# APPENDIX J: HYDROLOGY REPORT

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September 2019

# PRELIMINARY HYDROLOGY REPORT

## For

## Tentative Tract No. 82874

### City of Covina

### County of Los Angeles

Prepared For:

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WO#: 3593-42X-HydrlgyRprt-TT82874

# DRAINAGE CONCEPT/HYDROLOGY REPORT

**FOR**

# VTTM NO. 82874

## CITY OF COVINA

## COUNTY OF LOS ANGELES

Prepared Date: 05/01/2020

PREPARED UNDER THE SUPERVISION OF:

5/01/2020

Jianhua "Gary" Guan, R.C.E. 64519, Exp. 06/30/21 Date:

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# SECTION 1

# INTRODUCTION & DISCUSSION

# A. **INTRODUCTION**

The proposed residential development for Covina Bowl – Vesting Tentative Tract Map (VTTM) No. 82874 is located at 1060 West San Bernardino Road, in the City of Covina, County of Los Angeles. The subject site is located on the north side of Badillo Street Drive, south of San Bernardino Road, west of Rimsdale Avenue, and east of existing residential. The general location can be found from the vicinity map attached.

The site presently encompasses commercial/retail buildings with parking lots and a preschool building structure. The overall property is approximately +/-4.50 gross acres and is generally a Trapezoid-shaped parcel. The project site is vacated and not in use. The proposed project would demolish all asphalt and paved areas, buildings, structures and landscaping.

Surrounding land uses include primarily residential and commercial land uses.

The project site in located within Flood Zone "X" per FIRM Map 06037C1700F dated September 26, 2008.

Trumark Homes proposes Vesting Tentative Tract Map No. 82874 for the development of residential lots, parkways, on-street parking, private drives, curb, gutter, sidewalk and storm drain improvements, wet and dry utilities and related infrastructure improvements.

## B. DRAINAGE PATTERNS

The overall property is approximately +/-4.55 gross acres in size and the Stormwater and surface water onsite generally flow from northeast to southwest direction. The onsite storm runoffs discharge into Rimsdale Avenue and Badillo Street. Currently, there are catch basins and storm drain systems in the perimeter Streets – one at the northwest intersection of Rimsdale Avenue and Badillo Street and one at the southwest project boundary along Badillo Street. The catch basin flows discharge into the existing 81" storm drain (Regional Project No. 1123) along Badillo Street; (Refer to the hydrology map for detailed locations). The existing storm drain plans for Regional Project No. 1123 can be found in Reference Section 5.

During the proposed condition, the project site will be proposed to follow the existing condition drainage pattern – discharging into the existing 81" storm drain (Regional Project No. 1123) with the proposed onsite storm drains and the new connections. The proposed Modular Wetland Systems (MWS) are provided for the treatment of the water quality flows.

## C. STUDY PURPOSE

The purpose of this study is to analyze pre-project and post-project hydrology of the project site to determine the peak flow rates of storm runoff and to analyze the negative impacts, if any, due to the project developments.

## D. HYDROLOGIC INFORMATION

A 25-year storm was analyzed for the project site. The project site encompasses the No. 006 soil group. The 50-year 24-hour isohyet is approximately 7.1 inches. The project falls into DPA zone 6. The 85$^{th}$ Percentile, 24-hr Rainfall is approximately 1.0 inches. The reference Los Angeles County Hydrology Map GIS information can be found in this Section.

The area averaged 96% of impervious percentage (Retail Center Land Use) was applied for the existing condition hydrology analysis and a uniform 86% of impervious area (Apartments and Condominiums Residential) was applied for the proposed condition hydrology analysis.

## E. METHODOLOGY

The methodology described in the Los Angeles County Department of Public Works (LACDPW) Hydrology Manual dated January 2006, was used to compute storm run-off from the project site. The LACDPW HydroCalc computer program was used to compute subarea time of concentration (TC), Peak Flow Rates and Runoff Volume. The hydrology calculations are included in Section 2 for existing (pre-project) and Section 3 proposed (post-project) conditions of this report.

## F. HYDROLOGY CALCULATION RESULTS

The summary of the hydrology study results and the comparisons between the existing and proposed conditions can be found in the following Hydrology Summary Table.

Hydrology Summary Table
Covina Bowl - VTTM 82874
City of Covina, County Of Los Angeles

| Drainage Area | Existing Condition (1) | | Proposed Condition (2) | | Differences (3)=(2)-(1) | |
|---|---|---|---|---|---|---|
| | Area | 25-yr Storm | Area | 25-yr Storm | Area | 25-yr Storm |
| | (acre) | (cfs) | (acre) | (cfs) | (acre) | (cfs) |
| 1A | 4.55 | 11.51 | 4.44 | 10.56 | -0.11 | -0.95 |
| 2B | 1.47 | 3.72 | 1.58 | 3.80 | 0.11 | 0.08 |
| Total | 6.02 | 15.23 | 6.02 | 14.36 | 0.00 | -0.87 |

As indicated from the summary table, the overall peak flow rates decreases due to the project development. The overall peak flow rate decreases 0.87 cfs for 25-year storm. Overall, it is concluded that there will have no adverse impacts to the existing drainage systems due to the project developments.

## G. LID/WATER QUALITY

This will require all filtration water quality devices to be sized per Adjusted Design Intensity to Provide Additional Capture In Lieu of Volume Reduction (see attached below).

July 2018

**Table 6: Adjusted Design Intensity to Provide Additional Capture In Lieu of Volume Reduction (Option B)**

| Adjusted Time of Concentration (min) | Reliable Infiltration Rate at Site | | | |
|---|---|---|---|---|
| | **0 in/hr (ET only)** Capture Efficiency Target = 93.8% | **0.01 in/hr** Capture Efficiency Target = 94.1% | **0.05 in/hr** Capture Efficiency Target = 95.4% | **0.15 in/hr** Capture Efficiency Target = 98.1% |
| | Adjusted MWS Design Precipitation Intensities, in/hr | | | |
| 5 | 0.55 | 0.57 | 0.66 | N/A |
| 7.5 | 0.51 | 0.53 | 0.60 | 0.96 |
| 10 | 0.48 | 0.49 | 0.57 | 0.90 |
| 15 | 0.44 | 0.45 | 0.52 | 0.79 |
| 20 | 0.41 | 0.42 | 0.48 | 0.74 |
| 30 | 0.37 | 0.38 | 0.43 | 0.64 |
| 60 | 0.31 | 0.31 | 0.35 | 0.50 |

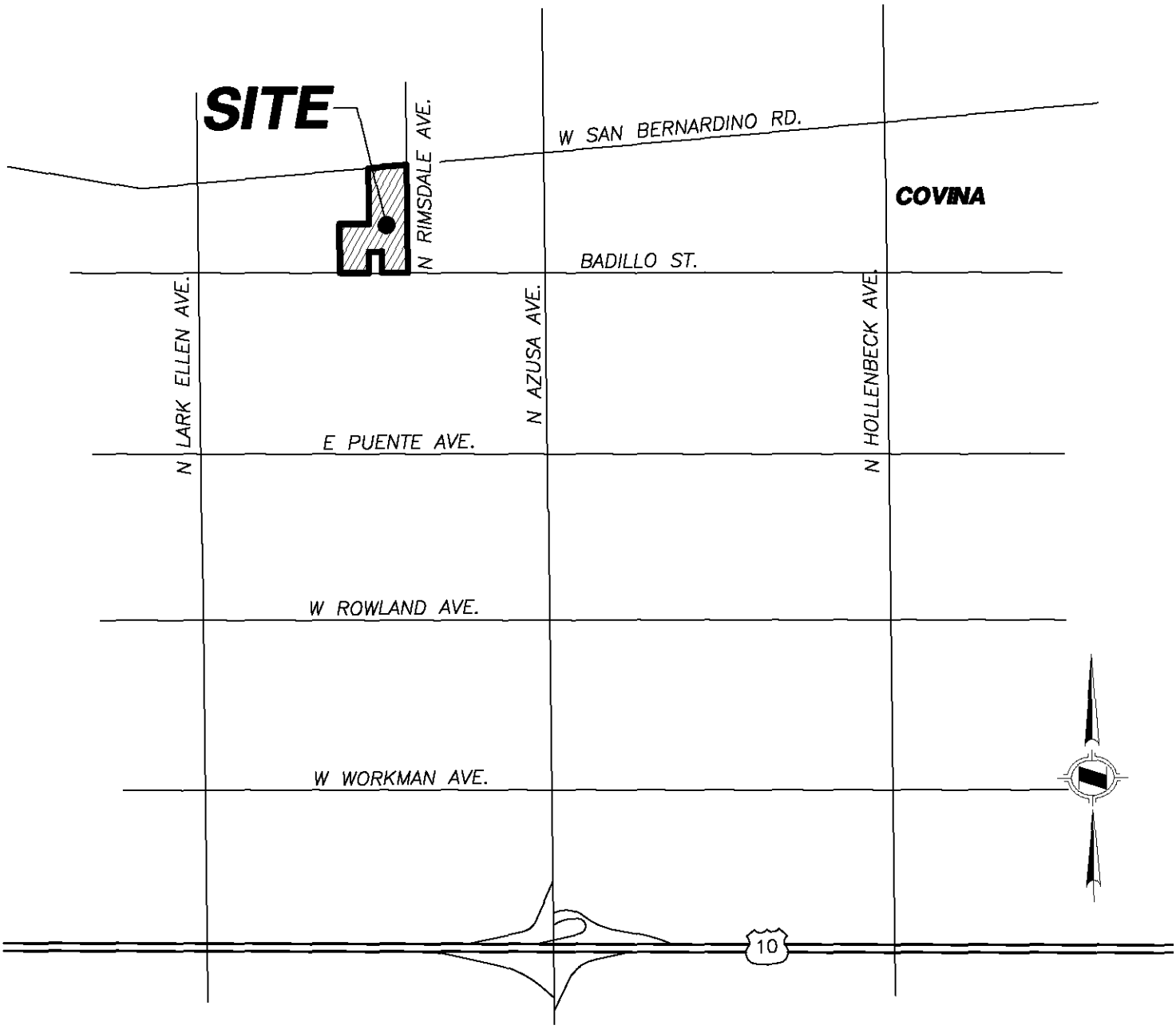
NA = additional capture is not a viable option to offset volume reduction in these cases.

The design storm is determined using the 0.75 inch storm or the 85$^{th}$ percentile storm, whichever is greater. The 85$^{th}$ Percentile, 24-hr Rainfall is approximately 1.0 inches per Los Angeles County Hydrology Map GIS information. The 85$^{th}$ percentile storm (1.0 inches) was selected as the project design storm. The Time of Concentration (TC) calculations from the 85$^{th}$ percentile storm can be found in Section 4 by applying the LACDPW HydroCalc computer program.

There are 2 Modular Wetland Systems (MWS) provided for the on-site project developments. The water quality peak flow calculations can be found in Section 4. The calculated water quality flow rate is about 1.2418 cfs and the total provided treatment capacity by the 2 MWS systems is about 1.3860 cfs with 0.693 cfs treatment capacity for each MWS-8-24.

There is one MWS provided for the Rimsdale Avenue widening. The water quality peak flow calculations can be found in Section 4. The calculated water quality flow rate is about 0.229 cfs and the provided treatment capacity by the MWS system is about 0.237 cfs for the proposed MWS-4-19.

The detailed Low Impact Development (LID) can be found from the separate LID report and preliminary sizing for the MWS systems can be found in Section 4.




# VICINITY MAP

# Hydrology Map

A GIS viewer application to view the data for the hydrology manual.

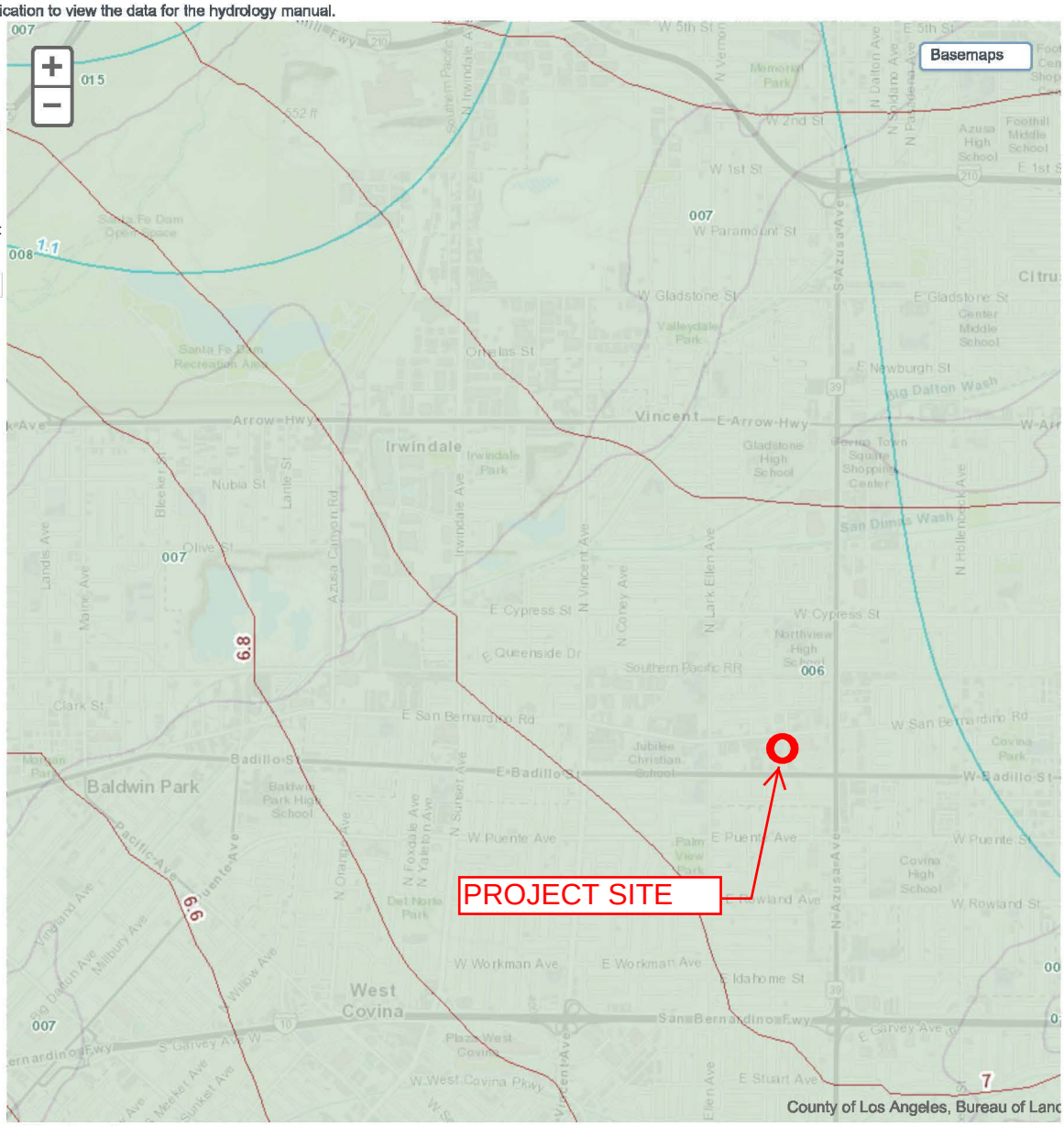
LAYERS

- [x] 50yr Two Tenths (Rainfall)
- [ ] DPA Zones
- [x] Soils 2004
- [x] Final 85th Percentile, 24-hr Rainfall
- [ ] Final 95th Percentile, 24-hr Rainfall
- [ ] 1-year, 1-hour Rainfall Intensity

SEARCH

Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

Search




Map Tips

# SECTION 2

## EXISTING CONDITION
## HYDROLOGY CALCULATIONS AND MAP

# Peak Flow Hydrologic Analysis

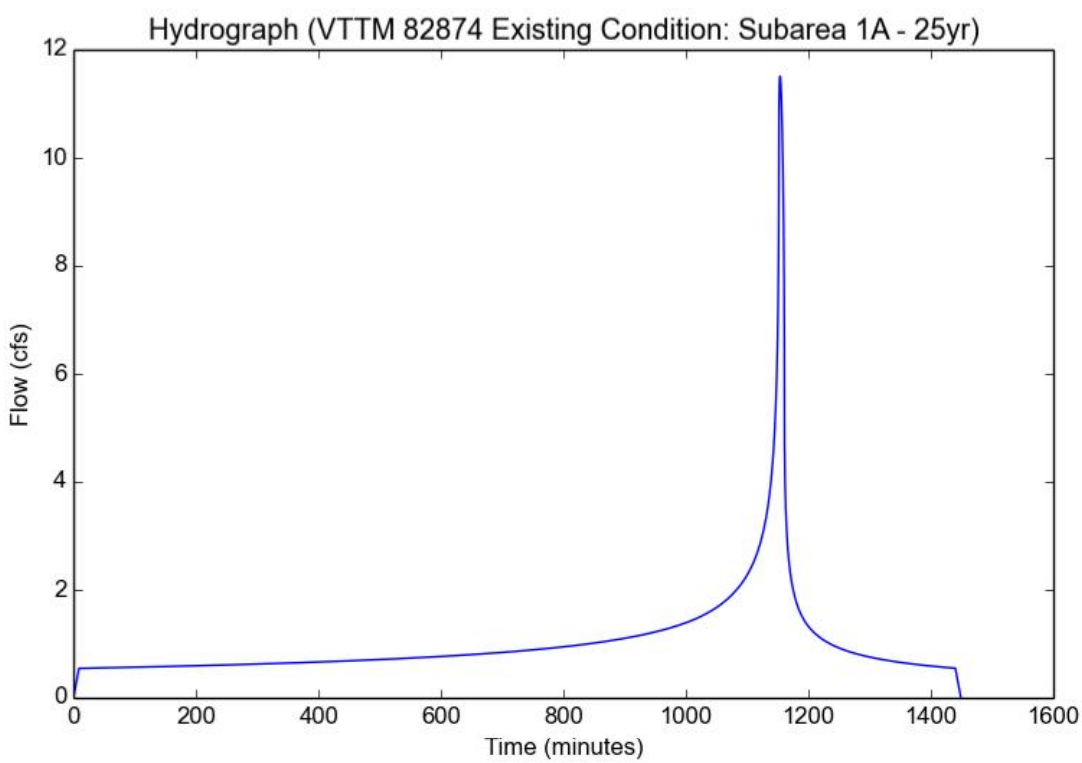
File location: C:/SD/Covina Bowl/VTTM 82874 Existing Condition - Subarea 1A - 25yr.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | VTTM 82874 Existing Condition |
| Subarea ID | Subarea 1A - 25yr |
| Area (ac) | 4.55 |
| Flow Path Length (ft) | 775.0 |
| Flow Path Slope (vft/hft) | 0.009 |
| 50-yr Rainfall Depth (in) | 7.1 |
| Percent Impervious | 0.96 |
| Soil Type | 6 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.2338 |
| Peak Intensity (in/hr) | 2.8215 |
| Undeveloped Runoff Coefficient (Cu) | 0.8097 |
| Developed Runoff Coefficient (Cd) | 0.8964 |
| Time of Concentration (min) | 9.0 |
| Clear Peak Flow Rate (cfs) | 11.5076 |
| Burned Peak Flow Rate (cfs) | 11.5076 |
| 24-Hr Clear Runoff Volume (ac-ft) | 2.046 |
| 24-Hr Clear Runoff Volume (cu-ft) | 89124.5903 |



# Peak Flow Hydrologic Analysis

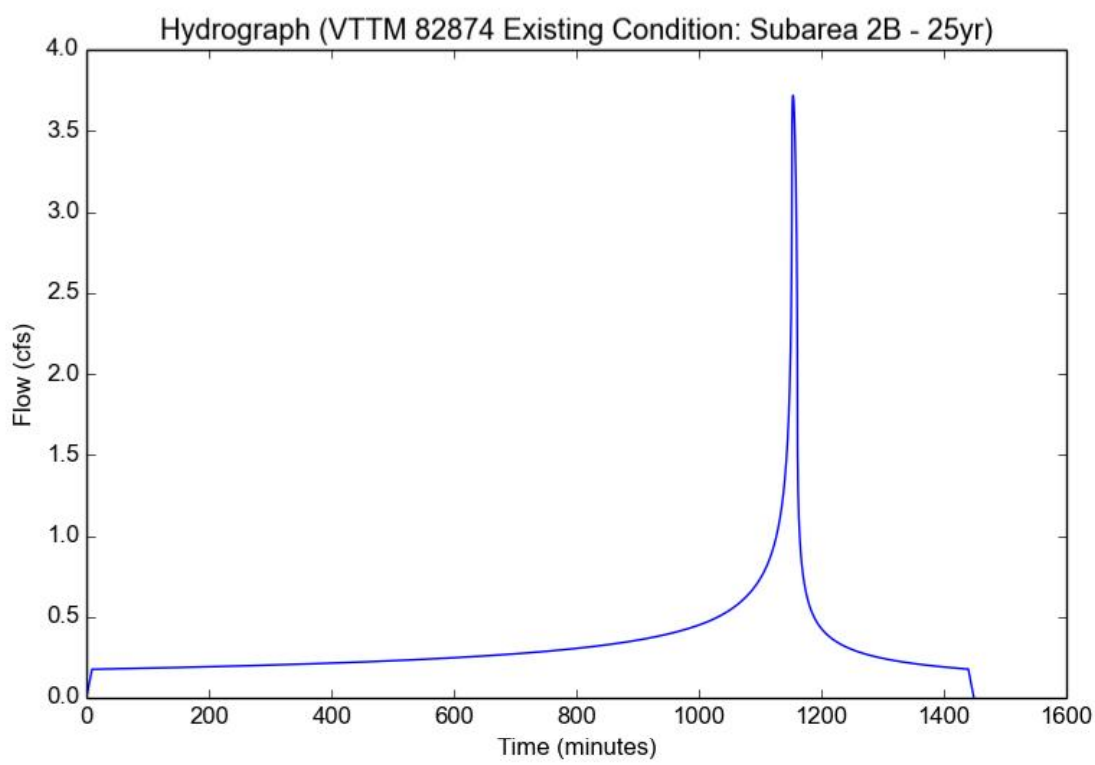
File location: C:/SD/Covina Bowl/VTTM 82874 Existing Condition - Subarea 2B - 25yr.pdf
Version: HydroCalc 1.0.3

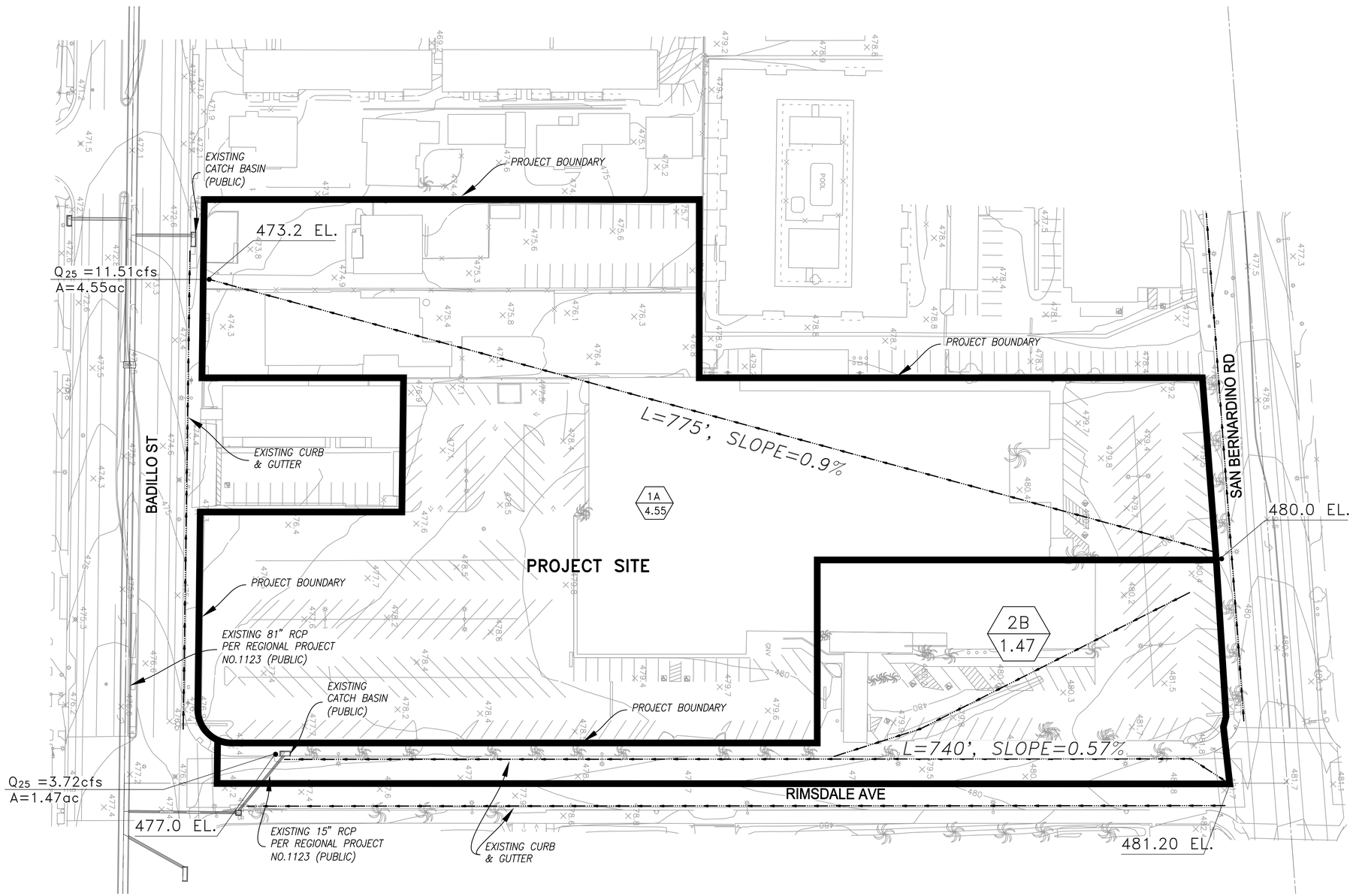
## Input Parameters

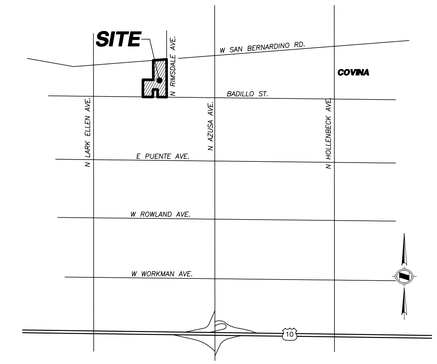
| | |
|---|---|
| Project Name | VTTM 82874 Existing Condition |
| Subarea ID | Subarea 2B - 25yr |
| Area (ac) | 1.47 |
| Flow Path Length (ft) | 740.0 |
| Flow Path Slope (vft/hft) | 0.0057 |
| 50-yr Rainfall Depth (in) | 7.1 |
| Percent Impervious | 0.96 |
| Soil Type | 6 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.2338 |
| Peak Intensity (in/hr) | 2.8215 |
| Undeveloped Runoff Coefficient (Cu) | 0.8097 |
| Developed Runoff Coefficient (Cd) | 0.8964 |
| Time of Concentration (min) | 9.0 |
| Clear Peak Flow Rate (cfs) | 3.7179 |
| Burned Peak Flow Rate (cfs) | 3.7179 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.661 |
| 24-Hr Clear Runoff Volume (cu-ft) | 28794.0984 |






**VICINITY MAP**

## HYDROLOGIC INFORMATION

| | |
|---|---|
| 6 | DPA ZONE |
| 006 | SOIL GROUP |
| 7.1" | 50-YEAR 24-HOUR ISOHYET |
| 96% | AREA AVERAGE % IMPERVIOUSNESS (RETAIL CENTER) |
| 1 | BURN FACTOR |
| 1 | BULKING FACTOR |
| 1.0" | 85TH PERCENTILE RAINFALL DEPTH |
| *85TH PERCENTILE RAINFALL DEPTH* | PROJECT DESIGN STORM (0.75 INCHES OR 85TH PERCENTILE) |
| *0%* | PERCENT OF DESIGN STORM RETAINED ON-SITE |
| *0%* | PERCENT OF DESIGN STORM INFILTRATED OFF-SITE |

## LEGEND

| | |
|---|---|
| | DRAINAGE BOUNDARY |
| 1A / 1.0 | AREA DESIGNATION FOR AREA "A" AREA ACREAGE (IN ACRES) |
| | FLOW LINE |
| $Q_{25}$ =30.0cfs / A=10.0ac | PEAK 25-YR FLOW RATE DRAINAGE AREA IN ACRES |

*HYDROLOGY CALCULATION TABLE*

| SUBAREA | AREA (ACRES) | 25-YR FLOW RATE (CFS) | 25-YR FLOW VOLUME (AC-FT) |
|---|---|---|---|
| 1A | 4.55 | 11.51 | 2.05 |
| 2B | 1.47 | 3.72 | 0.66 |
| OVERALL | 6.02 | 15.23 | 2.71 |

SCALE: 1"=40'

0 20 40 80 120 160

SCALE: 1" = 40'

*PREPARED FOR:*

**TRUMARK HOMES**
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# *EXHIBIT 1*
# *DRAINAGE CONCEPT/HYDROLOGY STUDY FOR EXISTING CONDITION HYDROLOGY MAP*
# *VESTING TENTATIVE TRACT MAP 82874*
# *CITY OF COVINA, COUNTY OF LOS ANGELES*

W.O. 3593-42X COVINA BOWL HYDROLOGY MAP

PLOTTED BY: Gary Guan DATE: Apr. 30, 2020 04:40:08 PM FILE: F:\1080\Engineering\SY_Hydrology\Existing Hydrology Map.dwg

# SECTION 3

## PROPOSED CONDITION
## HYDROLOGY CALCULATIONS AND MAP

# Peak Flow Hydrologic Analysis

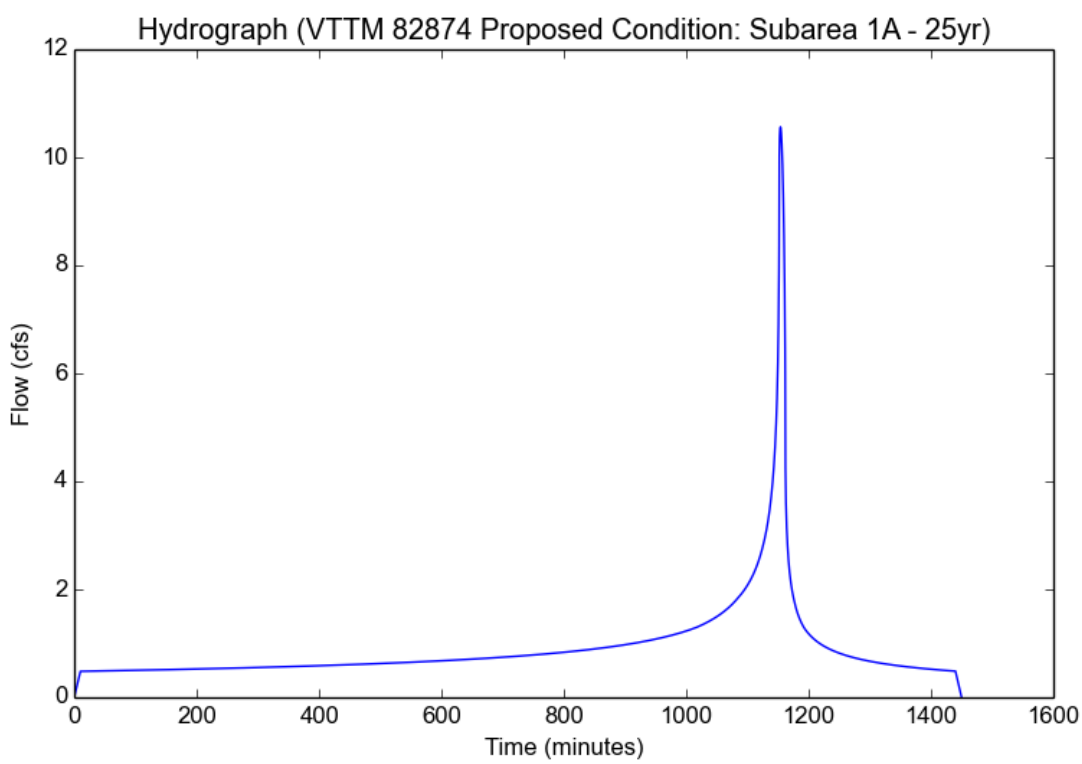
File location: C:/SD/Covina Bowl/VTTM 82874 Proposed Condition - Subarea 1A - 25yr.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | VTTM 82874 Proposed Condition |
| Subarea ID | Subarea 1A - 25yr |
| Area (ac) | 4.44 |
| Flow Path Length (ft) | 880.0 |
| Flow Path Slope (vft/hft) | 0.007 |
| 50-yr Rainfall Depth (in) | 7.1 |
| Percent Impervious | 0.86 |
| Soil Type | 6 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.2338 |
| Peak Intensity (in/hr) | 2.6852 |
| Undeveloped Runoff Coefficient (Cu) | 0.8002 |
| Developed Runoff Coefficient (Cd) | 0.886 |
| Time of Concentration (min) | 10.0 |
| Clear Peak Flow Rate (cfs) | 10.5633 |
| Burned Peak Flow Rate (cfs) | 10.5633 |
| 24-Hr Clear Runoff Volume (ac-ft) | 1.8411 |
| 24-Hr Clear Runoff Volume (cu-ft) | 80199.3316 |



# Peak Flow Hydrologic Analysis

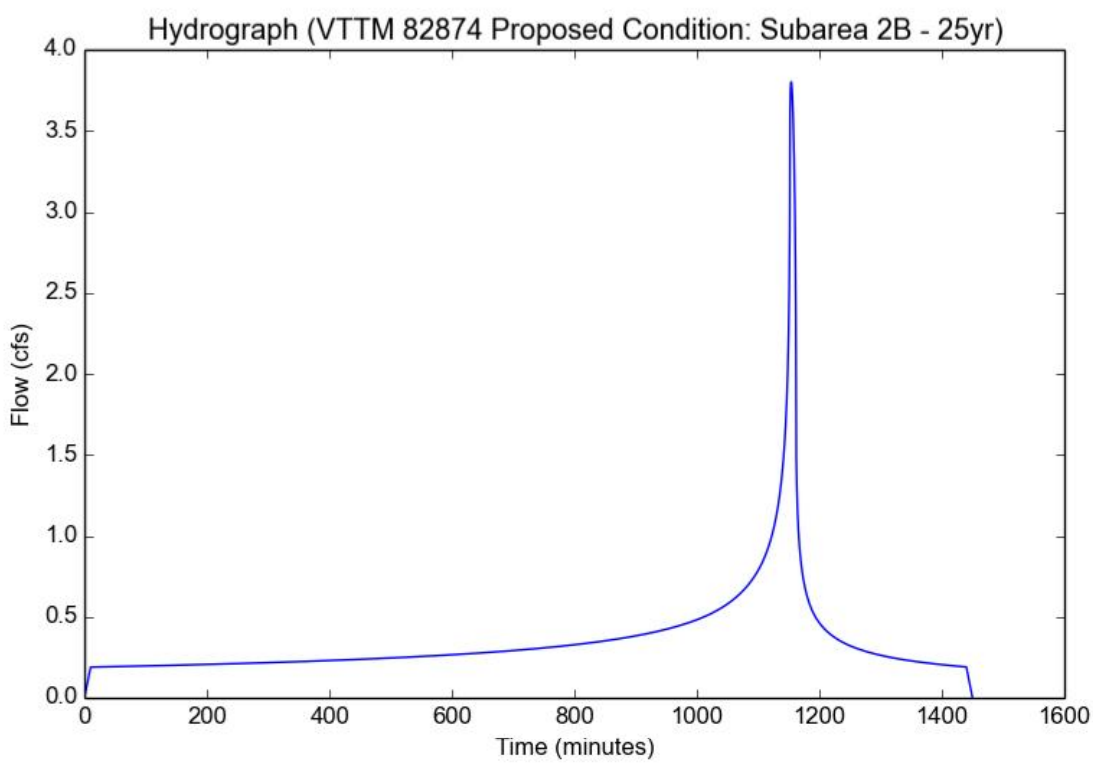
File location: C:/SD/Covina Bowl/VTTM 82874 Proposed Condition - Subarea 2B - 25yr.pdf
Version: HydroCalc 1.0.3

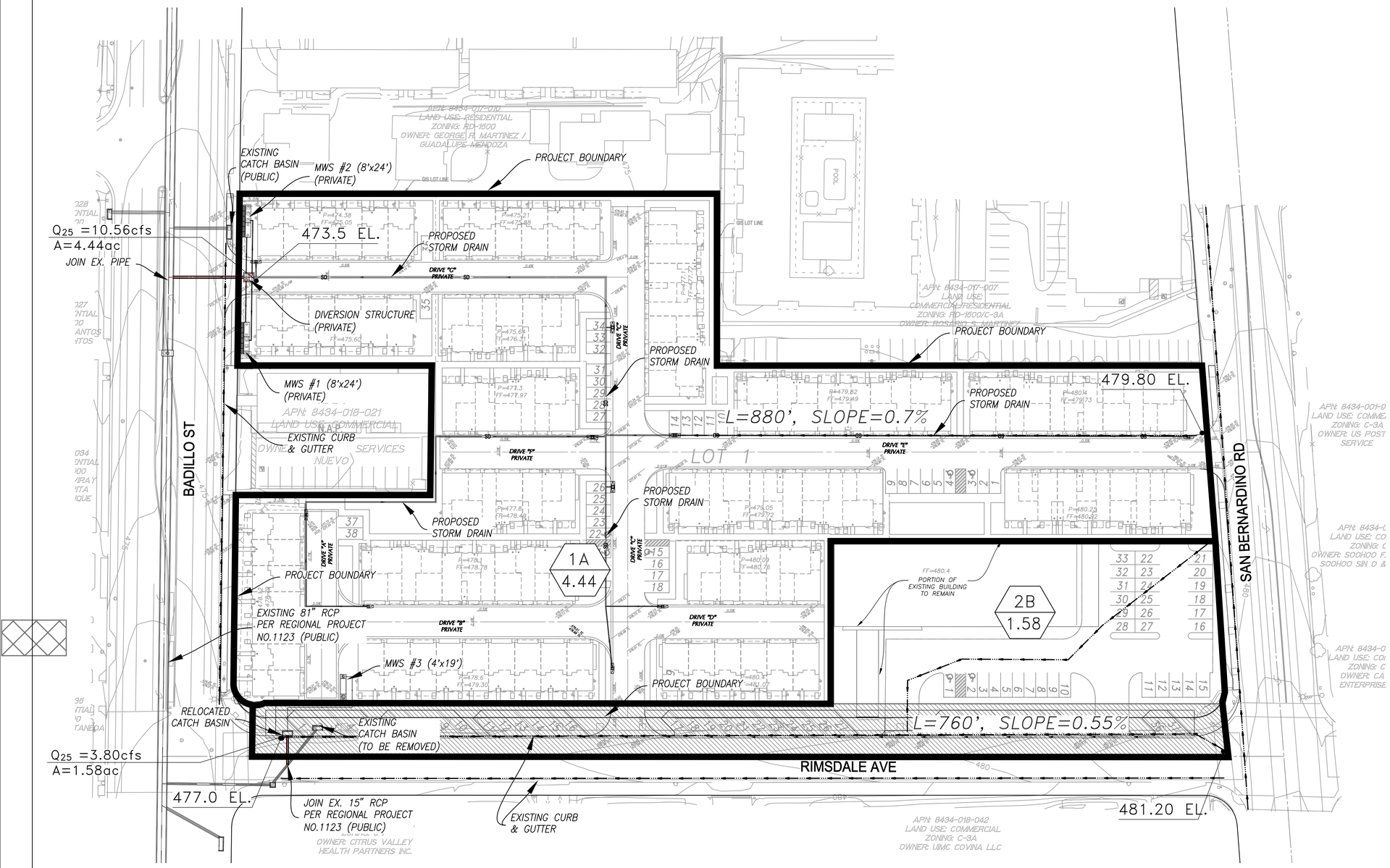
## Input Parameters

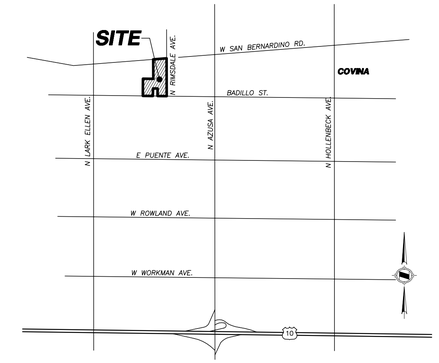
| | |
|---|---|
| Project Name | VTTM 82874 Proposed Condition |
| Subarea ID | Subarea 2B - 25yr |
| Area (ac) | 1.58 |
| Flow Path Length (ft) | 760.0 |
| Flow Path Slope (vft/hft) | 0.0055 |
| 50-yr Rainfall Depth (in) | 7.1 |
| Percent Impervious | 0.96 |
| Soil Type | 6 |
| Design Storm Frequency | 25-yr |
| Fire Factor | 0 |
| LID | False |

## Output Results

| | |
|---|---|
| Modeled (25-yr) Rainfall Depth (in) | 6.2338 |
| Peak Intensity (in/hr) | 2.6852 |
| Undeveloped Runoff Coefficient (Cu) | 0.8002 |
| Developed Runoff Coefficient (Cd) | 0.896 |
| Time of Concentration (min) | 10.0 |
| Clear Peak Flow Rate (cfs) | 3.8014 |
| Burned Peak Flow Rate (cfs) | 3.8014 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.7105 |
| 24-Hr Clear Runoff Volume (cu-ft) | 30948.4785 |






## VICINITY MAP

## HYDROLOGIC INFORMATION

| | |
|---|---|
| 6 | DPA ZONE |
| 006 | SOIL GROUP |
| 7.1" | 50-YEAR 24-HOUR ISOHYET |
| 86% | AREA AVERAGE % IMPERVIOUSNESS (APARTMENTS AND CONDOMINIUMS) |
| 1 | BURN FACTOR |
| 1 | BULKING FACTOR |
| 1.0" | 85TH PERCENTILE RAINFALL DEPTH |
| *85TH PERCENTILE RAINFALL DEPTH* | PROJECT DESIGN STORM (0.75 INCHES OR 85TH PERCENTILE) |
| 0% | PERCENT OF DESIGN STORM RETAINED ON-SITE |
| 0% | PERCENT OF DESIGN STORM INFILTRATED OFF-SITE |

## LEGEND

- DRAINAGE BOUNDARY
- 1A / 1.0 — AREA DESIGNATION FOR AREA "A" AREA ACREAGE (IN ACRES)
- FLOW LINE
- $Q_{25}$ =30.0cfs, A=10.0ac — PEAK 25-YR FLOW RATE DRAINAGE AREA IN ACRES
- PROPOSED STORM DRAIN
- AREA TO SIZE THE BMP FACILITIES (HALF STREET OF RIMSDALE AVENUE, 0.71 ACRES)

### HYDROLOGY CALCULATION TABLE

| SUBAREA | AREA (ACRES) | 25-YR FLOW RATE (CFS) | 25-YR FLOW VOLUME (AC-FT) |
|---|---|---|---|
| 1A | 4.44 | 10.56 | 1.84 |
| 2B | 1.58 | 3.80 | 0.71 |
| OVERALL | 6.02 | 14.36 | 2.55 |

### WATER QUALTY CALCULATION TABLE

| SUBAREA | AREA (ACRES) | TIME OF CONCENTRATION (MIN) | WQ FLOW RATE (CFS) PER ADJUSTED DESIGN INTENSITY | MWS UNITS NUMBER | MWS UNITS SIZE | MWS CAPACITY (CFS) | PROVIDED CAPACITY (CFS) |
|---|---|---|---|---|---|---|---|
| ON-SITE AREA 1A | 4.44 | 39.0 | 1.2418 | #1 | MWS-8-24 | 0.693 | 1.3860 |
| | | | | #2 | MWS-8-24 | 0.693 | |
| RIMSDALE AVENUE WIDENING 2B | 0.71 | 35.0 | 0.229 | #3 | MWS-4-19 | 0.237 | 0.237 |

SCALE: 1"=40'

0 20 40 80 120 160
SCALE: 1" = 40'

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# EXHIBIT 2
# DRAINAGE CONCEPT/HYDROLOGY STUDY FOR PROPOSED CONDITION HYDROLOGY MAP
# VESTING TENTATIVE TRACT MAP 82874
# CITY OF COVINA, COUNTY OF LOS ANGELES

W.O. 3593-42X COVINA BOWL HYDROLOGY MAP

PLOTTED BY: Gary Guan DATE: May. 01, 2020 09:14:55 AM FILE: F:\1080\Engineering\SY_Hydrology\Proposed Hydrology Map.dwg

# SECTION 4

## LID CALCUALTIONS

The project will be required to comply with the newly adopted MS4 Permit. This will require all filtration water quality devices to be sized per Adjusted Design Intensity to Provide Additional Capture In Lieu of Volume Reduction (see attached below).

July 2018

**Table 6: Adjusted Design Intensity to Provide Additional Capture In Lieu of Volume Reduction (Option B)**

| Adjusted Time of Concentration (min) | Reliable Infiltration Rate at Site | | | |
|---|---|---|---|---|
| | **0 in/hr (ET only)** Capture Efficiency Target = 93.8% | **0.01 in/hr** Capture Efficiency Target = 94.1% | **0.05 in/hr** Capture Efficiency Target = 95.4% | **0.15 in/hr** Capture Efficiency Target = 98.1% |
| | Adjusted MWS Design Precipitation Intensities, in/hr | | | |
| 5 | 0.55 | 0.57 | 0.66 | N/A |
| 7.5 | 0.51 | 0.53 | 0.60 | 0.96 |
| 10 | 0.48 | 0.49 | 0.57 | 0.90 |
| 15 | 0.44 | 0.45 | 0.52 | 0.79 |
| 20 | 0.41 | 0.42 | 0.48 | 0.74 |
| 30 | 0.37 | 0.38 | 0.43 | 0.64 |
| 60 | 0.31 | 0.31 | 0.35 | 0.50 |

NA = additional capture is not a viable option to offset volume reduction in these cases.

## On-site Area (Area 1A)

Per SUSMP flow rate calculations,

$Q_{PM} = C_D * I_X * A_{Total} *$ (1.008333 $ft^3$-hour / acre-inches-seconds)

Where:

QPM =Peak Mitigation Flow Rate (cfs)

$C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

Imp=0.86 for Apartments and Condominiums Residential, Cu=0.1 per below

=0.9*0.86+ (1-0.86)*0.1

=**0.788**

$C_U$ = Undeveloped Runoff Coefficient, (**0.1** for Soil 06)
$I_X$ = **0.352**, Rainfall Intensity (inches / hour) (per above Table 6 using Infiltration Rate at 0 in/hour,
TC=**39 minutes** per 85th Percentile HydroCalc Calculations)
$A_{Total}$ = **4.44 acres** (Total Area in acres)

Rimsdale Avenue Widending (Area 2B)

Please note, only Half Street of Rimsdale Avenue tributary areas are applied in the BMP sizings.

Per SUSMP flow rate calculations,

$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour / acre-inches-seconds})$

Where:

QPM =Peak Mitigation Flow Rate (cfs)

$C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

Imp=0.96 for the roadway, Cu=0.1 per below

=0.9*0.96+ (1-0.96)*0.1

=**0.868**

$C_U$ = Undeveloped Runoff Coefficient, (**0.1** for Soil 06)
$I_X$ = **0.369**, Rainfall Intensity (inches / hour) (per above Table 6 using Infiltration Rate at 0 in/hour,
TC=**35 minutes** per 85th Percentile HydroCalc Calculations)
$A_{Total}$ = **0.71 acres** (Total Area in acres – half street of Rimsdale Avenue)

The LID flow rate calculations can be found from the following table.

LID Flow Rate and Treatment BMP Summary Table
Covina Bowl - VTTM 82874
City of Covina, County Of Los Angeles

| DMA | Area | TC | $C_D$ | Ix | $Q_{PM}$ | MWS # | MWS Size | MWS Design Capacity | Provided Capacity |
|---|---|---|---|---|---|---|---|---|---|
| | (acre) | (Min) | | (in/hr) | (cfs) | | | (cfs) | (cfs) |
| On-Site Area | 4.44 | 39 | 0.788 | 0.352 | 1.2726 | #1 | MWS-8-24 | 0.693 | 1.386 |
| | | | | | | #2 | MWS-8-24 | 0.693 | |
| Rimsdale Widening | 0.71 | 35 | 0.868 | 0.369 | 0.229 | #3 | MWS-4-19 | 0.237 | 0.237 |

# Peak Flow Hydrologic Analysis

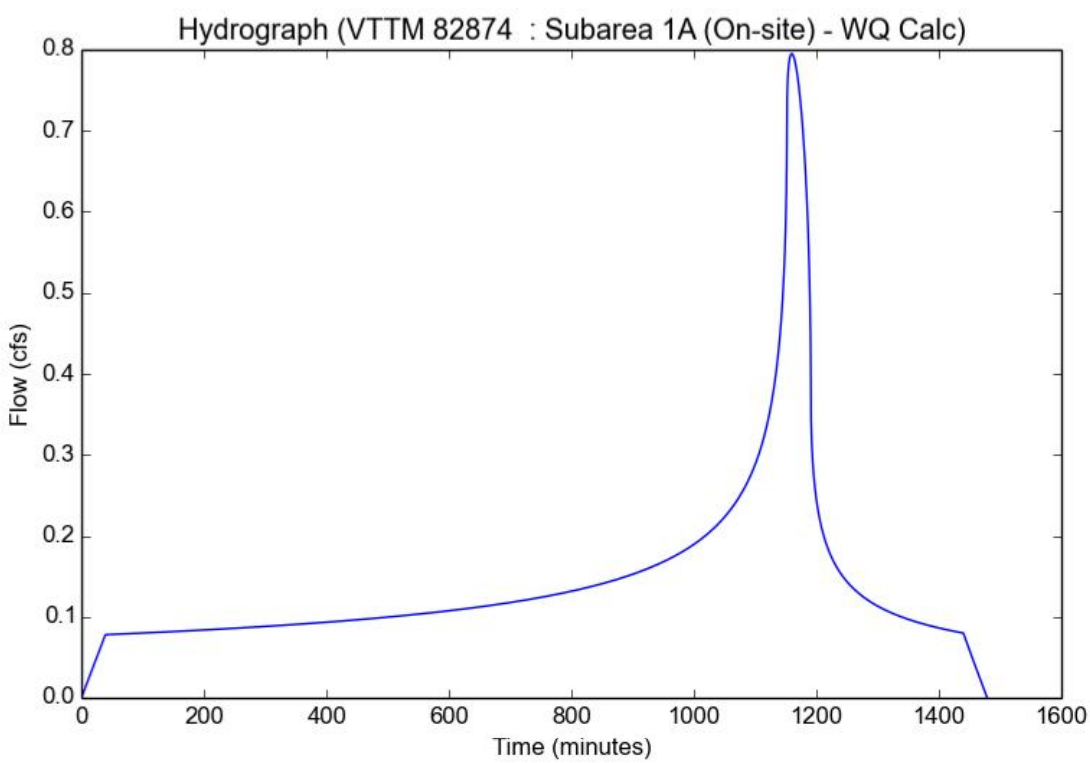
File location: C:/SD/Covina Bowl/VTTM 82874 - Subarea 1A (On-site) - WQ Calc.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | VTTM 82874 |
| Subarea ID | Subarea 1A (On-site) - WQ Calc |
| Area (ac) | 4.44 |
| Flow Path Length (ft) | 880.0 |
| Flow Path Slope (vft/hft) | 0.007 |
| 85th Percentile Rainfall Depth (in) | 1.0 |
| Percent Impervious | 0.86 |
| Soil Type | 6 |
| Design Storm Frequency | 85th percentile storm |
| Fire Factor | 0 |
| LID | True |

## Output Results

| | |
|---|---|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.0 |
| Peak Intensity (in/hr) | 0.2272 |
| Undeveloped Runoff Coefficient (Cu) | 0.1 |
| Developed Runoff Coefficient (Cd) | 0.788 |
| Time of Concentration (min) | 39.0 |
| Clear Peak Flow Rate (cfs) | 0.7949 |
| Burned Peak Flow Rate (cfs) | 0.7949 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.2892 |
| 24-Hr Clear Runoff Volume (cu-ft) | 12595.6378 |



# Peak Flow Hydrologic Analysis

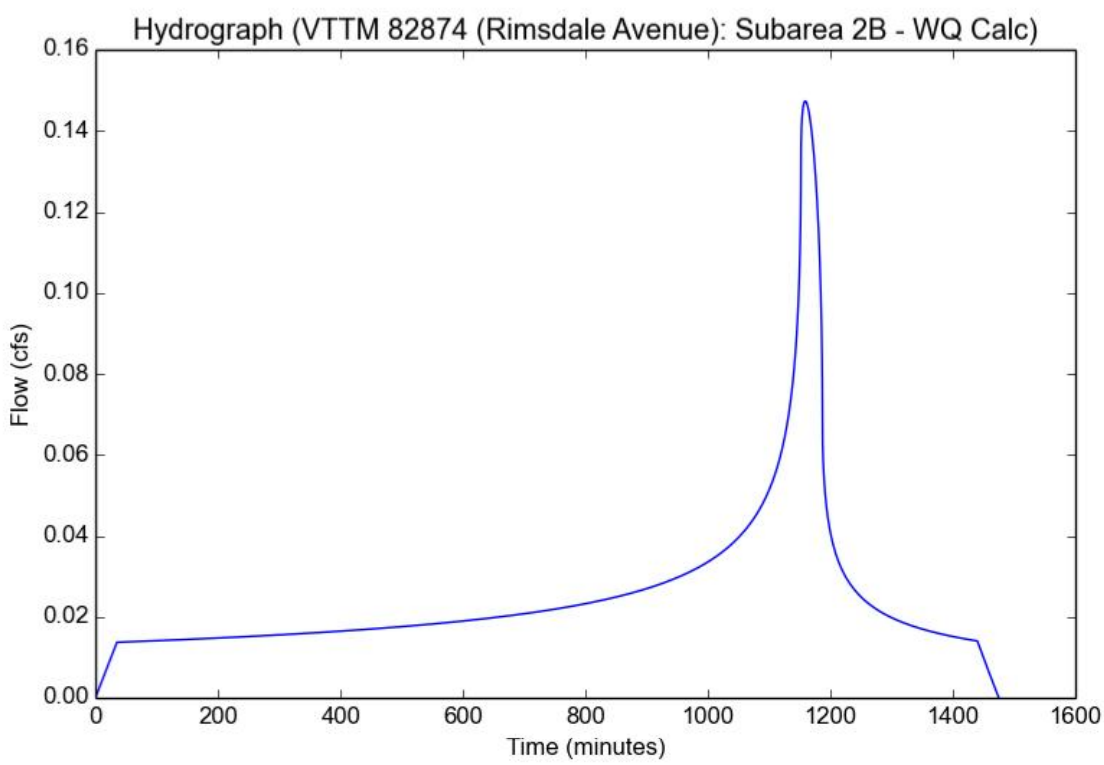
File location: C:/SD/Covina Bowl/VTTM 82874 (Rimsdale Avenue) - Subarea 2B - WQ Calc.pdf
Version: HydroCalc 1.0.3

## Input Parameters

| | |
|---|---|
| Project Name | VTTM 82874 (Rimsdale Avenue) |
| Subarea ID | Subarea 2B - WQ Calc |
| Area (ac) | 0.71 |
| Flow Path Length (ft) | 760.0 |
| Flow Path Slope (vft/hft) | 0.0055 |
| 85th Percentile Rainfall Depth (in) | 1.0 |
| Percent Impervious | 0.96 |
| Soil Type | 6 |
| Design Storm Frequency | 85th percentile storm |
| Fire Factor | 0 |
| LID | True |

## Output Results

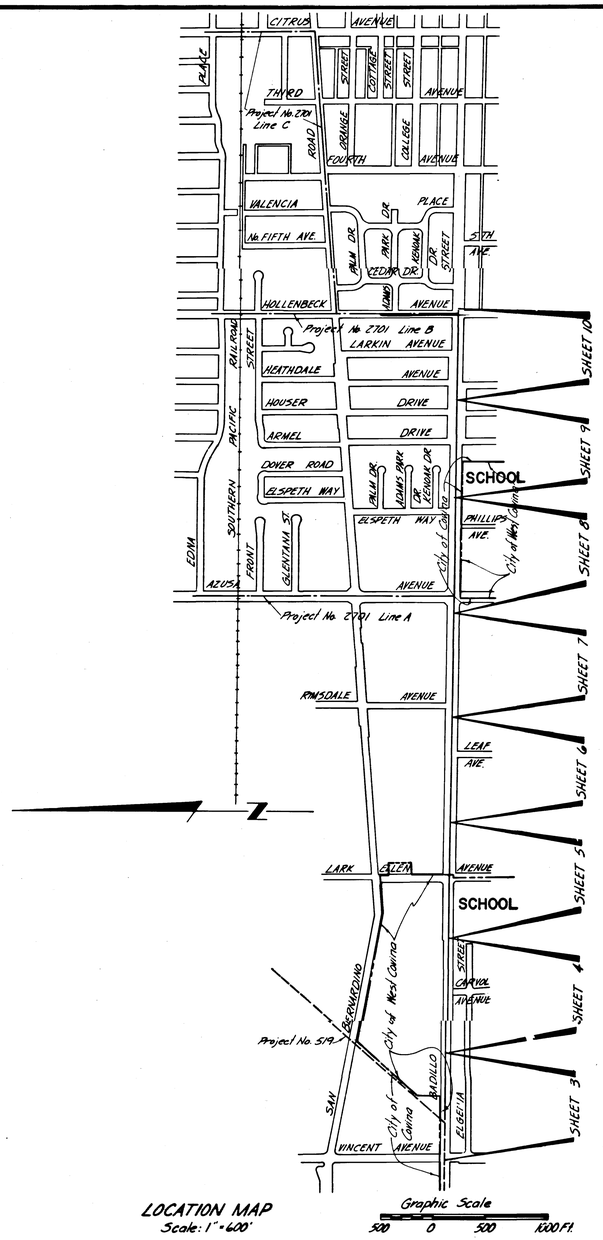
| | |
|---|---|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.0 |
| Peak Intensity (in/hr) | 0.2391 |
| Undeveloped Runoff Coefficient (Cu) | 0.1 |
| Developed Runoff Coefficient (Cd) | 0.868 |
| Time of Concentration (min) | 35.0 |
| Clear Peak Flow Rate (cfs) | 0.1473 |
| Burned Peak Flow Rate (cfs) | 0.1473 |
| 24-Hr Clear Runoff Volume (ac-ft) | 0.0509 |
| 24-Hr Clear Runoff Volume (cu-ft) | 2218.6428 |



# SECTION 5

## REFERENCES

- **EXISTING STORM DRAIN PLANS FOR REGIONAL PROJECT NO. 1123**




LOCATION MAP
Scale: 1" = 600'

Graphic Scale
500 0 500 1000 Ft.

## GENERAL NOTES

1. NUMBERS IN CIRCLES INDICATE ITEMS UNDER WHICH PAYMENT WILL BE MADE.
2. ELEVATIONS SHOWN ARE IN FEET ABOVE THE U.S.G.S. MEAN SEA LEVEL DATUM.
3. STATIONS SHOWN ON DRAWINGS ARE ALONG CENTER LINE OF CONDUIT OR ON A LINE NORMAL TO CENTER LINE OF CONDUIT.
4. STATIONS AND INVERT ELEVATIONS OF PIPE INLETS SHOWN ON THE PROFILES ARE AT THE INSIDE FACE OF THE CONDUIT, UNLESS OTHERWISE SHOWN.
5. ALL PIPE IN OPEN TRENCH SHALL BE BEDDED ACCORDING TO STANDARD DRAWING 2-D 177, CASE III, EXCEPT BELL AND SPIGOT PIPE WHICH SHALL BE CASE II BEDDING, UNLESS OTHERWISE SHOWN OR MODIFIED IN THE SPECIFICATIONS.
6. PIPE CONNECTIONS TO STORM DRAIN SHALL CONFORM TO STANDARD DRAWINGS 2-D 191 OR 2-D 193, UNLESS OTHERWISE SHOWN.
7. WHERE REQUIRED BY STANDARD DRAWING 2-D 213.1, CONCRETE BACKFILL SHALL BE USED AROUND CONNECTOR PIPES 36 INCHES OR LESS IN DIAMETER. CONCRETE BACKFILL FOR MAIN LINE PIPE SHALL BE USED ONLY WHEN DIRECTED BY THE ENGINEER.
8. TIES FOR CATCH BASINS AS SHOWN ON THE DRAWINGS ARE FROM CURB RETURN TO CENTER LINE OF CATCH BASIN, UNLESS OTHERWISE SHOWN.
9. 'BLANKET S.S', WHERE NOTED ON THE DRAWINGS, SHALL BE PER STANDARD DRAWING 2-D 251, CASE IV, HALF-SECTION D-D.
10. CURB FACES (C.F.) AT THE CATCH BASIN OPENINGS SHALL BE THAT OF EXISTING CURB PLUS: 4" WHERE L.D. NO. 2 IS SPECIFIED AND 2" WHERE L.D. NO. 4 IS SPECIFIED, UNLESS OTHERWISE SHOWN.
11. THE OPENINGS AND TOP SLABS OF ALL SIDE INLET CATCH BASINS SHALL BE MODIFIED TO MEET THE REQUIREMENTS SHOWN ON STANDARD DRAWING 2-D 232.
12. LOCATIONS OF CATCH BASIN CONNECTOR PIPE JUNCTIONS WITH CATCH BASINS AS SHOWN ON THE DRAWINGS ARE SCHEMATIC. IT IS INTENDED THAT SUCH JUNCTIONS BE LOCATED AT THE DOWNSTREAM ENDS OF THE CATCH BASINS, UNLESS OTHERWISE SHOWN. IN ALL CASES THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER TO MEET FIELD CONDITIONS.
13. MONOLITHIC CATCH BASIN CONNECTIONS SHALL BE CONSTRUCTED, WHERE APPLICABLE, PER STANDARD DRAWING 2-D 224.
14. THE DEPTH AT THE UPSTREAM END OF CATCH BASINS 10 FEET OR MORE IN LENGTH SHALL BE CURB FACE PLUS 12 INCHES, UNLESS OTHERWISE SHOWN.
15. "$V_i$" IS THE DEPTH OF INLET OF CATCH BASINS IN SERIES MEASURED FROM TOP OF CURB TO INVERT OF CONNECTOR PIPE.
16. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
17. DELETED.
18. LOCATIONS SHOWN ON THE PLANS FOR EXISTING SANITARY SEWER HOUSE CONNECTIONS ARE APPROXIMATE ONLY.
19. DELETED
20. SANITARY SEWERS AND HOUSE CONNECTIONS CROSSING OVER THE STORM DRAIN TRENCH SHALL BE SUPPORTED IN ACCORDANCE WITH STANDARD DRAWING 2-D 173.1 TO .3 AND ENCASED PER GENERAL NOTE 1 ON STANDARD DRAWING 2-D 173.1.
21. WHEN INDICATED ON THE DRAWINGS, SANITARY SEWERS AND HOUSE CONNECTIONS SHALL BE ENCASED OR BLANKETED IN ACCORDANCE WITH STANDARD DRAWING 2-D 251.
22. ALL OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES SHALL BE SEALED NORMAL TO CENTERLINE OF CONDUIT WITH 8 INCHES OF BRICK AND MORTAR OR 6 INCHES OF CONCRETE UNLESS OTHERWISE SHOWN.
23. ALL RESURFACING, CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED SHALL BE CONSTRUCTED AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS, UNLESS OTHERWISE SHOWN.
24. REFER TO SHEET 12 FOR TYPICAL CATCH BASIN CONNECTOR PIPE DETAIL.
25. STREET RESURFACING PLANS ARE SHOWN ON SHEET 2.
26. SOIL TEST BORINGS FOR THIS PROJECT WERE MADE MARCH, 1966
27. ELEVATIONS SHOWN ON PLANS FOR CURBS AT CATCH BASINS ARE TOP OF CURB, UNLESS OTHERWISE NOTED.
28. UTILITIES DESIGNATED BY THE SYMBOL * WILL BE ABANDONED IN PLACE AND THE OWNER WILL INSTALL A NEW SECTION OF THE AFFECTED UTILITY AT A LOCATION IN CLOSE PROXIMITY TO, BUT WHICH DOES NOT PHYSICALLY INTERFERE WITH, THE PROPOSED STORM DRAIN CONDUIT AND APPURTENANT STRUCTURES.
29. UTILITIES DESIGNATED BY THE SYMBOL ≠ WILL BE REMOVED BY THE OWNER AND THE OWNER WILL REINSTALL A NEW SECTION OF THE AFFECTED UTILITY AT A LOCATION IN CLOSE PROXIMITY TO, BUT WHICH DOES NOT PHYSICALLY INTERFERE WITH, THE PROPOSED STORM DRAIN CONDUIT AND APPURTENANT STRUCTURES.

## INDEX TO DRAWINGS


| | Sheet No. |
|---|---|
| LOCATION MAP, GENERAL NOTES, INDEX | 1 |
| RESURFACING PLAN, LIST OF STANDARD DRAWINGS, LEGEND | 2 |
| PLAN AND PROFILE | 3-10 |
| LOG OF BORINGS | 11 |
| MISCELLANEOUS DETAILS, STRUCTURAL NOTES | 12 |


"AS BUILT" DWG.

APPROVAL RECOMMENDED BY
Milton W. Ransom
ASST. CHIEF DEPUTY ENGINEER
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

APPROVED BY:
R.E. Ponton RE 7875
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

APPROVED BY:
Clifford Shankman R.E. 11379
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA, CALIF.
DATE 8/1/66 R.E. 7668

| REVISIONS | | |
|---|---|---|
| MARK | DATE | DESCRIPTION |

DRAWN BY Cities | DESIGNED BY Cities
TRACED BY Cities | SUBMITTED BY C.W.N.
CHECKED BY
RECOMMENDED BY C.F. Chelius, DIVISION ENGINEER

1964 STORM DRAIN BOND ISSUE

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

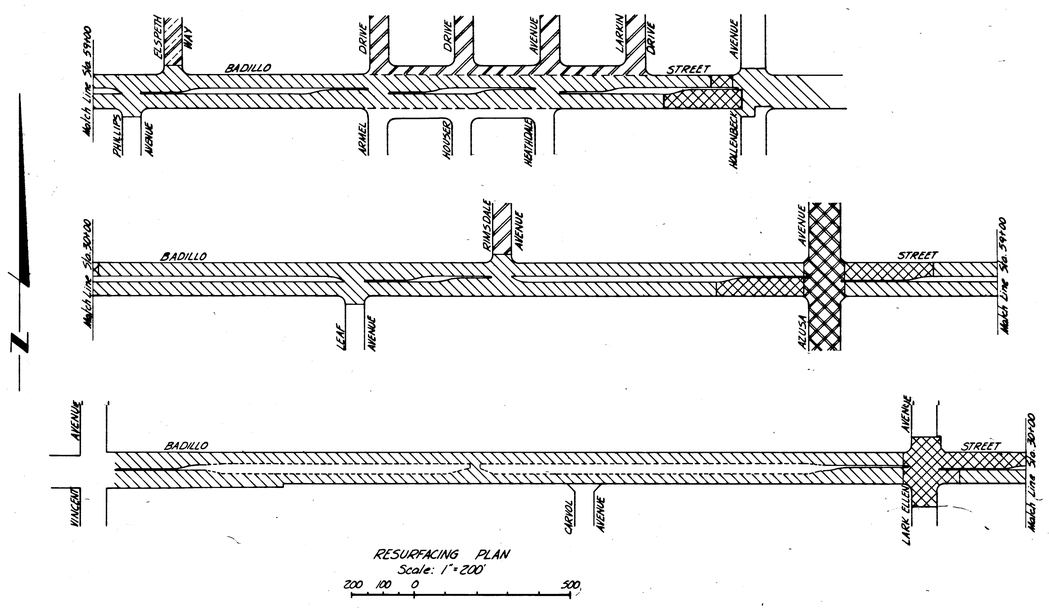
REGIONAL PROJECT NO. 1123
GENERAL NOTES, INDEX
LOCATION MAP

APPROVED BY Walter J. Ward, CHIEF ENGINEER

| SCALE | DATE | NO. 364-1123-D2.1 |
|---|---|---|
| AS SHOWN | FEB. '67 | SHEET 1 OF 12 |

## PAVING LEGEND

- EXISTING 4" A.C. ON 6" AGG. BASE – REPLACE WITH 5" A.C. ON 6" AGG. BASE
- EXISTING 8" P.C.C. – REPLACE WITH 8" P.C.C.
- EXISTING 2½" PRE-MIX – REPLACE WITH 3½" A.C.
- EXISTING 2½" PRE-MIX ON 3" BASE – REPLACE WITH 3½" A.C. ON 3" AGG. BASE
- EXISTING 4" A.C. ON 8" CEMENT TREATED BASE ON 12" SELECTED SUB-BASE – FOR REPLACEMENT SEE STANDARD DRAWING NO. 2-D187.
- EXISTING DIRT ISLAND




RESURFACING PLAN
Scale: 1" = 200'
200 100 0 500

## LIST OF STANDARD DRAWINGS
## LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

| DRAWING NO. | TITLE |
|---|---|
| 2-D88 | LOCAL DEPRESSION NO. 2 |
| 2-D96 | STANDARD DROP STEP |
| 2-D104 | MANHOLE NO. 3 |
| 2-D107 | CONCRETE RINGS, REDUCER, AND PIPE FOR MANHOLE SHAFT |
| 2-D112 | JUNCTION STRUCTURE NO. 2 |
| 2-D113 | MANHOLE NO. 4 |
| 2-D156 | MANHOLE FRAME AND COVER FOR CATCH BASINS |
| 2-D157 | CATCH BASIN REINFORCEMENT FOR ROUND MANHOLES |
| 2-D160 | CATCH BASIN NO. 1 |
| 2-D162 | CATCH BASIN NO. 2 |
| 2-D163 | CATCH BASIN NO. 3 |
| 2-D171 | STANDARD A305 REINFORCING BARS |
| 2-D172 | CATCH BASIN REINFORCEMENT |
| 2-D173.1, .2, .3 | PIPE SUPPORTS ACROSS TRENCHES |
| 2-D175 | REMOVABLE PROTECTION BAR FOR CATCH BASINS |
| 2-D177 | PIPE BEDDING IN TRENCHES |
| 2-D181 | STANDARD NON-ROCKING MANHOLE FRAME AND COVER |
| 2-D184 | MANHOLE NO. 2 |
| 2-D187 | PAVEMENT REMOVAL, EXCAVATION, BACKFILL, AND RESURFACING IN STATE HIGHWAYS |
| 2-D188 | TRANSITION STRUCTURE NO. 3 |
| 2-D191 | JUNCTION STRUCTURE NO. 3 |
| 2-D193 | JUNCTION STRUCTURE NO. 4 |
| 2-D213.1, .2 | "D" LOAD TABLE FOR DESIGN OF REINFORCED CONCRETE PIPE |
| 2-D224 | CONNECTION TO CATCH BASIN FOR PIPES 12 INCHES THROUGH 72 INCHES |
| 2-D232 | DETAIL OF CATCH BASIN OPENING |
| 2-D235 | TRANSITION STRUCTURE NO. 1 |
| 2-D239 | TRANSITION STRUCTURE NO. 2 |
| 2-D249-1,2 | CATCH BASIN NO. 8 |
| 2-D251 | PROTECTION FOR MAINLINE AND HOUSE CONNECTION SEWERS |
| 2-D264 | ADJUSTABLE PROTECTION |
| 2-D393 | CONCRETE COLLAR |
| 2-D399 | CRITERIA FOR THE DESIGN OF SHORING FOR EXCAVATIONS |
| 2-D400 | SAMPLE SHEET FOR USE AS A GUIDE IN PREPARING CALCULATIONS FOR SHORING OF EXCAVATIONS |
| 2-D415 | LOCAL DEPRESSION NO. 4 |
| 2-D413 | UNIFIED SOIL CLASSIFICATION SYSTEM |

## COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

| DRAWING NO. | TITLE |
|---|---|
| G-b-48 | TEMPORARY SUPPORT |

## LEGEND

- POWER POLE
- GUY ANCHOR
- TRAFFIC SIGN OR STREET SIGN
- FIRE HYDRANT
- SEWER MANHOLE
- WATER METER OR WEIR BOX
- GAS METER OR BOX
- TELEPHONE MANHOLE
- MAIL BOX
- WATER VALVE
- CONCRETE DRIVEWAY
- CURB & GUTTER
- ELECTROLIER OR TRAFFIC SIGNAL
- TRAFFIC SIGNAL BOX
- EDGE OF PAVEMENT
- TREE
- PROPERTY LINE
- PALM TREE

PD034789

1964 STORM DRAIN BOND ISSUE

APPROVAL RECOMMENDED BY
Milan W. Ranson
ASST. CHIEF DEPUTY ENGINEER
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

APPROVED BY:
R. E. Fenton RE 2875
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

APPROVED BY:
Clifford Sandman RE 11379
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA CALIF.
DATE 8/1/66 R.E. 7668

| REVISIONS | | |
|---|---|---|
| MARK | DATE | DESCRIPTION |

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

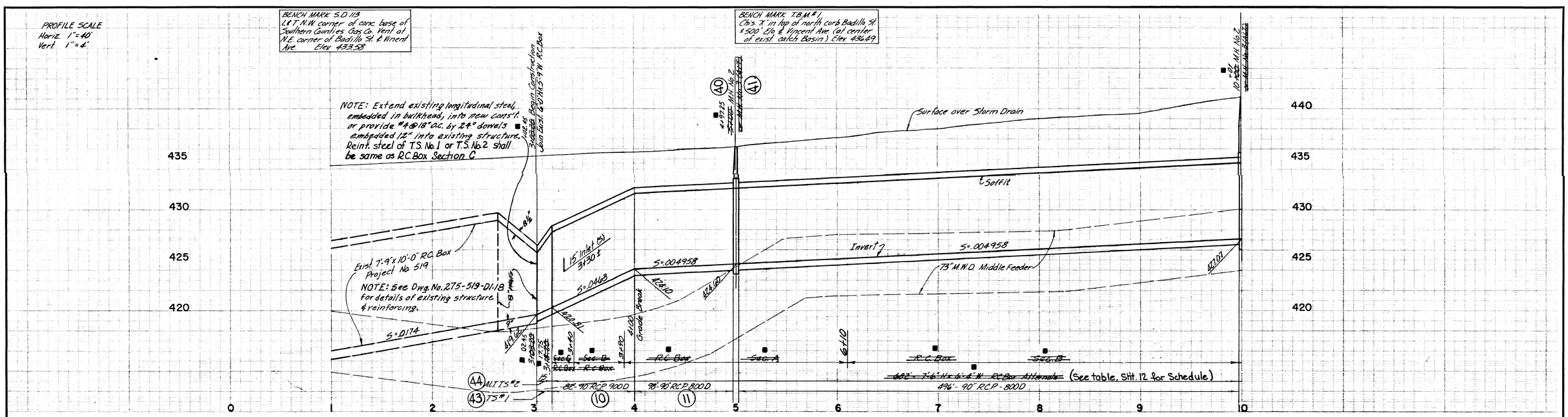
REGIONAL PROJECT NO. 1123

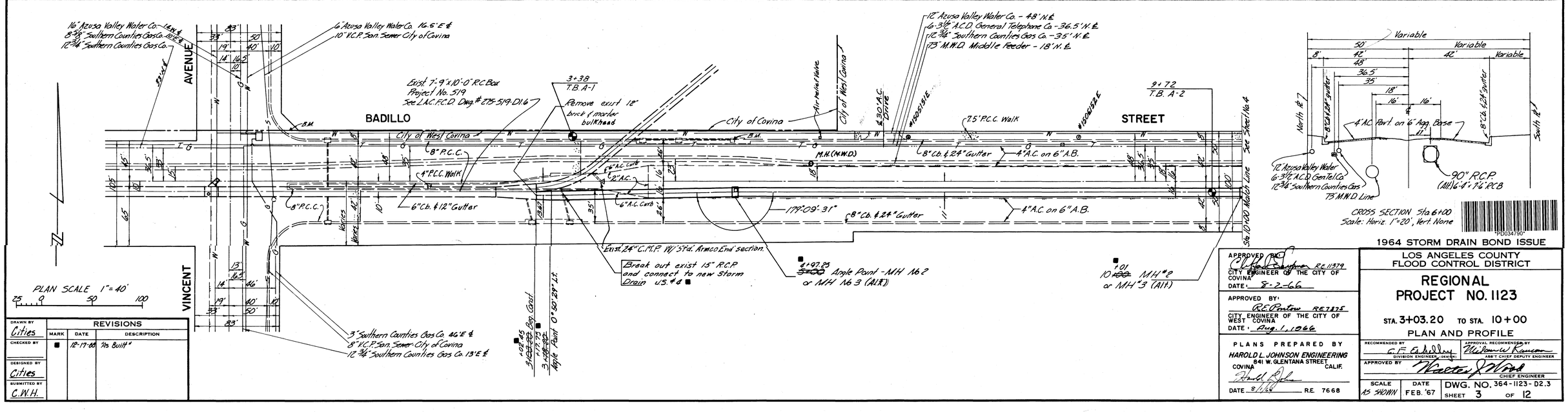
RESURFACING PLAN, LIST OF STANDARD DRAWINGS, LEGEND

DRAWN BY Cities | DESIGNED BY Cities
TRACED BY Cities | SUBMITTED BY C.W.H.
CHECKED BY
RECOMMENDED BY C.F. Caballero, DIVISION ENGINEER (Design)

APPROVED BY Walter S. Wood, CHIEF ENGINEER

SCALE AS SHOWN | DATE FEB. '67 | NO. 364-1123-D2.2 | SHEET 2 OF 12




1964 STORM DRAIN BOND ISSUE

| DRAWN BY | REVISIONS | | |
|---|---|---|---|
| Cities | MARK | DATE | DESCRIPTION |
| CHECKED BY | | 12-17-68 | "As Built" |
| DESIGNED BY Cities | | | |
| SUBMITTED BY C.W.H. | | | |

APPROVED BY: C. Wood Scantlin RE 11379
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

APPROVED BY: R.C. Pontow RE 7375
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA CALIF.
Harold L. John
DATE 8/1/68 R.E. 7668

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

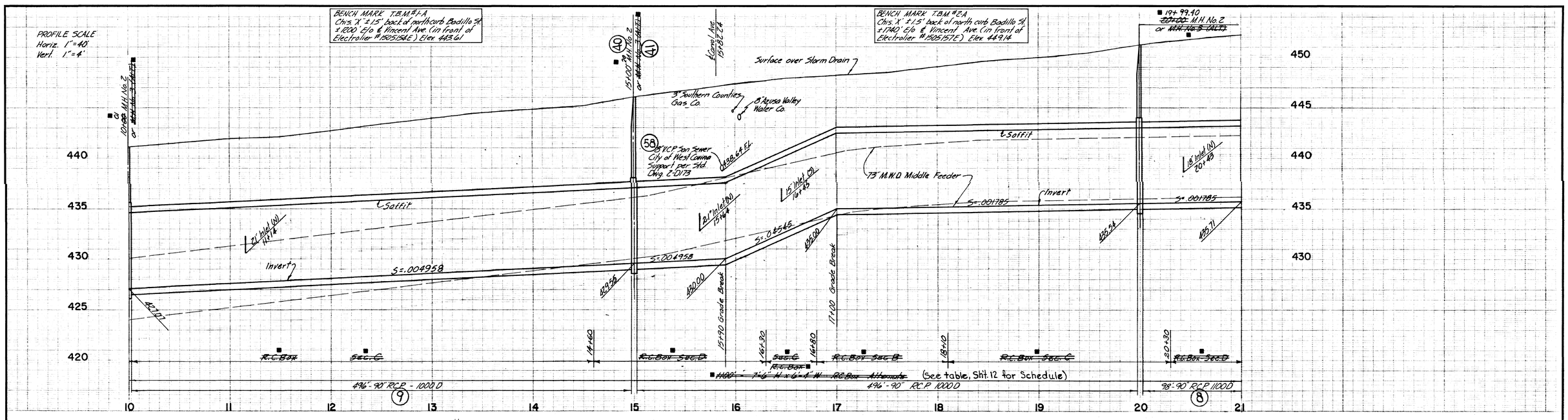
# REGIONAL PROJECT NO. 1123

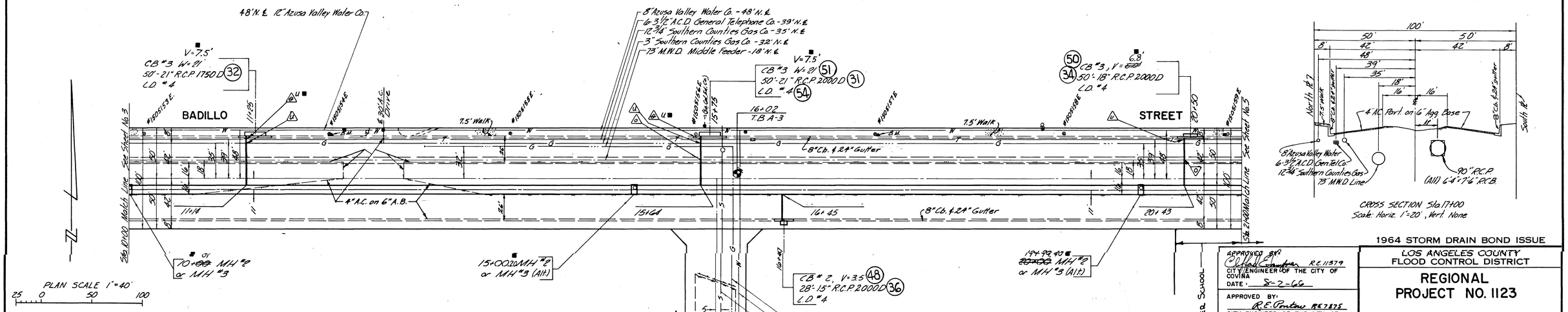
STA. 3+03.20 TO STA. 10+00

## PLAN AND PROFILE

RECOMMENDED BY: G.F. Schilling, DIVISION ENGINEER (DESIGN)
APPROVAL RECOMMENDED BY: W. Donald Ramsey, ASS'T CHIEF DEPUTY ENGINEER
APPROVED BY: Walter J. Wade, CHIEF ENGINEER

| SCALE | DATE | DWG. NO. 364-1123-D2.3 |
|---|---|---|
| AS SHOWN | FEB. '67 | SHEET 3 OF 12 |







CROSS SECTION Sta. 17+00
Scale: Horiz. 1" = 20', Vert. None

1964 STORM DRAIN BOND ISSUE

| DRAWN BY | REVISIONS | | |
|---|---|---|---|
| Cities | MARK | DATE | DESCRIPTION |
| CHECKED BY | ■ | 12-17-68 | "As Built" |
| DESIGNED BY Cities | | | |
| SUBMITTED BY C.W.H. | | | |

APPROVED BY
CITY ENGINEER OF THE CITY OF COVINA R.E. 11379
DATE: 8-2-66

APPROVED BY
R.E. Pritchard R.E. 7875
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA CALIF.
DATE 8/1/66 R.E. 7668

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT

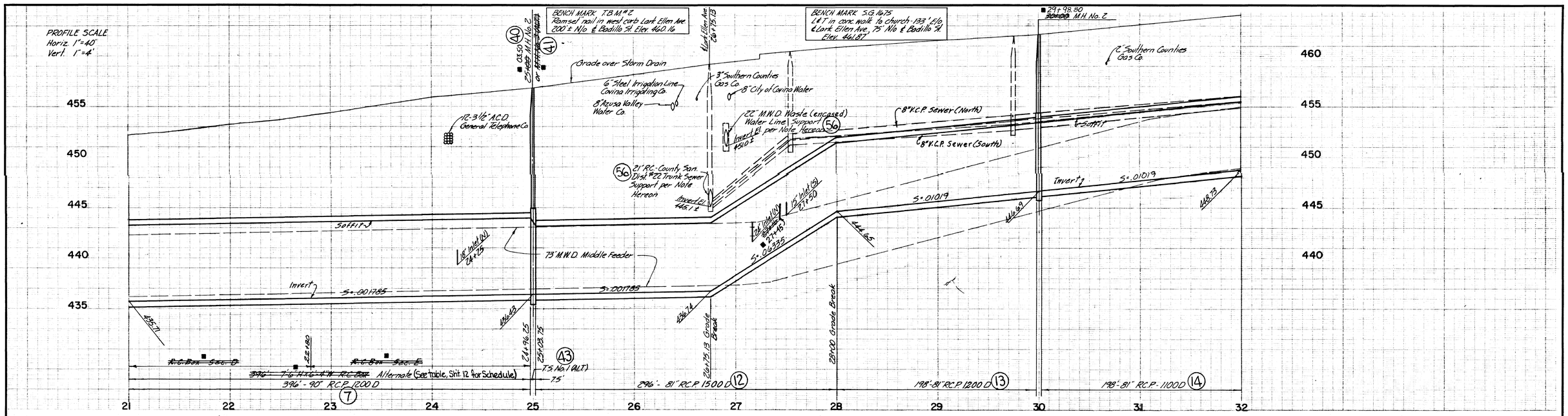
# REGIONAL PROJECT NO. 1123

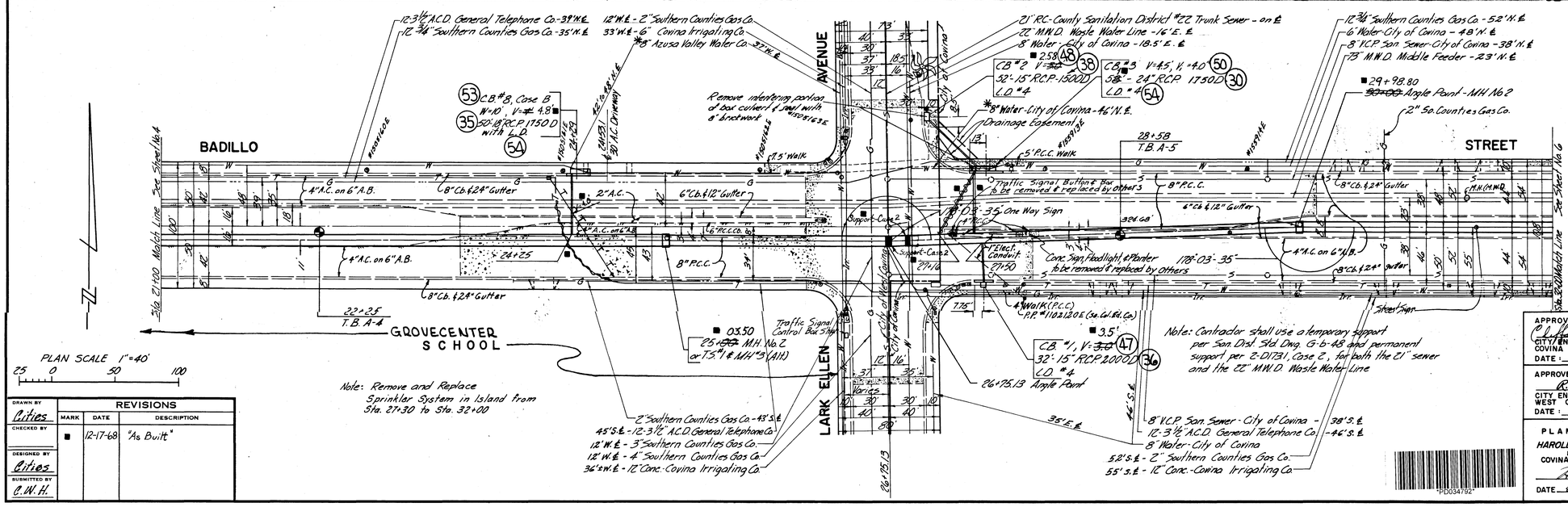
STA. 10+00 TO STA. 21+00

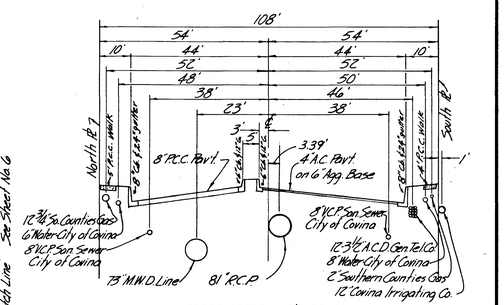
## PLAN AND PROFILE

RECOMMENDED BY C.F. Caldwell, DIVISION ENGINEER (DESIGN)
APPROVAL RECOMMENDED BY William W. Hanson, ASS'T CHIEF DEPUTY ENGINEER
APPROVED BY Walter J. Wood, CHIEF ENGINEER

| SCALE | DATE | DWG. NO. 364-1123-D2.4 |
|---|---|---|
| AS SHOWN | FEB. '67 | SHEET 4 OF 12 |




CROSS SECTION Sta. 29+00
Scale: Horiz. 1"=20', Vert. None

1964 STORM DRAIN BOND ISSUE

| DRAWN BY | REVISIONS | | |
|---|---|---|---|
| Cities | MARK | DATE | DESCRIPTION |
| CHECKED BY | ■ | 12-17-68 | "As Built" |
| DESIGNED BY Cities | | | |
| SUBMITTED BY C.W.H. | | | |

APPROVED BY C. F. Thompson R.E. 11579
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

APPROVED BY: R.C. Foster R.E. 7825
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA CALIF.
DATE 8/1/66 R.E. 7668

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT

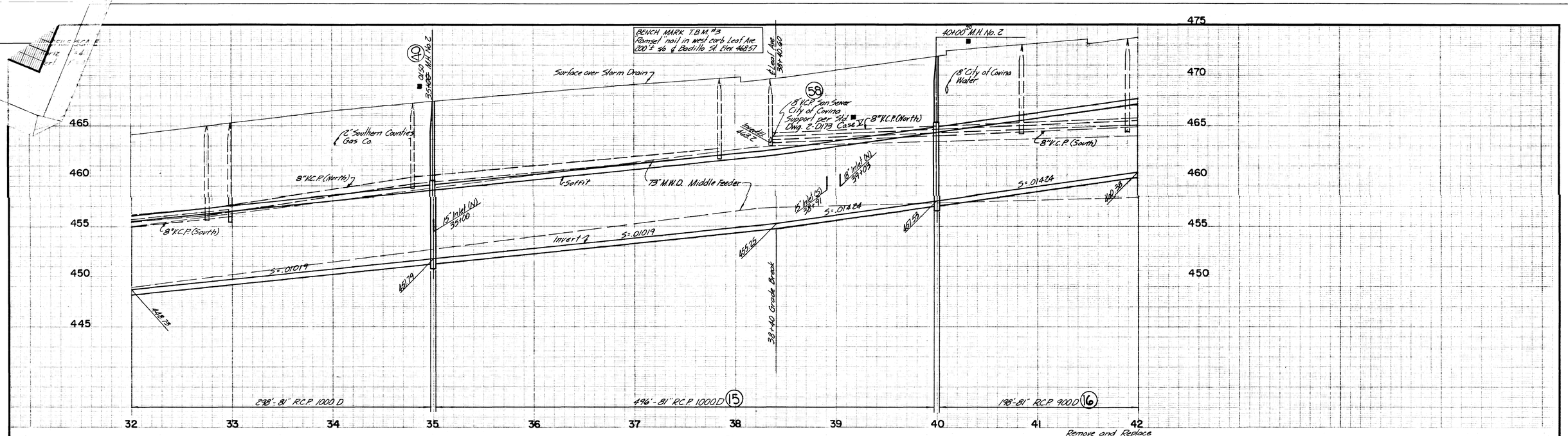
# REGIONAL PROJECT NO. 1123

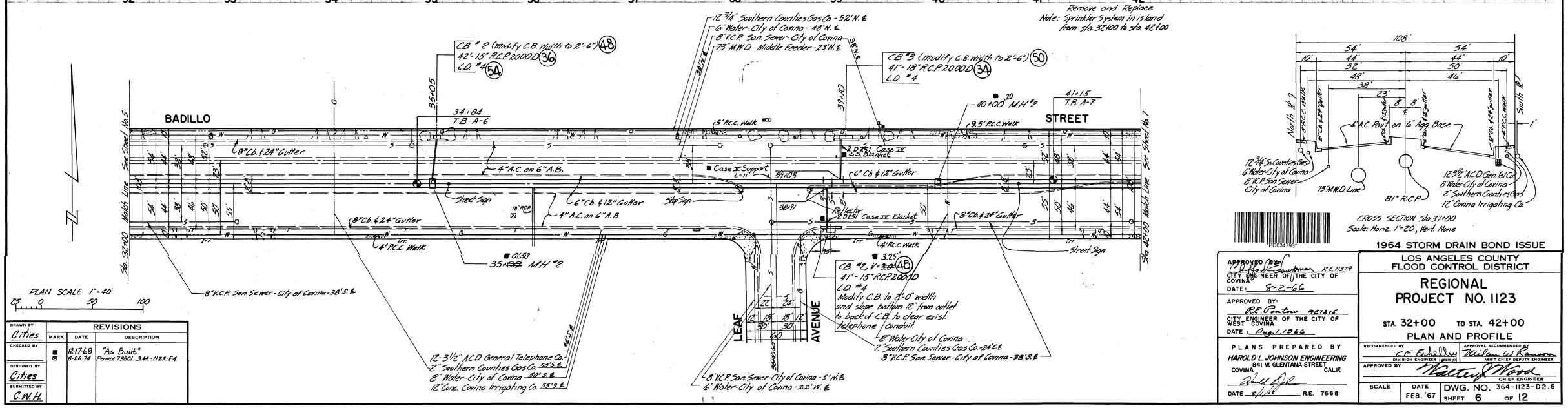
STA. 21+00 TO STA. 32+00

## PLAN AND PROFILE

RECOMMENDED BY C. F. Caldwell, DIVISION ENGINEER, DESIGN
APPROVAL RECOMMENDED BY William C. Ramon, ASS'T CHIEF DEPUTY ENGINEER
APPROVED BY Walter J. Wood, CHIEF ENGINEER

| SCALE | DATE | DWG. NO. 364-1123-D2.5 |
|---|---|---|
| AS SHOWN | FEB. '67 | SHEET 5 OF 12 |







CROSS SECTION Sta. 37+00
Scale: Horiz. 1" = 20', Vert. None

"PD034793"

1964 STORM DRAIN BOND ISSUE

| REVISIONS | | |
|---|---|---|
| MARK | DATE | DESCRIPTION |
| | 12-17-68 | "As Built" |
| | 6-26-74 | Permit T3801 364-1123-F4 |

DRAWN BY: Cities
CHECKED BY:
DESIGNED BY: Cities
SUBMITTED BY: C.W.H.

APPROVED BY: R.E. Sculpner R.E. 11379
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

APPROVED BY: R.E. Pontow RE 1826
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA, CALIF.
DATE 8/1/66 R.E. 7668

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

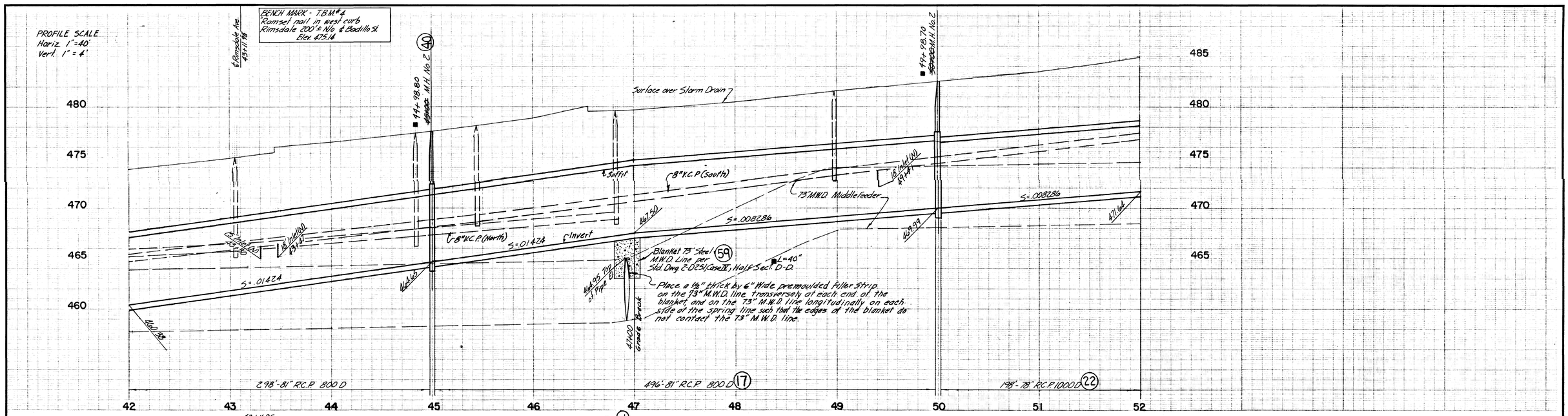
# REGIONAL PROJECT NO. 1123

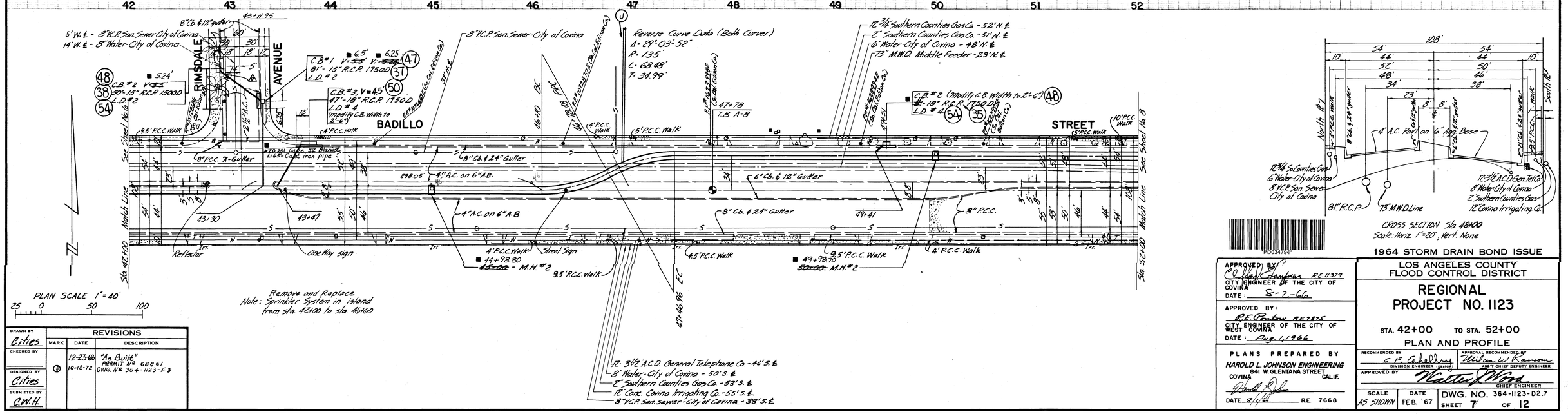
STA. 32+00 TO STA. 42+00

## PLAN AND PROFILE

RECOMMENDED BY: C.E. Edelblut, DIVISION ENGINEER
APPROVAL RECOMMENDED BY: William W. Parsons, ASS'T CHIEF DEPUTY ENGINEER
APPROVED BY: Walter J. Wood, CHIEF ENGINEER

| SCALE | DATE | DWG. NO. | SHEET |
|---|---|---|---|
| | FEB. '67 | 364-1123-D2.6 | 6 OF 12 |







| DRAWN BY | REVISIONS | | |
|---|---|---|---|
| Cities | MARK | DATE | DESCRIPTION |
| CHECKED BY | 3 | 12-23-68 | "As Built" PERMIT No. 68861 |
| | | 10-12-72 | DWG. No. 364-1123-F3 |
| DESIGNED BY Cities | | | |
| SUBMITTED BY C.W.H. | | | |

APPROVED BY: C. Max Sanderson RE 11379
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

APPROVED BY: R.E. Barlow RE 7825
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA CALIF.
Harold L. Johnson
DATE 8/1/66 R.E. 7668

1964 STORM DRAIN BOND ISSUE

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT

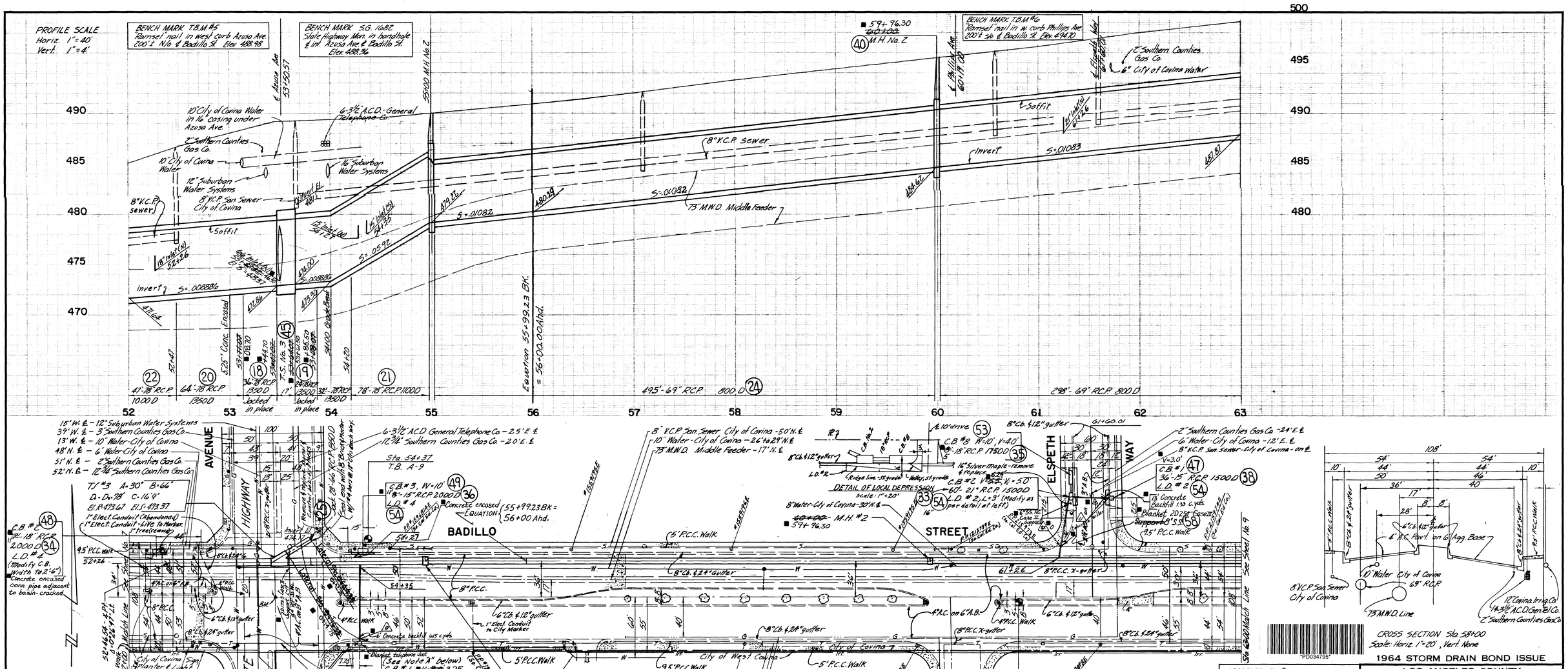
# REGIONAL PROJECT NO. 1123

STA. 42+00 TO STA. 52+00

## PLAN AND PROFILE

RECOMMENDED BY: C. F. Ahlberg, DIVISION ENGINEER (DESIGN)
APPROVAL RECOMMENDED BY: William W. Ranson, ASST. CHIEF DEPUTY ENGINEER
APPROVED BY: Walter J. Wood, CHIEF ENGINEER

| SCALE | DATE | DWG. NO. 364-1123-D2.7 |
|---|---|---|
| AS SHOWN | FEB. '67 | SHEET 7 OF 12 |










CROSS SECTION Sta. 58+00
Scale: Horiz. 1"=20', Vert. None

1964 STORM DRAIN BOND ISSUE

| DRAWN BY | Cities |
|---|---|
| CHECKED BY | |
| DESIGNED BY | Cities |
| SUBMITTED BY | C.W.H. |

REVISIONS

| MARK | DATE | DESCRIPTION |
|---|---|---|
| ■ | 12-23-68 | "As Built" |

APPROVED BY: C. W. Hanson R.E. 11379
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

APPROVED BY: R. E. Parker RE 7825
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA CALIF.
Harold L. Johnson
DATE 8/1/66 R.E. 7668

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

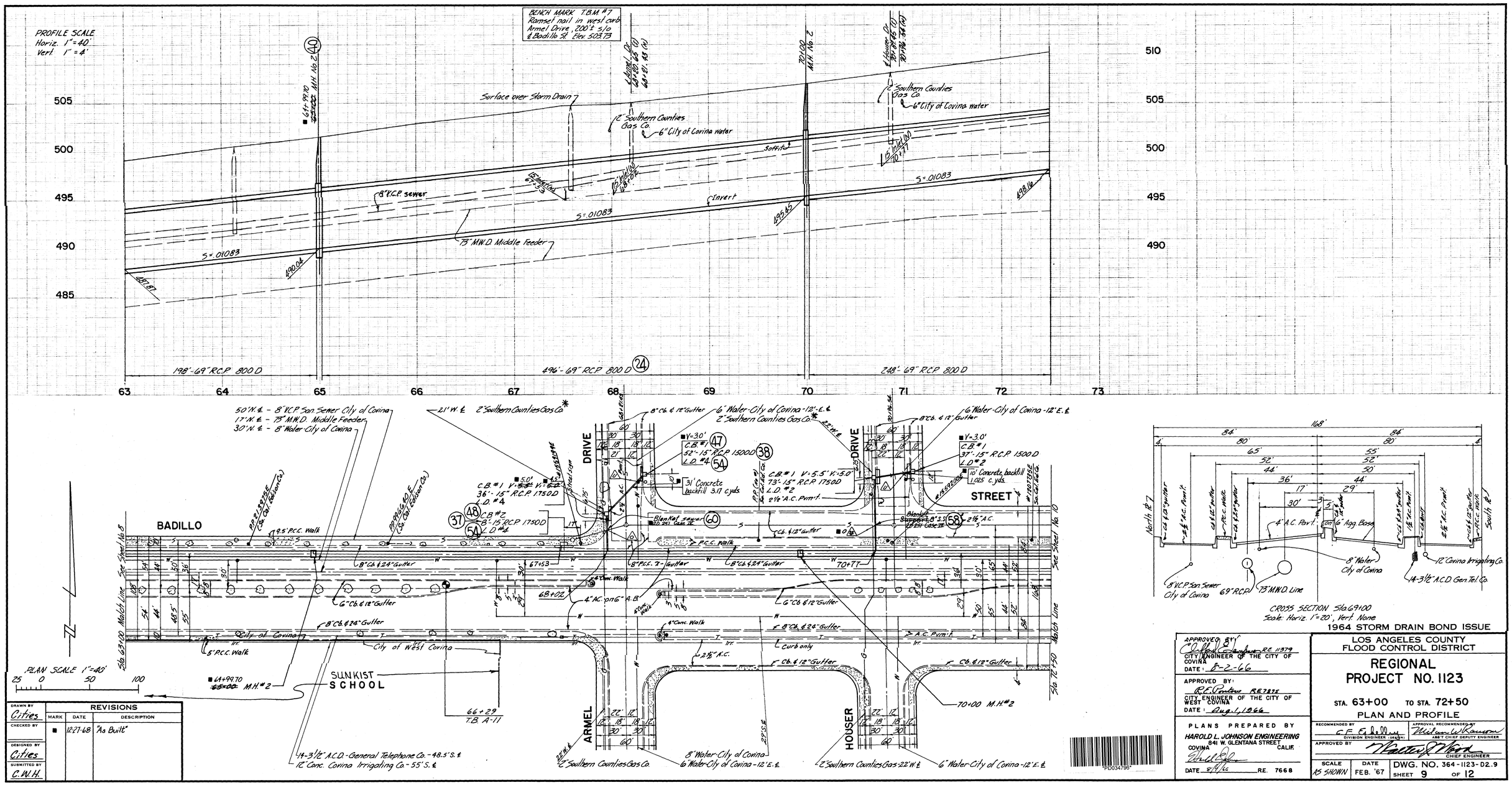
# REGIONAL PROJECT NO. 1123

STA. 52+00 TO STA. 63+00

## PLAN AND PROFILE

RECOMMENDED BY: G. F. Gallant, DIVISION ENGINEER (DESIGN)
APPROVED, RECOMMENDED BY: Wilbur W. Robertson, ASS'T CHIEF DEPUTY ENGINEER
APPROVED BY: Walter J. Ward, CHIEF ENGINEER

| SCALE | DATE | DWG. NO. 364-1123-D2.8 |
|---|---|---|
| AS SHOWN | FEB. '67 | SHEET 8 OF 12 |




1964 STORM DRAIN BOND ISSUE

| DRAWN BY | Cities |
|---|---|
| CHECKED BY | |
| DESIGNED BY | Cities |
| SUBMITTED BY | C.W.H. |

REVISIONS

| MARK | DATE | DESCRIPTION |
|---|---|---|
| ■ | 12-27-68 | "As Built" |

APPROVED BY: C. W. Hall RE 11379
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

APPROVED BY: R. E. Pontius RE 7875
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET, COVINA CALIF.
DATE 8/11/66 RE. 7668

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT

# REGIONAL PROJECT NO. 1123

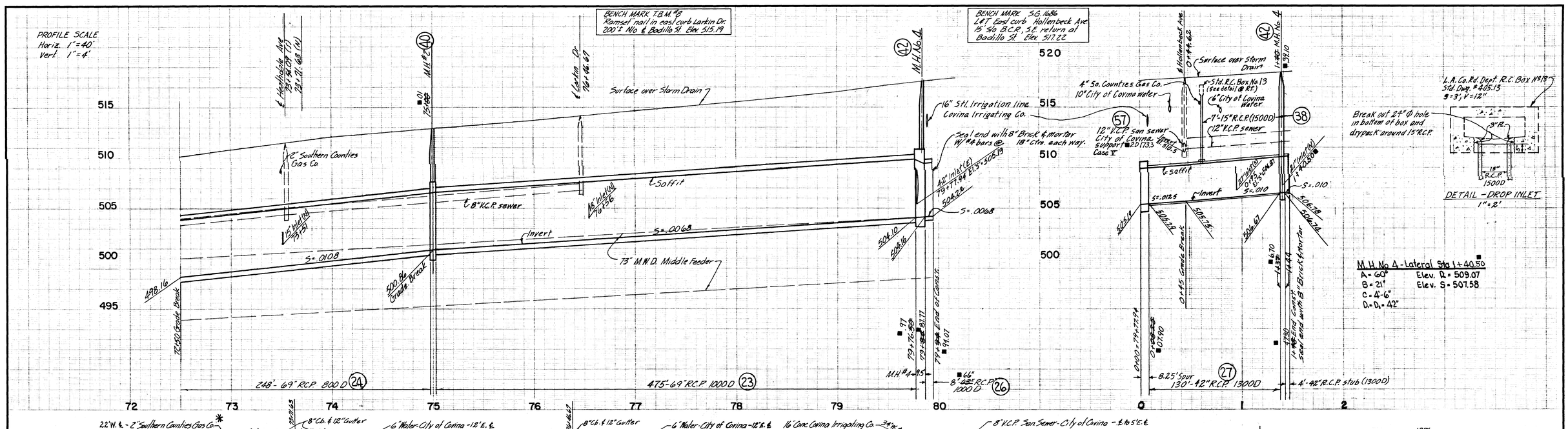
STA. 63+00 TO STA. 72+50

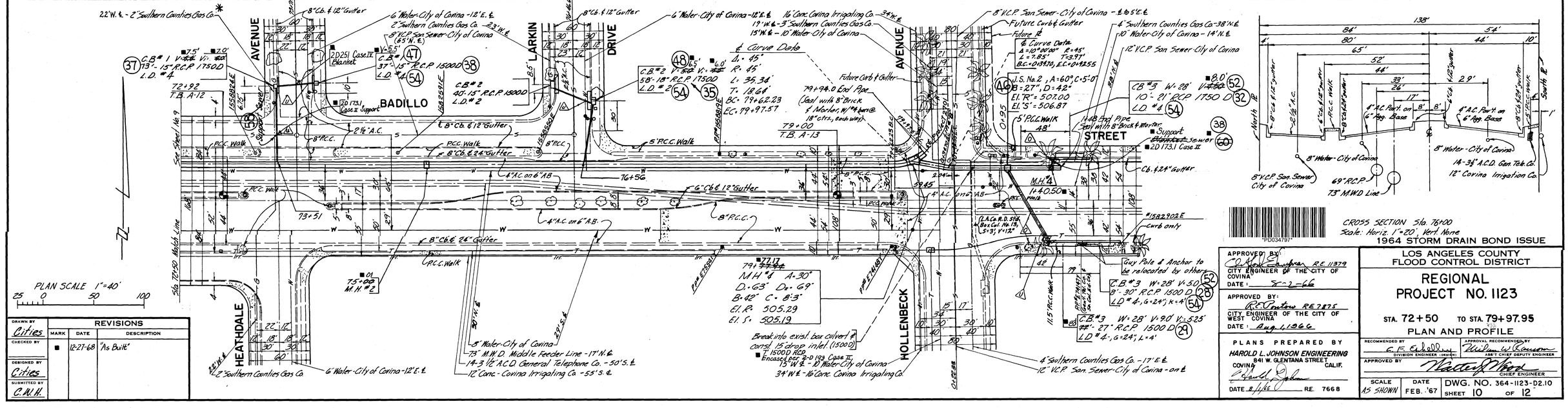
## PLAN AND PROFILE

RECOMMENDED BY: C. F. Fahlbusch, DIVISION ENGINEER (DESIGN)
APPROVAL RECOMMENDED BY: William W. Kanover, ASS'T CHIEF DEPUTY ENGINEER
APPROVED BY: Walter J. Wark, CHIEF ENGINEER

| SCALE | DATE | DWG. NO. |
|---|---|---|
| AS SHOWN | FEB. '67 | 364-1123-D2.9 |

SHEET 9 OF 12




CROSS SECTION Sta. 76+00
Scale: Horiz. 1"=20', Vert. None

1964 STORM DRAIN BOND ISSUE

| DRAWN BY | REVISIONS | | |
|---|---|---|---|
| Cities | MARK | DATE | DESCRIPTION |
| CHECKED BY | ■ | 12-27-68 | "As Built" |
| DESIGNED BY Cities | | | |
| SUBMITTED BY C.M.H. | | | |

APPROVED BY: C. Hal Lawson R.E. 11379
CITY ENGINEER OF THE CITY OF COVINA
DATE: 8-2-66

APPROVED BY: R.S. Ontove RE 7875
CITY ENGINEER OF THE CITY OF WEST COVINA
DATE: Aug. 1, 1966

PLANS PREPARED BY
HAROLD L. JOHNSON ENGINEERING
841 W. GLENTANA STREET
COVINA, CALIF.
DATE 8/1/66 RE. 7668

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT

# REGIONAL PROJECT NO. 1123

STA. 72+50 TO STA. 79+97.95

## PLAN AND PROFILE

RECOMMENDED BY: C. E. Ekelberry, DIVISION ENGINEER (DESIGN)
APPROVAL RECOMMENDED BY: William W. Lawson, ASS'T CHIEF DEPUTY ENGINEER
APPROVED BY: Walter J. Wade, CHIEF ENGINEER

| SCALE | DATE | DWG. NO. 364-1123-D2.10 |
|---|---|---|
| AS SHOWN | FEB. '67 | SHEET 10 OF 12 |

September 2019

# PRELIMINARY HYDROLOGY REPORT

## For

## Tentative Tract No. 82874

City of Covina

County of Los Angeles

HUNSAKER & ASSOCIATES IRVINE, INC.

PRELIMINARY HYDROLOGY REPORT

**Tentative Tract No. 82874**

City of Covina | County of Los Angeles

HUNSAKER & ASSOCIATES IRVINE, INC.

September 2019