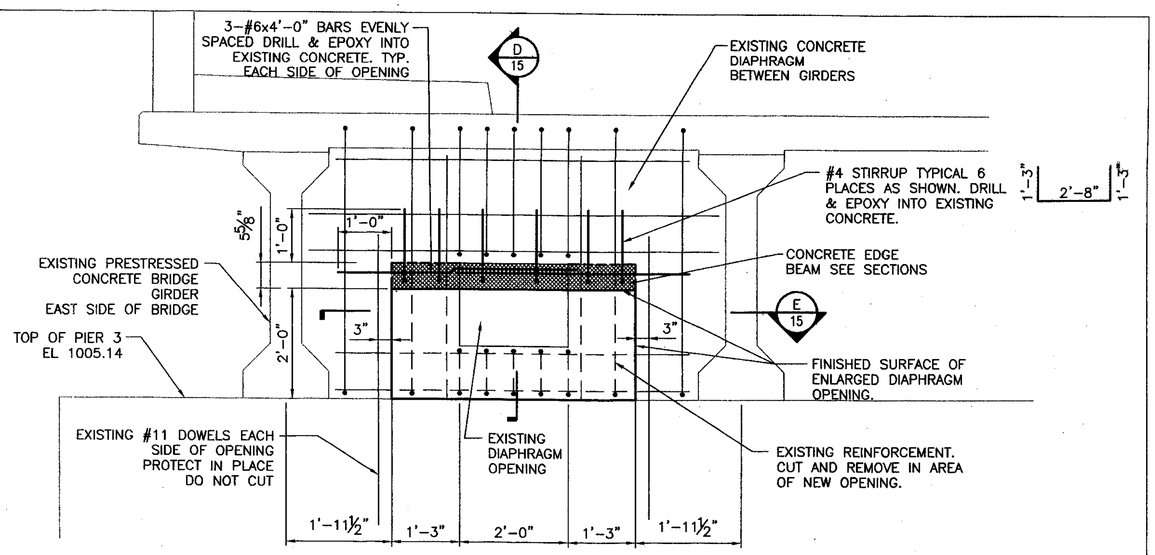



PIER 6 DIAPHRAGM AT EXPANSION JOINT

REINFORCEMENT SHOWN IS TYPICAL IN 2 DIAPHRAGMS. ONE ON EACH SIDE OF EXPANSION JOINT. SEE SECTIONS

## SECTION A/13

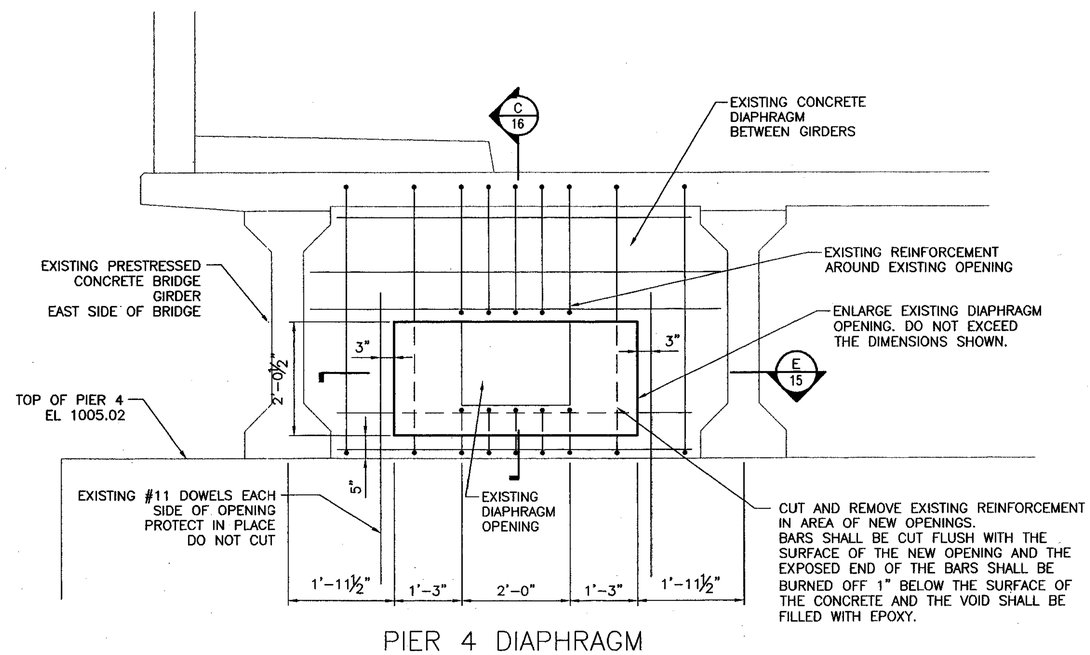
SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN




PIER 5 DIAPHRAGM

## SECTION B/13

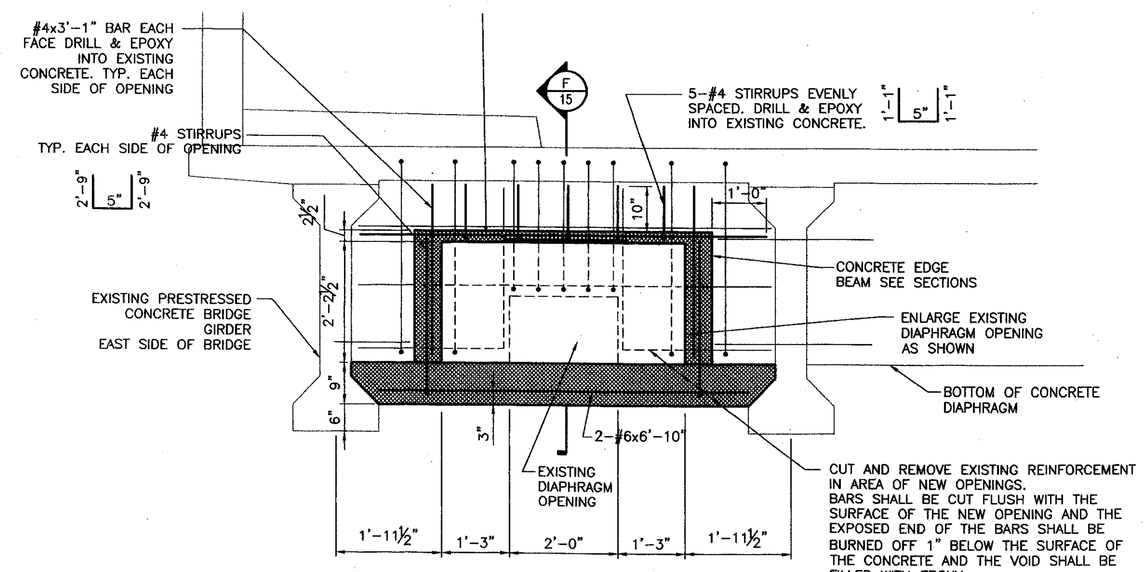
SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN




PIER 4 DIAPHRAGM

## SECTION C/13

SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN




INTERMEDIATE DIAPHRAGM

(APPLIES TO INTERMEDIATE DIAPHRAGMS AT SECTIONS LOCATED AS SHOWN ON THE PIPE PROFILE ON PAGE 9)

## SECTION D/13

SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN

T.G.P.4549 GRID H1

# 18" DIP BRIDGE CROSSING SECTIONS

## SANITARY SEWER PLANS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS


$R_2H$ ENGINEERING, INC.
CONSULTING STRUCTURAL ENGINEERS
17150 VIA DEL CAMPO, SUITE 306
SAN DIEGO, CA 92127
PHONE (858) 673-8416
FAX (858) 673-8418


REVIEWED DESIGN DIVISION
BY [signature] STRUCTURES I SECTION 10-25-07 DATE

REVIEWED LAND DEVELOPMENT DIVISION
BY [signature] SEWER AND WATER/LANDSCAPING SECTION 10-25-07 DATE

| NO. | REVISIONS | REVISED BY | APPROVED BY | DATE |
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REGISTERED PROFESSIONAL ENGINEER DANIEL WEINGART No. 53616 Exp. 6/30/09 STRUCTURAL STATE OF CALIFORNIA
[signature] PROJECT ENGINEER 10/15/07 DATE

PLANS PREPARED BY:


ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACE CT.
SUITE 130
CARLSBAD, CA 92008
TEL: (760) 431-9896
E-MAIL: cwhitteker@allianceeng.com


TRACT NO. 26363 PAGE 14

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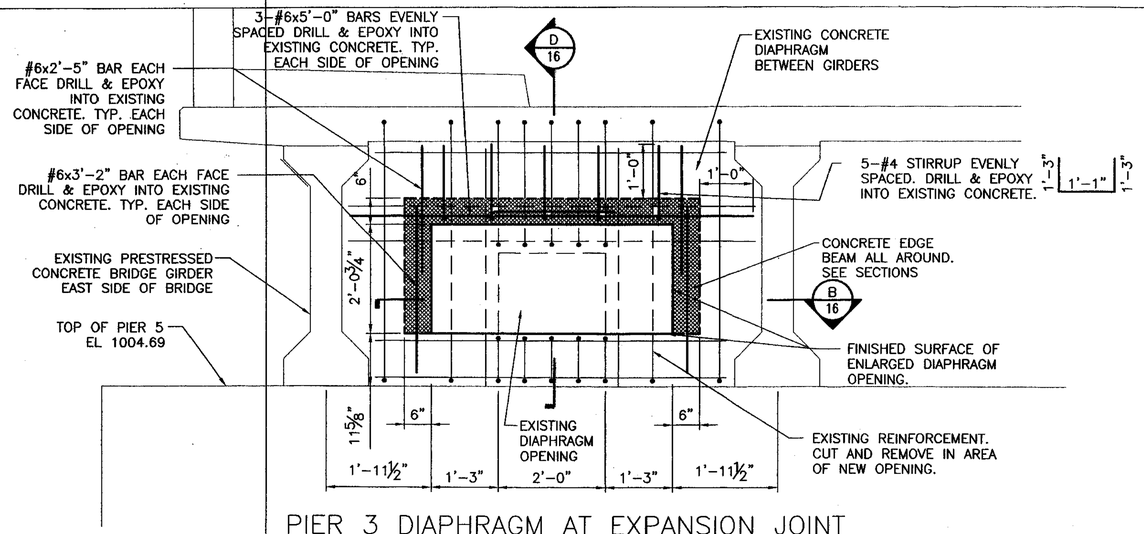
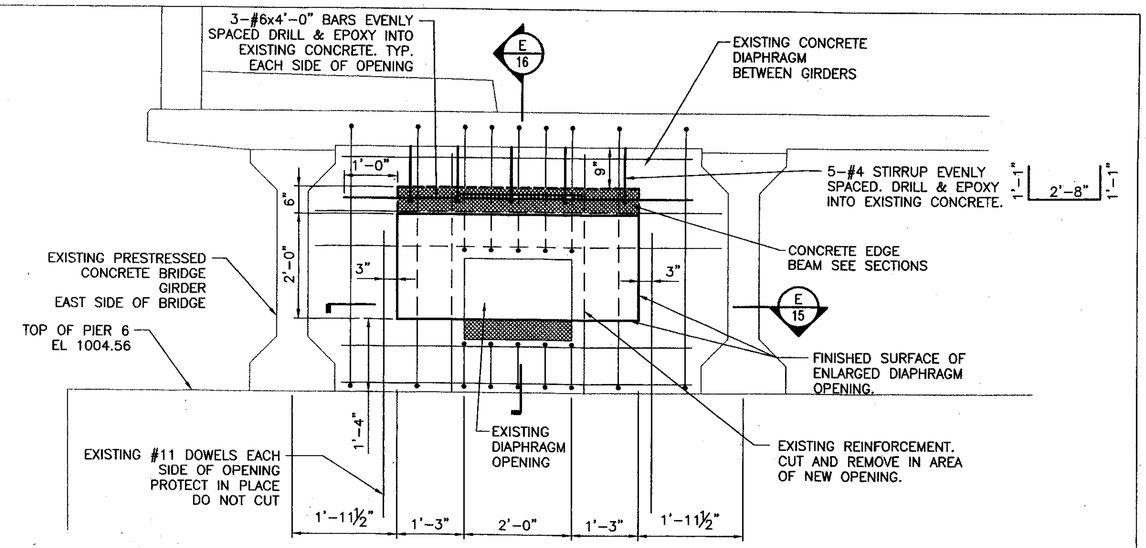
PROJECT NO. 26363




PIER 3 DIAPHRAGM AT EXPANSION JOINT

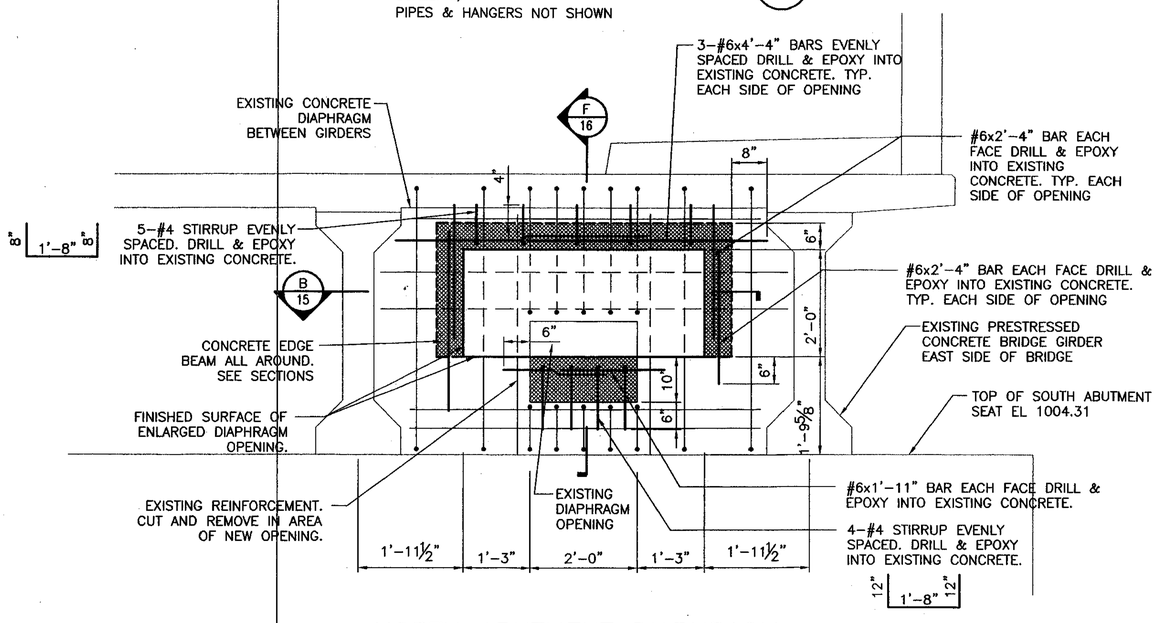
REINFORCEMENT SHOWN IS TYPICAL IN 2 DIAPHRAGMS. ONE ON EACH SIDE OF EXPANSION JOINT. SEE SECTIONS




PIER 2 DIAPHRAGM

## SECTION A/14

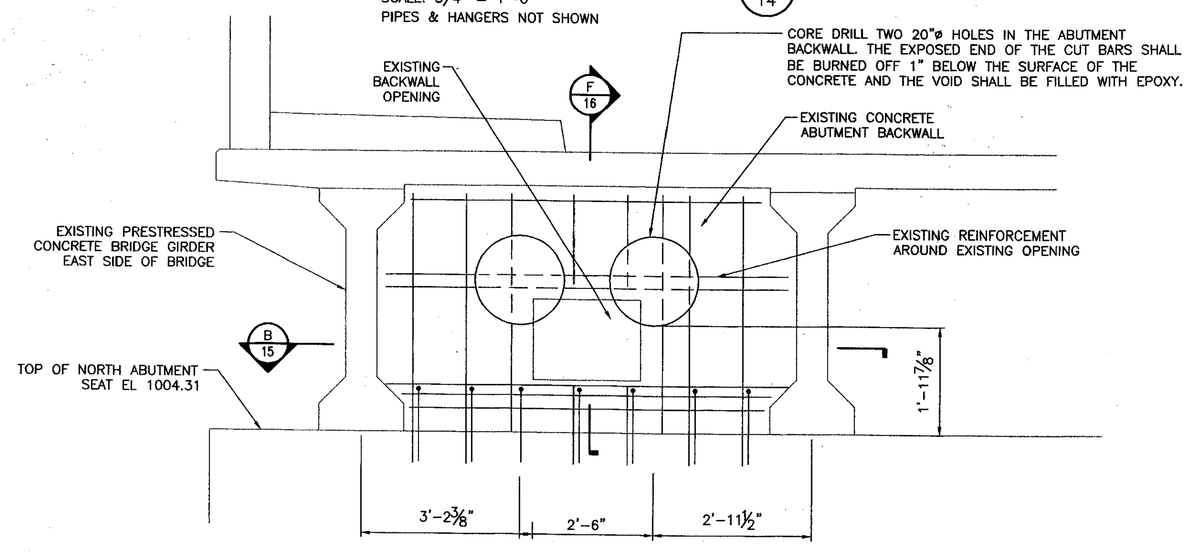
SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN




NORTH ABUTMENT DIAPHRAGM
ABUTMENT 1

## SECTION B/14

SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN




NORTH ABUTMENT
BACKWALL

## SECTION C/14

SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN

## SECTION D/14

SCALE: 3/4" = 1'-0"
PIPES & HANGERS NOT SHOWN

T.G.P.4549 GRID H1

# 18" DIP BRIDGE CROSSING SECTIONS

## SANITARY SEWER PLANS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

PLANS PREPARED BY:

ALLIANCE LAND PLANNING & ENGINEERING INC.
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TRACT NO. 26363 PAGE 15

R2H ENGINEERING, INC.
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SAN DIEGO, CA 92127
PHONE (858) 673-8416
FAX (858) 673-8418

REVIEWED DESIGN DIVISION
BY STRUCTURES I SECTION 10-25-07

REVIEWED LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPING SECTION DATE 10-25-07

| NO. | REVISIONS | REVISED BY | APPROVED BY | DATE |
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REGISTERED PROFESSIONAL ENGINEER DANIEL WEINGARD No. S3616 Exp. 6/30/08 STRUCTURAL STATE OF CALIFORNIA
PROJECT ENGINEER 10/15/07 DATE

NOV 0 7 2007

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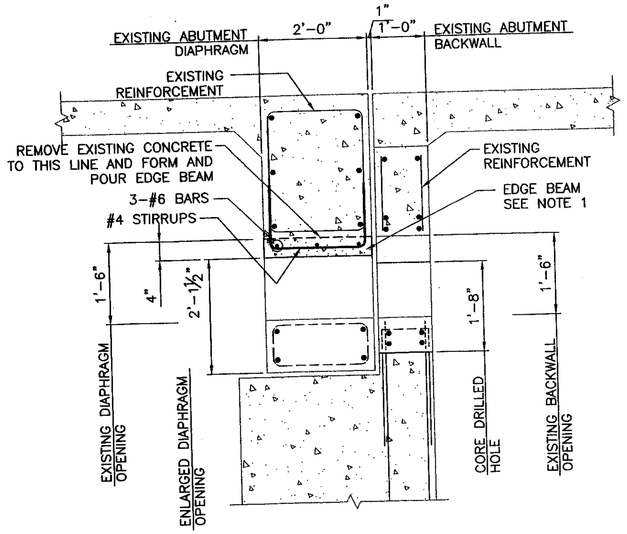
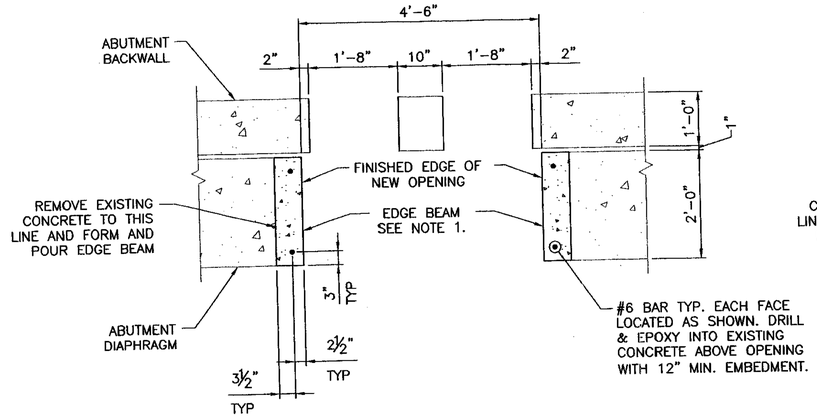
P.C.P. JIT 2982 PARCEL MAP NO. 26363



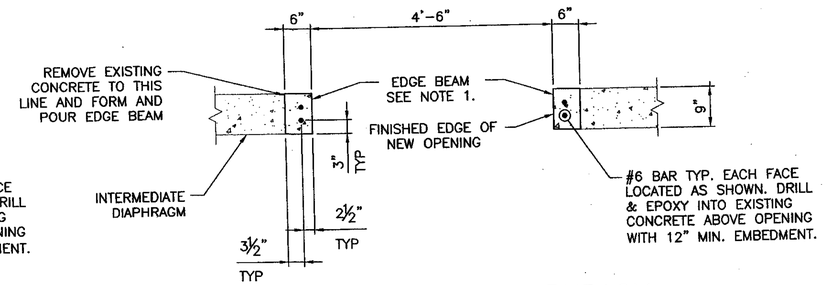

SOUTH ABUTMENT

**SECTION** A/15
SCALE: 3/4" = 1'-0"



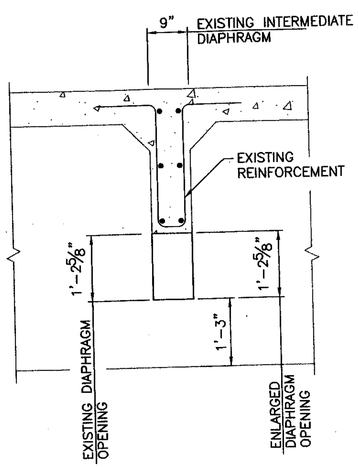

ABUTMENTS

**SECTION** B/15
SCALE: 3/4" = 1'-0"



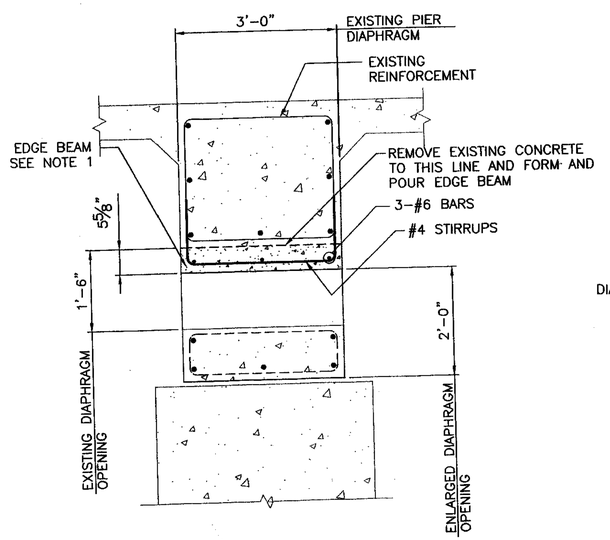

INTERMEDIATE DIAPHRAGM

**SECTION** G/15
SCALE: 3/4" = 1'-0"



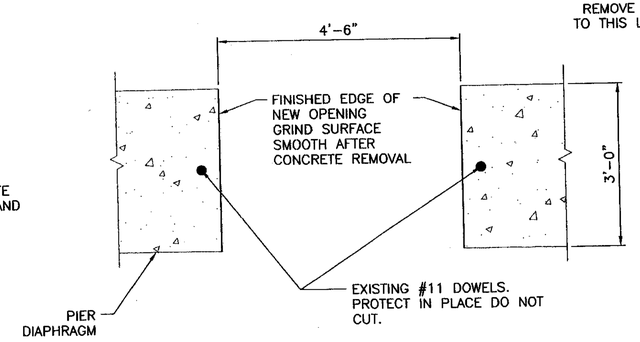

INTERMEDIATE DIAPHRAGM

**SECTION** C/15
SCALE: 3/4" = 1'-0"



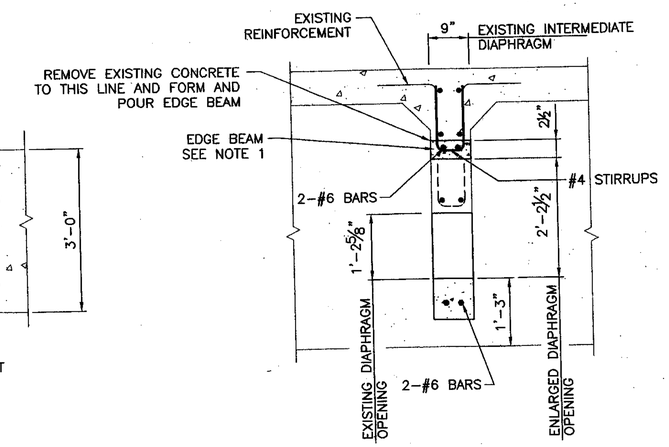

FIXED PIER

**SECTION** D/15
SCALE: 3/4" = 1'-0"




FIXED PIER

**SECTION** E/15
SCALE: 3/4" = 1'-0"




INTERMEDIATE DIAPHRAGM

**SECTION** F/15
SCALE: 3/4" = 1'-0"

NOTES

1. CONCRETE FOR EDGE BEAMS SHALL BE A 4000 PSI MIX WITH ⅜" MAXIMUM AGGREGATE SIZE. THE CONCRETE SHALL HAVE A MAXIMUM SLUMP OF 2". A SUPERPLASTICIZER SHALL BE ADDED BEFORE PLACING THE CONCRETE TO INCREASE THE SLUMP TO 8".

T.G.P.4549 GRID H1

**18" DIP BRIDGE CROSSING SECTIONS**

**SANITARY SEWER PLANS**

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

PLANS PREPARED BY:

ALLIANCE LAND PLANNING & ENGINEERING INC.
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TRACT NO. 26363 PAGE 16

R2H ENGINEERING, INC.
CONSULTING STRUCTURAL ENGINEERS
17150 VIA DEL CAMPO, SUITE 306
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PHONE (858) 673-8416
FAX (858) 673-8418

REVIEWED DESIGN DIVISION
BY [signature] STRUCTURES & SECTION 10-25-07 DATE

REVIEWED LAND DEVELOPMENT DIVISION
BY [signature] SEWER AND WATER, LANDSCAPING SECTION 10-26-07 DATE

| NO. | REVISIONS | REVISED BY | APPROVED BY | DATE |
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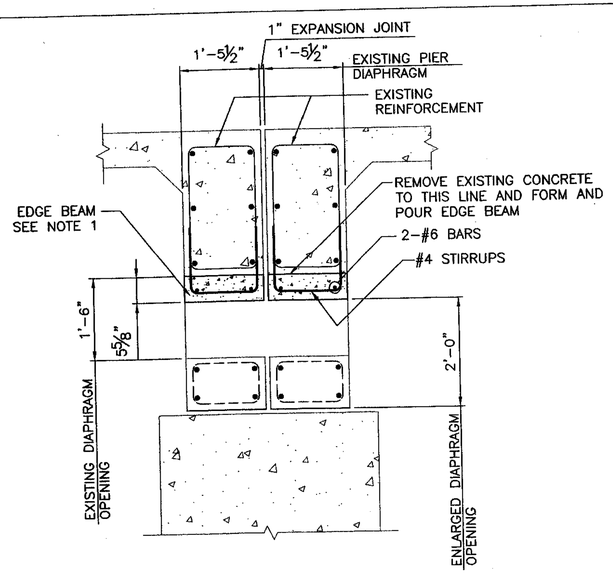
REGISTERED PROFESSIONAL ENGINEER DANIEL WEINGART No. S3616 Exp. 6/30/08 STRUCTURAL STATE OF CALIFORNIA
[signature] PROJECT ENGINEER 10/26/07 DATE

NOV 07 2007

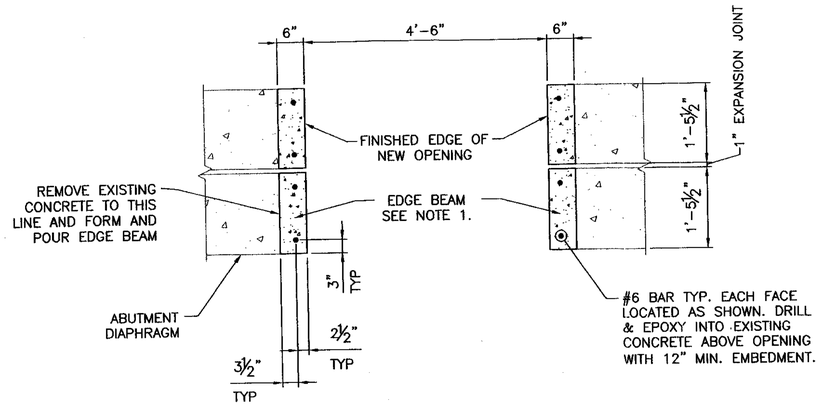
OCT 31 2007

C.G. 1484 PAGE NO. 3282



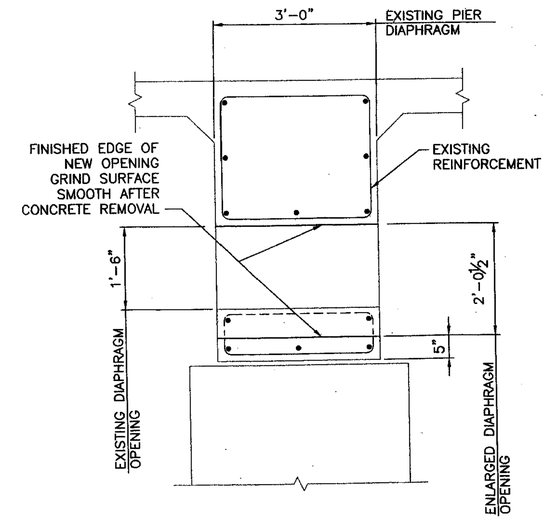

EXPANSION PIER

**SECTION** A/16
SCALE: 3/4" = 1'-0"



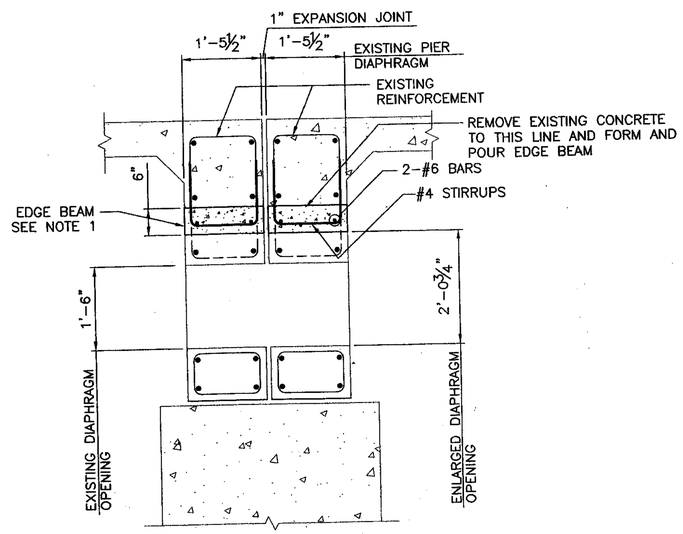

EXPANSION PIER

**SECTION** B/16
SCALE: 3/4" = 1'-0"



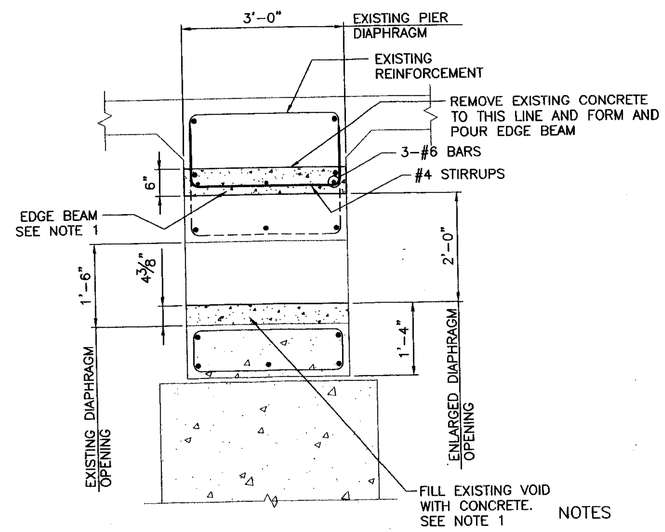

FIXED PIER

**SECTION** C/16
SCALE: 3/4" = 1'-0"



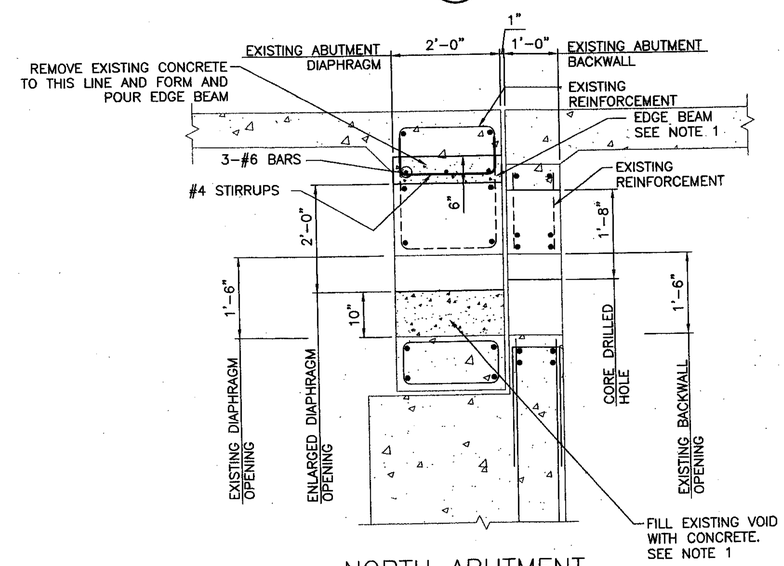

EXPANSION PIER

**SECTION** D/16
SCALE: 3/4" = 1'-0"




FIXED PIER

**SECTION** E/16
SCALE: 3/4" = 1'-0"




NORTH ABUTMENT

**SECTION** F/16
SCALE: 3/4" = 1'-0"

T.G.P.4549 GRID H1

NOTES

1. CONCRETE FOR EDGE BEAMS SHALL BE A 4000 PSI MIX WITH ⅜" MAXIMUM AGGREGATE SIZE. THE CONCRETE SHALL HAVE A MAXIMUM SLUMP OF 2". A SUPERPLASTICIZER SHALL BE ADDED BEFORE PLACING THE CONCRETE TO INCREASE THE SLUMP TO 8".


R2H ENGINEERING, INC.
CONSULTING STRUCTURAL ENGINEERS
17150 VIA DEL CAMPO, SUITE 306
SAN DIEGO, CA 92127
PHONE (858) 673-8416
FAX (858) 673-8418


REVIEWED DESIGN DIVISION
BY STRUCTURES & SECTION — DATE 10-25-07

REVIEWED LAND DEVELOPMENT DIVISION
BY SEWER AND WATER/LANDSCAPING SECTION — DATE 10-25-07

| NO. | REVISIONS | REVISED BY | APPROVED BY | DATE |
|---|---|---|---|---|
| | | | | |

REGISTERED PROFESSIONAL ENGINEER DANIEL WEINGART No. S3616 Exp. 6/30/09 STRUCTURAL STATE OF CALIFORNIA
PROJECT ENGINEER — DATE 10/25/07

# 18" DIP BRIDGE CROSSING SECTIONS

## SANITARY SEWER PLANS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS


PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACE CT.
SUITE 130
CARLSBAD, CA 92008
TEL: (760) 431-9896
E-MAIL: cwhittekar@allianceeng.com


TRACT NO. 26363 — PAGE 17

NOV 07 2007 — OCT 31 2007


P.C. 11984 PLANCHET PLAN ON FILE

# COUNTY SANITATION DISTRICT Nº 32

OF LOS ANGELES COUNTY, CALIF.
OFFICE OF CHIEF ENGINEER

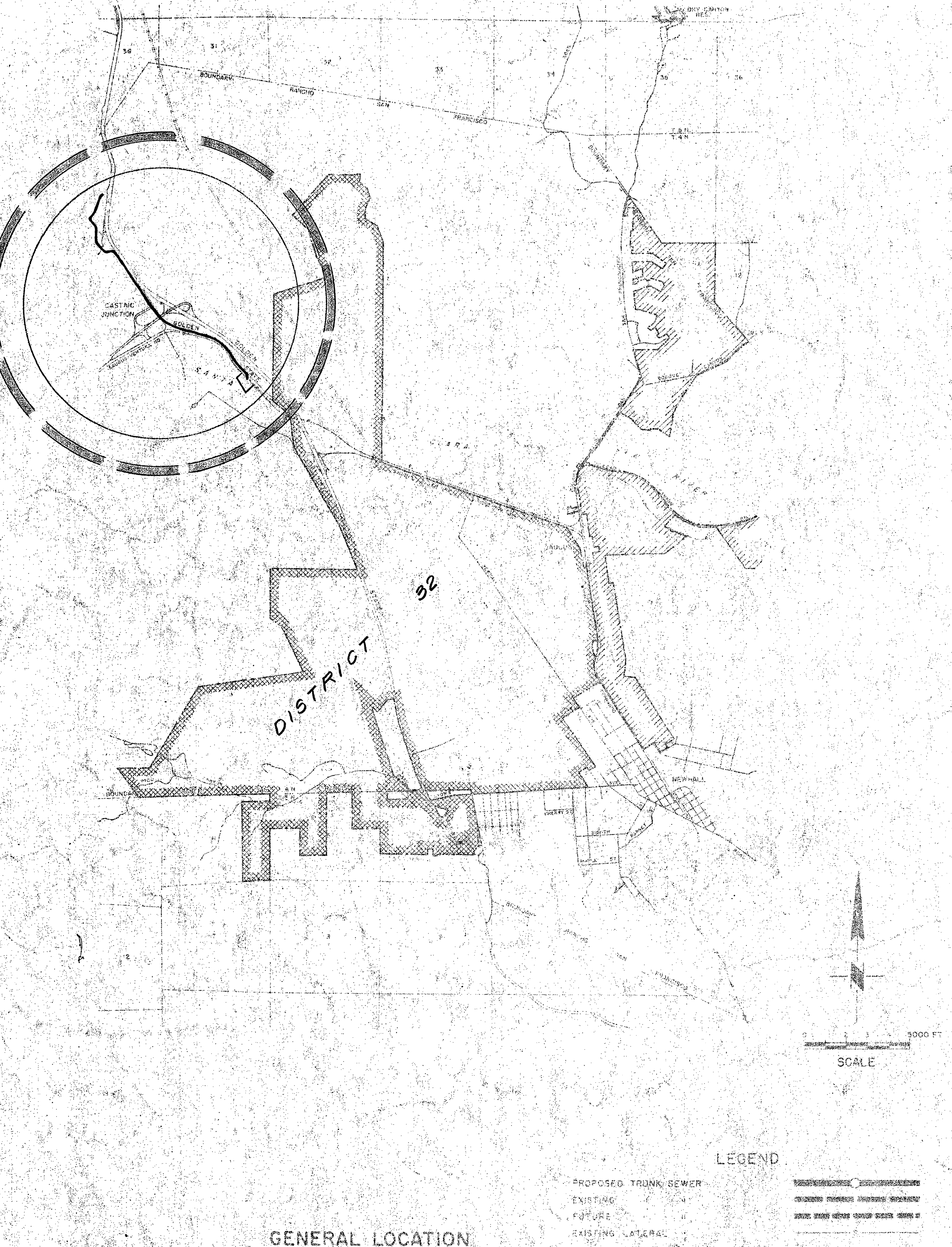
CONTRACT DRAWINGS

# CASTAIC TRUNK SEWER SECTIONS 1, 2 & 3 AND CASTAIC PUMPING PLANT FORCE MAIN

SUBMITTED G. Posthumus (OFFICE ENGINEER) DATED MAY 12, 1970

RECOMMENDED W.E. Garrison (ASST. CHIEF ENGINEER) DATED MAY 12, 1970

APPROVED John D. Parkhurst (CHIEF ENGINEER) DATED MAY 12, 1970




## LEGEND

- PROPOSED TRUNK SEWER
- EXISTING " "
- FUTURE " "
- EXISTING LATERAL "
- WATER LINE
- GAS "
- OIL "
- PIPE "
- TELEPHONE CONDUIT
- ELECTRICAL
- TELEPHONE POLE & DEAD MAN
- POWER " " "
- LIGHT " "
- FIRE HYDRANT
- WATER & GAS VALVE
- " " METER
- FENCE
- PAVING
- CURB, PARKWAY & SIDEWALK
- C.S.D. BOUNDARY (C.S.D. NO 32 | C.S.D. NO 26)
- CITY "
- RIGHT OF WAY
- BENCH MARK
- PLAN & PROFILE SHEET INDEX

## GENERAL NOTES

(3) ~~ELEVATIONS ARE IN FEET ABOVE U.S.C.G. OR MEAN SEA LEVEL DATUM.~~

2 - ALL UTILITIES AFFECTED BY CONSTRUCTION OF TRUNK SEWER AND APPURTENANT WORK SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION.

3 - UNLESS OTHERWISE NOTED, PERMITS FOR EXCAVATION WILL BE OBTAINED BY THE DISTRICT. ALL COSTS FOR COMPLYING WITH SPECIAL REQUIREMENTS IN THE EXCAVATION PERMIT OBTAINED BY THE DISTRICT, INCLUDING INSPECTION, TRAFFIC CONTROL, REPAIRS, LIGHTS, SIGNS, STRIPING, OR ANY OTHER REQUIREMENTS OF THE PERMIT, SHALL BE BORNE BY THE CONTRACTOR.

4 - THE CONTRACTOR SHALL PLACE TEMPORARY RESURFACING OF 2-INCH PREMIX OVER ALL CUTS IN PAVEMENT. SEE ADDENDUM TO STANDARD SPECIFICATIONS DATED OCT. 28, 1964, CHANGE NO.5.

5 - INSPECTION FEES FOR REPAVING REQUIRED BY LOCAL AUTHORITIES SHALL BE PAID BY THE DISTRICT.

6 - UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS, ALL TRENCH REPAVING SHALL BE MADE WITH THE TYPE OF PAVING REMOVED PLUS 1" OF THICKNESS OR WITH AN EQUIVALENT PAVEMENT AS DIRECTED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

7 - ALL ASPHALTIC TYPE REPAVING TO BE SEALED WITH 1/4 GALLON EMULSION PER SQUARE YARD AND COVERED WITH Nº 5 ROCK UNLESS OTHERWISE SPECIFIED. ALL CONCRETE TO BE CUT WITH DIAMOND SAW TO MINIMUM DEPTH OF 1/3 THE THICKNESS OF EXISTING PAVEMENT.

8 - ATTENTION IS DIRECTED TO SECTION 37 OF THE STANDARD SPECIFICATIONS WHICH REQUIRES THAT "ALL STREETS OR ALLEYS IN WHICH THE SURFACE IS REMOVED, BROKEN OR DAMAGED OR IN WHICH THE GROUND HAS CAVED-IN OR SETTLED DUE TO THE INSTALLATION OF THE IMPROVEMENT, SHALL BE RESURFACED AND BROUGHT TO THE ORIGINAL GRADE AND CROWN SECTION" AND "IN ALL CASES THE REPAVING AND REPAIRING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION IN THE AREA OF THE WORK." THE CONTRACTOR IS CAUTIONED THAT THE AUTHORITIES HAVING JURISDICTION MAY REQUIRE THAT THE ENTIRE STREET BE REPAVED IF AN EXCESSIVE AREA OF THE PAVEMENT HAS BEEN REMOVED OR DAMAGED.

9 - WHERE 6" STUBS ARE REQUIRED IN REINFORCED CONCRETE PIPE, THE MANUFACTURER SHALL PROVIDE HOLES BY BLOCKOUT PRIOR TO SPINNING OR CASTING THE JOINTS OF PIPE. STUBS TO BE PLACED 45° ABOVE HORIZONTAL.

10 - PAYMENT FOR ALL STUBS IN THE STRUCTURES SHOWN ON THE PLANS SHALL BE MADE UNDER THE APPROPRIATE PIPE ITEM FOR THE SAME SIZE AND STRENGTH. IF NO PIPE ITEM EXISTS WITH THE SAME SIZE AND STRENGTH, THEN PAYMENT FOR SAID STUBS SHALL BE MADE UNDER THE ITEM BID FOR THE STRUCTURE.

11 - WHERE THE MAXIMUM ALLOWABLE TRENCH WIDTHS HAVE BEEN EXCEEDED AND WHERE REINFORCED CONCRETE PIPE HAS BEEN SPECIFIED ON THE PLAN, THE CONTRACTOR HAS THE OPTION, IN ACCORDANCE WITH SECTION 25, STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF SEWERS AND APPURTENANCES, OF EITHER SUBSTITUTING AT HIS EXPENSE, REINFORCED CONCRETE PIPE WITH D-LOAD STRENGTH SUFFICIENT TO CARRY THE ADDITIONAL TRENCH LOADS OR PLACING THE PIPE SHOWN ON THE PLANS WITH THE NECESSARY SPECIAL BEDDING.

12 - BEFORE ANY PIPE IS DELIVERED TO THE SITE OF THE WORK THE CONTRACTOR SHALL FIRST OBTAIN APPROVAL FROM THE ENGINEER OF THE ROUTES THAT SHALL BE USED BY THE PIPE DELIVERY TRUCKS, BOTH COMING AND GOING IN THE VICINITY OF THE WORK. THERE SHALL ALSO BE SUBMITTED FOR APPROVAL A SCHEDULE OF PIPE DELIVERY AND PLACING ALONGSIDE OF THE TRENCH.

13 - ALL EXCESS DIRT, UNLESS OTHERWISE INDICATED ON THE PLANS, SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AT HIS EXPENSE. HOWEVER, IF THE PROPERTY OWNER DESIRES THE DIRT TO REMAIN ON THE PROPERTY, THE PLANS WILL SO INDICATE AND THE CONTRACTOR SHALL EITHER STOCK-PILE OR SPREAD THE EXCESS DIRT ADJACENT TO THE WORK AS DIRECTED BY THE ENGINEER.

14 - ALL CONCRETE FOR STRUCTURES SHALL BE CLASS "A" UNLESS OTHERWISE SPECIFIED.

15 - THE OCCUPATIONAL RIGHTS OF WAY OBTAINED BY THE DISTRICT ARE SHOWN ON THE DRAWINGS. PAYMENT FOR LOSSES OR DAMAGE TO CROPS WITHIN THE OCCUPATIONAL RIGHTS OF WAY OBTAINED BY THE DISTRICT WILL BE PAID BY THE DISTRICT. REMOVAL AND REPLACING WHERE NECESSARY OF SURFACE OR SUBSURFACE OBSTRUCTIONS OR IMPROVEMENTS WITHIN THE OCCUPATIONAL RIGHTS OF WAY OBTAINED BY THE DISTRICT SHALL BE DONE BY THE CONTRACTOR AT HIS EXPENSE, BUT ONLY AFTER AUTHORIZATION IS GIVEN BY THE ENGINEER. IF ADDITIONAL OCCUPATIONAL RIGHTS OF WAY IS REQUIRED, THE CONTRACTOR SHALL ARRANGE FOR AND BEAR ALL OF THE COST OF THE ADDITIONAL OCCUPATIONAL RIGHTS OF WAY NECESSARY, INCLUDING ALL LOSS OR DAMAGE TO CROPS AND REMOVAL AND REPLACING OF SURFACE OR SUBSURFACE OBSTRUCTIONS OR IMPROVEMENTS.

16 - THE DISTRICT HAS DILIGENTLY ATTEMPTED TO CORRECTLY LOCATE AND SHOW ALL EXISTING PIPE LINES AND OTHER SUBSTRUCTURES IN THE VICINITY OF THE WORK, BUT THE DISTRICT DOES NOT GUARANTEE THAT THERE ARE NO OTHER SUBSTRUCTURES. FAILURE OF THE DISTRICT TO SHOW ALL OF THE SUBSTRUCTURES AND IN THEIR CORRECT LOCATIONS WILL NOT BE A BASIS FOR A CLAIM FOR EXTRA WORK AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO SUBSTRUCTURES WHETHER SHOWN OR NOT.

17 - BORINGS MADE BY THE DISTRICT TO DETERMINE GROUND CONDITIONS ARE AVAILABLE TO BIDDERS AT THE DISTRICTS' OFFICE. DISTRICT DOES NOT GUARANTEE THAT THE BORINGS REPRESENT THE GROUND CONDITIONS AS THEY ACTUALLY EXIST. THE BIDDER SHALL ASSUME FULL RESPONSIBILITY IN INTERPRETING THE DISTRICTS' BORINGS.

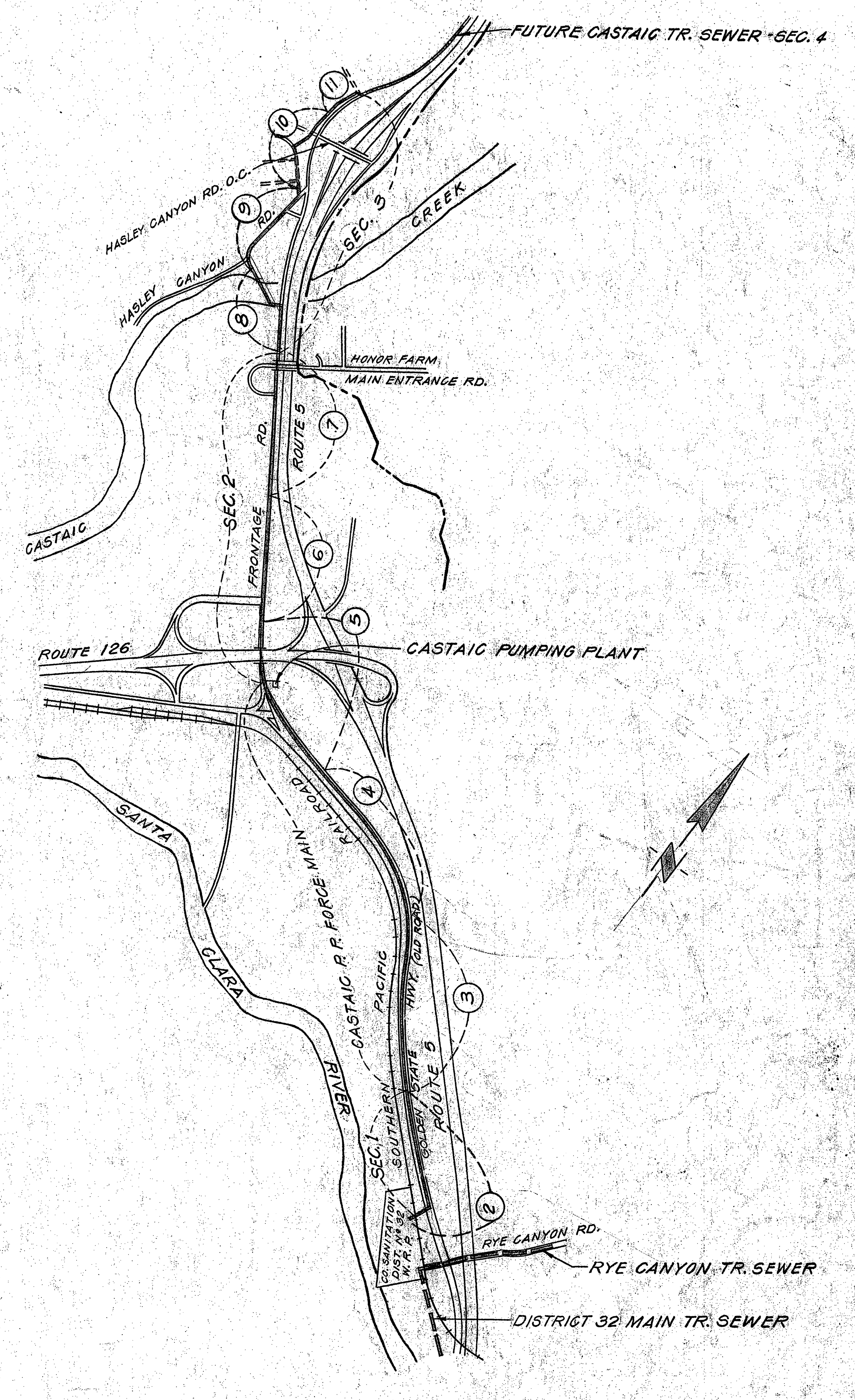
18 - TYPE "A" MANHOLES AND JUNCTION CHAMBERS SHALL CONFORM TO STD. DWG. S-a-201, TYPE "B" MANHOLES AND JUNCTION CHAMBERS SHALL CONFORM TO STD. DWG. S-a-202, TYPE "D" MANHOLES AND JUNCTION CHAMBERS SHALL CONFORM TO STD. DWGS. S-a-204C OR S-a-204D. STANDARD CONCRETE CRADLES AND ENCASEMENTS SHALL CONFORM TO STD. DWG. S-a-212; CONCRETE PIPE SUPPORTS SHALL CONFORM TO STD. DWG. S-a-217.

19 - IF THE CONTRACTOR IS REQUIRED TO REPLACE PAVING OR BASE MATERIAL OF GREATER THICKNESS THAN IS INDICATED ON THE DRAWINGS THE DISTRICT WILL REIMBURSE THE CONTRACTOR FOR THE ADDITIONAL PAVING OR BASE MATERIAL AT THE FOLLOWING RATES PER SQUARE FOOT PER INCH OF THICKNESS:

PREMIX OR A.C. - 6¢
CONCRETE - 10¢
BASE MATERIAL - 2¢

QUANTITY FOR PAYMENT FOR ADDITIONAL PAVING OR BASE MATERIAL SHALL BE BASED ON THE ACTUAL WIDTH OF MATERIAL REPLACED, BUT NOT TO EXCEED A WIDTH OF O.D. OF THE PIPE + 24". IF THE CONTRACTOR IS REQUIRED TO REPLACE PAVING OR BASE MATERIAL OF LESS THICKNESS THAN IS INDICATED ON THE DRAWINGS, FINAL PAYMENT TO THE CONTRACTOR WILL BE REDUCED BY AN AMOUNT REPRESENTING THE REDUCTION IN PAVING OR BASE MATERIAL BASED ON 90% OF THE RATES INDICATED ABOVE AND ON THE WIDTH INDICATED ABOVE.

20 - (3) IF AN INCORPORATED CITY, HAVING STREETS WHICH ARE NOT MAINTAINED BY THE COUNTY ROAD DEPARTMENT, DESIRES THAT TEMPORARY RESURFACING BE OMITTED TO EXPEDITE FINAL REPAVING, THE ENGINEER MAY AUTHORIZE DELETION OF THE TEMPORARY RESURFACING OVER CUTS IN PAVEMENT. IF TEMPORARY RESURFACING IS OMITTED, THE FINAL PAYMENT TO THE CONTRACTOR WILL BE REDUCED BY AN AMOUNT REPRESENTING THE REDUCTION IN TEMPORARY RESURFACING COST BASED ON THE ACTUAL AREA OF TEMPORARY RESURFACING OMITTED AT THE UNIT PRICE OF 10¢ PER SQUARE FOOT OF RESURFACING.




SHEET INDEX
SCALE: 1" = 1000'

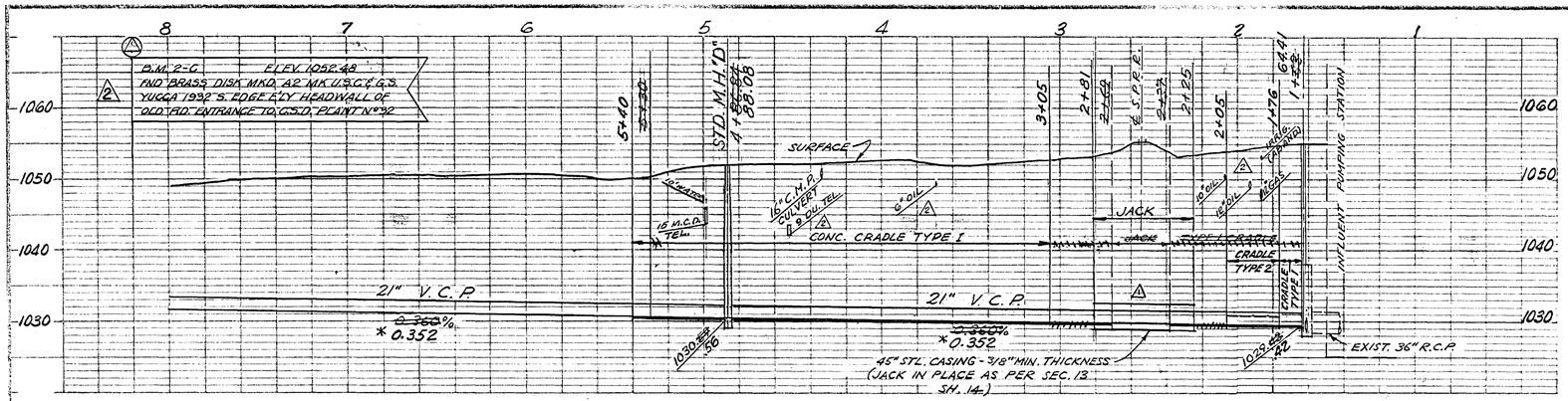
| No. | SHEET | REVISION | INITIAL | | DATE |
|---|---|---|---|---|---|
| 8 | 7 | ADDED MANHOLE | A.J. | | 4-12-05 |
| 7 | 4A | INCORPORATED INSPECTOR'S AS-BUILT | A.J. | | 4-12-05 |
| 6 | 4,5,4A | ADDED SHT. 4A FOR F.M. RELOCATION | A.J. | | 4-12-05 |
| 5 | 6A | ADDED SHT. 8A. PROTECTION FOR SEWER SIPHON. | Ryee | DMJ. | 3-11-86 |
| 4 | 13 | REVISED REPAVING SCHEDULE | DMJ | | 9-29-70 |
| 3 | 1 & 13 | REVISED TRAFFIC REQUIREMENTS AND DELETED GENERAL NOTE Nº 1 | DMJ. | E.P.A. | 7-30-70 |
| 2 | 2-12, 14 | REVISIONS TO ALIGNMENT, ADDITIONAL SUBSTRUCTURES AND ADJUSTMENT OF B.M. | DMJ. | | 7-21-70 |
| 1 | 2 & 14 | EXTENDED JACKING LIMITS PER S.P.R.R. REQ. | DMJ. | | 6-10-70 |

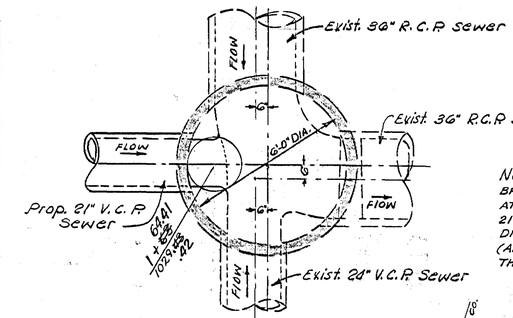
FINAL SURVEY, F.B.

32-p-6

SHEET No. 1 OF 15 SHEETS

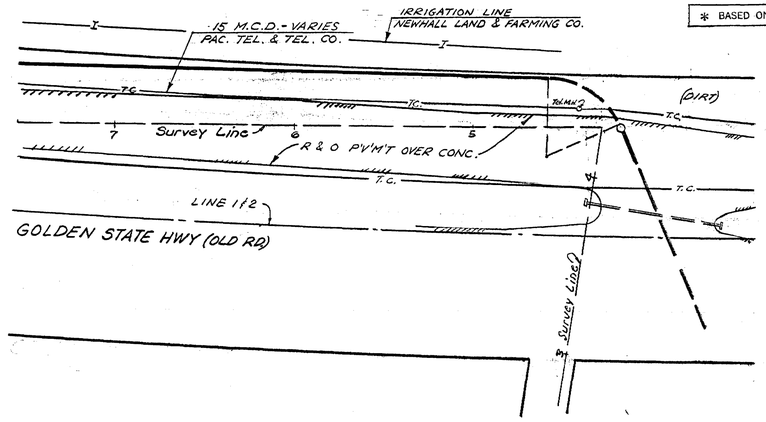
DISCLAIMER: THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY (DISTRICTS) PROVIDE THIS INFORMATION "AS IS" FOR GENERAL REFERENCE ONLY. THE DISTRICTS DO NOT GUARANTEE OR WARRANT THE ACCURACY OF ANY INFORMATION SHOWN OR THE DRAWINGS AVAILABLE FOR DOWNLOAD. THE DISTRICTS DISCLAIM ANY EXPRESS OR IMPLIED WARRANTY. THIS INFORMATION SHOULD NOT BE RELIED UPON FOR CONSTRUCTION. THE INFORMATION MAY REFLECT ONLY AS-PLANNED LOCATIONS AND DOES NOT NECESSARILY ACCURATELY REFLECT THE LOCATIONS OF AS-BUILT FACILITIES OR SUBSEQUENTLY BUILT FACILITIES. APPROPRIATE FIELD VERIFICATION IS REQUIRED IN ORDER TO DETERMINE THE EXACT LOCATION OF DISTRICTS' FACILITIES. FACILITIES WITHIN DISTRICTS' PROPERTY ARE NOT SHOWN. ANY PERSON PERFORMING EXCAVATION MUST COMPLY WITH CALIFORNIA GOVERNMENT CODE SECTION 4216. NOTE THAT "SUBSURFACE INSTALLATIONS" AS DEFINED BY CALIFORNIA GOVERNMENT CODE SECTION 4216 EXCLUDES NON-PRESSURIZED SEWERS, NON-PRESSURIZED STORM DRAINS, AND OTHER NON-PRESSURIZED DRAIN LINES. ANY PERSON PLANNING TO CONSTRUCT IMPROVEMENTS OVER OR BELOW DISTRICTS' FACILITIES WITHIN PRIVATE RIGHT-OF-WAY SHALL OBTAIN A BUILDOVER AGREEMENT PRIOR TO CONSTRUCTION.




NOTE: THE CONTRACTOR SHALL BREAK INTO THE EXISTING J.C. AT STA. 1+63, INSERT PROPOSED 21" AND REFORM CHANNEL AS DIRECTED BY THE ENGINEER. (ALL COST TO BE ABSORBED IN THE 21" V.C. PIPE ITEM).

EXIST. JUNCTION CHAMBER
MOD. 6' DIAM.
AT STA. 1+64.41
SCALE: 3/8" = 1'-0"

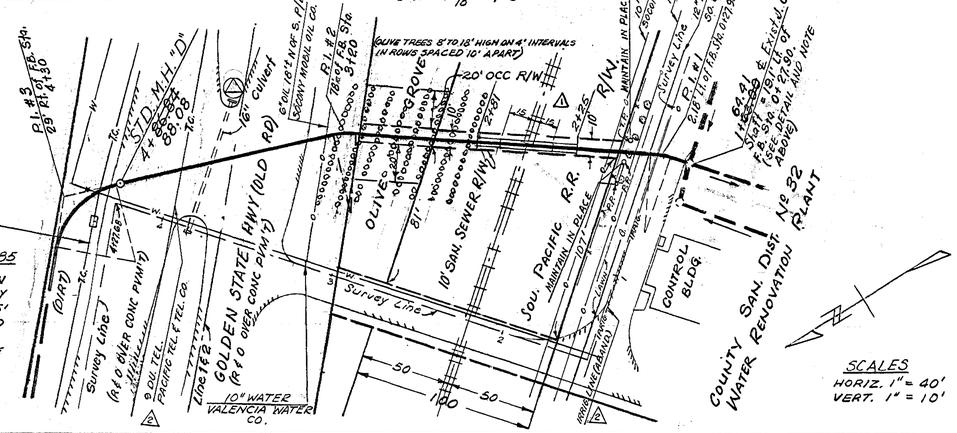



* BASED ON FINAL SURVEY

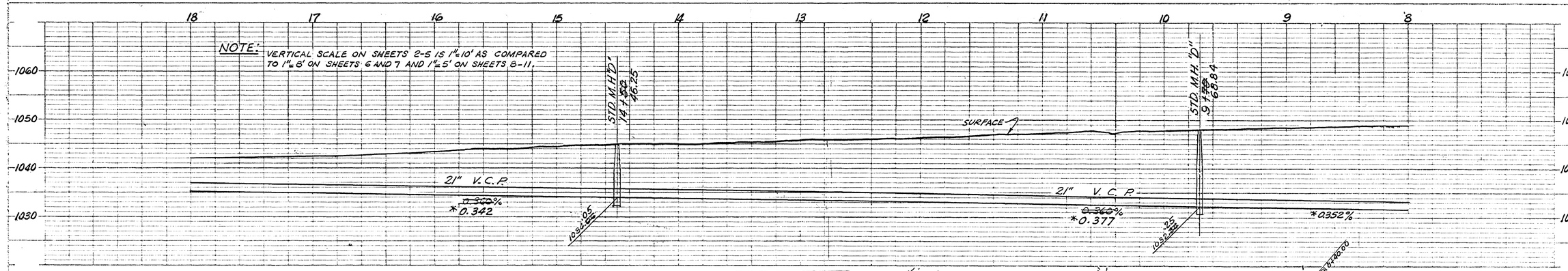
℄ of SEWER CURVE DATA

| AT P.I. # 1 | AT P.I. # 2 | AT P.I. # 3 |
|---|---|---|
| Δ = 10°51'10" | Δ = 17°29'08" | Δ = 65°21'26" |
| R = 45.00' | R = 45.00' | R = 45.00' |
| T = 4.27' | T = 6.92' | T = 28.87' |
| L = 8.52' | L = 13.73' | L = 51.33' |
| B.C. = 1+75.61 | B.C. = 3+50.68 | B.C. = 4+88.77 |
| E.C. = 1+84.13 | E.C. = 3+64.41 | E.C. = 5+40.11 |

EXISTING OLIVE TREES BET. STAS. 2+85 AND 3+60. THE OLIVE TREES BETWEEN THE ABOVE STATIONS WILL BE REMOVED BY OTHERS WITHIN THE AREA 25' RIGHT AND 25' LEFT OF THE CENTERLINE OF THE PROPOSED SEWER PRIOR TO THE CONTRACTORS WORK IN THIS AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE TREES OUTSIDE THE LIMITS OF THE REMOVAL AREA.




SCALES
HORIZ. 1" = 40'
VERT. 1" = 10'

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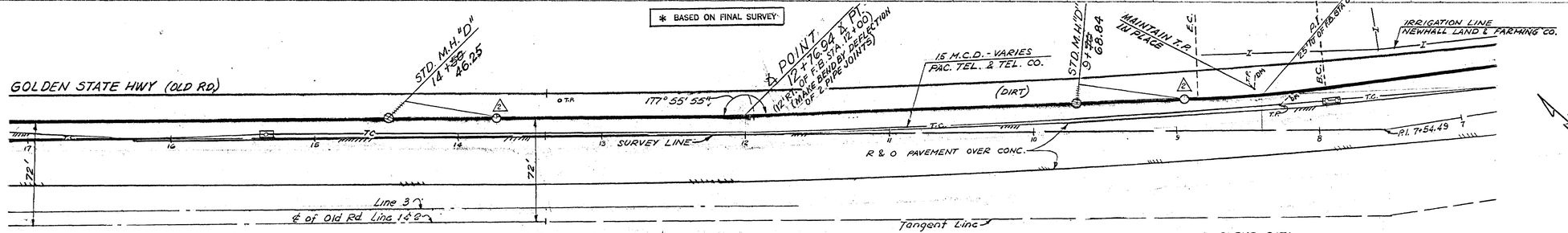


CURVE DATA
Δ = 5° 5' 15"
R = 1000'
T = 46.01'
L = 89.96'
B.C. = 8+71.76
E.C. = 9+61.72

| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE |
|---|---|---|---|---|
| | 1192 | H.F.W. | T.A.H. | 9-28-71 |

SANITATION DISTRICT NO. 32
COUNTY OF LOS ANGELES, CALIF.

| | BY | DATE |
|---|---|---|
| SUBMITTED | | MAY 12, 1970 |
| RECOMMENDED | | MAY 12, 1970 |
| APPROVED | | MAY 12, 1970 |

SURVEYED CHAPPELL
DESIGNED
DRAWN
CHECKED
F.W. CHECKED
FINAL CHECK
FIELD BOOK NO. 1192

PREPARED BY DEPARTMENT OF COUNTY ENGINEER JOHN A. LAMBIE COUNTY ENGINEER
DESIGNED BY
RCE No 17723 DATE 5-21-70
APPROVED BY
SANITATION DISTRICTS - DATE 5-21-70

| NO. | REVISION | BY | DATE |
|---|---|---|---|
| 1 | ADDED EM. AND ADDITIONAL EVERSTRUCTURES, CORRECTED W.H. LOCATIONS EXTENDED JACKING LIMITS PER S.P.R.R. R/R. | | 7-21-70 6-10-70 |

CASTAIC TRUNK SEWER
SECTION 1

SHEET NO. 2 OF 15 SHEETS
DWG. NO. 32-P-6

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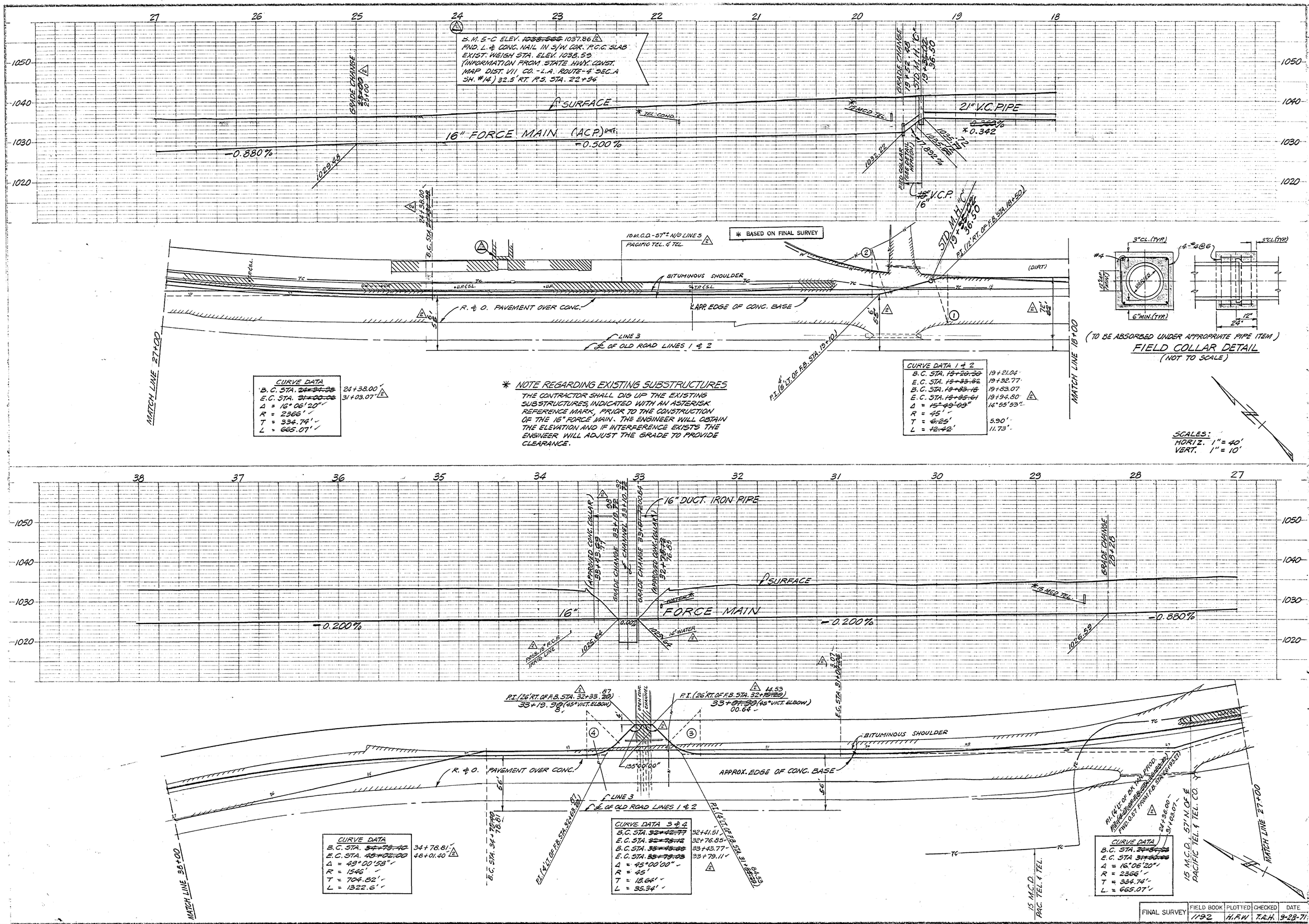


| CURVE DATA | |
|---|---|
| B.C. STA. ~~24+34.38~~ | 24+38.00 |
| E.C. STA. ~~31+00.06~~ | 31+03.07 |
| Δ = 16° 06' 20" | |
| R = 2366' | |
| T = 334.74' | |
| L = 665.07' | |

| CURVE DATA 1 & 2 | |
|---|---|
| B.C. STA. ~~19+20.30~~ | 19+21.04 |
| E.C. STA. ~~19+33.82~~ | 19+32.77 |
| B.C. STA. ~~19+83.16~~ | 19+83.07 |
| E.C. STA. ~~19+95.61~~ | 19+94.80 |
| Δ = ~~15° 40' 03"~~ | 14° 55' 53" |
| R = 45' | |
| T = ~~6.25'~~ | 5.90' |
| L = ~~12.42'~~ | 11.73' |

| CURVE DATA | |
|---|---|
| B.C. STA. ~~34+79.40~~ | 34+78.81 |
| E.C. STA. ~~48+02.00~~ | 48+01.40 |
| Δ = 49° 00' 58" | |
| R = 1546' | |
| T = 704.82' | |
| L = 1322.6' | |

| CURVE DATA 3 & 4 | |
|---|---|
| B.C. STA. ~~32+42.77~~ | 32+41.51 |
| E.C. STA. ~~32+78.12~~ | 32+76.85 |
| B.C. STA. ~~33+43.68~~ | 33+43.77 |
| E.C. STA. ~~33+79.03~~ | 33+79.11 |
| Δ = 45° 00' 00" | |
| R = 45' | |
| T = 18.64' | |
| L = 35.34' | |

| CURVE DATA | |
|---|---|
| B.C. STA. ~~24+34.38~~ | 24+38.00 |
| E.C. STA. ~~31+00.06~~ | 31+03.07 |
| Δ = 16° 06' 20" | |
| R = 2366' | |
| T = 334.74' | |
| L = 665.07' | |

## * NOTE REGARDING EXISTING SUBSTRUCTURES

THE CONTRACTOR SHALL DIG UP THE EXISTING SUBSTRUCTURES, INDICATED WITH AN ASTERISK REFERENCE MARK, PRIOR TO THE CONSTRUCTION OF THE 16" FORCE MAIN. THE ENGINEER WILL OBTAIN THE ELEVATION AND IF INTERFERENCE EXISTS THE ENGINEER WILL ADJUST THE GRADE TO PROVIDE CLEARANCE.

COUNTY SANITATION DISTRICT NO. 32 OF LOS ANGELES COUNTY, CALIF.

SUBMITTED: CHRYSELL 7-21-70
RECOMMENDED: MAY 12, 1970
APPROVED: MAY 12, 1970
APPROVED: MAY 12, 1970

REVISIONS IN ALIGNMENT AND ADDITIONAL SUBSTRUCTURES

PREPARED BY DEPARTMENT OF COUNTY ENGINEER JOHN A. LAMBIE COUNTY ENGINEER
DESIGNED BY RCE No 17721 DATE 5-11-70
APPROVED BY SANITATION ENGINEER DATE 5-11-70

CASTAIC TRUNK SEWER, SEC. 1 AND CASTAIC PUMPING PLANT FORCE MAIN

SHEET NO. 3 OF 15 SHEETS
DWG. NO. 32-P-6

| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE |
|---|---|---|---|---|
| | 1192 | H.F.W. | T.A.H. | 9-28-71 |

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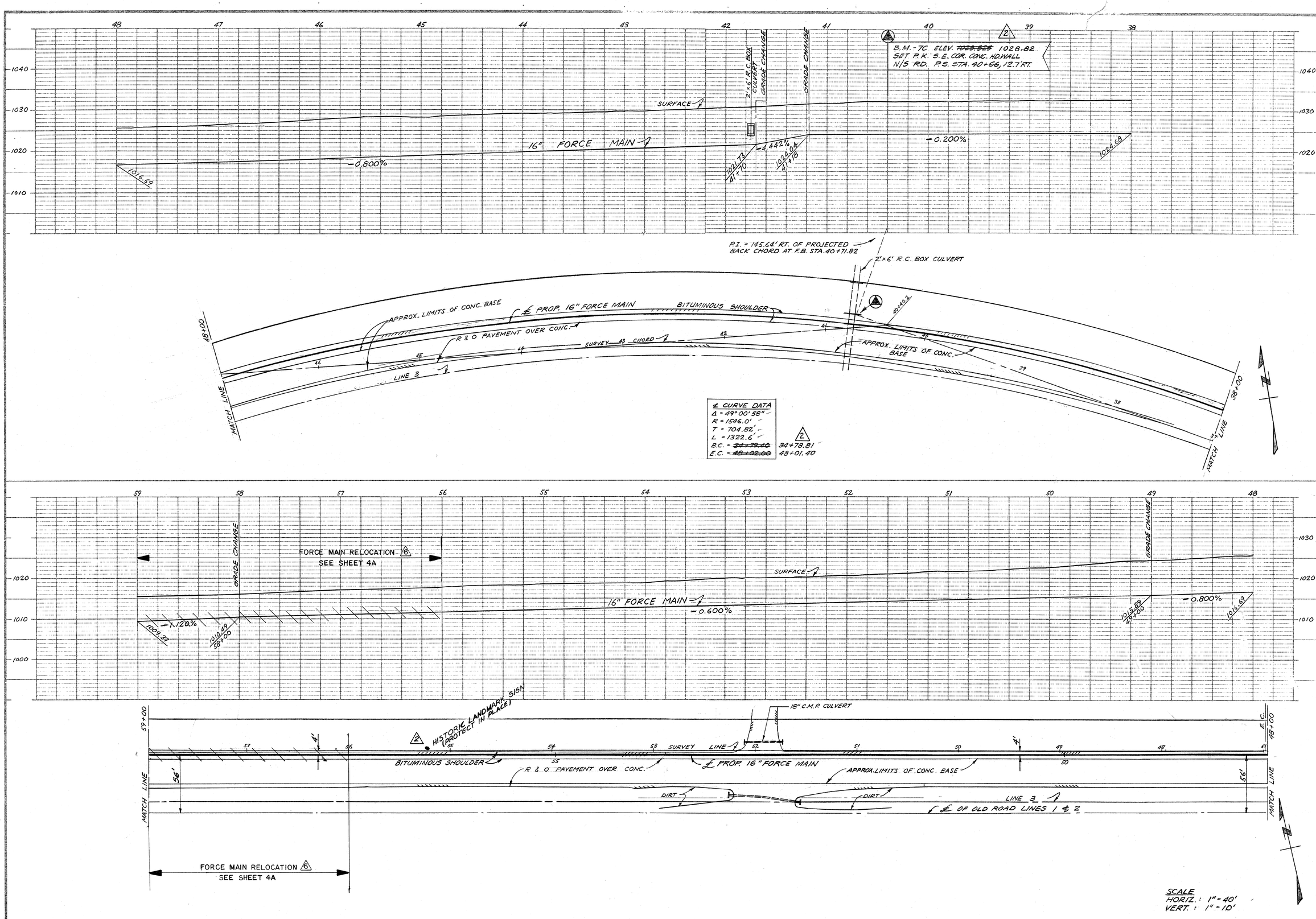


| NO. | REVISION | INITIAL | DATE |
|---|---|---|---|
| 4 | FORCE MAIN RELOCATED | | 4-4-75 |
| 3 | REVISED CURVE DATA, ADD B.M. | | 7-21-70 |

SANITATION DISTRICT NO. 32
COUNTY OF LOS ANGELES, CALIF.

| | BY | DATE |
|---|---|---|
| SUBMITTED | | MAY 12, 1970 |
| RECOMMENDED | | MAY 12, 1970 |
| APPROVED | | MAY 12, 1970 |

SUBMITTED: CHARZALL
SURVEYED, SUBSTRUCTURES, DESIGNED, DRAWN, CHECKED, CHECKED FOR CLOSED FINAL CHECK.
FIELD BOOK NO. 1192

PREPARED BY DEPARTMENT OF COUNTY ENGINEER JOHN A. LAMBIE COUNTY ENGINEER
DESIGNED BY RCE NO. 17127 DATE 5-21-70
APPROVED BY SANITATION ENGINEER DATE 5-21-70

# CASTAIC PUMPING PLANT FORCE MAIN

SHEET NO. 4 OF 15 SHEETS
DWG. NO. 32-P-6

| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE |
|---|---|---|---|---|
| | 1192 | | | |

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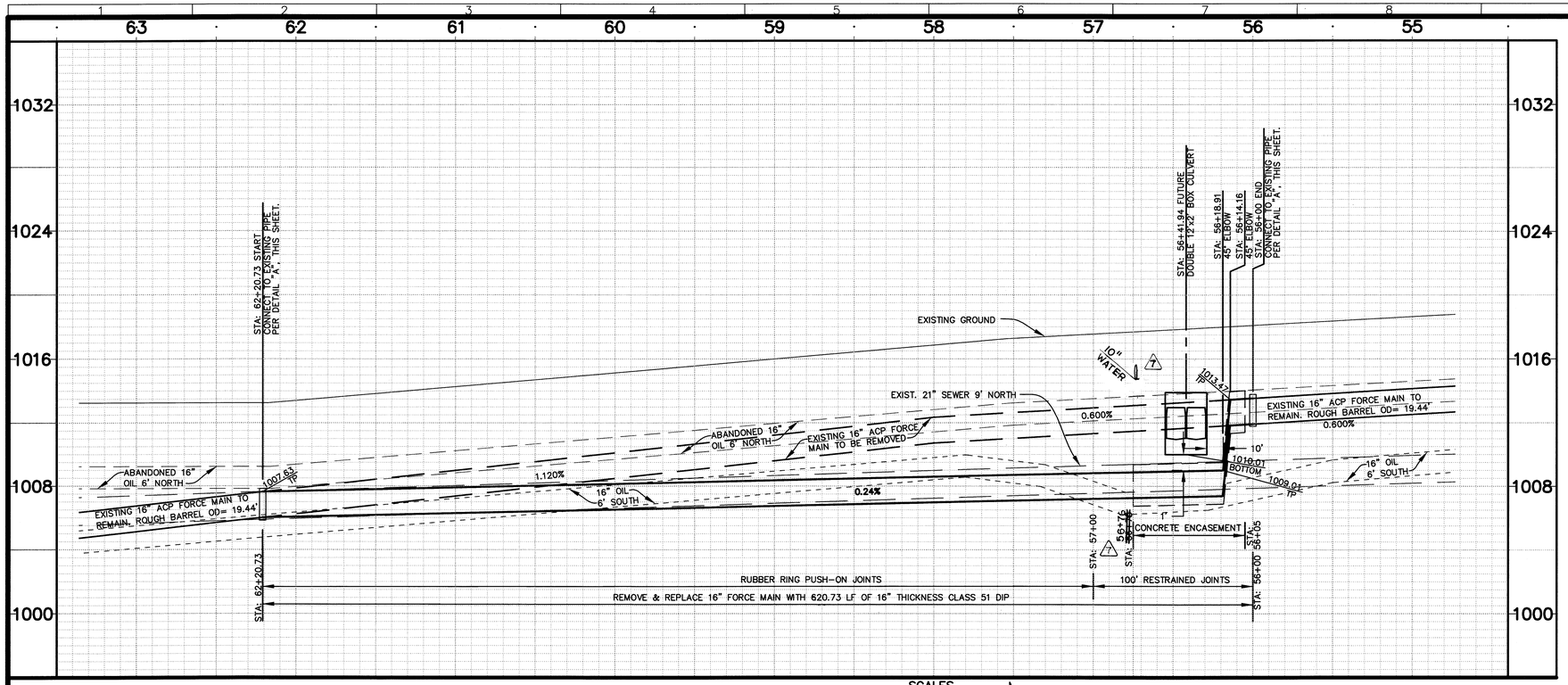
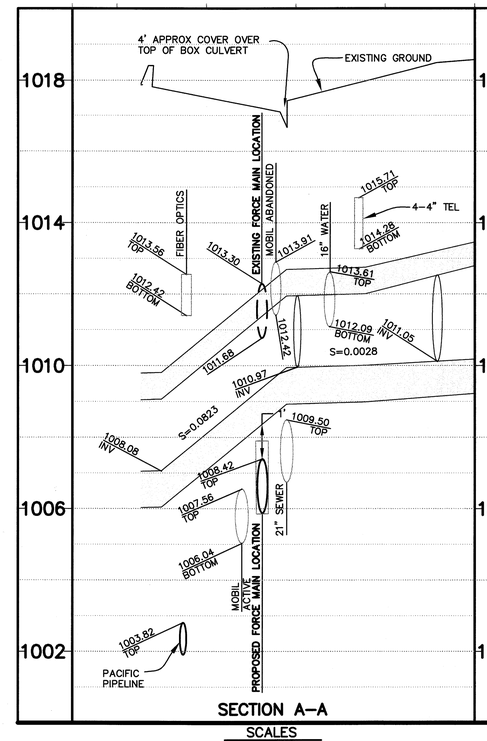
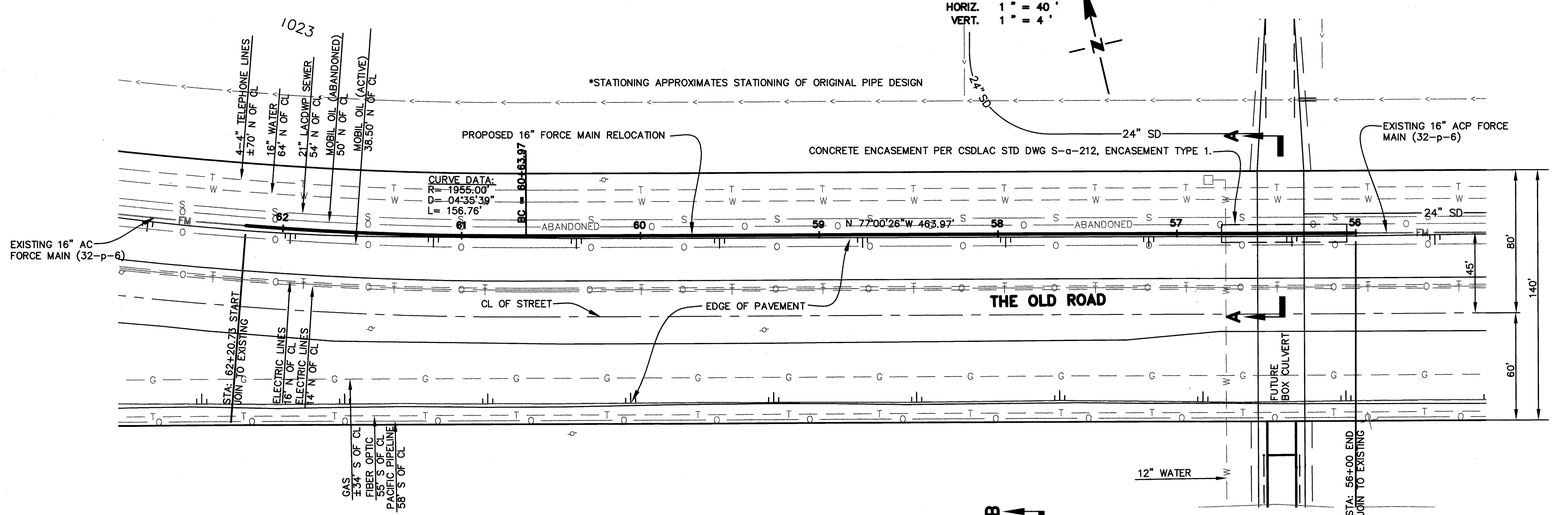


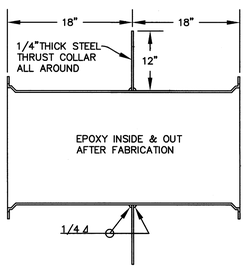




SECTION A–A

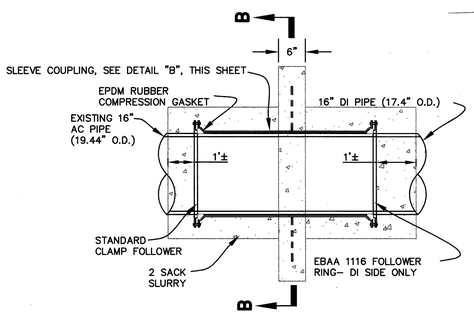
SCALES
HORIZ. 1" = 20'
VERT. 1" = 2'

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

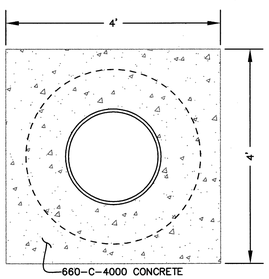



B/1 SLEEVE COUPLING DETAIL
NTS




A/1 PIPE CONNECTION DETAIL
NTS




SECTION B–B

## CONSTRUCTION NOTES

1. ALL SEWER CONSTRUCTION WORK ON THIS PROJECT SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2003 EDITION, AND THE AMENDMENTS TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2003 EDITION AND STANDARD DRAWINGS FOR CONSTRUCTION, AS ADOPTED BY COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY DATED DECEMBER 2003.
2. THE CONTRACTOR SHALL NOTIFY MR. PAUL PERKINS OF THE COUNTY SANITATION DISTRICTS AT (323) 283–0881 AT LEAST 48 HOURS PRIOR TO THE START OF THE CONSTRUCTION. ALL SEWER WORK ON THIS PROJECT SHALL BE DONE IN THE PRESENCE OF A COUNTY SANITATION DISTRICTS REPRESENTATIVE.
3. ALL SEWER PIPE MATERIALS SHALL BE INSPECTED AND APPROVED BY THE COUNTY SANITATION DISTRICTS REPRESENTATIVE(S) AT THE PIPE MANUFACTURER'S PLANT PRIOR TO DELIVERY TO THE JOB SITE.
4. THE SEWER SHALL NOT BELONG TO THE COUNTY SANITATION DISTRICTS UNTIL ACCEPTANCE BY THE DISTRICTS BOARD OF DIRECTORS.
5. THE DISTRICTS CONSTRUCTION INSPECTION SHALL ONLY PERTAIN TO SUBBEDDING, BEDDING, PIPE LAYING, PIPE TESTING, AND CONNECTING. IN THESE MATTERS THE DISTRICT'S CONSTRUCTION INSPECTOR SHALL HAVE JURISDICTION. ALL OTHER ACTIVITIES SUCH AS TRENCHING, CONSOLIDATION OF BACKFILL, PAVING AND STREET WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CITY AND/OR COUNTY REQUIREMENTS.
6. SEWER PIPE USED IN THIS PROJECT SHALL BE DUCTILE IRON PIPE PER AWWA C–151 THICKNESS CLASS 51 (t=0.37") WITH DOUBLE THICKNESS CEMENT MORTAR LINING PER AWWA C104. PIPE SHALL BE ENCASED WITH 8 MIL POLYETHYLENE WRAP PER AWWA STANDARD C105.
7. PUSH–ON JOINTS SHALL CONFORM TO AWWA C111 APPENDIX B. RESTRAINED JOINTS SHALL HAVE A RUBBER GASKET WITH STAINLESS STEEL LOCKING SEGMENTS VULCANIZED INTO THE GASKET, FIELDLOK 350 AS MANUFACTURED BY US PIPE, OR EQUAL.
8. ALL BOLTS BELOW GRADE SHALL BE HIGH STRENGTH, LOW ALLOY PER ASTM A193 GRADE B8M (316SS) PATTERN, DIMENSION AND THREAD SHALL BE PER ASME B18.2.1, STANDARD HEX HEAD. BOLTS SHALL BE COARSE THREAD AND CLASS 2B FIT. NUTS SHALL BE PER ASTM A194 GRADE 8M (316SS). PATTERN, DIMENSION AND THREAD SHALL BE PER ASME B16.2.2 STANDARD HEX HEAD PATTERN AND ASME B1.1 COARSE THREAD, CLASS 2B FIT.
9. TRENCHING SHALL BE DONE IN PER LOS ANGELES COUNTY STANDARD PLAN 2027–1.
10. FITTINGS SHALL BE CLASS 250 RESTRAINED JOINT FITTINGS PER NOTE 7 ABOVE.
11. EXTERNAL COATINGS ON ALL PIPE AND FITTINGS SHALL BE A 1 MIL (MIN) THICK SHOP APPLIED ASPHALT COATING PER AWWA C151 AND C110.
12. COAT ALL BURIED NUTS AND BOLTS WITH NON–OXIDE CORROSION RESISTANT GREASE AND WRAP IN 8–MIL POLYETHYLENE BAG PRIOR TO BACKFILL OR PLACING CONCRETE ENCASEMENT, THRUST OR RESTRAINT BLOCKS. OVERLAP BAG 2 FEET ONTO ADJOINING PIPE ON EACH SIDE OF FITTING OR JOINT. TAPE TO PIPE WITH 2 WRAPS (MIN) 10 MIL POLYKEN TAPE.
13. JOINING COLLAR: AS SHOWN ON DETAIL. DO NOT COAT OR WRAP THRUST RESTRAINT RING
14. AC PIPE SHALL BE SEVERED AT THE FIRST COLLARED JOINT BEYOND THE POINT OF CONNECTION SHOWN. NOTE ON THE PLANS THE ACTUAL CONNECTION POINT. CAREFULLY BREAK COLLAR WITHOUT DAMAGE TO THE HOST PIPE TO REMAIN IN SERVICE. REMOVE RUBBER RING FROM MILLED PIPE END TO REMAIN IN SERVICE.
15. PRESSURE TEST IN ACCORDANCE WITH SPPWC 306–1.4. TEST PRESSURE SHALL BE 65 psig.

| NO. | REVISIONS | INITIALS | DATE |
|---|---|---|---|
| 6 | ADDED SHT. 4A FOR F.M. RELOCATION | G.T. | 4-12-05 |
| 7 | INCORPORATED INSPECTOR'S AS-BUILT | G.T. | 4-12-05 |

REFERENCE DWG. NO.
FIELD BOOK NO.

**COUNTY SANITATION DISTRICT NO. 32**
OF LOS ANGELES COUNTY, CALIFORNIA

| | | DATE |
|---|---|---|
| DESIGNED | PENFIELD & SMITH ENGINEERS | 5/5/04 |
| DRAWN | PENFIELD & SMITH ENGINEERS | 5/5/04 |
| CHECKED | PENFIELD & SMITH ENGINEERS | 5/5/04 |
| REVIEWED | PENFIELD & SMITH ENGINEERS | 5/5/04 |

CASTAIC PUMPING PLANT FORCE MAIN

# PLAN AND PROFILE

REGISTERED PROFESSIONAL ENGINEER
DANIEL S. [illegible]
NO 43846
EXPIRES 12/31/04
CIVIL
STATE OF CALIFORNIA

SHEET NO. 4A (6)
OF 15 SHEETS

DWG. NO. 32-p-6

APPROVED: COUNTY SANITATION DISTRICT NO.32
OF LOS ANGELES COUNTY, CA.
JAMES F. STAHL – CHIEF ENGINEER & GENERAL MANAGER
BY: [signature] for OFFICE ENGINEER DATE: 7-1-04

| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE |
|---|---|---|---|---|
| | | | | |

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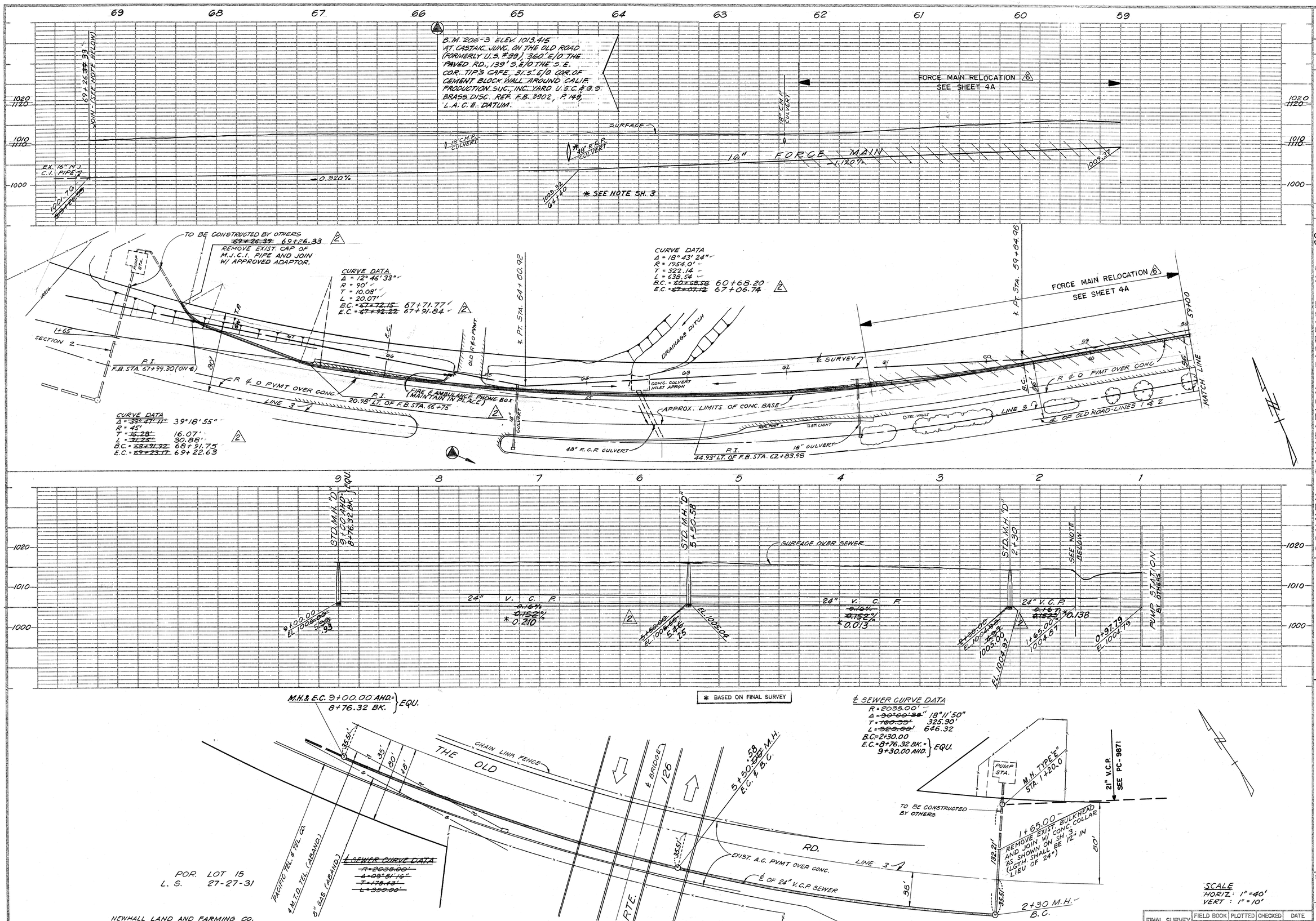
5/25/04




SCALE
HORIZ.: 1" = 40'
VERT.: 1" = 10'

| NO. | REVISION | DATE | INITIAL |
|---|---|---|---|
| 6 | FORCE MAIN RELOCATED | 4-3-70 | |
| 4 | REVISED ALIGNMENT & PROFILE | 4-1-45 | |

PREPARED BY DEPARTMENT OF COUNTY ENGINEER
JOHN A. LAMBIE COUNTY ENGINEER

DESIGNED BY R.C.E. NO. 17922 DATE 5-21-70
APPROVED BY SUBDIVISION ENGINEER DATE 5-21-70

COUNTY SANITATION DISTRICT NO. 32 OF LOS ANGELES COUNTY, CALIF.

| | | |
|---|---|---|
| SUBMITTED | | MAY 12, 1970 |
| RECOMMENDED | CHIEF ENGINEER | MAY 12, 1970 |
| APPROVED | CHIEF ENGINEER | MAY 12, 1970 |

SURVEYED
SUBSTRUCTURES
DESIGNED
CHECKED
CHAPPELL
CHECKED
RE-REVIEWED
FINAL CHECK
FIELD BOOK NO. 1192

# CASTAIC TRUNK SEWER SEC. 2 AND CASTAIC PUMPING PLANT FORCE MAIN

SHEET NO. 5 OF 15 SHEETS
DWG. NO. 32-P-6

| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE |
|---|---|---|---|---|
| | | | | |

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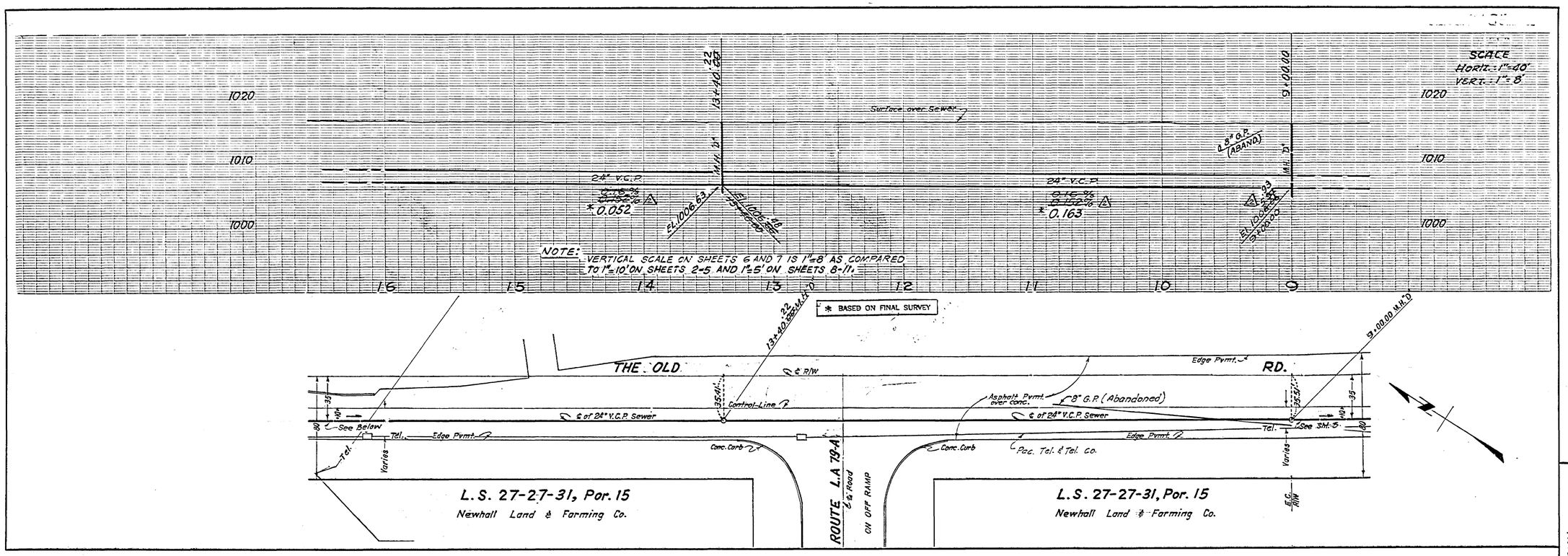


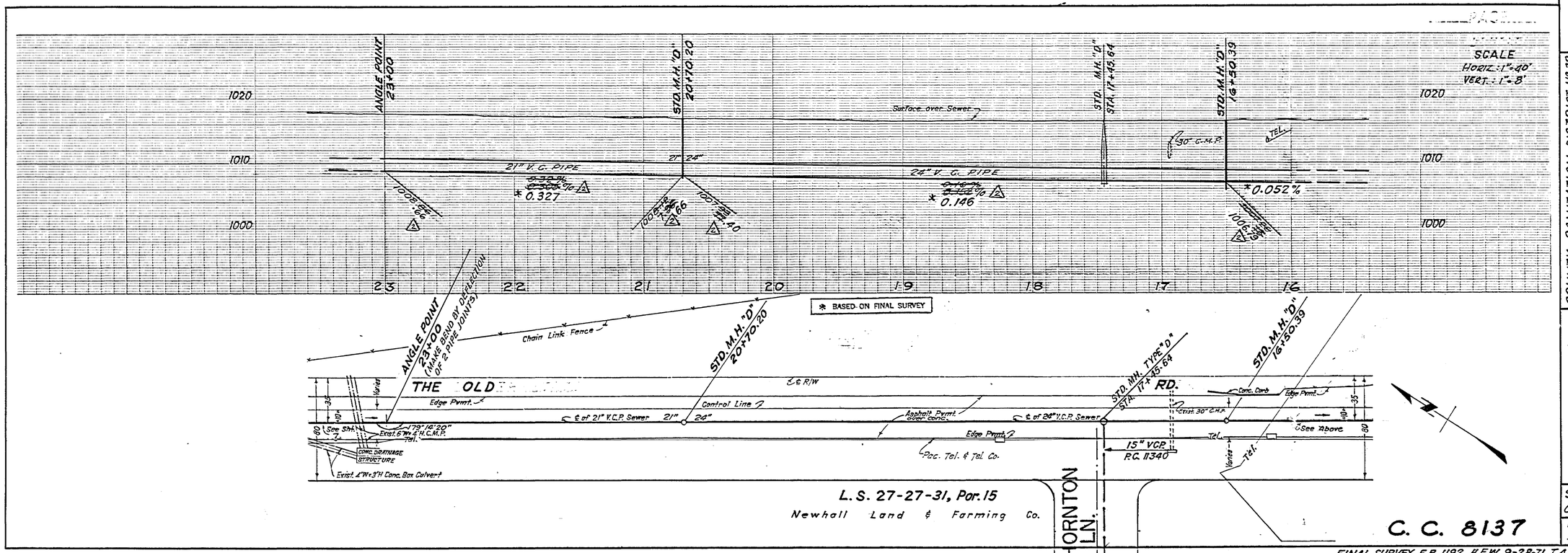


REVISION
REVISED PROFILE 7-21-70

COUNTY SANITATION DISTRICT Nº 32
OF LOS ANGELES COUNTY, CALIF.

PREPARED BY
DEPARTMENT OF COUNTY ENGINEER
JOHN A. LANGE COUNTY ENGINEER
DESIGNED BY [signature] DATE 5-21-70
RECEIVED BY [signature] DATE 5-21-70
APPROVED BY [signature] DATE 5-21-70
SANITATION ENGINEER

SUBMITTED [signature] DATE MAY 12, 1970
RECOMMENDED [signature] DATE MAY 12, 1970
APPROVED [signature] DATE MAY 12, 1970

CASTAIC TRUNK
SEWER - SEC. 2
PLAN & PROFILE

SHEET Nº 6
OF 15 SHEETS

DWG. Nº 32-p-6

C. C. 8137

FINAL SURVEY, F.B. 1192, H.F.W. 9-28-71, T.A.H.

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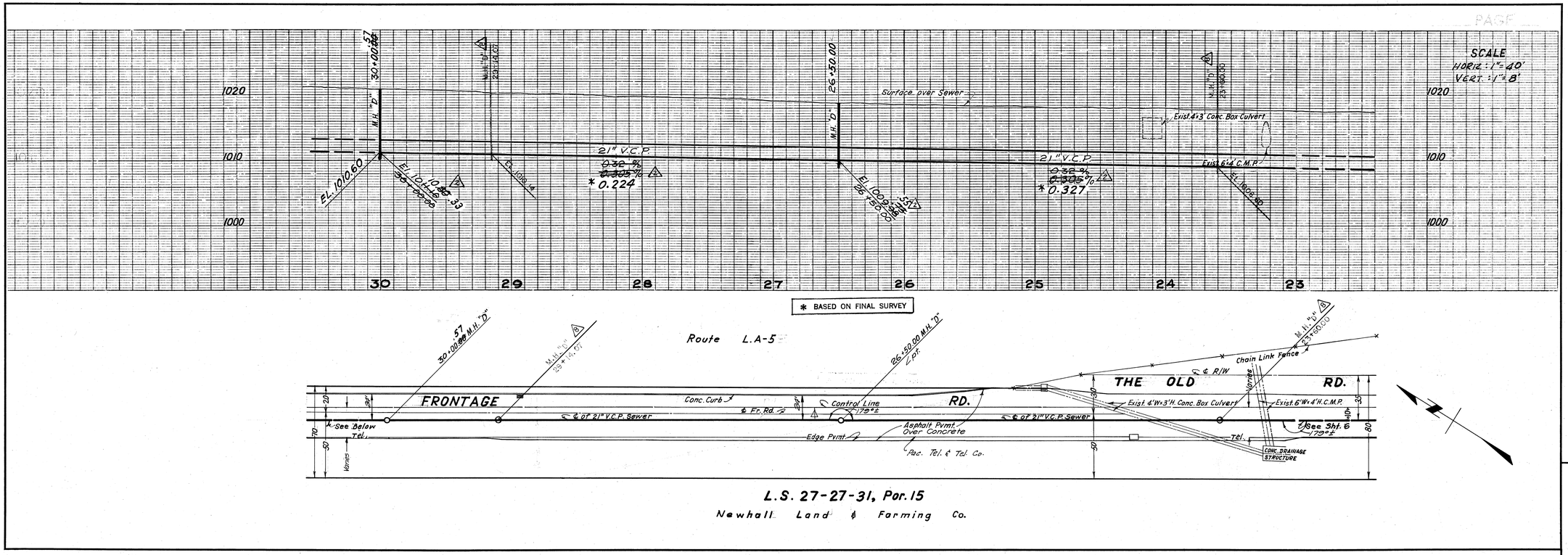


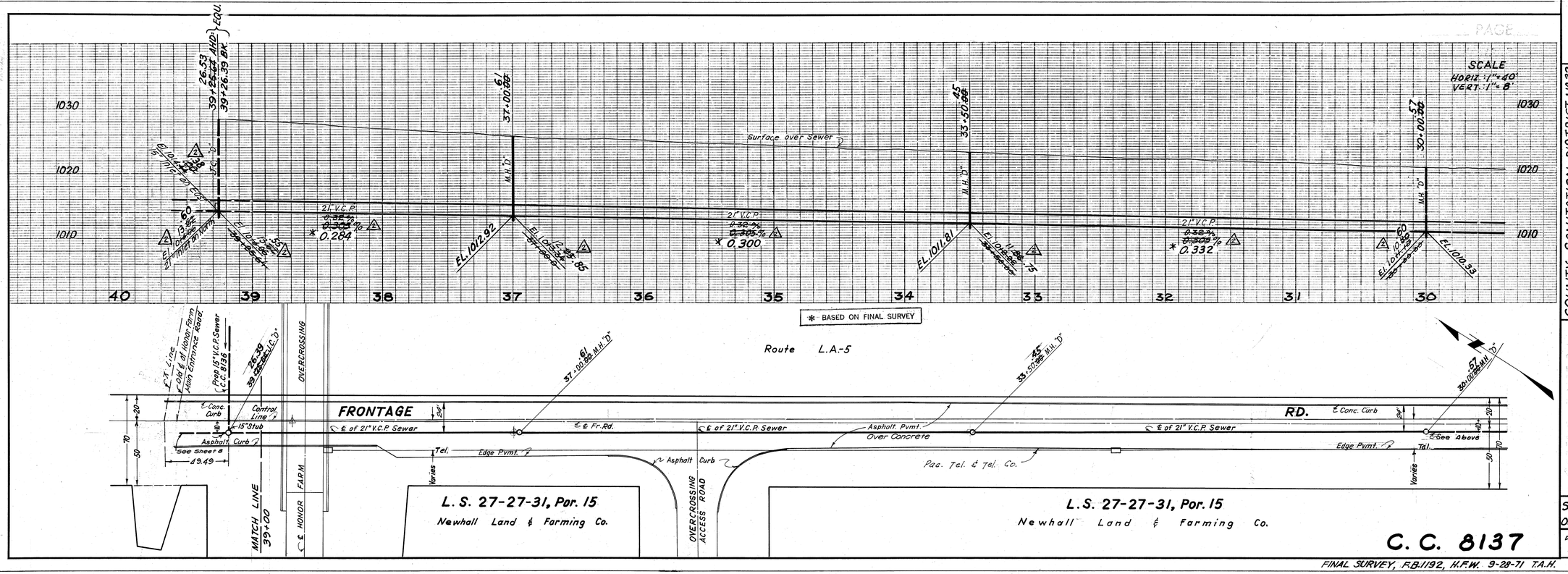


C. C. 8137

FINAL SURVEY, F.B.1192, H.F.W. 9-28-71 T.A.H.

REVISION

| | | | |
|---|---|---|---|
| 2 | REVISED PROFILE | 7-21-70 | |
| 3 | ADDED MANHOLE | 4-12-06 | |

COUNTY SANITATION DISTRICT No 32 OF LOS ANGELES COUNTY, CALIF.

PREPARED BY DEPARTMENT OF COUNTY ENGINEER JOHN A. LAMBIE COUNTY ENGINEER

SUBMITTED MAY 12, 1970 DATE

RECOMMENDED MAY 12, 1970 DATE

APPROVED MAY 12, 1970 DATE

RECEIVED 5-21-70 DATE

APPROVED BY SANITATION ENGINEER DATE

# CASTAIC TRUNK SEWER - SEC. 2

PLAN & PROFILE

SHEET No 7 OF 15 SHEETS

DWG. No 32-p-6

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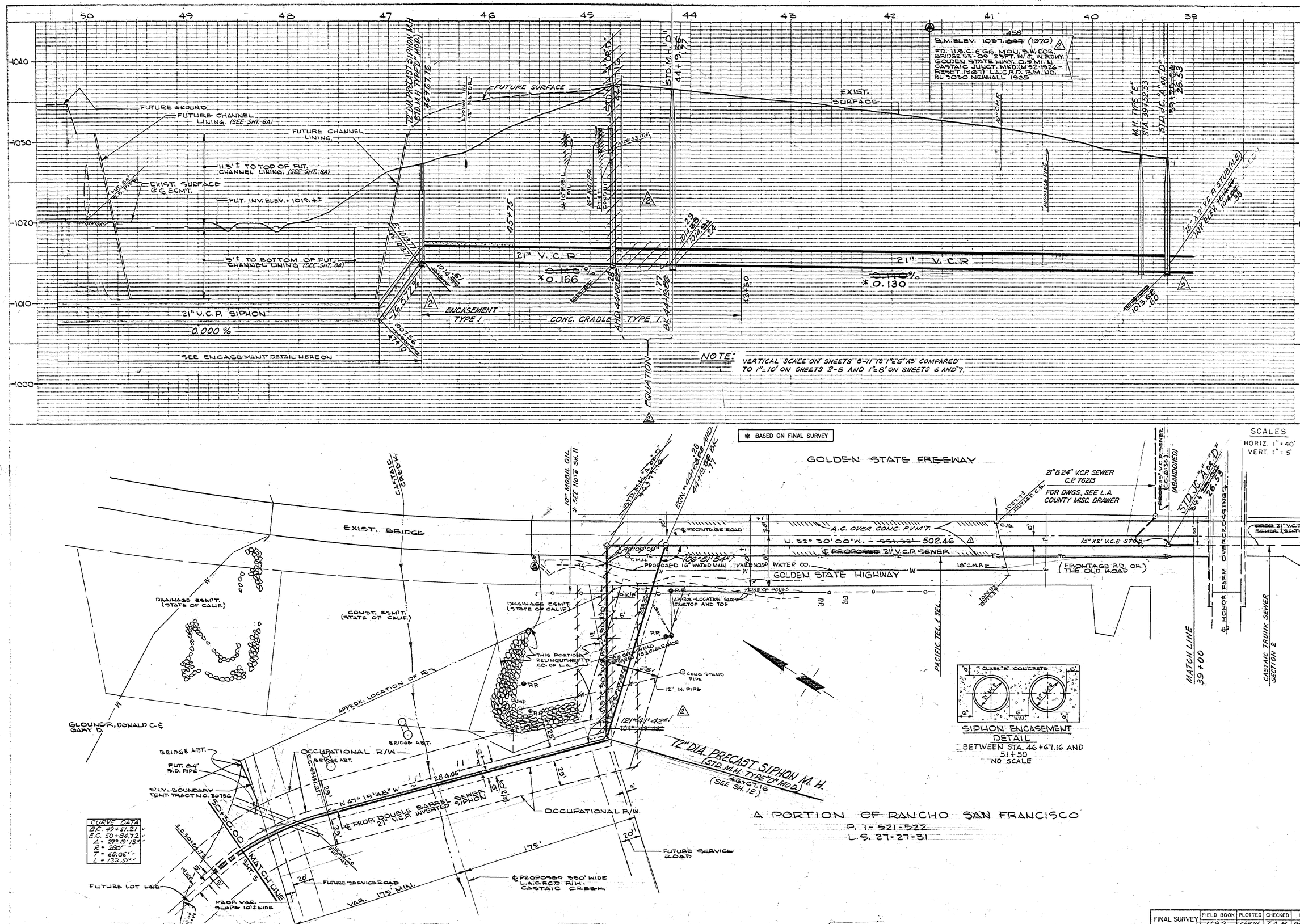


COUNTY SANITATION DISTRICT NO. 32
OF LOS ANGELES COUNTY, CALIF.

REVISED ALIGNMENT VIC. STA 45+00 & ADJ. B.M.

REVISIONS

SUBMITTED MAY 12, 1970
RECOMMENDED MAY 12, 1970
APPROVED MAY 12, 1970

PREPARED BY SIKAND ENGINEERING ASSOCIATES
DESIGNED
DATE 7-29-12-1970

CASTAIC TRUNK SEWER SECTION 3

SHEET NO. 8 OF 15 SHEETS

| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE | DWG. NO. |
|---|---|---|---|---|---|
| | 1192 | WFW | T.A.H. | 9-28-71 | 32-P-6 |

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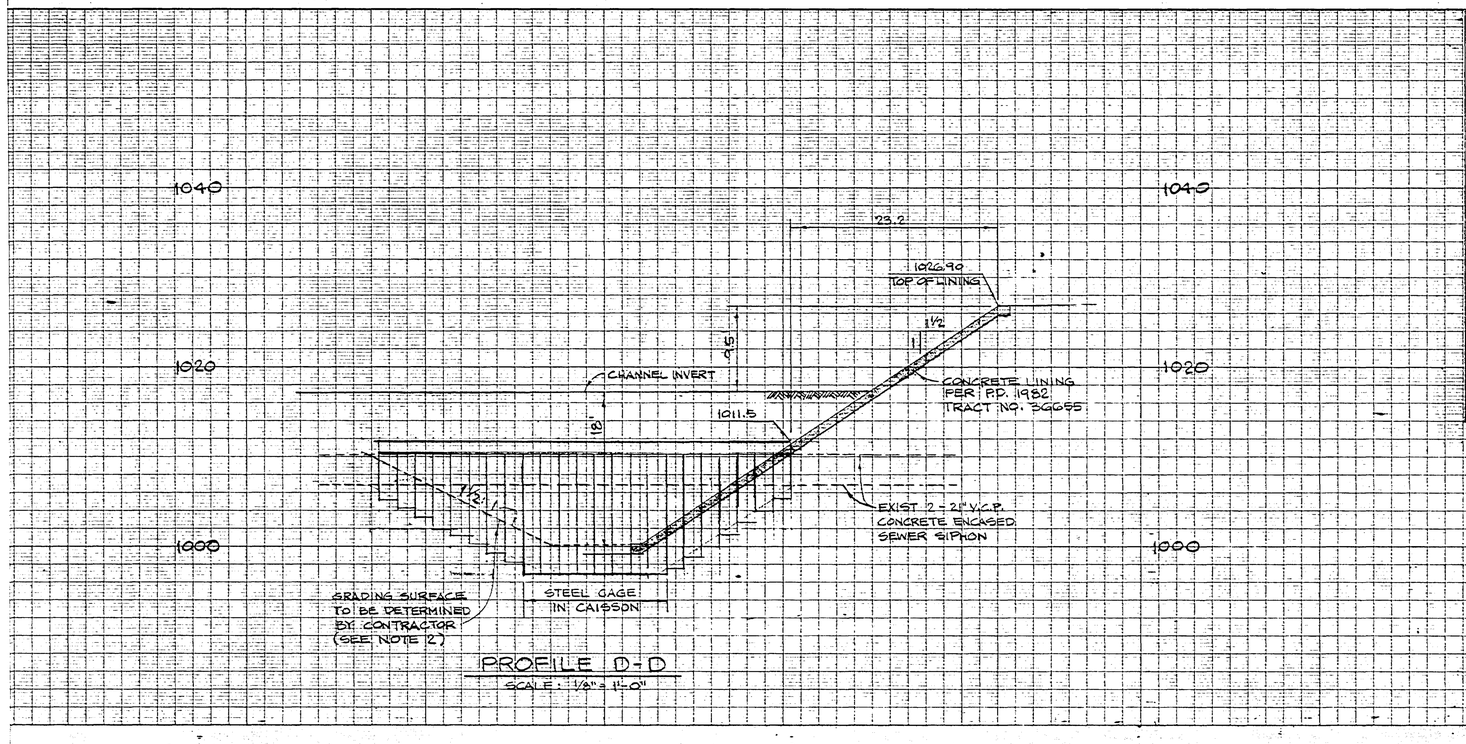
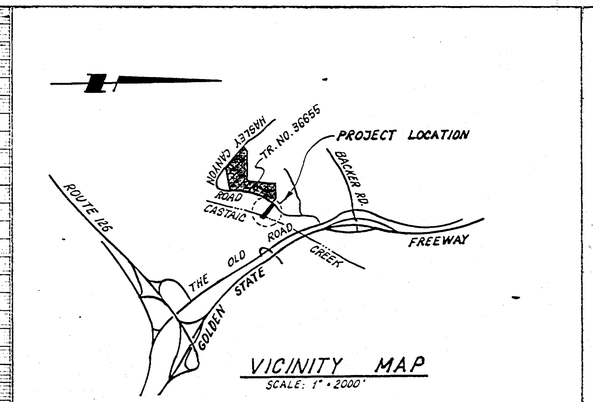



PROFILE D-D

SCALE: 1/8" = 1'-0"




VICINITY MAP

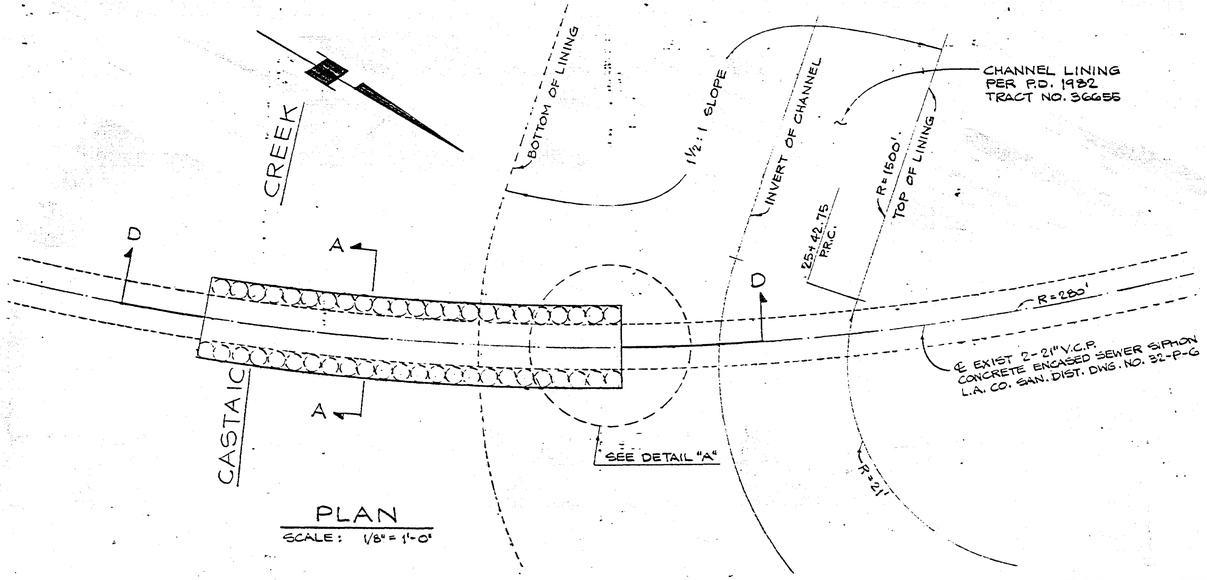
SCALE: 1" = 2000'

NOTES:

1. CONCRETE SHALL OBTAIN A ULTIMATE UNIT COMPRESSIVE STRESS OF 3000 P.S.I. IN 28 DAY TEST.
2. HORIZONTAL LIMITS OF GRADING TO BE DETERMINED BY CONTRACTOR PRIOR TO DRILLING HOLES FOR CAISSONS. HORIZONTAL LIMITS OF CAISSON TO BE ADJUSTED IF HORIZONTAL LIMITS OF GRADING CHANGES.
3. CAISSONS AND TOP CONCRETE BEAM MUST BE COMPLETED AND SET AT LEAST 7 DAYS PRIOR TO GRADING ON EACH SIDE OF SEWER SIPHON. DIFFERENTIAL LEVEL OF GRADING ON EACH SIDE OF SIPHON SHALL NOT EXCEED 2 FEET. PLACEMENT OF COMPACTED BACKFILL LEVEL ON EACH SIDE OF SIPHON SHALL ALSO NOT EXCEED 2 FEET.
4. WORK SHALL BE INSPECTED BY L.A. CO. SANITATION DISTRICT.

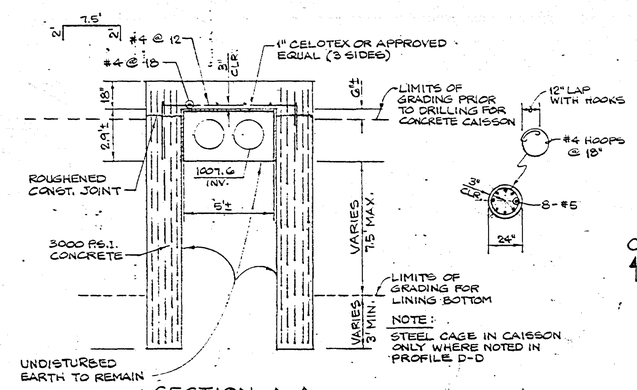
**NOTE:**

*THIS PROJECT IS INCOMPLETE UNTIL FINALIZED BY C.S.D. FIELD FORCES. 3-11-86*



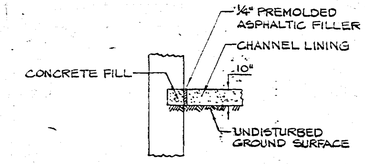

PLAN

SCALE: 1/8" = 1'-0"

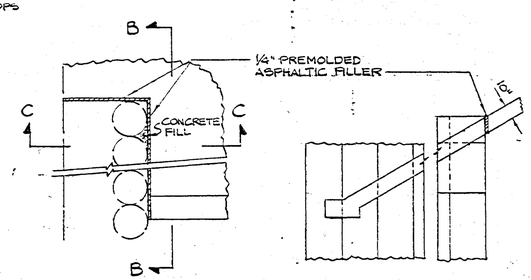



SECTION A-A

SCALE: 1/4" = 1'-0"




SECTION C-C




PLAN

SECTION B-B

DETAIL "A"

SCALE: 1/4" = 1'-0"

LOS ANGELES COUNTY SANITATION DISTRICT NO. 32

CHARLES W. CARRY, CHIEF ENGINEER

APPROVED BY: [signature] 2/27/86

for OFFICE ENGINEER

SUGGESTED PROTECTION FOR EXISTING SEWER SIPHON

| REV. Nº | DATE | REVISION | BY | APP. |
|---|---|---|---|---|
| | | | | |

| SCALE: | CHK'D. BY: | APPROVED BY: | R.C.E. NO. | DATE: | DWG. NO: | SHEET 1 OF 1 |
|---|---|---|---|---|---|---|
| AS SHOWN | | John R. Peiro | 9812 | 2-12-86 | 1020-17TA | |

**SIKAND ENGINEERING ASSOCIATES**

**CONSULTING ENGINEERS**

**15230 BURBANK BLVD., VAN NUYS, CALIFORNIA**

**(818) 787-8550 — 91411**

CASTAIC T.S. SECTIONS 1, 2 & 3, and CASTAIC PUMPING PLANT FORCE MAIN

32-P-6

*Sht Nº 8A of 15 Shts.*

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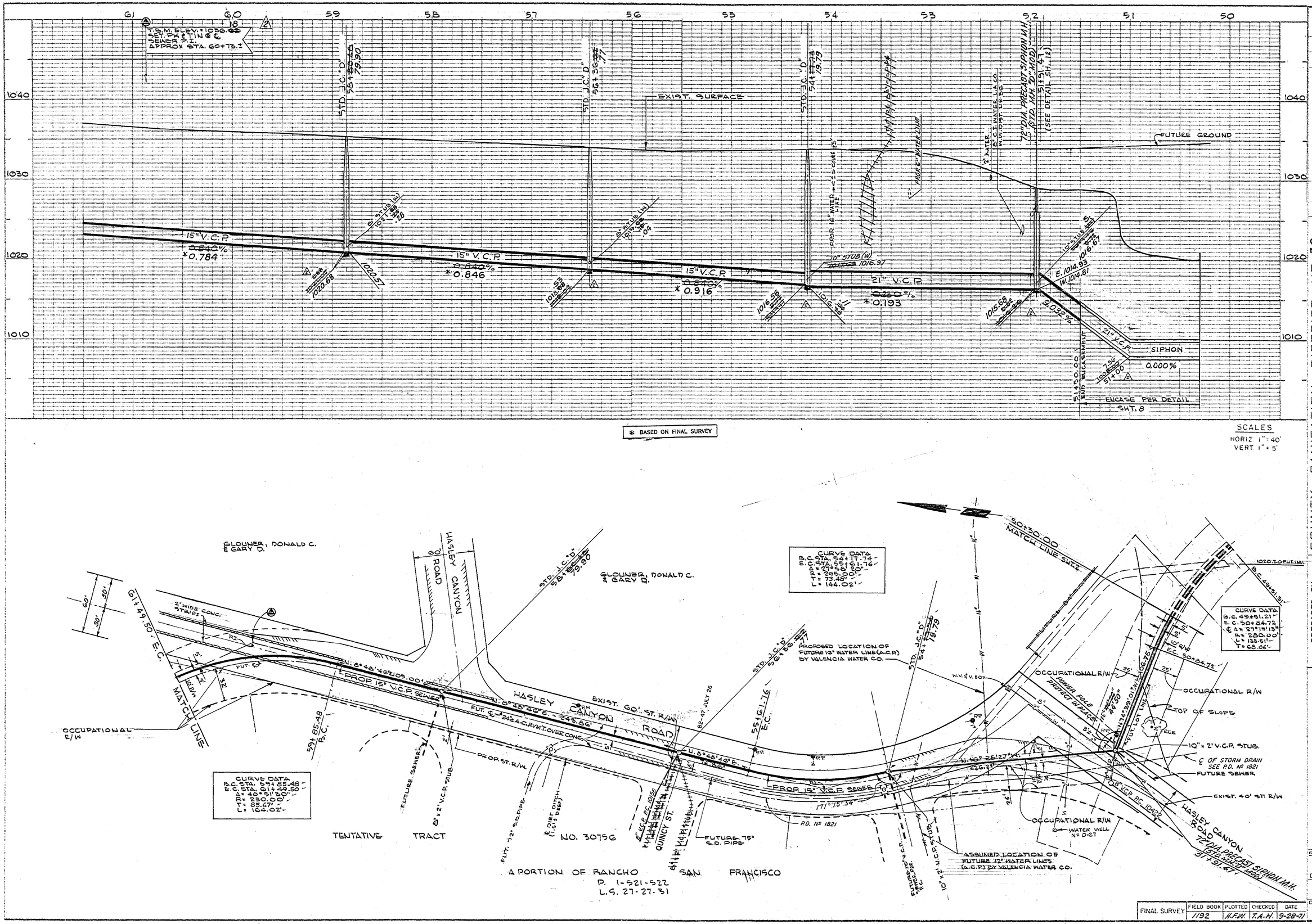
NOTE THAT "SUBSURFACE INSTALLATIONS" AS DEFINED BY CALIFORNIA GOVERNMENT CODE SECTION 4216 EXCLUDES NON-PRESSURIZED SEWERS, NON-PRESSURIZED STORM DRAINS, AND OTHER NON-PRESSURIZED DRAIN LINES. ANY PERSON PLANNING TO CONSTRUCT IMPROVEMENTS OVER OR BELOW DISTRICTS' FACILITIES WITHIN PRIVATE RIGHT-OF-WAY SHALL OBTAIN A BUILDOVER AGREEMENT PRIOR TO CONSTRUCTION.




| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE |
|---|---|---|---|---|
| | 1192 | H.F.W. | T.A.H. | 9-28-71 |

DWG. NO. 32-P-6

COUNTY OF LOS ANGELES SANITATION DISTRICT NO. 32

CALIF.

| NO. | SHEET | REVISIONS | INITIALS | DATE |
|---|---|---|---|---|
| 9 | | REVISED B.M. ELEV. | | 7-21-70 |

| | | DATE |
|---|---|---|
| SUBMITTED | | MAY 12, 1970 |
| RECOMMENDED | | MAY 12, 1970 |
| APPROVED | | MAY 12, 1970 |

PREPARED BY SIKAND ENGINEERING ASSOCIATES

DESIGNED BY
DATE May 12, 1970

CASTAIC TRUNK SEWER
SECTION 3

SHEET NO. 9 OF 15 SHEETS

FIELD BOOK NO.

SURVEYED
SUBSTRUCTURES
PLOTTED
DRAWN
CHECKED
CHECKED
FINAL CHECK

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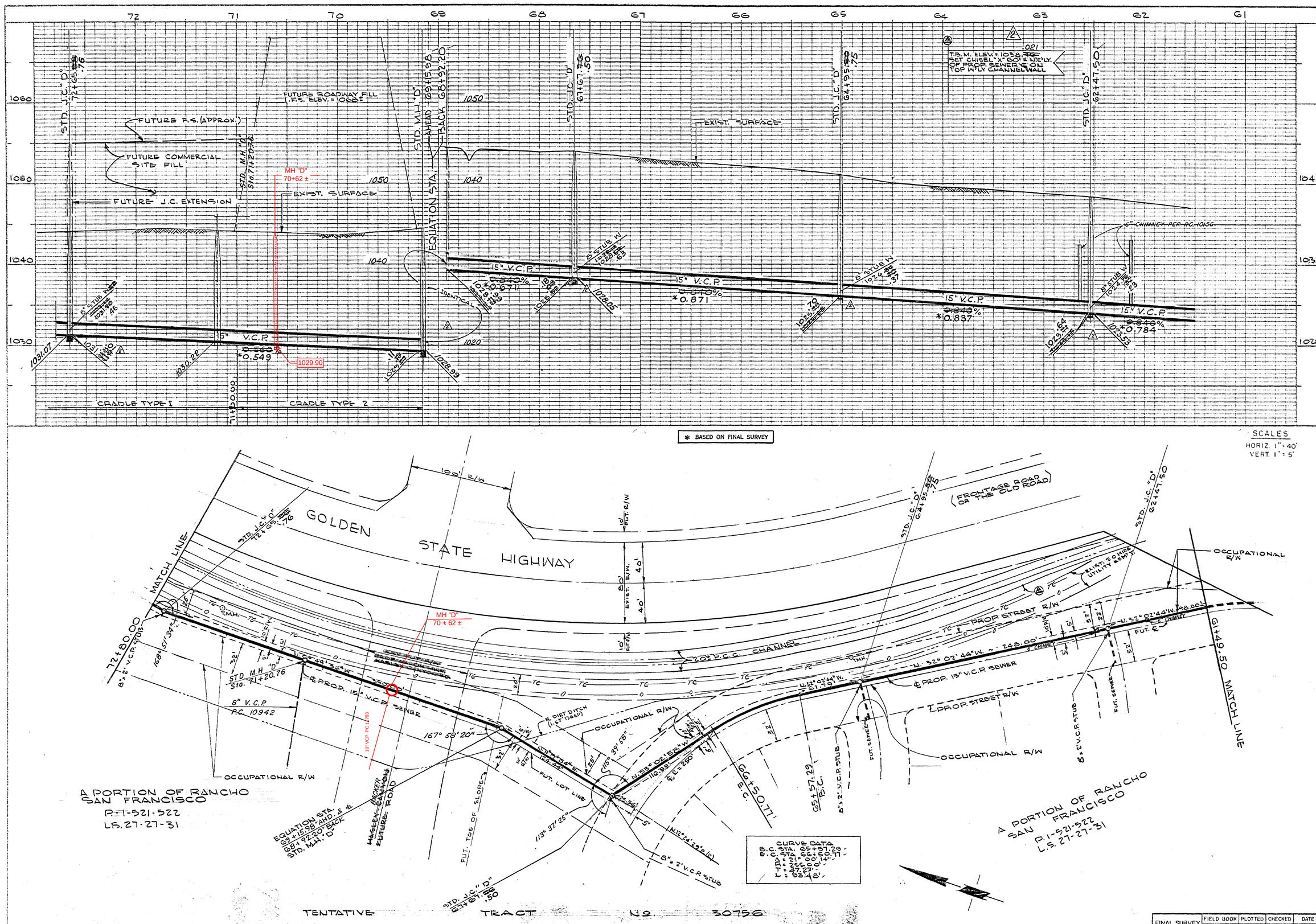


* BASED ON FINAL SURVEY

SCALES
HORIZ. 1" = 40'
VERT. 1" = 5'




TENTATIVE TRACT NO. 30756

COUNTY SANITATION DISTRICT NO. 32
OF LOS ANGELES COUNTY, CALIF.

| | | DATE |
|---|---|---|
| SUBMITTED | | MAY 12, 1970 |
| RECOMMENDED | | MAY 12, 1970 |
| APPROVED | | MAY 12, 1970 |

SUPERVISED: S. WEATHERFORD
REVISED: J. WEBB
DRAWN: J. WEBB
CHECKED: F.A.P. CHECKED: F.W.A. / D.R.C.P.

PREPARED BY SIKAND ENGINEERING ASSOCIATES
DESIGNED BY
DATE May 12, 1970

FIELD BOOK NO.

| NO. | SHEET | REVISIONS | INITIALS | DATE |
|---|---|---|---|---|
| 10 | | REVISED B.M. ELEV. | | 7-21-70 |

CASTAIC TRUNK SEWER
SECTION 3

SHEET NO. 10
OF 15 SHEETS

| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE | DWG. NO. |
|---|---|---|---|---|---|
| | 1192 | H.F.W. | T.A.H. | 9-28-71 | 32-P-6 |

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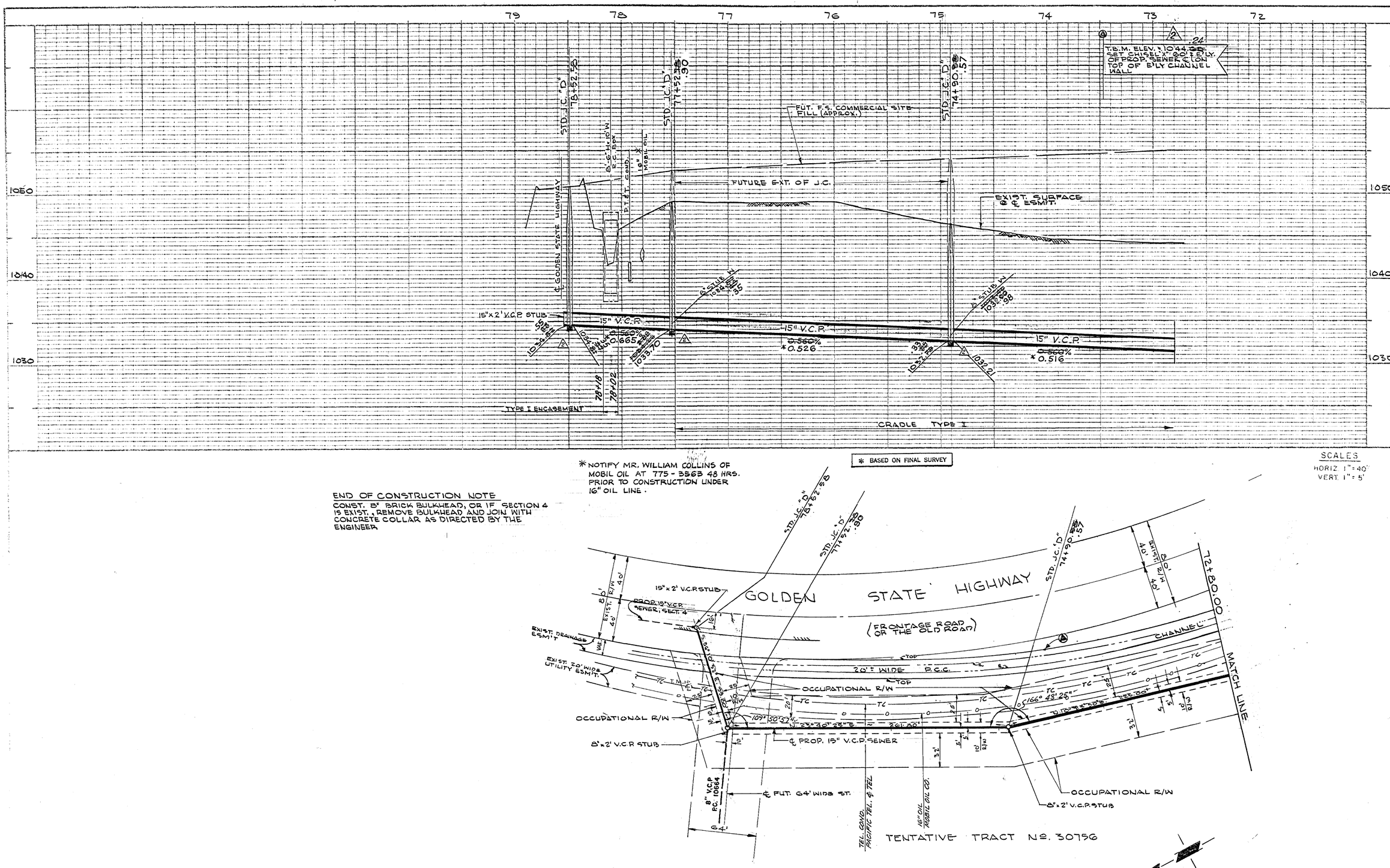


* NOTIFY MR. WILLIAM COLLINS OF MOBIL OIL AT 775-3563 48 HRS. PRIOR TO CONSTRUCTION UNDER 16" OIL LINE.

* BASED ON FINAL SURVEY

SCALES
HORIZ. 1" = 40'
VERT. 1" = 5'

END OF CONSTRUCTION NOTE
CONST. 8" BRICK BULKHEAD, OR IF SECTION 4 IS EXIST., REMOVE BULKHEAD AND JOIN WITH CONCRETE COLLAR AS DIRECTED BY THE ENGINEER




A PORTION OF RANCHO SAN FRANCISCO

P.1-521-522
L.S. 27-27-31

COUNTY SANITATION DISTRICT NO. 32
OF LOS ANGELES COUNTY, CALIF.

SUBMITTED G. Porthimmer MAY 12, 1970
RECOMMENDED W. E. Bonin MAY 12, 1970
APPROVED J. A. Pollmont MAY 12, 1970

| NO. | SHEET | REVISIONS | INITIALS | DATE |
|---|---|---|---|---|
| 2 | 11 | REVISED B.M. ELEV. | WMP | 7-21-70 |

PREPARED BY SIKAND ENGINEERING ASSOCIATES
DESIGNED [signature]
DATE May 12, 1970

CASTAIC TRUNK SEWER
SECTION 3

SHEET NO. 11
OF 15 SHEETS

| FINAL SURVEY | FIELD BOOK | PLOTTED | CHECKED | DATE | DWG. NO. |
|---|---|---|---|---|---|
| | 1192 | H.F.W. | T.A.H. | 9-28-71 | 32-P-6 |

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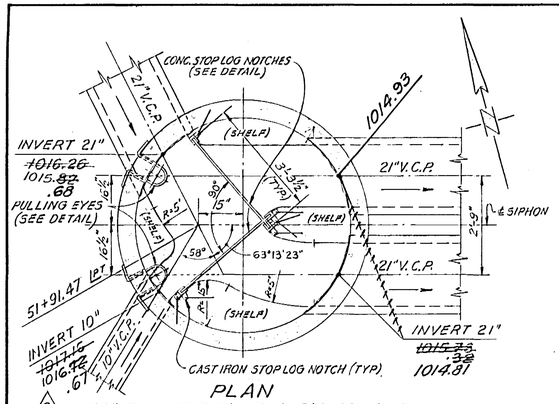
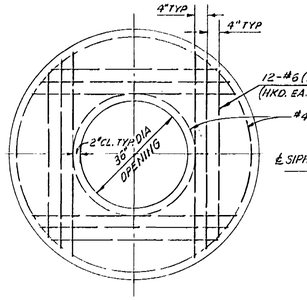
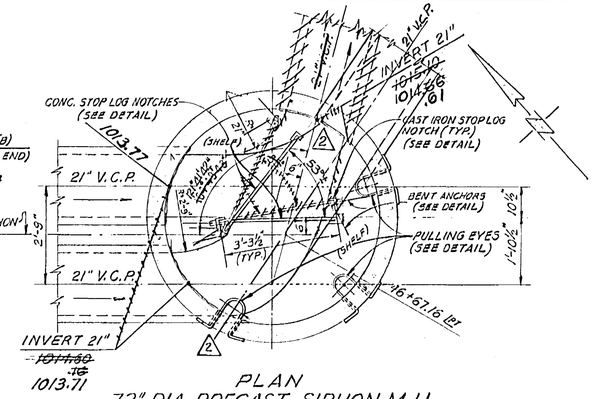


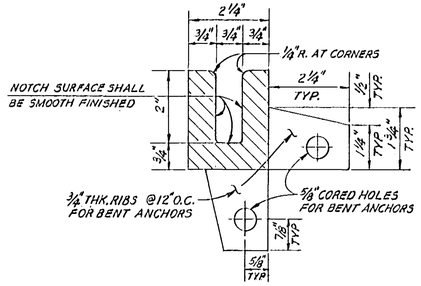

2 72" DIA. PRECAST SIPHON M.H.
TYPE "D" (MODIFIED)
STA. 51+91.47



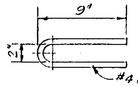

PLAN
FLAT SLAB TOP




PLAN
72" DIA. PRECAST SIPHON M.H.
TYPE "D" (MODIFIED)
STA. 46+67.16

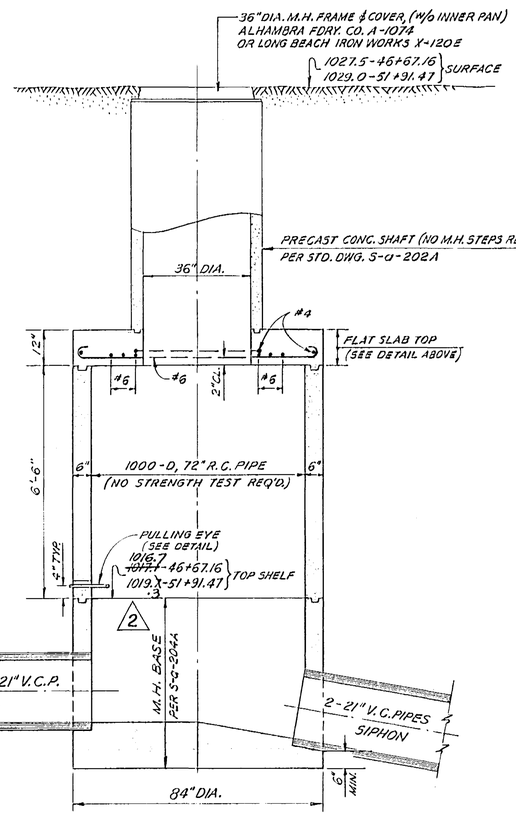



CAST IRON STOP LOG NOTCH
HALF SCALE

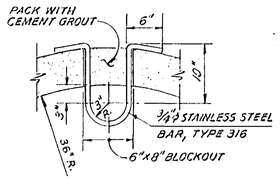



BENT ANCHOR
NO SCALE

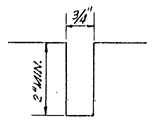
NOTES:
1. CAST IRON NOTCHES SHALL BE GRAY IRON CASTING ASTM-A48 CLASS 35B.
2. SUBMIT SHOP DRAWINGS FOR APPROVAL OF ENGINEER PRIOR TO FABRICATION.
3. BENT ANCHORS SHALL BE SUPPORTED IN A HORIZONTAL POSITION DURING POURING OF CONCRETE.




TYPICAL SECTION
(CHANNELS & STOP LOGS NOT SHOWN)

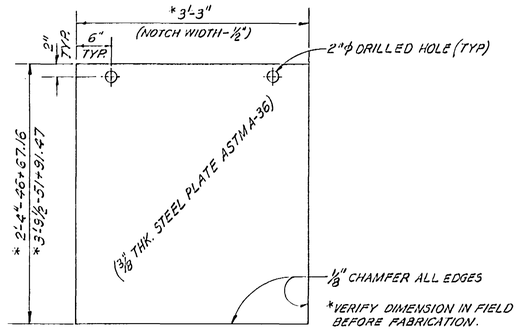



PULLING EYE
5 # REQ'D.
SCALE 1"=1'-0"




NOTE:
NOTCH SHALL BE FORMED USING STYROFOAM. CONTRACTOR SHALL REMOVE STYROFOAM AFTER CONCRETE HAS SET.

CONCRETE STOP LOG NOTCH
HALF SCALE




*VERIFY DIMENSION IN FIELD BEFORE FABRICATION.

STOP LOG
1 REQ'D. EACH M.H.
NO SCALE

## CONSTRUCTION NOTES

CONCRETE

1. ALL CONCRETE SHALL BE CLASS "A" ($f'_c$ = 3000 PSI @ 28 DAYS)
2. ALL REINFORCING BARS SHALL BE NEW BILLET STEEL DEFORMED BARS CONFORMING TO A.S.T.M. SPECIFICATIONS A615-68, GRADE 40. REINFORCING BARS SHALL BE WELDABLE.
3. ALL HOOKS AND BENDS AND CONCRETE CONSTRUCTION SHALL CONFORM TO THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-63).
4. THE DISTRICT WILL PROVIDE CONTINUOS INSPECTION FOR ALL REINFORCED CONCRETE CONSTRUCTION.
5. THE FOLLOWING ABBREVIATIONS ARE DEFINED:

| | | |
|---|---|---|
| CONC. | - | CONCRETE |
| CL. | - | CLEAR |
| B. | - | BOTTOM |
| HKD. | - | HOOKED |
| TYP. | - | TYPICAL |
| EA. | - | EACH |
| M.H. | - | MANHOLE |

PROTECTIVE COATINGS FOR STOP LOGS AND LOG NOTCHES

ALL SURFACES OF STOP LOGS AND CAST IRON STOP LOG NOTCHES SHALL BE COATED WITH "USS CHEMICALS" COAL TAR-EPOXY COATING "TARSET" PRIOR TO INSTALLATION IN THE STRUCTURE. THE COATING SHALL BE A MINIMUM THICKNESS OF 15 MILLS TOTAL DRY FILM APPLIED IN TWO OR MORE COATS. THE COAL TAR-EPOXY SHALL BE APPLIED IN CONFORMANCE WITH THE MANUFACTURER'S TECHNICAL BULLETINS AND RECOMMENDATIONS. THE METAL SURFACES TO BE COATED WITH COAL TAR-EPOXY SHALL BE CLEANED BY ABRASIVE BLASTING IN ACCORDANCE WITH THE "STEEL BLAST CLEANING" AND THE COATING SHALL BE APPLIED IMMEDIATELY AFTER CLEANING OF THE METAL SURFACE.
A COAL TAR-EPOXY COATING EQUAL TO THE COATING CALLED FOR MAY BE SUBSTITUTED WITH APPROVAL OF THE CHIEF ENGINEER.

| NO. | REVISIONS | INITIALS | DATE |
|---|---|---|---|
| 2 | REVISED TO REFLECT CHANGE | | 7-21-70 |

COUNTY SANITATION DISTRICT NO. 32 OF LOS ANGELES COUNTY, CALIF.

| | | | |
|---|---|---|---|
| SUBMITTED | | MAY 12, 1970 | DATE |
| RECOMMENDED | ASST. CHIEF ENGINEER & CHIEF ENGINEER | MAY 12, 1970 | DATE |
| APPROVED | CHIEF ENGINEER | MAY 12, 1970 | DATE |

| | | | |
|---|---|---|---|
| DESIGNED | | | |
| DRAWN | | MAY 1, 1970 | |
| CHECKED | | MAY 1, 1970 | |
| FIELD BOOK NO. | | | |

PREPARED BY SIKAND ENGINEERING ASSOCIATES
DESIGNED BY
DATE May 12 1970

# SIPHON MANHOLES
CASTAIC TRUNK SEWER SECTION 3

SCALE: ½" = 1'-0" (EXCEPT AS NOTED)
SHEET NO. 12
OF 15 SHEETS
DWG. NO. 32-P-6

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## Section 1 - General

The notes and specifications contained on these drawings are supplemental to the "Standard Specifications for the Construction of Sewers and Appurtenances" dated April 9, 1952, complete with addendum to said Standard Specifications dated October 28, 1964. In all matters where conflict exists between the notes and specifications on the drawings and the Standard Specifications, the notes and specifications on the drawings shall govern.

Unless otherwise allowed by the Engineer, the Contractor shall complete construction at each location to and including the base course of the final resurfacing within 45 calendar days after commencement of construction at the location. Completion of construction shall include all work required on the drawings and in the specifications, including manholes, house connections, planting, and replacement or repair of damaged surface improvements. Failure on the part of the Contractor to complete construction at each location, including base course of the final resurfacing, within 45 calendar days after commencement of construction at the location may result in a directive from the Engineer to cease progress on any or all parts of the work under contract until construction is completed, including base course of the final resurfacing on all portions of the project commenced more than 45 calendar days prior to the date of the directive. No additional compensation will be allowed as a result of such directive.

Throughout the period of construction, the Contractor shall keep the site free and clean from all rubbish and debris and shall promptly remove rubbish and debris from all or any portion of the site when notified to do so by the Engineer. When so directed by the Engineer, the Contractor shall furnish and operate a "pick-up-broom" with spray nozzles for cleaning up the site. Care shall be taken to prevent spillage on streets over which hauling is done, and any such spillage or debris deposited on streets due to the Contractor's operations shall immediately be cleaned up. During all phases of the construction work, the Contractor shall take precautions to abate dust nuisance by cleaning up, sweeping, sprinkling with water, or other means as necessary to accomplish results satisfactory to the Engineer, but whatever means are used, dust shall not be discharged into the atmosphere. The use of water which produces mud on public streets will not be permitted as a substitute for sweeping or other methods of control. The Contractor shall promptly remove from any parts of the working area all unused materials, surplus earth and debris, to the end that construction areas are returned to a clean, neat and acceptable condition at the earliest time following completion of the work in any reasonable reach. Failure on the part of the Contractor to comply with the orders of the Engineer regarding cleanup may result in a directive from the Engineer to cease progress on any or all parts of the work under contract until the unsatisfactory condition is corrected. No additional compensation will be allowed as a result of such suspension.

## Section 2 - Sequence of Work and Cooperation With Pumping Plant Contractor

The work to be done consists of the construction of a force main and three sections of gravity sewer.

The Contractor shall construct the portion of gravity sewer between Section 3 Sta. 68+15.98 and 72+65.98 as the first order of work to expedite embankment construction by others.

Unless otherwise allowed by the Engineer, the Contractor, after completion of above portion of gravity sewer, shall commence construction at the lower end of Section 1, 2, 3, or the force main and proceed upgrade in a continuous operation on that particular section before commencing construction on another section. Where tunneling or jacking operations are required, the Engineer will authorize out-of-sequence construction.

No sewer construction shall commence within the Southern Pacific Company property, proposed pumping plant property or within R/W between Section 3 Sta. 45+15 and 45+25 until authorization is obtained from the Engineer.

A separate contract will be awarded for the construction of the Castaic Pumping Plant shown on Sheets 6A & 6B of the drawings. The Contractor shall cooperate with the pumping plant contractor to expedite construction work of both parties.

## Section 3 - Notification

The Contractor shall notify the following persons or agencies at lease 48 hours prior to commencing construction:

| | |
|---|---|
| L. A. Co. Rd. Dept. (Palmdale Office B. Chalman) | 805-947-7173 |
| L. A. Co. Sheriff's (Newhall) | 805-259-1151 |
| L. A. Co. Fire Dept. (Castaic) | 805-259-2199 |

The Contractor shall notify the following persons or firms at least 48 hours prior to commencing construction in the vicinity of their facilities:

| | |
|---|---|
| Pac. Tel. & Tel. (Mr. R. W. Johnson) | 805-259-3720 |
| Valencia Water Co. (Mr. Hackney) | 805-259-7550 |
| Newhall Land & Farming (Irrig) (Mr. Ed Toney) | 805-259-2160 |

## Section 4 - Traffic Requirements In and Across Streets

The Contractor shall furnish and install all advance warning signing and any other traffic control devices, including flagmen, as may be required by the County Road Dept. Whenever, in the opinion of the Engineer, the Contractor's operations create a condition hazardous to traffic or to the public, the Contractor shall furnish at his expense such flagmen and guards as are necessary to give adequate warning to the public of any dangerous conditions to be encountered and he shall furnish, erect and maintain such barricades, lights, signs and other devices as are necessary to prevent accidents and avoid damage or injury to the public. Flagmen assigned to give warning to the public that the sewer is under construction and of any dangerous conditions to be encountered as a result thereof, shall be provided with the necessary equipment and perform their duties in accordance with the current "Instructions To Flagmen" issued by the State of California Department of Public Works, Division of Highways.

Signs, lights, flags and other warning and safety devices shall conform to the requirements set forth elsewhere in the current "Manual of Warning Signs, Lights, and Devices for Use in Performance of Work Upon Highways", issued by the State of California Department of Public Works Division of Highways.

Any shifting of traffic from one lane to another, which is necessary in order to maintain the required number of lanes, shall be directed in such a manner that traffic may move smoothly through the construction zone without any sudden changes from one lane to another; toward this end the minimum radii allowed for detouring of traffic from one lane to another shall be 250 feet.

In the event that traffic striping must be relocated in order to provide the necessary lanes, the removal of both temporary and permanent striping shall be accomplished by sandblasting by the Contractor at the expense of the Contractor under the direction of the Engineer. Striping, both temporary and permanent, will be performed by the County Road Dept. and shall be paid for by the District.

No material or equipment shall be stored where it will interfere with the free and safe passage of public traffic, and at the end of each day's work and at other times when construction operations are suspended for any reason, the Contractor shall remove all equipment and other obstructinns from that portion of the roadway open for use by public traffic. Equipment left overnight shall be made inoperable.

The Contractor may post "Temporary No Parking" signs in the vicinity of the actual construction work. The signs shall be posted at least 24 hours prior to commencing work.

All structures which the Contractor may elect to use to convey traffic, both vehicular and pedestrian, over the excavation, shall be approved by the County Road Dept. prior to their installation.

Unless otherwise noted, all traffic lanes mentioned herein shall have a minimum width of 10 feet. A minimum distance of 5 feet to any excavation and 2 feet from obstructions such as curbs or poles shall be maintained in addition to the lane width specified herein. Unless otherwise permitted by the Engineer, the Contractor shall comply with the following requirements when constructing in the streets:

3 Golden State Hwy. or "Old Road" or "Frontage Road", between Sec. 1 Sta. 3+65 & Force Main Sta. 68+00.

Maintain all lanes southbound and one lane northbound except for street crossing where one lane each way shall be maintained. Where median strip exists, opposing directions of traffic shall be separated by this median at all times.

Golden State Hwy. or Frontage Rd. or "Old Road"
3 Between Sec. 2 Sta. 1+65, and Sec 3 Sta. 44+30

Unless otherwise allowed by the L. A. County Road Dept., maintain two lanes, one in each direction at all times, except in the vicinity of active construction between the hours of 8:00 A.M. and 4:30 P.M. where the Contractor may reduce traffic to one flagmen controlled lane.

Route LA79-A On-Off Ramp

Maintain two lanes, one in each direction at all times.

Honor Farm Access Road

Maintain two lanes, one in each direction at all times.

Hasley Canyon Road
Between Sec. 3 Sta. 52+20 and 59+00

3 ~~Maintain local access at all times.~~ Same as Golden State Hwy. or "Old Road" or "Frontage Road" between Sec. 2 Sta. 1+65 and Sec. 3 Sta. 44+30.

## Section 5 - Backfill and Flooding of Gravity Sewer

The backfill of the trench above a depth of 3' below the surface shall be compacted to a relative density of 90% as determined in accordance with ASTM D 1556 (In Place Density) and ASTM D 1557 (Maximum Density).

The consolidation of the backfill of the trench below a depth of 3' below the surface may be accomplished by flooding and jetting the native material in accordance with Section 36 of the Standard Specifications. The backfill may be flooded in one lift.

The cost of initial compaction tests will be paid for by the District. Any expenses for subsequent tests required because of failure of the backfill to meet the initial tests shall be borne by the Contractor.

## Section 6 - Backfill of Force Main Trench

The Contractor shall provide a continuous bed for the force main pipe extending from not less than 4" below the pipe and joints to 4" above the pipe joints. This area will be referred to as the "pipe zone". This pipe bed shall consist of selected granular material free from clay, lumps of earth, rock, and stone and shall have a sand equivalent value of not less than 30. For sand equivalent value reference is made to California Test Method 217-H California State Highway Materials Manual. This backfill material shall be carefully placed in 4" layers by hand tamping with a hand tamping bar approved by the Engineer. Water shall be added to the backfill when required by the Engineer. Prior to placing this special bedding, the pipe shall be supported on mounds of select material. The remainder of the backfill from 4" above the top of the pipe to the top of the trench shall be placed as specified in Section 5. Flooding of the backfill in the "pipe zone" may be permitted in lieu of hand tamping, provided the compaction requirements can be obtained. The Engineer will be the sole judge as to the method of consolidation or compaction used by the Contractor. The Contractor shall obtain a minimum relative compaction of 90% of maximum density in the "pipe zone".

## Section 7 - Repaving Schedule

Materials and methods of construction for repaving shall conform to the "Standard Specifications for Public Works Construction 1970 Edition as adopted by the Los Angeles County Road Department and to Los Angeles County Road Department Standard Plan 40-01. The temporary resurfacing shall be with Type II asphaltic concrete and shall be left in place a minimum of 30 days.

Repaving requirements for the streets in which the proposed sewer is located are as follows:

Golden State Hwy. (Old Road) - (Rye Canyon Rd. to Castaic Creek)

Replace A. C. pavement area with ~~3"~~ 6" 4 of Type II A. C. ~~over 7" of concrete~~ over ~~8"~~ 15" 4 of aggregate base. Replace bituminous pavement shoulder area with Type II A. C. in kind plus one inch of thickness. See General Note 19, Sheet 1, for pavement adjustments.

Hasley Canyon Road Between Sec. 3, Sta. 52+30 & 60+65

Replace with ~~3"~~ 6" 4 of Type II A. C. ~~over 7" of concrete~~ over ~~8"~~ 15" 4 of aggregate base. See General Note 19, Sheet 1 for pavement adjustments.

All other pavement shall be replaced in kind plus 1" of thickness.

The Contractor is cautioned that the requirements for resurfacing as noted above do not necessarily reflect the thickness of existing pavement. Existing pavement may be of greater or lesser thickness than the required replacement.

## Section 8 - Specifications for Vitrified Clay Pipe

The Contractor shall furnish and install extra strength mechanical compression joint vitrified clay pipe as shown on the drawings. The pipe shall be manufactured in accordance with Section 21 of the Standard Specifications except that the 15", 21" & 24" diameter vitrified clay pipe shall withstand 3-edge bearing loads shown below rather than as shown in Table 8 on Page 26 of the Standard Specifications. Allowable width of trench shall be as shown below rather than as shown in Table 11 on Page 34 of the Standard Specifications.

MAXIMUM ALLOWABLE TRENCH WIDTH IN INCHES

| Pipe Size | 3-Edge Bearing | Cover on Pipe in Feet | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 9' | 10' | 11' | 12' | 13' | 14' | 15' | 16' | 18' |
| 15 | 3,100 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 |
| 21 | 4,200 | 53 | 51 | 50 | 48 | 46 | 45 | 44 | 43 | 41 |
| 24 | 4,800 | 59 | 56 | 55 | 53 | 51 | 49 | 48 | 47 | 45 |

Horizontal curves shall be constructed using beveled pipe which has a maximum bevel of 5° degrees on the spigot end. No one joint shall have a deflection greater than 5° degrees. The pipe used to construct the horizontal curves shall be factory fabricated to centerline radii shown on the drawings.

## Section 9 - Specifications For Force Main Between Sta. 19+52 & 68+12

The 16" diameter force main between above stations shall be Asbestos-Cement Pressure Pipe as manufactured by Johns-Manville or Certain-Teed, or Reinforced Plastic Mortar Pipe (Techite) as manufactured by United Technology Center, except as noted herein.

The asbestos-cement pressure pipe alternate shall be grooved sleeve coupling with sealing rings of suitable size and cross-section to fill the grooves, class 150, tested at 525 pounds as manufactured by Johns-Manville or Certain-teed, to comply with AWWA Specification C-400-64T or Federal Specifications SS-p-351A. The sealing rings shall be buna-N rubber

| NO. | SHEET | REVISIONS | INITIALS | DATE |
|---|---|---|---|---|
| 4 | 13 | REVISED REPAVING SCHEDULE | | 3-23-71 |
| 3 | 13 | REVISED TRAFFIC REQUIREMENTS | | 7-30-70 |

COUNTY SANITATION DISTRICT NO. 32
OF LOS ANGELES COUNTY, CALIF.

DESIGNED:
DRAWN:
CHECKED: 5-12-70
FIELD BOOK NO.

SUBMITTED: OFFICE ENGINEER — MAY 12, 1970 DATE
RECOMMENDED: ASSOCIATE ENGINEER — MAY 12, 1970 DATE
APPROVED: CHIEF ENGINEER — MAY 12, 1970 DATE

NOTES & SPECIFICATIONS
CASTAIC TRUNK SEWER SECTIONS 1, 2 & 3
AND
CASTAIC PUMPING PLANT FORCE MAIN

SCALE:

SHEET NO. 13
OF 15 SHEETS

DWG. NO. 32-P-6

DISCLAIMER: THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY (DISTRICTS) PROVIDE THIS INFORMATION "AS IS" FOR GENERAL REFERENCE ONLY. THE DISTRICTS DO NOT GUARANTEE OR WARRANT THE ACCURACY OF ANY INFORMATION SHOWN OR THE DRAWINGS AVAILABLE FOR DOWNLOAD. THE DISTRICTS DISCLAIM ANY EXPRESS OR IMPLIED WARRANTY. THIS INFORMATION SHOULD NOT BE RELIED UPON FOR CONSTRUCTION. THE INFORMATION MAY REFLECT ONLY AS-PLANNED LOCATIONS AND DOES NOT NECESSARILY ACCURATELY REFLECT THE LOCATIONS OF AS-BUILT FACILITIES OR SUBSEQUENTLY BUILT FACILITIES. APPROPRIATE FIELD VERIFICATION IS REQUIRED IN ORDER TO DETERMINE THE EXACT LOCATION OF DISTRICTS' FACILITIES. FACILITIES WITHIN DISTRICTS' PROPERTY ARE NOT SHOWN. ANY PERSON PERFORMING EXCAVATION MUST COMPLY WITH CALIFORNIA GOVERNMENT CODE SECTION 4216. NOTE THAT "SUBSURFACE INSTALLATIONS" AS DEFINED BY CALIFORNIA GOVERNMENT CODE SECTION 4216 EXCLUDES NON-PRESSURIZED SEWERS, NON-PRESSURIZED STORM DRAINS, AND OTHER NON-PRESSURIZED DRAIN LINES. ANY PERSON PLANNING TO CONSTRUCT IMPROVEMENTS OVER OR BELOW DISTRICTS' FACILITIES WITHIN PRIVATE RIGHT-OF-WAY SHALL OBTAIN A BUILDOVER AGREEMENT PRIOR TO CONSTRUCTION.

having a texture to insure a watertight and permanent seal.

The pipe manufacturer shall notify the Engineer 48 hours prior to the time the inspection and testing will take place. Prior to delivery, the pipe manufacturer shall furnish the Engineer a certification that the pipe has been sampled, tested, and inspected in accordance with the provisions of this specification.

Installation of the asbestos-cement pipe and joint deflection for curves shall be as outlined in manuals as furnished by the pipe manufacturer. The installing Contractor shall arrange with the manufacturer of the pipe for the services of a qualified pipe installation instructor to be on hand at the start of pipe assembly, during testing of the line and at other times during the installation, as necessary, to instruct in the proper assembly of pipe. This service does not include any inspection or design responsibility by the instructor or his employer.

The rubber gasket reinforced plastic mortar pipe alternate shall be manufactured using a resin binder, an aggregate filler and fiberglass reinforcement prescribed therefore in the United Technology Center Specification No. 01015 Form B, Revision C. The pipe shall be bell and spigot type having a single rubber gasket, class 150, tested at 450 psi. The dimensions of the bell and spigot shall be such that the joint can be pulled 3/4" open from normal closing without impairment of the tightness of the joint. The spigot end of the pipe measured at the groove shall have a thickness of approximately equal to the thickness of the wall of the pipe. The rubber gasket shall be seated in an accurately shaped groove on the spigot end of the pipe section. The gasket shall be of suitable cross section and size to fill the groove and provide a watertight joint when the pipe is laid. The rubber gaskets shall be the sole element depended upon to make the joint watertight. The gaskets shall be of rubber of neoprene base having a texture to insure a watertight and permanent seal, and shall be a product of a manufacturer having at least 5 years' experience in the manufacturing of rubber gaskets for pipe joints. The rubber gasket joint shall be identical to that successfully manufactured by the pipe supplier for a period of at least 3 years.

The pipe manufacturer shall notify the Engineer 48 hours prior to the time the inspection and testing will take place. Prior to delivery, the pipe manufacturer shall furnish the Engineer a certification that the pipe has been sampled, tested, and inspected in accordance with the provisions of this specification.

Installation of the reinforced plastic mortar pipe and joint deflection for curves shall be as outlined in manuals as furnished by the pipe manufacturer. The installing contractor shall arrange with the manufacturer of the pipe for the services of a qualified pipe installation instructor to be on hand at the start of pipe assembly, during testing of the line and at other times during the installation, as necessary, to instruct in the proper assembly of pipe. This service does not include any inspection or design responsibility by the instructor or his employer.

The force main between Sta. 32+~~77.93~~ 76.85 and 33+43.~~54~~ .77, ⚠2 except the 45° victaulic elbows at Sta. 33+~~01.73~~ 00.64 and 33+19.~~73~~ .98, shall be constructed of 16" diameter ductile iron pipe, Class 2, per ASA spec. A21.50 and A21.51 with shouldered ends OD of 18.50" to accept victaulic couplings, Style 44. The two 16" diameter 45° victaulic elbows (A-1056) shall be gray cast iron compatible to the force main pipe and manufactured per ASA spec. A21.10 with shouldered ends having an OD of 18.50".

The 16" pressure pipe shall be subjected to a yard leakage test and a field leakage test. The yard leakage test shall be performed by the manufacturer prior to the laying of any pipe in the trench. Two specimens of the pipe manufactured shall be selected by the Engineer and pressure tested by assembling the two pieces together using the rubber gasket proposed to be used. The pipe ends shall be bulkheaded and the pipe section filled with water and allowed to stand to saturate the pipe walls. The saturation time shall be in accordance to the manufacturer's recommendations. The pipe sections shall be thoroughly bled of air and then subjected to a pressure of 50 psi and allowed to remain at least 1 hour. The total leakage from the tested sections shall not exceed one-half of the amount permitted for an equivalent length of pipe under the field leakage test required for the completed line.

After the 16" force main is completed, the Contractor shall properly bulkhead the pipe at Station 19+52 and fill the 16" force main between bulkhead and 16" main line gate valve outside pumping plant with water. After thoroughly bleeding the air from the system, the pipe shall be subjected to a hydrostatic pressure of 50 psig measured at the lower end of the force main. After the pipe has been saturated, the field leakage test shall not exceed 50 gallons per inch diameter per mile of pipe per day for a period of at least 4 hours.

Any repair of the line required to meet the leakage test shall be done by the Contractor. If the leakage is less than the amount specified, the Contractor shall stop any individual leaks that may be observed when ordered to do so by the Engineer.

The Contractor shall, at his expense, furnish all materials, bulkheads and labor for making the required tests.

<u>Section 10 - Mark-Ups for Extra Work</u>

15% will be added to the total amounts for labor, material, equipment rental and other direct costs of extra work to cover overhead and profit, including bonds and insurance. When all or any part of the extra work is performed by a subcontractor, an additional 5% will be added for the general contractor.

<u>Section 11 - Gas and Water Service Connections</u>

The gas and water service connections are not shown on the drawings. Prior to beginning construction, the Contractor shall contact the affected utility companies and obtain the locations of their service connections.

<u>Section - Support of Conduits Crossing Sewer Trench</u>

The Contractor shall provide temporary supports in a manner approved by the Engineer and permanent concrete pipe supports per S-a-217 under all existing concrete, asbestos cement and clay pipe lines and all conduits which are not tunneled and also under other conduits where requested by the owner, or by the Engineer.

<u>Section 13 - Requirements Within Southern Pacific Company Property</u>

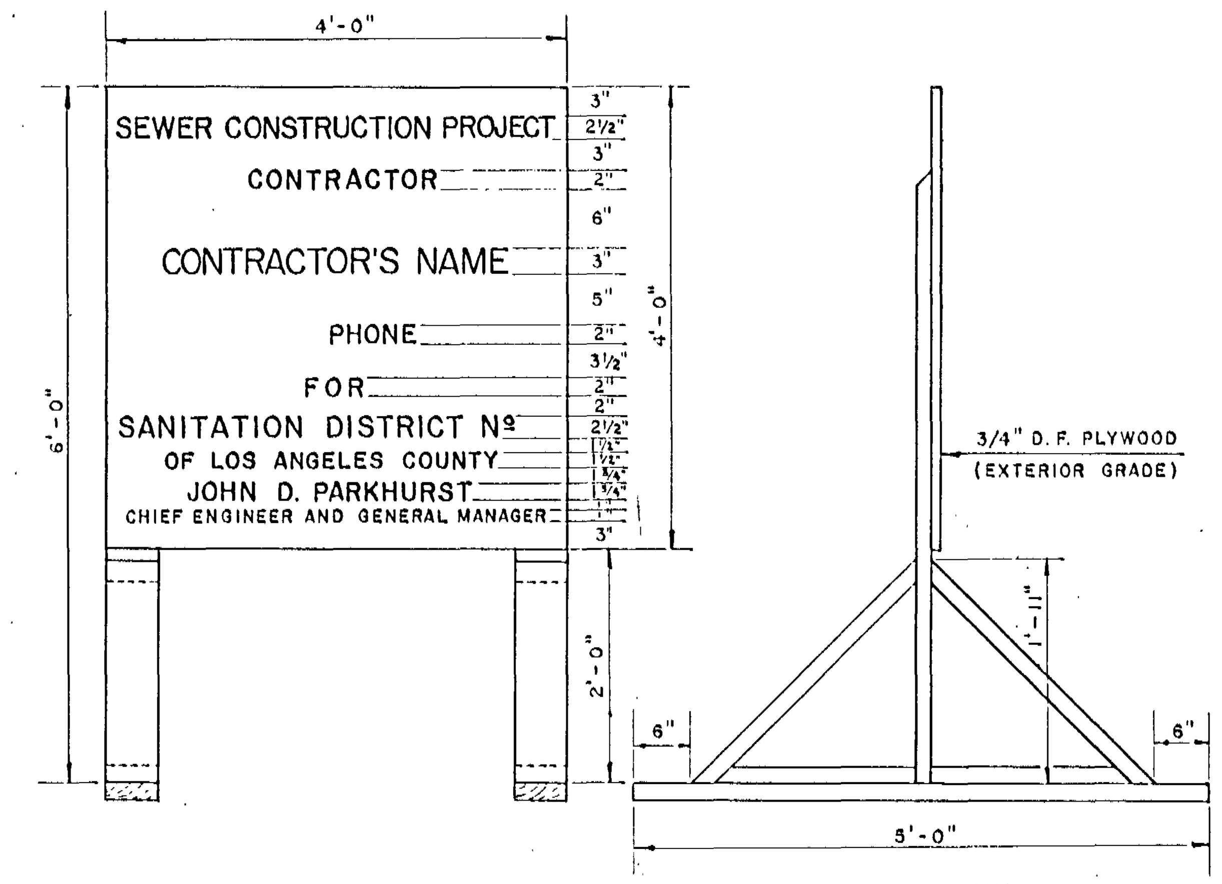
All work between sewer stations 2+03 and 3+06, as shown on Sheet 2, shall be in accordance with the requirements of the Southern Pacific Company. No sewer construction shall commence within the Southern Pacific Company property until authorization is obtained from the Engineer.

Prior to commencing construction within the Southern Pacific Company's property, the Contractor shall enter into an indemnification agreement with Southern Pacific Company. This agreement shall require the Contractor to provide the Company with a certified copy of an insurance policy, terminal upon completion of work and acceptance by District covering the contractorial liability under this agreement. The limits of the policy shall be not less than $500,000/1,000,000 bodily injury and $500,000/1,000,000 property damage. This agreement shall also specify that the Contractor shall reimburse the Southern Pacific Company for any and all expenses incurred by the Company as a result of this construction and shall deposit $500 with the Company to cover these expenses. Any portion of this deposit remaining after construction is completed will be returned to the Contractor.

⚠ Between sewer Stations 2+~~37~~ 25 and 2+~~69~~ 81, as indicated on the drawings, the Contractor shall jack into place a 45" diameter steel casing having a minimum wall thickness of 3/8" and shall install the pipe within the casing. All voids outside of the casing and between the casing and the sewer pipe shall be filled with cement-sand grout placed under pressure. All cement-sand grout shall have 8 sacks of cement per cubic yard of grout.

No part of the excavation shall be closer than 15' to the centerline of the railroad track measured at right angles to the track. The jacking pit perimeter and the foreface of the excavation adjacent to track shall be solid sheeted, and timbers used for sheeting shall extend 3-1/2 feet above the ground surface. All timbers and supports shall be designed to withstand an E-72 train load. The Contractor shall submit to and obtain approval of the Engineer of his method of solid sheeting prior to commencing construction.

The Contractor shall notify Mr. J. R. Meyer, Assistant Engineer, Southern Pacific Company, 610 South Main Street, Los Angeles, California 90014, telephone (213) 624-6161, Ext. 22778, five working days prior to commencing construction within the Southern Pacific Company property.

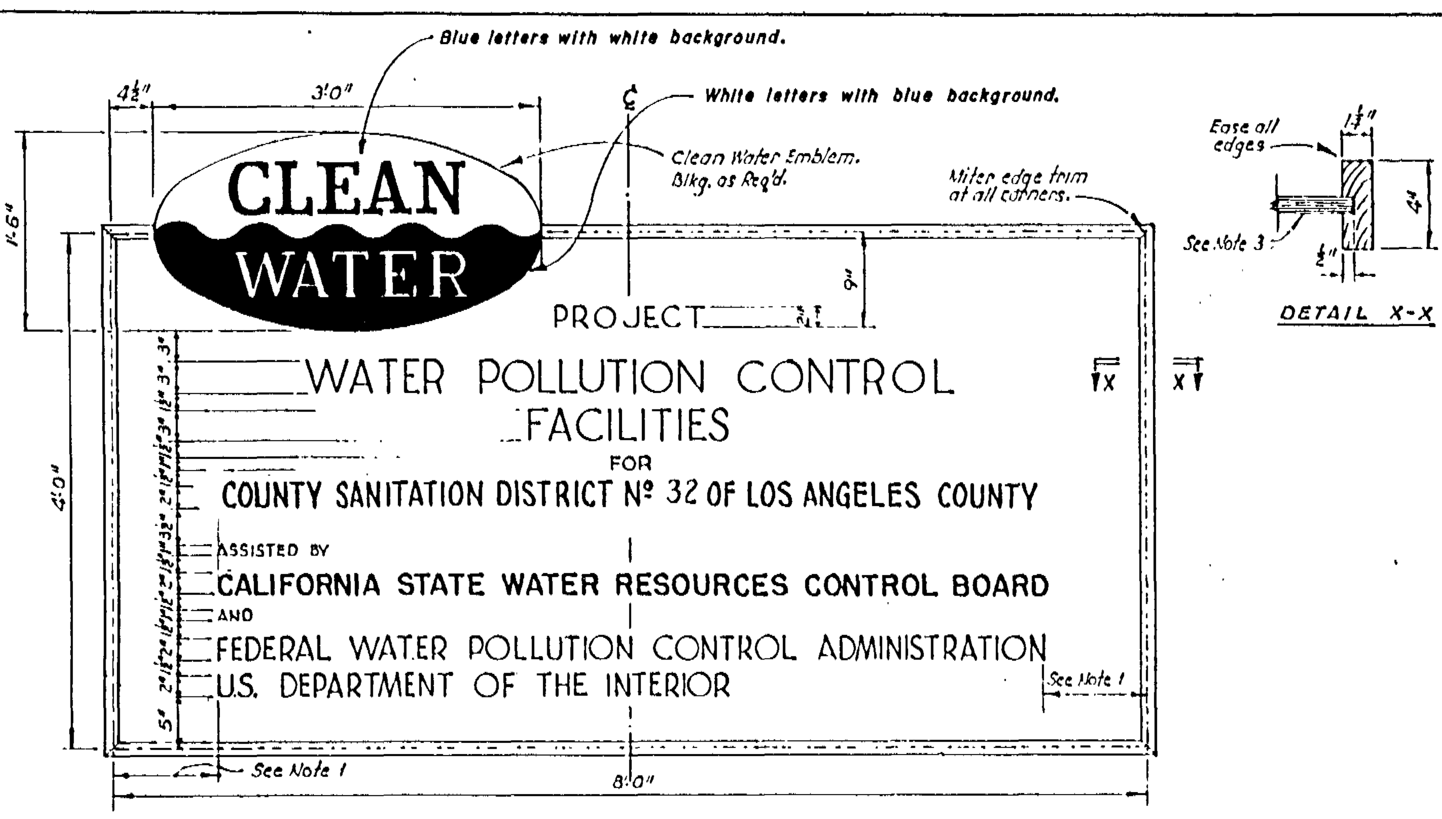



FRONT VIEW　　SIDE VIEW

NOTES:

1. ALL FRAMING LUMBER TO BE 2" x 6" S4S D.F.
2. ENTIRE SIGNS, INCLUDING FRAMING, TO BE PAINTED WITH TWO COATS OF EXTERIOR OIL BASE WHITE PAINT.
3. LETTERING TO BE DONE IN BLACK BY QUALIFIED SIGN PAINTER AND TO THE SATISFACTION OF THE ENGINEER.
4. SIGNS TO BE MAINTAINED IN A CONDITION SATISFACTORY TO THE ENGINEER.
5. SIGNS TO BE FURNISHED BY CONTRACTOR AND INSTALLED AND MOVED BY CONTRACTOR AS DIRECTED BY THE ENGINEER.

PROJECT SIGNS
(2 REQUIRED)




C L E A N　W A T E R　S I G N

<u>Notes</u>

1. All lines shall be kept in vertical alignment at left border of sign. Left border shall be determined using the longest line centered on the sign providing equal borders. The Rt. border for other than longest line shall vary as required.
2. Provide adequate supports for sign as site conditions may require and keep sign a proper distance above prevailing grade to permit public viewing.
3. Exterior type high density overlaid plywood or other approved material suitable for signs.
4. The style of letters and spacing shall be in accordance with those shown.
5. Paint letters blue, background and all other sign components white. Blue No. 15102 in Federal Color Standard No. 595.
6. Duplicate standard "Clean Water" emblem. The lettering style shall be as shown. Set emblem on edge trim of sign. Provide supports for rigid installation.
7. The "Clean Water" sign and support frame will be furnished by the District at no cost to the Contractor. The sign will be delivered to the job site but the Contractor shall move the sign as directed by the Engineer. Upon completion of the project, the Contractor shall return the sign in good condition to the District.

| NO | SHEET | REVISIONS | INITIALS | DATE |
|---|---|---|---|---|
| ⚠ | 14 | REVISED F.M. LOCATION VICINITY OF 33+00± | [illegible] | 7-21-70 |
| ⚠ | 14 | EXTENDED JACKING LIMITS PER S.P.R.R. REQ. | [illegible] | 6-10-70 |

COUNTY SANITATION DISTRICT NO. 32 OF LOS ANGELES COUNTY, CALIF.

| | | | |
|---|---|---|---|
| DESIGNED | | SUBMITTED [signature] OFFICE ENGINEER | MAY 12, 1970 DATE |
| DRAWN | | RECOMMENDED [signature] ASST. CHIEF ENGINEER | MAY 12, 1970 DATE |
| CHECKED | [signature] 5-2-70 | APPROVED [signature] CHIEF ENGINEER | MAY 12, 1970 DATE |
| FIELD BOOK NO. | | | |

NOTES & SPECIFICATIONS
CASTAIC TRUNK SEWER SECTIONS 1, 2 & 3
AND
CASTAIC PUMPING PLANT FORCE MAIN

SCALE:

SHEET NO. 14 OF 15 SHEETS

DWG. NO.

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## Section 14 - Federal Grant Requirements

Application has been made by County Sanitation District No. 8 for a federal construction grant for this project as authorized under provisions of the Federal Water Pollution Control Act. The contract for this project, and all subcontracts, shall contain the stipulations and provisions issued by the Secretary of Health, Education and Welfare in "Labor Standards - Contract Provisions", a copy of which is included herein and are hereby made a part of the contract documents.

## Section 15 - Nondiscrimination in Employment

The contract for work under this proposal will obligate the contractor and subcontractors not to discriminate in employment practices.

Bidders must submit with their initial bid a signed statement as to whether they have previously performed work subject to the President's Executive Order No. 10925.

Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the contract.

The successful bidder must submit a list of all subcontractors who will perform work on the project and, if requested, written signed statements from authorized agents of the labor pools with which they will or may deal for employees on the work, together with supporting information to the effect that said labor pools' practices and policies are in conformity with Executive Order No. 10925 as amended by Executive Order No. 11114 and that said labor pools will affirmatively cooperate in or offer no hinderance to the recruitment, employment and equal treatment of employees seeking employment and performing work under this contract, or a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish same prior to the award of the contract.

The successful bidder must be prepared to comply in all respects with the contract provisions regarding nondiscrimination.

## Section 16 - Minimum Pay Rates

The construction contract, and all subcontracts, shall prescribe the minimum rates of pay for laborers and mechanics engaged in the construction of the project as determined by the Secretary of Labor in accordance with the Davis-Bacon Act. A copy of the federal minimum wage rates is included herein and is hereby made a part of the contract documents.

If conflict exists between the federal minimum wage rates and the prevailing wage rates ascertained by the Board of Directors of the District, the higher minimum wage shall be prescribed.

## Section 17 - Statement of Compliance

A statement of compliance with the regulations stated herein must be signed weekly by the Contractor. A file of these statements, along with the payrolls, must be maintained by the Contractor and the District for a period of at least three years.

## LABOR STANDARDS

FEBRUARY 1959

### Contract Provisions

(1) *Minimum wages.* (i) All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amounts due at time of payment computed at wage rates not less than those contained in the wage determination decision of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics; and the wage determination decision shall be posted by the contractor at the site of the work in a prominent place where it can be easily seen by the workers. For the purpose of this clause, contributions made or costs reasonably anticipated under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of (1)(iv) hereof. Also for the purpose of this clause, regular contributions made or costs incurred for more than a weekly period under plans, funds, or programs, but covering the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

(ii) The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract, shall be classified or reclassified conformably to the wage determination, and a report of the action taken shall be sent by the Federal agency to the Secretary of Labor. In the event the interested parties cannot agree on the proper classification or reclassification of a particular class of laborers and mechanics to be used, the question accompanied by the recommendation of the contracting officer shall be referred to the Secretary of Labor for final determination.

(iii) The contracting officer shall require whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly wage rate and the contractor is obligated to pay a cash equivalent of such a fringe benefit, an hourly cash equivalent thereof to be established. In the event the interested parties cannot agree upon a cash equivalent of the fringe benefit, the question, accompanied by the recommendation of the contracting officer, shall be referred to the Secretary of Labor for determination.

(iv) If the contractor does not make payments to a trustee or other third person, he may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing benefits under a plan or program of a type expressly listed in the wage determination decision of the Secretary of Labor which is a part of this contract: *Provided, however,* The Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) *Withholding.*
The Federal Water Pollution Control Administration may withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics employed by the contractor or any subcontractor on the work, the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic employed or working on the site of the work all or part of the wages required by the contract, the Federal Water Pollution Control Administration may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) *Payrolls and basic records.* (i) Payrolls and basic records relating thereto will be maintained during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records will contain the name and address of each such employee, his correct classification, rates of pay (including rates of contributions or costs anticipated of the types described in section 1 (b) (2) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found (as provided for by (1) (iv) hereof) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1 (b) (2) (B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(ii) The contractor will submit weekly a copy of all payrolls to the applicant, sponsor, or owner, as the case may be. The copy shall be accompanied by a statement signed by the employer or his agent indicating that the payrolls are correct and complete, that the wage rates contained therein are not less than those determined by the Secretary of Labor and that the classifications set forth for each laborer or mechanic conform with the work he performed. A submission of a "Weekly Statement of Compliance" which is required under this contract and the Copeland regulations of the Secretary of Labor (29 CFR, Part 3) and the filing with the initial payroll or any subsequent payroll of a copy of any findings by the Secretary of Labor pursuant to (1) (iv) hereof shall satisfy this requirement. The prime contractor shall be responsible for the submission of copies of payrolls of all subcontractors. The contractor will make the records required under the labor standards clauses of the contract available for inspection by authorized representatives of the Federal Water Pollution Control Administration and the Department of Labor, and will permit such representatives to interview employees during working hours on the job.

(4) *Apprentices.* Apprentices will be permitted to work as such only when they are registered, individually, under a bona fide apprenticeship program registered with a State apprenticeship agency which is recognized by the Bureau of Apprenticeship and Training, United States Department of Labor; or, if no such recognized agency exists in a State, under a program registered with the Bureau of Apprenticeship and Training, United States Department of Labor. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the wage rate determined by the Secretary of Labor for the classification of work he actually performed. The contractor or subcontractor will be required to furnish to the contracting officer written evidence of the registration of his program and apprentices as well as of the appropriate ratios and wages rates, for the area of construction prior to using any apprentices on the contract work.

(5) *Compliance with Copeland Regulations (29 CFR Part 3).* The contractor shall comply with the Copeland Regulations (29 CFR Part 3) of the Secretary of Labor which are herein incorporated by reference.

(6) *Subcontracts.* The contractor will insert in any subcontracts clauses (1) through (5) and (7) hereof and such other clauses as the Federal Water Pollution Control Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

(7) *Contract termination; debarment.* A breach of clauses (1) through (6) may be grounds for termination of the contract, and for debarment as provided in Regulations of the Secretary of Labor at 29 CFR 5.6.

(8) *Overtime requirements.* No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, as the case may be.

(9) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in paragraph (8), the contractor and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such district or such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the clause set forth in paragraph (8), in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (8).

(10) *Withholding for unpaid wages and liquidated damages.* The Federal Water Pollution Control Administration may withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (9).

(11) *Subcontracts.* The contractor shall insert in any subcontracts the clauses set forth in paragraphs (8), (9), and (10) hereof and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

### NON DISCRIMINATION PROVISIONS TO BE INCLUDED IN FEDERALLY ASSISTED CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however,* That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

## U.S. DEPARTMENT OF LABOR
OFFICE OF THE SECRETARY
WASHINGTON

### DECISION OF THE SECRETARY

This case is before the Department of Labor pursuant to a request for a wage predetermination as required by law applicable to the work described.

A study has been made of wage conditions in the locality and based on information available to the Department of Labor the wage rates and fringe payments listed are hereby determined by the Secretary of Labor as prevailing for the described classes of labor in accordance with applicable law.

This wage determination decision and any modifications thereof during the period prior to the stated expiration date shall be made a part of every contract for performance of the described work as provided by applicable law and regulations of the Secretary of Labor, and the wage rates and fringe payments contained in this decision, including modifications, shall be the minimums to be paid under any such contract by contractors and subcontractors on the work.

The contracting officer shall require that any class of laborers and mechanics which is not listed in the wage determination and which is to be employed under the contract, shall be classified or reclassified conformably to the wage determination, and a report of the action taken shall be sent by the Federal agency to the Secretary of Labor. In the event the interested parties cannot agree on the proper classification or reclassification of a particular class of laborers and mechanics to be used, the question accompanied by the recommendation of the contracting officer shall be referred to the Secretary for determination.

Before using apprentices on the job the contractor shall present to the contracting officer written evidence of registration of such employees in a program of a State apprenticeship and training agency approved and recognized by the U.S. Bureau of Apprenticeship and Training. In the absence of such a State agency, the contractor shall submit evidence of approval and registration by the U.S. Bureau of Apprenticeship and Training.

The contractor shall submit to the contracting officer written evidence of the established apprentice-journeyman ratios and wage rates in the project area, which will be the basis for establishing such ratios and rates for the project under the applicable contract provisions.

Fringe payments include medical and hospital care, compensation for injuries or illness resulting from occupational activity, unemployment benefits, life insurance, disability and sickness insurance, accident insurance (all designated as health and welfare), pensions, vacation and holiday pay, apprenticeship or other similar programs and other bona fide fringe benefits.

*By direction of the Secretary of Labor,*

E. Irving Manger (signature)

E. IRVING MANGER, Associate Administrator
Division of Wage Determinations
Wage and Labor Standards Administration

GPO : 1966 O-266-847

## Wage Determination — CALIFORNIA, LOS ANGELES COUNTY — BUILDING, HEAVY & HIGHWAY CONSTRUCTION

| Classification | Basic Hourly Rates | H & W | Pensions | Vacation | App. Tr. | Others |
|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

LABORERS: (cont'd.)

| Classification | Basic Hourly Rates | H & W | Pensions | Vacation | App. Tr. | Others |
|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

POWER EQUIPMENT OPERATORS

| Classification | Basic Hourly Rates | H & W | Pensions | Vacation | App. Tr. | Others |
|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

TRUCK DRIVERS

| Classification | Basic Hourly Rates | H & W | Pensions | Vacation | App. Tr. | Others |
|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

DREDGING

| Classification | Basic Hourly Rates | H & W | Pensions | Vacation | App. Tr. | Others |
|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

FOOTNOTES: [illegible]

PAID HOLIDAYS: [illegible]

| COUNTY SANITATION DISTRICT NO. 32 OF LOS ANGELES COUNTY, CALIF. | |
|---|---|
| DESIGNED | SUBMITTED (signature) OFFICE ENGINEER — MAY 12, 1970 |
| DRAWN | RECOMMENDED W. E. (signature) ASST. CHIEF ENGINEER — MAY 12, 1970 |
| CHECKED K. M. Fulton 5-12-70 | APPROVED (signature) CHIEF ENGINEER — MAY 12, 1970 |
| FIELD BOOK NO. | |

NOTES & SPECIFICATIONS
CASTAIC TRUNK SEWER SECTIONS 1, 2 & 3
AND
CASTAIC PUMPING PLANT FORCE MAIN

SCALE:
SHEET NO. 15 OF 15 SHEETS
DWG. NO. 32-P-6

DISCLAIMER: THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY (DISTRICTS) PROVIDE THIS INFORMATION "AS IS" FOR GENERAL REFERENCE ONLY. THE DISTRICTS DO NOT GUARANTEE OR WARRANT THE ACCURACY OF ANY INFORMATION SHOWN OR THE DRAWINGS AVAILABLE FOR DOWNLOAD. THE DISTRICTS DISCLAIM ANY EXPRESS OR IMPLIED WARRANTY. THIS INFORMATION SHOULD NOT BE RELIED UPON FOR CONSTRUCTION. THE INFORMATION MAY REFLECT ONLY AS-PLANNED LOCATIONS AND DOES NOT NECESSARILY ACCURATELY REFLECT THE LOCATIONS OF AS-BUILT FACILITIES OR SUBSEQUENTLY BUILT FACILITIES. APPROPRIATE FIELD VERIFICATION IS REQUIRED IN ORDER TO DETERMINE THE EXACT LOCATION OF DISTRICTS' FACILITIES. FACILITIES WITHIN DISTRICTS' PROPERTY ARE NOT SHOWN. ANY PERSON PERFORMING EXCAVATION MUST COMPLY WITH CALIFORNIA GOVERNMENT CODE SECTION 4216. NOTE THAT "SUBSURFACE INSTALLATIONS" AS DEFINED BY CALIFORNIA GOVERNMENT CODE SECTION 4216 EXCLUDES NON-PRESSURIZED SEWERS, NON-PRESSURIZED STORM DRAINS, AND OTHER NON-PRESSURIZED DRAIN LINES. ANY PERSON PLANNING TO CONSTRUCT IMPROVEMENTS OVER OR BELOW DISTRICTS' FACILITIES WITHIN PRIVATE RIGHT-OF-WAY SHALL OBTAIN A BUILDOVER AGREEMENT PRIOR TO CONSTRUCTION.

# 4. RATING TABLE FOR SEWER PIPE

# Rating Table for 8 inch

## Project Description

| | |
|---|---|
| Friction Method | Kutter Formula |
| Solve For | Discharge |

## Input Data

| | | |
|---|---|---|
| Roughness Coefficient | 0.013 | |
| Channel Slope | 0.00400 | ft/ft |
| Normal Depth | 0.33 | ft |
| Diameter | 0.66 | ft |

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.00400 | 0.34 | 1.98 | 0.17 | 1.04 | 0.66 |
| 0.00440 | 0.36 | 2.08 | 0.17 | 1.04 | 0.66 |
| 0.00480 | 0.37 | 2.17 | 0.17 | 1.04 | 0.66 |
| 0.00520 | 0.39 | 2.26 | 0.17 | 1.04 | 0.66 |
| 0.00560 | 0.40 | 2.35 | 0.17 | 1.04 | 0.66 |
| 0.00600 | 0.42 | 2.43 | 0.17 | 1.04 | 0.66 |
| 0.00640 | 0.43 | 2.51 | 0.17 | 1.04 | 0.66 |
| 0.00680 | 0.44 | 2.59 | 0.17 | 1.04 | 0.66 |
| 0.00720 | 0.46 | 2.66 | 0.17 | 1.04 | 0.66 |
| 0.00760 | 0.47 | 2.74 | 0.17 | 1.04 | 0.66 |
| 0.00800 | 0.48 | 2.81 | 0.17 | 1.04 | 0.66 |
| 0.00840 | 0.49 | 2.88 | 0.17 | 1.04 | 0.66 |
| 0.00880 | 0.50 | 2.95 | 0.17 | 1.04 | 0.66 |
| 0.00920 | 0.52 | 3.01 | 0.17 | 1.04 | 0.66 |
| 0.00960 | 0.53 | 3.08 | 0.17 | 1.04 | 0.66 |
| 0.01000 | 0.54 | 3.14 | 0.17 | 1.04 | 0.66 |
| 0.01040 | 0.55 | 3.21 | 0.17 | 1.04 | 0.66 |
| 0.01080 | 0.56 | 3.27 | 0.17 | 1.04 | 0.66 |
| 0.01120 | 0.57 | 3.33 | 0.17 | 1.04 | 0.66 |
| 0.01160 | 0.58 | 3.39 | 0.17 | 1.04 | 0.66 |
| 0.01200 | 0.59 | 3.44 | 0.17 | 1.04 | 0.66 |
| 0.01240 | 0.60 | 3.50 | 0.17 | 1.04 | 0.66 |
| 0.01280 | 0.61 | 3.56 | 0.17 | 1.04 | 0.66 |
| 0.01320 | 0.62 | 3.61 | 0.17 | 1.04 | 0.66 |
| 0.01360 | 0.63 | 3.67 | 0.17 | 1.04 | 0.66 |

# Rating Table for 8 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.01400 | 0.64 | 3.72 | 0.17 | 1.04 | 0.66 |
| 0.01440 | 0.65 | 3.77 | 0.17 | 1.04 | 0.66 |
| 0.01480 | 0.65 | 3.83 | 0.17 | 1.04 | 0.66 |
| 0.01520 | 0.66 | 3.88 | 0.17 | 1.04 | 0.66 |
| 0.01560 | 0.67 | 3.93 | 0.17 | 1.04 | 0.66 |
| 0.01600 | 0.68 | 3.98 | 0.17 | 1.04 | 0.66 |
| 0.01640 | 0.69 | 4.03 | 0.17 | 1.04 | 0.66 |
| 0.01680 | 0.70 | 4.08 | 0.17 | 1.04 | 0.66 |
| 0.01720 | 0.71 | 4.13 | 0.17 | 1.04 | 0.66 |
| 0.01760 | 0.71 | 4.17 | 0.17 | 1.04 | 0.66 |
| 0.01800 | 0.72 | 4.22 | 0.17 | 1.04 | 0.66 |
| 0.01840 | 0.73 | 4.27 | 0.17 | 1.04 | 0.66 |
| 0.01880 | 0.74 | 4.31 | 0.17 | 1.04 | 0.66 |
| 0.01920 | 0.75 | 4.36 | 0.17 | 1.04 | 0.66 |
| 0.01960 | 0.75 | 4.41 | 0.17 | 1.04 | 0.66 |
| 0.02000 | 0.76 | 4.45 | 0.17 | 1.04 | 0.66 |
| 0.02040 | 0.77 | 4.50 | 0.17 | 1.04 | 0.66 |
| 0.02080 | 0.78 | 4.54 | 0.17 | 1.04 | 0.66 |
| 0.02120 | 0.78 | 4.58 | 0.17 | 1.04 | 0.66 |
| 0.02160 | 0.79 | 4.63 | 0.17 | 1.04 | 0.66 |
| 0.02200 | 0.80 | 4.67 | 0.17 | 1.04 | 0.66 |
| 0.02240 | 0.81 | 4.71 | 0.17 | 1.04 | 0.66 |
| 0.02280 | 0.81 | 4.75 | 0.17 | 1.04 | 0.66 |
| 0.02320 | 0.82 | 4.79 | 0.17 | 1.04 | 0.66 |
| 0.02360 | 0.83 | 4.84 | 0.17 | 1.04 | 0.66 |
| 0.02400 | 0.83 | 4.88 | 0.17 | 1.04 | 0.66 |
| 0.02440 | 0.84 | 4.92 | 0.17 | 1.04 | 0.66 |
| 0.02480 | 0.85 | 4.96 | 0.17 | 1.04 | 0.66 |
| 0.02520 | 0.85 | 5.00 | 0.17 | 1.04 | 0.66 |
| 0.02560 | 0.86 | 5.04 | 0.17 | 1.04 | 0.66 |
| 0.02600 | 0.87 | 5.08 | 0.17 | 1.04 | 0.66 |
| 0.02640 | 0.87 | 5.11 | 0.17 | 1.04 | 0.66 |
| 0.02680 | 0.88 | 5.15 | 0.17 | 1.04 | 0.66 |
| 0.02720 | 0.89 | 5.19 | 0.17 | 1.04 | 0.66 |
| 0.02760 | 0.89 | 5.23 | 0.17 | 1.04 | 0.66 |
| 0.02800 | 0.90 | 5.27 | 0.17 | 1.04 | 0.66 |
| 0.02840 | 0.91 | 5.31 | 0.17 | 1.04 | 0.66 |

# Rating Table for 8 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.02880 | 0.91 | 5.34 | 0.17 | 1.04 | 0.66 |
| 0.02920 | 0.92 | 5.38 | 0.17 | 1.04 | 0.66 |
| 0.02960 | 0.93 | 5.42 | 0.17 | 1.04 | 0.66 |
| 0.03000 | 0.93 | 5.45 | 0.17 | 1.04 | 0.66 |
| 0.03040 | 0.94 | 5.49 | 0.17 | 1.04 | 0.66 |
| 0.03080 | 0.95 | 5.53 | 0.17 | 1.04 | 0.66 |
| 0.03120 | 0.95 | 5.56 | 0.17 | 1.04 | 0.66 |
| 0.03160 | 0.96 | 5.60 | 0.17 | 1.04 | 0.66 |
| 0.03200 | 0.96 | 5.63 | 0.17 | 1.04 | 0.66 |
| 0.03240 | 0.97 | 5.67 | 0.17 | 1.04 | 0.66 |
| 0.03280 | 0.98 | 5.70 | 0.17 | 1.04 | 0.66 |
| 0.03320 | 0.98 | 5.74 | 0.17 | 1.04 | 0.66 |
| 0.03360 | 0.99 | 5.77 | 0.17 | 1.04 | 0.66 |
| 0.03400 | 0.99 | 5.81 | 0.17 | 1.04 | 0.66 |
| 0.03440 | 1.00 | 5.84 | 0.17 | 1.04 | 0.66 |
| 0.03480 | 1.00 | 5.87 | 0.17 | 1.04 | 0.66 |
| 0.03520 | 1.01 | 5.91 | 0.17 | 1.04 | 0.66 |
| 0.03560 | 1.02 | 5.94 | 0.17 | 1.04 | 0.66 |
| 0.03600 | 1.02 | 5.97 | 0.17 | 1.04 | 0.66 |
| 0.03640 | 1.03 | 6.01 | 0.17 | 1.04 | 0.66 |
| 0.03680 | 1.03 | 6.04 | 0.17 | 1.04 | 0.66 |
| 0.03720 | 1.04 | 6.07 | 0.17 | 1.04 | 0.66 |
| 0.03760 | 1.04 | 6.11 | 0.17 | 1.04 | 0.66 |
| 0.03800 | 1.05 | 6.14 | 0.17 | 1.04 | 0.66 |
| 0.03840 | 1.06 | 6.17 | 0.17 | 1.04 | 0.66 |
| 0.03880 | 1.06 | 6.20 | 0.17 | 1.04 | 0.66 |
| 0.03920 | 1.07 | 6.23 | 0.17 | 1.04 | 0.66 |
| 0.03960 | 1.07 | 6.27 | 0.17 | 1.04 | 0.66 |
| 0.04000 | 1.08 | 6.30 | 0.17 | 1.04 | 0.66 |
| 0.04040 | 1.08 | 6.33 | 0.17 | 1.04 | 0.66 |
| 0.04080 | 1.09 | 6.36 | 0.17 | 1.04 | 0.66 |
| 0.04120 | 1.09 | 6.39 | 0.17 | 1.04 | 0.66 |
| 0.04160 | 1.10 | 6.42 | 0.17 | 1.04 | 0.66 |
| 0.04200 | 1.10 | 6.45 | 0.17 | 1.04 | 0.66 |
| 0.04240 | 1.11 | 6.48 | 0.17 | 1.04 | 0.66 |
| 0.04280 | 1.11 | 6.51 | 0.17 | 1.04 | 0.66 |
| 0.04320 | 1.12 | 6.55 | 0.17 | 1.04 | 0.66 |

# Rating Table for 8 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.04360 | 1.12 | 6.58 | 0.17 | 1.04 | 0.66 |
| 0.04400 | 1.13 | 6.61 | 0.17 | 1.04 | 0.66 |
| 0.04440 | 1.14 | 6.64 | 0.17 | 1.04 | 0.66 |
| 0.04480 | 1.14 | 6.67 | 0.17 | 1.04 | 0.66 |
| 0.04520 | 1.15 | 6.70 | 0.17 | 1.04 | 0.66 |
| 0.04560 | 1.15 | 6.72 | 0.17 | 1.04 | 0.66 |
| 0.04600 | 1.16 | 6.75 | 0.17 | 1.04 | 0.66 |
| 0.04640 | 1.16 | 6.78 | 0.17 | 1.04 | 0.66 |
| 0.04680 | 1.17 | 6.81 | 0.17 | 1.04 | 0.66 |
| 0.04720 | 1.17 | 6.84 | 0.17 | 1.04 | 0.66 |
| 0.04760 | 1.18 | 6.87 | 0.17 | 1.04 | 0.66 |
| 0.04800 | 1.18 | 6.90 | 0.17 | 1.04 | 0.66 |
| 0.04840 | 1.19 | 6.93 | 0.17 | 1.04 | 0.66 |
| 0.04880 | 1.19 | 6.96 | 0.17 | 1.04 | 0.66 |
| 0.04920 | 1.19 | 6.99 | 0.17 | 1.04 | 0.66 |
| 0.04960 | 1.20 | 7.01 | 0.17 | 1.04 | 0.66 |
| 0.05000 | 1.20 | 7.04 | 0.17 | 1.04 | 0.66 |
| 0.05040 | 1.21 | 7.07 | 0.17 | 1.04 | 0.66 |
| 0.05080 | 1.21 | 7.10 | 0.17 | 1.04 | 0.66 |
| 0.05120 | 1.22 | 7.13 | 0.17 | 1.04 | 0.66 |
| 0.05160 | 1.22 | 7.15 | 0.17 | 1.04 | 0.66 |
| 0.05200 | 1.23 | 7.18 | 0.17 | 1.04 | 0.66 |
| 0.05240 | 1.23 | 7.21 | 0.17 | 1.04 | 0.66 |
| 0.05280 | 1.24 | 7.24 | 0.17 | 1.04 | 0.66 |
| 0.05320 | 1.24 | 7.26 | 0.17 | 1.04 | 0.66 |
| 0.05360 | 1.25 | 7.29 | 0.17 | 1.04 | 0.66 |
| 0.05400 | 1.25 | 7.32 | 0.17 | 1.04 | 0.66 |
| 0.05440 | 1.26 | 7.35 | 0.17 | 1.04 | 0.66 |
| 0.05480 | 1.26 | 7.37 | 0.17 | 1.04 | 0.66 |
| 0.05520 | 1.27 | 7.40 | 0.17 | 1.04 | 0.66 |
| 0.05560 | 1.27 | 7.43 | 0.17 | 1.04 | 0.66 |
| 0.05600 | 1.27 | 7.45 | 0.17 | 1.04 | 0.66 |
| 0.05640 | 1.28 | 7.48 | 0.17 | 1.04 | 0.66 |
| 0.05680 | 1.28 | 7.51 | 0.17 | 1.04 | 0.66 |
| 0.05720 | 1.29 | 7.53 | 0.17 | 1.04 | 0.66 |
| 0.05760 | 1.29 | 7.56 | 0.17 | 1.04 | 0.66 |
| 0.05800 | 1.30 | 7.58 | 0.17 | 1.04 | 0.66 |

# Rating Table for 8 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.05840 | 1.30 | 7.61 | 0.17 | 1.04 | 0.66 |
| 0.05880 | 1.31 | 7.64 | 0.17 | 1.04 | 0.66 |
| 0.05920 | 1.31 | 7.66 | 0.17 | 1.04 | 0.66 |
| 0.05960 | 1.32 | 7.69 | 0.17 | 1.04 | 0.66 |
| 0.06000 | 1.32 | 7.71 | 0.17 | 1.04 | 0.66 |
| 0.06040 | 1.32 | 7.74 | 0.17 | 1.04 | 0.66 |
| 0.06080 | 1.33 | 7.77 | 0.17 | 1.04 | 0.66 |
| 0.06120 | 1.33 | 7.79 | 0.17 | 1.04 | 0.66 |
| 0.06160 | 1.34 | 7.82 | 0.17 | 1.04 | 0.66 |
| 0.06200 | 1.34 | 7.84 | 0.17 | 1.04 | 0.66 |
| 0.06240 | 1.35 | 7.87 | 0.17 | 1.04 | 0.66 |
| 0.06280 | 1.35 | 7.89 | 0.17 | 1.04 | 0.66 |
| 0.06320 | 1.35 | 7.92 | 0.17 | 1.04 | 0.66 |
| 0.06360 | 1.36 | 7.94 | 0.17 | 1.04 | 0.66 |
| 0.06400 | 1.36 | 7.97 | 0.17 | 1.04 | 0.66 |
| 0.06440 | 1.37 | 7.99 | 0.17 | 1.04 | 0.66 |
| 0.06480 | 1.37 | 8.02 | 0.17 | 1.04 | 0.66 |
| 0.06520 | 1.38 | 8.04 | 0.17 | 1.04 | 0.66 |
| 0.06560 | 1.38 | 8.07 | 0.17 | 1.04 | 0.66 |
| 0.06600 | 1.38 | 8.09 | 0.17 | 1.04 | 0.66 |
| 0.06640 | 1.39 | 8.12 | 0.17 | 1.04 | 0.66 |
| 0.06680 | 1.39 | 8.14 | 0.17 | 1.04 | 0.66 |
| 0.06720 | 1.40 | 8.16 | 0.17 | 1.04 | 0.66 |
| 0.06760 | 1.40 | 8.19 | 0.17 | 1.04 | 0.66 |
| 0.06800 | 1.40 | 8.21 | 0.17 | 1.04 | 0.66 |
| 0.06840 | 1.41 | 8.24 | 0.17 | 1.04 | 0.66 |
| 0.06880 | 1.41 | 8.26 | 0.17 | 1.04 | 0.66 |
| 0.06920 | 1.42 | 8.29 | 0.17 | 1.04 | 0.66 |
| 0.06960 | 1.42 | 8.31 | 0.17 | 1.04 | 0.66 |
| 0.07000 | 1.43 | 8.33 | 0.17 | 1.04 | 0.66 |
| 0.07040 | 1.43 | 8.36 | 0.17 | 1.04 | 0.66 |
| 0.07080 | 1.43 | 8.38 | 0.17 | 1.04 | 0.66 |
| 0.07120 | 1.44 | 8.40 | 0.17 | 1.04 | 0.66 |
| 0.07160 | 1.44 | 8.43 | 0.17 | 1.04 | 0.66 |
| 0.07200 | 1.45 | 8.45 | 0.17 | 1.04 | 0.66 |
| 0.07240 | 1.45 | 8.48 | 0.17 | 1.04 | 0.66 |
| 0.07280 | 1.45 | 8.50 | 0.17 | 1.04 | 0.66 |

# Rating Table for 8 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.07320 | 1.46 | 8.52 | 0.17 | 1.04 | 0.66 |
| 0.07360 | 1.46 | 8.55 | 0.17 | 1.04 | 0.66 |
| 0.07400 | 1.47 | 8.57 | 0.17 | 1.04 | 0.66 |
| 0.07440 | 1.47 | 8.59 | 0.17 | 1.04 | 0.66 |
| 0.07480 | 1.47 | 8.61 | 0.17 | 1.04 | 0.66 |
| 0.07520 | 1.48 | 8.64 | 0.17 | 1.04 | 0.66 |
| 0.07560 | 1.48 | 8.66 | 0.17 | 1.04 | 0.66 |
| 0.07600 | 1.49 | 8.68 | 0.17 | 1.04 | 0.66 |
| 0.07640 | 1.49 | 8.71 | 0.17 | 1.04 | 0.66 |
| 0.07680 | 1.49 | 8.73 | 0.17 | 1.04 | 0.66 |
| 0.07720 | 1.50 | 8.75 | 0.17 | 1.04 | 0.66 |
| 0.07760 | 1.50 | 8.77 | 0.17 | 1.04 | 0.66 |
| 0.07800 | 1.50 | 8.80 | 0.17 | 1.04 | 0.66 |
| 0.07840 | 1.51 | 8.82 | 0.17 | 1.04 | 0.66 |
| 0.07880 | 1.51 | 8.84 | 0.17 | 1.04 | 0.66 |
| 0.07920 | 1.52 | 8.86 | 0.17 | 1.04 | 0.66 |
| 0.07960 | 1.52 | 8.89 | 0.17 | 1.04 | 0.66 |
| 0.08000 | 1.52 | 8.91 | 0.17 | 1.04 | 0.66 |

# Rating Table for 10 inch

## Project Description

| | |
|---|---|
| Friction Method | Kutter Formula |
| Solve For | Discharge |

## Input Data

| | | |
|---|---|---|
| Roughness Coefficient | 0.013 | |
| Channel Slope | 0.00400 | ft/ft |
| Normal Depth | 0.42 | ft |
| Diameter | 0.83 | ft |

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.00320 | 0.58 | 2.12 | 0.27 | 1.31 | 0.83 |
| 0.00360 | 0.61 | 2.25 | 0.27 | 1.31 | 0.83 |
| 0.00400 | 0.65 | 2.37 | 0.27 | 1.31 | 0.83 |
| 0.00440 | 0.68 | 2.49 | 0.27 | 1.31 | 0.83 |
| 0.00480 | 0.71 | 2.60 | 0.27 | 1.31 | 0.83 |
| 0.00520 | 0.74 | 2.71 | 0.27 | 1.31 | 0.83 |
| 0.00560 | 0.77 | 2.81 | 0.27 | 1.31 | 0.83 |
| 0.00600 | 0.79 | 2.91 | 0.27 | 1.31 | 0.83 |
| 0.00640 | 0.82 | 3.01 | 0.27 | 1.31 | 0.83 |
| 0.00680 | 0.84 | 3.10 | 0.27 | 1.31 | 0.83 |
| 0.00720 | 0.87 | 3.19 | 0.27 | 1.31 | 0.83 |
| 0.00760 | 0.89 | 3.28 | 0.27 | 1.31 | 0.83 |
| 0.00800 | 0.92 | 3.37 | 0.27 | 1.31 | 0.83 |
| 0.00840 | 0.94 | 3.45 | 0.27 | 1.31 | 0.83 |
| 0.00880 | 0.96 | 3.53 | 0.27 | 1.31 | 0.83 |
| 0.00920 | 0.98 | 3.61 | 0.27 | 1.31 | 0.83 |
| 0.00960 | 1.00 | 3.69 | 0.27 | 1.31 | 0.83 |
| 0.01000 | 1.02 | 3.77 | 0.27 | 1.31 | 0.83 |
| 0.01040 | 1.05 | 3.84 | 0.27 | 1.31 | 0.83 |
| 0.01080 | 1.07 | 3.91 | 0.27 | 1.31 | 0.83 |
| 0.01120 | 1.08 | 3.99 | 0.27 | 1.31 | 0.83 |
| 0.01160 | 1.10 | 4.06 | 0.27 | 1.31 | 0.83 |
| 0.01200 | 1.12 | 4.13 | 0.27 | 1.31 | 0.83 |
| 0.01240 | 1.14 | 4.20 | 0.27 | 1.31 | 0.83 |
| 0.01280 | 1.16 | 4.26 | 0.27 | 1.31 | 0.83 |

# Rating Table for 10 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.01320 | 1.18 | 4.33 | 0.27 | 1.31 | 0.83 |
| 0.01360 | 1.20 | 4.40 | 0.27 | 1.31 | 0.83 |
| 0.01400 | 1.21 | 4.46 | 0.27 | 1.31 | 0.83 |
| 0.01440 | 1.23 | 4.52 | 0.27 | 1.31 | 0.83 |
| 0.01480 | 1.25 | 4.59 | 0.27 | 1.31 | 0.83 |
| 0.01520 | 1.26 | 4.65 | 0.27 | 1.31 | 0.83 |
| 0.01560 | 1.28 | 4.71 | 0.27 | 1.31 | 0.83 |
| 0.01600 | 1.30 | 4.77 | 0.27 | 1.31 | 0.83 |
| 0.01640 | 1.31 | 4.83 | 0.27 | 1.31 | 0.83 |
| 0.01680 | 1.33 | 4.89 | 0.27 | 1.31 | 0.83 |
| 0.01720 | 1.35 | 4.94 | 0.27 | 1.31 | 0.83 |
| 0.01760 | 1.36 | 5.00 | 0.27 | 1.31 | 0.83 |
| 0.01800 | 1.38 | 5.06 | 0.27 | 1.31 | 0.83 |
| 0.01840 | 1.39 | 5.11 | 0.27 | 1.31 | 0.83 |
| 0.01880 | 1.41 | 5.17 | 0.27 | 1.31 | 0.83 |
| 0.01920 | 1.42 | 5.22 | 0.27 | 1.31 | 0.83 |
| 0.01960 | 1.44 | 5.28 | 0.27 | 1.31 | 0.83 |
| 0.02000 | 1.45 | 5.33 | 0.27 | 1.31 | 0.83 |
| 0.02040 | 1.47 | 5.39 | 0.27 | 1.31 | 0.83 |
| 0.02080 | 1.48 | 5.44 | 0.27 | 1.31 | 0.83 |
| 0.02120 | 1.49 | 5.49 | 0.27 | 1.31 | 0.83 |
| 0.02160 | 1.51 | 5.54 | 0.27 | 1.31 | 0.83 |
| 0.02200 | 1.52 | 5.59 | 0.27 | 1.31 | 0.83 |
| 0.02240 | 1.54 | 5.64 | 0.27 | 1.31 | 0.83 |
| 0.02280 | 1.55 | 5.69 | 0.27 | 1.31 | 0.83 |
| 0.02320 | 1.56 | 5.74 | 0.27 | 1.31 | 0.83 |
| 0.02360 | 1.58 | 5.79 | 0.27 | 1.31 | 0.83 |
| 0.02400 | 1.59 | 5.84 | 0.27 | 1.31 | 0.83 |
| 0.02440 | 1.60 | 5.89 | 0.27 | 1.31 | 0.83 |
| 0.02480 | 1.62 | 5.94 | 0.27 | 1.31 | 0.83 |
| 0.02520 | 1.63 | 5.99 | 0.27 | 1.31 | 0.83 |
| 0.02560 | 1.64 | 6.03 | 0.27 | 1.31 | 0.83 |
| 0.02600 | 1.65 | 6.08 | 0.27 | 1.31 | 0.83 |
| 0.02640 | 1.67 | 6.13 | 0.27 | 1.31 | 0.83 |
| 0.02680 | 1.68 | 6.17 | 0.27 | 1.31 | 0.83 |
| 0.02720 | 1.69 | 6.22 | 0.27 | 1.31 | 0.83 |
| 0.02760 | 1.70 | 6.27 | 0.27 | 1.31 | 0.83 |

# Rating Table for 10 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.02800 | 1.72 | 6.31 | 0.27 | 1.31 | 0.83 |
| 0.02840 | 1.73 | 6.36 | 0.27 | 1.31 | 0.83 |
| 0.02880 | 1.74 | 6.40 | 0.27 | 1.31 | 0.83 |
| 0.02920 | 1.75 | 6.45 | 0.27 | 1.31 | 0.83 |
| 0.02960 | 1.77 | 6.49 | 0.27 | 1.31 | 0.83 |
| 0.03000 | 1.78 | 6.53 | 0.27 | 1.31 | 0.83 |
| 0.03040 | 1.79 | 6.58 | 0.27 | 1.31 | 0.83 |
| 0.03080 | 1.80 | 6.62 | 0.27 | 1.31 | 0.83 |
| 0.03120 | 1.81 | 6.66 | 0.27 | 1.31 | 0.83 |
| 0.03160 | 1.82 | 6.71 | 0.27 | 1.31 | 0.83 |
| 0.03200 | 1.84 | 6.75 | 0.27 | 1.31 | 0.83 |
| 0.03240 | 1.85 | 6.79 | 0.27 | 1.31 | 0.83 |
| 0.03280 | 1.86 | 6.83 | 0.27 | 1.31 | 0.83 |
| 0.03320 | 1.87 | 6.87 | 0.27 | 1.31 | 0.83 |
| 0.03360 | 1.88 | 6.91 | 0.27 | 1.31 | 0.83 |
| 0.03400 | 1.89 | 6.96 | 0.27 | 1.31 | 0.83 |
| 0.03440 | 1.90 | 7.00 | 0.27 | 1.31 | 0.83 |
| 0.03480 | 1.91 | 7.04 | 0.27 | 1.31 | 0.83 |
| 0.03520 | 1.93 | 7.08 | 0.27 | 1.31 | 0.83 |
| 0.03560 | 1.94 | 7.12 | 0.27 | 1.31 | 0.83 |
| 0.03600 | 1.95 | 7.16 | 0.27 | 1.31 | 0.83 |
| 0.03640 | 1.96 | 7.20 | 0.27 | 1.31 | 0.83 |
| 0.03680 | 1.97 | 7.24 | 0.27 | 1.31 | 0.83 |
| 0.03720 | 1.98 | 7.28 | 0.27 | 1.31 | 0.83 |
| 0.03760 | 1.99 | 7.32 | 0.27 | 1.31 | 0.83 |
| 0.03800 | 2.00 | 7.35 | 0.27 | 1.31 | 0.83 |
| 0.03840 | 2.01 | 7.39 | 0.27 | 1.31 | 0.83 |
| 0.03880 | 2.02 | 7.43 | 0.27 | 1.31 | 0.83 |
| 0.03920 | 2.03 | 7.47 | 0.27 | 1.31 | 0.83 |
| 0.03960 | 2.04 | 7.51 | 0.27 | 1.31 | 0.83 |
| 0.04000 | 2.05 | 7.55 | 0.27 | 1.31 | 0.83 |
| 0.04040 | 2.06 | 7.58 | 0.27 | 1.31 | 0.83 |
| 0.04080 | 2.07 | 7.62 | 0.27 | 1.31 | 0.83 |
| 0.04120 | 2.08 | 7.66 | 0.27 | 1.31 | 0.83 |
| 0.04160 | 2.09 | 7.69 | 0.27 | 1.31 | 0.83 |
| 0.04200 | 2.10 | 7.73 | 0.27 | 1.31 | 0.83 |
| 0.04240 | 2.11 | 7.77 | 0.27 | 1.31 | 0.83 |

# Rating Table for 10 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.04280 | 2.12 | 7.80 | 0.27 | 1.31 | 0.83 |
| 0.04320 | 2.13 | 7.84 | 0.27 | 1.31 | 0.83 |
| 0.04360 | 2.14 | 7.88 | 0.27 | 1.31 | 0.83 |
| 0.04400 | 2.15 | 7.91 | 0.27 | 1.31 | 0.83 |
| 0.04440 | 2.16 | 7.95 | 0.27 | 1.31 | 0.83 |
| 0.04480 | 2.17 | 7.99 | 0.27 | 1.31 | 0.83 |
| 0.04520 | 2.18 | 8.02 | 0.27 | 1.31 | 0.83 |
| 0.04560 | 2.19 | 8.06 | 0.27 | 1.31 | 0.83 |
| 0.04600 | 2.20 | 8.09 | 0.27 | 1.31 | 0.83 |
| 0.04640 | 2.21 | 8.13 | 0.27 | 1.31 | 0.83 |
| 0.04680 | 2.22 | 8.16 | 0.27 | 1.31 | 0.83 |
| 0.04720 | 2.23 | 8.20 | 0.27 | 1.31 | 0.83 |
| 0.04760 | 2.24 | 8.23 | 0.27 | 1.31 | 0.83 |
| 0.04800 | 2.25 | 8.27 | 0.27 | 1.31 | 0.83 |
| 0.04840 | 2.26 | 8.30 | 0.27 | 1.31 | 0.83 |
| 0.04880 | 2.27 | 8.33 | 0.27 | 1.31 | 0.83 |
| 0.04920 | 2.28 | 8.37 | 0.27 | 1.31 | 0.83 |
| 0.04960 | 2.29 | 8.40 | 0.27 | 1.31 | 0.83 |
| 0.05000 | 2.30 | 8.44 | 0.27 | 1.31 | 0.83 |
| 0.05040 | 2.30 | 8.47 | 0.27 | 1.31 | 0.83 |
| 0.05080 | 2.31 | 8.50 | 0.27 | 1.31 | 0.83 |
| 0.05120 | 2.32 | 8.54 | 0.27 | 1.31 | 0.83 |
| 0.05160 | 2.33 | 8.57 | 0.27 | 1.31 | 0.83 |
| 0.05200 | 2.34 | 8.60 | 0.27 | 1.31 | 0.83 |
| 0.05240 | 2.35 | 8.64 | 0.27 | 1.31 | 0.83 |
| 0.05280 | 2.36 | 8.67 | 0.27 | 1.31 | 0.83 |
| 0.05320 | 2.37 | 8.70 | 0.27 | 1.31 | 0.83 |
| 0.05360 | 2.38 | 8.74 | 0.27 | 1.31 | 0.83 |
| 0.05400 | 2.39 | 8.77 | 0.27 | 1.31 | 0.83 |
| 0.05440 | 2.39 | 8.80 | 0.27 | 1.31 | 0.83 |
| 0.05480 | 2.40 | 8.83 | 0.27 | 1.31 | 0.83 |
| 0.05520 | 2.41 | 8.86 | 0.27 | 1.31 | 0.83 |
| 0.05560 | 2.42 | 8.90 | 0.27 | 1.31 | 0.83 |
| 0.05600 | 2.43 | 8.93 | 0.27 | 1.31 | 0.83 |
| 0.05640 | 2.44 | 8.96 | 0.27 | 1.31 | 0.83 |
| 0.05680 | 2.45 | 8.99 | 0.27 | 1.31 | 0.83 |
| 0.05720 | 2.46 | 9.02 | 0.27 | 1.31 | 0.83 |

# Rating Table for 10 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.05760 | 2.46 | 9.06 | 0.27 | 1.31 | 0.83 |
| 0.05800 | 2.47 | 9.09 | 0.27 | 1.31 | 0.83 |
| 0.05840 | 2.48 | 9.12 | 0.27 | 1.31 | 0.83 |
| 0.05880 | 2.49 | 9.15 | 0.27 | 1.31 | 0.83 |
| 0.05920 | 2.50 | 9.18 | 0.27 | 1.31 | 0.83 |
| 0.05960 | 2.51 | 9.21 | 0.27 | 1.31 | 0.83 |
| 0.06000 | 2.51 | 9.24 | 0.27 | 1.31 | 0.83 |
| 0.06040 | 2.52 | 9.27 | 0.27 | 1.31 | 0.83 |
| 0.06080 | 2.53 | 9.30 | 0.27 | 1.31 | 0.83 |
| 0.06120 | 2.54 | 9.33 | 0.27 | 1.31 | 0.83 |
| 0.06160 | 2.55 | 9.36 | 0.27 | 1.31 | 0.83 |
| 0.06200 | 2.56 | 9.40 | 0.27 | 1.31 | 0.83 |
| 0.06240 | 2.56 | 9.43 | 0.27 | 1.31 | 0.83 |
| 0.06280 | 2.57 | 9.46 | 0.27 | 1.31 | 0.83 |
| 0.06320 | 2.58 | 9.49 | 0.27 | 1.31 | 0.83 |
| 0.06360 | 2.59 | 9.52 | 0.27 | 1.31 | 0.83 |
| 0.06400 | 2.60 | 9.55 | 0.27 | 1.31 | 0.83 |
| 0.06440 | 2.61 | 9.58 | 0.27 | 1.31 | 0.83 |
| 0.06480 | 2.61 | 9.61 | 0.27 | 1.31 | 0.83 |
| 0.06520 | 2.62 | 9.63 | 0.27 | 1.31 | 0.83 |
| 0.06560 | 2.63 | 9.66 | 0.27 | 1.31 | 0.83 |
| 0.06600 | 2.64 | 9.69 | 0.27 | 1.31 | 0.83 |
| 0.06640 | 2.65 | 9.72 | 0.27 | 1.31 | 0.83 |
| 0.06680 | 2.65 | 9.75 | 0.27 | 1.31 | 0.83 |
| 0.06720 | 2.66 | 9.78 | 0.27 | 1.31 | 0.83 |
| 0.06760 | 2.67 | 9.81 | 0.27 | 1.31 | 0.83 |
| 0.06800 | 2.68 | 9.84 | 0.27 | 1.31 | 0.83 |
| 0.06840 | 2.69 | 9.87 | 0.27 | 1.31 | 0.83 |
| 0.06880 | 2.69 | 9.90 | 0.27 | 1.31 | 0.83 |
| 0.06920 | 2.70 | 9.93 | 0.27 | 1.31 | 0.83 |
| 0.06960 | 2.71 | 9.95 | 0.27 | 1.31 | 0.83 |
| 0.07000 | 2.72 | 9.98 | 0.27 | 1.31 | 0.83 |
| 0.07040 | 2.72 | 10.01 | 0.27 | 1.31 | 0.83 |
| 0.07080 | 2.73 | 10.04 | 0.27 | 1.31 | 0.83 |
| 0.07120 | 2.74 | 10.07 | 0.27 | 1.31 | 0.83 |
| 0.07160 | 2.75 | 10.10 | 0.27 | 1.31 | 0.83 |
| 0.07200 | 2.75 | 10.13 | 0.27 | 1.31 | 0.83 |

# Rating Table for 10 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.07240 | 2.76 | 10.15 | 0.27 | 1.31 | 0.83 |
| 0.07280 | 2.77 | 10.18 | 0.27 | 1.31 | 0.83 |
| 0.07320 | 2.78 | 10.21 | 0.27 | 1.31 | 0.83 |
| 0.07360 | 2.79 | 10.24 | 0.27 | 1.31 | 0.83 |
| 0.07400 | 2.79 | 10.26 | 0.27 | 1.31 | 0.83 |
| 0.07440 | 2.80 | 10.29 | 0.27 | 1.31 | 0.83 |
| 0.07480 | 2.81 | 10.32 | 0.27 | 1.31 | 0.83 |
| 0.07520 | 2.82 | 10.35 | 0.27 | 1.31 | 0.83 |
| 0.07560 | 2.82 | 10.38 | 0.27 | 1.31 | 0.83 |
| 0.07600 | 2.83 | 10.40 | 0.27 | 1.31 | 0.83 |
| 0.07640 | 2.84 | 10.43 | 0.27 | 1.31 | 0.83 |
| 0.07680 | 2.85 | 10.46 | 0.27 | 1.31 | 0.83 |
| 0.07720 | 2.85 | 10.48 | 0.27 | 1.31 | 0.83 |
| 0.07760 | 2.86 | 10.51 | 0.27 | 1.31 | 0.83 |
| 0.07800 | 2.87 | 10.54 | 0.27 | 1.31 | 0.83 |
| 0.07840 | 2.87 | 10.57 | 0.27 | 1.31 | 0.83 |
| 0.07880 | 2.88 | 10.59 | 0.27 | 1.31 | 0.83 |
| 0.07920 | 2.89 | 10.62 | 0.27 | 1.31 | 0.83 |
| 0.07960 | 2.90 | 10.65 | 0.27 | 1.31 | 0.83 |
| 0.08000 | 2.90 | 10.67 | 0.27 | 1.31 | 0.83 |

# Rating Table for 12 inch

## Project Description

| | |
|---|---|
| Friction Method | Kutter Formula |
| Solve For | Discharge |

## Input Data

| | | |
|---|---|---|
| Roughness Coefficient | 0.013 | |
| Channel Slope | 0.00400 | ft/ft |
| Normal Depth | 0.50 | ft |
| Diameter | 1.00 | ft |

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.00240 | 0.83 | 2.11 | 0.39 | 1.57 | 1.00 |
| 0.00280 | 0.90 | 2.28 | 0.39 | 1.57 | 1.00 |
| 0.00320 | 0.96 | 2.44 | 0.39 | 1.57 | 1.00 |
| 0.00360 | 1.02 | 2.59 | 0.39 | 1.57 | 1.00 |
| 0.00400 | 1.07 | 2.73 | 0.39 | 1.57 | 1.00 |
| 0.00440 | 1.13 | 2.87 | 0.39 | 1.57 | 1.00 |
| 0.00480 | 1.18 | 3.00 | 0.39 | 1.57 | 1.00 |
| 0.00520 | 1.23 | 3.12 | 0.39 | 1.57 | 1.00 |
| 0.00560 | 1.27 | 3.24 | 0.39 | 1.57 | 1.00 |
| 0.00600 | 1.32 | 3.35 | 0.39 | 1.57 | 1.00 |
| 0.00640 | 1.36 | 3.46 | 0.39 | 1.57 | 1.00 |
| 0.00680 | 1.40 | 3.57 | 0.39 | 1.57 | 1.00 |
| 0.00720 | 1.44 | 3.68 | 0.39 | 1.57 | 1.00 |
| 0.00760 | 1.48 | 3.78 | 0.39 | 1.57 | 1.00 |
| 0.00800 | 1.52 | 3.88 | 0.39 | 1.57 | 1.00 |
| 0.00840 | 1.56 | 3.97 | 0.39 | 1.57 | 1.00 |
| 0.00880 | 1.60 | 4.07 | 0.39 | 1.57 | 1.00 |
| 0.00920 | 1.63 | 4.16 | 0.39 | 1.57 | 1.00 |
| 0.00960 | 1.67 | 4.25 | 0.39 | 1.57 | 1.00 |
| 0.01000 | 1.70 | 4.34 | 0.39 | 1.57 | 1.00 |
| 0.01040 | 1.74 | 4.42 | 0.39 | 1.57 | 1.00 |
| 0.01080 | 1.77 | 4.51 | 0.39 | 1.57 | 1.00 |
| 0.01120 | 1.80 | 4.59 | 0.39 | 1.57 | 1.00 |
| 0.01160 | 1.83 | 4.67 | 0.39 | 1.57 | 1.00 |
| 0.01200 | 1.87 | 4.75 | 0.39 | 1.57 | 1.00 |

# Rating Table for 12 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.01240 | 1.90 | 4.83 | 0.39 | 1.57 | 1.00 |
| 0.01280 | 1.93 | 4.91 | 0.39 | 1.57 | 1.00 |
| 0.01320 | 1.96 | 4.98 | 0.39 | 1.57 | 1.00 |
| 0.01360 | 1.99 | 5.06 | 0.39 | 1.57 | 1.00 |
| 0.01400 | 2.02 | 5.13 | 0.39 | 1.57 | 1.00 |
| 0.01440 | 2.04 | 5.21 | 0.39 | 1.57 | 1.00 |
| 0.01480 | 2.07 | 5.28 | 0.39 | 1.57 | 1.00 |
| 0.01520 | 2.10 | 5.35 | 0.39 | 1.57 | 1.00 |
| 0.01560 | 2.13 | 5.42 | 0.39 | 1.57 | 1.00 |
| 0.01600 | 2.16 | 5.49 | 0.39 | 1.57 | 1.00 |
| 0.01640 | 2.18 | 5.56 | 0.39 | 1.57 | 1.00 |
| 0.01680 | 2.21 | 5.62 | 0.39 | 1.57 | 1.00 |
| 0.01720 | 2.23 | 5.69 | 0.39 | 1.57 | 1.00 |
| 0.01760 | 2.26 | 5.76 | 0.39 | 1.57 | 1.00 |
| 0.01800 | 2.29 | 5.82 | 0.39 | 1.57 | 1.00 |
| 0.01840 | 2.31 | 5.89 | 0.39 | 1.57 | 1.00 |
| 0.01880 | 2.34 | 5.95 | 0.39 | 1.57 | 1.00 |
| 0.01920 | 2.36 | 6.01 | 0.39 | 1.57 | 1.00 |
| 0.01960 | 2.39 | 6.08 | 0.39 | 1.57 | 1.00 |
| 0.02000 | 2.41 | 6.14 | 0.39 | 1.57 | 1.00 |
| 0.02040 | 2.43 | 6.20 | 0.39 | 1.57 | 1.00 |
| 0.02080 | 2.46 | 6.26 | 0.39 | 1.57 | 1.00 |
| 0.02120 | 2.48 | 6.32 | 0.39 | 1.57 | 1.00 |
| 0.02160 | 2.50 | 6.38 | 0.39 | 1.57 | 1.00 |
| 0.02200 | 2.53 | 6.44 | 0.39 | 1.57 | 1.00 |
| 0.02240 | 2.55 | 6.50 | 0.39 | 1.57 | 1.00 |
| 0.02280 | 2.57 | 6.55 | 0.39 | 1.57 | 1.00 |
| 0.02320 | 2.60 | 6.61 | 0.39 | 1.57 | 1.00 |
| 0.02360 | 2.62 | 6.67 | 0.39 | 1.57 | 1.00 |
| 0.02400 | 2.64 | 6.72 | 0.39 | 1.57 | 1.00 |
| 0.02440 | 2.66 | 6.78 | 0.39 | 1.57 | 1.00 |
| 0.02480 | 2.68 | 6.84 | 0.39 | 1.57 | 1.00 |
| 0.02520 | 2.71 | 6.89 | 0.39 | 1.57 | 1.00 |
| 0.02560 | 2.73 | 6.94 | 0.39 | 1.57 | 1.00 |
| 0.02600 | 2.75 | 7.00 | 0.39 | 1.57 | 1.00 |
| 0.02640 | 2.77 | 7.05 | 0.39 | 1.57 | 1.00 |
| 0.02680 | 2.79 | 7.11 | 0.39 | 1.57 | 1.00 |

# Rating Table for 12 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.02720 | 2.81 | 7.16 | 0.39 | 1.57 | 1.00 |
| 0.02760 | 2.83 | 7.21 | 0.39 | 1.57 | 1.00 |
| 0.02800 | 2.85 | 7.26 | 0.39 | 1.57 | 1.00 |
| 0.02840 | 2.87 | 7.32 | 0.39 | 1.57 | 1.00 |
| 0.02880 | 2.89 | 7.37 | 0.39 | 1.57 | 1.00 |
| 0.02920 | 2.91 | 7.42 | 0.39 | 1.57 | 1.00 |
| 0.02960 | 2.93 | 7.47 | 0.39 | 1.57 | 1.00 |
| 0.03000 | 2.95 | 7.52 | 0.39 | 1.57 | 1.00 |
| 0.03040 | 2.97 | 7.57 | 0.39 | 1.57 | 1.00 |
| 0.03080 | 2.99 | 7.62 | 0.39 | 1.57 | 1.00 |
| 0.03120 | 3.01 | 7.67 | 0.39 | 1.57 | 1.00 |
| 0.03160 | 3.03 | 7.72 | 0.39 | 1.57 | 1.00 |
| 0.03200 | 3.05 | 7.77 | 0.39 | 1.57 | 1.00 |
| 0.03240 | 3.07 | 7.81 | 0.39 | 1.57 | 1.00 |
| 0.03280 | 3.09 | 7.86 | 0.39 | 1.57 | 1.00 |
| 0.03320 | 3.11 | 7.91 | 0.39 | 1.57 | 1.00 |
| 0.03360 | 3.13 | 7.96 | 0.39 | 1.57 | 1.00 |
| 0.03400 | 3.14 | 8.01 | 0.39 | 1.57 | 1.00 |
| 0.03440 | 3.16 | 8.05 | 0.39 | 1.57 | 1.00 |
| 0.03480 | 3.18 | 8.10 | 0.39 | 1.57 | 1.00 |
| 0.03520 | 3.20 | 8.15 | 0.39 | 1.57 | 1.00 |
| 0.03560 | 3.22 | 8.19 | 0.39 | 1.57 | 1.00 |
| 0.03600 | 3.23 | 8.24 | 0.39 | 1.57 | 1.00 |
| 0.03640 | 3.25 | 8.28 | 0.39 | 1.57 | 1.00 |
| 0.03680 | 3.27 | 8.33 | 0.39 | 1.57 | 1.00 |
| 0.03720 | 3.29 | 8.37 | 0.39 | 1.57 | 1.00 |
| 0.03760 | 3.31 | 8.42 | 0.39 | 1.57 | 1.00 |
| 0.03800 | 3.32 | 8.46 | 0.39 | 1.57 | 1.00 |
| 0.03840 | 3.34 | 8.51 | 0.39 | 1.57 | 1.00 |
| 0.03880 | 3.36 | 8.55 | 0.39 | 1.57 | 1.00 |
| 0.03920 | 3.38 | 8.60 | 0.39 | 1.57 | 1.00 |
| 0.03960 | 3.39 | 8.64 | 0.39 | 1.57 | 1.00 |
| 0.04000 | 3.41 | 8.68 | 0.39 | 1.57 | 1.00 |
| 0.04040 | 3.43 | 8.73 | 0.39 | 1.57 | 1.00 |
| 0.04080 | 3.44 | 8.77 | 0.39 | 1.57 | 1.00 |
| 0.04120 | 3.46 | 8.81 | 0.39 | 1.57 | 1.00 |
| 0.04160 | 3.48 | 8.86 | 0.39 | 1.57 | 1.00 |

# Rating Table for 12 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.04200 | 3.49 | 8.90 | 0.39 | 1.57 | 1.00 |
| 0.04240 | 3.51 | 8.94 | 0.39 | 1.57 | 1.00 |
| 0.04280 | 3.53 | 8.98 | 0.39 | 1.57 | 1.00 |
| 0.04320 | 3.54 | 9.02 | 0.39 | 1.57 | 1.00 |
| 0.04360 | 3.56 | 9.07 | 0.39 | 1.57 | 1.00 |
| 0.04400 | 3.58 | 9.11 | 0.39 | 1.57 | 1.00 |
| 0.04440 | 3.59 | 9.15 | 0.39 | 1.57 | 1.00 |
| 0.04480 | 3.61 | 9.19 | 0.39 | 1.57 | 1.00 |
| 0.04520 | 3.63 | 9.23 | 0.39 | 1.57 | 1.00 |
| 0.04560 | 3.64 | 9.27 | 0.39 | 1.57 | 1.00 |
| 0.04600 | 3.66 | 9.31 | 0.39 | 1.57 | 1.00 |
| 0.04640 | 3.67 | 9.35 | 0.39 | 1.57 | 1.00 |
| 0.04680 | 3.69 | 9.39 | 0.39 | 1.57 | 1.00 |
| 0.04720 | 3.70 | 9.43 | 0.39 | 1.57 | 1.00 |
| 0.04760 | 3.72 | 9.47 | 0.39 | 1.57 | 1.00 |
| 0.04800 | 3.74 | 9.51 | 0.39 | 1.57 | 1.00 |
| 0.04840 | 3.75 | 9.55 | 0.39 | 1.57 | 1.00 |
| 0.04880 | 3.77 | 9.59 | 0.39 | 1.57 | 1.00 |
| 0.04920 | 3.78 | 9.63 | 0.39 | 1.57 | 1.00 |
| 0.04960 | 3.80 | 9.67 | 0.39 | 1.57 | 1.00 |
| 0.05000 | 3.81 | 9.71 | 0.39 | 1.57 | 1.00 |
| 0.05040 | 3.83 | 9.75 | 0.39 | 1.57 | 1.00 |
| 0.05080 | 3.84 | 9.79 | 0.39 | 1.57 | 1.00 |
| 0.05120 | 3.86 | 9.83 | 0.39 | 1.57 | 1.00 |
| 0.05160 | 3.87 | 9.86 | 0.39 | 1.57 | 1.00 |
| 0.05200 | 3.89 | 9.90 | 0.39 | 1.57 | 1.00 |
| 0.05240 | 3.90 | 9.94 | 0.39 | 1.57 | 1.00 |
| 0.05280 | 3.92 | 9.98 | 0.39 | 1.57 | 1.00 |
| 0.05320 | 3.93 | 10.02 | 0.39 | 1.57 | 1.00 |
| 0.05360 | 3.95 | 10.05 | 0.39 | 1.57 | 1.00 |
| 0.05400 | 3.96 | 10.09 | 0.39 | 1.57 | 1.00 |
| 0.05440 | 3.98 | 10.13 | 0.39 | 1.57 | 1.00 |
| 0.05480 | 3.99 | 10.17 | 0.39 | 1.57 | 1.00 |
| 0.05520 | 4.01 | 10.20 | 0.39 | 1.57 | 1.00 |
| 0.05560 | 4.02 | 10.24 | 0.39 | 1.57 | 1.00 |
| 0.05600 | 4.04 | 10.28 | 0.39 | 1.57 | 1.00 |
| 0.05640 | 4.05 | 10.31 | 0.39 | 1.57 | 1.00 |

# Rating Table for 12 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.05680 | 4.06 | 10.35 | 0.39 | 1.57 | 1.00 |
| 0.05720 | 4.08 | 10.39 | 0.39 | 1.57 | 1.00 |
| 0.05760 | 4.09 | 10.42 | 0.39 | 1.57 | 1.00 |
| 0.05800 | 4.11 | 10.46 | 0.39 | 1.57 | 1.00 |
| 0.05840 | 4.12 | 10.49 | 0.39 | 1.57 | 1.00 |
| 0.05880 | 4.14 | 10.53 | 0.39 | 1.57 | 1.00 |
| 0.05920 | 4.15 | 10.57 | 0.39 | 1.57 | 1.00 |
| 0.05960 | 4.16 | 10.60 | 0.39 | 1.57 | 1.00 |
| 0.06000 | 4.18 | 10.64 | 0.39 | 1.57 | 1.00 |

# Rating Table for 15 VCP

## Project Description

| | |
|---|---|
| Friction Method | Kutter Formula |
| Solve For | Discharge |

## Input Data

| | | |
|---|---|---|
| Roughness Coefficient | 0.013 | |
| Channel Slope | 0.00400 | ft/ft |
| Normal Depth | 0.63 | ft |
| Diameter | 1.25 | ft |

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.00400 | 1.99 | 3.24 | 0.61 | 1.96 | 1.25 |
| 0.00440 | 2.08 | 3.40 | 0.61 | 1.96 | 1.25 |
| 0.00480 | 2.18 | 3.55 | 0.61 | 1.96 | 1.25 |
| 0.00520 | 2.27 | 3.69 | 0.61 | 1.96 | 1.25 |
| 0.00560 | 2.35 | 3.83 | 0.61 | 1.96 | 1.25 |
| 0.00600 | 2.44 | 3.97 | 0.61 | 1.96 | 1.25 |
| 0.00640 | 2.52 | 4.10 | 0.61 | 1.96 | 1.25 |
| 0.00680 | 2.59 | 4.23 | 0.61 | 1.96 | 1.25 |
| 0.00720 | 2.67 | 4.35 | 0.61 | 1.96 | 1.25 |
| 0.00760 | 2.74 | 4.47 | 0.61 | 1.96 | 1.25 |
| 0.00800 | 2.81 | 4.59 | 0.61 | 1.96 | 1.25 |
| 0.00840 | 2.88 | 4.70 | 0.61 | 1.96 | 1.25 |
| 0.00880 | 2.95 | 4.81 | 0.61 | 1.96 | 1.25 |
| 0.00920 | 3.02 | 4.92 | 0.61 | 1.96 | 1.25 |
| 0.00960 | 3.08 | 5.03 | 0.61 | 1.96 | 1.25 |
| 0.01000 | 3.15 | 5.13 | 0.61 | 1.96 | 1.25 |
| 0.01040 | 3.21 | 5.23 | 0.61 | 1.96 | 1.25 |
| 0.01080 | 3.27 | 5.33 | 0.61 | 1.96 | 1.25 |
| 0.01120 | 3.33 | 5.43 | 0.61 | 1.96 | 1.25 |
| 0.01160 | 3.39 | 5.53 | 0.61 | 1.96 | 1.25 |
| 0.01200 | 3.45 | 5.62 | 0.61 | 1.96 | 1.25 |
| 0.01240 | 3.51 | 5.71 | 0.61 | 1.96 | 1.25 |
| 0.01280 | 3.56 | 5.81 | 0.61 | 1.96 | 1.25 |
| 0.01320 | 3.62 | 5.90 | 0.61 | 1.96 | 1.25 |
| 0.01360 | 3.67 | 5.98 | 0.61 | 1.96 | 1.25 |

# Rating Table for 15 VCP

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.01400 | 3.73 | 6.07 | 0.61 | 1.96 | 1.25 |
| 0.01440 | 3.78 | 6.16 | 0.61 | 1.96 | 1.25 |
| 0.01480 | 3.83 | 6.24 | 0.61 | 1.96 | 1.25 |
| 0.01520 | 3.88 | 6.33 | 0.61 | 1.96 | 1.25 |
| 0.01560 | 3.93 | 6.41 | 0.61 | 1.96 | 1.25 |
| 0.01600 | 3.98 | 6.49 | 0.61 | 1.96 | 1.25 |
| 0.01640 | 4.03 | 6.57 | 0.61 | 1.96 | 1.25 |
| 0.01680 | 4.08 | 6.65 | 0.61 | 1.96 | 1.25 |
| 0.01720 | 4.13 | 6.73 | 0.61 | 1.96 | 1.25 |
| 0.01760 | 4.18 | 6.81 | 0.61 | 1.96 | 1.25 |
| 0.01800 | 4.23 | 6.89 | 0.61 | 1.96 | 1.25 |
| 0.01840 | 4.27 | 6.96 | 0.61 | 1.96 | 1.25 |
| 0.01880 | 4.32 | 7.04 | 0.61 | 1.96 | 1.25 |
| 0.01920 | 4.36 | 7.11 | 0.61 | 1.96 | 1.25 |
| 0.01960 | 4.41 | 7.19 | 0.61 | 1.96 | 1.25 |
| 0.02000 | 4.46 | 7.26 | 0.61 | 1.96 | 1.25 |
| 0.02040 | 4.50 | 7.33 | 0.61 | 1.96 | 1.25 |
| 0.02080 | 4.54 | 7.40 | 0.61 | 1.96 | 1.25 |
| 0.02120 | 4.59 | 7.48 | 0.61 | 1.96 | 1.25 |
| 0.02160 | 4.63 | 7.55 | 0.61 | 1.96 | 1.25 |
| 0.02200 | 4.67 | 7.62 | 0.61 | 1.96 | 1.25 |
| 0.02240 | 4.72 | 7.68 | 0.61 | 1.96 | 1.25 |
| 0.02280 | 4.76 | 7.75 | 0.61 | 1.96 | 1.25 |
| 0.02320 | 4.80 | 7.82 | 0.61 | 1.96 | 1.25 |
| 0.02360 | 4.84 | 7.89 | 0.61 | 1.96 | 1.25 |
| 0.02400 | 4.88 | 7.95 | 0.61 | 1.96 | 1.25 |
| 0.02440 | 4.92 | 8.02 | 0.61 | 1.96 | 1.25 |
| 0.02480 | 4.96 | 8.09 | 0.61 | 1.96 | 1.25 |
| 0.02520 | 5.00 | 8.15 | 0.61 | 1.96 | 1.25 |
| 0.02560 | 5.04 | 8.22 | 0.61 | 1.96 | 1.25 |
| 0.02600 | 5.08 | 8.28 | 0.61 | 1.96 | 1.25 |
| 0.02640 | 5.12 | 8.34 | 0.61 | 1.96 | 1.25 |
| 0.02680 | 5.16 | 8.41 | 0.61 | 1.96 | 1.25 |
| 0.02720 | 5.20 | 8.47 | 0.61 | 1.96 | 1.25 |
| 0.02760 | 5.23 | 8.53 | 0.61 | 1.96 | 1.25 |
| 0.02800 | 5.27 | 8.59 | 0.61 | 1.96 | 1.25 |
| 0.02840 | 5.31 | 8.65 | 0.61 | 1.96 | 1.25 |

# Rating Table for 15 VCP

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.02880 | 5.35 | 8.72 | 0.61 | 1.96 | 1.25 |
| 0.02920 | 5.38 | 8.78 | 0.61 | 1.96 | 1.25 |
| 0.02960 | 5.42 | 8.84 | 0.61 | 1.96 | 1.25 |
| 0.03000 | 5.46 | 8.90 | 0.61 | 1.96 | 1.25 |
| 0.03040 | 5.49 | 8.95 | 0.61 | 1.96 | 1.25 |
| 0.03080 | 5.53 | 9.01 | 0.61 | 1.96 | 1.25 |
| 0.03120 | 5.57 | 9.07 | 0.61 | 1.96 | 1.25 |
| 0.03160 | 5.60 | 9.13 | 0.61 | 1.96 | 1.25 |
| 0.03200 | 5.64 | 9.19 | 0.61 | 1.96 | 1.25 |
| 0.03240 | 5.67 | 9.24 | 0.61 | 1.96 | 1.25 |
| 0.03280 | 5.71 | 9.30 | 0.61 | 1.96 | 1.25 |
| 0.03320 | 5.74 | 9.36 | 0.61 | 1.96 | 1.25 |
| 0.03360 | 5.78 | 9.41 | 0.61 | 1.96 | 1.25 |
| 0.03400 | 5.81 | 9.47 | 0.61 | 1.96 | 1.25 |
| 0.03440 | 5.85 | 9.53 | 0.61 | 1.96 | 1.25 |
| 0.03480 | 5.88 | 9.58 | 0.61 | 1.96 | 1.25 |
| 0.03520 | 5.91 | 9.64 | 0.61 | 1.96 | 1.25 |
| 0.03560 | 5.95 | 9.69 | 0.61 | 1.96 | 1.25 |
| 0.03600 | 5.98 | 9.75 | 0.61 | 1.96 | 1.25 |
| 0.03640 | 6.01 | 9.80 | 0.61 | 1.96 | 1.25 |
| 0.03680 | 6.05 | 9.85 | 0.61 | 1.96 | 1.25 |
| 0.03720 | 6.08 | 9.91 | 0.61 | 1.96 | 1.25 |
| 0.03760 | 6.11 | 9.96 | 0.61 | 1.96 | 1.25 |
| 0.03800 | 6.14 | 10.01 | 0.61 | 1.96 | 1.25 |
| 0.03840 | 6.18 | 10.07 | 0.61 | 1.96 | 1.25 |
| 0.03880 | 6.21 | 10.12 | 0.61 | 1.96 | 1.25 |
| 0.03920 | 6.24 | 10.17 | 0.61 | 1.96 | 1.25 |
| 0.03960 | 6.27 | 10.22 | 0.61 | 1.96 | 1.25 |
| 0.04000 | 6.30 | 10.27 | 0.61 | 1.96 | 1.25 |
| 0.04040 | 6.33 | 10.32 | 0.61 | 1.96 | 1.25 |
| 0.04080 | 6.37 | 10.38 | 0.61 | 1.96 | 1.25 |
| 0.04120 | 6.40 | 10.43 | 0.61 | 1.96 | 1.25 |
| 0.04160 | 6.43 | 10.48 | 0.61 | 1.96 | 1.25 |
| 0.04200 | 6.46 | 10.53 | 0.61 | 1.96 | 1.25 |
| 0.04240 | 6.49 | 10.58 | 0.61 | 1.96 | 1.25 |
| 0.04280 | 6.52 | 10.63 | 0.61 | 1.96 | 1.25 |
| 0.04320 | 6.55 | 10.68 | 0.61 | 1.96 | 1.25 |

# Rating Table for 15 VCP

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.04360 | 6.58 | 10.73 | 0.61 | 1.96 | 1.25 |
| 0.04400 | 6.61 | 10.77 | 0.61 | 1.96 | 1.25 |
| 0.04440 | 6.64 | 10.82 | 0.61 | 1.96 | 1.25 |
| 0.04480 | 6.67 | 10.87 | 0.61 | 1.96 | 1.25 |
| 0.04520 | 6.70 | 10.92 | 0.61 | 1.96 | 1.25 |
| 0.04560 | 6.73 | 10.97 | 0.61 | 1.96 | 1.25 |
| 0.04600 | 6.76 | 11.02 | 0.61 | 1.96 | 1.25 |
| 0.04640 | 6.79 | 11.06 | 0.61 | 1.96 | 1.25 |
| 0.04680 | 6.82 | 11.11 | 0.61 | 1.96 | 1.25 |
| 0.04720 | 6.85 | 11.16 | 0.61 | 1.96 | 1.25 |
| 0.04760 | 6.88 | 11.21 | 0.61 | 1.96 | 1.25 |
| 0.04800 | 6.91 | 11.25 | 0.61 | 1.96 | 1.25 |
| 0.04840 | 6.93 | 11.30 | 0.61 | 1.96 | 1.25 |
| 0.04880 | 6.96 | 11.35 | 0.61 | 1.96 | 1.25 |
| 0.04920 | 6.99 | 11.39 | 0.61 | 1.96 | 1.25 |
| 0.04960 | 7.02 | 11.44 | 0.61 | 1.96 | 1.25 |
| 0.05000 | 7.05 | 11.49 | 0.61 | 1.96 | 1.25 |
| 0.05040 | 7.08 | 11.53 | 0.61 | 1.96 | 1.25 |
| 0.05080 | 7.10 | 11.58 | 0.61 | 1.96 | 1.25 |
| 0.05120 | 7.13 | 11.62 | 0.61 | 1.96 | 1.25 |
| 0.05160 | 7.16 | 11.67 | 0.61 | 1.96 | 1.25 |
| 0.05200 | 7.19 | 11.71 | 0.61 | 1.96 | 1.25 |
| 0.05240 | 7.22 | 11.76 | 0.61 | 1.96 | 1.25 |
| 0.05280 | 7.24 | 11.80 | 0.61 | 1.96 | 1.25 |
| 0.05320 | 7.27 | 11.85 | 0.61 | 1.96 | 1.25 |
| 0.05360 | 7.30 | 11.89 | 0.61 | 1.96 | 1.25 |
| 0.05400 | 7.32 | 11.94 | 0.61 | 1.96 | 1.25 |
| 0.05440 | 7.35 | 11.98 | 0.61 | 1.96 | 1.25 |
| 0.05480 | 7.38 | 12.03 | 0.61 | 1.96 | 1.25 |
| 0.05520 | 7.41 | 12.07 | 0.61 | 1.96 | 1.25 |
| 0.05560 | 7.43 | 12.11 | 0.61 | 1.96 | 1.25 |
| 0.05600 | 7.46 | 12.16 | 0.61 | 1.96 | 1.25 |
| 0.05640 | 7.49 | 12.20 | 0.61 | 1.96 | 1.25 |
| 0.05680 | 7.51 | 12.24 | 0.61 | 1.96 | 1.25 |
| 0.05720 | 7.54 | 12.29 | 0.61 | 1.96 | 1.25 |
| 0.05760 | 7.56 | 12.33 | 0.61 | 1.96 | 1.25 |
| 0.05800 | 7.59 | 12.37 | 0.61 | 1.96 | 1.25 |

# Rating Table for 15 VCP

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.05840 | 7.62 | 12.41 | 0.61 | 1.96 | 1.25 |
| 0.05880 | 7.64 | 12.46 | 0.61 | 1.96 | 1.25 |
| 0.05920 | 7.67 | 12.50 | 0.61 | 1.96 | 1.25 |
| 0.05960 | 7.70 | 12.54 | 0.61 | 1.96 | 1.25 |
| 0.06000 | 7.72 | 12.58 | 0.61 | 1.96 | 1.25 |
| 0.06040 | 7.75 | 12.63 | 0.61 | 1.96 | 1.25 |
| 0.06080 | 7.77 | 12.67 | 0.61 | 1.96 | 1.25 |
| 0.06120 | 7.80 | 12.71 | 0.61 | 1.96 | 1.25 |
| 0.06160 | 7.82 | 12.75 | 0.61 | 1.96 | 1.25 |
| 0.06200 | 7.85 | 12.79 | 0.61 | 1.96 | 1.25 |
| 0.06240 | 7.87 | 12.83 | 0.61 | 1.96 | 1.25 |
| 0.06280 | 7.90 | 12.87 | 0.61 | 1.96 | 1.25 |
| 0.06320 | 7.92 | 12.91 | 0.61 | 1.96 | 1.25 |
| 0.06360 | 7.95 | 12.96 | 0.61 | 1.96 | 1.25 |
| 0.06400 | 7.97 | 13.00 | 0.61 | 1.96 | 1.25 |
| 0.06440 | 8.00 | 13.04 | 0.61 | 1.96 | 1.25 |
| 0.06480 | 8.02 | 13.08 | 0.61 | 1.96 | 1.25 |
| 0.06520 | 8.05 | 13.12 | 0.61 | 1.96 | 1.25 |
| 0.06560 | 8.07 | 13.16 | 0.61 | 1.96 | 1.25 |
| 0.06600 | 8.10 | 13.20 | 0.61 | 1.96 | 1.25 |
| 0.06640 | 8.12 | 13.24 | 0.61 | 1.96 | 1.25 |
| 0.06680 | 8.15 | 13.28 | 0.61 | 1.96 | 1.25 |
| 0.06720 | 8.17 | 13.32 | 0.61 | 1.96 | 1.25 |
| 0.06760 | 8.20 | 13.36 | 0.61 | 1.96 | 1.25 |
| 0.06800 | 8.22 | 13.40 | 0.61 | 1.96 | 1.25 |
| 0.06840 | 8.24 | 13.44 | 0.61 | 1.96 | 1.25 |
| 0.06880 | 8.27 | 13.48 | 0.61 | 1.96 | 1.25 |
| 0.06920 | 8.29 | 13.51 | 0.61 | 1.96 | 1.25 |
| 0.06960 | 8.32 | 13.55 | 0.61 | 1.96 | 1.25 |
| 0.07000 | 8.34 | 13.59 | 0.61 | 1.96 | 1.25 |
| 0.07040 | 8.36 | 13.63 | 0.61 | 1.96 | 1.25 |
| 0.07080 | 8.39 | 13.67 | 0.61 | 1.96 | 1.25 |
| 0.07120 | 8.41 | 13.71 | 0.61 | 1.96 | 1.25 |
| 0.07160 | 8.43 | 13.75 | 0.61 | 1.96 | 1.25 |
| 0.07200 | 8.46 | 13.79 | 0.61 | 1.96 | 1.25 |
| 0.07240 | 8.48 | 13.82 | 0.61 | 1.96 | 1.25 |
| 0.07280 | 8.51 | 13.86 | 0.61 | 1.96 | 1.25 |

# Rating Table for 15 VCP

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.07320 | 8.53 | 13.90 | 0.61 | 1.96 | 1.25 |
| 0.07360 | 8.55 | 13.94 | 0.61 | 1.96 | 1.25 |
| 0.07400 | 8.58 | 13.98 | 0.61 | 1.96 | 1.25 |
| 0.07440 | 8.60 | 14.01 | 0.61 | 1.96 | 1.25 |
| 0.07480 | 8.62 | 14.05 | 0.61 | 1.96 | 1.25 |
| 0.07520 | 8.64 | 14.09 | 0.61 | 1.96 | 1.25 |
| 0.07560 | 8.67 | 14.13 | 0.61 | 1.96 | 1.25 |
| 0.07600 | 8.69 | 14.16 | 0.61 | 1.96 | 1.25 |
| 0.07640 | 8.71 | 14.20 | 0.61 | 1.96 | 1.25 |
| 0.07680 | 8.74 | 14.24 | 0.61 | 1.96 | 1.25 |
| 0.07720 | 8.76 | 14.27 | 0.61 | 1.96 | 1.25 |
| 0.07760 | 8.78 | 14.31 | 0.61 | 1.96 | 1.25 |
| 0.07800 | 8.80 | 14.35 | 0.61 | 1.96 | 1.25 |
| 0.07840 | 8.83 | 14.39 | 0.61 | 1.96 | 1.25 |
| 0.07880 | 8.85 | 14.42 | 0.61 | 1.96 | 1.25 |
| 0.07920 | 8.87 | 14.46 | 0.61 | 1.96 | 1.25 |
| 0.07960 | 8.89 | 14.49 | 0.61 | 1.96 | 1.25 |
| 0.08000 | 8.92 | 14.53 | 0.61 | 1.96 | 1.25 |

# Rating Table for 15 inch - 3/4 Full

## Project Description

| | |
|---|---|
| Friction Method | Kutter Formula |
| Solve For | Discharge |

## Input Data

| | |
|---|---|
| Roughness Coefficient | 0.013 |
| Channel Slope | 0.0040 ft/ft |
| Normal Depth | 11.25 in |
| Diameter | 15.0 in |

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0008 | 1.62 | 1.64 | 1.0 | 2.6 | 1.08 |
| 0.0012 | 1.99 | 2.02 | 1.0 | 2.6 | 1.08 |
| 0.0016 | 2.31 | 2.34 | 1.0 | 2.6 | 1.08 |
| 0.0020 | 2.59 | 2.62 | 1.0 | 2.6 | 1.08 |
| 0.0024 | 2.84 | 2.87 | 1.0 | 2.6 | 1.08 |
| 0.0028 | 3.07 | 3.11 | 1.0 | 2.6 | 1.08 |
| 0.0032 | 3.28 | 3.32 | 1.0 | 2.6 | 1.08 |
| 0.0036 | 3.48 | 3.53 | 1.0 | 2.6 | 1.08 |
| 0.0040 | 3.67 | 3.72 | 1.0 | 2.6 | 1.08 |
| 0.0044 | 3.85 | 3.90 | 1.0 | 2.6 | 1.08 |
| 0.0048 | 4.03 | 4.08 | 1.0 | 2.6 | 1.08 |
| 0.0052 | 4.19 | 4.25 | 1.0 | 2.6 | 1.08 |
| 0.0056 | 4.35 | 4.41 | 1.0 | 2.6 | 1.08 |
| 0.0060 | 4.50 | 4.56 | 1.0 | 2.6 | 1.08 |
| 0.0064 | 4.65 | 4.71 | 1.0 | 2.6 | 1.08 |
| 0.0068 | 4.80 | 4.86 | 1.0 | 2.6 | 1.08 |
| 0.0072 | 4.94 | 5.00 | 1.0 | 2.6 | 1.08 |
| 0.0076 | 5.07 | 5.14 | 1.0 | 2.6 | 1.08 |
| 0.0080 | 5.20 | 5.27 | 1.0 | 2.6 | 1.08 |
| 0.0084 | 5.33 | 5.40 | 1.0 | 2.6 | 1.08 |
| 0.0088 | 5.46 | 5.53 | 1.0 | 2.6 | 1.08 |
| 0.0092 | 5.58 | 5.65 | 1.0 | 2.6 | 1.08 |
| 0.0096 | 5.70 | 5.78 | 1.0 | 2.6 | 1.08 |
| 0.0100 | 5.82 | 5.90 | 1.0 | 2.6 | 1.08 |
| 0.0104 | 5.94 | 6.01 | 1.0 | 2.6 | 1.08 |
| 0.0108 | 6.05 | 6.13 | 1.0 | 2.6 | 1.08 |
| 0.0112 | 6.16 | 6.24 | 1.0 | 2.6 | 1.08 |
| 0.0116 | 6.27 | 6.35 | 1.0 | 2.6 | 1.08 |
| 0.0120 | 6.38 | 6.46 | 1.0 | 2.6 | 1.08 |
| 0.0124 | 6.48 | 6.57 | 1.0 | 2.6 | 1.08 |
| 0.0128 | 6.59 | 6.67 | 1.0 | 2.6 | 1.08 |
| 0.0132 | 6.69 | 6.78 | 1.0 | 2.6 | 1.08 |
| 0.0136 | 6.79 | 6.88 | 1.0 | 2.6 | 1.08 |
| 0.0140 | 6.89 | 6.98 | 1.0 | 2.6 | 1.08 |
| 0.0144 | 6.99 | 7.08 | 1.0 | 2.6 | 1.08 |
| 0.0148 | 7.09 | 7.18 | 1.0 | 2.6 | 1.08 |
| 0.0152 | 7.18 | 7.27 | 1.0 | 2.6 | 1.08 |
| 0.0156 | 7.27 | 7.37 | 1.0 | 2.6 | 1.08 |

# Rating Table for 15 inch - 3/4 Full

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0160 | 7.37 | 7.46 | 1.0 | 2.6 | 1.08 |
| 0.0164 | 7.46 | 7.56 | 1.0 | 2.6 | 1.08 |
| 0.0168 | 7.55 | 7.65 | 1.0 | 2.6 | 1.08 |
| 0.0172 | 7.64 | 7.74 | 1.0 | 2.6 | 1.08 |
| 0.0176 | 7.73 | 7.83 | 1.0 | 2.6 | 1.08 |
| 0.0180 | 7.82 | 7.92 | 1.0 | 2.6 | 1.08 |
| 0.0184 | 7.90 | 8.00 | 1.0 | 2.6 | 1.08 |
| 0.0188 | 7.99 | 8.09 | 1.0 | 2.6 | 1.08 |
| 0.0192 | 8.07 | 8.18 | 1.0 | 2.6 | 1.08 |
| 0.0196 | 8.16 | 8.26 | 1.0 | 2.6 | 1.08 |
| 0.0200 | 8.24 | 8.34 | 1.0 | 2.6 | 1.08 |
| 0.0204 | 8.32 | 8.43 | 1.0 | 2.6 | 1.08 |
| 0.0208 | 8.40 | 8.51 | 1.0 | 2.6 | 1.08 |
| 0.0212 | 8.48 | 8.59 | 1.0 | 2.6 | 1.08 |
| 0.0216 | 8.56 | 8.67 | 1.0 | 2.6 | 1.08 |
| 0.0220 | 8.64 | 8.75 | 1.0 | 2.6 | 1.08 |
| 0.0224 | 8.72 | 8.83 | 1.0 | 2.6 | 1.08 |
| 0.0228 | 8.80 | 8.91 | 1.0 | 2.6 | 1.08 |
| 0.0232 | 8.87 | 8.99 | 1.0 | 2.6 | 1.08 |
| 0.0236 | 8.95 | 9.07 | 1.0 | 2.6 | 1.08 |
| 0.0240 | 9.03 | 9.14 | 1.0 | 2.6 | 1.08 |
| 0.0244 | 9.10 | 9.22 | 1.0 | 2.6 | 1.08 |
| 0.0248 | 9.18 | 9.29 | 1.0 | 2.6 | 1.08 |
| 0.0252 | 9.25 | 9.37 | 1.0 | 2.6 | 1.08 |
| 0.0256 | 9.32 | 9.44 | 1.0 | 2.6 | 1.08 |
| 0.0260 | 9.40 | 9.52 | 1.0 | 2.6 | 1.08 |
| 0.0264 | 9.47 | 9.59 | 1.0 | 2.6 | 1.08 |
| 0.0268 | 9.54 | 9.66 | 1.0 | 2.6 | 1.08 |
| 0.0272 | 9.61 | 9.73 | 1.0 | 2.6 | 1.08 |
| 0.0276 | 9.68 | 9.81 | 1.0 | 2.6 | 1.08 |
| 0.0280 | 9.75 | 9.88 | 1.0 | 2.6 | 1.08 |
| 0.0284 | 9.82 | 9.95 | 1.0 | 2.6 | 1.08 |
| 0.0288 | 9.89 | 10.02 | 1.0 | 2.6 | 1.08 |
| 0.0292 | 9.96 | 10.09 | 1.0 | 2.6 | 1.08 |
| 0.0296 | 10.03 | 10.15 | 1.0 | 2.6 | 1.08 |
| 0.0300 | 10.09 | 10.22 | 1.0 | 2.6 | 1.08 |
| 0.0304 | 10.16 | 10.29 | 1.0 | 2.6 | 1.08 |
| 0.0308 | 10.23 | 10.36 | 1.0 | 2.6 | 1.08 |
| 0.0312 | 10.29 | 10.43 | 1.0 | 2.6 | 1.08 |
| 0.0316 | 10.36 | 10.49 | 1.0 | 2.6 | 1.08 |
| 0.0320 | 10.42 | 10.56 | 1.0 | 2.6 | 1.08 |
| 0.0324 | 10.49 | 10.62 | 1.0 | 2.6 | 1.08 |
| 0.0328 | 10.55 | 10.69 | 1.0 | 2.6 | 1.08 |
| 0.0332 | 10.62 | 10.76 | 1.0 | 2.6 | 1.08 |
| 0.0336 | 10.68 | 10.82 | 1.0 | 2.6 | 1.08 |
| 0.0340 | 10.75 | 10.88 | 1.0 | 2.6 | 1.08 |
| 0.0344 | 10.81 | 10.95 | 1.0 | 2.6 | 1.08 |
| 0.0348 | 10.87 | 11.01 | 1.0 | 2.6 | 1.08 |
| 0.0352 | 10.93 | 11.07 | 1.0 | 2.6 | 1.08 |

# Rating Table for 15 inch - 3/4 Full

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0356 | 11.00 | 11.14 | 1.0 | 2.6 | 1.08 |
| 0.0360 | 11.06 | 11.20 | 1.0 | 2.6 | 1.08 |
| 0.0364 | 11.12 | 11.26 | 1.0 | 2.6 | 1.08 |
| 0.0368 | 11.18 | 11.32 | 1.0 | 2.6 | 1.08 |
| 0.0372 | 11.24 | 11.39 | 1.0 | 2.6 | 1.08 |
| 0.0376 | 11.30 | 11.45 | 1.0 | 2.6 | 1.08 |
| 0.0380 | 11.36 | 11.51 | 1.0 | 2.6 | 1.08 |
| 0.0384 | 11.42 | 11.57 | 1.0 | 2.6 | 1.08 |
| 0.0388 | 11.48 | 11.63 | 1.0 | 2.6 | 1.08 |
| 0.0392 | 11.54 | 11.69 | 1.0 | 2.6 | 1.08 |
| 0.0396 | 11.60 | 11.75 | 1.0 | 2.6 | 1.08 |
| 0.0400 | 11.66 | 11.81 | 1.0 | 2.6 | 1.08 |
| 0.0404 | 11.71 | 11.87 | 1.0 | 2.6 | 1.08 |
| 0.0408 | 11.77 | 11.92 | 1.0 | 2.6 | 1.08 |
| 0.0412 | 11.83 | 11.98 | 1.0 | 2.6 | 1.08 |
| 0.0416 | 11.89 | 12.04 | 1.0 | 2.6 | 1.08 |
| 0.0420 | 11.94 | 12.10 | 1.0 | 2.6 | 1.08 |
| 0.0424 | 12.00 | 12.16 | 1.0 | 2.6 | 1.08 |
| 0.0428 | 12.06 | 12.21 | 1.0 | 2.6 | 1.08 |
| 0.0432 | 12.11 | 12.27 | 1.0 | 2.6 | 1.08 |
| 0.0436 | 12.17 | 12.33 | 1.0 | 2.6 | 1.08 |
| 0.0440 | 12.23 | 12.38 | 1.0 | 2.6 | 1.08 |
| 0.0444 | 12.28 | 12.44 | 1.0 | 2.6 | 1.08 |
| 0.0448 | 12.34 | 12.50 | 1.0 | 2.6 | 1.08 |
| 0.0452 | 12.39 | 12.55 | 1.0 | 2.6 | 1.08 |
| 0.0456 | 12.45 | 12.61 | 1.0 | 2.6 | 1.08 |
| 0.0460 | 12.50 | 12.66 | 1.0 | 2.6 | 1.08 |
| 0.0464 | 12.55 | 12.72 | 1.0 | 2.6 | 1.08 |
| 0.0468 | 12.61 | 12.77 | 1.0 | 2.6 | 1.08 |
| 0.0472 | 12.66 | 12.83 | 1.0 | 2.6 | 1.08 |
| 0.0476 | 12.72 | 12.88 | 1.0 | 2.6 | 1.08 |
| 0.0480 | 12.77 | 12.93 | 1.0 | 2.6 | 1.08 |
| 0.0484 | 12.82 | 12.99 | 1.0 | 2.6 | 1.08 |
| 0.0488 | 12.88 | 13.04 | 1.0 | 2.6 | 1.08 |
| 0.0492 | 12.93 | 13.09 | 1.0 | 2.6 | 1.08 |
| 0.0496 | 12.98 | 13.15 | 1.0 | 2.6 | 1.08 |
| 0.0500 | 13.03 | 13.20 | 1.0 | 2.6 | 1.08 |
| 0.0504 | 13.08 | 13.25 | 1.0 | 2.6 | 1.08 |
| 0.0508 | 13.14 | 13.31 | 1.0 | 2.6 | 1.08 |
| 0.0512 | 13.19 | 13.36 | 1.0 | 2.6 | 1.08 |
| 0.0516 | 13.24 | 13.41 | 1.0 | 2.6 | 1.08 |
| 0.0520 | 13.29 | 13.46 | 1.0 | 2.6 | 1.08 |
| 0.0524 | 13.34 | 13.51 | 1.0 | 2.6 | 1.08 |
| 0.0528 | 13.39 | 13.57 | 1.0 | 2.6 | 1.08 |
| 0.0532 | 13.44 | 13.62 | 1.0 | 2.6 | 1.08 |
| 0.0536 | 13.49 | 13.67 | 1.0 | 2.6 | 1.08 |
| 0.0540 | 13.54 | 13.72 | 1.0 | 2.6 | 1.08 |
| 0.0544 | 13.59 | 13.77 | 1.0 | 2.6 | 1.08 |
| 0.0548 | 13.64 | 13.82 | 1.0 | 2.6 | 1.08 |

# Rating Table for 15 inch - 3/4 Full

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0552 | 13.69 | 13.87 | 1.0 | 2.6 | 1.08 |
| 0.0556 | 13.74 | 13.92 | 1.0 | 2.6 | 1.08 |
| 0.0560 | 13.79 | 13.97 | 1.0 | 2.6 | 1.08 |
| 0.0564 | 13.84 | 14.02 | 1.0 | 2.6 | 1.08 |
| 0.0568 | 13.89 | 14.07 | 1.0 | 2.6 | 1.08 |
| 0.0572 | 13.94 | 14.12 | 1.0 | 2.6 | 1.08 |
| 0.0576 | 13.99 | 14.17 | 1.0 | 2.6 | 1.08 |
| 0.0580 | 14.04 | 14.22 | 1.0 | 2.6 | 1.08 |
| 0.0584 | 14.09 | 14.27 | 1.0 | 2.6 | 1.08 |
| 0.0588 | 14.13 | 14.32 | 1.0 | 2.6 | 1.08 |
| 0.0592 | 14.18 | 14.36 | 1.0 | 2.6 | 1.08 |
| 0.0596 | 14.23 | 14.41 | 1.0 | 2.6 | 1.08 |
| 0.0600 | 14.28 | 14.46 | 1.0 | 2.6 | 1.08 |
| 0.0604 | 14.33 | 14.51 | 1.0 | 2.6 | 1.08 |
| 0.0608 | 14.37 | 14.56 | 1.0 | 2.6 | 1.08 |
| 0.0612 | 14.42 | 14.61 | 1.0 | 2.6 | 1.08 |
| 0.0616 | 14.47 | 14.65 | 1.0 | 2.6 | 1.08 |
| 0.0620 | 14.51 | 14.70 | 1.0 | 2.6 | 1.08 |
| 0.0624 | 14.56 | 14.75 | 1.0 | 2.6 | 1.08 |
| 0.0628 | 14.61 | 14.80 | 1.0 | 2.6 | 1.08 |
| 0.0632 | 14.65 | 14.84 | 1.0 | 2.6 | 1.08 |
| 0.0636 | 14.70 | 14.89 | 1.0 | 2.6 | 1.08 |
| 0.0640 | 14.75 | 14.94 | 1.0 | 2.6 | 1.08 |
| 0.0644 | 14.79 | 14.98 | 1.0 | 2.6 | 1.08 |
| 0.0648 | 14.84 | 15.03 | 1.0 | 2.6 | 1.08 |
| 0.0652 | 14.88 | 15.08 | 1.0 | 2.6 | 1.08 |
| 0.0656 | 14.93 | 15.12 | 1.0 | 2.6 | 1.08 |
| 0.0660 | 14.97 | 15.17 | 1.0 | 2.6 | 1.08 |
| 0.0664 | 15.02 | 15.21 | 1.0 | 2.6 | 1.08 |
| 0.0668 | 15.07 | 15.26 | 1.0 | 2.6 | 1.08 |
| 0.0672 | 15.11 | 15.31 | 1.0 | 2.6 | 1.08 |
| 0.0676 | 15.16 | 15.35 | 1.0 | 2.6 | 1.08 |
| 0.0680 | 15.20 | 15.40 | 1.0 | 2.6 | 1.08 |
| 0.0684 | 15.24 | 15.44 | 1.0 | 2.6 | 1.08 |
| 0.0688 | 15.29 | 15.49 | 1.0 | 2.6 | 1.08 |
| 0.0692 | 15.33 | 15.53 | 1.0 | 2.6 | 1.08 |
| 0.0696 | 15.38 | 15.58 | 1.0 | 2.6 | 1.08 |
| 0.0700 | 15.42 | 15.62 | 1.0 | 2.6 | 1.08 |
| 0.0704 | 15.47 | 15.67 | 1.0 | 2.6 | 1.08 |
| 0.0708 | 15.51 | 15.71 | 1.0 | 2.6 | 1.08 |
| 0.0712 | 15.55 | 15.75 | 1.0 | 2.6 | 1.08 |
| 0.0716 | 15.60 | 15.80 | 1.0 | 2.6 | 1.08 |
| 0.0720 | 15.64 | 15.84 | 1.0 | 2.6 | 1.08 |
| 0.0724 | 15.68 | 15.89 | 1.0 | 2.6 | 1.08 |
| 0.0728 | 15.73 | 15.93 | 1.0 | 2.6 | 1.08 |
| 0.0732 | 15.77 | 15.97 | 1.0 | 2.6 | 1.08 |
| 0.0736 | 15.81 | 16.02 | 1.0 | 2.6 | 1.08 |
| 0.0740 | 15.86 | 16.06 | 1.0 | 2.6 | 1.08 |
| 0.0744 | 15.90 | 16.10 | 1.0 | 2.6 | 1.08 |

# Rating Table for 15 inch - 3/4 Full

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area ($ft^2$) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0748 | 15.94 | 16.15 | 1.0 | 2.6 | 1.08 |
| 0.0752 | 15.98 | 16.19 | 1.0 | 2.6 | 1.08 |
| 0.0756 | 16.03 | 16.23 | 1.0 | 2.6 | 1.08 |
| 0.0760 | 16.07 | 16.28 | 1.0 | 2.6 | 1.08 |
| 0.0764 | 16.11 | 16.32 | 1.0 | 2.6 | 1.08 |
| 0.0768 | 16.15 | 16.36 | 1.0 | 2.6 | 1.08 |
| 0.0772 | 16.20 | 16.41 | 1.0 | 2.6 | 1.08 |
| 0.0776 | 16.24 | 16.45 | 1.0 | 2.6 | 1.08 |
| 0.0780 | 16.28 | 16.49 | 1.0 | 2.6 | 1.08 |
| 0.0784 | 16.32 | 16.53 | 1.0 | 2.6 | 1.08 |
| 0.0788 | 16.36 | 16.57 | 1.0 | 2.6 | 1.08 |
| 0.0792 | 16.40 | 16.62 | 1.0 | 2.6 | 1.08 |
| 0.0796 | 16.45 | 16.66 | 1.0 | 2.6 | 1.08 |
| 0.0800 | 16.49 | 16.70 | 1.0 | 2.6 | 1.08 |

# Rating Table for 18 inch

## Project Description

| | |
|---|---|
| Friction Method | Kutter Formula |
| Solve For | Discharge |

## Input Data

| | | |
|---|---|---|
| Roughness Coefficient | 0.013 | |
| Channel Slope | 0.01000 | ft/ft |
| Normal Depth | 0.75 | ft |
| Diameter | 1.50 | ft |

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.00140 | 1.92 | 2.18 | 0.88 | 2.36 | 1.50 |
| 0.00180 | 2.19 | 2.47 | 0.88 | 2.36 | 1.50 |
| 0.00220 | 2.42 | 2.74 | 0.88 | 2.36 | 1.50 |
| 0.00260 | 2.63 | 2.98 | 0.88 | 2.36 | 1.50 |
| 0.00300 | 2.83 | 3.20 | 0.88 | 2.36 | 1.50 |
| 0.00340 | 3.02 | 3.41 | 0.88 | 2.36 | 1.50 |
| 0.00380 | 3.19 | 3.61 | 0.88 | 2.36 | 1.50 |
| 0.00420 | 3.35 | 3.80 | 0.88 | 2.36 | 1.50 |
| 0.00460 | 3.51 | 3.97 | 0.88 | 2.36 | 1.50 |
| 0.00500 | 3.66 | 4.15 | 0.88 | 2.36 | 1.50 |
| 0.00540 | 3.81 | 4.31 | 0.88 | 2.36 | 1.50 |
| 0.00580 | 3.95 | 4.47 | 0.88 | 2.36 | 1.50 |
| 0.00620 | 4.08 | 4.62 | 0.88 | 2.36 | 1.50 |
| 0.00660 | 4.21 | 4.77 | 0.88 | 2.36 | 1.50 |
| 0.00700 | 4.34 | 4.91 | 0.88 | 2.36 | 1.50 |
| 0.00740 | 4.46 | 5.05 | 0.88 | 2.36 | 1.50 |
| 0.00780 | 4.58 | 5.18 | 0.88 | 2.36 | 1.50 |
| 0.00820 | 4.70 | 5.32 | 0.88 | 2.36 | 1.50 |
| 0.00860 | 4.81 | 5.44 | 0.88 | 2.36 | 1.50 |
| 0.00900 | 4.92 | 5.57 | 0.88 | 2.36 | 1.50 |
| 0.00940 | 5.03 | 5.69 | 0.88 | 2.36 | 1.50 |
| 0.00980 | 5.14 | 5.81 | 0.88 | 2.36 | 1.50 |
| 0.01020 | 5.24 | 5.93 | 0.88 | 2.36 | 1.50 |
| 0.01060 | 5.34 | 6.05 | 0.88 | 2.36 | 1.50 |
| 0.01100 | 5.44 | 6.16 | 0.88 | 2.36 | 1.50 |

# Rating Table for 18 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.01140 | 5.54 | 6.27 | 0.88 | 2.36 | 1.50 |
| 0.01180 | 5.64 | 6.38 | 0.88 | 2.36 | 1.50 |
| 0.01220 | 5.73 | 6.49 | 0.88 | 2.36 | 1.50 |
| 0.01260 | 5.83 | 6.59 | 0.88 | 2.36 | 1.50 |
| 0.01300 | 5.92 | 6.70 | 0.88 | 2.36 | 1.50 |
| 0.01340 | 6.01 | 6.80 | 0.88 | 2.36 | 1.50 |
| 0.01380 | 6.10 | 6.90 | 0.88 | 2.36 | 1.50 |
| 0.01420 | 6.19 | 7.00 | 0.88 | 2.36 | 1.50 |
| 0.01460 | 6.27 | 7.10 | 0.88 | 2.36 | 1.50 |
| 0.01500 | 6.36 | 7.20 | 0.88 | 2.36 | 1.50 |
| 0.01540 | 6.44 | 7.29 | 0.88 | 2.36 | 1.50 |
| 0.01580 | 6.53 | 7.39 | 0.88 | 2.36 | 1.50 |
| 0.01620 | 6.61 | 7.48 | 0.88 | 2.36 | 1.50 |
| 0.01660 | 6.69 | 7.57 | 0.88 | 2.36 | 1.50 |
| 0.01700 | 6.77 | 7.66 | 0.88 | 2.36 | 1.50 |
| 0.01740 | 6.85 | 7.75 | 0.88 | 2.36 | 1.50 |
| 0.01780 | 6.93 | 7.84 | 0.88 | 2.36 | 1.50 |
| 0.01820 | 7.00 | 7.93 | 0.88 | 2.36 | 1.50 |
| 0.01860 | 7.08 | 8.01 | 0.88 | 2.36 | 1.50 |
| 0.01900 | 7.16 | 8.10 | 0.88 | 2.36 | 1.50 |
| 0.01940 | 7.23 | 8.18 | 0.88 | 2.36 | 1.50 |
| 0.01980 | 7.31 | 8.27 | 0.88 | 2.36 | 1.50 |
| 0.02020 | 7.38 | 8.35 | 0.88 | 2.36 | 1.50 |
| 0.02060 | 7.45 | 8.43 | 0.88 | 2.36 | 1.50 |
| 0.02100 | 7.52 | 8.52 | 0.88 | 2.36 | 1.50 |
| 0.02140 | 7.60 | 8.60 | 0.88 | 2.36 | 1.50 |
| 0.02180 | 7.67 | 8.68 | 0.88 | 2.36 | 1.50 |
| 0.02220 | 7.74 | 8.76 | 0.88 | 2.36 | 1.50 |
| 0.02260 | 7.81 | 8.84 | 0.88 | 2.36 | 1.50 |
| 0.02300 | 7.88 | 8.91 | 0.88 | 2.36 | 1.50 |
| 0.02340 | 7.94 | 8.99 | 0.88 | 2.36 | 1.50 |
| 0.02380 | 8.01 | 9.07 | 0.88 | 2.36 | 1.50 |
| 0.02420 | 8.08 | 9.14 | 0.88 | 2.36 | 1.50 |
| 0.02460 | 8.15 | 9.22 | 0.88 | 2.36 | 1.50 |
| 0.02500 | 8.21 | 9.29 | 0.88 | 2.36 | 1.50 |
| 0.02540 | 8.28 | 9.37 | 0.88 | 2.36 | 1.50 |
| 0.02580 | 8.34 | 9.44 | 0.88 | 2.36 | 1.50 |

# Rating Table for 18 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.02620 | 8.41 | 9.51 | 0.88 | 2.36 | 1.50 |
| 0.02660 | 8.47 | 9.59 | 0.88 | 2.36 | 1.50 |
| 0.02700 | 8.53 | 9.66 | 0.88 | 2.36 | 1.50 |
| 0.02740 | 8.60 | 9.73 | 0.88 | 2.36 | 1.50 |
| 0.02780 | 8.66 | 9.80 | 0.88 | 2.36 | 1.50 |
| 0.02820 | 8.72 | 9.87 | 0.88 | 2.36 | 1.50 |
| 0.02860 | 8.78 | 9.94 | 0.88 | 2.36 | 1.50 |
| 0.02900 | 8.84 | 10.01 | 0.88 | 2.36 | 1.50 |
| 0.02940 | 8.91 | 10.08 | 0.88 | 2.36 | 1.50 |
| 0.02980 | 8.97 | 10.15 | 0.88 | 2.36 | 1.50 |
| 0.03020 | 9.03 | 10.22 | 0.88 | 2.36 | 1.50 |
| 0.03060 | 9.09 | 10.28 | 0.88 | 2.36 | 1.50 |
| 0.03100 | 9.14 | 10.35 | 0.88 | 2.36 | 1.50 |
| 0.03140 | 9.20 | 10.42 | 0.88 | 2.36 | 1.50 |
| 0.03180 | 9.26 | 10.48 | 0.88 | 2.36 | 1.50 |
| 0.03220 | 9.32 | 10.55 | 0.88 | 2.36 | 1.50 |
| 0.03260 | 9.38 | 10.61 | 0.88 | 2.36 | 1.50 |
| 0.03300 | 9.44 | 10.68 | 0.88 | 2.36 | 1.50 |
| 0.03340 | 9.49 | 10.74 | 0.88 | 2.36 | 1.50 |
| 0.03380 | 9.55 | 10.81 | 0.88 | 2.36 | 1.50 |
| 0.03420 | 9.61 | 10.87 | 0.88 | 2.36 | 1.50 |
| 0.03460 | 9.66 | 10.93 | 0.88 | 2.36 | 1.50 |
| 0.03500 | 9.72 | 11.00 | 0.88 | 2.36 | 1.50 |
| 0.03540 | 9.77 | 11.06 | 0.88 | 2.36 | 1.50 |
| 0.03580 | 9.83 | 11.12 | 0.88 | 2.36 | 1.50 |
| 0.03620 | 9.88 | 11.18 | 0.88 | 2.36 | 1.50 |
| 0.03660 | 9.94 | 11.25 | 0.88 | 2.36 | 1.50 |
| 0.03700 | 9.99 | 11.31 | 0.88 | 2.36 | 1.50 |
| 0.03740 | 10.05 | 11.37 | 0.88 | 2.36 | 1.50 |
| 0.03780 | 10.10 | 11.43 | 0.88 | 2.36 | 1.50 |
| 0.03820 | 10.15 | 11.49 | 0.88 | 2.36 | 1.50 |
| 0.03860 | 10.21 | 11.55 | 0.88 | 2.36 | 1.50 |
| 0.03900 | 10.26 | 11.61 | 0.88 | 2.36 | 1.50 |
| 0.03940 | 10.31 | 11.67 | 0.88 | 2.36 | 1.50 |
| 0.03980 | 10.36 | 11.73 | 0.88 | 2.36 | 1.50 |
| 0.04020 | 10.41 | 11.79 | 0.88 | 2.36 | 1.50 |
| 0.04060 | 10.47 | 11.85 | 0.88 | 2.36 | 1.50 |

# Rating Table for 18 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.04100 | 10.52 | 11.90 | 0.88 | 2.36 | 1.50 |
| 0.04140 | 10.57 | 11.96 | 0.88 | 2.36 | 1.50 |
| 0.04180 | 10.62 | 12.02 | 0.88 | 2.36 | 1.50 |
| 0.04220 | 10.67 | 12.08 | 0.88 | 2.36 | 1.50 |
| 0.04260 | 10.72 | 12.13 | 0.88 | 2.36 | 1.50 |
| 0.04300 | 10.77 | 12.19 | 0.88 | 2.36 | 1.50 |
| 0.04340 | 10.82 | 12.25 | 0.88 | 2.36 | 1.50 |
| 0.04380 | 10.87 | 12.30 | 0.88 | 2.36 | 1.50 |
| 0.04420 | 10.92 | 12.36 | 0.88 | 2.36 | 1.50 |
| 0.04460 | 10.97 | 12.42 | 0.88 | 2.36 | 1.50 |
| 0.04500 | 11.02 | 12.47 | 0.88 | 2.36 | 1.50 |
| 0.04540 | 11.07 | 12.53 | 0.88 | 2.36 | 1.50 |
| 0.04580 | 11.12 | 12.58 | 0.88 | 2.36 | 1.50 |
| 0.04620 | 11.17 | 12.64 | 0.88 | 2.36 | 1.50 |
| 0.04660 | 11.21 | 12.69 | 0.88 | 2.36 | 1.50 |
| 0.04700 | 11.26 | 12.75 | 0.88 | 2.36 | 1.50 |
| 0.04740 | 11.31 | 12.80 | 0.88 | 2.36 | 1.50 |
| 0.04780 | 11.36 | 12.85 | 0.88 | 2.36 | 1.50 |
| 0.04820 | 11.40 | 12.91 | 0.88 | 2.36 | 1.50 |
| 0.04860 | 11.45 | 12.96 | 0.88 | 2.36 | 1.50 |
| 0.04900 | 11.50 | 13.01 | 0.88 | 2.36 | 1.50 |
| 0.04940 | 11.55 | 13.07 | 0.88 | 2.36 | 1.50 |
| 0.04980 | 11.59 | 13.12 | 0.88 | 2.36 | 1.50 |
| 0.05020 | 11.64 | 13.17 | 0.88 | 2.36 | 1.50 |
| 0.05060 | 11.69 | 13.23 | 0.88 | 2.36 | 1.50 |
| 0.05100 | 11.73 | 13.28 | 0.88 | 2.36 | 1.50 |
| 0.05140 | 11.78 | 13.33 | 0.88 | 2.36 | 1.50 |
| 0.05180 | 11.82 | 13.38 | 0.88 | 2.36 | 1.50 |
| 0.05220 | 11.87 | 13.43 | 0.88 | 2.36 | 1.50 |
| 0.05260 | 11.91 | 13.48 | 0.88 | 2.36 | 1.50 |
| 0.05300 | 11.96 | 13.54 | 0.88 | 2.36 | 1.50 |
| 0.05340 | 12.00 | 13.59 | 0.88 | 2.36 | 1.50 |
| 0.05380 | 12.05 | 13.64 | 0.88 | 2.36 | 1.50 |
| 0.05420 | 12.09 | 13.69 | 0.88 | 2.36 | 1.50 |
| 0.05460 | 12.14 | 13.74 | 0.88 | 2.36 | 1.50 |
| 0.05500 | 12.18 | 13.79 | 0.88 | 2.36 | 1.50 |
| 0.05540 | 12.23 | 13.84 | 0.88 | 2.36 | 1.50 |

# Rating Table for 18 inch

## Input Data

| Channel Slope (ft/ft) | Discharge (ft³/s) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.05580 | 12.27 | 13.89 | 0.88 | 2.36 | 1.50 |
| 0.05620 | 12.32 | 13.94 | 0.88 | 2.36 | 1.50 |
| 0.05660 | 12.36 | 13.99 | 0.88 | 2.36 | 1.50 |
| 0.05700 | 12.40 | 14.04 | 0.88 | 2.36 | 1.50 |
| 0.05740 | 12.45 | 14.09 | 0.88 | 2.36 | 1.50 |
| 0.05780 | 12.49 | 14.14 | 0.88 | 2.36 | 1.50 |
| 0.05820 | 12.53 | 14.18 | 0.88 | 2.36 | 1.50 |
| 0.05860 | 12.58 | 14.23 | 0.88 | 2.36 | 1.50 |
| 0.05900 | 12.62 | 14.28 | 0.88 | 2.36 | 1.50 |
| 0.05940 | 12.66 | 14.33 | 0.88 | 2.36 | 1.50 |
| 0.05980 | 12.70 | 14.38 | 0.88 | 2.36 | 1.50 |

# Rating Table for 18 inch - 3/4 Full

## Project Description

| | |
|---|---|
| Friction Method | Kutter Formula |
| Solve For | Discharge |

## Input Data

| | |
|---|---|
| Roughness Coefficient | 0.013 |
| Channel Slope | 0.0040 ft/ft |
| Normal Depth | 13.50 in |
| Diameter | 18.0 in |

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0008 | 2.66 | 1.87 | 1.4 | 3.1 | 1.30 |
| 0.0012 | 3.28 | 2.31 | 1.4 | 3.1 | 1.30 |
| 0.0016 | 3.80 | 2.67 | 1.4 | 3.1 | 1.30 |
| 0.0020 | 4.26 | 2.99 | 1.4 | 3.1 | 1.30 |
| 0.0024 | 4.67 | 3.28 | 1.4 | 3.1 | 1.30 |
| 0.0028 | 5.05 | 3.55 | 1.4 | 3.1 | 1.30 |
| 0.0032 | 5.40 | 3.80 | 1.4 | 3.1 | 1.30 |
| 0.0036 | 5.73 | 4.03 | 1.4 | 3.1 | 1.30 |
| 0.0040 | 6.04 | 4.25 | 1.4 | 3.1 | 1.30 |
| 0.0044 | 6.34 | 4.46 | 1.4 | 3.1 | 1.30 |
| 0.0048 | 6.62 | 4.66 | 1.4 | 3.1 | 1.30 |
| 0.0052 | 6.90 | 4.85 | 1.4 | 3.1 | 1.30 |
| 0.0056 | 7.16 | 5.03 | 1.4 | 3.1 | 1.30 |
| 0.0060 | 7.41 | 5.21 | 1.4 | 3.1 | 1.30 |
| 0.0064 | 7.65 | 5.38 | 1.4 | 3.1 | 1.30 |
| 0.0068 | 7.89 | 5.55 | 1.4 | 3.1 | 1.30 |
| 0.0072 | 8.12 | 5.71 | 1.4 | 3.1 | 1.30 |
| 0.0076 | 8.34 | 5.87 | 1.4 | 3.1 | 1.30 |
| 0.0080 | 8.56 | 6.02 | 1.4 | 3.1 | 1.30 |
| 0.0084 | 8.77 | 6.17 | 1.4 | 3.1 | 1.30 |
| 0.0088 | 8.98 | 6.32 | 1.4 | 3.1 | 1.30 |
| 0.0092 | 9.18 | 6.46 | 1.4 | 3.1 | 1.30 |
| 0.0096 | 9.38 | 6.60 | 1.4 | 3.1 | 1.30 |
| 0.0100 | 9.57 | 6.73 | 1.4 | 3.1 | 1.30 |
| 0.0104 | 9.76 | 6.87 | 1.4 | 3.1 | 1.30 |
| 0.0108 | 9.95 | 7.00 | 1.4 | 3.1 | 1.30 |
| 0.0112 | 10.13 | 7.13 | 1.4 | 3.1 | 1.30 |
| 0.0116 | 10.31 | 7.25 | 1.4 | 3.1 | 1.30 |
| 0.0120 | 10.49 | 7.38 | 1.4 | 3.1 | 1.30 |
| 0.0124 | 10.66 | 7.50 | 1.4 | 3.1 | 1.30 |
| 0.0128 | 10.84 | 7.62 | 1.4 | 3.1 | 1.30 |
| 0.0132 | 11.00 | 7.74 | 1.4 | 3.1 | 1.30 |
| 0.0136 | 11.17 | 7.86 | 1.4 | 3.1 | 1.30 |
| 0.0140 | 11.33 | 7.97 | 1.4 | 3.1 | 1.30 |
| 0.0144 | 11.49 | 8.09 | 1.4 | 3.1 | 1.30 |
| 0.0148 | 11.65 | 8.20 | 1.4 | 3.1 | 1.30 |
| 0.0152 | 11.81 | 8.31 | 1.4 | 3.1 | 1.30 |
| 0.0156 | 11.96 | 8.42 | 1.4 | 3.1 | 1.30 |

# Rating Table for 18 inch - 3/4 Full

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0160 | 12.12 | 8.52 | 1.4 | 3.1 | 1.30 |
| 0.0164 | 12.27 | 8.63 | 1.4 | 3.1 | 1.30 |
| 0.0168 | 12.42 | 8.73 | 1.4 | 3.1 | 1.30 |
| 0.0172 | 12.56 | 8.84 | 1.4 | 3.1 | 1.30 |
| 0.0176 | 12.71 | 8.94 | 1.4 | 3.1 | 1.30 |
| 0.0180 | 12.85 | 9.04 | 1.4 | 3.1 | 1.30 |
| 0.0184 | 13.00 | 9.14 | 1.4 | 3.1 | 1.30 |
| 0.0188 | 13.14 | 9.24 | 1.4 | 3.1 | 1.30 |
| 0.0192 | 13.28 | 9.34 | 1.4 | 3.1 | 1.30 |
| 0.0196 | 13.41 | 9.44 | 1.4 | 3.1 | 1.30 |
| 0.0200 | 13.55 | 9.53 | 1.4 | 3.1 | 1.30 |
| 0.0204 | 13.69 | 9.63 | 1.4 | 3.1 | 1.30 |
| 0.0208 | 13.82 | 9.72 | 1.4 | 3.1 | 1.30 |
| 0.0212 | 13.95 | 9.81 | 1.4 | 3.1 | 1.30 |
| 0.0216 | 14.08 | 9.91 | 1.4 | 3.1 | 1.30 |
| 0.0220 | 14.21 | 10.00 | 1.4 | 3.1 | 1.30 |
| 0.0224 | 14.34 | 10.09 | 1.4 | 3.1 | 1.30 |
| 0.0228 | 14.47 | 10.18 | 1.4 | 3.1 | 1.30 |
| 0.0232 | 14.60 | 10.27 | 1.4 | 3.1 | 1.30 |
| 0.0236 | 14.72 | 10.35 | 1.4 | 3.1 | 1.30 |
| 0.0240 | 14.85 | 10.44 | 1.4 | 3.1 | 1.30 |
| 0.0244 | 14.97 | 10.53 | 1.4 | 3.1 | 1.30 |
| 0.0248 | 15.09 | 10.62 | 1.4 | 3.1 | 1.30 |
| 0.0252 | 15.21 | 10.70 | 1.4 | 3.1 | 1.30 |
| 0.0256 | 15.33 | 10.79 | 1.4 | 3.1 | 1.30 |
| 0.0260 | 15.45 | 10.87 | 1.4 | 3.1 | 1.30 |
| 0.0264 | 15.57 | 10.95 | 1.4 | 3.1 | 1.30 |
| 0.0268 | 15.69 | 11.04 | 1.4 | 3.1 | 1.30 |
| 0.0272 | 15.81 | 11.12 | 1.4 | 3.1 | 1.30 |
| 0.0276 | 15.92 | 11.20 | 1.4 | 3.1 | 1.30 |
| 0.0280 | 16.04 | 11.28 | 1.4 | 3.1 | 1.30 |
| 0.0284 | 16.15 | 11.36 | 1.4 | 3.1 | 1.30 |
| 0.0288 | 16.26 | 11.44 | 1.4 | 3.1 | 1.30 |
| 0.0292 | 16.38 | 11.52 | 1.4 | 3.1 | 1.30 |
| 0.0296 | 16.49 | 11.60 | 1.4 | 3.1 | 1.30 |
| 0.0300 | 16.60 | 11.68 | 1.4 | 3.1 | 1.30 |
| 0.0304 | 16.71 | 11.75 | 1.4 | 3.1 | 1.30 |
| 0.0308 | 16.82 | 11.83 | 1.4 | 3.1 | 1.30 |
| 0.0312 | 16.93 | 11.91 | 1.4 | 3.1 | 1.30 |
| 0.0316 | 17.04 | 11.98 | 1.4 | 3.1 | 1.30 |
| 0.0320 | 17.14 | 12.06 | 1.4 | 3.1 | 1.30 |
| 0.0324 | 17.25 | 12.13 | 1.4 | 3.1 | 1.30 |
| 0.0328 | 17.36 | 12.21 | 1.4 | 3.1 | 1.30 |
| 0.0332 | 17.46 | 12.28 | 1.4 | 3.1 | 1.30 |
| 0.0336 | 17.57 | 12.36 | 1.4 | 3.1 | 1.30 |
| 0.0340 | 17.67 | 12.43 | 1.4 | 3.1 | 1.30 |
| 0.0344 | 17.78 | 12.50 | 1.4 | 3.1 | 1.30 |
| 0.0348 | 17.88 | 12.58 | 1.4 | 3.1 | 1.30 |
| 0.0352 | 17.98 | 12.65 | 1.4 | 3.1 | 1.30 |

# Rating Table for 18 inch - 3/4 Full

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0356 | 18.08 | 12.72 | 1.4 | 3.1 | 1.30 |
| 0.0360 | 18.19 | 12.79 | 1.4 | 3.1 | 1.30 |
| 0.0364 | 18.29 | 12.86 | 1.4 | 3.1 | 1.30 |
| 0.0368 | 18.39 | 12.93 | 1.4 | 3.1 | 1.30 |
| 0.0372 | 18.49 | 13.00 | 1.4 | 3.1 | 1.30 |
| 0.0376 | 18.59 | 13.07 | 1.4 | 3.1 | 1.30 |
| 0.0380 | 18.68 | 13.14 | 1.4 | 3.1 | 1.30 |
| 0.0384 | 18.78 | 13.21 | 1.4 | 3.1 | 1.30 |
| 0.0388 | 18.88 | 13.28 | 1.4 | 3.1 | 1.30 |
| 0.0392 | 18.98 | 13.35 | 1.4 | 3.1 | 1.30 |
| 0.0396 | 19.07 | 13.42 | 1.4 | 3.1 | 1.30 |
| 0.0400 | 19.17 | 13.48 | 1.4 | 3.1 | 1.30 |
| 0.0404 | 19.27 | 13.55 | 1.4 | 3.1 | 1.30 |
| 0.0408 | 19.36 | 13.62 | 1.4 | 3.1 | 1.30 |
| 0.0412 | 19.46 | 13.69 | 1.4 | 3.1 | 1.30 |
| 0.0416 | 19.55 | 13.75 | 1.4 | 3.1 | 1.30 |
| 0.0420 | 19.64 | 13.82 | 1.4 | 3.1 | 1.30 |
| 0.0424 | 19.74 | 13.88 | 1.4 | 3.1 | 1.30 |
| 0.0428 | 19.83 | 13.95 | 1.4 | 3.1 | 1.30 |
| 0.0432 | 19.92 | 14.01 | 1.4 | 3.1 | 1.30 |
| 0.0436 | 20.01 | 14.08 | 1.4 | 3.1 | 1.30 |
| 0.0440 | 20.11 | 14.14 | 1.4 | 3.1 | 1.30 |
| 0.0444 | 20.20 | 14.21 | 1.4 | 3.1 | 1.30 |
| 0.0448 | 20.29 | 14.27 | 1.4 | 3.1 | 1.30 |
| 0.0452 | 20.38 | 14.33 | 1.4 | 3.1 | 1.30 |
| 0.0456 | 20.47 | 14.40 | 1.4 | 3.1 | 1.30 |
| 0.0460 | 20.56 | 14.46 | 1.4 | 3.1 | 1.30 |
| 0.0464 | 20.65 | 14.52 | 1.4 | 3.1 | 1.30 |
| 0.0468 | 20.74 | 14.59 | 1.4 | 3.1 | 1.30 |
| 0.0472 | 20.83 | 14.65 | 1.4 | 3.1 | 1.30 |
| 0.0476 | 20.91 | 14.71 | 1.4 | 3.1 | 1.30 |
| 0.0480 | 21.00 | 14.77 | 1.4 | 3.1 | 1.30 |
| 0.0484 | 21.09 | 14.83 | 1.4 | 3.1 | 1.30 |
| 0.0488 | 21.18 | 14.89 | 1.4 | 3.1 | 1.30 |
| 0.0492 | 21.26 | 14.96 | 1.4 | 3.1 | 1.30 |
| 0.0496 | 21.35 | 15.02 | 1.4 | 3.1 | 1.30 |
| 0.0500 | 21.43 | 15.08 | 1.4 | 3.1 | 1.30 |
| 0.0504 | 21.52 | 15.14 | 1.4 | 3.1 | 1.30 |
| 0.0508 | 21.61 | 15.20 | 1.4 | 3.1 | 1.30 |
| 0.0512 | 21.69 | 15.26 | 1.4 | 3.1 | 1.30 |
| 0.0516 | 21.77 | 15.32 | 1.4 | 3.1 | 1.30 |
| 0.0520 | 21.86 | 15.38 | 1.4 | 3.1 | 1.30 |
| 0.0524 | 21.94 | 15.43 | 1.4 | 3.1 | 1.30 |
| 0.0528 | 22.03 | 15.49 | 1.4 | 3.1 | 1.30 |
| 0.0532 | 22.11 | 15.55 | 1.4 | 3.1 | 1.30 |
| 0.0536 | 22.19 | 15.61 | 1.4 | 3.1 | 1.30 |
| 0.0540 | 22.28 | 15.67 | 1.4 | 3.1 | 1.30 |
| 0.0544 | 22.36 | 15.73 | 1.4 | 3.1 | 1.30 |
| 0.0548 | 22.44 | 15.78 | 1.4 | 3.1 | 1.30 |

# Rating Table for 18 inch - 3/4 Full

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area (ft²) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0552 | 22.52 | 15.84 | 1.4 | 3.1 | 1.30 |
| 0.0556 | 22.60 | 15.90 | 1.4 | 3.1 | 1.30 |
| 0.0560 | 22.68 | 15.96 | 1.4 | 3.1 | 1.30 |
| 0.0564 | 22.77 | 16.01 | 1.4 | 3.1 | 1.30 |
| 0.0568 | 22.85 | 16.07 | 1.4 | 3.1 | 1.30 |
| 0.0572 | 22.93 | 16.13 | 1.4 | 3.1 | 1.30 |
| 0.0576 | 23.01 | 16.18 | 1.4 | 3.1 | 1.30 |
| 0.0580 | 23.09 | 16.24 | 1.4 | 3.1 | 1.30 |
| 0.0584 | 23.17 | 16.29 | 1.4 | 3.1 | 1.30 |
| 0.0588 | 23.25 | 16.35 | 1.4 | 3.1 | 1.30 |
| 0.0592 | 23.32 | 16.41 | 1.4 | 3.1 | 1.30 |
| 0.0596 | 23.40 | 16.46 | 1.4 | 3.1 | 1.30 |
| 0.0600 | 23.48 | 16.52 | 1.4 | 3.1 | 1.30 |
| 0.0604 | 23.56 | 16.57 | 1.4 | 3.1 | 1.30 |
| 0.0608 | 23.64 | 16.63 | 1.4 | 3.1 | 1.30 |
| 0.0612 | 23.71 | 16.68 | 1.4 | 3.1 | 1.30 |
| 0.0616 | 23.79 | 16.74 | 1.4 | 3.1 | 1.30 |
| 0.0620 | 23.87 | 16.79 | 1.4 | 3.1 | 1.30 |
| 0.0624 | 23.95 | 16.84 | 1.4 | 3.1 | 1.30 |
| 0.0628 | 24.02 | 16.90 | 1.4 | 3.1 | 1.30 |
| 0.0632 | 24.10 | 16.95 | 1.4 | 3.1 | 1.30 |
| 0.0636 | 24.18 | 17.01 | 1.4 | 3.1 | 1.30 |
| 0.0640 | 24.25 | 17.06 | 1.4 | 3.1 | 1.30 |
| 0.0644 | 24.33 | 17.11 | 1.4 | 3.1 | 1.30 |
| 0.0648 | 24.40 | 17.16 | 1.4 | 3.1 | 1.30 |
| 0.0652 | 24.48 | 17.22 | 1.4 | 3.1 | 1.30 |
| 0.0656 | 24.55 | 17.27 | 1.4 | 3.1 | 1.30 |
| 0.0660 | 24.63 | 17.32 | 1.4 | 3.1 | 1.30 |
| 0.0664 | 24.70 | 17.38 | 1.4 | 3.1 | 1.30 |
| 0.0668 | 24.78 | 17.43 | 1.4 | 3.1 | 1.30 |
| 0.0672 | 24.85 | 17.48 | 1.4 | 3.1 | 1.30 |
| 0.0676 | 24.92 | 17.53 | 1.4 | 3.1 | 1.30 |
| 0.0680 | 25.00 | 17.58 | 1.4 | 3.1 | 1.30 |
| 0.0684 | 25.07 | 17.64 | 1.4 | 3.1 | 1.30 |
| 0.0688 | 25.14 | 17.69 | 1.4 | 3.1 | 1.30 |
| 0.0692 | 25.22 | 17.74 | 1.4 | 3.1 | 1.30 |
| 0.0696 | 25.29 | 17.79 | 1.4 | 3.1 | 1.30 |
| 0.0700 | 25.36 | 17.84 | 1.4 | 3.1 | 1.30 |
| 0.0704 | 25.44 | 17.89 | 1.4 | 3.1 | 1.30 |
| 0.0708 | 25.51 | 17.94 | 1.4 | 3.1 | 1.30 |
| 0.0712 | 25.58 | 17.99 | 1.4 | 3.1 | 1.30 |
| 0.0716 | 25.65 | 18.04 | 1.4 | 3.1 | 1.30 |
| 0.0720 | 25.72 | 18.09 | 1.4 | 3.1 | 1.30 |
| 0.0724 | 25.79 | 18.14 | 1.4 | 3.1 | 1.30 |
| 0.0728 | 25.87 | 18.19 | 1.4 | 3.1 | 1.30 |
| 0.0732 | 25.94 | 18.24 | 1.4 | 3.1 | 1.30 |
| 0.0736 | 26.01 | 18.29 | 1.4 | 3.1 | 1.30 |
| 0.0740 | 26.08 | 18.34 | 1.4 | 3.1 | 1.30 |
| 0.0744 | 26.15 | 18.39 | 1.4 | 3.1 | 1.30 |

# Rating Table for 18 inch - 3/4 Full

| Channel Slope (ft/ft) | Discharge (cfs) | Velocity (ft/s) | Flow Area ($ft^2$) | Wetted Perimeter (ft) | Top Width (ft) |
|---|---|---|---|---|---|
| 0.0748 | 26.22 | 18.44 | 1.4 | 3.1 | 1.30 |
| 0.0752 | 26.29 | 18.49 | 1.4 | 3.1 | 1.30 |
| 0.0756 | 26.36 | 18.54 | 1.4 | 3.1 | 1.30 |
| 0.0760 | 26.43 | 18.59 | 1.4 | 3.1 | 1.30 |
| 0.0764 | 26.50 | 18.64 | 1.4 | 3.1 | 1.30 |
| 0.0768 | 26.57 | 18.69 | 1.4 | 3.1 | 1.30 |
| 0.0772 | 26.64 | 18.74 | 1.4 | 3.1 | 1.30 |
| 0.0776 | 26.71 | 18.78 | 1.4 | 3.1 | 1.30 |
| 0.0780 | 26.77 | 18.83 | 1.4 | 3.1 | 1.30 |
| 0.0784 | 26.84 | 18.88 | 1.4 | 3.1 | 1.30 |
| 0.0788 | 26.91 | 18.93 | 1.4 | 3.1 | 1.30 |
| 0.0792 | 26.98 | 18.98 | 1.4 | 3.1 | 1.30 |
| 0.0796 | 27.05 | 19.03 | 1.4 | 3.1 | 1.30 |
| 0.0800 | 27.12 | 19.07 | 1.4 | 3.1 | 1.30 |

# Revised Draft SEIR Appendix 5.12c-2

Approved VCC Hydraulic Outlet Study

This sewer facility outlet feasibility study has been reviewed and approved by Los Angeles County Public Works.

Plan Case No. ESTU2022000625

Date Approved: 5/20/2025

Approver: James Chon

# HYDRAULIC OUTLET STUDY FOR THE HANCOCK PARKWAY PUMP STATION AND CONDITIONS AND MITIGATION MEASURES FOR PM18108 IN THE COUNTY OF LOS ANGELES

May 20, 2025

Prepared for:
Los Angeles County Department of Public Works
Sewer Maintenance Division


**Prepared by:**
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STATE OF CALIFORNIA

Job No. 721-470

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## SECTION 1
## BACKGROUND INFORMATION

A gravity outlet is not presently available to serve the proposed TM18108. As such, the existing Hancock Parkway Pump Station will serve as the outlet until future, downstream, regional facilities are constructed.

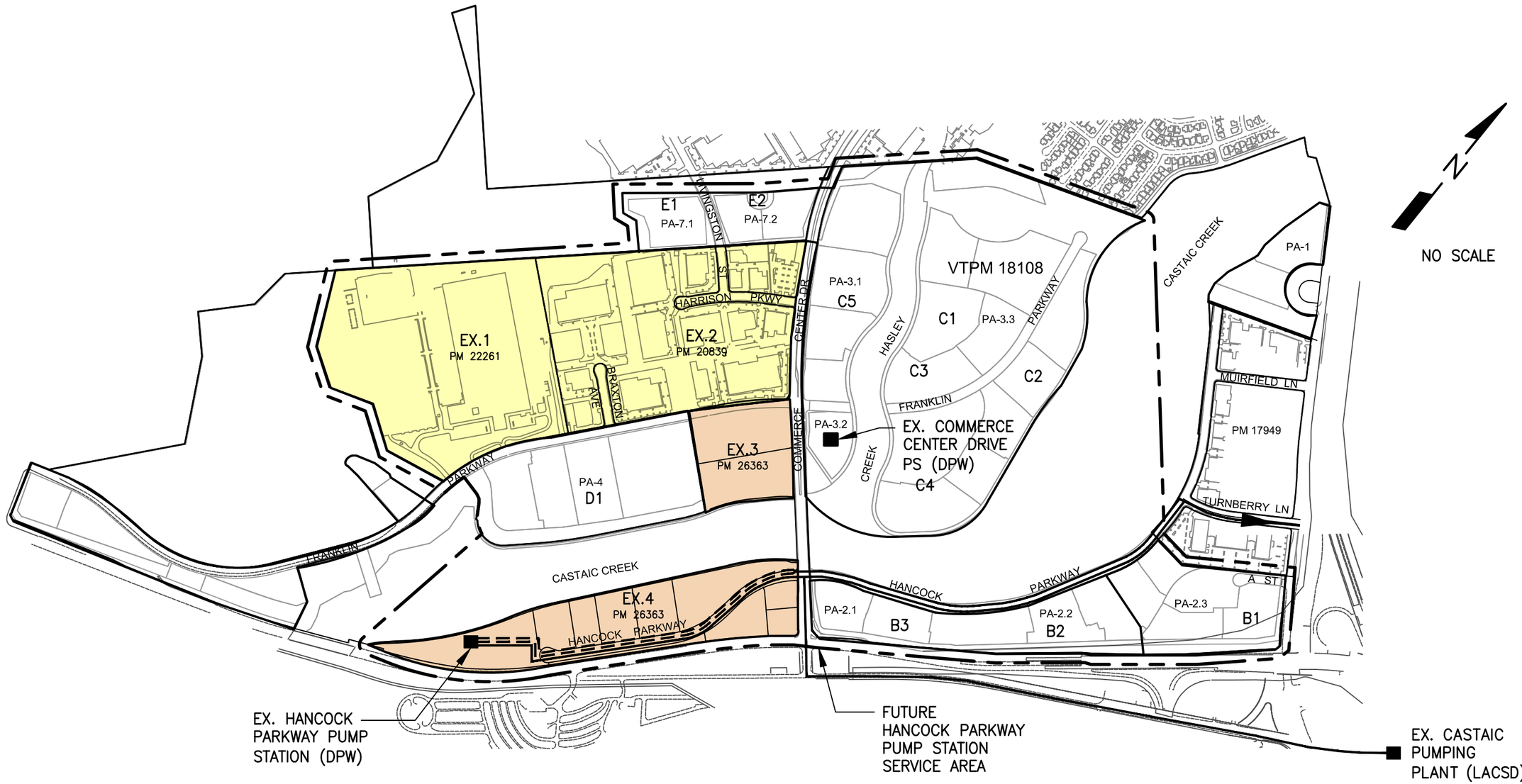
### Hancock Parkway Pump Station

Hancock Parkway PS has three (3) pumps and two (2) force mains. DPW Standards require 2 standby pumps and 1 standby force main. Thus, 1 pump and 1 force main must be able to pump the Design Flow. The existing Design Flow is 150% of the Peak Flow, thus each of the three existing pumps at Hancock Parkway Pump Station is capable of pumping 710 gpm (PM 26363 DPW Peak Flow of 473 gpm*1.5 = 710 gpm). 473 gpm is based on the acre-based generation rate of 0.021 cfs/acre and is consistent with the PM 26363 Approved Sewer Area Study (SAS). Additionally, the station has 2 hours of Emergency Storage at Peak Flow 473 gpm * 2 hours * 60 min/hour = 56,760 gallons.

**Commerce Center Drive Pump Station** – The Commerce Center Drive Pump Station was designed and constructed to serve PM22261 (Study Area EX.1) and PM20839 (EX.2). Improvements made in upstream gravity sewers during construction of PM26363 (EX.3 and EX.4) allow for gravity flows to bypass the Commerce Center Drive Pump Station. These improvements, made at the request of operations staff, consisted of installing a berm within the pump station gravity influent line providing start-up flows for the Hancock Parkway Pump Station. As such, presently, flows from PM22261 (EX.1), PM20839 (EX.2), and PM26363 (EX.3 and EX.4) all flow directly into the existing Hancock Parkway Pump Station and are then pumped to the existing Commerce Center Drive Pump Station.

### Service Area

Figure 1 depicts the location and service area for the Hancock Parkway Pump Station as well as the nearby Commerce Center Drive Pump Station.




LEGEND

EX. COMMERCE CENTER DRIVE PS SERVICE AREA

EX. HANCOCK PARKWAY PS SERVICE AREA

C5 SEWER AREA STUDY PLANNING AREA

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

# FIGURE 1

## HANCOCK PARKWAY PUMP STATION SERVICE AREA

HANCOCK PARKWAY PUMP STATION
HYDRAULIC OUTLET STUDY

\\ARTIC\DWG\721470\REPORT\HPY_FIGURE-1_HANCOCKPSSERVICEAREA.DWG 4/13/2023 11:05:13 AM LAYOUT:11x17 USER: William

PM22261 (EX.1) and PM20839 (EX.2) are built out with the exception of one lot along Franklin Parkway. The majority of PM26363 (EX.3 & EX.4) is constructed and occupied, with only one area remaining to be developed. Presently, flows from PM22261 (EX.1), PM20839 (EX.2), and PM26363 (EX.3 & EX.4) all flow directly into Hancock Parkway Pump Station which are then pumped to the existing Commerce Center Drive Pump Station. As such, at the present time, the existing Hancock Parkway Pump Station is serving (1) the 1,182 gpm planning Peak Flow from the 22261 and 20839 tracts as well as (2) the 473 gpm planning Peak Flow from 26363. For illustrative purposes, if it is assumed that the vacant parcels represent 5%, the Hancock Parkway Pump Station (designed to serve a planning Peak Flow of 473 gpm) is presently serving a planning Peak Flow of approximately 1,570 gpm. See Appendix A for the detailed planning Peak Flow calculations.

## Existing Flows

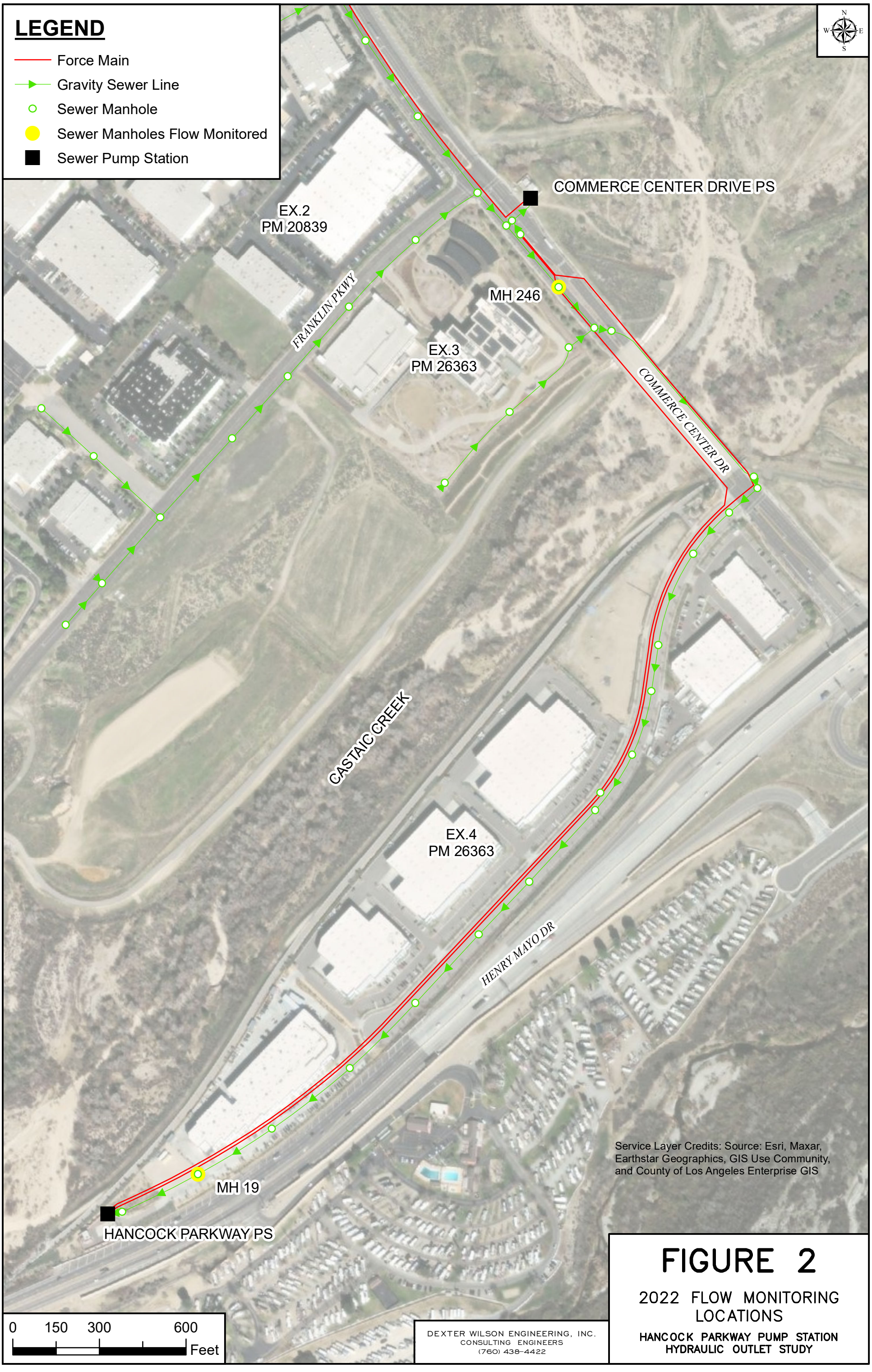
Table 1 summarizes those existing planning areas which are tributary to the Hancock Parkway Pump Station. Figure 2 illustrates the location of recent flow monitoring activities in VCC which is summarized in Table 1 below.

**TABLE 1**
**EXISTING FLOWS TO**
**HANCOCK PARKWAY PUMP STATION**

| Planning Area | Parcel Map | Peak Flow*, gpm |
|---|---|---|
| EX.1 | 22261 | 49.05 |
| EX.2 | 20839 | |
| EX.3 | 26363 | |
| EX.4 | 26363 | |
| **TOTAL** | **--** | **49.05** |

*Measured as described in Appendix B.

DEXTER WILSON ENGINEERING INC.
Document Path: \\artic\GIS\721470\Report\HPY_Figure-2_MonitoringLocations.mxd Date Saved: 4/12/2023 8:51:49 AM

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CONSULTING ENGINEERS
(760) 438-4422

# FIGURE 2

2022 FLOW MONITORING LOCATIONS

HANCOCK PARKWAY PUMP STATION
HYDRAULIC OUTLET STUDY

## SECTION 2
## PROPOSED DEVELOPMENT AND FLOWS

For the areas tributary to Hancock Parkway Pump Station, Table 2 summarizes the estimated sewage generation based on DPW cfs/acre planning factors. Additional planning flow information is provided in Appendix D for reference. The required Pump Station Design Flow necessary to serve the Existing and Proposed flows is also provided in this table.

**TABLE 2**
**EXISTING AND PROPOSED FLOWS TO HANCOCK PARKWAY PUMP STATION**

| Planning Area | Acres | Coefficient, cfs/ac | Peak Flow[1], cfs | Peak Flow[1], gpm | Design Flow[2], gpm |
|---|---|---|---|---|---|
| EX. 1 | 59.50 | 0.021 | 0.109 | 49 | 74 |
| EX. 2 | 65.93 | 0.021 | | | |
| EX. 3 | 13.80 | 0.021 | | | |
| EX. 4 | 36.40 | 0.021 | | | |
| Subtotal | 175.63 | — | 0.109 | 49 | 74 |
| EX. 2 (V-1) | 2.21 | 0.021 | 0.047 | 21 | 31 |
| EX. 4 (V-2) | 2.47 | 0.021 | 0.052 | 23 | 35 |
| EX. 4 (V-3) | 1.04 | 0.021 | 0.022 | 10 | 15 |
| Subtotal | 181.35 | — | 0.230 | 103 | 155 |
| Pro. 4 (D1) | 27.13 | 0.015 | 0.407 | 183 | 274 |
| Subtotal | 208.48 | — | 0.636 | 286 | 428 |
| Pro. 2.1 (B3) | 13.25 | 0.015 | 0.199 | 89 | 134 |
| Pro. 2.2 (B2) | 10.48 | 0.015 | 0.157 | 71 | 106 |
| Pro. 2.3 (B1) | 17.43 | 0.015 | 0.261 | 117 | 176 |
| Subtotal | 249.64 | — | 1.254 | 563 | 844 |
| Pro. 3.1 (C5) | 19.06 | 0.015 | 0.286 | 128 | 192 |
| Pro. 3.2 (C6) | 2.55 | 0.015 | 0.038 | 17 | 26 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.021 | 0.507 | 227 | 341 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.015 | 0.314 | 141 | 212 |
| Subtotal | 316.33 | — | 2.399 | 1,077 | 1,615 |
| Pro. 7.1 (E1) | 4.87 | 0.021 | 0.102 | 46 | 69 |
| Pro. 7.2 (E2) | 6.09 | 0.021 | 0.128 | 57 | 86 |
| **Total** | **327.29** | **—** | **2.629** | **1,180** | **1,770** |

EX. = Existing, Pro. = Proposed.
[1] Measured, where available, as described in Appendix B.
[2] Pump station Design Flow equals Peak Flow * 1.5. Can be substituted with Peak Wet Weather Flow (PWWF) data, if available.
Note: This table is Table 4 in Appendix D.

# SECTION 3
# HANCOCK PARKWAY PUMP STATION IMPROVEMENTS

Hancock Parkway Pump Station has three (3) pumps and two (2) force mains. DPW Standards require 2 standby pumps and 1 standby force main. Thus, 1 pump and 1 force main must be able to pump the design flow. The Design Flow is 150% of the Peak Flow, thus each of the three existing pumps are capable of pumping 710 gpm (PM26363 DPW Peak Flow of 473 gpm*1.5 = 710 gpm).

## Phasing Plan

This section details the Hancock Parkway Pump Station improvements that are required to accommodate all the flows provided in Table 2. The specific improvements required are listed in Table 3 and include additional emergency storage, new force mains, new gravity sewer, electrical upgrades, and mechanical upgrades. Exhibit E.1 in Appendix E shows expansion area for the emergency storage. Exhibit E.2 shows the location of the force mains and gravity line.

Immediately upstream of the Hancock Parkway Pump Station is a gravity sewer line constructed in anticipation of a future regional gravity sewer in SR126 which would allow the Hancock Parkway Pump Station to be taken offline. The downstream infrastructure has not yet been constructed which is why the Hancock Parkway Pump Station remains in service to pump wastewater from the VCC area to the treatment plant. In the future, depending on the timing of development in the VCC area versus the timing of the downstream gravity sewer, the scope of improvements to Hancock Parkway Pump Station itself could be reduced or the pump station could be eliminated altogether.

| **TABLE 3<br>EXPANSION OF HANCOCK PARKWAY PS TO<br>ACCOMMODATE VCC DEVELOPMENT** | |
|---|---|
| **Emergency Storage Upgrade**<br>1,159 gpm x 2 hours = 139,080 gallons<br>Existing storage is 9.5 ft x 832 sq ft = 59,121 gallons<br>New storage = 82,500 gallons or overflow to SR-126 | |
| **Force Main Option #1** | **Force Main Option #2** |
| **Extend Dual 8" Force Main**<br>Length = 3,700 ft<br>**Second 12" Force Main**<br>Length = 6,900 ft<br>**New 18" Gravity in Turnberry Ln**<br>Length = 1,300 ft | **Extend Dual 8" Force Main**<br>Length = 5,400 ft<br>**Second 12" Force Main**<br>Length = 8,900 ft |
| **Upgrades at Pump Station**<br>Electrical – New MCC and upsize generator<br>Mechanical – New pumps and piping<br>Expand and split wet well | |

## SECTION 4
## CONDITIONS AND MITIGATION MEASURES FOR PM18108

Below are the proposed sewer conditions for TPM18108 (VCC). In summary, both the Commerce Center Drive Pump Station (CCPS) and Hancock Parkway Pump Station (HPS) will remain in service to allow for development to proceed. With future realignment of the HPS force mains, the County may elect to minimize operation of the CCPS (or place the station in emergency use mode only) or the pump station could be fully abandoned at some point in the future. County SMD may elect to divert flows from CCPS to HPS; however, CCPS will be retained as an emergency backup and the capacity of CCPS will be made available for development. When needed, alternative designs/improvements of gravity outlet solutions and/or force main alignments may be prepared to the satisfaction of Public Works.

1. Subdivider shall provide the design plans and calculations for expansion of the HPS to serve PM18108 (which may be done in phases) as stipulated below for review and approval to the satisfaction of Public Works (PW).

2. Subdivider to provide proof of sufficient easements, as needed, for all proposed improvements associated with the sewer pump system in VCC, including offsite improvements prior to PM18108 approval.

3. Prior to the 1st Building Permit Issuance:

    a. For PA-4 or PA-7 or first Unit Phase Map of PM 18108, initiate construction of the CCPS dual force main.

    **OR**

    b. As an alternative to (a), reroute HPS dual force main discharge from HPS to a new gravity discharge location acceptable to PW (including any necessary modifications to the existing HPS to handle diversion).

4. Reroute HPS dual force discharge through PA-2 to Turnberry Lane (or approved alternate alignment) when PA-2 is developed (including any necessary modifications to the existing HPS to handle diversion) to the satisfaction of PW.

5. Prior to recordation of each Unit Phase Map for PM 18108 tributary to HPS , subdivider for VCC shall provide improvement plans and associated bonds for the upgrade of the HPS including associated force mains necessary to serve the planning flows (County Code planning coefficients) for each Unit Phase for PM 18108 to the satisfaction of PW.

a. Design of the phased HPS improvements will be incremental and strategic in order to maximize the use of the existing pump station components and in consideration that the long-term PW goal is to abandon this pump station. Construction plans shall ensure that uninterrupted services will be maintained at the HPS throughout construction. The incremental phasing shall be subject to PW approval.

6. Phasing of HPS improvements to accommodate developments may occur and is subject to the Flow Monitoring Scheme below.

   a. The Flow Monitoring Scheme shall include the following:

      i. Prior to the 1st Building Permit of PA-4, PA-7, or PM18108, initiate construction of manhole modifications and permanent meter per Attachment A of the Implementation requirements (excerpt below).

**ATTACHMENT A**

**FLOW MONITORING REQUIREMENTS**

Flow Monitoring shall include the following per DPW written comments prior to 1st Building Permit, of either PA-4, PA-7, or 18108:

a. Perform flow monitoring at selected manhole locations that will best represent the actual flows condition of the entire sewershed at any given point. To have good represented flow data, applicant will need to modify the overflow manhole at Commerce Center PS to assure all flow is diverted to Hancock PS and install ongoing influent flow monitoring at Hancock PS.

b. Provide continuous flow monitoring at minimum 15-minute increments or shorter and submit biweekly (or quarterly, if determined adequate) reports signed and certified by licensed Civil Engineer to the County for approval at the applicant's cost. The applicant will also cover all costs for County staffs' time associated with the review and approval of the data.

   b. Implement the following to upgrade the existing sewer system:

      i. At the actual 15-minute peak flow reaching 190 gallons per minute (gpm), no additional building permits will be issued until the following occurs:

         1. The improvement plans and associated bonds for the expansion of the existing HPS to accommodate planned flows (PA-4, PA-7, or each Unit Phase Map of PM 18108, whichever occur first) are approved to PW satisfaction. The plans shall include the following:

            a. The expansion of HPS to accommodate the planned flows. and routing of discharge through PA-2 to Turnberry Lane or approved alternate alignment.

b. Construction plans shall ensure that uninterrupted services will be maintained at the HPS throughout construction. Subdivider will be responsible for all costs related to temporary/construction systems necessary to accommodate construction.

c. Bonds under this phased approach may replace bonds contemplated under 5. subject to PW approval.

ii. At the actual 15-minute peak flow reaching 330 gpm, no additional building permits will be issued until the following occurs:

1. Construct forcemains to Turnberry Lane or approved alternate including the construction of any necessary expansion to the HPS to PW satisfaction.

iii. After the initial upgrade of HPS and each subsequent phase, no additional building permits will be issued until the following occurs:

1. Construct a phased upgrade to HPS when the actual 15-minute peak flow reaches 70% of design capacity.

7. Independent of the Flow Monitoring Scheme, prior to the issuance of the first building permit for the Final Unit Phase of PM18108:

a. Construct forcemains to Turnberry Lane or approved alternate including the construction of any necessary expansion to the HPS to PW satisfaction.

b. Design and bond for either:

i. The ultimate HPS such that it remains the only pump station to accommodate planned flows for the tributary area per PW satisfaction.

OR

ii. Gravity sewer outlet including decommissioning of CCPS and HPS to the satisfaction of PW.

8. All required bonds are to be held and updated every two years until the ultimate HPS (buildout of PM18108) is constructed to PW satisfaction.

9. If a gravity sewer outlet has not been identified and implemented, Subdivider will continue to monitor actual flow monitoring system and after 10 years of issuance of the building permits for the last Unit Phase Map of PM 18108, assess the need for the construction of the ultimate HPS or phase thereof, and construct the ultimate HPS or phase thereof if the actual flow reaches the capacity of the improved HPS system to the satisfaction of PW.

10. Upon implementation of an alternate downstream gravity solution, the CPS and HPS shall be decommissioned by the subdivider and easements shall be quitclaimed by the County to the landowner.

## APPENDIX A

## PLANNING FACTOR BASED FLOW CALCULATIONS

Table A-1 summarizes the Existing Planning Peak Flows which are tributary to each pump station in the VCC area, as well as the combined total Planning Peak Flow to both stations.

**TABLE A-1**
**SUMMARY OF PLANNING PEAK FLOWS**
**(EXISTING ONLY)**

| Area | Acres | Coefficient, cfs/acre | Peak Flow | |
|---|---|---|---|---|
| | | | cfs | gpm |
| PM 22261 (Existing) | 59.5 | 0.021 | 1.250 | 561 |
| PM 20839 (Existing) | 65.93 | 0.021 | 1.385 | 621 |
| *Planning Flow to Comm. Center Dr PS* | *125.43* | -- | *2.635* | *1,182* |
| PM 26363 (Existing) | 50.2 | 0.021 | 1.054 | 473 |
| *Planning Flow to Hancock Parkway PS* | *50.2* | -- | *1.054* | *473* |
| **TOTAL EXISTING PEAK FLOW (PLANNING FACTOR BASED)** | **175.63** | **--** | **3.689** | **1,655** |

See Table A-2 for additional detail.

# TABLE A-2

**VCC Projected Flow Summary**

## *SEWER GENERATION OVERVIEW, VTM 18108 + FUTURE*

| *Hunsaker February 2023 SAS* | | | | | *DWE Analysis* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Planning Area** | **Lot Area (Acres)** | **Developable Area (Acres)** | **Sewer Flows (cfs)** | **Ult. Discharge Location** | **Land Use** | **DPW Peak Flow Factor, cfs/acre** | **Q By Zoning DPW Peak Flow, cfs** | **DPW Avg Flow Factor, cfs/acre** | **DPW Avg. Flow, cfs** | **LACSD Peak Flow Factor, cfs/acre** | **LACSD Peak Flow, cfs** | **LACSD Avg. Flow, cfs** | **DPW Peak Service Area Flow, gpm** | **LACSD Peak Service Area Flow, gpm** |
| 1 | - | 9.62 | 0.144 | SCVSD | Commercial | 0.015 | 0.144 | 0.006 | 0.058 | 0.010 | 0.096 | 0.026 | 65 | 43 |
| **Subtotal** | **-** | **9.62** | **0.144** | | | | **0.144** | | **0.058** | | **0.096** | **0.026** | **65** | **43** |
| 2.1 (B3) | - | 13.25 | 0.199 | Hancock | Commercial | 0.015 | 0.199 | 0.006 | 0.080 | 0.010 | 0.133 | 0.037 | 89 | 59 |
| 2.2 (B2) | - | 10.48 | 0.157 | Hancock | Commercial | 0.015 | 0.157 | 0.006 | 0.063 | 0.010 | 0.105 | 0.028 | 71 | 47 |
| 2.3 (B1) | - | 17.43 | 0.262 | Hancock | Commercial | 0.015 | 0.262 | 0.006 | 0.105 | 0.010 | 0.174 | 0.050 | 118 | 78 |
| **Subtotal** | **-** | **41.16** | **0.618** | | | | **0.618** | | **0.247** | | **0.412** | **0.114** | **277** | **185** |
| 3.1 (C5) | - | 19.06 | 0.286 | Hancock | Commercial | 0.015 | 0.286 | 0.006 | 0.114 | 0.010 | 0.191 | 0.055 | 128 | 86 |
| 3.2 (C6) | - | 2.55 | 0.038 | Hancock | Commercial | 0.015 | 0.038 | 0.006 | 0.015 | 0.010 | 0.026 | 0.006 | 17 | 11 |
| 3.3a/b (C1/C2) | - | 24.12 | 0.507 | Hancock | Industrial | 0.021 | 0.507 | 0.008 | 0.203 | 0.010 | 0.241 | 0.071 | 227 | 108 |
| 3.3c/d (C3/C4) | - | 20.96 | 0.314 | Hancock | Commercial | 0.015 | 0.314 | 0.006 | 0.126 | 0.010 | 0.210 | 0.061 | 141 | 94 |
| **Subtotal** | **-** | **66.69** | **1.15** | | | | **1.145** | | **0.458** | | **0.667** | **0.192** | **514** | **299** |
| *TOTAL VTM10108* | | *117.47* | *1.91* | | | | *1.91* | | *0.76* | | | | | |
| 4 (D1) * | | 27.13 | 0.407 | Hancock | Commercial | 0.015 | 0.407 | 0.006 | 0.163 | 0.010 | 0.271 | 0.081 | 183 | 122 |
| **Subtotal** | **-** | **27.13** | **0.407** | | | | **0.407** | | **0.163** | | **0.271** | **0.081** | **183** | **122** |
| 5.1 * | | 1.83 | 0.027 | NRSD | Commercial | 0.015 | 0.027 | 0.006 | 0.011 | 0.010 | 0.018 | 0.004 | 12 | 8 |
| 5.2 * | | 2.74 | 0.041 | NRSD | Commercial | 0.015 | 0.041 | 0.006 | 0.016 | 0.010 | 0.027 | 0.006 | 18 | 12 |
| Subtotal | - | **4.57** | **0.069** | | | | **0.069** | | **0.027** | | 0.046 | 0.011 | **31** | 21 |
| 5.3/6 * | | 7.42 | 0.156 | NRSD | Industrial | 0.021 | 0.156 | 0.008 | 0.062 | 0.010 | 0.074 | 0.019 | 70 | 33 |
| Subtotal | - | **7.42** | **0.156** | | | | **0.156** | | **0.062** | | 0.074 | 0.019 | **70** | 33 |
| 7.1 (E1) * | | 4.87 | 0.102 | Hancock | Industrial | 0.021 | 0.102 | 0.008 | 0.041 | 0.010 | 0.049 | 0.012 | 46 | 22 |
| 7.2 (E2) * | | 6.09 | 0.128 | Hancock | Industrial | 0.021 | 0.128 | 0.008 | 0.051 | 0.010 | 0.061 | 0.016 | 57 | 27 |
| **Subtotal** | **-** | **10.96** | **0.230** | | | | **0.230** | | **0.092** | | **0.110** | **0.028** | **103** | **49** |
| **Total** | **-** | **167.55** | **2.768** | | | | **2.769** | | **1.108** | | **1.676** | **0.471** | **1,243** | **752** |
| | | | | | | | *2.400* | *<-- Total to Hancock* | | *Total to Hancock-->* | *1.459* | | *1,077* | *655* |

* Included for planning purposes, not a part of VTTM 18108.

Grouped to correspond with Exhibit

## *FLOW TO HANCOCK PARKWAY PS, VTM 18108 + FUTURE*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***From Approved SAS for 26363*** | | | | | | | | | | |
| 22261 | 59.5 | 0.021 | 1.250 | 0.008 | 0.500 | 0.010 | 0.595 | 0.192 | 561 | 267 |
| 20839 | 65.93 | 0.021 | 1.385 | 0.008 | 0.554 | 0.010 | 0.659 | 0.215 | 621 | 296 |
| **PM22261+20839** | 125.43 | 0.021 | **2.634** | 0.008 | 1.054 | 0.010 | **1.254** | 0.438 | **1,182** | **563** |
| (Existing) | acreage per 28108 SAS exhibit 11-25-2015 | | | | | | | | | |
| PM26363 (north) | 13.8 | 0.021 | **0.290** | 0.008 | 0.116 | 0.010 | **0.138** | 0.038 | **130** | **62** |
| (Proposed) | acreage increased slightly to achieve station peak flow of 473 gpm | | | | | | | | | |
| PM26363 (south) | 36.4 | 0.021 | **0.764** | 0.008 | 0.306 | 0.010 | **0.364** | 0.112 | **343** | **163** |
| (Proposed) | acreage increased slightly to achieve station peak flow of 473 gpm | | | | | | | | | |
| **Subtotal Existing Planning Flows (PM22261+PM20839+PM26363)** | | | **3.688** | | | | **1.756** | | **1,655** | **788** |
| **TOTAL To Hancock Parkway PS (Existing & Proposed)** | | | **6.088** | | | | **3.216** | | **2,732** | **1,443** |
| Total w/o Future 4 and 7. | | | 5.451 | | | | 2.835 | | 2,447 | 1,272 |

use these flows for emergency storage calcs ^^

# APPENDIX B

## 2022 FLOW MONITORING OF GRAVITY SEWERS
## (JUNE 28, 2022 – JULY 13, 2022)

**INFORMATION INCLUDED:**

1. Figure 2 – Flow Monitoring Locations

2. Dexter Wilson Engineering, Inc. Data Review and Summary

3. US3 Flow Monitoring Report

**APPENDIX B**
**ITEM 1**

**FIGURE 2**

**2022 FLOW MONITORING LOCATIONS**

DEXTER WILSON ENGINEERING INC.
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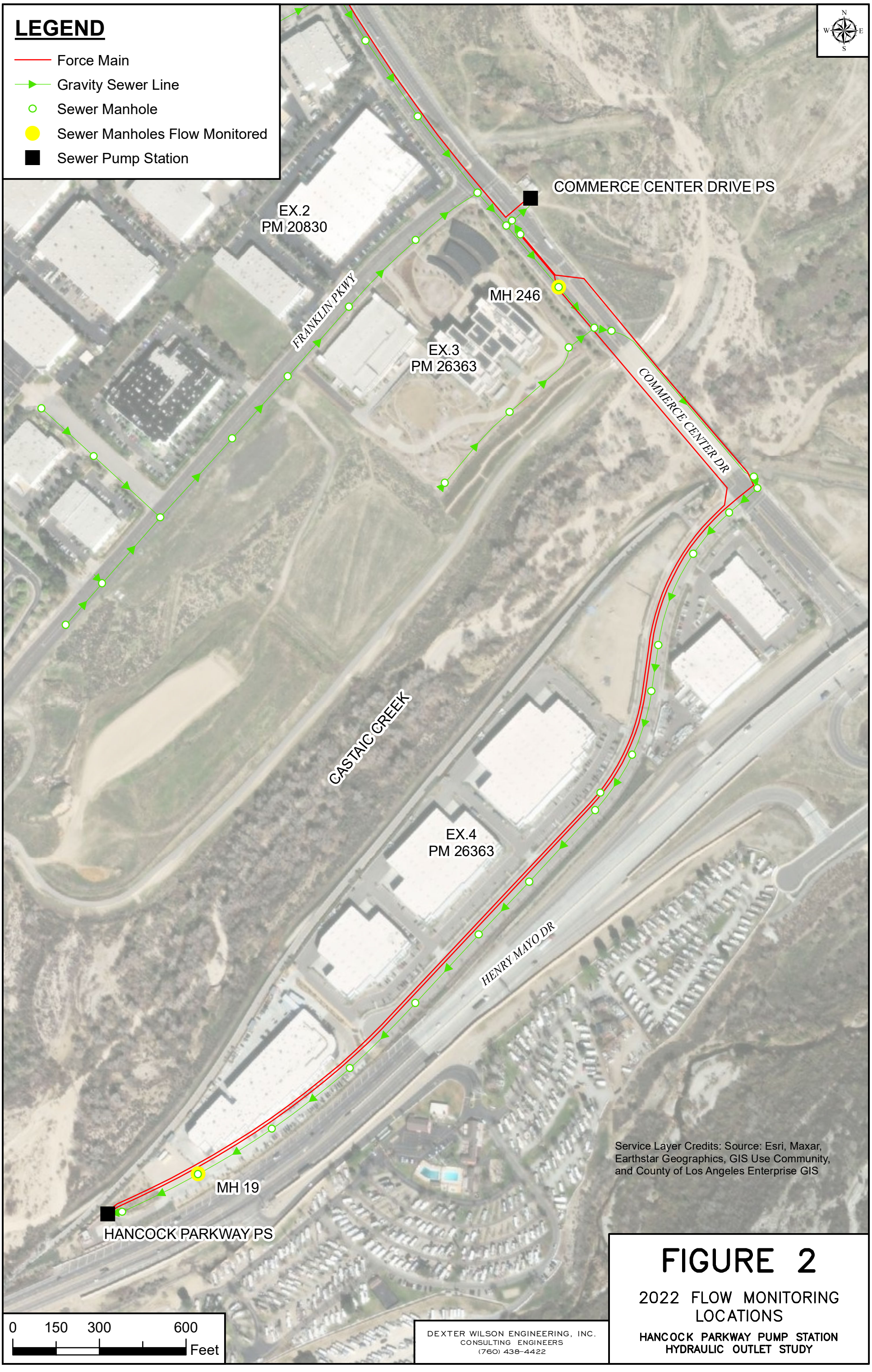



DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

# FIGURE 2

2022 FLOW MONITORING LOCATIONS

HANCOCK PARKWAY PUMP STATION
HYDRAULIC OUTLET STUDY

# APPENDIX B
# ITEM 2

# DEXTER WILSON ENGINEERING, INC.
# DATA REVIEW AND SUMMARY

Flow Monitoring Locations:

MH - 246 in Commerce Center Drive

MH - 19 just upstream of Hancock Parkway Pump Station

Notes/Comments:

- Gravity flow of unknown amount may enter Commerce Center Drive Pump Station.
- Pumped flow from Hancock Parkway Pump Station when discharged from the force main, may re-enter gravity sewer in Commerce Center Drive (measured at MH-246). Therefore, exclude time periods where circular pumping is anticipated to be occurring.
- Use estimated hourly peak based on 2019 wet well level until recirculating is eliminated.

MH 19 Data Summary

| | Flow (gpm) | Flow (gpm) |
|---|---|---|
| Average Daily Flow (w/o red) = | 24.37 | - |
| Max Hourly Peak Flow (w/o red) = | - | 49.05 |
| Median Hourly Peak Flow (w/o red) = | - | 23.13 |
| Peak 15 min (w/o red) = | 54.55 | - |

**PEAK FLOW FOR PUMP STATION ANALYSIS =** 49.05 gpm

# APPENDIX B
# ITEM 3

# US3 FLOW MONITORING REPORT

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 6/28/2022 12:03 | 1.84 | 1.11 | 47.32 | 0.10 | 47.32 | - |
| 6/28/2022 12:18 | 1.55 | 1.35 | 44.73 | 0.09 | - | - |
| 6/28/2022 12:33 | 1.83 | 1.12 | 47.37 | 0.10 | - | - |
| 6/28/2022 12:48 | 1.68 | 1.11 | 41.4 | 0.09 | - | - |
| 6/28/2022 13:03 | 1.82 | 1.12 | 46.99 | 0.10 | 45.12 | - |
| 6/28/2022 13:18 | 1.82 | 1.12 | 46.99 | 0.10 | - | - |
| 6/28/2022 13:33 | 1.82 | 1.12 | 46.99 | 0.10 | - | - |
| 6/28/2022 13:48 | 1.82 | 1.11 | 46.57 | 0.10 | - | - |
| 6/28/2022 14:03 | 2.04 | 1.1 | 54.55 | 0.11 | 48.78 | - |
| 6/28/2022 14:18 | 2.04 | 1.1 | 54.55 | 0.11 | - | - |
| 6/28/2022 14:33 | 1.93 | 1.1 | 50.3 | 0.11 | - | - |
| 6/28/2022 14:48 | 1.93 | 1.05 | 48.01 | 0.11 | - | - |
| 6/28/2022 15:03 | 1.8 | 1.05 | 43.34 | 0.10 | 49.05 | - |
| 6/28/2022 15:18 | 1.79 | 1.07 | 43.81 | 0.10 | - | - |
| 6/28/2022 15:33 | 1.79 | 1.07 | 43.81 | 0.10 | - | - |
| 6/28/2022 15:48 | 1.55 | 1.1 | 36.44 | 0.09 | - | - |
| 6/28/2022 16:03 | 1.53 | 1.1 | 35.75 | 0.09 | 39.95 | - |
| 6/28/2022 16:18 | 1.55 | 1.1 | 36.44 | 0.09 | - | - |
| 6/28/2022 16:33 | 1.66 | 1.06 | 38.85 | 0.09 | - | - |
| 6/28/2022 16:48 | 1.29 | 0.91 | 23 | 0.07 | - | - |
| 6/28/2022 17:03 | 1.58 | 0.98 | 33.4 | 0.09 | 32.92 | - |
| 6/28/2022 17:18 | 1.19 | 1.03 | 23.1 | 0.07 | - | - |
| 6/28/2022 17:33 | 1.58 | 0.98 | 33.4 | 0.09 | - | - |
| 6/28/2022 17:48 | 1.51 | 0.93 | 29.65 | 0.08 | - | - |
| 6/28/2022 18:03 | 1.71 | 0.87 | 33.31 | 0.10 | 29.87 | - |
| 6/28/2022 18:18 | 1.51 | 0.85 | 27.1 | 0.08 | - | - |
| 6/28/2022 18:33 | 1.32 | 1.03 | 26.93 | 0.07 | - | - |
| 6/28/2022 18:48 | 1.47 | 0.84 | 25.74 | 0.08 | - | - |
| 6/28/2022 19:03 | 1.53 | 0.84 | 27.3 | 0.09 | 26.77 | - |
| 6/28/2022 19:18 | 1.66 | 0.96 | 35.18 | 0.09 | - | - |
| 6/28/2022 19:33 | 1.53 | 0.84 | 27.3 | 0.09 | - | - |
| 6/28/2022 19:48 | 1.44 | 0.95 | 28.24 | 0.08 | - | - |
| 6/28/2022 20:03 | 1.18 | 0.81 | 17.94 | 0.07 | 27.17 | - |
| 6/28/2022 20:18 | 1.37 | 0.89 | 24.58 | 0.08 | - | - |
| 6/28/2022 20:33 | 1.64 | 0.86 | 30.96 | 0.09 | - | - |
| 6/28/2022 20:48 | 1.43 | 1.06 | 31.19 | 0.08 | - | - |
| 6/28/2022 21:03 | 1.46 | 0.75 | 22.75 | 0.08 | 27.37 | - |
| 6/28/2022 21:18 | 1.46 | 0.71 | 21.54 | 0.08 | - | - |
| 6/28/2022 21:33 | 1.36 | 0.87 | 23.77 | 0.08 | - | - |
| 6/28/2022 21:48 | 1.26 | 0.88 | 21.48 | 0.07 | - | - |
| 6/28/2022 22:03 | 1.01 | 0.78 | 13.72 | 0.06 | 20.13 | - |
| 6/28/2022 22:18 | 1.16 | 0.9 | 19.44 | 0.06 | - | - |
| 6/28/2022 22:33 | 1.22 | 0.85 | 19.78 | 0.07 | - | - |
| 6/28/2022 22:48 | 1.36 | 0.9 | 24.7 | 0.08 | - | - |
| 6/28/2022 23:03 | 1.41 | 0.88 | 25.36 | 0.08 | 22.32 | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 6/28/2022 23:18 | 1.15 | 0.76 | 16.2 | 0.06 | - | - |
| 6/28/2022 23:33 | 1.61 | 0.86 | 30.13 | 0.09 | - | - |
| 6/28/2022 23:48 | 1.32 | 0.85 | 22.22 | 0.07 | - | - |
| 6/29/2022 0:03 | 1.32 | 0.85 | 22.22 | 0.07 | 22.69 | 32.98 |
| 6/29/2022 0:18 | 1.32 | 0.77 | 20.13 | 0.07 | - | - |
| 6/29/2022 0:33 | 1.25 | 0.8 | 19.41 | 0.07 | - | - |
| 6/29/2022 0:48 | 1.17 | 0.85 | 18.71 | 0.07 | - | - |
| 6/29/2022 1:03 | 1.15 | 0.88 | 18.76 | 0.06 | 19.25 | - |
| 6/29/2022 1:18 | 1.44 | 0.99 | 29.43 | 0.08 | - | - |
| 6/29/2022 1:33 | 1.37 | 0.85 | 23.55 | 0.08 | - | - |
| 6/29/2022 1:48 | 1.37 | 0.85 | 23.55 | 0.08 | - | - |
| 6/29/2022 2:03 | 1.23 | 0.92 | 21.67 | 0.07 | 24.55 | - |
| 6/29/2022 2:18 | 1.03 | 0.87 | 15.76 | 0.06 | - | - |
| 6/29/2022 2:33 | 1.37 | 0.83 | 22.92 | 0.08 | - | - |
| 6/29/2022 2:48 | 1.36 | 0.89 | 24.32 | 0.08 | - | - |
| 6/29/2022 3:03 | 1.22 | 0.76 | 17.69 | 0.07 | 20.17 | - |
| 6/29/2022 3:18 | 1.33 | 0.74 | 19.56 | 0.07 | - | - |
| 6/29/2022 3:33 | 1.34 | 0.62 | 16.57 | 0.07 | - | - |
| 6/29/2022 3:48 | 1.01 | 0.47 | 8.27 | 0.06 | - | - |
| 6/29/2022 4:03 | 0.93 | 1.06 | 16.5 | 0.05 | 15.23 | - |
| 6/29/2022 4:18 | 1.21 | 0.74 | 17.01 | 0.07 | - | - |
| 6/29/2022 4:33 | 1.21 | 0.79 | 18.16 | 0.07 | - | - |
| 6/29/2022 4:48 | 1.21 | 0.79 | 18.16 | 0.07 | - | - |
| 6/29/2022 5:03 | 1.21 | 0.79 | 18.16 | 0.07 | 17.87 | - |
| 6/29/2022 5:18 | 1.24 | 0.79 | 18.83 | 0.07 | - | - |
| 6/29/2022 5:33 | 1.62 | 0.83 | 29.35 | 0.09 | - | - |
| 6/29/2022 5:48 | 1.29 | 0.82 | 20.72 | 0.07 | - | - |
| 6/29/2022 6:03 | 1.41 | 0.86 | 24.78 | 0.08 | 23.42 | - |
| 6/29/2022 6:18 | 1.69 | 0.94 | 35.37 | 0.09 | - | - |
| 6/29/2022 6:33 | 1.26 | 0.87 | 21.23 | 0.07 | - | - |
| 6/29/2022 6:48 | 1.37 | 1.02 | 28.17 | 0.08 | - | - |
| 6/29/2022 7:03 | 1.14 | 0.93 | 19.58 | 0.06 | 26.09 | - |
| 6/29/2022 7:18 | 0.75 | 0.97 | 10.97 | 0.04 | - | - |
| 6/29/2022 7:33 | 0.54 | 1.02 | 7.07 | 0.03 | - | - |
| 6/29/2022 7:48 | 0.47 | 1.05 | 5.92 | 0.03 | - | - |
| 6/29/2022 8:03 | 1.19 | 1.03 | 23.1 | 0.07 | 11.77 | - |
| 6/29/2022 8:18 | 1.22 | 1.04 | 24.2 | 0.07 | - | - |
| 6/29/2022 8:33 | 1.26 | 1.05 | 25.63 | 0.07 | - | - |
| 6/29/2022 8:48 | 0.9 | 1.19 | 17.64 | 0.05 | - | - |
| 6/29/2022 9:03 | 1.18 | 1.11 | 24.59 | 0.07 | 23.02 | - |
| 6/29/2022 9:18 | 1.36 | 1.06 | 28.96 | 0.08 | - | - |
| 6/29/2022 9:33 | 1.26 | 1.24 | 30.26 | 0.07 | - | - |
| 6/29/2022 9:48 | 1.4 | 1.21 | 34.5 | 0.08 | - | - |
| 6/29/2022 10:03 | 1.53 | 1.15 | 37.38 | 0.09 | 32.78 | - |
| 6/29/2022 10:18 | 1.57 | 1.2 | 40.52 | 0.09 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 6/29/2022 10:33 | 1.63 | 1.22 | 43.53 | 0.09 | - | - |
| 6/29/2022 10:48 | 1.71 | 1.24 | 47.47 | 0.10 | - | - |
| 6/29/2022 11:03 | 1.59 | 1.17 | 40.25 | 0.09 | 42.94 | - |
| 6/29/2022 11:18 | 1.69 | 1.39 | 52.3 | 0.09 | - | - |
| 6/29/2022 11:33 | 1.66 | 1.22 | 44.71 | 0.09 | - | - |
| 6/29/2022 11:48 | 1.65 | 1.08 | 39.23 | 0.09 | - | - |
| 6/29/2022 12:03 | 1.65 | 1.16 | 42.14 | 0.09 | 44.60 | - |
| 6/29/2022 12:18 | 1.42 | 1.19 | 34.65 | 0.08 | - | - |
| 6/29/2022 12:33 | 1.34 | 1.21 | 32.34 | 0.07 | - | - |
| 6/29/2022 12:48 | 1.11 | 1.23 | 24.89 | 0.06 | - | - |
| 6/29/2022 13:03 | 1.78 | 1.13 | 45.89 | 0.10 | 34.44 | - |
| 6/29/2022 13:18 | 1.6 | 1.02 | 35.41 | 0.09 | - | - |
| 6/29/2022 13:33 | 1.62 | 1.16 | 41.01 | 0.09 | - | - |
| 6/29/2022 13:48 | 1.44 | 1 | 29.73 | 0.08 | - | - |
| 6/29/2022 14:03 | 1.4 | 0.88 | 25.09 | 0.08 | 32.81 | - |
| 6/29/2022 14:18 | 1.32 | 0.62 | 16.21 | 0.07 | - | - |
| 6/29/2022 14:33 | 1.2 | 0.86 | 19.53 | 0.07 | - | - |
| 6/29/2022 14:48 | 1.16 | 1.15 | 24.84 | 0.06 | - | - |
| 6/29/2022 15:03 | 1.29 | 1.19 | 29.97 | 0.07 | 22.64 | - |
| 6/29/2022 15:18 | 1.76 | 1.18 | 47.13 | 0.10 | - | - |
| 6/29/2022 15:33 | 1.72 | 1.14 | 44.02 | 0.10 | - | - |
| 6/29/2022 15:48 | 1.69 | 1.12 | 42.14 | 0.09 | - | - |
| 6/29/2022 16:03 | 1.36 | 1.28 | 34.97 | 0.08 | 42.07 | - |
| 6/29/2022 16:18 | 1.69 | 1.04 | 39.13 | 0.09 | - | - |
| 6/29/2022 16:33 | 1.39 | 0.95 | 26.8 | 0.08 | - | - |
| 6/29/2022 16:48 | 1.39 | 1.1 | 31.04 | 0.08 | - | - |
| 6/29/2022 17:03 | 1.73 | 1.06 | 41.28 | 0.10 | 34.56 | - |
| 6/29/2022 17:18 | 1.62 | 0.91 | 32.17 | 0.09 | - | - |
| 6/29/2022 17:33 | 1.32 | 0.82 | 21.44 | 0.07 | - | - |
| 6/29/2022 17:48 | 1.55 | 0.79 | 26.17 | 0.09 | - | - |
| 6/29/2022 18:03 | 1.55 | 0.91 | 30.15 | 0.09 | 27.48 | - |
| 6/29/2022 18:18 | 1.44 | 0.91 | 27.05 | 0.08 | - | - |
| 6/29/2022 18:33 | 1.32 | 0.96 | 25.1 | 0.07 | - | - |
| 6/29/2022 18:48 | 1.36 | 0.96 | 26.23 | 0.08 | - | - |
| 6/29/2022 19:03 | 1.29 | 0.96 | 24.26 | 0.07 | 25.66 | - |
| 6/29/2022 19:18 | 1.29 | 0.96 | 24.26 | 0.07 | - | - |
| 6/29/2022 19:33 | 1.29 | 0.95 | 24.01 | 0.07 | - | - |
| 6/29/2022 19:48 | 1.34 | 0.92 | 24.59 | 0.07 | - | - |
| 6/29/2022 20:03 | 1.34 | 0.8 | 21.38 | 0.07 | 23.56 | - |
| 6/29/2022 20:18 | 1.53 | 0.8 | 26 | 0.09 | - | - |
| 6/29/2022 20:33 | 1.19 | 0.87 | 19.51 | 0.07 | - | - |
| 6/29/2022 20:48 | 1.19 | 0.84 | 18.84 | 0.07 | - | - |
| 6/29/2022 21:03 | 1.69 | 0.73 | 27.47 | 0.09 | 22.96 | - |
| 6/29/2022 21:18 | 1.11 | 0.79 | 15.98 | 0.06 | - | - |
| 6/29/2022 21:33 | 1.72 | 0.81 | 31.28 | 0.10 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 6/29/2022 21:48 | 1.64 | 0.72 | 25.92 | 0.09 | - | - |
| 6/29/2022 22:03 | 1.34 | 0.89 | 23.79 | 0.07 | 24.24 | - |
| 6/29/2022 22:18 | 1.39 | 0.73 | 20.6 | 0.08 | - | - |
| 6/29/2022 22:33 | 1.22 | 1.08 | 25.13 | 0.07 | - | - |
| 6/29/2022 22:48 | 1.3 | 0.89 | 22.75 | 0.07 | - | - |
| 6/29/2022 23:03 | 1.32 | 0.72 | 18.82 | 0.07 | 21.83 | - |
| 6/29/2022 23:18 | 1.59 | 0.79 | 27.17 | 0.09 | - | - |
| 6/29/2022 23:33 | 1.64 | 0.8 | 28.8 | 0.09 | - | - |
| 6/29/2022 23:48 | 1.55 | 0.79 | 26.17 | 0.09 | - | - |
| 6/30/2022 0:03 | 1.55 | 0.79 | 26.17 | 0.09 | 27.08 | 26.66 |
| 6/30/2022 0:18 | 1.59 | 0.79 | 27.17 | 0.09 | - | - |
| 6/30/2022 0:33 | 1.26 | 0.83 | 20.26 | 0.07 | - | - |
| 6/30/2022 0:48 | 1.47 | 0.83 | 25.43 | 0.08 | - | - |
| 6/30/2022 1:03 | 1.68 | 0.79 | 29.47 | 0.09 | 25.58 | - |
| 6/30/2022 1:18 | 1.43 | 0.78 | 22.95 | 0.08 | - | - |
| 6/30/2022 1:33 | 1.34 | 0.82 | 21.92 | 0.07 | - | - |
| 6/30/2022 1:48 | 1.5 | 0.66 | 20.84 | 0.08 | - | - |
| 6/30/2022 2:03 | 1.43 | 0.78 | 22.95 | 0.08 | 22.17 | - |
| 6/30/2022 2:18 | 1.4 | 0.66 | 18.82 | 0.08 | - | - |
| 6/30/2022 2:33 | 1.4 | 0.66 | 18.82 | 0.08 | - | - |
| 6/30/2022 2:48 | 1.4 | 0.66 | 18.82 | 0.08 | - | - |
| 6/30/2022 3:03 | 1.4 | 0.72 | 20.53 | 0.08 | 19.25 | - |
| 6/30/2022 3:18 | 1.43 | 0.72 | 21.18 | 0.08 | - | - |
| 6/30/2022 3:33 | 1.55 | 0.89 | 29.49 | 0.09 | - | - |
| 6/30/2022 3:48 | 1.55 | 0.91 | 30.15 | 0.09 | - | - |
| 6/30/2022 4:03 | 1.55 | 0.95 | 31.47 | 0.09 | 28.07 | - |
| 6/30/2022 4:18 | 1.54 | 0.95 | 31.18 | 0.09 | - | - |
| 6/30/2022 4:33 | 1.18 | 0.95 | 21.04 | 0.07 | - | - |
| 6/30/2022 4:48 | 1.18 | 0.95 | 21.04 | 0.07 | - | - |
| 6/30/2022 5:03 | 1.18 | 0.94 | 20.82 | 0.07 | 23.52 | - |
| 6/30/2022 5:18 | 1.19 | 0.87 | 19.51 | 0.07 | - | - |
| 6/30/2022 5:33 | 1.28 | 0.78 | 19.49 | 0.07 | - | - |
| 6/30/2022 5:48 | 1.28 | 0.78 | 19.49 | 0.07 | - | - |
| 6/30/2022 6:03 | 1.28 | 0.78 | 19.49 | 0.07 | 19.50 | - |
| 6/30/2022 6:18 | 1.24 | 0.83 | 19.78 | 0.07 | - | - |
| 6/30/2022 6:33 | 1.22 | 0.99 | 23.04 | 0.07 | - | - |
| 6/30/2022 6:48 | 1.48 | 0.94 | 29.09 | 0.08 | - | - |
| 6/30/2022 7:03 | 1.57 | 1.06 | 35.79 | 0.09 | 26.93 | - |
| 6/30/2022 7:18 | 1.55 | 0.97 | 32.14 | 0.09 | - | - |
| 6/30/2022 7:33 | 1.55 | 0.97 | 32.14 | 0.09 | - | - |
| 6/30/2022 7:48 | 1.51 | 1.09 | 34.75 | 0.08 | - | - |
| 6/30/2022 8:03 | 1.48 | 1.16 | 35.9 | 0.08 | 33.73 | - |
| 6/30/2022 8:18 | 1.39 | 1.2 | 33.86 | 0.08 | - | - |
| 6/30/2022 8:33 | 1.33 | 1.23 | 32.52 | 0.07 | - | - |
| 6/30/2022 8:48 | 1.64 | 1.05 | 37.8 | 0.09 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 6/30/2022 9:03 | 1.61 | 0.83 | 29.08 | 0.09 | 33.32 | - |
| 6/30/2022 9:18 | 1.64 | 1.12 | 40.32 | 0.09 | - | - |
| 6/30/2022 9:33 | 1.61 | 1.05 | 36.79 | 0.09 | - | - |
| 6/30/2022 9:48 | 1.61 | 1.05 | 36.79 | 0.09 | - | - |
| 6/30/2022 10:03 | 1.59 | 1.03 | 35.43 | 0.09 | 37.33 | - |
| 6/30/2022 10:18 | 1.32 | 1.03 | 26.98 | 0.07 | - | - |
| 6/30/2022 10:33 | 1.29 | 1.03 | 26.03 | 0.07 | - | - |
| 6/30/2022 10:48 | 1.39 | 1.3 | 36.68 | 0.08 | - | - |
| 6/30/2022 11:03 | 1.75 | 1.1 | 43.57 | 0.10 | 33.32 | - |
| 6/30/2022 11:18 | 1.4 | 1.17 | 33.36 | 0.08 | - | - |
| 6/30/2022 11:33 | 1.39 | 1.1 | 31.04 | 0.08 | - | - |
| 6/30/2022 11:48 | 1.39 | 1.17 | 33.01 | 0.08 | - | - |
| 6/30/2022 12:03 | 1.05 | 1.14 | 21.24 | 0.06 | 29.66 | - |
| 6/30/2022 12:18 | 0.86 | 1.12 | 15.52 | 0.05 | - | - |
| 6/30/2022 12:33 | 0.86 | 1.1 | 15.24 | 0.05 | - | - |
| 6/30/2022 12:48 | 1.33 | 1.13 | 29.87 | 0.07 | - | - |
| 6/30/2022 13:03 | 1.8 | 1.08 | 44.58 | 0.10 | 26.30 | - |
| 6/30/2022 13:18 | 1.77 | 1.03 | 41.48 | 0.10 | - | - |
| 6/30/2022 13:33 | 1.79 | 1.05 | 42.99 | 0.10 | - | - |
| 6/30/2022 13:48 | 1.8 | 0.94 | 38.8 | 0.10 | - | - |
| 6/30/2022 14:03 | 0.87 | 1.14 | 16.07 | 0.05 | 34.84 | - |
| 6/30/2022 14:18 | 1.61 | 0.93 | 32.58 | 0.09 | - | - |
| 6/30/2022 14:33 | 1.61 | 1.03 | 36.09 | 0.09 | - | - |
| 6/30/2022 14:48 | 1.59 | 1.05 | 36.12 | 0.09 | - | - |
| 6/30/2022 15:03 | 1.57 | 1.06 | 35.79 | 0.09 | 35.15 | - |
| 6/30/2022 15:18 | 1.4 | 0.63 | 17.96 | 0.08 | - | - |
| 6/30/2022 15:33 | 1.59 | 0.88 | 30.27 | 0.09 | - | - |
| 6/30/2022 15:48 | 1.72 | 1.1 | 42.47 | 0.10 | - | - |
| 6/30/2022 16:03 | 1.76 | 1.25 | 49.92 | 0.10 | 35.16 | - |
| 6/30/2022 16:18 | 1.73 | 1.21 | 47.12 | 0.10 | - | - |
| 6/30/2022 16:33 | 1.79 | 1.14 | 46.67 | 0.10 | - | - |
| 6/30/2022 16:48 | 1.3 | 0.92 | 23.52 | 0.07 | - | - |
| 6/30/2022 17:03 | 1.17 | 0.9 | 19.69 | 0.07 | 34.25 | - |
| 6/30/2022 17:18 | 1.05 | 0.94 | 17.52 | 0.06 | - | - |
| 6/30/2022 17:33 | 1.19 | 0.88 | 19.74 | 0.07 | - | - |
| 6/30/2022 17:48 | 1.73 | 0.82 | 31.93 | 0.10 | - | - |
| 6/30/2022 18:03 | 1.78 | 1.15 | 46.7 | 0.10 | 28.97 | - |
| 6/30/2022 18:18 | 1.77 | 0.89 | 35.84 | 0.10 | - | - |
| 6/30/2022 18:33 | 1.76 | 0.62 | 24.76 | 0.10 | - | - |
| 6/30/2022 18:48 | 1.69 | 0.66 | 24.83 | 0.09 | - | - |
| 6/30/2022 19:03 | 1.59 | 0.61 | 20.98 | 0.09 | 26.60 | - |
| 6/30/2022 19:18 | 1.65 | 0.79 | 28.7 | 0.09 | - | - |
| 6/30/2022 19:33 | 1.65 | 0.66 | 23.97 | 0.09 | - | - |
| 6/30/2022 19:48 | 1.64 | 0.66 | 23.76 | 0.09 | - | - |
| 6/30/2022 20:03 | 1.54 | 0.73 | 23.96 | 0.09 | 25.10 | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 6/30/2022 20:18 | 1.46 | 0.88 | 26.7 | 0.08 | - | - |
| 6/30/2022 20:33 | 1.73 | 0.99 | 38.55 | 0.10 | - | - |
| 6/30/2022 20:48 | 1.58 | 0.72 | 24.54 | 0.09 | - | - |
| 6/30/2022 21:03 | 1.41 | 0.55 | 15.85 | 0.08 | 26.41 | - |
| 6/30/2022 21:18 | 1.25 | 0.99 | 23.88 | 0.07 | - | - |
| 6/30/2022 21:33 | 1.09 | 0.43 | 8.47 | 0.06 | - | - |
| 6/30/2022 21:48 | 1.03 | 0.87 | 15.76 | 0.06 | - | - |
| 6/30/2022 22:03 | 0.77 | 0.31 | 3.65 | 0.04 | 12.94 | - |
| 6/30/2022 22:18 | 1.01 | 0.75 | 13.19 | 0.06 | - | - |
| 6/30/2022 22:33 | 1.25 | 0.64 | 15.44 | 0.07 | - | - |
| 6/30/2022 22:48 | 1.39 | 0.65 | 18.34 | 0.08 | - | - |
| 6/30/2022 23:03 | 1.65 | 0.66 | 23.97 | 0.09 | 17.74 | - |
| 6/30/2022 23:18 | 1.28 | 0.77 | 19.24 | 0.07 | - | - |
| 6/30/2022 23:33 | 1.75 | 0.84 | 33.27 | 0.10 | - | - |
| 6/30/2022 23:48 | 1.29 | 0.88 | 22.24 | 0.07 | - | - |
| 7/1/2022 0:03 | 1.53 | 0.81 | 26.33 | 0.09 | 25.27 | 27.53 |
| 7/1/2022 0:18 | 1.73 | 0.87 | 33.88 | 0.10 | - | - |
| 7/1/2022 0:33 | 1.54 | 0.82 | 26.91 | 0.09 | - | - |
| 7/1/2022 0:48 | 1.36 | 0.84 | 22.95 | 0.08 | - | - |
| 7/1/2022 1:03 | 1.59 | 0.83 | 28.55 | 0.09 | 28.07 | - |
| 7/1/2022 1:18 | 1.36 | 0.87 | 23.77 | 0.08 | - | - |
| 7/1/2022 1:33 | 1.15 | 0.8 | 17.06 | 0.06 | - | - |
| 7/1/2022 1:48 | 1.14 | 0.78 | 16.48 | 0.06 | - | - |
| 7/1/2022 2:03 | 1.15 | 0.78 | 16.74 | 0.06 | 18.51 | - |
| 7/1/2022 2:18 | 1.27 | 0.75 | 18.46 | 0.07 | - | - |
| 7/1/2022 2:33 | 1.29 | 0.71 | 17.94 | 0.07 | - | - |
| 7/1/2022 2:48 | 1.4 | 0.64 | 18.25 | 0.08 | - | - |
| 7/1/2022 3:03 | 1.26 | 0.55 | 13.42 | 0.07 | 17.02 | - |
| 7/1/2022 3:18 | 1.68 | 0.73 | 27.23 | 0.09 | - | - |
| 7/1/2022 3:33 | 1.43 | 0.58 | 17.06 | 0.08 | - | - |
| 7/1/2022 3:48 | 1.43 | 0.64 | 18.83 | 0.08 | - | - |
| 7/1/2022 4:03 | 1.5 | 0.75 | 23.68 | 0.08 | 21.70 | - |
| 7/1/2022 4:18 | 1.53 | 0.76 | 24.7 | 0.09 | - | - |
| 7/1/2022 4:33 | 1.59 | 0.88 | 30.27 | 0.09 | - | - |
| 7/1/2022 4:48 | 1.4 | 0.88 | 25.09 | 0.08 | - | - |
| 7/1/2022 5:03 | 1.54 | 0.8 | 26.25 | 0.09 | 26.58 | - |
| 7/1/2022 5:18 | 1.47 | 0.83 | 25.43 | 0.08 | - | - |
| 7/1/2022 5:33 | 1.54 | 0.83 | 27.24 | 0.09 | - | - |
| 7/1/2022 5:48 | 1.47 | 0.81 | 24.82 | 0.08 | - | - |
| 7/1/2022 6:03 | 1.45 | 0.75 | 22.52 | 0.08 | 25.00 | - |
| 7/1/2022 6:18 | 1.47 | 0.72 | 22.06 | 0.08 | - | - |
| 7/1/2022 6:33 | 1.23 | 0.66 | 15.54 | 0.07 | - | - |
| 7/1/2022 6:48 | 1.11 | 0.6 | 12.14 | 0.06 | - | - |
| 7/1/2022 7:03 | 1.29 | 1.07 | 27.04 | 0.07 | 19.20 | - |
| 7/1/2022 7:18 | 1.39 | 1.01 | 28.5 | 0.08 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/1/2022 7:33 | 1.69 | 1.14 | 42.89 | 0.09 | - | - |
| 7/1/2022 7:48 | 1.39 | 1.05 | 29.63 | 0.08 | - | - |
| 7/1/2022 8:03 | 0.86 | 1.26 | 17.46 | 0.05 | 29.62 | - |
| 7/1/2022 8:18 | 1.46 | 1.2 | 36.4 | 0.08 | - | - |
| 7/1/2022 8:33 | 1.69 | 1.13 | 42.52 | 0.09 | - | - |
| 7/1/2022 8:48 | 1.33 | 0.97 | 25.64 | 0.07 | - | - |
| 7/1/2022 9:03 | 1.08 | 0.9 | 17.49 | 0.06 | 30.51 | - |
| 7/1/2022 9:18 | 1.15 | 0.93 | 19.83 | 0.06 | - | - |
| 7/1/2022 9:33 | 1.1 | 0.96 | 19.17 | 0.06 | - | - |
| 7/1/2022 9:48 | 1.15 | 1.02 | 21.75 | 0.06 | - | - |
| 7/1/2022 10:03 | 0.97 | 0.93 | 15.48 | 0.05 | 19.06 | - |
| 7/1/2022 10:18 | 0.79 | 0.85 | 10.38 | 0.04 | - | - |
| 7/1/2022 10:33 | 0.61 | 0.66 | 5.49 | 0.03 | - | - |
| 7/1/2022 10:48 | 0.43 | 0.82 | 4.05 | 0.02 | - | - |
| 7/1/2022 11:03 | 0.22 | 0.98 | 1.78 | 0.01 | 5.43 | - |
| 7/1/2022 11:18 | 0.78 | 1.14 | 13.67 | 0.04 | - | - |
| 7/1/2022 11:33 | 0.78 | 1.09 | 13.07 | 0.04 | - | - |
| 7/1/2022 11:48 | 1 | 1.11 | 19.24 | 0.06 | - | - |
| 7/1/2022 12:03 | 1.21 | 1.13 | 25.98 | 0.07 | 17.99 | - |
| 7/1/2022 12:18 | 1.22 | 1.06 | 24.67 | 0.07 | - | - |
| 7/1/2022 12:33 | 1.05 | 1.05 | 19.57 | 0.06 | - | - |
| 7/1/2022 12:48 | 1.43 | 1.15 | 33.83 | 0.08 | - | - |
| 7/1/2022 13:03 | 1.27 | 1.21 | 29.88 | 0.07 | 26.99 | - |
| 7/1/2022 13:18 | 1.14 | 1.33 | 27.99 | 0.06 | - | - |
| 7/1/2022 13:33 | 1.05 | 1.04 | 19.33 | 0.06 | - | - |
| 7/1/2022 13:48 | 1.26 | 0.89 | 21.72 | 0.07 | - | - |
| 7/1/2022 14:03 | 1.57 | 0.7 | 23.63 | 0.09 | 23.17 | - |
| 7/1/2022 14:18 | 1.48 | 0.97 | 30.02 | 0.08 | - | - |
| 7/1/2022 14:33 | 1.37 | 0.68 | 18.78 | 0.08 | - | - |
| 7/1/2022 14:48 | 1.26 | 0.98 | 23.92 | 0.07 | - | - |
| 7/1/2022 15:03 | 0.87 | 0.96 | 13.53 | 0.05 | 21.56 | - |
| 7/1/2022 15:18 | 1.06 | 1 | 18.85 | 0.06 | - | - |
| 7/1/2022 15:33 | 1.17 | 1 | 21.85 | 0.07 | - | - |
| 7/1/2022 15:48 | 1.34 | 0.91 | 24.32 | 0.07 | - | - |
| 7/1/2022 16:03 | 1.18 | 1.01 | 22.37 | 0.07 | 21.85 | - |
| 7/1/2022 16:18 | 1.51 | 0.89 | 28.37 | 0.08 | - | - |
| 7/1/2022 16:33 | 1.71 | 0.93 | 35.6 | 0.10 | - | - |
| 7/1/2022 16:48 | 1.53 | 0.88 | 28.6 | 0.09 | - | - |
| 7/1/2022 17:03 | 1.36 | 0.85 | 23.22 | 0.08 | 28.95 | - |
| 7/1/2022 17:18 | 1.3 | 0.93 | 23.77 | 0.07 | - | - |
| 7/1/2022 17:33 | 1.3 | 0.95 | 24.28 | 0.07 | - | - |
| 7/1/2022 17:48 | 1.5 | 0.93 | 29.36 | 0.08 | - | - |
| 7/1/2022 18:03 | 1.41 | 0.9 | 25.93 | 0.08 | 25.84 | - |
| 7/1/2022 18:18 | 1.26 | 0.88 | 21.48 | 0.07 | - | - |
| 7/1/2022 18:33 | 1.5 | 0.74 | 23.36 | 0.08 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/1/2022 18:48 | 1.58 | 0.67 | 22.83 | 0.09 | - | - |
| 7/1/2022 19:03 | 1.33 | 1.04 | 27.49 | 0.07 | 23.79 | - |
| 7/1/2022 19:18 | 1.3 | 0.89 | 22.75 | 0.07 | - | - |
| 7/1/2022 19:33 | 1.25 | 0.75 | 18.09 | 0.07 | - | - |
| 7/1/2022 19:48 | 1.14 | 0.65 | 13.68 | 0.06 | - | - |
| 7/1/2022 20:03 | 1.32 | 0.69 | 18.04 | 0.07 | 18.14 | - |
| 7/1/2022 20:18 | 1.39 | 1.3 | 36.68 | 0.08 | - | - |
| 7/1/2022 20:33 | 1.5 | 0.73 | 23.05 | 0.08 | - | - |
| 7/1/2022 20:48 | 1.32 | 0.69 | 18.04 | 0.07 | - | - |
| 7/1/2022 21:03 | 1.32 | 0.73 | 19.08 | 0.07 | 24.21 | - |
| 7/1/2022 21:18 | 1.25 | 0.8 | 19.25 | 0.07 | - | - |
| 7/1/2022 21:33 | 1.12 | 0.93 | 19.07 | 0.06 | - | - |
| 7/1/2022 21:48 | 1.25 | 0.85 | 20.5 | 0.07 | - | - |
| 7/1/2022 22:03 | 1.32 | 0.67 | 17.52 | 0.07 | 19.09 | - |
| 7/1/2022 22:18 | 1.11 | 0.6 | 12.14 | 0.06 | - | - |
| 7/1/2022 22:33 | 1.15 | 1.24 | 26.44 | 0.06 | - | - |
| 7/1/2022 22:48 | 1.12 | 0.64 | 13.12 | 0.06 | - | - |
| 7/1/2022 23:03 | 1.17 | 0.61 | 13.36 | 0.07 | 16.27 | - |
| 7/1/2022 23:18 | 1.19 | 0.86 | 19.29 | 0.07 | - | - |
| 7/1/2022 23:33 | 1.12 | 0.72 | 14.76 | 0.06 | - | - |
| 7/1/2022 23:48 | 1.25 | 0.84 | 20.26 | 0.07 | - | - |
| 7/2/2022 0:03 | 1.25 | 0.87 | 20.99 | 0.07 | 18.83 | 22.02 |
| 7/2/2022 0:18 | 1.25 | 0.86 | 20.74 | 0.07 | - | - |
| 7/2/2022 0:33 | 1.25 | 0.87 | 20.99 | 0.07 | - | - |
| 7/2/2022 0:48 | 1.54 | 0.94 | 30.85 | 0.09 | - | - |
| 7/2/2022 1:03 | 1.26 | 1 | 24.41 | 0.07 | 24.25 | - |
| 7/2/2022 1:18 | 1.47 | 0.94 | 28.8 | 0.08 | - | - |
| 7/2/2022 1:33 | 1.23 | 0.6 | 14.13 | 0.07 | - | - |
| 7/2/2022 1:48 | 1.18 | 0.81 | 17.94 | 0.07 | - | - |
| 7/2/2022 2:03 | 1.32 | 0.76 | 19.87 | 0.07 | 20.19 | - |
| 7/2/2022 2:18 | 1.58 | 1.01 | 34.42 | 0.09 | - | - |
| 7/2/2022 2:33 | 1.58 | 0.95 | 32.38 | 0.09 | - | - |
| 7/2/2022 2:48 | 1.5 | 0.6 | 18.94 | 0.08 | - | - |
| 7/2/2022 3:03 | 1.29 | 0.68 | 17.18 | 0.07 | 25.73 | - |
| 7/2/2022 3:18 | 1.23 | 0.65 | 15.31 | 0.07 | - | - |
| 7/2/2022 3:33 | 1.55 | 0.53 | 17.56 | 0.09 | - | - |
| 7/2/2022 3:48 | 1.29 | 0.6 | 15.16 | 0.07 | - | - |
| 7/2/2022 4:03 | 1.29 | 0.65 | 16.43 | 0.07 | 16.12 | - |
| 7/2/2022 4:18 | 1.4 | 0.57 | 16.25 | 0.08 | - | - |
| 7/2/2022 4:33 | 1.38 | 0.58 | 16.19 | 0.08 | - | - |
| 7/2/2022 4:48 | 1.36 | 0.6 | 16.34 | 0.08 | - | - |
| 7/2/2022 5:03 | 1.48 | 0.56 | 17.33 | 0.08 | 16.53 | - |
| 7/2/2022 5:18 | 1.19 | 0.55 | 12.34 | 0.07 | - | - |
| 7/2/2022 5:33 | 1.18 | 0.61 | 13.51 | 0.07 | - | - |
| 7/2/2022 5:48 | 1.19 | 0.64 | 14.35 | 0.07 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/2/2022 6:03 | 1.54 | 0.54 | 17.72 | 0.09 | 14.48 | - |
| 7/2/2022 6:18 | 1.65 | 0.67 | 24.34 | 0.09 | - | - |
| 7/2/2022 6:33 | 1.51 | 0.6 | 19.13 | 0.08 | - | - |
| 7/2/2022 6:48 | 1.5 | 0.59 | 18.63 | 0.08 | - | - |
| 7/2/2022 7:03 | 1.43 | 0.92 | 27.07 | 0.08 | 22.29 | - |
| 7/2/2022 7:18 | 1.5 | 0.67 | 21.15 | 0.08 | - | - |
| 7/2/2022 7:33 | 1.5 | 0.6 | 18.94 | 0.08 | - | - |
| 7/2/2022 7:48 | 1.54 | 0.69 | 22.55 | 0.09 | - | - |
| 7/2/2022 8:03 | 1 | 0.58 | 10.05 | 0.06 | 18.17 | - |
| 7/2/2022 8:18 | 1.23 | 0.66 | 15.54 | 0.07 | - | - |
| 7/2/2022 8:33 | 1.41 | 0.67 | 19.31 | 0.08 | - | - |
| 7/2/2022 8:48 | 1.41 | 0.6 | 17.29 | 0.08 | - | - |
| 7/2/2022 9:03 | 1.37 | 0.6 | 16.57 | 0.08 | 17.18 | - |
| 7/2/2022 9:18 | 1.37 | 0.63 | 17.4 | 0.08 | - | - |
| 7/2/2022 9:33 | 1.41 | 0.6 | 17.29 | 0.08 | - | - |
| 7/2/2022 9:48 | 1.38 | 0.72 | 20.1 | 0.08 | - | - |
| 7/2/2022 10:03 | 1.36 | 0.84 | 22.95 | 0.08 | 19.44 | - |
| 7/2/2022 10:18 | 1.23 | 0.55 | 12.95 | 0.07 | - | - |
| 7/2/2022 10:33 | 1.32 | 0.56 | 14.64 | 0.07 | - | - |
| 7/2/2022 10:48 | 1.55 | 0.56 | 18.55 | 0.09 | - | - |
| 7/2/2022 11:03 | 1.65 | 0.58 | 21.07 | 0.09 | 16.80 | - |
| 7/2/2022 11:18 | 1.33 | 0.56 | 14.8 | 0.07 | - | - |
| 7/2/2022 11:33 | 1.37 | 0.58 | 16.02 | 0.08 | - | - |
| 7/2/2022 11:48 | 1.25 | 0.79 | 19.06 | 0.07 | - | - |
| 7/2/2022 12:03 | 1.46 | 0.89 | 27 | 0.08 | 19.22 | - |
| 7/2/2022 12:18 | 1.35 | 0.79 | 21.35 | 0.08 | - | - |
| 7/2/2022 12:33 | 1.14 | 0.78 | 16.42 | 0.06 | - | - |
| 7/2/2022 12:48 | 1.39 | 0.65 | 18.34 | 0.08 | - | - |
| 7/2/2022 13:03 | 1.36 | 0.55 | 15.03 | 0.08 | 17.79 | - |
| 7/2/2022 13:18 | 1.28 | 0.85 | 21.23 | 0.07 | - | - |
| 7/2/2022 13:33 | 1.28 | 0.78 | 19.49 | 0.07 | - | - |
| 7/2/2022 13:48 | 1.36 | 0.85 | 23.22 | 0.08 | - | - |
| 7/2/2022 14:03 | 1.28 | 0.86 | 21.48 | 0.07 | 21.36 | - |
| 7/2/2022 14:18 | 1.23 | 0.86 | 20.26 | 0.07 | - | - |
| 7/2/2022 14:33 | 1.23 | 0.89 | 20.96 | 0.07 | - | - |
| 7/2/2022 14:48 | 1.29 | 0.73 | 18.45 | 0.07 | - | - |
| 7/2/2022 15:03 | 1.34 | 0.65 | 17.37 | 0.07 | 19.26 | - |
| 7/2/2022 15:18 | 1.47 | 0.69 | 21.14 | 0.08 | - | - |
| 7/2/2022 15:33 | 1.64 | 0.56 | 20.16 | 0.09 | - | - |
| 7/2/2022 15:48 | 1.25 | 0.52 | 12.54 | 0.07 | - | - |
| 7/2/2022 16:03 | 1.34 | 0.64 | 17.11 | 0.07 | 17.74 | - |
| 7/2/2022 16:18 | 1.25 | 0.64 | 15.44 | 0.07 | - | - |
| 7/2/2022 16:33 | 1.25 | 0.64 | 15.44 | 0.07 | - | - |
| 7/2/2022 16:48 | 1.25 | 0.64 | 15.44 | 0.07 | - | - |
| 7/2/2022 17:03 | 1.39 | 0.6 | 16.93 | 0.08 | 15.81 | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/2/2022 17:18 | 1.54 | 0.54 | 17.72 | 0.09 | - | - |
| 7/2/2022 17:33 | 1.36 | 0.62 | 16.94 | 0.08 | - | - |
| 7/2/2022 17:48 | 1.44 | 0.54 | 16.05 | 0.08 | - | - |
| 7/2/2022 18:03 | 1.54 | 0.61 | 20.02 | 0.09 | 17.68 | - |
| 7/2/2022 18:18 | 1.51 | 0.6 | 19.13 | 0.08 | - | - |
| 7/2/2022 18:33 | 1.44 | 0.6 | 17.84 | 0.08 | - | - |
| 7/2/2022 18:48 | 1.44 | 0.54 | 16.05 | 0.08 | - | - |
| 7/2/2022 19:03 | 1.36 | 0.6 | 16.39 | 0.08 | 17.35 | - |
| 7/2/2022 19:18 | 1.48 | 0.6 | 18.57 | 0.08 | - | - |
| 7/2/2022 19:33 | 1.33 | 0.76 | 20.09 | 0.07 | - | - |
| 7/2/2022 19:48 | 1.21 | 0.54 | 12.41 | 0.07 | - | - |
| 7/2/2022 20:03 | 1.07 | 0.47 | 9.01 | 0.06 | 15.02 | - |
| 7/2/2022 20:18 | 1.5 | 0.65 | 20.52 | 0.08 | - | - |
| 7/2/2022 20:33 | 1.25 | 0.57 | 13.75 | 0.07 | - | - |
| 7/2/2022 20:48 | 1.25 | 0.57 | 13.75 | 0.07 | - | - |
| 7/2/2022 21:03 | 1.19 | 0.61 | 13.68 | 0.07 | 15.43 | - |
| 7/2/2022 21:18 | 1.4 | 0.57 | 16.25 | 0.08 | - | - |
| 7/2/2022 21:33 | 1.39 | 0.55 | 15.52 | 0.08 | - | - |
| 7/2/2022 21:48 | 1.39 | 0.53 | 14.95 | 0.08 | - | - |
| 7/2/2022 22:03 | 1.29 | 0.63 | 15.92 | 0.07 | 15.66 | - |
| 7/2/2022 22:18 | 1.62 | 0.54 | 19.09 | 0.09 | - | - |
| 7/2/2022 22:33 | 1.5 | 0.56 | 17.68 | 0.08 | - | - |
| 7/2/2022 22:48 | 1.43 | 0.59 | 17.36 | 0.08 | - | - |
| 7/2/2022 23:03 | 1.14 | 0.88 | 18.52 | 0.06 | 18.16 | - |
| 7/2/2022 23:18 | 1.55 | 0.72 | 23.85 | 0.09 | - | - |
| 7/2/2022 23:33 | 1.48 | 0.52 | 16.09 | 0.08 | - | - |
| 7/2/2022 23:48 | 1.43 | 0.59 | 17.36 | 0.08 | - | - |
| 7/3/2022 0:03 | 1.44 | 0.52 | 15.46 | 0.08 | 18.19 | 18.35 |
| 7/3/2022 0:18 | 1.44 | 0.52 | 15.46 | 0.08 | - | - |
| 7/3/2022 0:33 | 1.44 | 0.52 | 15.46 | 0.08 | - | - |
| 7/3/2022 0:48 | 1.4 | 0.53 | 15.11 | 0.08 | - | - |
| 7/3/2022 1:03 | 1.4 | 0.58 | 16.54 | 0.08 | 15.64 | - |
| 7/3/2022 1:18 | 1.4 | 0.59 | 16.82 | 0.08 | - | - |
| 7/3/2022 1:33 | 1.4 | 0.61 | 17.39 | 0.08 | - | - |
| 7/3/2022 1:48 | 1.5 | 0.5 | 15.78 | 0.08 | - | - |
| 7/3/2022 2:03 | 1.5 | 0.62 | 19.57 | 0.08 | 17.39 | - |
| 7/3/2022 2:18 | 1.57 | 0.8 | 27.01 | 0.09 | - | - |
| 7/3/2022 2:33 | 1.3 | 0.57 | 14.57 | 0.07 | - | - |
| 7/3/2022 2:48 | 1.44 | 0.78 | 23.19 | 0.08 | - | - |
| 7/3/2022 3:03 | 1.41 | 0.76 | 21.9 | 0.08 | 21.67 | - |
| 7/3/2022 3:18 | 1.41 | 0.76 | 21.9 | 0.08 | - | - |
| 7/3/2022 3:33 | 1.41 | 0.76 | 21.9 | 0.08 | - | - |
| 7/3/2022 3:48 | 1.41 | 0.76 | 21.9 | 0.08 | - | - |
| 7/3/2022 4:03 | 1.12 | 0.61 | 12.51 | 0.06 | 19.55 | - |
| 7/3/2022 4:18 | 1.12 | 0.61 | 12.51 | 0.06 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/3/2022 4:33 | 1.15 | 0.59 | 12.58 | 0.06 | - | - |
| 7/3/2022 4:48 | 1.15 | 0.57 | 12.15 | 0.06 | - | - |
| 7/3/2022 5:03 | 1.15 | 0.75 | 15.99 | 0.06 | 13.31 | - |
| 7/3/2022 5:18 | 1.11 | 0.72 | 14.57 | 0.06 | - | - |
| 7/3/2022 5:33 | 1.22 | 0.67 | 15.59 | 0.07 | - | - |
| 7/3/2022 5:48 | 0.96 | 0.52 | 8.48 | 0.05 | - | - |
| 7/3/2022 6:03 | 1.19 | 0.71 | 15.92 | 0.07 | 13.64 | - |
| 7/3/2022 6:18 | 1.19 | 0.61 | 13.68 | 0.07 | - | - |
| 7/3/2022 6:33 | 1.19 | 0.54 | 12.11 | 0.07 | - | - |
| 7/3/2022 6:48 | 1.19 | 0.54 | 12.11 | 0.07 | - | - |
| 7/3/2022 7:03 | 1.25 | 0.61 | 14.71 | 0.07 | 13.15 | - |
| 7/3/2022 7:18 | 1.25 | 0.61 | 14.71 | 0.07 | - | - |
| 7/3/2022 7:33 | 1.53 | 0.65 | 21.13 | 0.09 | - | - |
| 7/3/2022 7:48 | 1.44 | 0.73 | 21.7 | 0.08 | - | - |
| 7/3/2022 8:03 | 1.48 | 0.86 | 26.62 | 0.08 | 21.04 | - |
| 7/3/2022 8:18 | 1.41 | 0.55 | 15.85 | 0.08 | - | - |
| 7/3/2022 8:33 | 1.14 | 0.45 | 9.47 | 0.06 | - | - |
| 7/3/2022 8:48 | 1.3 | 0.51 | 13.04 | 0.07 | - | - |
| 7/3/2022 9:03 | 1.3 | 0.54 | 13.8 | 0.07 | 13.04 | - |
| 7/3/2022 9:18 | 1.28 | 0.51 | 12.74 | 0.07 | - | - |
| 7/3/2022 9:33 | 1.28 | 0.51 | 12.74 | 0.07 | - | - |
| 7/3/2022 9:48 | 1.28 | 0.54 | 13.49 | 0.07 | - | - |
| 7/3/2022 10:03 | 1.28 | 0.55 | 13.74 | 0.07 | 13.18 | - |
| 7/3/2022 10:18 | 1.26 | 0.55 | 13.42 | 0.07 | - | - |
| 7/3/2022 10:33 | 1.3 | 0.63 | 16.1 | 0.07 | - | - |
| 7/3/2022 10:48 | 1.43 | 0.79 | 23.24 | 0.08 | - | - |
| 7/3/2022 11:03 | 1.43 | 0.61 | 17.95 | 0.08 | 17.68 | - |
| 7/3/2022 11:18 | 1.12 | 0.65 | 13.33 | 0.06 | - | - |
| 7/3/2022 11:33 | 1.55 | 0.5 | 16.57 | 0.09 | - | - |
| 7/3/2022 11:48 | 1.39 | 0.6 | 16.93 | 0.08 | - | - |
| 7/3/2022 12:03 | 1.3 | 0.68 | 17.38 | 0.07 | 16.05 | - |
| 7/3/2022 12:18 | 1.08 | 0.72 | 13.99 | 0.06 | - | - |
| 7/3/2022 12:33 | 1.22 | 0.71 | 16.52 | 0.07 | - | - |
| 7/3/2022 12:48 | 1.37 | 0.7 | 19.33 | 0.08 | - | - |
| 7/3/2022 13:03 | 1.03 | 0.73 | 13.22 | 0.06 | 15.77 | - |
| 7/3/2022 13:18 | 1.18 | 0.69 | 15.28 | 0.07 | - | - |
| 7/3/2022 13:33 | 1.18 | 0.68 | 15.06 | 0.07 | - | - |
| 7/3/2022 13:48 | 1.18 | 0.7 | 15.51 | 0.07 | - | - |
| 7/3/2022 14:03 | 1.14 | 0.61 | 12.84 | 0.06 | 14.67 | - |
| 7/3/2022 14:18 | 1.3 | 0.81 | 20.7 | 0.07 | - | - |
| 7/3/2022 14:33 | 1.16 | 0.59 | 12.74 | 0.06 | - | - |
| 7/3/2022 14:48 | 1.21 | 0.61 | 14.02 | 0.07 | - | - |
| 7/3/2022 15:03 | 1.11 | 0.67 | 13.56 | 0.06 | 15.26 | - |
| 7/3/2022 15:18 | 1.16 | 0.67 | 14.56 | 0.06 | - | - |
| 7/3/2022 15:33 | 1.16 | 0.67 | 14.56 | 0.06 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/3/2022 15:48 | 1.16 | 0.67 | 14.56 | 0.06 | - | - |
| 7/3/2022 16:03 | 1.16 | 0.67 | 14.56 | 0.06 | 14.56 | - |
| 7/3/2022 16:18 | 1.27 | 0.73 | 17.94 | 0.07 | - | - |
| 7/3/2022 16:33 | 1.32 | 0.61 | 15.95 | 0.07 | - | - |
| 7/3/2022 16:48 | 1.47 | 0.84 | 25.79 | 0.08 | - | - |
| 7/3/2022 17:03 | 1.48 | 0.87 | 26.82 | 0.08 | 21.63 | - |
| 7/3/2022 17:18 | 1.47 | 0.9 | 27.63 | 0.08 | - | - |
| 7/3/2022 17:33 | 1.38 | 0.88 | 24.57 | 0.08 | - | - |
| 7/3/2022 17:48 | 1.29 | 0.87 | 21.99 | 0.07 | - | - |
| 7/3/2022 18:03 | 1.78 | 0.86 | 34.92 | 0.10 | 27.28 | - |
| 7/3/2022 18:18 | 1.16 | 0.75 | 16.2 | 0.06 | - | - |
| 7/3/2022 18:33 | 1.03 | 0.54 | 9.78 | 0.06 | - | - |
| 7/3/2022 18:48 | 1.04 | 0.69 | 12.68 | 0.06 | - | - |
| 7/3/2022 19:03 | 1.14 | 0.8 | 16.84 | 0.06 | 13.88 | - |
| 7/3/2022 19:18 | 1.59 | 1.04 | 35.77 | 0.09 | - | - |
| 7/3/2022 19:33 | 1.37 | 0.82 | 22.65 | 0.08 | - | - |
| 7/3/2022 19:48 | 1.44 | 0.53 | 15.75 | 0.08 | - | - |
| 7/3/2022 20:03 | 1.16 | 0.69 | 14.9 | 0.06 | 22.27 | - |
| 7/3/2022 20:18 | 1.19 | 0.66 | 14.8 | 0.07 | - | - |
| 7/3/2022 20:33 | 1.09 | 0.63 | 12.41 | 0.06 | - | - |
| 7/3/2022 20:48 | 1.3 | 0.67 | 17.13 | 0.07 | - | - |
| 7/3/2022 21:03 | 1.16 | 0.66 | 14.25 | 0.06 | 14.65 | - |
| 7/3/2022 21:18 | 1.11 | 0.66 | 13.35 | 0.06 | - | - |
| 7/3/2022 21:33 | 1.09 | 0.67 | 13.2 | 0.06 | - | - |
| 7/3/2022 21:48 | 1.11 | 0.71 | 14.37 | 0.06 | - | - |
| 7/3/2022 22:03 | 1.11 | 0.71 | 14.37 | 0.06 | 13.82 | - |
| 7/3/2022 22:18 | 1.11 | 0.71 | 14.37 | 0.06 | - | - |
| 7/3/2022 22:33 | 1.11 | 0.65 | 13.15 | 0.06 | - | - |
| 7/3/2022 22:48 | 1.09 | 0.74 | 14.58 | 0.06 | - | - |
| 7/3/2022 23:03 | 1.08 | 0.83 | 16.13 | 0.06 | 14.56 | - |
| 7/3/2022 23:18 | 1.08 | 0.77 | 14.96 | 0.06 | - | - |
| 7/3/2022 23:33 | 1.21 | 0.63 | 14.48 | 0.07 | - | - |
| 7/3/2022 23:48 | 1.26 | 0.63 | 15.38 | 0.07 | - | - |
| 7/4/2022 0:03 | 1.14 | 0.68 | 14.31 | 0.06 | 14.78 | 16.59 |
| 7/4/2022 0:18 | 1.18 | 0.72 | 15.95 | 0.07 | - | - |
| 7/4/2022 0:33 | 0.96 | 0.69 | 11.26 | 0.05 | - | - |
| 7/4/2022 0:48 | 1.05 | 0.69 | 12.86 | 0.06 | - | - |
| 7/4/2022 1:03 | 1.11 | 0.69 | 13.96 | 0.06 | 13.51 | - |
| 7/4/2022 1:18 | 1.11 | 0.69 | 13.96 | 0.06 | - | - |
| 7/4/2022 1:33 | 1.08 | 0.7 | 13.6 | 0.06 | - | - |
| 7/4/2022 1:48 | 1.05 | 0.72 | 13.42 | 0.06 | - | - |
| 7/4/2022 2:03 | 1.09 | 0.71 | 13.98 | 0.06 | 13.74 | - |
| 7/4/2022 2:18 | 0.86 | 0.85 | 11.78 | 0.05 | - | - |
| 7/4/2022 2:33 | 1.16 | 1.15 | 24.84 | 0.06 | - | - |
| 7/4/2022 2:48 | 1.29 | 0.92 | 23.25 | 0.07 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/4/2022 3:03 | 1.16 | 0.74 | 15.98 | 0.06 | 18.96 | - |
| 7/4/2022 3:18 | 1.23 | 0.58 | 13.66 | 0.07 | - | - |
| 7/4/2022 3:33 | 1 | 0.68 | 11.79 | 0.06 | - | - |
| 7/4/2022 3:48 | 1.53 | 0.69 | 22.43 | 0.09 | - | - |
| 7/4/2022 4:03 | 1.46 | 0.85 | 25.81 | 0.08 | 18.42 | - |
| 7/4/2022 4:18 | 1.28 | 0.77 | 19.21 | 0.07 | - | - |
| 7/4/2022 4:33 | 1.05 | 0.62 | 11.55 | 0.06 | - | - |
| 7/4/2022 4:48 | 1.36 | 0.7 | 19.13 | 0.08 | - | - |
| 7/4/2022 5:03 | 1.22 | 0.63 | 14.66 | 0.07 | 16.14 | - |
| 7/4/2022 5:18 | 1.18 | 0.61 | 13.49 | 0.07 | - | - |
| 7/4/2022 5:33 | 0.96 | 0.68 | 11.1 | 0.05 | - | - |
| 7/4/2022 5:48 | 1.16 | 0.75 | 16.2 | 0.06 | - | - |
| 7/4/2022 6:03 | 1.32 | 0.88 | 23.01 | 0.07 | 15.95 | - |
| 7/4/2022 6:18 | 1.01 | 0.7 | 12.31 | 0.06 | - | - |
| 7/4/2022 6:33 | 1.25 | 0.97 | 23.31 | 0.07 | - | - |
| 7/4/2022 6:48 | 1.14 | 1.01 | 21.37 | 0.06 | - | - |
| 7/4/2022 7:03 | 1 | 0.65 | 11.27 | 0.06 | 17.07 | - |
| 7/4/2022 7:18 | 1.06 | 0.57 | 10.8 | 0.06 | - | - |
| 7/4/2022 7:33 | 1.04 | 0.52 | 9.55 | 0.06 | - | - |
| 7/4/2022 7:48 | 1.07 | 0.53 | 10.16 | 0.06 | - | - |
| 7/4/2022 8:03 | 1.18 | 0.66 | 14.62 | 0.07 | 11.28 | - |
| 7/4/2022 8:18 | 1.34 | 0.69 | 18.44 | 0.07 | - | - |
| 7/4/2022 8:33 | 1.18 | 0.65 | 14.4 | 0.07 | - | - |
| 7/4/2022 8:48 | 1.18 | 0.66 | 14.62 | 0.07 | - | - |
| 7/4/2022 9:03 | 1.18 | 0.66 | 14.62 | 0.07 | 15.52 | - |
| 7/4/2022 9:18 | 1.15 | 0.65 | 13.86 | 0.06 | - | - |
| 7/4/2022 9:33 | 1.39 | 1.22 | 34.42 | 0.08 | - | - |
| 7/4/2022 9:48 | 1.19 | 0.86 | 19.29 | 0.07 | - | - |
| 7/4/2022 10:03 | 1.09 | 0.71 | 13.98 | 0.06 | 20.39 | - |
| 7/4/2022 10:18 | 1.16 | 0.81 | 17.49 | 0.06 | - | - |
| 7/4/2022 10:33 | 1.14 | 0.74 | 15.58 | 0.06 | - | - |
| 7/4/2022 10:48 | 1.36 | 0.93 | 25.41 | 0.08 | - | - |
| 7/4/2022 11:03 | 1.08 | 0.68 | 13.21 | 0.06 | 17.92 | - |
| 7/4/2022 11:18 | 1.21 | 0.74 | 17.01 | 0.07 | - | - |
| 7/4/2022 11:33 | 1.07 | 0.62 | 11.88 | 0.06 | - | - |
| 7/4/2022 11:48 | 1.11 | 0.6 | 12.14 | 0.06 | - | - |
| 7/4/2022 12:03 | 1.11 | 0.68 | 13.76 | 0.06 | 13.70 | - |
| 7/4/2022 12:18 | 1.23 | 0.85 | 20.02 | 0.07 | - | - |
| 7/4/2022 12:33 | 1.46 | 1.17 | 35.49 | 0.08 | - | - |
| 7/4/2022 12:48 | 1.2 | 1.13 | 25.66 | 0.07 | - | - |
| 7/4/2022 13:03 | 1.01 | 1.17 | 20.58 | 0.06 | 25.44 | - |
| 7/4/2022 13:18 | 0.86 | 1.2 | 16.63 | 0.05 | - | - |
| 7/4/2022 13:33 | 1.07 | 0.89 | 16.96 | 0.06 | - | - |
| 7/4/2022 13:48 | 1.26 | 0.66 | 16.11 | 0.07 | - | - |
| 7/4/2022 14:03 | 1.08 | 0.63 | 12.24 | 0.06 | 15.49 | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/4/2022 14:18 | 1.01 | 0.62 | 10.91 | 0.06 | - | - |
| 7/4/2022 14:33 | 1.25 | 0.89 | 21.59 | 0.07 | - | - |
| 7/4/2022 14:48 | 1.11 | 0.68 | 13.76 | 0.06 | - | - |
| 7/4/2022 15:03 | 1.22 | 1.05 | 24.43 | 0.07 | 17.67 | - |
| 7/4/2022 15:18 | 1.08 | 0.92 | 17.87 | 0.06 | - | - |
| 7/4/2022 15:33 | 1.21 | 0.84 | 19.31 | 0.07 | - | - |
| 7/4/2022 15:48 | 1.36 | 1.05 | 28.69 | 0.08 | - | - |
| 7/4/2022 16:03 | 1.35 | 1.04 | 28.01 | 0.08 | 23.47 | - |
| 7/4/2022 16:18 | 1.16 | 0.83 | 17.93 | 0.06 | - | - |
| 7/4/2022 16:33 | 1.17 | 0.89 | 19.44 | 0.07 | - | - |
| 7/4/2022 16:48 | 1.03 | 0.75 | 13.58 | 0.06 | - | - |
| 7/4/2022 17:03 | 1.28 | 0.89 | 22.23 | 0.07 | 18.30 | - |
| 7/4/2022 17:18 | 1.28 | 0.81 | 20.24 | 0.07 | - | - |
| 7/4/2022 17:33 | 1.32 | 0.79 | 20.65 | 0.07 | - | - |
| 7/4/2022 17:48 | 1.12 | 0.8 | 16.4 | 0.06 | - | - |
| 7/4/2022 18:03 | 1.47 | 1.08 | 33.09 | 0.08 | 22.60 | - |
| 7/4/2022 18:18 | 1.26 | 0.73 | 17.82 | 0.07 | - | - |
| 7/4/2022 18:33 | 1.28 | 0.87 | 21.83 | 0.07 | - | - |
| 7/4/2022 18:48 | 1.06 | 0.61 | 11.53 | 0.06 | - | - |
| 7/4/2022 19:03 | 0.84 | 0.93 | 12.45 | 0.05 | 15.91 | - |
| 7/4/2022 19:18 | 0.64 | 0.67 | 5.98 | 0.04 | - | - |
| 7/4/2022 19:33 | 1.08 | 0.93 | 18.17 | 0.06 | - | - |
| 7/4/2022 19:48 | 1.34 | 0.64 | 17.11 | 0.07 | - | - |
| 7/4/2022 20:03 | 1.34 | 0.65 | 17.37 | 0.07 | 14.66 | - |
| 7/4/2022 20:18 | 1.09 | 0.69 | 13.59 | 0.06 | - | - |
| 7/4/2022 20:33 | 1.18 | 0.58 | 12.85 | 0.07 | - | - |
| 7/4/2022 20:48 | 1.18 | 0.61 | 13.55 | 0.07 | - | - |
| 7/4/2022 21:03 | 1.19 | 0.81 | 18.17 | 0.07 | 14.54 | - |
| 7/4/2022 21:18 | 1.14 | 0.57 | 12.01 | 0.06 | - | - |
| 7/4/2022 21:33 | 1.15 | 0.57 | 12.17 | 0.06 | - | - |
| 7/4/2022 21:48 | 1.11 | 0.64 | 12.95 | 0.06 | - | - |
| 7/4/2022 22:03 | 1.15 | 0.68 | 14.5 | 0.06 | 12.91 | - |
| 7/4/2022 22:18 | 1.01 | 0.69 | 12.14 | 0.06 | - | - |
| 7/4/2022 22:33 | 1.12 | 0.73 | 14.97 | 0.06 | - | - |
| 7/4/2022 22:48 | 1.12 | 0.7 | 14.35 | 0.06 | - | - |
| 7/4/2022 23:03 | 1.21 | 0.58 | 13.33 | 0.07 | 13.70 | - |
| 7/4/2022 23:18 | 1.05 | 0.7 | 13.04 | 0.06 | - | - |
| 7/4/2022 23:33 | 1.09 | 0.63 | 12.41 | 0.06 | - | - |
| 7/4/2022 23:48 | 1.28 | 0.68 | 16.99 | 0.07 | - | - |
| 7/5/2022 0:03 | 1.09 | 0.67 | 13.2 | 0.06 | 13.91 | 16.69 |
| 7/5/2022 0:18 | 1.23 | 0.67 | 15.78 | 0.07 | - | - |
| 7/5/2022 0:33 | 1.48 | 0.69 | 21.36 | 0.08 | - | - |
| 7/5/2022 0:48 | 1.48 | 0.67 | 20.74 | 0.08 | - | - |
| 7/5/2022 1:03 | 1.15 | 0.67 | 14.29 | 0.06 | 18.04 | - |
| 7/5/2022 1:18 | 1.14 | 0.73 | 15.37 | 0.06 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/5/2022 1:33 | 1.28 | 0.86 | 21.48 | 0.07 | - | - |
| 7/5/2022 1:48 | 1.15 | 0.66 | 14.07 | 0.06 | - | - |
| 7/5/2022 2:03 | 1.21 | 0.7 | 16.09 | 0.07 | 16.75 | - |
| 7/5/2022 2:18 | 1.14 | 0.87 | 18.31 | 0.06 | - | - |
| 7/5/2022 2:33 | 1.46 | 0.92 | 27.91 | 0.08 | - | - |
| 7/5/2022 2:48 | 1.33 | 0.8 | 21.15 | 0.07 | - | - |
| 7/5/2022 3:03 | 1.19 | 0.62 | 13.91 | 0.07 | 20.32 | - |
| 7/5/2022 3:18 | 1.46 | 0.71 | 21.54 | 0.08 | - | - |
| 7/5/2022 3:33 | 1.23 | 0.82 | 19.31 | 0.07 | - | - |
| 7/5/2022 3:48 | 1.21 | 0.7 | 16.09 | 0.07 | - | - |
| 7/5/2022 4:03 | 1.16 | 0.62 | 13.39 | 0.06 | 17.58 | - |
| 7/5/2022 4:18 | 1.48 | 0.57 | 17.64 | 0.08 | - | - |
| 7/5/2022 4:33 | 1.23 | 0.69 | 16.25 | 0.07 | - | - |
| 7/5/2022 4:48 | 1.16 | 0.62 | 13.39 | 0.06 | - | - |
| 7/5/2022 5:03 | 1.34 | 0.62 | 16.57 | 0.07 | 15.96 | - |
| 7/5/2022 5:18 | 1.34 | 0.69 | 18.44 | 0.07 | - | - |
| 7/5/2022 5:33 | 1.41 | 0.73 | 21.04 | 0.08 | - | - |
| 7/5/2022 5:48 | 1.4 | 0.67 | 19.11 | 0.08 | - | - |
| 7/5/2022 6:03 | 0.96 | 0.61 | 9.95 | 0.05 | 17.14 | - |
| 7/5/2022 6:18 | 1.43 | 0.74 | 21.77 | 0.08 | - | - |
| 7/5/2022 6:33 | 1.59 | 0.87 | 29.93 | 0.09 | - | - |
| 7/5/2022 6:48 | 1.37 | 0.77 | 21.27 | 0.08 | - | - |
| 7/5/2022 7:03 | 1.8 | 0.89 | 36.74 | 0.10 | 27.43 | - |
| 7/5/2022 7:18 | 1.8 | 0.96 | 39.63 | 0.10 | - | - |
| 7/5/2022 7:33 | 1.8 | 0.58 | 23.94 | 0.10 | - | - |
| 7/5/2022 7:48 | 1.4 | 1.01 | 28.8 | 0.08 | - | - |
| 7/5/2022 8:03 | 1.23 | 1.01 | 23.79 | 0.07 | 29.04 | - |
| 7/5/2022 8:18 | 1.66 | 0.92 | 33.72 | 0.09 | - | - |
| 7/5/2022 8:33 | 1.59 | 0.76 | 26.14 | 0.09 | - | - |
| 7/5/2022 8:48 | 0.66 | 1.06 | 9.91 | 0.04 | - | - |
| 7/5/2022 9:03 | 1.34 | 0.93 | 24.86 | 0.07 | 23.66 | - |
| 7/5/2022 9:18 | 0.58 | 1.02 | 7.87 | 0.03 | - | - |
| 7/5/2022 9:33 | 1.48 | 1.02 | 31.57 | 0.08 | - | - |
| 7/5/2022 9:48 | 1.28 | 1.04 | 25.98 | 0.07 | - | - |
| 7/5/2022 10:03 | 1.72 | 1 | 38.61 | 0.10 | 26.01 | - |
| 7/5/2022 10:18 | 1.61 | 1.05 | 36.79 | 0.09 | - | - |
| 7/5/2022 10:33 | 1.53 | 1.11 | 36.08 | 0.09 | - | - |
| 7/5/2022 10:48 | 0.73 | 1.09 | 11.84 | 0.04 | - | - |
| 7/5/2022 11:03 | 1.54 | 1.13 | 37.08 | 0.09 | 30.45 | - |
| 7/5/2022 11:18 | 1.71 | 1.13 | 43.26 | 0.10 | - | - |
| 7/5/2022 11:33 | 1.54 | 1.13 | 37.08 | 0.09 | - | - |
| 7/5/2022 11:48 | 1.54 | 1.13 | 37.08 | 0.09 | - | - |
| 7/5/2022 12:03 | 1.47 | 1.13 | 34.63 | 0.08 | 38.01 | - |
| 7/5/2022 12:18 | 1.59 | 1.11 | 38.18 | 0.09 | - | - |
| 7/5/2022 12:33 | 1.55 | 0.78 | 25.84 | 0.09 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/5/2022 12:48 | 1.57 | 1.37 | 46.26 | 0.09 | - | - |
| 7/5/2022 13:03 | 1.5 | 1.15 | 36.3 | 0.08 | 36.65 | - |
| 7/5/2022 13:18 | 1.66 | 1.05 | 38.48 | 0.09 | - | - |
| 7/5/2022 13:33 | 1.4 | 1.01 | 28.8 | 0.08 | - | - |
| 7/5/2022 13:48 | 1.57 | 1.15 | 38.83 | 0.09 | - | - |
| 7/5/2022 14:03 | 1.57 | 1.05 | 35.45 | 0.09 | 35.39 | - |
| 7/5/2022 14:18 | 1.64 | 1.05 | 37.8 | 0.09 | - | - |
| 7/5/2022 14:33 | 1.57 | 1.01 | 34.1 | 0.09 | - | - |
| 7/5/2022 14:48 | 1.64 | 0.99 | 35.64 | 0.09 | - | - |
| 7/5/2022 15:03 | 1.51 | 1.01 | 32.2 | 0.08 | 34.94 | - |
| 7/5/2022 15:18 | 1.66 | 1.28 | 46.91 | 0.09 | - | - |
| 7/5/2022 15:33 | 1.89 | 1.01 | 44.78 | 0.11 | - | - |
| 7/5/2022 15:48 | 1.82 | 1.13 | 47.41 | 0.10 | - | - |
| 7/5/2022 16:03 | 1.83 | 1.1 | 46.52 | 0.10 | 46.41 | - |
| 7/5/2022 16:18 | 1.3 | 1.05 | 26.84 | 0.07 | - | - |
| 7/5/2022 16:33 | 1.54 | 1 | 32.82 | 0.09 | - | - |
| 7/5/2022 16:48 | 1.51 | 1.03 | 32.84 | 0.08 | - | - |
| 7/5/2022 17:03 | 1.39 | 0.93 | 26.24 | 0.08 | 29.69 | - |
| 7/5/2022 17:18 | 1.51 | 1 | 31.88 | 0.08 | - | - |
| 7/5/2022 17:33 | 1.51 | 0.93 | 29.65 | 0.08 | - | - |
| 7/5/2022 17:48 | 1.51 | 0.93 | 29.65 | 0.08 | - | - |
| 7/5/2022 18:03 | 1.47 | 0.89 | 27.27 | 0.08 | 29.61 | - |
| 7/5/2022 18:18 | 1.51 | 0.85 | 27.1 | 0.08 | - | - |
| 7/5/2022 18:33 | 1.47 | 0.84 | 25.74 | 0.08 | - | - |
| 7/5/2022 18:48 | 1.47 | 0.84 | 25.74 | 0.08 | - | - |
| 7/5/2022 19:03 | 1.53 | 0.84 | 27.3 | 0.09 | 26.47 | - |
| 7/5/2022 19:18 | 1.54 | 0.84 | 27.57 | 0.09 | - | - |
| 7/5/2022 19:33 | 1.53 | 0.84 | 27.3 | 0.09 | - | - |
| 7/5/2022 19:48 | 1.53 | 0.84 | 27.3 | 0.09 | - | - |
| 7/5/2022 20:03 | 1.54 | 0.89 | 29.21 | 0.09 | 27.85 | - |
| 7/5/2022 20:18 | 1.37 | 0.89 | 24.58 | 0.08 | - | - |
| 7/5/2022 20:33 | 1.37 | 0.81 | 22.37 | 0.08 | - | - |
| 7/5/2022 20:48 | 1.46 | 0.81 | 24.57 | 0.08 | - | - |
| 7/5/2022 21:03 | 1.46 | 0.75 | 22.75 | 0.08 | 23.57 | - |
| 7/5/2022 21:18 | 1.32 | 0.73 | 19.08 | 0.07 | - | - |
| 7/5/2022 21:33 | 1.82 | 0.61 | 25.59 | 0.10 | - | - |
| 7/5/2022 21:48 | 1.64 | 0.81 | 29.16 | 0.09 | - | - |
| 7/5/2022 22:03 | 1.75 | 1.13 | 44.75 | 0.10 | 29.65 | - |
| 7/5/2022 22:18 | 1.46 | 0.9 | 27.3 | 0.08 | - | - |
| 7/5/2022 22:33 | 1.75 | 0.7 | 27.72 | 0.10 | - | - |
| 7/5/2022 22:48 | 1.64 | 0.9 | 32.4 | 0.09 | - | - |
| 7/5/2022 23:03 | 1.5 | 0.94 | 29.67 | 0.08 | 29.27 | - |
| 7/5/2022 23:18 | 1.5 | 0.9 | 28.41 | 0.08 | - | - |
| 7/5/2022 23:33 | 1.51 | 0.81 | 25.82 | 0.08 | - | - |
| 7/5/2022 23:48 | 1.59 | 0.53 | 18.23 | 0.09 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/6/2022 0:03 | 1.32 | 0.95 | 24.84 | 0.07 | 24.33 | 27.11 |
| 7/6/2022 0:18 | 1.71 | 0.85 | 32.54 | 0.10 | - | - |
| 7/6/2022 0:33 | 1.55 | 0.8 | 26.51 | 0.09 | - | - |
| 7/6/2022 0:48 | 1.75 | 0.85 | 33.66 | 0.10 | - | - |
| 7/6/2022 1:03 | 1.71 | 0.85 | 32.54 | 0.10 | 31.31 | - |
| 7/6/2022 1:18 | 1.73 | 0.85 | 33.1 | 0.10 | - | - |
| 7/6/2022 1:33 | 1.73 | 0.85 | 33.1 | 0.10 | - | - |
| 7/6/2022 1:48 | 1.73 | 0.85 | 33.1 | 0.10 | - | - |
| 7/6/2022 2:03 | 1.62 | 0.86 | 30.41 | 0.09 | 32.43 | - |
| 7/6/2022 2:18 | 1.39 | 0.83 | 23.42 | 0.08 | - | - |
| 7/6/2022 2:33 | 1.37 | 0.83 | 22.92 | 0.08 | - | - |
| 7/6/2022 2:48 | 1.22 | 0.76 | 17.69 | 0.07 | - | - |
| 7/6/2022 3:03 | 1.22 | 0.76 | 17.69 | 0.07 | 20.43 | - |
| 7/6/2022 3:18 | 1.15 | 0.76 | 16.2 | 0.06 | - | - |
| 7/6/2022 3:33 | 1.15 | 0.76 | 16.2 | 0.06 | - | - |
| 7/6/2022 3:48 | 1.12 | 0.76 | 15.58 | 0.06 | - | - |
| 7/6/2022 4:03 | 1.12 | 0.76 | 15.58 | 0.06 | 15.89 | - |
| 7/6/2022 4:18 | 1.12 | 0.76 | 15.58 | 0.06 | - | - |
| 7/6/2022 4:33 | 1.62 | 0.71 | 25.1 | 0.09 | - | - |
| 7/6/2022 4:48 | 1.54 | 0.98 | 32.16 | 0.09 | - | - |
| 7/6/2022 5:03 | 1.71 | 0.81 | 31.01 | 0.10 | 25.96 | - |
| 7/6/2022 5:18 | 1.4 | 0.79 | 22.53 | 0.08 | - | - |
| 7/6/2022 5:33 | 1.62 | 0.83 | 29.35 | 0.09 | - | - |
| 7/6/2022 5:48 | 1.54 | 0.83 | 27.24 | 0.09 | - | - |
| 7/6/2022 6:03 | 1.37 | 0.59 | 16.29 | 0.08 | 23.85 | - |
| 7/6/2022 6:18 | 1.69 | 0.94 | 35.37 | 0.09 | - | - |
| 7/6/2022 6:33 | 1.26 | 0.87 | 21.23 | 0.07 | - | - |
| 7/6/2022 6:48 | 1.37 | 0.61 | 16.85 | 0.08 | - | - |
| 7/6/2022 7:03 | 1.32 | 0.96 | 25.1 | 0.07 | 24.64 | - |
| 7/6/2022 7:18 | 1.8 | 0.91 | 37.56 | 0.10 | - | - |
| 7/6/2022 7:33 | 1.54 | 1.02 | 33.47 | 0.09 | - | - |
| 7/6/2022 7:48 | 0.47 | 1.05 | 5.92 | 0.03 | - | - |
| 7/6/2022 8:03 | 1.5 | 1.02 | 32.2 | 0.08 | 27.29 | - |
| 7/6/2022 8:18 | 1.8 | 0.99 | 40.87 | 0.10 | - | - |
| 7/6/2022 8:33 | 1.72 | 1.29 | 49.81 | 0.10 | - | - |
| 7/6/2022 8:48 | 1.79 | 1.23 | 50.36 | 0.10 | - | - |
| 7/6/2022 9:03 | 1.69 | 1.23 | 46.28 | 0.09 | 46.83 | - |
| 7/6/2022 9:18 | 1.79 | 1.3 | 53.22 | 0.10 | - | - |
| 7/6/2022 9:33 | 1.79 | 1.23 | 50.36 | 0.10 | - | - |
| 7/6/2022 9:48 | 1.58 | 1.19 | 40.56 | 0.09 | - | - |
| 7/6/2022 10:03 | 1.4 | 1.15 | 32.79 | 0.08 | 44.23 | - |
| 7/6/2022 10:18 | 1.57 | 1.2 | 40.52 | 0.09 | - | - |
| 7/6/2022 10:33 | 1.66 | 1.14 | 41.78 | 0.09 | - | - |
| 7/6/2022 10:48 | 1.8 | 1.08 | 44.58 | 0.10 | - | - |
| 7/6/2022 11:03 | 1.65 | 1.29 | 46.86 | 0.09 | 43.44 | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/6/2022 11:18 | 1.5 | 1.06 | 33.46 | 0.08 | - | - |
| 7/6/2022 11:33 | 1.48 | 1.03 | 31.88 | 0.08 | - | - |
| 7/6/2022 11:48 | 1.65 | 1.08 | 39.23 | 0.09 | - | - |
| 7/6/2022 12:03 | 1.65 | 1.16 | 42.14 | 0.09 | 36.68 | - |
| 7/6/2022 12:18 | 1.6 | 1.09 | 37.84 | 0.09 | - | - |
| 7/6/2022 12:33 | 1.58 | 1.16 | 39.53 | 0.09 | - | - |
| 7/6/2022 12:48 | 1.64 | 1.1 | 39.6 | 0.09 | - | - |
| 7/6/2022 13:03 | 1.76 | 1.06 | 42.33 | 0.10 | 39.83 | - |
| 7/6/2022 13:18 | 1.78 | 1.25 | 50.76 | 0.10 | - | - |
| 7/6/2022 13:33 | 1.64 | 1.16 | 41.76 | 0.09 | - | - |
| 7/6/2022 13:48 | 1.64 | 1.1 | 39.6 | 0.09 | - | - |
| 7/6/2022 14:03 | 1.57 | 1.07 | 36.13 | 0.09 | 42.06 | - |
| 7/6/2022 14:18 | 1.36 | 1.07 | 29.23 | 0.08 | - | - |
| 7/6/2022 14:33 | 1.33 | 1.04 | 27.49 | 0.07 | - | - |
| 7/6/2022 14:48 | 1.02 | 1.1 | 19.64 | 0.06 | - | - |
| 7/6/2022 15:03 | 0.87 | 1.19 | 16.78 | 0.05 | 23.29 | - |
| 7/6/2022 15:18 | 1.76 | 1.18 | 47.13 | 0.10 | - | - |
| 7/6/2022 15:33 | 1.7 | 1.14 | 43.27 | 0.09 | - | - |
| 7/6/2022 15:48 | 1.68 | 1.12 | 41.78 | 0.09 | - | - |
| 7/6/2022 16:03 | 1.36 | 1.28 | 34.97 | 0.08 | 41.79 | - |
| 7/6/2022 16:18 | 1.43 | 1.1 | 32.36 | 0.08 | - | - |
| 7/6/2022 16:33 | 1.39 | 0.95 | 26.8 | 0.08 | - | - |
| 7/6/2022 16:48 | 1.39 | 1.1 | 31.04 | 0.08 | - | - |
| 7/6/2022 17:03 | 1.39 | 1.09 | 30.75 | 0.08 | 30.24 | - |
| 7/6/2022 17:18 | 1.39 | 1 | 28.22 | 0.08 | - | - |
| 7/6/2022 17:33 | 1.39 | 0.95 | 26.8 | 0.08 | - | - |
| 7/6/2022 17:48 | 1.55 | 0.79 | 26.17 | 0.09 | - | - |
| 7/6/2022 18:03 | 0.71 | 0.96 | 10.01 | 0.04 | 22.80 | - |
| 7/6/2022 18:18 | 1.53 | 0.87 | 28.28 | 0.09 | - | - |
| 7/6/2022 18:33 | 1.15 | 0.85 | 18.12 | 0.06 | - | - |
| 7/6/2022 18:48 | 1.39 | 0.83 | 23.42 | 0.08 | - | - |
| 7/6/2022 19:03 | 1.21 | 0.85 | 19.54 | 0.07 | 22.34 | - |
| 7/6/2022 19:18 | 1.21 | 0.83 | 19.08 | 0.07 | - | - |
| 7/6/2022 19:33 | 1.21 | 0.83 | 19.08 | 0.07 | - | - |
| 7/6/2022 19:48 | 1.21 | 0.83 | 19.08 | 0.07 | - | - |
| 7/6/2022 20:03 | 1.19 | 0.84 | 18.84 | 0.07 | 19.02 | - |
| 7/6/2022 20:18 | 1.19 | 0.87 | 19.51 | 0.07 | - | - |
| 7/6/2022 20:33 | 1.19 | 0.87 | 19.51 | 0.07 | - | - |
| 7/6/2022 20:48 | 1.19 | 0.84 | 18.84 | 0.07 | - | - |
| 7/6/2022 21:03 | 1.19 | 0.82 | 18.39 | 0.07 | 19.06 | - |
| 7/6/2022 21:18 | 1.28 | 0.82 | 20.48 | 0.07 | - | - |
| 7/6/2022 21:33 | 1.3 | 0.82 | 20.96 | 0.07 | - | - |
| 7/6/2022 21:48 | 1.34 | 0.86 | 22.99 | 0.07 | - | - |
| 7/6/2022 22:03 | 1.34 | 0.89 | 23.79 | 0.07 | 22.06 | - |
| 7/6/2022 22:18 | 1.34 | 0.89 | 23.79 | 0.07 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/6/2022 22:33 | 1.34 | 0.89 | 23.79 | 0.07 | - | - |
| 7/6/2022 22:48 | 1.3 | 0.89 | 22.75 | 0.07 | - | - |
| 7/6/2022 23:03 | 1.3 | 0.77 | 19.68 | 0.07 | 22.50 | - |
| 7/6/2022 23:18 | 1.59 | 0.79 | 27.17 | 0.09 | - | - |
| 7/6/2022 23:33 | 1.64 | 0.8 | 28.8 | 0.09 | - | - |
| 7/6/2022 23:48 | 1.47 | 0.87 | 26.66 | 0.08 | - | - |
| 7/7/2022 0:03 | 1.51 | 0.84 | 26.78 | 0.08 | 27.35 | 29.34 |
| 7/7/2022 0:18 | 1.47 | 0.82 | 25.13 | 0.08 | - | - |
| 7/7/2022 0:33 | 1.16 | 0.83 | 17.93 | 0.06 | - | - |
| 7/7/2022 0:48 | 1.47 | 0.83 | 25.43 | 0.08 | - | - |
| 7/7/2022 1:03 | 1.34 | 0.82 | 21.92 | 0.07 | 22.60 | - |
| 7/7/2022 1:18 | 1.43 | 0.78 | 22.95 | 0.08 | - | - |
| 7/7/2022 1:33 | 1.34 | 0.97 | 25.93 | 0.07 | - | - |
| 7/7/2022 1:48 | 1.19 | 0.76 | 17.05 | 0.07 | - | - |
| 7/7/2022 2:03 | 1.18 | 0.75 | 16.61 | 0.07 | 20.64 | - |
| 7/7/2022 2:18 | 1.39 | 0.88 | 24.83 | 0.08 | - | - |
| 7/7/2022 2:33 | 1.19 | 0.78 | 17.49 | 0.07 | - | - |
| 7/7/2022 2:48 | 1.4 | 0.66 | 18.82 | 0.08 | - | - |
| 7/7/2022 3:03 | 1.09 | 0.71 | 13.98 | 0.06 | 18.78 | - |
| 7/7/2022 3:18 | 1.43 | 0.72 | 21.18 | 0.08 | - | - |
| 7/7/2022 3:33 | 1.54 | 0.57 | 18.71 | 0.09 | - | - |
| 7/7/2022 3:48 | 1.66 | 1.14 | 41.78 | 0.09 | - | - |
| 7/7/2022 4:03 | 1.5 | 0.92 | 29.04 | 0.08 | 27.68 | - |
| 7/7/2022 4:18 | 1.14 | 0.55 | 11.58 | 0.06 | - | - |
| 7/7/2022 4:33 | 1.5 | 0.57 | 17.99 | 0.08 | - | - |
| 7/7/2022 4:48 | 1.14 | 0.55 | 11.58 | 0.06 | - | - |
| 7/7/2022 5:03 | 1.14 | 0.54 | 11.37 | 0.06 | 13.13 | - |
| 7/7/2022 5:18 | 1.14 | 0.54 | 11.37 | 0.06 | - | - |
| 7/7/2022 5:33 | 1.14 | 0.54 | 11.37 | 0.06 | - | - |
| 7/7/2022 5:48 | 1.14 | 0.73 | 15.37 | 0.06 | - | - |
| 7/7/2022 6:03 | 1.36 | 0.75 | 20.49 | 0.08 | 14.65 | - |
| 7/7/2022 6:18 | 1.47 | 0.8 | 24.51 | 0.08 | - | - |
| 7/7/2022 6:33 | 1.47 | 0.88 | 26.97 | 0.08 | - | - |
| 7/7/2022 6:48 | 1.47 | 0.96 | 29.42 | 0.08 | - | - |
| 7/7/2022 7:03 | 1.47 | 1.03 | 31.56 | 0.08 | 28.12 | - |
| 7/7/2022 7:18 | 1.5 | 1.1 | 34.73 | 0.08 | - | - |
| 7/7/2022 7:33 | 1.55 | 0.97 | 32.14 | 0.09 | - | - |
| 7/7/2022 7:48 | 1.62 | 1.04 | 36.77 | 0.09 | - | - |
| 7/7/2022 8:03 | 1.71 | 1.13 | 43.26 | 0.10 | 36.73 | - |
| 7/7/2022 8:18 | 1.49 | 1.18 | 36.89 | 0.08 | - | - |
| 7/7/2022 8:33 | 1.33 | 1.23 | 32.52 | 0.07 | - | - |
| 7/7/2022 8:48 | 1.07 | 1.21 | 23.19 | 0.06 | - | - |
| 7/7/2022 9:03 | 1.61 | 0.83 | 29.08 | 0.09 | 30.42 | - |
| 7/7/2022 9:18 | 1.64 | 1.12 | 40.32 | 0.09 | - | - |
| 7/7/2022 9:33 | 1.57 | 1.27 | 42.88 | 0.09 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/7/2022 9:48 | 0.53 | 1.12 | 7.55 | 0.03 | - | - |
| 7/7/2022 10:03 | 0.59 | 1.3 | 10.28 | 0.03 | 25.26 | - |
| 7/7/2022 10:18 | 1.32 | 1.32 | 34.51 | 0.07 | - | - |
| 7/7/2022 10:33 | 1.29 | 1.03 | 26.03 | 0.07 | - | - |
| 7/7/2022 10:48 | 1.39 | 1.3 | 36.68 | 0.08 | - | - |
| 7/7/2022 11:03 | 1.75 | 1.1 | 43.57 | 0.10 | 35.20 | - |
| 7/7/2022 11:18 | 1.64 | 1.17 | 42.12 | 0.09 | - | - |
| 7/7/2022 11:33 | 1.51 | 1.27 | 40.49 | 0.08 | - | - |
| 7/7/2022 11:48 | 1.16 | 1.28 | 27.64 | 0.06 | - | - |
| 7/7/2022 12:03 | 1.29 | 1.32 | 33.36 | 0.07 | 35.90 | - |
| 7/7/2022 12:18 | 1.07 | 1.45 | 27.79 | 0.06 | - | - |
| 7/7/2022 12:33 | 1.29 | 1.22 | 30.83 | 0.07 | - | - |
| 7/7/2022 12:48 | 1.53 | 1.15 | 37.38 | 0.09 | - | - |
| 7/7/2022 13:03 | 1.8 | 1.08 | 44.58 | 0.10 | 35.15 | - |
| 7/7/2022 13:18 | 1.79 | 1.06 | 43.4 | 0.10 | - | - |
| 7/7/2022 13:33 | 1.79 | 1.05 | 42.99 | 0.10 | - | - |
| 7/7/2022 13:48 | 1.8 | 1.14 | 47.06 | 0.10 | - | - |
| 7/7/2022 14:03 | 1.61 | 1.39 | 48.7 | 0.09 | 45.54 | - |
| 7/7/2022 14:18 | 1.61 | 1.43 | 50.1 | 0.09 | - | - |
| 7/7/2022 14:33 | 1.61 | 1.43 | 50.1 | 0.09 | - | - |
| 7/7/2022 14:48 | 1.59 | 1.35 | 46.44 | 0.09 | - | - |
| 7/7/2022 15:03 | 1.57 | 1.36 | 45.92 | 0.09 | 48.14 | - |
| 7/7/2022 15:18 | 1.45 | 1.25 | 37.54 | 0.08 | - | - |
| 7/7/2022 15:33 | 1.36 | 1.17 | 31.97 | 0.08 | - | - |
| 7/7/2022 15:48 | 1.72 | 1.1 | 42.47 | 0.10 | - | - |
| 7/7/2022 16:03 | 1.76 | 1.25 | 49.92 | 0.10 | 40.48 | - |
| 7/7/2022 16:18 | 1.77 | 1.2 | 48.33 | 0.10 | - | - |
| 7/7/2022 16:33 | 1.79 | 1.14 | 46.67 | 0.10 | - | - |
| 7/7/2022 16:48 | 1.3 | 0.92 | 23.52 | 0.07 | - | - |
| 7/7/2022 17:03 | 0.81 | 0.7 | 8.88 | 0.05 | 31.85 | - |
| 7/7/2022 17:18 | 1.32 | 0.88 | 23.01 | 0.07 | - | - |
| 7/7/2022 17:33 | 1.65 | 1.29 | 46.86 | 0.09 | - | - |
| 7/7/2022 17:48 | 1.73 | 0.82 | 31.93 | 0.10 | - | - |
| 7/7/2022 18:03 | 1.78 | 1.15 | 46.7 | 0.10 | 37.13 | - |
| 7/7/2022 18:18 | 1.75 | 0.86 | 34.06 | 0.10 | - | - |
| 7/7/2022 18:33 | 1.76 | 0.92 | 36.74 | 0.10 | - | - |
| 7/7/2022 18:48 | 1.55 | 1.2 | 39.76 | 0.09 | - | - |
| 7/7/2022 19:03 | 1.55 | 1.2 | 39.76 | 0.09 | 37.58 | - |
| 7/7/2022 19:18 | 1.51 | 1.16 | 36.98 | 0.08 | - | - |
| 7/7/2022 19:33 | 1.61 | 1.27 | 44.5 | 0.09 | - | - |
| 7/7/2022 19:48 | 1.71 | 1.38 | 52.83 | 0.10 | - | - |
| 7/7/2022 20:03 | 1.54 | 1.23 | 40.37 | 0.09 | 43.67 | - |
| 7/7/2022 20:18 | 1.46 | 1.18 | 35.8 | 0.08 | - | - |
| 7/7/2022 20:33 | 1.73 | 1.29 | 50.24 | 0.10 | - | - |
| 7/7/2022 20:48 | 1.52 | 1.14 | 36.7 | 0.08 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/7/2022 21:03 | 1.41 | 1.05 | 30.26 | 0.08 | 38.25 | - |
| 7/7/2022 21:18 | 1.25 | 0.99 | 23.88 | 0.07 | - | - |
| 7/7/2022 21:33 | 0.81 | 1.13 | 14.33 | 0.05 | - | - |
| 7/7/2022 21:48 | 1.08 | 1.04 | 20.21 | 0.06 | - | - |
| 7/7/2022 22:03 | 0.85 | 0.98 | 13.35 | 0.05 | 17.94 | - |
| 7/7/2022 22:18 | 0.61 | 1.16 | 9.64 | 0.03 | - | - |
| 7/7/2022 22:33 | 1.25 | 0.84 | 20.26 | 0.07 | - | - |
| 7/7/2022 22:48 | 1.4 | 0.65 | 18.54 | 0.08 | - | - |
| 7/7/2022 23:03 | 1.65 | 0.86 | 31.24 | 0.09 | 19.92 | - |
| 7/7/2022 23:18 | 1.28 | 1.17 | 29.23 | 0.07 | - | - |
| 7/7/2022 23:33 | 1.53 | 1.2 | 39 | 0.09 | - | - |
| 7/7/2022 23:48 | 1.29 | 1.38 | 34.8731 | 0.07 | - | - |
| 7/8/2022 0:03 | 1.53 | 1.21 | 39.33 | 0.09 | 35.61 | 30.81 |
| 7/8/2022 0:18 | 1.4 | 1.2 | 34.22 | 0.08 | - | - |
| 7/8/2022 0:33 | 1.4 | 1.2 | 34.22 | 0.08 | - | - |
| 7/8/2022 0:48 | 1.3 | 1.12 | 28.63 | 0.07 | - | - |
| 7/8/2022 1:03 | 1.4 | 1.22 | 34.789 | 0.08 | 32.96 | - |
| 7/8/2022 1:18 | 1.36 | 1.11 | 30.33 | 0.08 | - | - |
| 7/8/2022 1:33 | 1.36 | 1.09 | 29.78 | 0.08 | - | - |
| 7/8/2022 1:48 | 1.43 | 1.18 | 34.7174 | 0.08 | - | - |
| 7/8/2022 2:03 | 1.55 | 1.23 | 40.7516 | 0.09 | 33.89 | - |
| 7/8/2022 2:18 | 1.59 | 1.28 | 44.0292 | 0.09 | - | - |
| 7/8/2022 2:33 | 1.59 | 1.28 | 44.0292 | 0.09 | - | - |
| 7/8/2022 2:48 | 1.55 | 1.21 | 40.089 | 0.09 | - | - |
| 7/8/2022 3:03 | 1.53 | 1.21 | 39.3295 | 0.09 | 41.87 | - |
| 7/8/2022 3:18 | 1.5 | 1.16 | 36.6202 | 0.08 | - | - |
| 7/8/2022 3:33 | 1.39 | 1.05 | 29.63 | 0.08 | - | - |
| 7/8/2022 3:48 | 1.5 | 1.05 | 33.15 | 0.08 | - | - |
| 7/8/2022 4:03 | 1.5 | 1.05 | 33.15 | 0.08 | 33.14 | - |
| 7/8/2022 4:18 | 1.53 | 1.06 | 34.45 | 0.09 | - | - |
| 7/8/2022 4:33 | 1.69 | 1.06 | 39.88 | 0.09 | - | - |
| 7/8/2022 4:48 | 1.69 | 1.06 | 39.88 | 0.09 | - | - |
| 7/8/2022 5:03 | 1.54 | 1.08 | 35.44 | 0.09 | 37.41 | - |
| 7/8/2022 5:18 | 1.54 | 1.07 | 35.11 | 0.09 | - | - |
| 7/8/2022 5:33 | 1.54 | 1.11 | 36.43 | 0.09 | - | - |
| 7/8/2022 5:48 | 1.27 | 1.03 | 25.43 | 0.07 | - | - |
| 7/8/2022 6:03 | 1.35 | 1.07 | 28.92 | 0.08 | 31.47 | - |
| 7/8/2022 6:18 | 1.66 | 1.13 | 41.41 | 0.09 | - | - |
| 7/8/2022 6:33 | 1.33 | 0.81 | 21.41 | 0.07 | - | - |
| 7/8/2022 6:48 | 1.11 | 0.6 | 12.14 | 0.06 | - | - |
| 7/8/2022 7:03 | 1.29 | 1.07 | 27.04 | 0.07 | 25.50 | - |
| 7/8/2022 7:18 | 1.39 | 1.01 | 28.5 | 0.08 | - | - |
| 7/8/2022 7:33 | 1.69 | 1.14 | 42.89 | 0.09 | - | - |
| 7/8/2022 7:48 | 1.39 | 1.05 | 29.63 | 0.08 | - | - |
| 7/8/2022 8:03 | 0.86 | 1.26 | 17.46 | 0.05 | 29.62 | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/8/2022 8:18 | 1.46 | 1.2 | 36.4 | 0.08 | - | - |
| 7/8/2022 8:33 | 1.05 | 1.2 | 22.36 | 0.06 | - | - |
| 7/8/2022 8:48 | 0.64 | 1.25 | 11.16 | 0.04 | - | - |
| 7/8/2022 9:03 | 0.53 | 1.3 | 8.7655 | 0.03 | 19.67 | - |
| 7/8/2022 9:18 | 0.38 | 1.32 | 5.4172 | 0.02 | - | - |
| 7/8/2022 9:33 | 0.59 | 1.34 | 10.6013 | 0.03 | - | - |
| 7/8/2022 9:48 | 0.44 | 1.31 | 6.6916 | 0.02 | - | - |
| 7/8/2022 10:03 | 0.41 | 1.26 | 5.7923 | 0.02 | 7.13 | - |
| 7/8/2022 10:18 | 0.32 | 0.93 | 2.9524 | 0.02 | - | - |
| 7/8/2022 10:33 | 0.23 | 0.58 | 1.12 | 0.01 | - | - |
| 7/8/2022 10:48 | 0.64 | 1.06 | 9.47 | 0.04 | - | - |
| 7/8/2022 11:03 | 0.9 | 1.39 | 20.61 | 0.05 | 8.54 | - |
| 7/8/2022 11:18 | 0.78 | 1.14 | 13.67 | 0.04 | - | - |
| 7/8/2022 11:33 | 0.91 | 1.07 | 16.13 | 0.05 | - | - |
| 7/8/2022 11:48 | 1.02 | 1.1 | 19.64 | 0.06 | - | - |
| 7/8/2022 12:03 | 1.21 | 1.13 | 25.98 | 0.07 | 18.86 | - |
| 7/8/2022 12:18 | 1.59 | 1.22 | 41.97 | 0.09 | - | - |
| 7/8/2022 12:33 | 1.23 | 1.12 | 26.38 | 0.07 | - | - |
| 7/8/2022 12:48 | 1.43 | 1.15 | 33.83 | 0.08 | - | - |
| 7/8/2022 13:03 | 1.27 | 1.24 | 30.62 | 0.07 | 33.20 | - |
| 7/8/2022 13:18 | 1.14 | 1.33 | 27.99 | 0.06 | - | - |
| 7/8/2022 13:33 | 1.48 | 1.04 | 32.19 | 0.08 | - | - |
| 7/8/2022 13:48 | 1.52 | 0.91 | 29.29 | 0.08 | - | - |
| 7/8/2022 14:03 | 1.57 | 0.7 | 23.63 | 0.09 | 28.28 | - |
| 7/8/2022 14:18 | 1.48 | 0.97 | 30.02 | 0.08 | - | - |
| 7/8/2022 14:33 | 1.37 | 0.68 | 18.78 | 0.08 | - | - |
| 7/8/2022 14:48 | 1.58 | 1 | 34.08 | 0.09 | - | - |
| 7/8/2022 15:03 | 1.57 | 0.97 | 32.75 | 0.09 | 28.91 | - |
| 7/8/2022 15:18 | 1.58 | 1 | 34.08 | 0.09 | - | - |
| 7/8/2022 15:33 | 1.69 | 1 | 37.63 | 0.09 | - | - |
| 7/8/2022 15:48 | 1.69 | 1 | 37.63 | 0.09 | - | - |
| 7/8/2022 16:03 | 1.78 | 0.98 | 39.79 | 0.10 | 37.28 | - |
| 7/8/2022 16:18 | 1.71 | 0.89 | 34.07 | 0.10 | - | - |
| 7/8/2022 16:33 | 1.65 | 0.8 | 29.06 | 0.09 | - | - |
| 7/8/2022 16:48 | 1.3 | 0.8 | 20.45 | 0.07 | - | - |
| 7/8/2022 17:03 | 1.33 | 0.92 | 24.32 | 0.07 | 26.98 | - |
| 7/8/2022 17:18 | 1.36 | 1.11 | 30.33 | 0.08 | - | - |
| 7/8/2022 17:33 | 1.68 | 0.86 | 32.08 | 0.09 | - | - |
| 7/8/2022 17:48 | 1.71 | 0.72 | 27.56 | 0.10 | - | - |
| 7/8/2022 18:03 | 1.65 | 0.65 | 23.61 | 0.09 | 28.40 | - |
| 7/8/2022 18:18 | 1.68 | 0.82 | 30.59 | 0.09 | - | - |
| 7/8/2022 18:33 | 1.68 | 0.82 | 30.59 | 0.09 | - | - |
| 7/8/2022 18:48 | 1.65 | 0.82 | 29.79 | 0.09 | - | - |
| 7/8/2022 19:03 | 1.65 | 1.03 | 37.41 | 0.09 | 32.10 | - |
| 7/8/2022 19:18 | 1.47 | 0.88 | 26.97 | 0.08 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/8/2022 19:33 | 1.25 | 0.75 | 18.09 | 0.07 | - | - |
| 7/8/2022 19:48 | 0.65 | 1.15 | 10.51 | 0.04 | - | - |
| 7/8/2022 20:03 | 1.79 | 0.99 | 40.53 | 0.10 | 24.03 | - |
| 7/8/2022 20:18 | 1.51 | 0.81 | 25.82 | 0.08 | - | - |
| 7/8/2022 20:33 | 1.48 | 0.81 | 25.07 | 0.08 | - | - |
| 7/8/2022 20:48 | 1.48 | 0.92 | 28.47 | 0.08 | - | - |
| 7/8/2022 21:03 | 1.5 | 0.81 | 25.57 | 0.08 | 26.23 | - |
| 7/8/2022 21:18 | 1.48 | 0.8 | 24.76 | 0.08 | - | - |
| 7/8/2022 21:33 | 1.48 | 0.8 | 24.76 | 0.08 | - | - |
| 7/8/2022 21:48 | 1.5 | 0.85 | 26.83 | 0.08 | - | - |
| 7/8/2022 22:03 | 1.5 | 0.8 | 25.26 | 0.08 | 25.40 | - |
| 7/8/2022 22:18 | 1.36 | 0.77 | 21.04 | 0.08 | - | - |
| 7/8/2022 22:33 | 1.5 | 0.77 | 24.31 | 0.08 | - | - |
| 7/8/2022 22:48 | 1.75 | 0.74 | 29.31 | 0.10 | - | - |
| 7/8/2022 23:03 | 1.71 | 0.61 | 23.35 | 0.10 | 24.50 | - |
| 7/8/2022 23:18 | 1.71 | 0.61 | 23.35 | 0.10 | - | - |
| 7/8/2022 23:33 | 1.75 | 0.61 | 24.16 | 0.10 | - | - |
| 7/8/2022 23:48 | 1.71 | 0.61 | 23.35 | 0.10 | - | - |
| 7/9/2022 0:03 | 1.71 | 0.89 | 34.07 | 0.10 | 26.23 | 27.69 |
| 7/9/2022 0:18 | 1.54 | 0.89 | 29.21 | 0.09 | - | - |
| 7/9/2022 0:33 | 1.54 | 0.89 | 29.21 | 0.09 | - | - |
| 7/9/2022 0:48 | 1.54 | 0.94 | 30.85 | 0.09 | - | - |
| 7/9/2022 1:03 | 1.47 | 0.94 | 28.8 | 0.08 | 29.52 | - |
| 7/9/2022 1:18 | 1.47 | 0.94 | 28.8 | 0.08 | - | - |
| 7/9/2022 1:33 | 1.5 | 0.95 | 29.99 | 0.08 | - | - |
| 7/9/2022 1:48 | 1.58 | 0.95 | 32.38 | 0.09 | - | - |
| 7/9/2022 2:03 | 1.5 | 1.01 | 31.88 | 0.08 | 30.76 | - |
| 7/9/2022 2:18 | 1.58 | 1.01 | 34.42 | 0.09 | - | - |
| 7/9/2022 2:33 | 1.58 | 0.95 | 32.38 | 0.09 | - | - |
| 7/9/2022 2:48 | 1.58 | 0.89 | 30.33 | 0.09 | - | - |
| 7/9/2022 3:03 | 1.53 | 0.89 | 28.93 | 0.09 | 31.52 | - |
| 7/9/2022 3:18 | 1.53 | 0.77 | 25.03 | 0.09 | - | - |
| 7/9/2022 3:33 | 1.46 | 0.54 | 16.38 | 0.08 | - | - |
| 7/9/2022 3:48 | 1.46 | 0.54 | 16.38 | 0.08 | - | - |
| 7/9/2022 4:03 | 1.26 | 0.47 | 11.47 | 0.07 | 17.32 | - |
| 7/9/2022 4:18 | 1.26 | 0.47 | 11.47 | 0.07 | - | - |
| 7/9/2022 4:33 | 1.29 | 0.64 | 16.17 | 0.07 | - | - |
| 7/9/2022 4:48 | 1.36 | 0.98 | 26.77 | 0.08 | - | - |
| 7/9/2022 5:03 | 1.36 | 0.6 | 16.39 | 0.08 | 17.70 | - |
| 7/9/2022 5:18 | 1.54 | 0.53 | 17.39 | 0.09 | - | - |
| 7/9/2022 5:33 | 1.54 | 0.44 | 14.44 | 0.09 | - | - |
| 7/9/2022 5:48 | 1.54 | 0.6 | 19.69 | 0.09 | - | - |
| 7/9/2022 6:03 | 1.54 | 0.54 | 17.72 | 0.09 | 17.31 | - |
| 7/9/2022 6:18 | 1.29 | 0.54 | 13.65 | 0.07 | - | - |
| 7/9/2022 6:33 | 1.29 | 0.79 | 19.96 | 0.07 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/9/2022 6:48 | 1.32 | 0.87 | 22.74 | 0.07 | - | - |
| 7/9/2022 7:03 | 1.32 | 0.87 | 22.74 | 0.07 | 19.77 | - |
| 7/9/2022 7:18 | 1.32 | 0.88 | 23.01 | 0.07 | - | - |
| 7/9/2022 7:33 | 1.54 | 0.9 | 29.54 | 0.09 | - | - |
| 7/9/2022 7:48 | 1.54 | 0.87 | 28.55 | 0.09 | - | - |
| 7/9/2022 8:03 | 1.54 | 0.85 | 27.89 | 0.09 | 27.25 | - |
| 7/9/2022 8:18 | 1.61 | 0.7 | 24.53 | 0.09 | - | - |
| 7/9/2022 8:33 | 1.61 | 0.7 | 24.53 | 0.09 | - | - |
| 7/9/2022 8:48 | 1.68 | 0.7 | 26.11 | 0.09 | - | - |
| 7/9/2022 9:03 | 1.37 | 0.6 | 16.57 | 0.08 | 22.94 | - |
| 7/9/2022 9:18 | 1.51 | 1.02 | 32.52 | 0.08 | - | - |
| 7/9/2022 9:33 | 1.68 | 0.99 | 36.93 | 0.09 | - | - |
| 7/9/2022 9:48 | 1.51 | 0.92 | 29.33 | 0.08 | - | - |
| 7/9/2022 10:03 | 1.36 | 0.84 | 22.95 | 0.08 | 30.43 | - |
| 7/9/2022 10:18 | 1.23 | 0.55 | 12.95 | 0.07 | - | - |
| 7/9/2022 10:33 | 1.64 | 0.83 | 29.88 | 0.09 | - | - |
| 7/9/2022 10:48 | 1.5 | 0.6 | 18.94 | 0.08 | - | - |
| 7/9/2022 11:03 | 1.65 | 0.58 | 21.07 | 0.09 | 20.71 | - |
| 7/9/2022 11:18 | 1.5 | 0.65 | 20.52 | 0.08 | - | - |
| 7/9/2022 11:33 | 1.61 | 0.64 | 22.42 | 0.09 | - | - |
| 7/9/2022 11:48 | 1.25 | 0.79 | 19.06 | 0.07 | - | - |
| 7/9/2022 12:03 | 1.46 | 0.89 | 27 | 0.08 | 22.25 | - |
| 7/9/2022 12:18 | 1.5 | 0.79 | 24.94 | 0.08 | - | - |
| 7/9/2022 12:33 | 1.46 | 0.79 | 23.97 | 0.08 | - | - |
| 7/9/2022 12:48 | 1.46 | 0.79 | 23.97 | 0.08 | - | - |
| 7/9/2022 13:03 | 1.46 | 0.67 | 20.33 | 0.08 | 23.30 | - |
| 7/9/2022 13:18 | 1.29 | 0.67 | 16.93 | 0.07 | - | - |
| 7/9/2022 13:33 | 1.29 | 0.67 | 16.93 | 0.07 | - | - |
| 7/9/2022 13:48 | 1.53 | 0.69 | 22.43 | 0.09 | - | - |
| 7/9/2022 14:03 | 1.53 | 0.69 | 22.43 | 0.09 | 19.68 | - |
| 7/9/2022 14:18 | 1.55 | 0.69 | 22.86 | 0.09 | - | - |
| 7/9/2022 14:33 | 1.75 | 0.89 | 35.25 | 0.10 | - | - |
| 7/9/2022 14:48 | 1.75 | 0.8 | 31.68 | 0.10 | - | - |
| 7/9/2022 15:03 | 1.55 | 0.64 | 21.2 | 0.09 | 27.75 | - |
| 7/9/2022 15:18 | 1.5 | 0.64 | 20.2 | 0.08 | - | - |
| 7/9/2022 15:33 | 1.5 | 0.8 | 25.26 | 0.08 | - | - |
| 7/9/2022 15:48 | 1.5 | 0.65 | 20.52 | 0.08 | - | - |
| 7/9/2022 16:03 | 1.78 | 0.65 | 26.39 | 0.10 | 23.09 | - |
| 7/9/2022 16:18 | 1.78 | 0.7 | 28.42 | 0.10 | - | - |
| 7/9/2022 16:33 | 1.25 | 0.64 | 15.44 | 0.07 | - | - |
| 7/9/2022 16:48 | 1.79 | 0.95 | 38.9 | 0.10 | - | - |
| 7/9/2022 17:03 | 1.79 | 0.66 | 27.02 | 0.10 | 27.45 | - |
| 7/9/2022 17:18 | 1.48 | 0.54 | 16.71 | 0.08 | - | - |
| 7/9/2022 17:33 | 1.44 | 0.58 | 17.24 | 0.08 | - | - |
| 7/9/2022 17:48 | 1.48 | 0.58 | 17.95 | 0.08 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/9/2022 18:03 | 1.48 | 0.58 | 17.95 | 0.08 | 17.46 | - |
| 7/9/2022 18:18 | 1.48 | 0.58 | 17.95 | 0.08 | - | - |
| 7/9/2022 18:33 | 1.44 | 0.58 | 17.24 | 0.08 | - | - |
| 7/9/2022 18:48 | 1.41 | 0.64 | 18.44 | 0.08 | - | - |
| 7/9/2022 19:03 | 1.41 | 0.64 | 18.44 | 0.08 | 18.02 | - |
| 7/9/2022 19:18 | 1.37 | 0.61 | 16.85 | 0.08 | - | - |
| 7/9/2022 19:33 | 1.48 | 0.76 | 23.52 | 0.08 | - | - |
| 7/9/2022 19:48 | 1.21 | 0.54 | 12.41 | 0.07 | - | - |
| 7/9/2022 20:03 | 1.07 | 0.47 | 9.01 | 0.06 | 15.45 | - |
| 7/9/2022 20:18 | 1.39 | 0.81 | 22.85 | 0.08 | - | - |
| 7/9/2022 20:33 | 1.25 | 0.57 | 13.75 | 0.07 | - | - |
| 7/9/2022 20:48 | 1.25 | 0.57 | 13.75 | 0.07 | - | - |
| 7/9/2022 21:03 | 1.19 | 0.61 | 13.68 | 0.07 | 16.01 | - |
| 7/9/2022 21:18 | 1.78 | 1.06 | 43.04 | 0.10 | - | - |
| 7/9/2022 21:33 | 1.79 | 1.02 | 41.76 | 0.10 | - | - |
| 7/9/2022 21:48 | 1.78 | 0.86 | 34.92 | 0.10 | - | - |
| 7/9/2022 22:03 | 1.29 | 0.63 | 15.92 | 0.07 | 33.91 | - |
| 7/9/2022 22:18 | 1.57 | 0.75 | 25.32 | 0.09 | - | - |
| 7/9/2022 22:33 | 1.73 | 0.9 | 35.05 | 0.10 | - | - |
| 7/9/2022 22:48 | 1.78 | 1.04 | 42.23 | 0.10 | - | - |
| 7/9/2022 23:03 | 1.14 | 0.88 | 18.52 | 0.06 | 30.28 | - |
| 7/9/2022 23:18 | 1.18 | 0.69 | 15.28 | 0.07 | - | - |
| 7/9/2022 23:33 | 1.36 | 0.8 | 21.86 | 0.08 | - | - |
| 7/9/2022 23:48 | 1.25 | 0.73 | 17.61 | 0.07 | - | - |
| 7/10/2022 0:03 | 1.75 | 1.02 | 40.4 | 0.10 | 23.79 | 23.59 |
| 7/10/2022 0:18 | 1.36 | 0.52 | 14.21 | 0.08 | - | - |
| 7/10/2022 0:33 | 1.36 | 0.52 | 14.21 | 0.08 | - | - |
| 7/10/2022 0:48 | 1.36 | 0.53 | 14.48 | 0.08 | - | - |
| 7/10/2022 1:03 | 1.46 | 1.08 | 32.76 | 0.08 | 18.92 | - |
| 7/10/2022 1:18 | 1.46 | 0.91 | 27.61 | 0.08 | - | - |
| 7/10/2022 1:33 | 1.5 | 0.62 | 19.57 | 0.08 | - | - |
| 7/10/2022 1:48 | 1.5 | 0.5 | 15.78 | 0.08 | - | - |
| 7/10/2022 2:03 | 1.5 | 0.62 | 19.57 | 0.08 | 20.63 | - |
| 7/10/2022 2:18 | 1.34 | 0.56 | 14.97 | 0.07 | - | - |
| 7/10/2022 2:33 | 1.34 | 0.52 | 13.9 | 0.07 | - | - |
| 7/10/2022 2:48 | 1.21 | 0.52 | 11.95 | 0.07 | - | - |
| 7/10/2022 3:03 | 1.21 | 0.56 | 12.87 | 0.07 | 13.42 | - |
| 7/10/2022 3:18 | 1.07 | 0.59 | 11.31 | 0.06 | - | - |
| 7/10/2022 3:33 | 1.09 | 0.64 | 12.61 | 0.06 | - | - |
| 7/10/2022 3:48 | 1.18 | 0.64 | 14.18 | 0.07 | - | - |
| 7/10/2022 4:03 | 1.18 | 0.66 | 14.62 | 0.07 | 13.18 | - |
| 7/10/2022 4:18 | 1.18 | 0.66 | 14.62 | 0.07 | - | - |
| 7/10/2022 4:33 | 1.15 | 0.73 | 15.57 | 0.06 | - | - |
| 7/10/2022 4:48 | 1.34 | 0.88 | 23.52 | 0.07 | - | - |
| 7/10/2022 5:03 | 1.15 | 0.75 | 15.99 | 0.06 | 17.43 | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/10/2022 5:18 | 1.11 | 0.72 | 14.57 | 0.06 | - | - |
| 7/10/2022 5:33 | 1.53 | 0.71 | 23.08 | 0.09 | - | - |
| 7/10/2022 5:48 | 1.19 | 0.72 | 16.15 | 0.07 | - | - |
| 7/10/2022 6:03 | 1.19 | 0.71 | 15.92 | 0.07 | 17.43 | - |
| 7/10/2022 6:18 | 1.19 | 0.61 | 13.68 | 0.07 | - | - |
| 7/10/2022 6:33 | 1.19 | 0.54 | 12.11 | 0.07 | - | - |
| 7/10/2022 6:48 | 1.19 | 0.54 | 12.11 | 0.07 | - | - |
| 7/10/2022 7:03 | 1.25 | 0.61 | 14.71 | 0.07 | 13.15 | - |
| 7/10/2022 7:18 | 1.25 | 0.61 | 14.71 | 0.07 | - | - |
| 7/10/2022 7:33 | 1.29 | 0.73 | 18.45 | 0.07 | - | - |
| 7/10/2022 7:48 | 1.44 | 0.73 | 21.7 | 0.08 | - | - |
| 7/10/2022 8:03 | 1.48 | 0.86 | 26.62 | 0.08 | 20.37 | - |
| 7/10/2022 8:18 | 1.19 | 0.69 | 15.48 | 0.07 | - | - |
| 7/10/2022 8:33 | 1.01 | 0.52 | 9.15 | 0.06 | - | - |
| 7/10/2022 8:48 | 1.07 | 0.54 | 10.35 | 0.06 | - | - |
| 7/10/2022 9:03 | 1.3 | 0.54 | 13.8 | 0.07 | 12.20 | - |
| 7/10/2022 9:18 | 1.47 | 0.66 | 20.22 | 0.08 | - | - |
| 7/10/2022 9:33 | 1.07 | 0.48 | 9.2 | 0.06 | - | - |
| 7/10/2022 9:48 | 1.07 | 0.74 | 14.18 | 0.06 | - | - |
| 7/10/2022 10:03 | 1.18 | 0.61 | 13.51 | 0.07 | 14.28 | - |
| 7/10/2022 10:18 | 1.18 | 0.61 | 13.51 | 0.07 | - | - |
| 7/10/2022 10:33 | 1.18 | 0.61 | 13.51 | 0.07 | - | - |
| 7/10/2022 10:48 | 1.18 | 0.74 | 16.39 | 0.07 | - | - |
| 7/10/2022 11:03 | 1.61 | 0.91 | 31.88 | 0.09 | 18.82 | - |
| 7/10/2022 11:18 | 1.66 | 0.97 | 35.55 | 0.09 | - | - |
| 7/10/2022 11:33 | 1.66 | 0.98 | 35.92 | 0.09 | - | - |
| 7/10/2022 11:48 | 1.69 | 0.82 | 30.85 | 0.09 | - | - |
| 7/10/2022 12:03 | 1.72 | 0.7 | 27.03 | 0.10 | 32.34 | - |
| 7/10/2022 12:18 | 1.76 | 1.02 | 40.74 | 0.10 | - | - |
| 7/10/2022 12:33 | 1.64 | 0.89 | 32.04 | 0.09 | - | - |
| 7/10/2022 12:48 | 1.59 | 0.66 | 22.7 | 0.09 | - | - |
| 7/10/2022 13:03 | 1.14 | 0.7 | 14.73 | 0.06 | 27.55 | - |
| 7/10/2022 13:18 | 1.14 | 0.7 | 14.73 | 0.06 | - | - |
| 7/10/2022 13:33 | 1.05 | 0.54 | 10.06 | 0.06 | - | - |
| 7/10/2022 13:48 | 1.14 | 0.66 | 13.89 | 0.06 | - | - |
| 7/10/2022 14:03 | 1.14 | 0.61 | 12.84 | 0.06 | 12.88 | - |
| 7/10/2022 14:18 | 1.14 | 0.61 | 12.84 | 0.06 | - | - |
| 7/10/2022 14:33 | 1.16 | 0.59 | 12.74 | 0.06 | - | - |
| 7/10/2022 14:48 | 1.21 | 0.61 | 14.02 | 0.07 | - | - |
| 7/10/2022 15:03 | 1.43 | 0.67 | 19.71 | 0.08 | 14.83 | - |
| 7/10/2022 15:18 | 1.65 | 0.67 | 24.34 | 0.09 | - | - |
| 7/10/2022 15:33 | 1.65 | 0.67 | 24.34 | 0.09 | - | - |
| 7/10/2022 15:48 | 1.65 | 0.67 | 24.34 | 0.09 | - | - |
| 7/10/2022 16:03 | 1.65 | 0.67 | 24.34 | 0.09 | 24.34 | - |
| 7/10/2022 16:18 | 1.66 | 0.73 | 26.75 | 0.09 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/10/2022 16:33 | 1.76 | 0.79 | 31.55 | 0.10 | - | - |
| 7/10/2022 16:48 | 1.72 | 0.84 | 32.43 | 0.10 | - | - |
| 7/10/2022 17:03 | 1.76 | 0.87 | 34.75 | 0.10 | 31.37 | - |
| 7/10/2022 17:18 | 1.72 | 0.9 | 34.75 | 0.10 | - | - |
| 7/10/2022 17:33 | 1.75 | 0.91 | 36.04 | 0.10 | - | - |
| 7/10/2022 17:48 | 1.8 | 0.93 | 38.39 | 0.10 | - | - |
| 7/10/2022 18:03 | 1.78 | 0.86 | 34.92 | 0.10 | 36.03 | - |
| 7/10/2022 18:18 | 1.57 | 0.58 | 19.58 | 0.09 | - | - |
| 7/10/2022 18:33 | 1.03 | 0.54 | 9.78 | 0.06 | - | - |
| 7/10/2022 18:48 | 1.04 | 0.69 | 12.68 | 0.06 | - | - |
| 7/10/2022 19:03 | 1.34 | 0.63 | 16.84 | 0.07 | 14.72 | - |
| 7/10/2022 19:18 | 1.59 | 1.04 | 35.77 | 0.09 | - | - |
| 7/10/2022 19:33 | 1.37 | 0.82 | 22.65 | 0.08 | - | - |
| 7/10/2022 19:48 | 1.44 | 0.53 | 15.75 | 0.08 | - | - |
| 7/10/2022 20:03 | 1.73 | 0.65 | 25.31 | 0.10 | 24.87 | - |
| 7/10/2022 20:18 | 1.72 | 0.55 | 21.24 | 0.10 | - | - |
| 7/10/2022 20:33 | 1.78 | 0.55 | 22.33 | 0.10 | - | - |
| 7/10/2022 20:48 | 1.72 | 0.55 | 21.24 | 0.10 | - | - |
| 7/10/2022 21:03 | 1.72 | 0.63 | 24.33 | 0.10 | 22.29 | - |
| 7/10/2022 21:18 | 1.59 | 0.55 | 18.92 | 0.09 | - | - |
| 7/10/2022 21:33 | 1.59 | 0.61 | 20.98 | 0.09 | - | - |
| 7/10/2022 21:48 | 1.59 | 0.63 | 21.67 | 0.09 | - | - |
| 7/10/2022 22:03 | 1.64 | 0.63 | 22.68 | 0.09 | 21.06 | - |
| 7/10/2022 22:18 | 1.64 | 0.67 | 24.12 | 0.09 | - | - |
| 7/10/2022 22:33 | 1.64 | 0.67 | 24.12 | 0.09 | - | - |
| 7/10/2022 22:48 | 1.52 | 0.7 | 22.53 | 0.08 | - | - |
| 7/10/2022 23:03 | 1.34 | 0.73 | 19.51 | 0.07 | 22.57 | - |
| 7/10/2022 23:18 | 1.68 | 0.64 | 23.87 | 0.09 | - | - |
| 7/10/2022 23:33 | 1.66 | 0.65 | 23.82 | 0.09 | - | - |
| 7/10/2022 23:48 | 1.26 | 0.63 | 15.38 | 0.07 | - | - |
| 7/11/2022 0:03 | 1.66 | 0.64 | 23.46 | 0.09 | 21.63 | 20.47 |
| 7/11/2022 0:18 | 1.66 | 0.64 | 23.46 | 0.09 | - | - |
| 7/11/2022 0:33 | 1.66 | 0.63 | 23.09 | 0.09 | - | - |
| 7/11/2022 0:48 | 1.35 | 0.52 | 14.05 | 0.08 | - | - |
| 7/11/2022 1:03 | 1.19 | 0.44 | 9.87 | 0.07 | 17.62 | - |
| 7/11/2022 1:18 | 1.54 | 0.65 | 21.33 | 0.09 | - | - |
| 7/11/2022 1:33 | 1.33 | 0.61 | 16.13 | 0.07 | - | - |
| 7/11/2022 1:48 | 1.29 | 0.58 | 14.66 | 0.07 | - | - |
| 7/11/2022 2:03 | 1.64 | 1.05 | 37.8 | 0.09 | 22.48 | - |
| 7/11/2022 2:18 | 0.86 | 0.85 | 11.78 | 0.05 | - | - |
| 7/11/2022 2:33 | 1.16 | 1.15 | 24.84 | 0.06 | - | - |
| 7/11/2022 2:48 | 1.29 | 0.92 | 23.25 | 0.07 | - | - |
| 7/11/2022 3:03 | 1.57 | 0.92 | 31.06 | 0.09 | 22.73 | - |
| 7/11/2022 3:18 | 1.57 | 0.92 | 31.06 | 0.09 | - | - |
| 7/11/2022 3:33 | 1.5 | 0.88 | 27.78 | 0.08 | - | - |

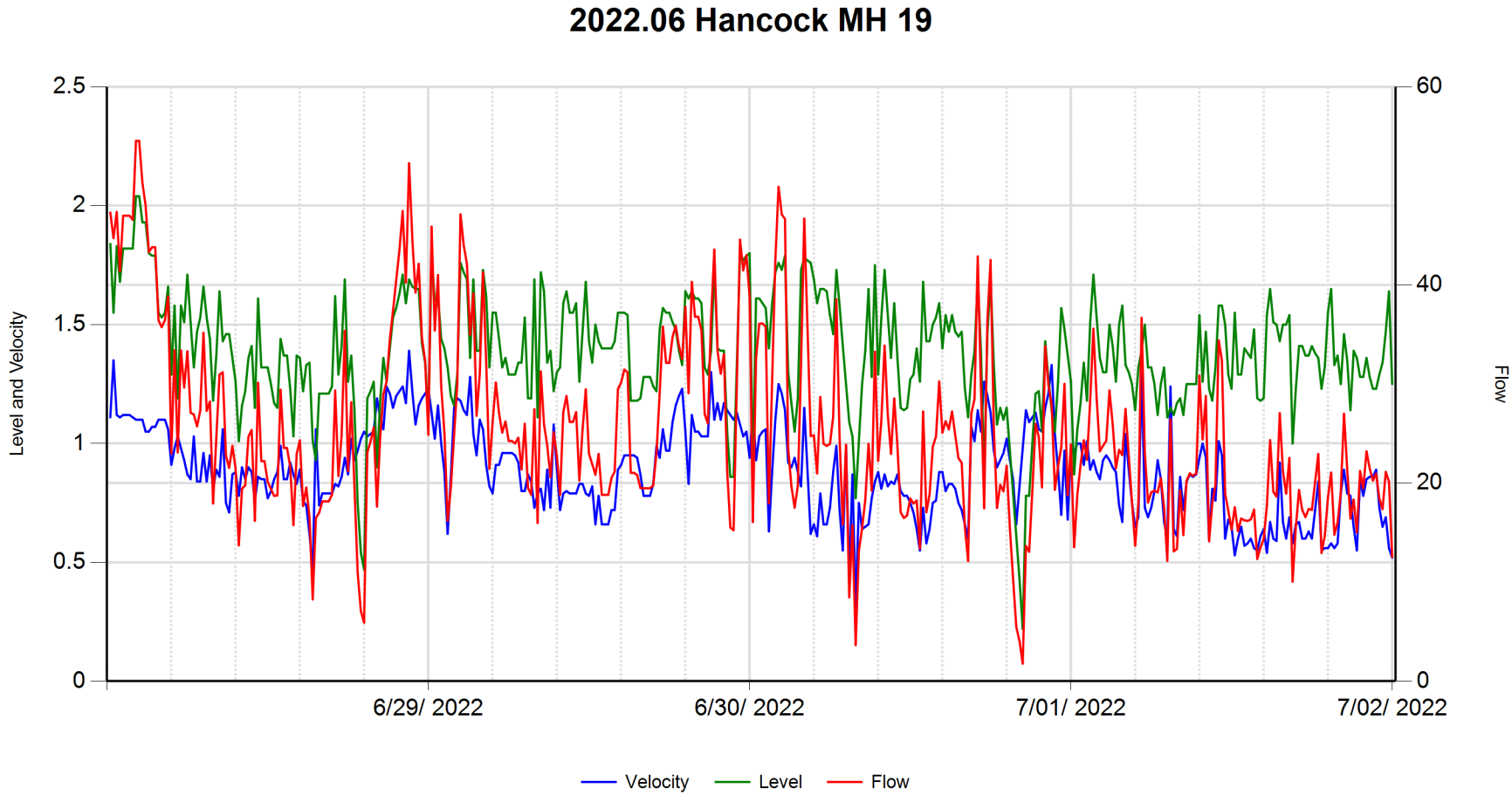
| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/11/2022 3:48 | 1.53 | 0.79 | 25.68 | 0.09 | - | - |
| 7/11/2022 4:03 | 1.61 | 0.85 | 29.78 | 0.09 | 28.58 | - |
| 7/11/2022 4:18 | 1.79 | 1.01 | 41.35 | 0.10 | - | - |
| 7/11/2022 4:33 | 1.76 | 0.75 | 29.95 | 0.10 | - | - |
| 7/11/2022 4:48 | 1.73 | 0.52 | 20.25 | 0.10 | - | - |
| 7/11/2022 5:03 | 1.75 | 0.58 | 22.97 | 0.10 | 28.63 | - |
| 7/11/2022 5:18 | 1.79 | 0.61 | 24.97 | 0.10 | - | - |
| 7/11/2022 5:33 | 1.09 | 0.38 | 7.48 | 0.06 | - | - |
| 7/11/2022 5:48 | 1.21 | 0.64 | 14.71 | 0.07 | - | - |
| 7/11/2022 6:03 | 1.4 | 0.79 | 22.53 | 0.08 | 17.42 | - |
| 7/11/2022 6:18 | 1.62 | 0.9 | 31.82 | 0.09 | - | - |
| 7/11/2022 6:33 | 1.47 | 0.97 | 29.72 | 0.08 | - | - |
| 7/11/2022 6:48 | 1.44 | 1.01 | 30.02 | 0.08 | - | - |
| 7/11/2022 7:03 | 1.79 | 0.9 | 36.85 | 0.10 | 32.10 | - |
| 7/11/2022 7:18 | 1.62 | 0.97 | 34.3 | 0.09 | - | - |
| 7/11/2022 7:33 | 1.47 | 0.99 | 30.34 | 0.08 | - | - |
| 7/11/2022 7:48 | 1.44 | 0.99 | 29.43 | 0.08 | - | - |
| 7/11/2022 8:03 | 1.18 | 0.86 | 19.05 | 0.07 | 28.28 | - |
| 7/11/2022 8:18 | 1.34 | 0.69 | 18.44 | 0.07 | - | - |
| 7/11/2022 8:33 | 1.18 | 0.95 | 21.04 | 0.07 | - | - |
| 7/11/2022 8:48 | 1.19 | 1.37 | 30.73 | 0.07 | - | - |
| 7/11/2022 9:03 | 1.55 | 1.28 | 42.41 | 0.09 | 28.16 | - |
| 7/11/2022 9:18 | 1.44 | 1.25 | 37.16 | 0.08 | - | - |
| 7/11/2022 9:33 | 1.39 | 1.22 | 34.42 | 0.08 | - | - |
| 7/11/2022 9:48 | 1.37 | 1.14 | 31.49 | 0.08 | - | - |
| 7/11/2022 10:03 | 1.35 | 0.89 | 24.05 | 0.08 | 31.78 | - |
| 7/11/2022 10:18 | 1.33 | 0.61 | 16.13 | 0.07 | - | - |
| 7/11/2022 10:33 | 1.65 | 1.33 | 48.31 | 0.09 | - | - |
| 7/11/2022 10:48 | 1.36 | 0.93 | 25.41 | 0.08 | - | - |
| 7/11/2022 11:03 | 1.51 | 0.91 | 29.01 | 0.08 | 29.72 | - |
| 7/11/2022 11:18 | 1.21 | 0.74 | 17.01 | 0.07 | - | - |
| 7/11/2022 11:33 | 1.46 | 0.82 | 24.88 | 0.08 | - | - |
| 7/11/2022 11:48 | 1.72 | 1.13 | 43.63 | 0.10 | - | - |
| 7/11/2022 12:03 | 1.6 | 1.02 | 35.41 | 0.09 | 30.23 | - |
| 7/11/2022 12:18 | 1.53 | 1.11 | 36.08 | 0.09 | - | - |
| 7/11/2022 12:33 | 1.46 | 1.17 | 35.49 | 0.08 | - | - |
| 7/11/2022 12:48 | 1.29 | 1.13 | 28.56 | 0.07 | - | - |
| 7/11/2022 13:03 | 1.03 | 1.08 | 19.56 | 0.06 | 29.92 | - |
| 7/11/2022 13:18 | 0.86 | 0.96 | 13.3 | 0.05 | - | - |
| 7/11/2022 13:33 | 1.66 | 0.89 | 32.62 | 0.09 | - | - |
| 7/11/2022 13:48 | 1.23 | 0.66 | 15.54 | 0.07 | - | - |
| 7/11/2022 14:03 | 1.31 | 0.75 | 19.39 | 0.07 | 20.21 | - |
| 7/11/2022 14:18 | 1.23 | 0.89 | 20.96 | 0.07 | - | - |
| 7/11/2022 14:33 | 1.55 | 0.89 | 29.49 | 0.09 | - | - |
| 7/11/2022 14:48 | 1.23 | 0.99 | 23.32 | 0.07 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/11/2022 15:03 | 1.22 | 1.05 | 24.43 | 0.07 | 24.55 | - |
| 7/11/2022 15:18 | 1.47 | 1.05 | 32.18 | 0.08 | - | - |
| 7/11/2022 15:33 | 1.36 | 1.04 | 28.41 | 0.08 | - | - |
| 7/11/2022 15:48 | 1.36 | 1.05 | 28.69 | 0.08 | - | - |
| 7/11/2022 16:03 | 1.47 | 1.04 | 31.87 | 0.08 | 30.29 | - |
| 7/11/2022 16:18 | 1.47 | 0.95 | 29.11 | 0.08 | - | - |
| 7/11/2022 16:33 | 1.69 | 0.89 | 33.49 | 0.09 | - | - |
| 7/11/2022 16:48 | 1.69 | 0.95 | 35.75 | 0.09 | - | - |
| 7/11/2022 17:03 | 1.8 | 0.89 | 36.74 | 0.10 | 33.77 | - |
| 7/11/2022 17:18 | 1.8 | 0.81 | 33.44 | 0.10 | - | - |
| 7/11/2022 17:33 | 1.32 | 0.79 | 20.65 | 0.07 | - | - |
| 7/11/2022 17:48 | 1.4 | 0.92 | 26.23 | 0.08 | - | - |
| 7/11/2022 18:03 | 1.47 | 1.08 | 33.09 | 0.08 | 28.35 | - |
| 7/11/2022 18:18 | 1.82 | 0.93 | 39.02 | 0.10 | - | - |
| 7/11/2022 18:33 | 1.84 | 0.87 | 37.09 | 0.10 | - | - |
| 7/11/2022 18:48 | 1.86 | 0.61 | 26.42 | 0.10 | - | - |
| 7/11/2022 19:03 | 1.84 | 0.93 | 39.65 | 0.10 | 35.55 | - |
| 7/11/2022 19:18 | 1.84 | 0.93 | 39.65 | 0.10 | - | - |
| 7/11/2022 19:33 | 1.84 | 0.93 | 39.65 | 0.10 | - | - |
| 7/11/2022 19:48 | 1.71 | 0.93 | 35.6 | 0.10 | - | - |
| 7/11/2022 20:03 | 1.38 | 0.79 | 22.05 | 0.08 | 34.24 | - |
| 7/11/2022 20:18 | 1.11 | 0.68 | 13.76 | 0.06 | - | - |
| 7/11/2022 20:33 | 1.33 | 0.57 | 15.07 | 0.07 | - | - |
| 7/11/2022 20:48 | 1.82 | 0.91 | 38.18 | 0.10 | - | - |
| 7/11/2022 21:03 | 1.51 | 0.54 | 17.22 | 0.08 | 21.06 | - |
| 7/11/2022 21:18 | 1.41 | 0.57 | 16.43 | 0.08 | - | - |
| 7/11/2022 21:33 | 1.51 | 0.57 | 18.17 | 0.08 | - | - |
| 7/11/2022 21:48 | 1.51 | 0.68 | 21.68 | 0.08 | - | - |
| 7/11/2022 22:03 | 1.51 | 0.68 | 21.68 | 0.08 | 19.49 | - |
| 7/11/2022 22:18 | 1.72 | 0.69 | 26.64 | 0.10 | - | - |
| 7/11/2022 22:33 | 1.72 | 0.73 | 28.19 | 0.10 | - | - |
| 7/11/2022 22:48 | 1.72 | 0.7 | 27.03 | 0.10 | - | - |
| 7/11/2022 23:03 | 1.76 | 0.73 | 29.16 | 0.10 | 27.76 | - |
| 7/11/2022 23:18 | 1.76 | 0.73 | 29.16 | 0.10 | - | - |
| 7/11/2022 23:33 | 1.59 | 0.73 | 25.11 | 0.09 | - | - |
| 7/11/2022 23:48 | 1.65 | 0.7 | 25.43 | 0.09 | - | - |
| 7/12/2022 0:03 | 1.57 | 0.67 | 22.62 | 0.09 | 25.58 | 26.98 |
| 7/12/2022 0:18 | 1.23 | 0.67 | 15.78 | 0.07 | - | - |
| 7/12/2022 0:33 | 1.48 | 0.69 | 21.36 | 0.08 | - | - |
| 7/12/2022 0:48 | 1.48 | 0.67 | 20.74 | 0.08 | - | - |
| 7/12/2022 1:03 | 1.15 | 0.67 | 14.29 | 0.06 | 18.04 | - |
| 7/12/2022 1:18 | 1.4 | 0.74 | 21.1 | 0.08 | - | - |
| 7/12/2022 1:33 | 1.8 | 0.86 | 35.5 | 0.10 | - | - |
| 7/12/2022 1:48 | 1.78 | 0.55 | 22.33 | 0.10 | - | - |
| 7/12/2022 2:03 | 1.3 | 0.61 | 15.59 | 0.07 | 23.63 | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/12/2022 2:18 | 1.73 | 0.53 | 20.64 | 0.10 | - | - |
| 7/12/2022 2:33 | 1.51 | 0.58 | 18.49 | 0.08 | - | - |
| 7/12/2022 2:48 | 1.33 | 0.6 | 15.86 | 0.07 | - | - |
| 7/12/2022 3:03 | 1.19 | 0.62 | 13.91 | 0.07 | 17.23 | - |
| 7/12/2022 3:18 | 1.46 | 0.71 | 21.54 | 0.08 | - | - |
| 7/12/2022 3:33 | 1.51 | 0.56 | 17.85 | 0.08 | - | - |
| 7/12/2022 3:48 | 1.29 | 0.53 | 13.39 | 0.07 | - | - |
| 7/12/2022 4:03 | 1.46 | 0.62 | 18.81 | 0.08 | 17.90 | - |
| 7/12/2022 4:18 | 1.46 | 0.56 | 16.99 | 0.08 | - | - |
| 7/12/2022 4:33 | 1.37 | 0.56 | 15.47 | 0.08 | - | - |
| 7/12/2022 4:48 | 1.37 | 0.6 | 16.57 | 0.08 | - | - |
| 7/12/2022 5:03 | 1.62 | 0.73 | 25.81 | 0.09 | 18.71 | - |
| 7/12/2022 5:18 | 1.37 | 0.66 | 18.23 | 0.08 | - | - |
| 7/12/2022 5:33 | 1.41 | 0.73 | 21.04 | 0.08 | - | - |
| 7/12/2022 5:48 | 1.57 | 0.74 | 24.98 | 0.09 | - | - |
| 7/12/2022 6:03 | 1.43 | 0.74 | 21.77 | 0.08 | 21.51 | - |
| 7/12/2022 6:18 | 1.43 | 0.74 | 21.77 | 0.08 | - | - |
| 7/12/2022 6:33 | 1.56 | 0.79 | 26.42 | 0.09 | - | - |
| 7/12/2022 6:48 | 1.69 | 0.84 | 31.61 | 0.09 | - | - |
| 7/12/2022 7:03 | 1.8 | 0.89 | 36.74 | 0.10 | 29.14 | - |
| 7/12/2022 7:18 | 1.8 | 0.96 | 39.63 | 0.10 | - | - |
| 7/12/2022 7:33 | 1.8 | 0.58 | 23.94 | 0.10 | - | - |
| 7/12/2022 7:48 | 1.72 | 0.62 | 23.94 | 0.10 | - | - |
| 7/12/2022 8:03 | 1.66 | 0.68 | 24.92 | 0.09 | 28.11 | - |
| 7/12/2022 8:18 | 1.66 | 0.92 | 33.72 | 0.09 | - | - |
| 7/12/2022 8:33 | 1.59 | 0.76 | 26.14 | 0.09 | - | - |
| 7/12/2022 8:48 | 0.66 | 1.06 | 9.91 | 0.04 | - | - |
| 7/12/2022 9:03 | 1.01 | 0.97 | 17.06 | 0.06 | 21.71 | - |
| 7/12/2022 9:18 | 1.55 | 0.88 | 29.16 | 0.09 | - | - |
| 7/12/2022 9:33 | 1.44 | 0.91 | 27.05 | 0.08 | - | - |
| 7/12/2022 9:48 | 1.54 | 1.17 | 38.4 | 0.09 | - | - |
| 7/12/2022 10:03 | 1.72 | 1 | 38.61 | 0.10 | 33.31 | - |
| 7/12/2022 10:18 | 1.61 | 1.05 | 36.79 | 0.09 | - | - |
| 7/12/2022 10:33 | 1.53 | 1.11 | 36.08 | 0.09 | - | - |
| 7/12/2022 10:48 | 0.73 | 1.08 | 11.73 | 0.04 | - | - |
| 7/12/2022 11:03 | 1.54 | 1.1 | 36.1 | 0.09 | 30.18 | - |
| 7/12/2022 11:18 | 1.41 | 1.13 | 32.56 | 0.08 | - | - |
| 7/12/2022 11:33 | 1.45 | 1.08 | 32.43 | 0.08 | - | - |
| 7/12/2022 11:48 | 1.48 | 1.03 | 31.88 | 0.08 | - | - |
| 7/12/2022 12:03 | 1.47 | 1.13 | 34.63 | 0.08 | 32.88 | - |
| 7/12/2022 12:18 | 1.37 | 1.16 | 32.04 | 0.08 | - | - |
| 7/12/2022 12:33 | 1.42 | 1.23 | 35.82 | 0.08 | - | - |
| 7/12/2022 12:48 | 1.57 | 1.37 | 46.26 | 0.09 | - | - |
| 7/12/2022 13:03 | 1.63 | 1.11 | 39.6 | 0.09 | 38.43 | - |
| 7/12/2022 13:18 | 1.72 | 0.83 | 32.05 | 0.10 | - | - |

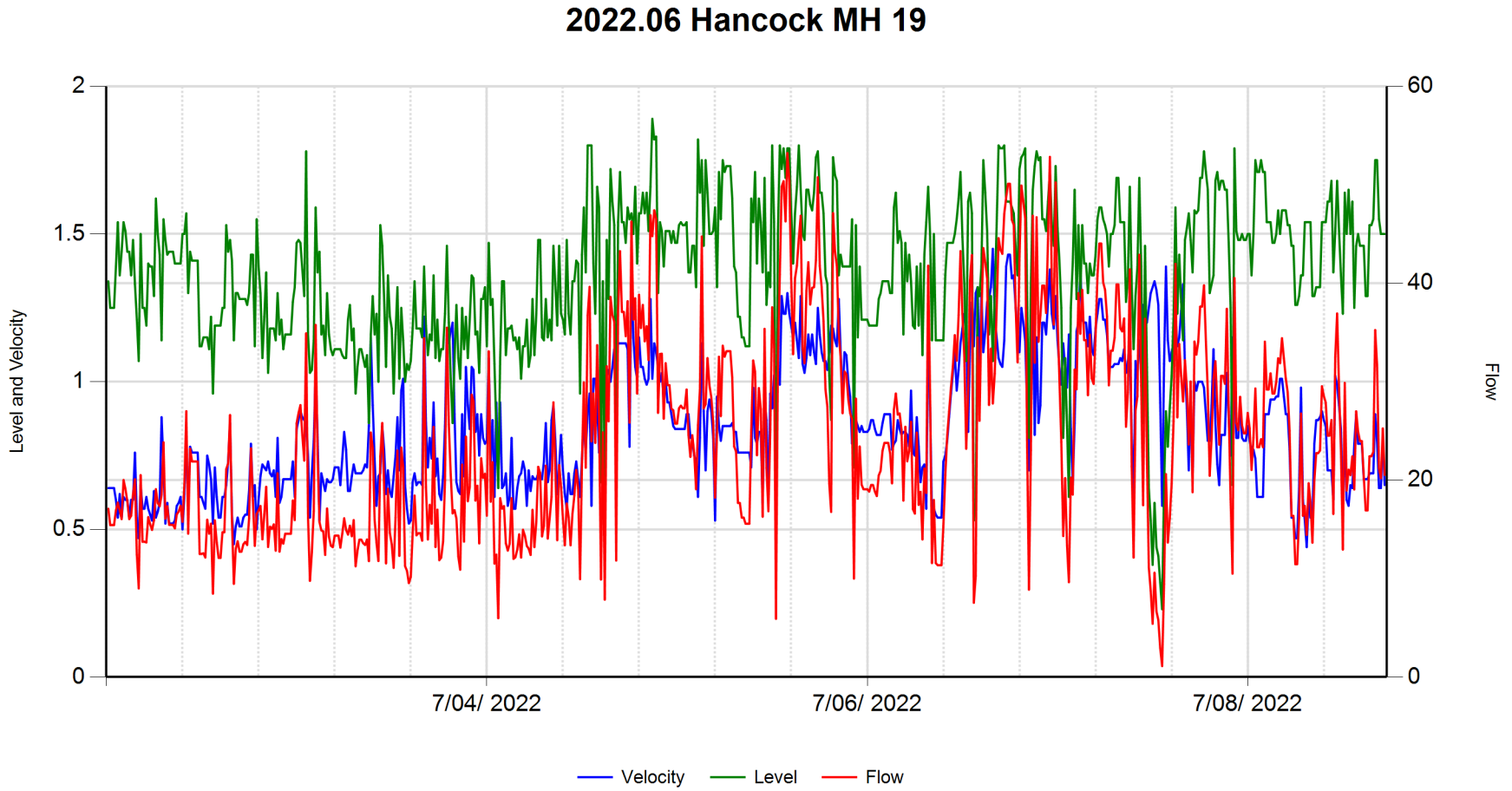
| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/12/2022 13:33 | 1.64 | 1.23 | 44.28 | 0.09 | - | - |
| 7/12/2022 13:48 | 1.9 | 1.01 | 45.13 | 0.11 | - | - |
| 7/12/2022 14:03 | 1.46 | 0.86 | 26.09 | 0.08 | 36.89 | - |
| 7/12/2022 14:18 | 1.64 | 1.01 | 36.36 | 0.09 | - | - |
| 7/12/2022 14:33 | 1.64 | 1.01 | 36.36 | 0.09 | - | - |
| 7/12/2022 14:48 | 1.89 | 1.01 | 44.78 | 0.11 | - | - |
| 7/12/2022 15:03 | 1.51 | 1.01 | 32.2 | 0.08 | 37.43 | - |
| 7/12/2022 15:18 | 1.89 | 1.05 | 46.56 | 0.11 | - | - |
| 7/12/2022 15:33 | 1.89 | 1.01 | 44.78 | 0.11 | - | - |
| 7/12/2022 15:48 | 1.89 | 1.05 | 46.56 | 0.11 | - | - |
| 7/12/2022 16:03 | 1.83 | 1.1 | 46.52 | 0.10 | 46.11 | - |
| 7/12/2022 16:18 | 1.83 | 1.05 | 44.41 | 0.10 | - | - |
| 7/12/2022 16:33 | 1.85 | 1.06 | 45.55 | 0.10 | - | - |
| 7/12/2022 16:48 | 1.89 | 1.07 | 47.45 | 0.11 | - | - |
| 7/12/2022 17:03 | 1.89 | 1.09 | 48.33 | 0.11 | 46.44 | - |
| 7/12/2022 17:18 | 1.84 | 1.05 | 44.76 | 0.10 | - | - |
| 7/12/2022 17:33 | 1.85 | 1.08 | 46.41 | 0.10 | - | - |
| 7/12/2022 17:48 | 1.87 | 1.11 | 48.46 | 0.10 | - | - |
| 7/12/2022 18:03 | 1.88 | 1.11 | 48.84 | 0.10 | 47.12 | - |
| 7/12/2022 18:18 | 1.88 | 1.1 | 48.4 | 0.10 | - | - |
| 7/12/2022 18:33 | 1.89 | 1.1 | 48.78 | 0.11 | - | - |
| 7/12/2022 18:48 | 1.87 | 0.96 | 41.91 | 0.10 | - | - |
| 7/12/2022 19:03 | 1.89 | 0.53 | 23.5 | 0.11 | 40.65 | - |
| 7/12/2022 19:18 | 1.25 | 0.52 | 12.54 | 0.07 | - | - |
| 7/12/2022 19:33 | 1.87 | 0.68 | 29.69 | 0.10 | - | - |
| 7/12/2022 19:48 | 1.43 | 0.54 | 15.89 | 0.08 | - | - |
| 7/12/2022 20:03 | 1.43 | 0.54 | 15.89 | 0.08 | 18.50 | - |
| 7/12/2022 20:18 | 1.43 | 0.62 | 18.24 | 0.08 | - | - |
| 7/12/2022 20:33 | 1.47 | 0.59 | 18.08 | 0.08 | - | - |
| 7/12/2022 20:48 | 1.51 | 0.56 | 17.85 | 0.08 | - | - |
| 7/12/2022 21:03 | 1.61 | 0.57 | 19.97 | 0.09 | 18.54 | - |
| 7/12/2022 21:18 | 1.71 | 0.53 | 20.29 | 0.10 | - | - |
| 7/12/2022 21:33 | 1.82 | 0.61 | 25.59 | 0.10 | - | - |
| 7/12/2022 21:48 | 1.61 | 0.57 | 19.97 | 0.09 | - | - |
| 7/12/2022 22:03 | 1.61 | 0.61 | 21.37 | 0.09 | 21.81 | - |
| 7/12/2022 22:18 | 1.71 | 0.63 | 24.12 | 0.10 | - | - |
| 7/12/2022 22:33 | 1.72 | 0.72 | 27.8 | 0.10 | - | - |
| 7/12/2022 22:48 | 1.72 | 0.83 | 32.05 | 0.10 | - | - |
| 7/12/2022 23:03 | 1.76 | 0.83 | 33.15 | 0.10 | 29.28 | - |
| 7/12/2022 23:18 | 1.62 | 0.74 | 26.16 | 0.09 | - | - |
| 7/12/2022 23:33 | 1.5 | 0.62 | 19.57 | 0.08 | - | - |
| 7/12/2022 23:48 | 1.59 | 0.53 | 18.23 | 0.09 | - | - |
| 7/13/2022 0:03 | 1.22 | 0.97 | 22.57 | 0.07 | 21.63 | 28.90 |
| 7/13/2022 0:18 | 1.18 | 0.66 | 14.62 | 0.07 | - | - |
| 7/13/2022 0:33 | 1.15 | 0.54 | 11.51 | 0.06 | - | - |

| MH 19 | | | | | | |
|---|---|---|---|---|---|---|
| Date (PST) | Level (in) | Velocity (fps) | Flow (gpm) | d/D | Hourly (gpm) | Daily (gpm) |
| 7/13/2022 0:48 | 1.78 | 0.54 | 21.93 | 0.10 | - | - |
| 7/13/2022 1:03 | 1.8 | 0.58 | 23.94 | 0.10 | 18.00 | - |
| 7/13/2022 1:18 | 1.84 | 0.62 | 26.43 | 0.10 | - | - |
| 7/13/2022 1:33 | 1.79 | 0.66 | 27.02 | 0.10 | - | - |
| 7/13/2022 1:48 | 1.71 | 0.7 | 26.8 | 0.10 | - | - |
| 7/13/2022 2:03 | 1.79 | 0.7 | 28.66 | 0.10 | 27.23 | - |
| 7/13/2022 2:18 | 1.8 | 1.17 | 48.3 | 0.10 | - | - |
| 7/13/2022 2:33 | 1.84 | 1.05 | 44.76 | 0.10 | - | - |
| 7/13/2022 2:48 | 1.79 | 0.7 | 28.66 | 0.10 | - | - |
| 7/13/2022 3:03 | 1.8 | 0.7 | 28.89 | 0.10 | 37.65 | - |
| 7/13/2022 3:18 | 1.8 | 0.67 | 27.66 | 0.10 | - | - |
| 7/13/2022 3:33 | 1.82 | 0.59 | 24.75 | 0.10 | - | - |
| 7/13/2022 3:48 | 1.65 | 0.59 | 21.43 | 0.09 | - | - |
| 7/13/2022 4:03 | 1.76 | 0.67 | 26.76 | 0.10 | 25.15 | - |
| 7/13/2022 4:18 | 1.62 | 0.68 | 24.04 | 0.09 | - | - |
| 7/13/2022 4:33 | 1.62 | 0.71 | 25.1 | 0.09 | - | - |
| 7/13/2022 4:48 | 1.62 | 0.71 | 25.1 | 0.09 | - | - |
| 7/13/2022 5:03 | 1.65 | 0.69 | 25.06 | 0.09 | 24.83 | - |
| 7/13/2022 5:18 | 1.62 | 0.69 | 24.4 | 0.09 | - | - |
| 7/13/2022 5:33 | 1.56 | 0.65 | 21.74 | 0.09 | - | - |
| 7/13/2022 5:48 | 1.44 | 0.62 | 18.43 | 0.08 | - | - |
| 7/13/2022 6:03 | 1.37 | 0.59 | 16.29 | 0.08 | 20.22 | - |
| 7/13/2022 6:18 | 1.46 | 0.63 | 19.11 | 0.08 | - | - |
| 7/13/2022 6:33 | 1.54 | 0.66 | 21.66 | 0.09 | - | - |
| 7/13/2022 6:48 | 1.37 | 0.61 | 16.85 | 0.08 | - | - |
| 7/13/2022 7:03 | 1.3 | 0.58 | 14.82 | 0.07 | 18.11 | - |
| 7/13/2022 7:18 | 1.8 | 0.91 | 37.56 | 0.10 | - | - |
| 7/13/2022 7:33 | 1.54 | 0.66 | 21.66 | 0.09 | - | - |
| 7/13/2022 7:48 | 1.8 | 0.91 | 37.56 | 0.10 | - | - |
| 7/13/2022 8:03 | 1.8 | 0.99 | 40.87 | 0.10 | 34.41 | - |
| 7/13/2022 8:18 | 1.8 | 0.99 | 40.87 | 0.10 | - | - |
| 7/13/2022 8:33 | 1.8 | 1.05 | 43.34 | 0.10 | - | - |
| 7/13/2022 8:48 | 1.8 | 1.05 | 43.34 | 0.10 | - | - |
| 7/13/2022 9:03 | 1.68 | 0.83 | 30.96 | 0.09 | 39.63 | - |




| | Velocity (fps) | Level (in) | Flow (gpm) | | |
|---|---|---|---|---|---|
| Average | 0.885 | 1.386 | 25.356 | **RainFall** | Inches |
| Maximum | 1.390 | 2.040 | 54.550 | | |
| Minimum | 0.310 | 0.220 | 1.780 | | |

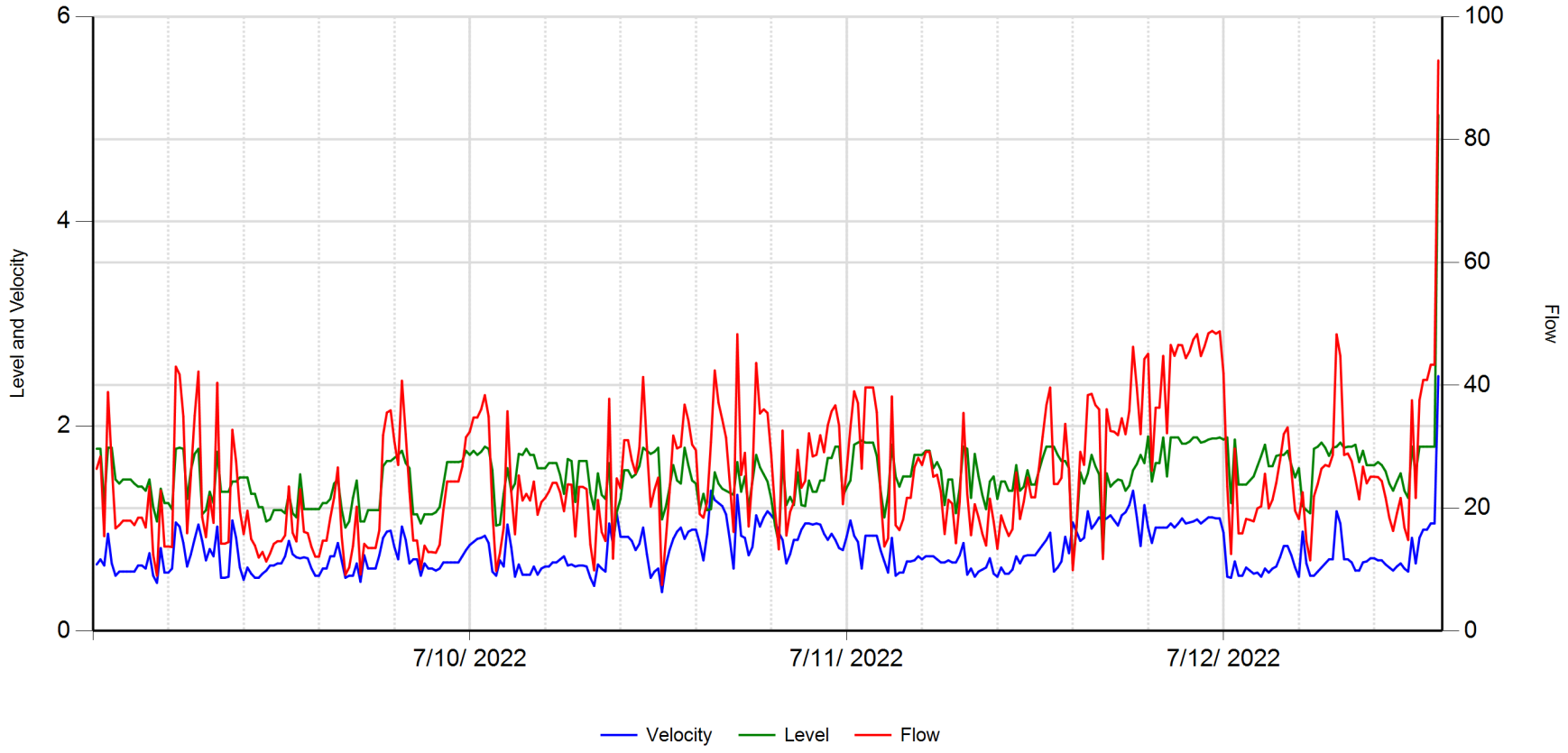
7/26/2022




| | Velocity (fps) | Level (in) | Flow (gpm) | | |
|---|---|---|---|---|---|
| Average | 0.859 | 1.365 | 24.246 | **RainFall** | Inches |
| Maximum | 1.450 | 1.890 | 53.220 | | |
| Minimum | 0.440 | 0.230 | 1.120 | | |

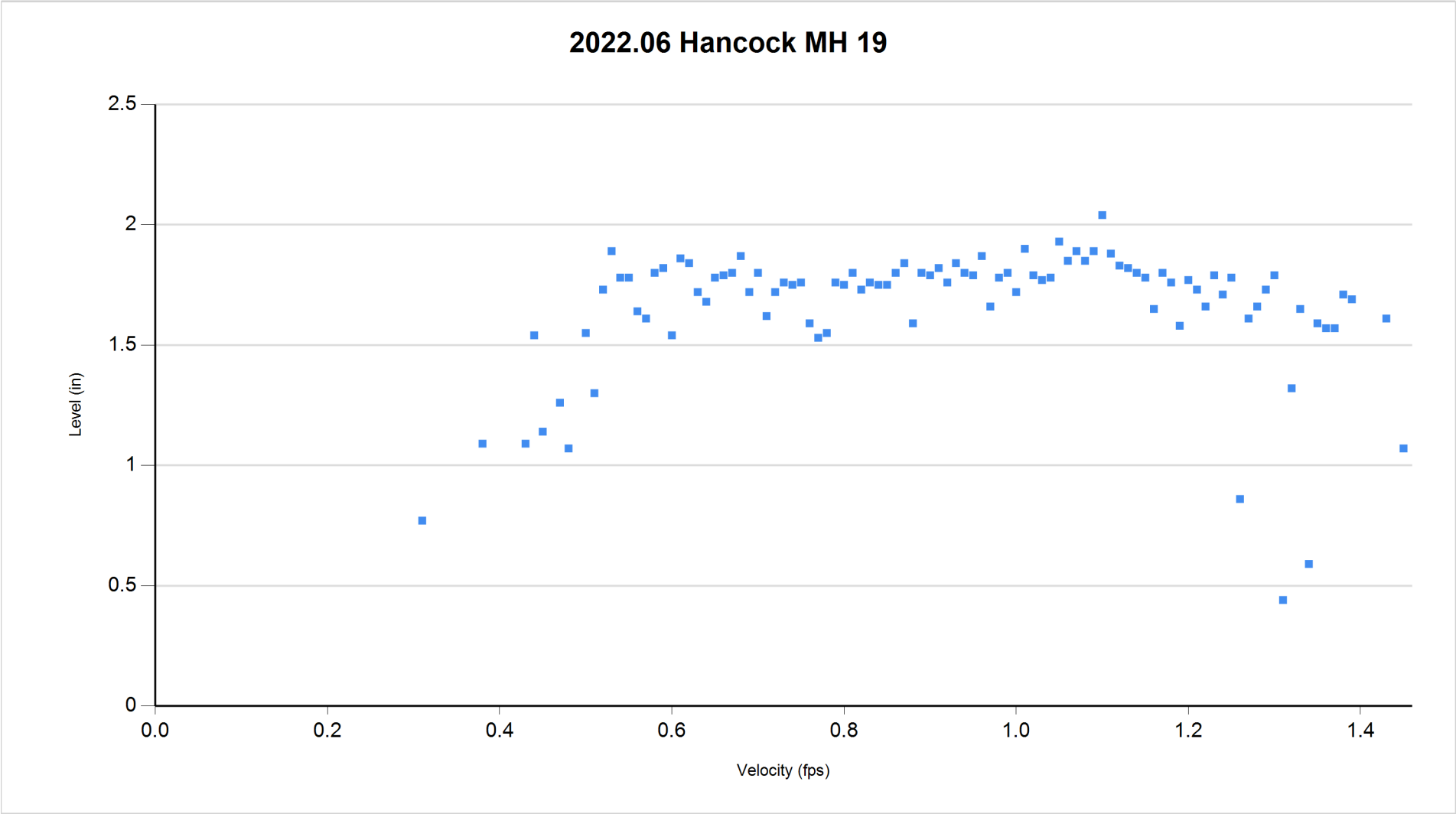
7/26/2022

# 2022.06 Hancock MH 19



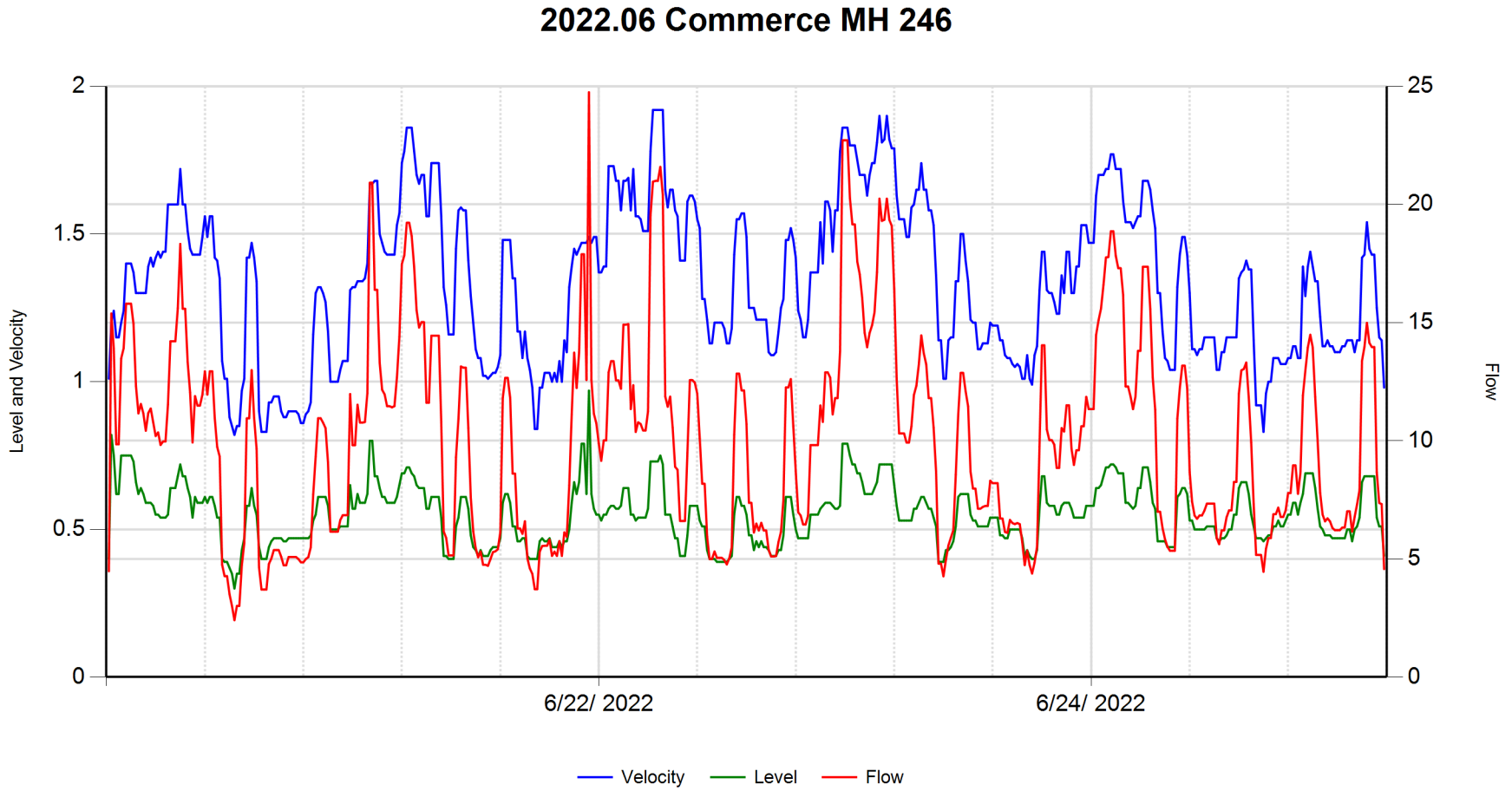

| | Velocity (fps) | Level (in) | Flow (gpm) | | |
|---|---|---|---|---|---|
| Average | 0.779 | 1.508 | 25.399 | **RainFall** | Inches |
| Maximum | 1.370 | 1.900 | 48.840 | | |
| Minimum | 0.380 | 0.660 | 7.480 | | |

7/26/2022




6/28/2022 thru 7/13/2022

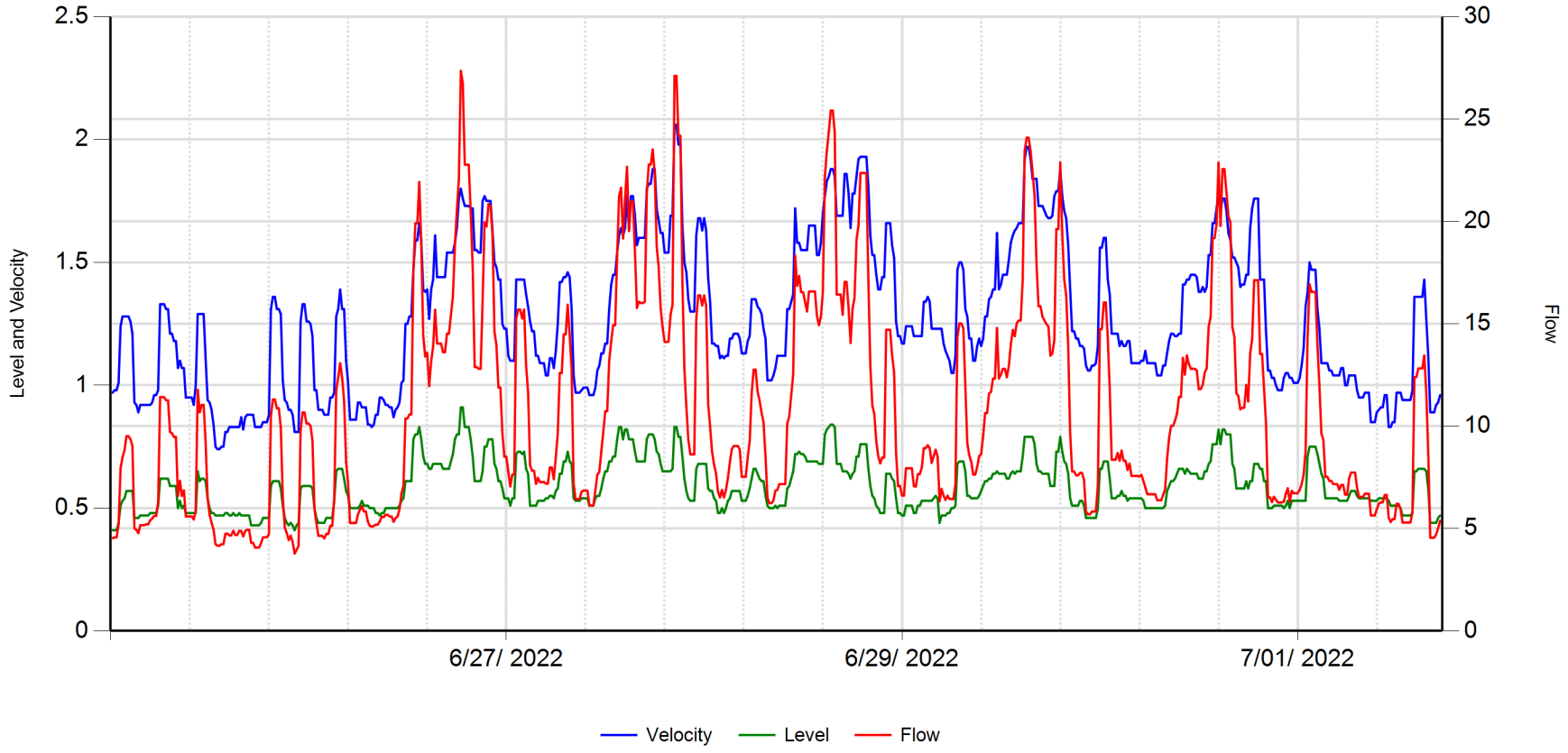
7/26/2022 1:52:38 PM




| | Velocity (fps) | Level (in) | Flow (gpm) | | |
|---|---|---|---|---|---|
| Average | 1.338 | 0.552 | 10.078 | **RainFall** | Inches |
| Maximum | 1.920 | 0.970 | 24.748 | | |
| Minimum | 0.820 | 0.300 | 2.411 | | |

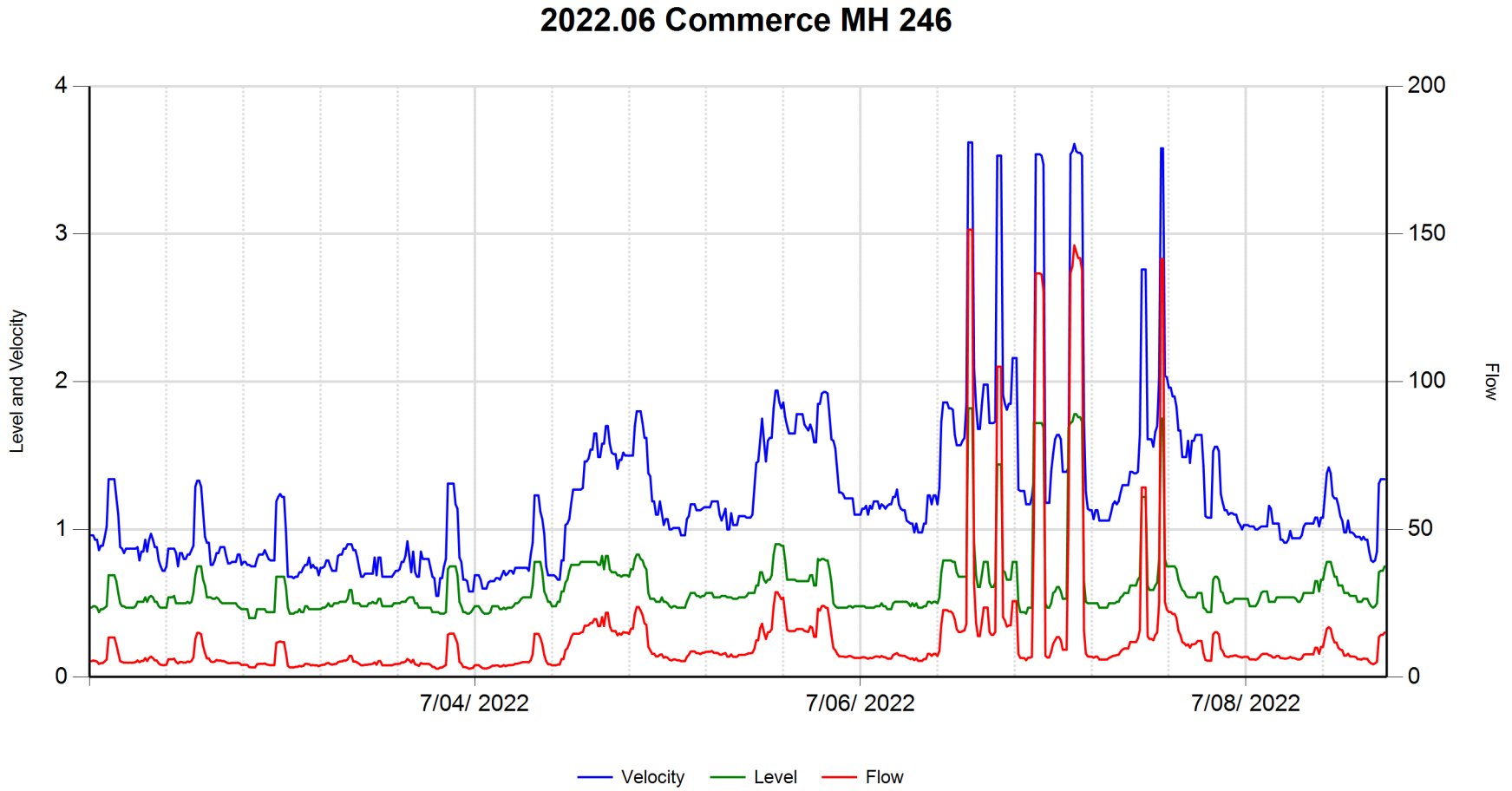
7/26/2022

# 2022.06 Commerce MH 246




| | Velocity (fps) | Level (in) | Flow (gpm) | | |
|---|---|---|---|---|---|
| Average | 1.279 | 0.591 | 10.796 | **RainFall** | Inches |
| Maximum | 2.060 | 0.910 | 27.353 | | |
| Minimum | 0.740 | 0.410 | 3.778 | | |

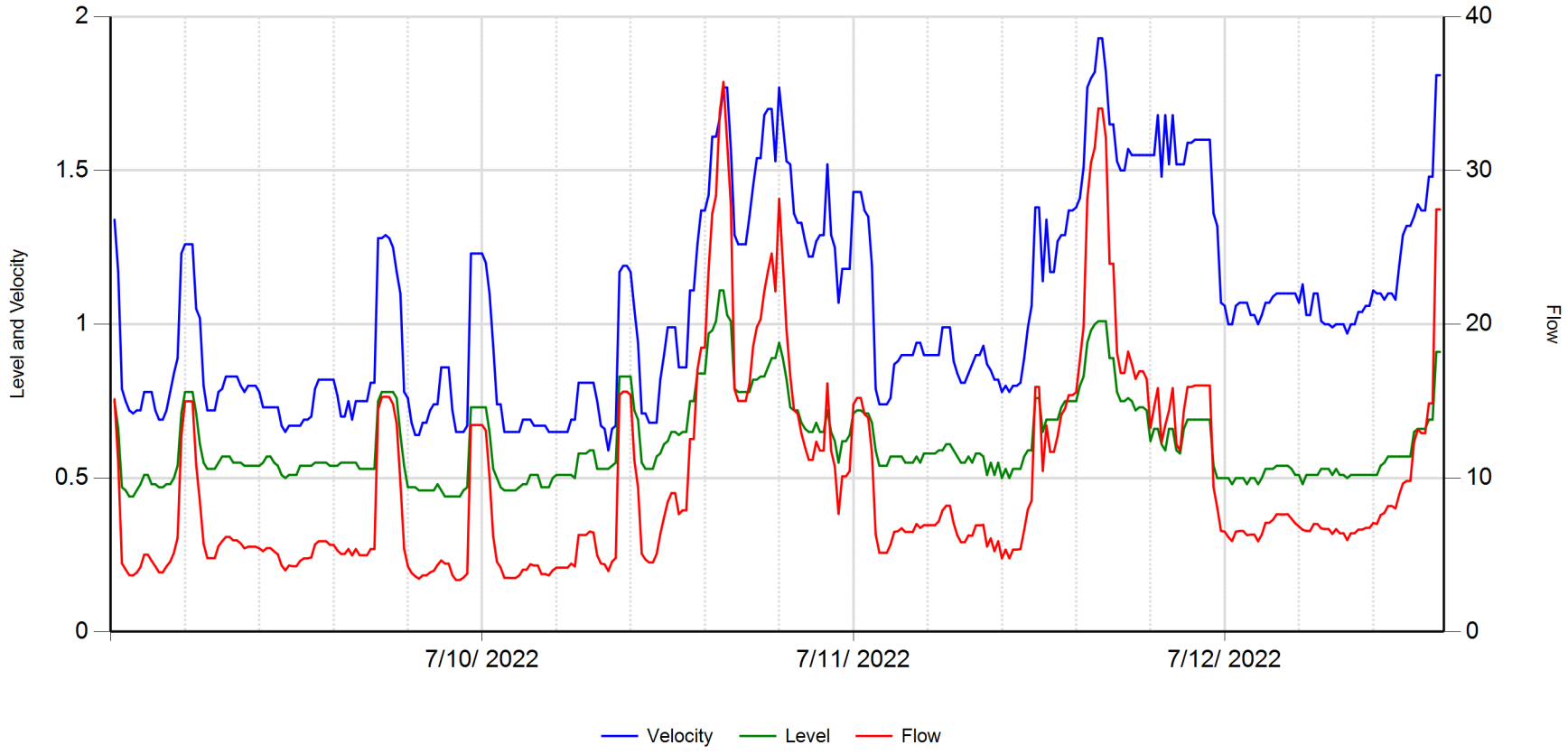
7/26/2022




| | Velocity (fps) | Level (in) | Flow (gpm) | | |
|---|---|---|---|---|---|
| Average | 1.219 | 0.605 | 13.329 | **RainFall** | Inches |
| Maximum | 3.620 | 1.820 | 151.473 | | |
| Minimum | 0.550 | 0.400 | 2.835 | | |

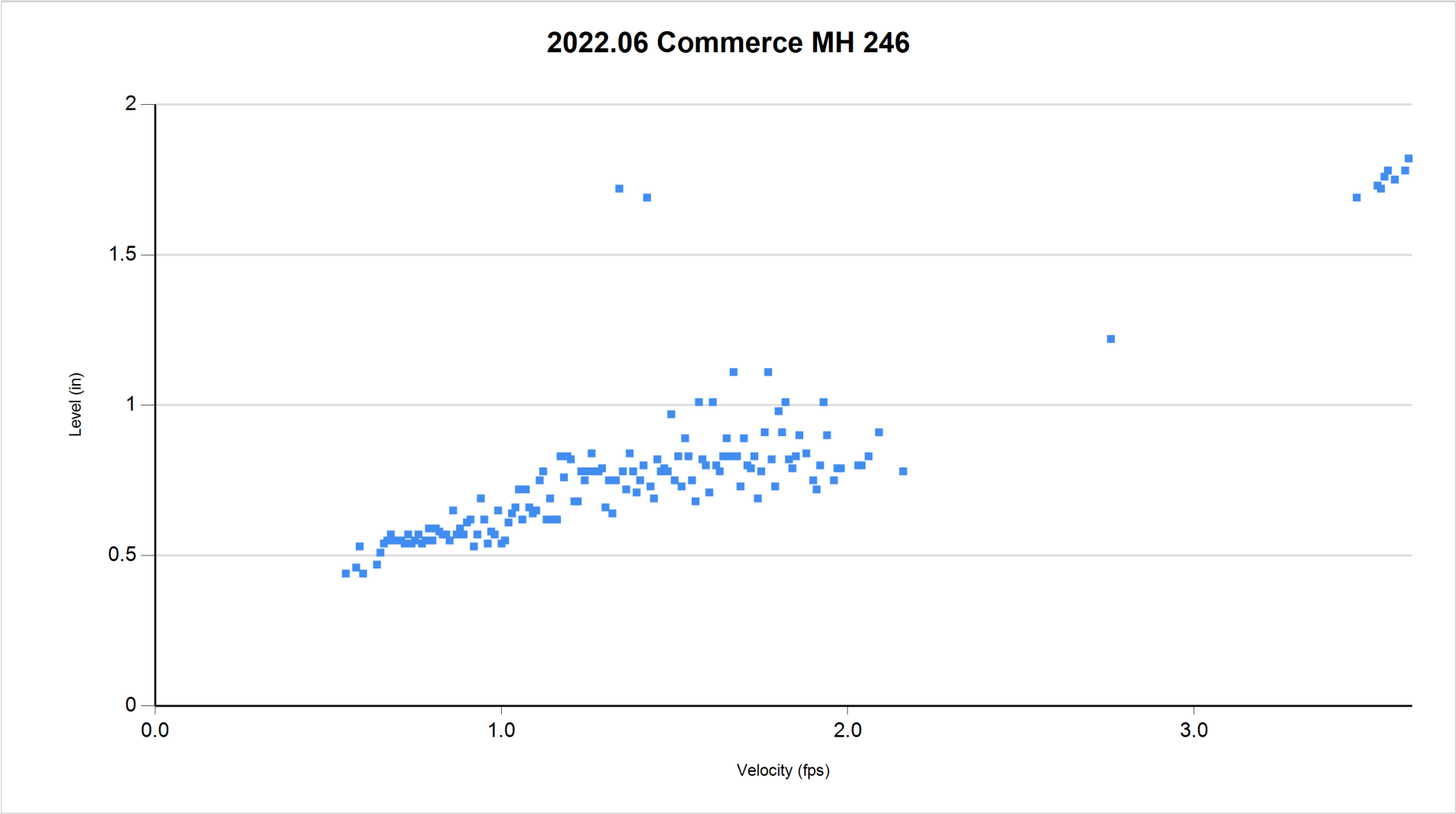
7/26/2022

# 2022.06 Commerce MH 246




| | Velocity (fps) | Level (in) | Flow (gpm) | | |
|---|---|---|---|---|---|
| Average | 1.058 | 0.614 | 9.805 | **RainFall** | Inches |
| Maximum | 1.930 | 1.110 | 35.755 | | |
| Minimum | 0.590 | 0.440 | 3.369 | | |

7/26/2022




6/20/2022 thru 7/13/2022

7/26/2022 1:51:46 PM

## Methods & Procedures & Equipment

### *Methods and Procedures*

Utility Systems Science & Software provided Dexter Wilson Engineering with an off the shelf, non-proprietary flow monitoring solution that included two state of the art Hach Flo-Dar® AV Sensor systems. The project course of action is listed below. The US$^3$ team:

- Assessed permitting and traffic control at the sites in Valencia, CA.
- Installed and removed traffic control in accord with site-specific California Temporary Traffic Control Handbook (CATTCH) requirements for both the installation and removal of equipment.
- Validated the sites for suitability for sewer flow monitoring for the Hancock Parkway 18-inch Gravity Sewer Outlet Project.
  - Commerce MH 246 had no laterals with moderate open channel hydraulics and some surges in discharge.
  - Hancock MH 19 had no laterals with slow to moderate hydraulics and some backwater conditions due to proximity of pump station. Note: Equipment was originally installed in MH 17. The error was identified and the equipment was moved to the correct location.
- Installed and calibrated the flow monitoring equipment at MH 246 on 6/20/2022 and at MH 19 on 6/28/2022 per manufacturer recommendations.
  - Follow-up on the installations confirmed equipment was reading properly.
  - Collected 15-minute interval depth and velocity data points over the entire monitoring period.
- Removed the equipment on 7/13/2022 and validated the data.
  - All of the equipment went through diagnostic testing before and after the study with less than a 1% deviation between manual and meter level readings and less than a 5% deviation between manual and meter velocity readings.
  - Equipment calibration was verified in accordance with manufacturer specifications.
- Prepared the data reports.
  - The table below contains a summary of the average (Avg) and maximum (Max) velocities (Vel) and levels (Lev) collected during this study as well as the calculated flow rates (Flow) and depth versus diameter ratios (d/D).

| MH | Pipe Size (in) | Avg Vel (fps) | Max Vel (fps) | Avg Lev (in) | Max Lev (in) | Avg Flow (gpm) | Max Flow (gpm) | Avg d/D | Max d/D |
|---|---|---|---|---|---|---|---|---|---|
| 246 | 18 | 1.24 | 3.62 | 0.59 | 1.82 | 11.23 | 151.47 | 0.02 | 0.10 |
| 19 | 18 | 0.85 | 1.45 | 1.40 | 2.04 | 24.84 | 54.55 | 0.08 | 0.11 |

***Equipment***

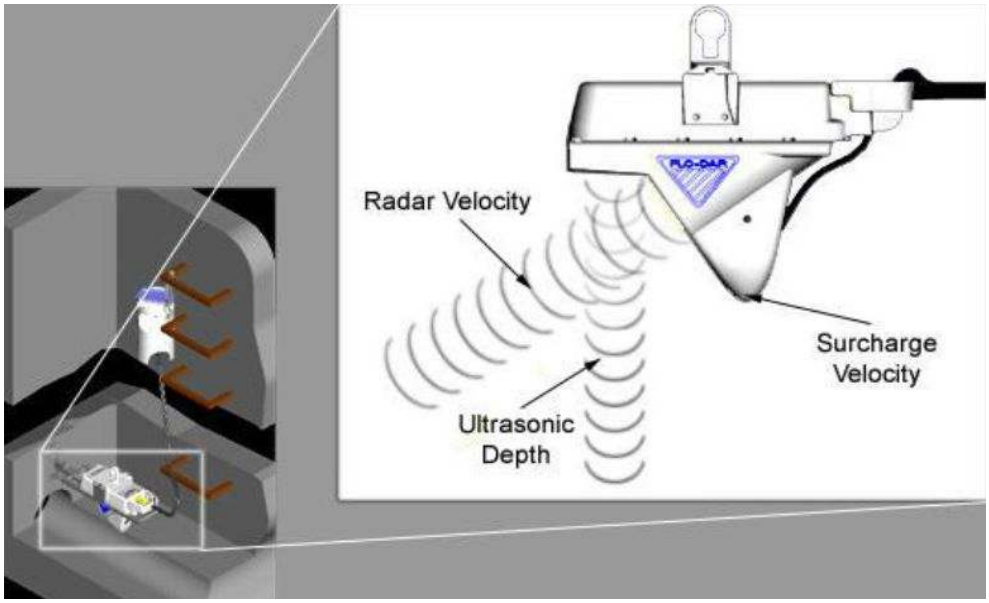



**Figure above:** Equipment installed for the Sewer Flow Monitoring Study

**Figure above:** Web-Enabled Flo-Dar® AV Sensor, Radar-Based Velocity/Area Flow Meter

**FloDar® AV Sensor Specifications:**

- **Enclosure**
  - IP68 Waterproof rating, Polystyrene
- **Dimensions**
  - 160.5 W x 432.2 L x 297 D mm (6.32 x 16.66 x 11.7 in.),
  - With SVS, D = 387 mm (15.2 in.)
- **Weight**
  - 4.8 kg (10.5 lbs.)
- **Operating Temperature**
  - -10 to 50°C (14 to 122°F)
- **Storage Temperature**
  - -40 to 60°C (-40 to 140°F)
- **Power Requirements**
  - Supplied by FL900 Flow Logger, Flo-Logger, or Flo-Station
- **Interconnecting Cable**
  - Disconnect available at both sensor and logger or Flo-Station
  - Polyurethane, 0.400 (±0.015) in. diameter; IP68
  - Standard length 9 m (30 ft), maximum 305 m (1000 ft)
- **Cables – available in two styles:**
  - connectors at both ends
  - connector from sensor with open leads to desiccant hub, desiccant hub with connector to logger. A potting/sealant kit will be included. This can be used to run the cable through conduit.
- **Certification**
  - Certified to: FCC Part 15.245: FCC ID: VIC-FLODAR24
  - Industry Canada Spec. RSS210. v7: IC No.: 6149A-FLODAR24

SURCHARGE DEPTH MEASUREMENT

  - Auto zero function maintains zero error below 0.5 cm (0.2 in.)
- **Method**
  - Piezo-resistive pressure transducer with stainless steel diaphragm
- **Range**
  - 3.5 m (138 in.), overpressure rating 2.5 x full scale

VELOCITY MEASUREMENT

- **Method**
  - Radar
- **Range**
  - 0.23 to 6.10 m/s (0.75 to 20 ft/s)

- **Frequency Range**
  - 24.075 to 24.175 GHz, 15.2 mW (max.)
- **Accuracy**
  - ±0.5%; ±0.03 m/s (±0.1 ft/s)

DEPTH MEASUREMENT

- **Method**
  - Ultrasonic
- **Standard Operating Range from Flo-Dar® Housing to Liquid**
  - 0 to 152.4 cm (0 to 60 in.)
- **Optional Extended Level Operating Range from Transducer Face to Liquid**
  - 0 to 6.1 m (0 to 20 ft.) with 43.18 cm (17 in.) dead band, temperature compensated.
- **Accuracy**
  - ±1%; ±0.25 cm (±0.1 in.)

FLOW MEASUREMENT

- **Method**
  - Based on Continuity Equation
- **Accuracy**
  - ±5% of reading typical where flow is in a channel with uniform flow conditions and is not surcharged, ±1% full scale max.

SURCHARGE CONDITIONS DEPTH/VELOCITY DEPTH (Std with Flo-Dar® Sensor)

- **Surcharge depth supplied by Flo-Dar® sensor.**

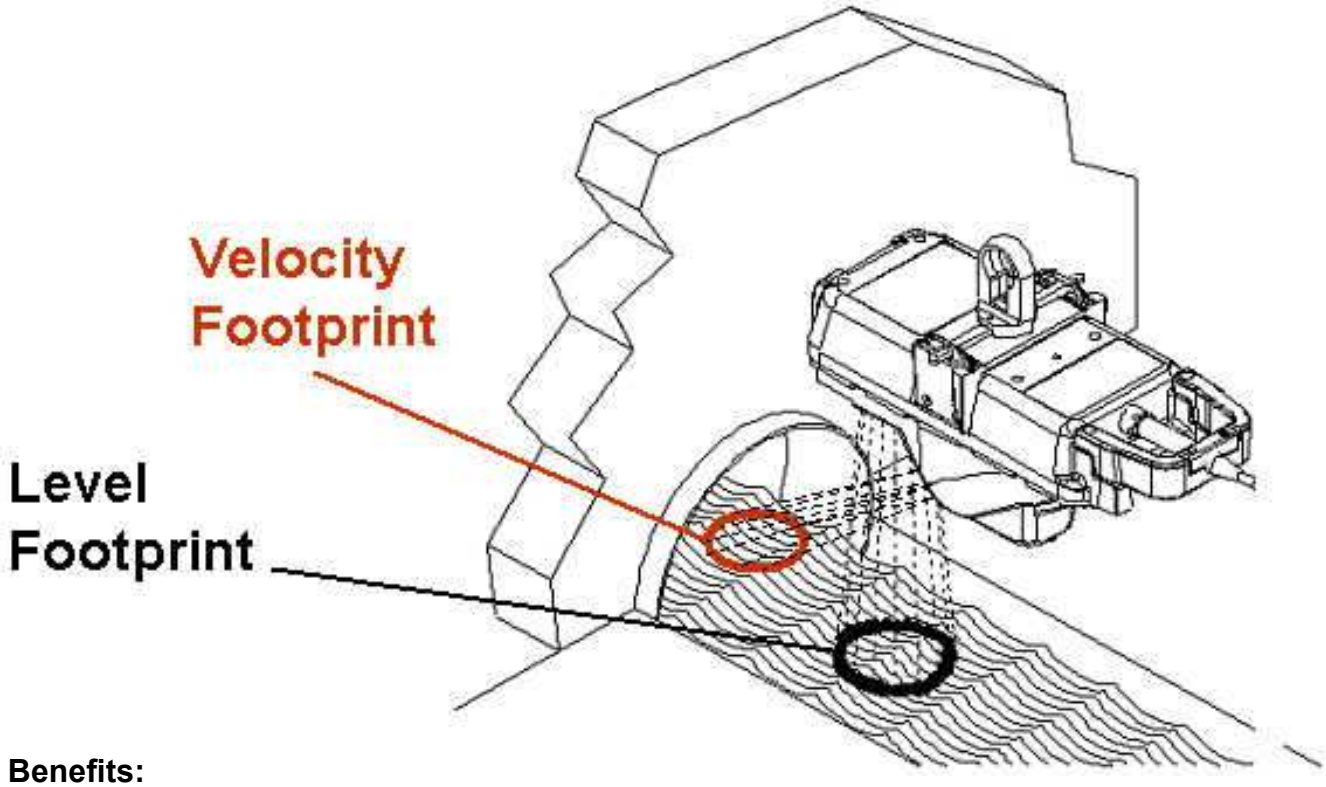
VELOCITY (Optional Surcharge Velocity Sensor)

- **Method**
  - Electromagnetic
- **Range**
  - ±4.8 m/s (±16 ft/s)
- **Accuracy**
  - ±0.15 ft/s or 4% of reading, whichever is greater.
- **Zero Stability**
  - ±0.05 ft/s

The Flo-Dar® Open Channel Flow Meters provide an innovative approach to open channel flow monitoring. Combining digital Doppler radar velocity sensing with ultrasonic pulse echo level sensing Flo-Dar® provides accurate open channel flow monitoring without the fouling problems associated with submerged sensors.

**Perfect Solution for Difficult Flow Conditions:**

- Flows with High Solids Content
- High Temperature Flows
- Caustic Flows
- Large Man-Made Channel
- High Velocities
- Shallow Flows




**Benefits:**

1. Personnel have no contact with the flow during installation.
2. Maintenance caused by sensor fouling is eliminated
3. Field Replaceable/Interchangeable Sensors and Monitors

**How It Works**

Flo-Dar® transmits a digital Doppler radar beam that interacts with the fluid and reflects back signals at a different frequency than that which was transmitted. These reflected signals are compared with the transmitted frequency. The resulting frequency shift provides an accurate measure of the velocity and the direction of the flow. Level is detected by ultrasonic pulse echo. Flow is then calculated based on the Continuity Equation:

*Q = V x A, Where Q = Flow, V = Average Velocity and A = Area*

**Accurate Flow Measurements**

Flo-Dar® provides the user with highly accurate flow measurements under a wide range of flows and site conditions. By measuring the velocity of the fluid from above, Flo-Dar® eliminates accuracy problems inherent with submerged sensors including sensor disturbances, high solids content and distribution of reflectors.

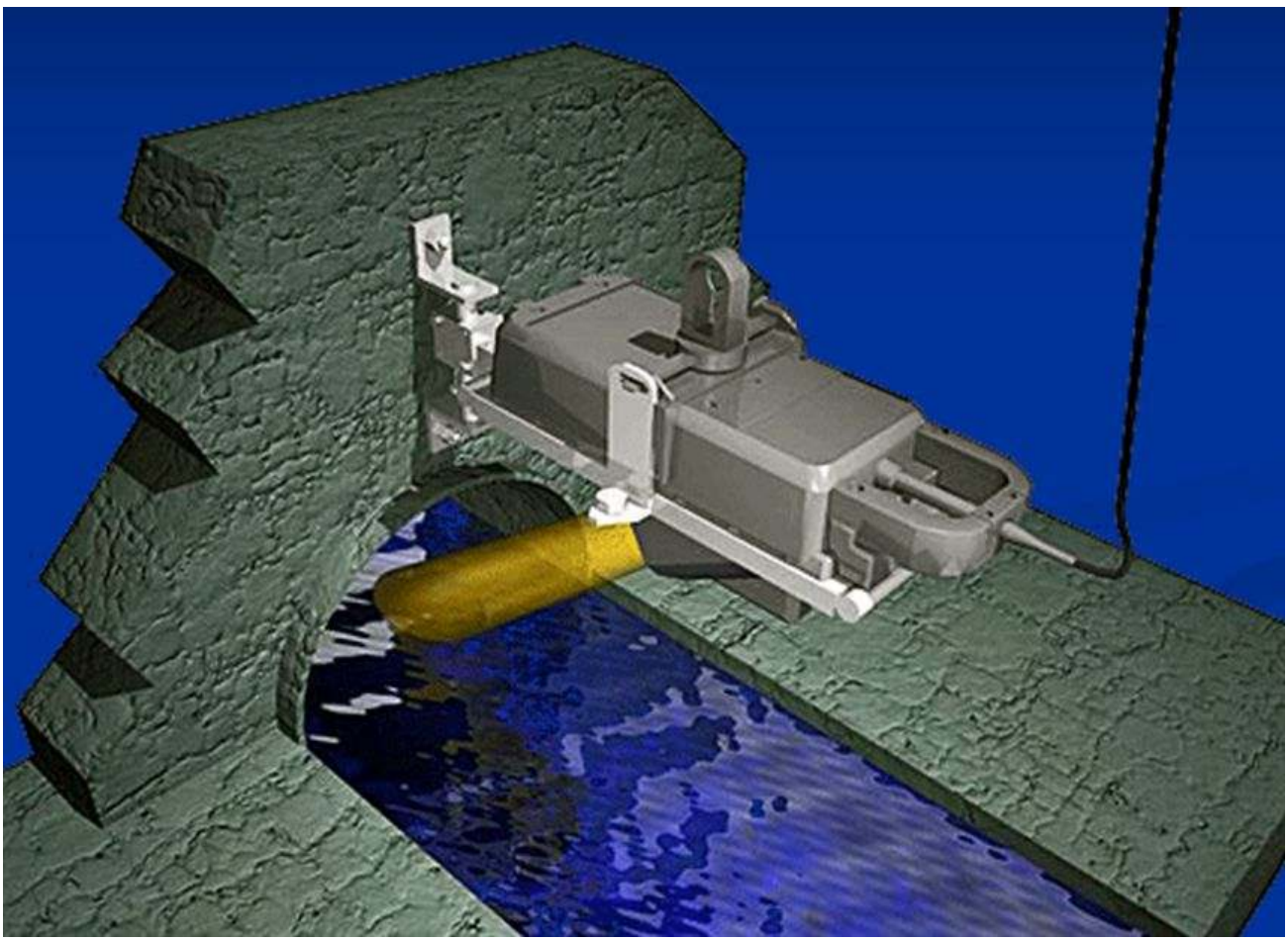


**Figure above:** US$^3$ utilizes exclusively Hach March-McBirney Flo-Dar® Meters

## US$^3$ Company Information

***US$^3$*** is a California Corporation **Federal ID No. 33-0729605** and qualifies as a Minority Business Enterprise. US$^3$ has certified as an MBE with the California Public Utility Commission's authorized clearinghouse, **Verification Number: 97ES0008.**

***US$^3$*** is a specialty service company for the Water & Waste Water industry, providing monitoring and control for Utilities since 1996. US$^3$ is in the forefront of this industry by taking the proven technological approaches developed in other high-tech industries and applying them to protect one of our most precious natural resources - our water.

***US$^3$*** engineers and technical personnel have applied advanced instrumentation system technology to water/wastewater open channel flow monitoring, pipeline evaluation, engineering, and data analysis, all coupled to the power of the Internet. This unique integrated systems approach allows the company to bring greater insight and intelligence to gathering information about water/wastewater system performance of our clients, and in turn, to support the fulfillment of their commitments to manage and cost effectively design, operate, and maintain these systems.

Moreover, ***US$^3$*** supports Municipalities, Consulting Engineering firms and other water/waste water systems integrators by providing temporary technical services for engineering, software programming and technical site maintenance and calibration site support work, primarily in the Water and Waste Water industries.

**Figure at right:** All US$^3$ technicians are certified for Confined Space Entry.

**Key Personnel Assigned**

***US³*** provided the necessary resources to fully implement this project. Primary in support of this effort were the following personnel:

**Mr. Mark Serres**: Mr. Serres is a degreed electrical engineer with over 25 years of experience with fresh/wastewater systems, project management, and systems integration in relation to complex industrial systems. This includes experience in industrial automation and water/wastewater industries. Mr. Serres is responsible for assuring client satisfaction and marshalling the required resources to meet the project requirements.

**Mr. Thomas Williams**: Mr. Williams is an Engineering Manager with over 20 years of experience in complex systems development for wastewater monitoring. This experience includes hydraulic compatibility, instrumentation, communications and analysis. Mr. Williams is responsible for assuring that the required equipment is designed and calibrated to meet the project requirements.

**Darlene Szczublewski, PE**: Mrs. Szczublewski is a licensed Civil Engineer in multiple states. She has over 15 years of engineering experience with stormwater/wastewater related projects. She assisted in the completion of several Sanitary Sewer Evaluation Surveys and Capacity Analysis projects to meet Consent Decrees as well as completing numerous Infiltration and Inflow (I&I) studies for other clients. Mrs. Szczublewski has developed numerous flow data analysis techniques to present a clear informative picture of flow in a monitored system. Her work also includes the development of training programs for clients describing I&I and capacity analysis methodologies. Mrs. Szczublewski is responsible for analyzing the data as well as the data collection process and assuring that the reports meet the project requirements.

**Name, title, address and telephone number of persons to contact regarding this US³ project.**

**Darlene Szczublewski, PE**
**Senior Civil Engineer**
darlene.szczublewski@uscubed.com

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El Cajon, CA 92021
619-546-4281 (work)
619-246-5304 (cell)

**Tom Williams**
**Engineering Manager**
tom.williams@uscubed.com

9314 Bond Av, Suite A
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619-546-4281 (work)
619-398-7799 (cell)

# APPENDIX C

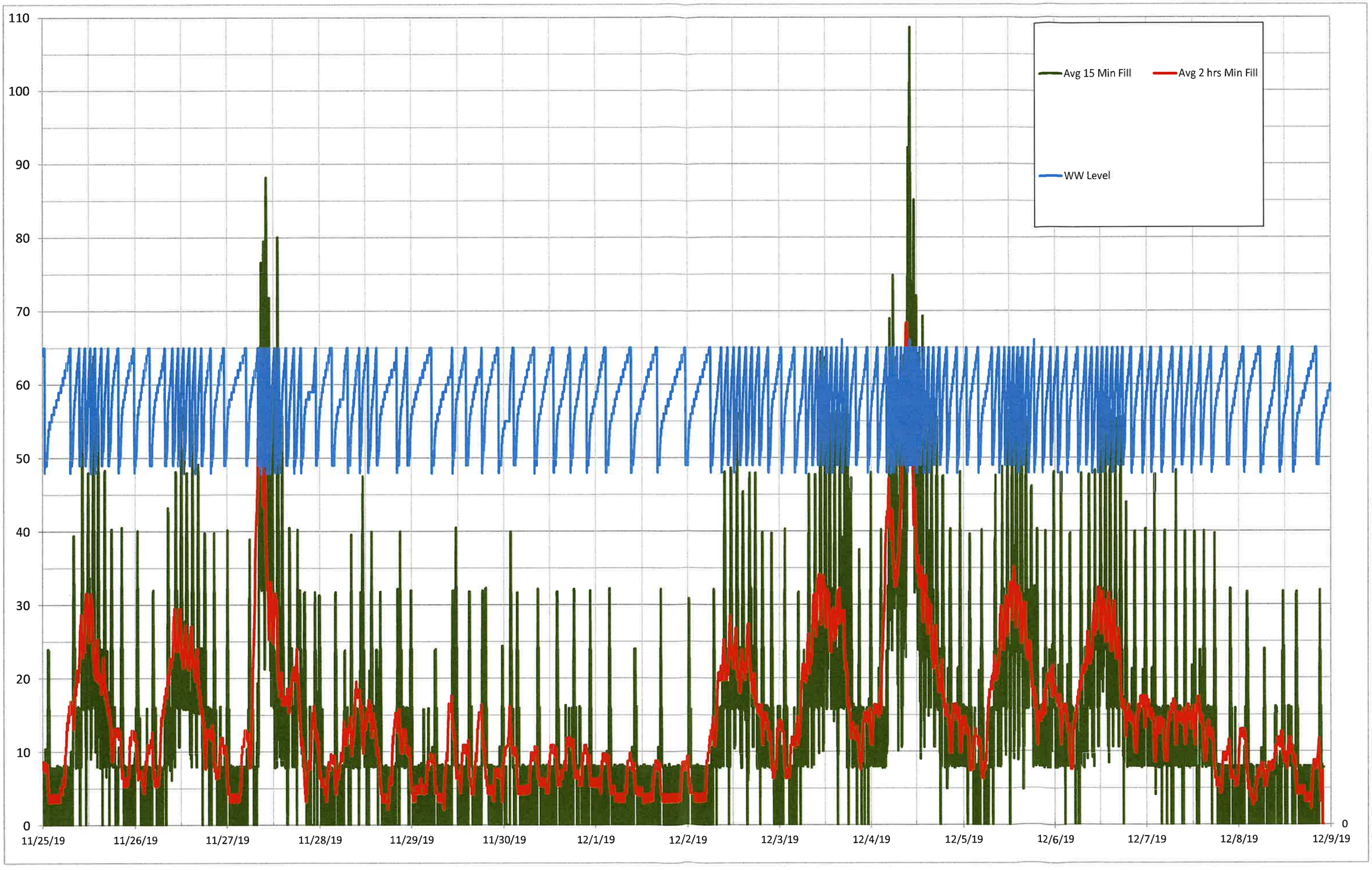
## 2019 FLOW EVALUATION USING WET WELL DATA

**TABLE C-1**
**SUMMARY OF MEASURED SEWAGE FLOW**
**AT HANCOCK PARKWAY PS**

| Flow Condition | Date | Flow, gpm [1] |
|---|---|---|
| Average | December 4, 2019 | 25 |
| **TOTAL EXISTING PEAK FLOW (MEASURED)** | **DECEMBER 4, 2019** | **77.4 [2]** |

[1] Flow tributary to both Commerce Center Drive PS and Hancock Parkway PS

[2] 17% of Hancock Parkway Design Flow


Avg 15 Min Fill
Avg 2 hrs Min Fill
WW Level
110
100
90
80
70
60
50
40
30
20
10
0
0
11/25/19
11/26/19
11/27/19
11/28/19
11/29/19
11/30/19
12/1/19
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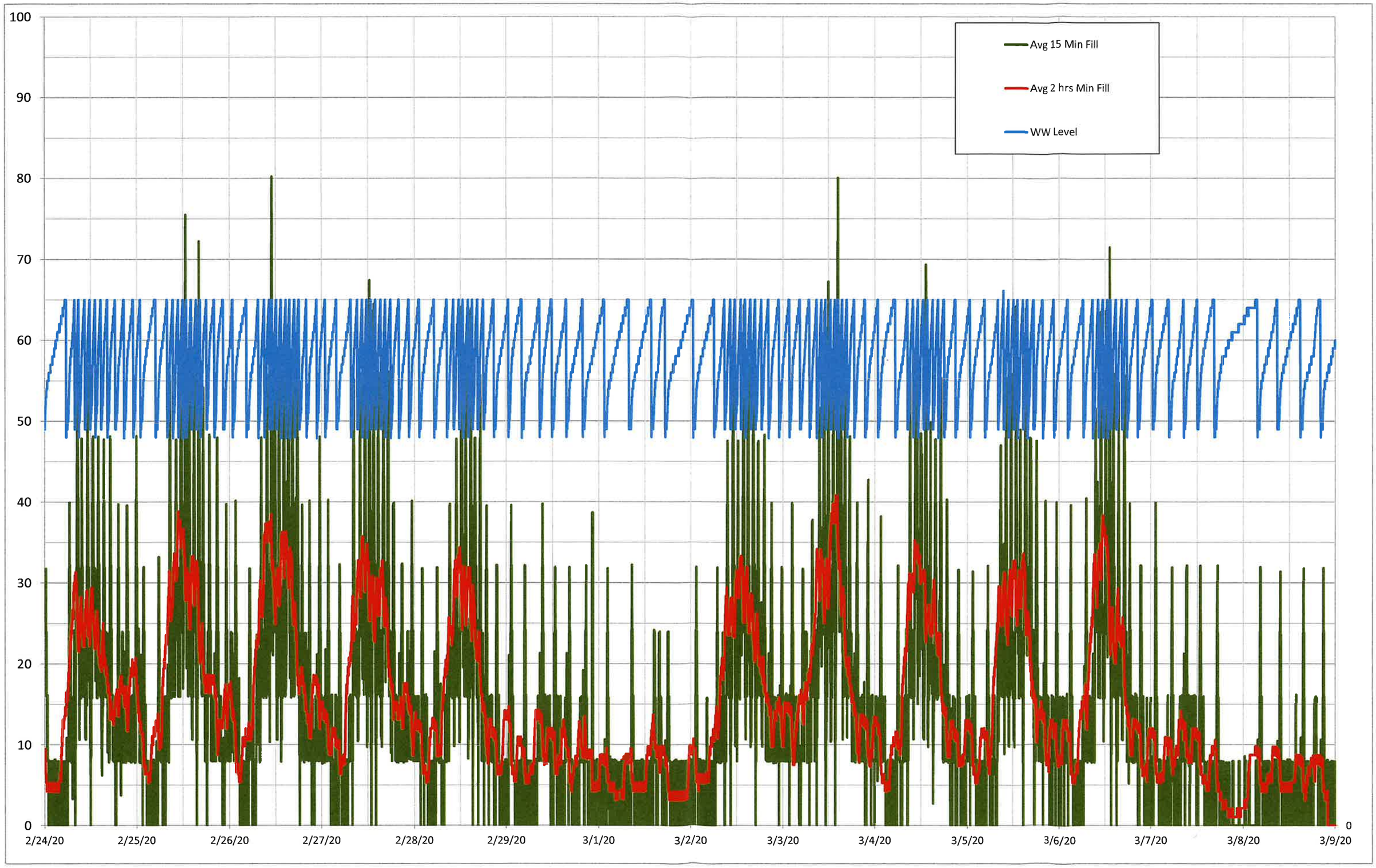
12/8/19
12/9/19


Avg 15 Min Fill
Avg 2 hrs Min Fill
WW Level
100
90
80
70
60
50
40
30
20
10
0
0
2/24/20
2/25/20
2/26/20
2/27/20
2/28/20
2/29/20
3/1/20
3/2/20
3/3/20
3/4/20
3/5/20
3/6/20
3/7/20
3/8/20
3/9/20

# APPENDIX D

# PUMP STATION FLOW COMPARISONS

| TABLE 1<br>HANCOCK + CCD PS DRAINAGE BASINS (ALL PLANNING) | | | | | |
|---|---|---|---|---|---|
| **Planning Area** | **Acres** | **Coefficient, cfs/ac** | **Peak Flow, cfs** | **Peak Flow, gpm** | **Design Flow, gpm** |
| EX.1 | 59.50 | 0.021 | 1.250 | 561 | 841 |
| EX.2 | 65.93 | 0.021 | 1.385 | 621 | 932 |
| EX.3 | 13.80 | 0.021 | 0.290 | 130 | 195 |
| EX.4 | 36.40 | 0.021 | 0.764 | 343 | 515 |
| EX. 2 (V-1) | 2.21 | 0.021 | 0.047 | 21 | 31 |
| EX. 4 (V-2) | 2.47 | 0.021 | 0.052 | 23 | 35 |
| EX. 4 (V-3) | 1.04 | 0.021 | 0.022 | 10 | 15 |
| Pro. 2.1 (B3) | 13.25 | 0.015 | 0.199 | 89 | 134 |
| Pro. 2.2 (B2) | 10.48 | 0.015 | 0.157 | 71 | 106 |
| Pro. 2.3 (B1) | 17.43 | 0.015 | 0.261 | 117 | 176 |
| Pro. 3.1 (C5) | 19.06 | 0.015 | 0.286 | 128 | 192 |
| Pro. 3.2 (C6) | 2.55 | 0.015 | 0.038 | 17 | 26 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.021 | 0.507 | 227 | 341 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.015 | 0.314 | 141 | 212 |
| Pro. 4 (D1) | 27.13 | 0.015 | 0.407 | 183 | 274 |
| Pro. 7.1 (E1) | 4.87 | 0.021 | 0.102 | 46 | 69 |
| Pro. 7.2 (E2) | 6.09 | 0.021 | 0.128 | 57 | 86 |
| **Total** | **327.29** | **—** | **6.208** | **2,786** | **4,179** |

| TABLE 2<br>HANCOCK + CCD PS DRAINAGE BASINS (ACTUAL + PLANNING) | | | | | |
|---|---|---|---|---|---|
| **Planning Area** | **Acres** | **Coefficient, cfs/ac** | **Peak Flow, cfs** | **Peak Flow[1], gpm** | **Design Flow[2], gpm** |
| EX.1 | 59.50 | 0.021 | 0.109 | 49 | 74 |
| EX.2 | 65.93 | 0.021 | | | |
| EX.3 | 13.80 | 0.021 | | | |
| EX.4 | 36.40 | 0.021 | | | |
| EX. 2 (V-1) | 2.21 | 0.021 | 0.047 | 21 | 31 |
| EX. 4 (V-2) | 2.47 | 0.021 | 0.052 | 23 | 35 |
| EX. 4 (V-3) | 1.04 | 0.021 | 0.022 | 10 | 15 |
| Pro. 2.1 (B3) | 13.25 | 0.015 | 0.199 | 89 | 134 |
| Pro. 2.2 (B2) | 10.48 | 0.015 | 0.157 | 71 | 106 |
| Pro. 2.3 (B1) | 17.43 | 0.015 | 0.261 | 117 | 176 |
| Pro. 3.1 (C5) | 19.06 | 0.015 | 0.286 | 128 | 192 |
| Pro. 3.2 (C6) | 2.55 | 0.015 | 0.038 | 17 | 26 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.021 | 0.507 | 227 | 341 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.015 | 0.314 | 141 | 212 |
| Pro. 4 (D1) | 27.13 | 0.015 | 0.407 | 183 | 274 |
| Pro. 7.1 (E1) | 4.87 | 0.021 | 0.102 | 46 | 69 |
| Pro. 7.2 (E2) | 6.09 | 0.021 | 0.128 | 57 | 86 |
| **Total** | **327.29** | **—** | **2.629** | **1,180** | **1,770** |

[1] Based on measured peak, where available. Data Source: MH19 July 2022 and includes CCD Flows.

[2] Pump station Design Flow equals Peak Flow * 1.5.

| TABLE 3<br>HANCOCK + CCD PS DRAINAGE BASINS (ALL PLANNING) WITH SUBTOTALS | | | | | |
|---|---|---|---|---|---|
| **Planning Area** | **Acres** | **Coefficient, cfs/ac** | **Peak Flow, cfs** | **Peak Flow, gpm** | **Design Flow, gpm** |
| EX.1 | 59.50 | 0.021 | 1.250 | 561 | 841 |
| EX.2 | 65.93 | 0.021 | 1.385 | 621 | 932 |
| EX.3 | 13.80 | 0.021 | 0.290 | 130 | 195 |
| EX.4 | 36.40 | 0.021 | 0.764 | 343 | 515 |
| Subtotal | 175.63 | — | 3.688 | 1655 | 2483 |
| EX. 2 (V-1) | 2.21 | 0.021 | 0.047 | 21 | 31 |
| EX. 4 (V-2) | 2.47 | 0.021 | 0.052 | 23 | 35 |
| EX. 4 (V-3) | 1.04 | 0.021 | 0.022 | 10 | 15 |
| Subtotal | 181.35 | — | 3.808 | 1,709 | 2,564 |
| Pro. 4 (D1) | 27.13 | 0.015 | 0.407 | 183 | 274 |
| Subtotal | 208.48 | — | 4.215 | 1,892 | 2,838 |
| Pro 2.1 (B3) | 13.25 | 0.015 | 0.199 | 89 | 134 |
| Pro. 2.2 (B2) | 10.48 | 0.015 | 0.157 | 71 | 106 |
| Pro. 2.3 (B1) | 17.43 | 0.015 | 0.261 | 117 | 176 |
| Subtotal | 249.64 | — | 4.833 | 2,169 | 3,253 |
| Pro. 3.1 (C5) | 19.06 | 0.015 | 0.286 | 128 | 192 |
| Pro. 3.2 (C6) | 2.55 | 0.015 | 0.038 | 17 | 26 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.021 | 0.507 | 227 | 341 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.015 | 0.314 | 141 | 212 |
| Subtotal | 316.33 | — | 5.978 | 2,683 | 4,024 |
| Pro. 7.1 (E1) | 4.87 | 0.021 | 0.102 | 46 | 69 |
| Pro. 7.2 (E2) | 6.09 | 0.021 | 0.128 | 57 | 86 |
| **Total** | **327.29** | **—** | **6.208** | **2,786** | **4,179** |

| TABLE 4<br>HANCOCK + CCD PS DRAINAGE BAINS (ACTUAL + PLANNING) WITH SUBTOTALS | | | | | |
|---|---|---|---|---|---|
| **Planning Area** | **Acres** | **Coefficient, cfs/ac** | **Peak Flow, cfs** | **Peak Flow[1], gpm** | **Design Flow[2], gpm** |
| EX.1 | 59.50 | 0.021 | 0.109 | 49 | 74 |
| EX.2 | 65.93 | 0.021 | | | |
| EX.3 | 13.80 | 0.021 | | | |
| EX.4 | 36.40 | 0.021 | | | |
| Subtotal | 175.63 | — | 0.109 | 49 | 74 |
| EX. 2 (V-1) | 2.21 | 0.021 | 0.047 | 21 | 31 |
| EX. 4 (V-2) | 2.47 | 0.021 | 0.052 | 23 | 35 |
| EX. 4 (V-3) | 1.04 | 0.021 | 0.022 | 10 | 15 |
| Subtotal | 181.35 | — | 0.230 | 103 | 155 |
| Pro. 4 (D1) | 27.13 | 0.015 | 0.407 | 183 | 274 |
| Subtotal | 208.48 | — | 0.636 | 286 | 428 |
| Pro 2.1 (B3) | 13.25 | 0.015 | 0.199 | 89 | 134 |
| Pro. 2.2 (B2) | 10.48 | 0.015 | 0.157 | 71 | 106 |
| Pro. 2.3 (B1) | 17.43 | 0.015 | 0.261 | 117 | 176 |
| Subtotal | 249.64 | — | 1.254 | 563 | 844 |
| Pro. 3.1 (C5) | 19.06 | 0.015 | 0.286 | 128 | 192 |
| Pro. 3.2 (C6) | 2.55 | 0.015 | 0.038 | 17 | 26 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.021 | 0.507 | 227 | 341 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.015 | 0.314 | 141 | 212 |
| Subtotal | 316.33 | — | 2.399 | 1,077 | 1,615 |
| Pro. 7.1 (E1) | 4.87 | 0.021 | 0.102 | 46 | 69 |
| Pro. 7.2 (E2) | 6.09 | 0.021 | 0.128 | 57 | 86 |
| **Total** | **327.29** | **—** | **2.629** | **1,180** | **1,770** |

[1] Based on measured peak, where available. Data Source: MH19 July 2022 and includes CCD Flows.

[2] Pump station Design Flow equals Peak Flow * 1.5.

| TABLE 5<br>HANCOCK ONLY (ALL PLANNING) | | | | | |
|---|---|---|---|---|---|
| **Planning Area** | **Acres** | **Coefficient, cfs/ac** | **Peak Flow, cfs** | **Peak Flow, gpm** | **Design Flow, gpm** |
| EX.3 | 13.80 | 0.021 | 0.290 | 130 | 195 |
| EX.4 | 36.40 | 0.021 | 0.764 | 343 | 515 |
| Subtotal | 50.20 | — | 1.054 | 473 | 710 |
| EX. 4 (V-2) | 2.47 | 0.021 | 0.052 | 23 | 35 |
| EX. 4 (V-3) | 1.04 | 0.021 | 0.022 | 10 | 15 |
| Subtotal | 53.71 | — | 1.128 | 506 | 759 |
| Pro. 4 (D1) | 27.13 | 0.015 | 0.407 | 183 | 274 |
| Subtotal | 80.84 | — | 1.535 | 689 | 1,033 |
| Pro 2.1 (B3) | 13.25 | 0.015 | 0.199 | 89 | 134 |
| Pro. 2.2 (B2) | 10.48 | 0.015 | 0.157 | 71 | 106 |
| Pro. 2.3 (B1) | 17.43 | 0.015 | 0.261 | 117 | 176 |
| Subtotal | 122.00 | — | 2.152 | 966 | 1,449 |
| Pro. 3.1 (C5) | 19.06 | 0.015 | 0.286 | 128 | 192 |
| Pro. 3.2 (C6) | 2.55 | 0.015 | 0.038 | 17 | 26 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.021 | 0.507 | 227 | 341 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.015 | 0.314 | 141 | 212 |
| Subtotal | 188.69 | — | 3.297 | 1,480 | 2,220 |
| Pro. 7.1 (E1) | 4.87 | 0.021 | 0.102 | 46 | 69 |
| Pro. 7.2 (E2) | 6.09 | 0.021 | 0.128 | 57 | 86 |
| **Total** | **199.65** | **—** | **3.527** | **1,583** | **2,375** |

| TABLE 6<br>HANCOCK ONLY (ACTUAL + PLANNING) | | | | | |
|---|---|---|---|---|---|
| **Planning Area** | **Acres** | **Coefficient, cfs/ac** | **Peak Flow, cfs** | **Peak Flow[1], gpm** | **Design Flow[2], gpm** |
| EX.3 | 13.80 | 0.021 | 0.109 | 49 | 74 |
| EX.4 | 36.40 | 0.021 | | | |
| Subtotal | 50.20 | — | 0.109 | 49 | 74 |
| EX. 4 (V-2) | 2.47 | 0.021 | 0.052 | 23 | 35 |
| EX. 4 (V-3) | 1.04 | 0.021 | 0.022 | 10 | 15 |
| Subtotal | 53.71 | — | 0.183 | 82 | 123 |
| Pro. 4 (D1) | 27.13 | 0.015 | 0.407 | 183 | 274 |
| Subtotal | 80.84 | — | 0.590 | 265 | 397 |
| Pro 2.1 (B3) | 13.25 | 0.015 | 0.199 | 89 | 134 |
| Pro. 2.2 (B2) | 10.48 | 0.015 | 0.157 | 71 | 106 |
| Pro. 2.3 (B1) | 17.43 | 0.015 | 0.261 | 117 | 176 |
| Subtotal | 122.00 | — | 1.207 | 542 | 813 |
| Pro. 3.1 (C5) | 19.06 | 0.015 | 0.286 | 128 | 192 |
| Pro. 3.2 (C6) | 2.55 | 0.015 | 0.038 | 17 | 26 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.021 | 0.507 | 227 | 341 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.015 | 0.314 | 141 | 212 |
| Subtotal | 188.69 | — | 2.352 | 1,056 | 1,584 |
| Pro. 7.1 (E1) | 4.87 | 0.021 | 0.102 | 46 | 69 |
| Pro. 7.2 (E2) | 6.09 | 0.021 | 0.128 | 57 | 86 |
| **Total** | **199.65** | **—** | **2.583** | **1,159** | **1,739** |

[1] Based on measured peak, where available. Data Source: MH19 July 2022 and includes CCD Flows.

[2] Pump station Design Flow equals Peak Flow * 1.5.

| TABLE 7<br>HANCOCK ONLY (ALL PROJECTED) | | | | | |
|---|---|---|---|---|---|
| **Planning Area** | **Acres** | **Coefficient[2], cfs/ac** | **Peak Flow, cfs** | **Peak Flow[1], gpm** | **Design Flow, gpm** |
| EX.3 | 13.80 | 0.002 | 0.109 | 49 | 74 |
| EX.4 | 36.40 | 0.002 | | | |
| Subtotal | 50.20 | — | 0.109 | 49 | 74 |
| EX. 4 (V-2) | 2.47 | 0.002 | 0.005 | 2 | 4 |
| EX. 4 (V-3) | 1.04 | 0.002 | 0.002 | 1 | 2 |
| Subtotal | 53.71 | — | 0.117 | 52 | 79 |
| Pro. 4 (D1) | 27.13 | 0.002 | 0.059 | 27 | 40 |
| Subtotal | 80.84 | — | 0.176 | 79 | 118 |
| Pro 2.1 (B3) | 13.25 | 0.002 | 0.029 | 13 | 19 |
| Pro. 2.2 (B2) | 10.48 | 0.002 | 0.023 | 10 | 15 |
| Pro. 2.3 (B1) | 17.43 | 0.002 | 0.038 | 17 | 26 |
| Subtotal | 122.00 | — | 0.266 | 119 | 179 |
| Pro. 3.1 (C5) | 19.06 | 0.002 | 0.041 | 19 | 28 |
| Pro. 3.2 (C6) | 2.55 | 0.002 | 0.006 | 2 | 4 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.002 | 0.053 | 24 | 35 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.002 | 0.046 | 20 | 31 |
| Subtotal | 188.69 | — | 0.411 | 184 | 277 |
| Pro. 7.1 (E1) | 4.87 | 0.002 | 0.011 | 5 | 7 |
| Pro. 7.2 (E2) | 6.09 | 0.002 | 0.013 | 6 | 9 |
| **Total** | **199.65** | **—** | **0.435** | **195** | **293** |

[1] Based on measured peak, where available. Data Source: MH19 July 2022 and includes CCD Flows.

[2] Factor of Safety of 1.0. (EX.3 Peak Flow + EX.4 Peak Flow)/(EX.3 Acres + EX.4 Acres) = 0.002 cfs/ac. 0.002 cfs/ac * 1.0 = 0.002 cfs/ac.

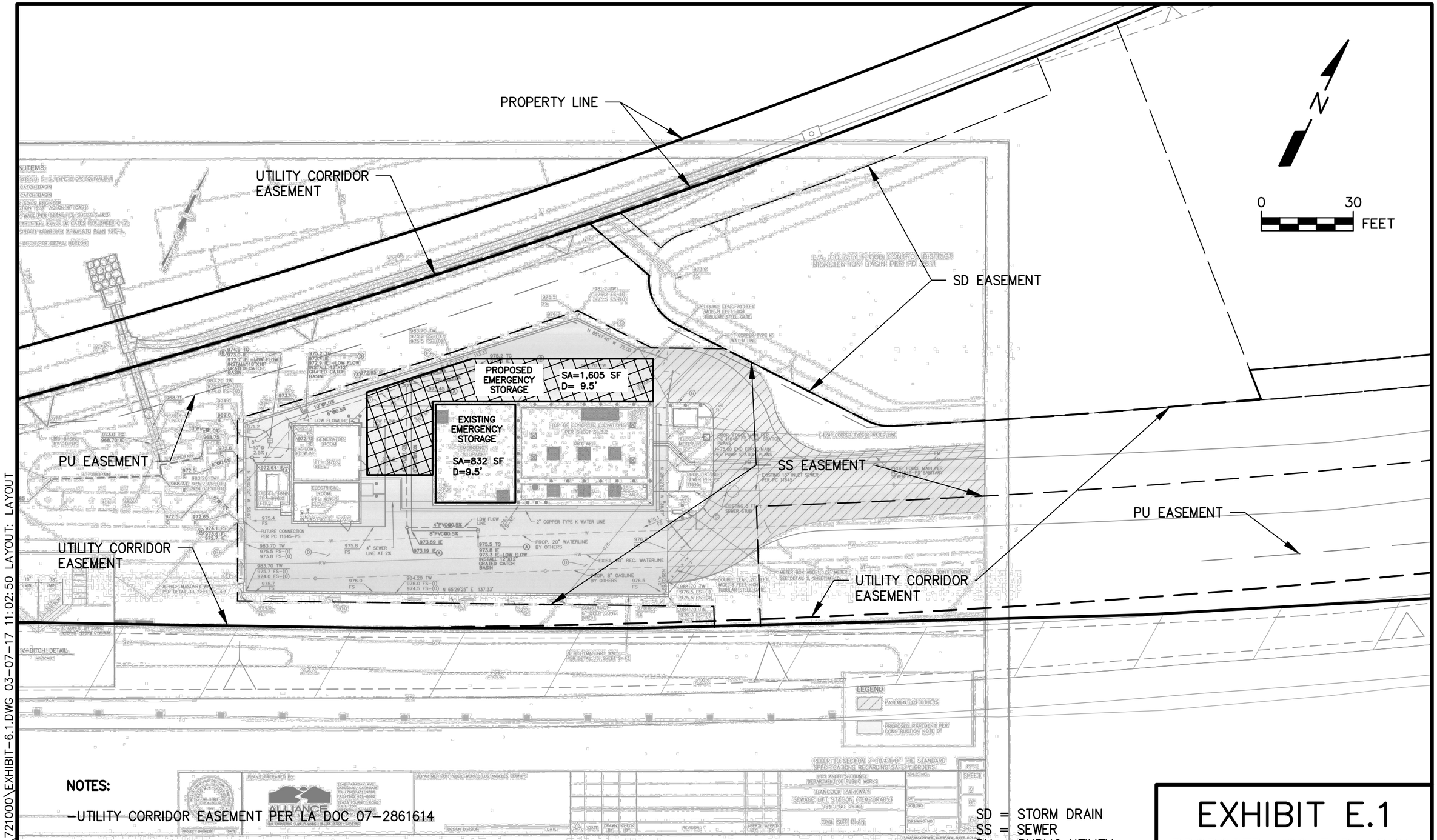
| TABLE 8<br>HANCOCK ONLY (ALL PROJECTED) | | | | | |
|---|---|---|---|---|---|
| **Planning Area** | **Acres** | **Coefficient[2], cfs/ac** | **Peak Flow, cfs** | **Peak Flow[1], gpm** | **Design Flow, gpm** |
| EX.3 | 13.80 | 0.003 | 0.109 | 49 | 74 |
| EX.4 | 36.40 | 0.003 | | | |
| Subtotal | 50.20 | — | 0.109 | 49 | 74 |
| EX. 4 (V-2) | 2.47 | 0.003 | 0.008 | 4 | 5 |
| EX. 4 (V-3) | 1.04 | 0.003 | 0.003 | 2 | 2 |
| Subtotal | 53.71 | — | 0.121 | 54 | 81 |
| Pro. 4 (D1) | 27.13 | 0.003 | 0.089 | 40 | 60 |
| Subtotal | 80.84 | — | 0.209 | 94 | 141 |
| Pro. 2.1 (B3) | 13.25 | 0.003 | 0.043 | 19 | 29 |
| Pro. 2.2 (B2) | 10.48 | 0.003 | 0.034 | 15 | 23 |
| Pro. 2.3 (B1) | 17.43 | 0.003 | 0.057 | 26 | 38 |
| Subtotal | 122.00 | — | 0.344 | 154 | 231 |
| Pro. 3.1 (C5) | 19.06 | 0.003 | 0.062 | 28 | 42 |
| Pro. 3.2 (C6) | 2.55 | 0.003 | 0.008 | 4 | 6 |
| Pro. 3.3 a/b (C1/C2) | 24.12 | 0.003 | 0.079 | 35 | 53 |
| Pro. 3.3 c/d (C3/C4) | 20.96 | 0.003 | 0.068 | 31 | 46 |
| Subtotal | 188.69 | — | 0.562 | 252 | 378 |
| Pro. 7.1 (E1) | 4.87 | 0.003 | 0.016 | 7 | 11 |
| Pro. 7.2 (E2) | 6.09 | 0.003 | 0.020 | 9 | 13 |
| **Total** | **199.65** | **—** | **0.597** | **268** | **402** |

[1] Based on measured peak, where available. Data Source: MH19 July 2022 and includes CCD Flows.

[2] Factor of Safety of 1.5. (EX.3 Peak Flow + EX.4 Peak Flow)/(EX.3 Acres + EX.4 Acres) = 0.002 cfs/ac. 0.003 cfs/ac * 1.5 = 0.003 cfs/ac.

# APPENDIX E

# PROPOSED IMPROVEMENTS




**NOTES:**

–UTILITY CORRIDOR EASEMENT PER LA DOC 07–2861614

–REMAINING EASEMENTS PER ALLIANCE DRAWING FOR PS

D = DEPTH, IN FEET

SF = SQUARE FEET

SD = STORM DRAIN
SS = SEWER
PU = PUBLIC UTILITY

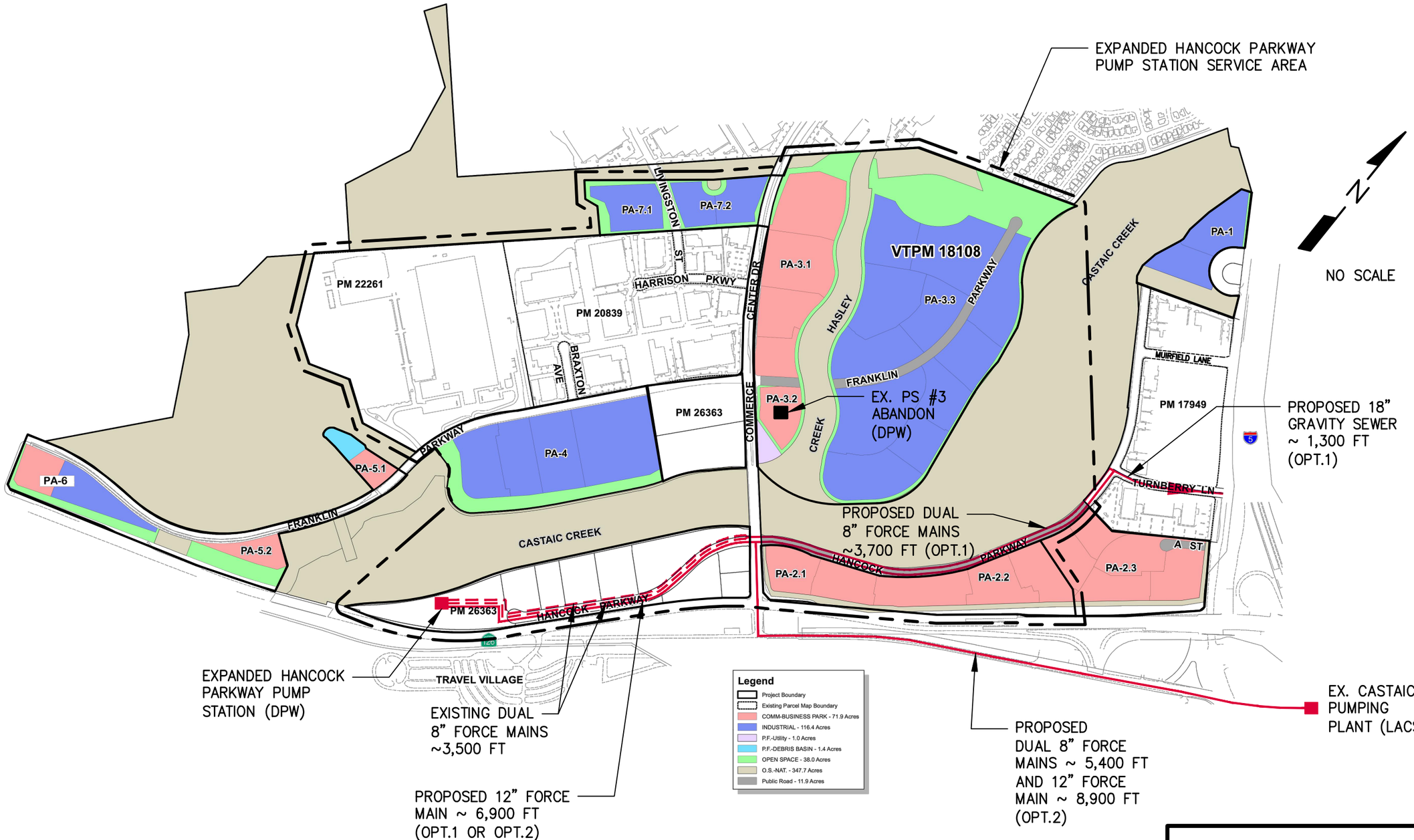
# EXHIBIT E.1

## PROPOSED VCC EXPANSION EMERGENCY STORAGE

HANCOCK PARKWAY PUMP STATION
HYDRAULIC OUTLET STUDY

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

\\ARTIC\DWG\721000\EXHIBIT–6.1.DWG 03–07–17 11:02:50 LAYOUT: LAYOUT




# EXHIBIT E.2

## EXPANDED HANCOCK PARKWAY PUMP STATION

HANCOCK PARKWAY PUMP STATION
HYDRAULIC OUTLET STUDY

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

\\ARTIC\DWG\721000\EXHIBIT-6.2.DWG 11-12-21 08:29:30 LAYOUT: LAYOUT