Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

FIRST MARCH BUILDING 2
NATWAR LANE
PERRIS, CALIFORNIA

PREPARED FOR

FIRST INDUSTRY REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY SUITE 175
EL SEGUNDO, CA 90245
PHONE: (310) 321-3813

MARCH 03, 2021

JOB NO. 3933

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BLVD.
LA MIRADA, CALIFORNIA 90638
PHONE: (714) 521-4811
FAX: (714) 521-4173

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

FIRST MARCH BUILDING 2

PREPARED UNDER
THE SUPERVISION OF

REINHARD STENZEL DATE:
R.C.E. 56155
EXP. 12/31/2022

INTRODUCTION

A: PROJECT LOCATION

The project site is located on the northeast side of Natwar Lane, west of Western Way, and north of Nandina Drive in the city of Perris, California. Interstate 215 is west of the site. See the following page for a vicinity map.

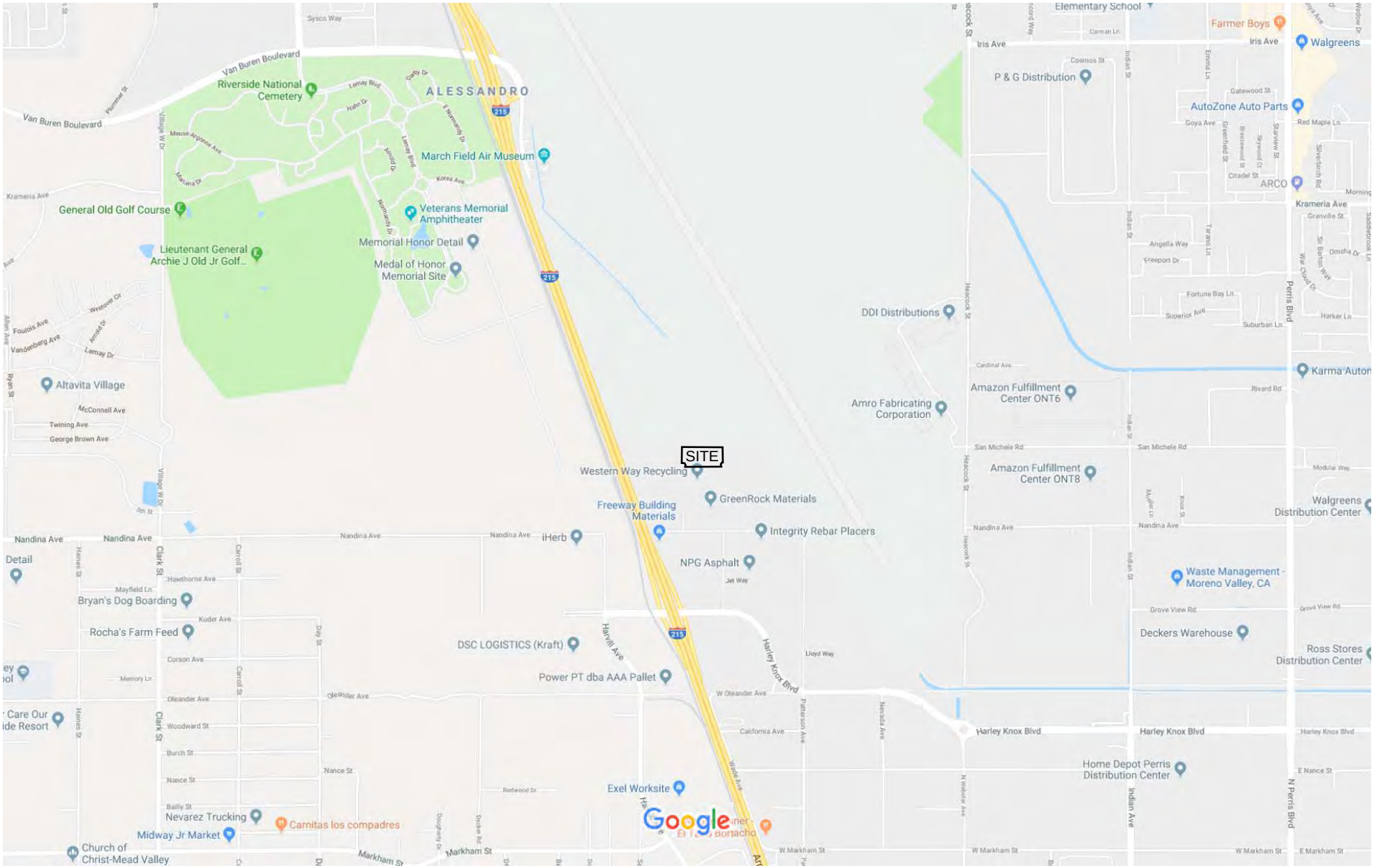
B: STUDY PURPOSE

The purpose of this study is to determine the existing and proposed condition 100-year peak flow rates for the project site that ultimately discharges into a proposed Master Plan storm drain that drains from west to east through the north portion of the site.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel
Brian Weil
Tony Nuñez


Google Maps
SITE
Western Way Recycling
GreenRock Materials
Freeway Building Materials
Integrity Rebar Placers
iHerb
NPG Asphalt
DSC LOGISTICS (Kraft)
Power PT dba AAA Pallet
Exel Worksite
Amro Fabricating Corporation
DDI Distributions
Amazon Fulfillment Center ONT6
Amazon Fulfillment Center ONT8
Riverside National Cemetery
ALESSANDRO
March Field Air Museum
General Old Golf Course
Veterans Memorial Amphitheater
Memorial Honor Detail
Medal of Honor Memorial Site
Lieutenant General Archie J Old Jr Golf...
Altavita Village
Bryan's Dog Boarding
Rocha's Farm Feed
Nevarez Trucking
Midway Jr Market
Carnitas los compadres
Church of Christ-Mead Valley
P & G Distribution
AutoZone Auto Parts
ARCO
Farmer Boys
Walgreens
Karma Autor
Walgreens Distribution Center
Waste Management - Moreno Valley, CA
Deckers Warehouse
Ross Stores Distribution Center
Home Depot Perris Distribution Center
Harley Knox Blvd
Van Buren Boulevard
Nandina Ave
Markham St
Perris Blvd
Indian Ave
Map data ©2019 Google
1000 ft

DISCUSSION

The project site encompasses approximately 6.40 acres. Proposed improvements to the site include a single commercial/warehouse type building that is approximately 138,713 square feet. There will be a truck dock and yard area on the southerly side of the building. Vehicle parking areas will be located on the easterly and westerly portions of the project site. There will be landscaped areas adjacent to Western Way and throughout the site.

Existing Condition

Under existing conditions, the site is a vacant lot covered in natural grasses and sparse vegetation. Runoff from the site generally drains from west to east toward Western Way. The existing condition 100-year peak flow rate currently draining to Western Way (nodes 200-201) is approximately 8.4 cfs.

Stormwater from the site will cross Western Way and continue southeasterly via an existing natural drainage course. An existing dirt berm and access road along the westerly property line of the March Air Reserve Base diverts runoff away from the base. Drainage is directed southeasterly to the Nandina Drive and Patterson Avenue intersection. Patterson Avenue is an unimproved dirt road and does not have positive drainage. Flows appear to drain easterly into an existing earthen channel that traverses from north to south through the March Air Reserve Base, east of the project site. The channel ultimately drains southeasterly and discharges to the Perris Valley Storm Channel, Line "B", at Heacock Avenue.

The project site is currently accepting offsite runon from the property to the west. Flows surface drain from west to east and enter the site at the surface along the westerly property line. The existing condition 100-year peak flow rate from the neighboring property is approximately 9.3 cfs. The westerly property will be improved prior to the development of the project site and runoff will be directed away from the site, to a proposed public storm drain system.

See Appendix "B" for existing condition hydrology calculations and Appendix "C" for an existing condition hydrology map.

Proposed Master Plan Storm Drain

The project site is tabled to Lateral "B-7.2" per the Perris Valley Area Master Drainage Plan Hydrology Map. The upstream end of lateral "B-7.2" is adjacent to the southeast portion of the site and is located in Western Way. Lateral "B-7.2" drains to the south and confluences with Lateral "B-7" in Nandina Avenue. Lateral "B-7" continues easterly in Nandina Avenue, turns southerly in Patterson Avenue, and ultimately discharges to Line "B" in Old Oleander Road (now called Harley Knox Boulevard). The Master Drainage Plan shows that Line "B" conveys drainage, from areas north of the site and west of the

215 Freeway, southerly to Old Oleander Road. These Master Drainage Plan facilities have not been constructed at the time of this report.

K & A Engineering has prepared preliminary plans for a future storm drain system that will convey stormwater from areas to the north, southeasterly past Nandina Avenue. The future reinforced concrete box will parallel the site's northerly property line and continue southeasterly around the easterly property line. The storm drain will be located adjacent to the March Air Reserve Base and within private property. The preliminary plans show Lateral "B-7" connecting to the future storm drain near the Nandina Avenue and Patterson Avenue intersection. The future storm drain construction schedule is unknown.

The Perris Valley MDP Line B storm drain plan by Albert A. Webb Associates (WEBB) proposes a storm drain system that conveys stormwater from an existing 96" RCP near the March Field Air Museum, north of the project site, to the southeast. The storm drain system will temporarily discharge into an existing earthen channel located east of the project site. The proposed storm drain system will ultimately continue southeasterly with the construction of the K & A Engineering future storm drain system or WEBB alternative 2 plan.

The First March Logistics Preliminary Hydrology Calculations report prepared by Thienes Engineering, Inc. shows a proposed public storm drain system that will convey runoff from areas west of the 215 freeway with the development of the westerly neighboring site. The proposed public storm drain system will drain from west to east, through the northerly portion of the site, and ultimately discharge into the K & A Engineering or WEBB alternative 2 future storm drain system.

See Appendix "A" for K & A Engineering, WEBB, and Thienes Engineering, Inc. reference plans.

Proposed Condition Hydrology

Runoff from the westerly parking stalls and drive aisle will surface drain to a catch basin within the northerly portion of the parking lot (nodes 100-101). Flow from the building, truck yard, and southeasterly parking lot will surface drain to catch basins located in the truck yard area (nodes 110-121). A proposed onsite storm drain system, Line A, will convey stormwater from the northwest parking to the south, turn east around the building, and confluence with flows from the building and truck yard. Line A will continue east, turn north around the southeast corner of the building and collect runoff from the northeasterly parking lot that will surface drain to a catch basin on the east side of the building (nodes 130-131). The drive aisle north of the building will surface drain to several catch basins adjacent to the northerly face of the building (nodes 140-171). A proposed storm drain system, Line B, will convey flow to the east and confluence with Line A (at node 172). Line A continues north and ultimately discharges to the proposed public storm drain (at node 173). The proposed condition 100-year peak flow rate for the majority of the project site is approximately 18.8 cfs.

Drainage from the landscaping along the easterly property line and a portion of the driveway will surface drain directly into Western Avenue (nodes 180-181). The proposed condition 100-year peak flow rate from the street adjacent landscaping is approximately 0.9 cfs.

The total proposed condition 100-year peak flow rate from the project site is approximately 19.7 cfs (direct sum of the individual areas).

See Appendix "B" for proposed condition hydrology calculations and Appendix "C" for a proposed condition hydrology map.

Methodology

Riverside County Rational Method Program, by AES Software, was used for the hydrology calculations. The soil type is "B" per the Riverside County Hydrology Manual.

See Appendix "A" for reference material from the Hydrology Manual.

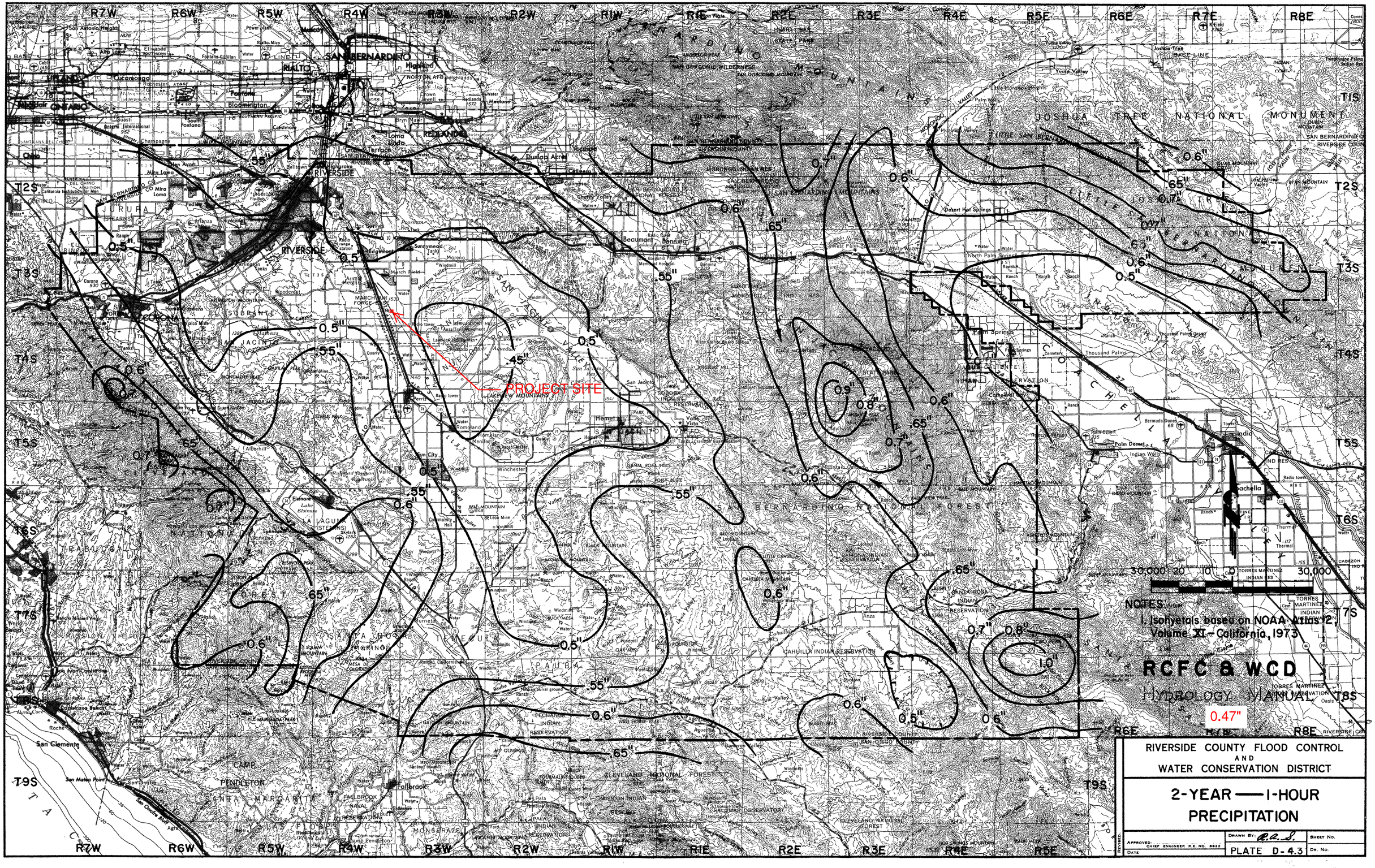
Conclusion

The existing condition 100-year peak flow rate is approximately 8.4 cfs. The proposed improvements will increase the 100-year peak flow to approximately 19.7 cfs. A proposed onsite storm drain system will discharge into a future public storm drain line that will drain from west to east through the northerly portion of the site. This future public storm drain and the downstream master storm drain facilities are designed for a 100-year storm frequency. Runoff from the project site to Western Way and the subsequent easterly properties is decreased from 8.4 cfs to 0.9 cfs. Therefore the proposed improvements will not negatively impact downstream facilities.

APPENDIX A

REFERENCE MATERIAL

HYDROLOGY MANUAL REFERENCE MATERIAL


PROJECT SITE
0.47"
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 1-HOUR PRECIPITATION
PLATE D-4.3
DRAWN BY: R.A.S.
SHEET No.
DR. No.
APPROVED CHIEF ENGINEER R.E. NO. 6822
DATE
REVISED:

PROJECT SITE

NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.

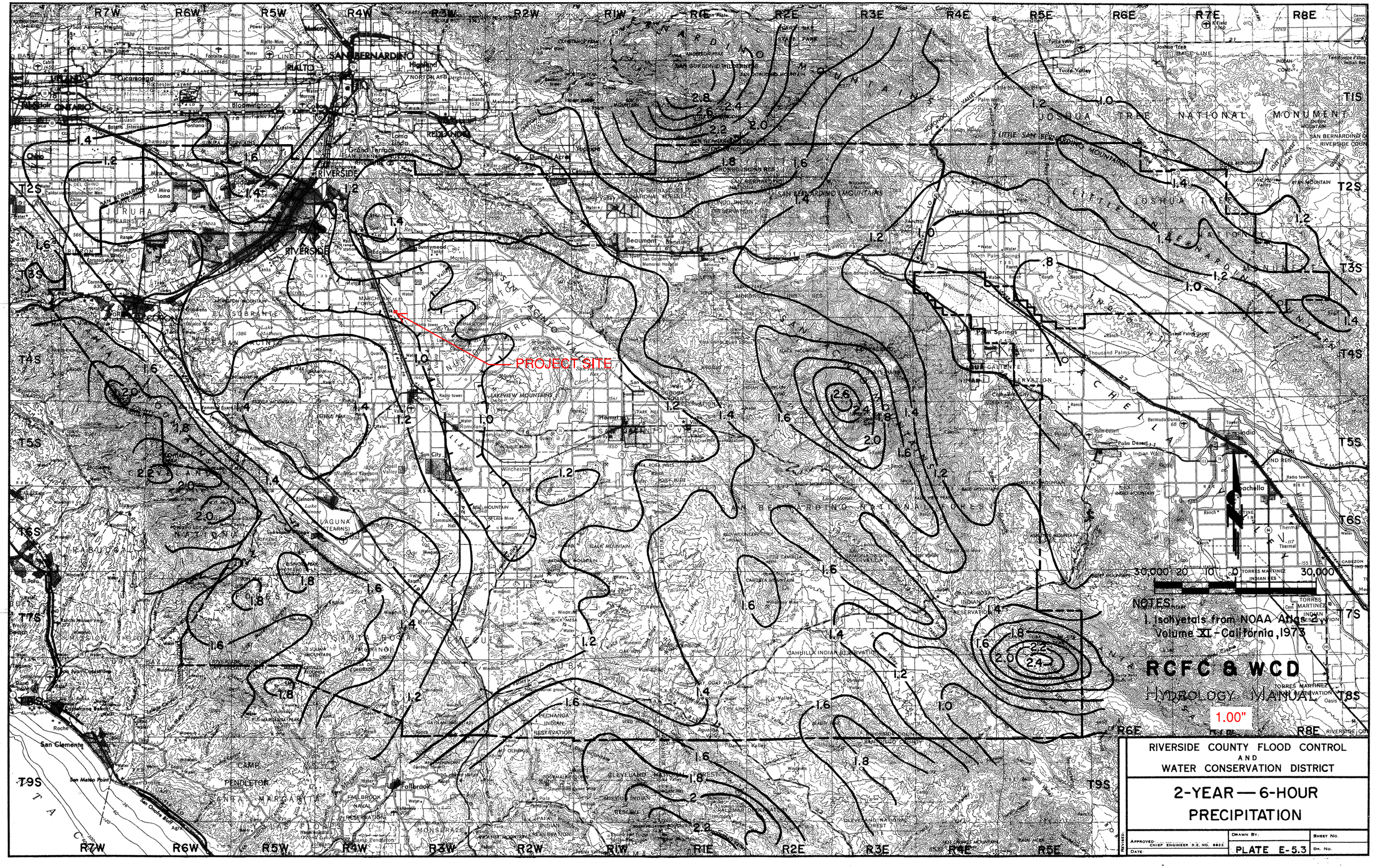
0.80"

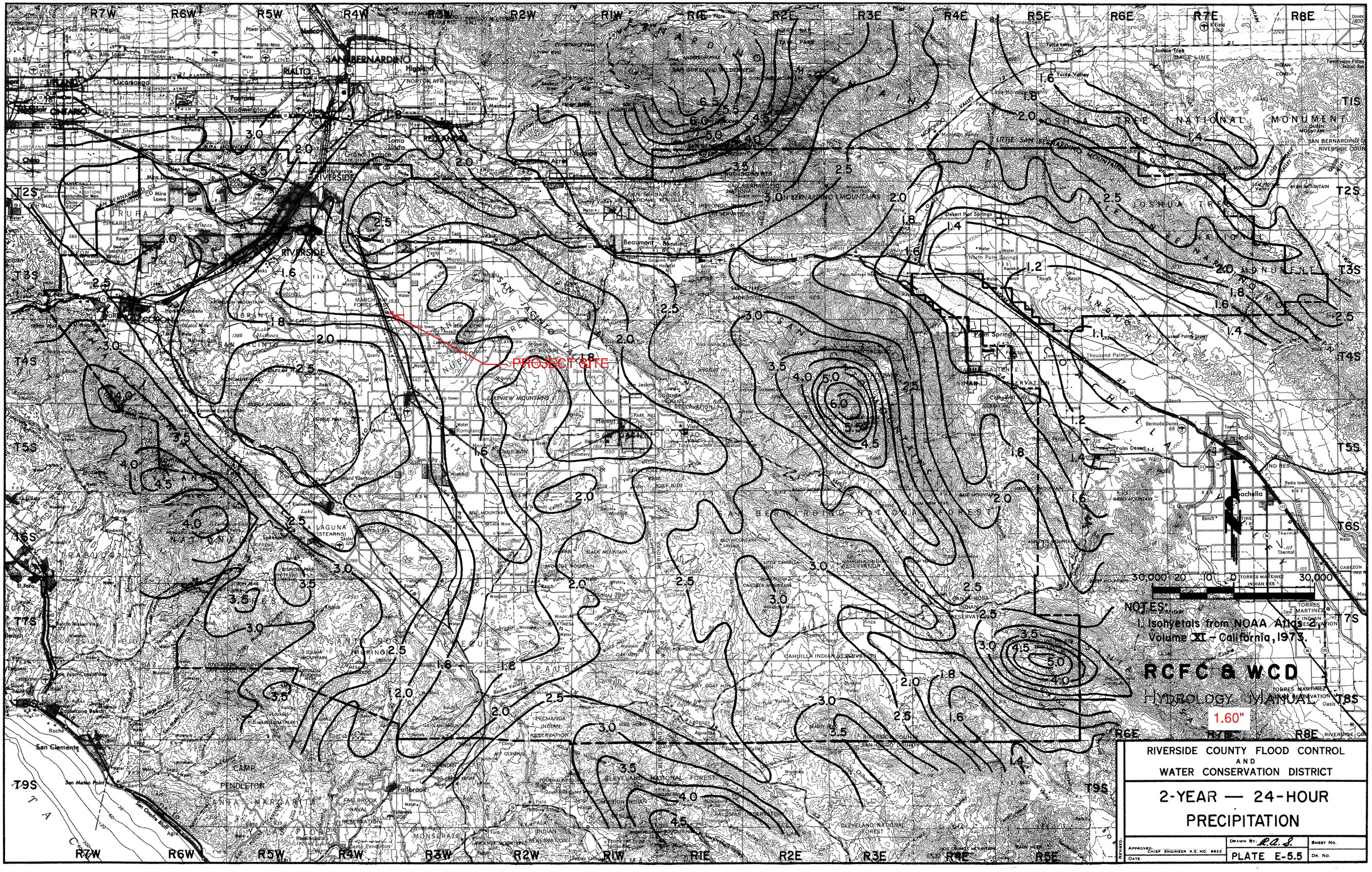
RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 3-HOUR
PRECIPITATION

REVISED:	DRAWN BY: R.A.S.	SHEET NO.
APPROVED: CHIEF ENGINEER R.E. NO. 6822	PLATE E-5.1	DR. NO.
DATE:		

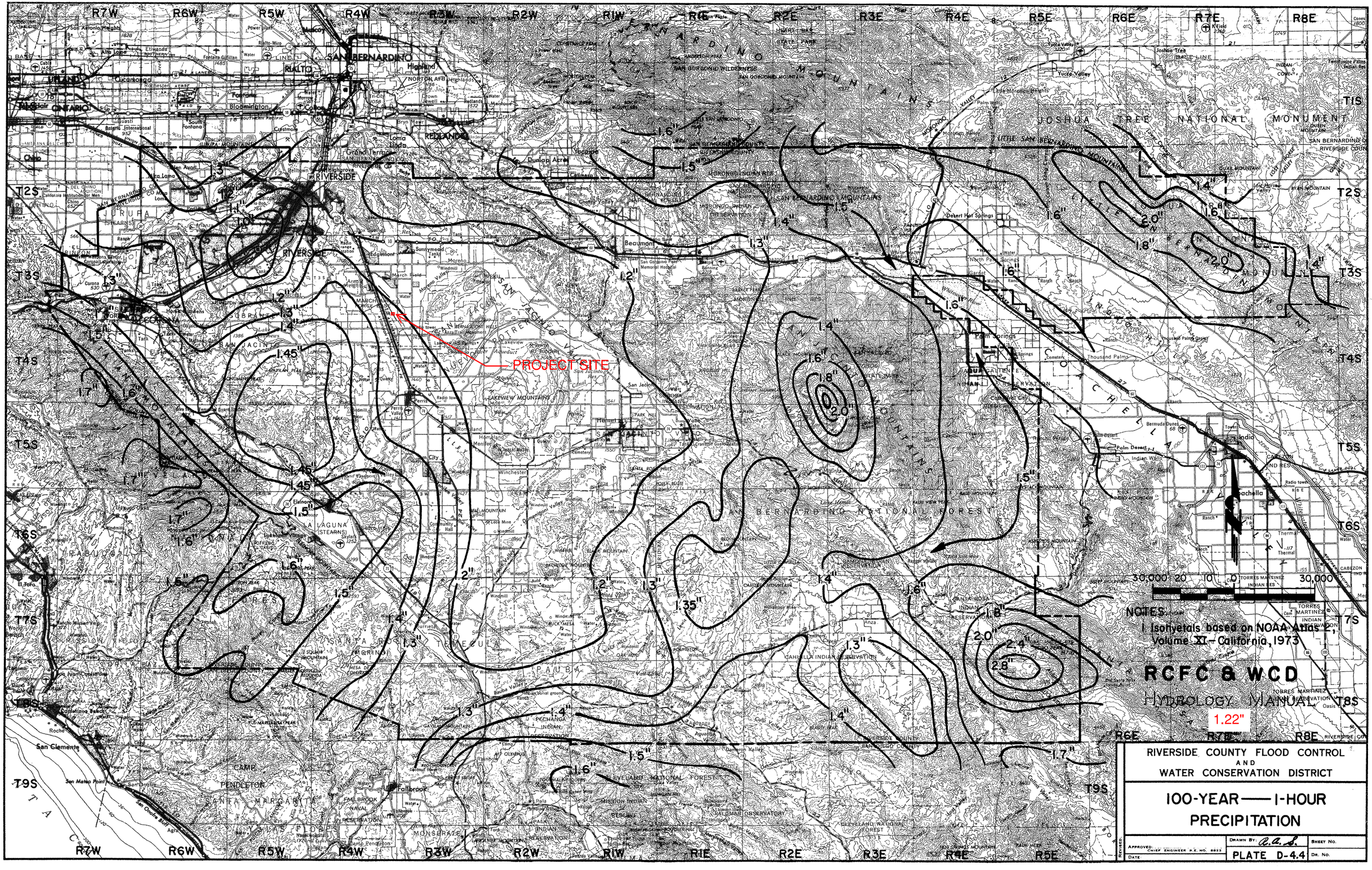

PROJECT SITE
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
1.00"
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 6-HOUR PRECIPITATION
DRAWN BY:
SHEET NO.
PLATE E-5.3
APPROVED CHIEF ENGINEER R.E. NO. 8822
DATE
REVISED
DR. NO.

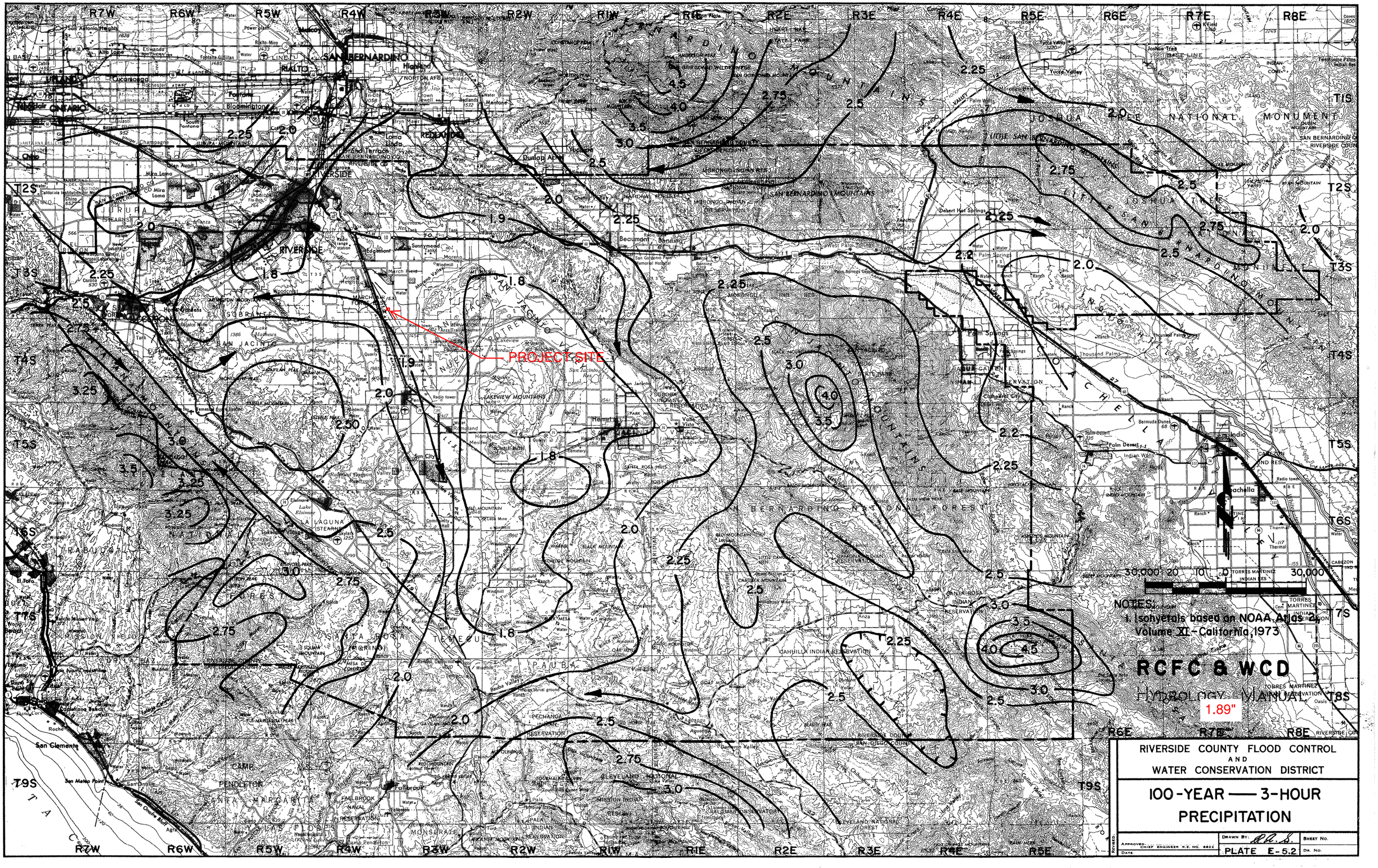


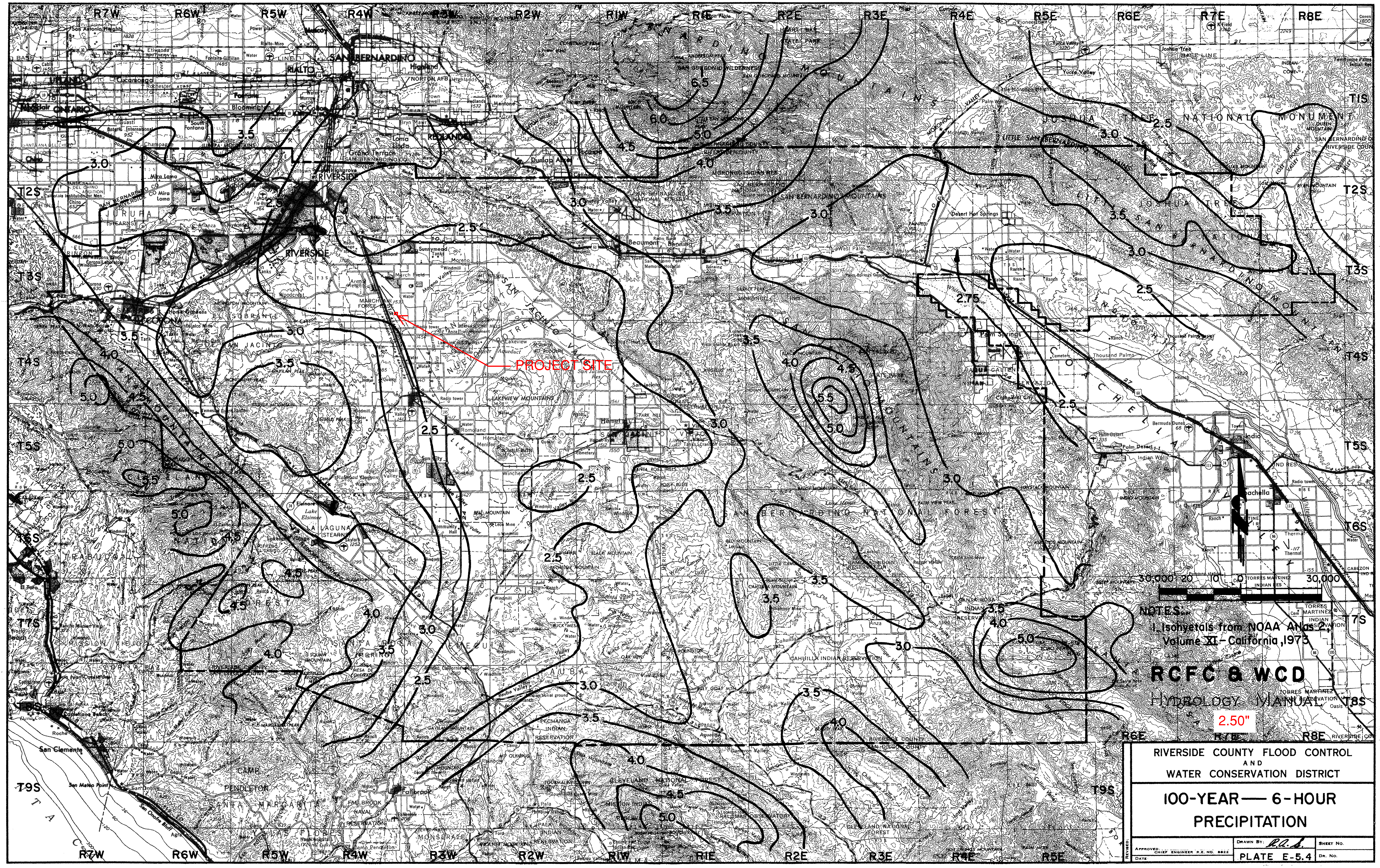
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

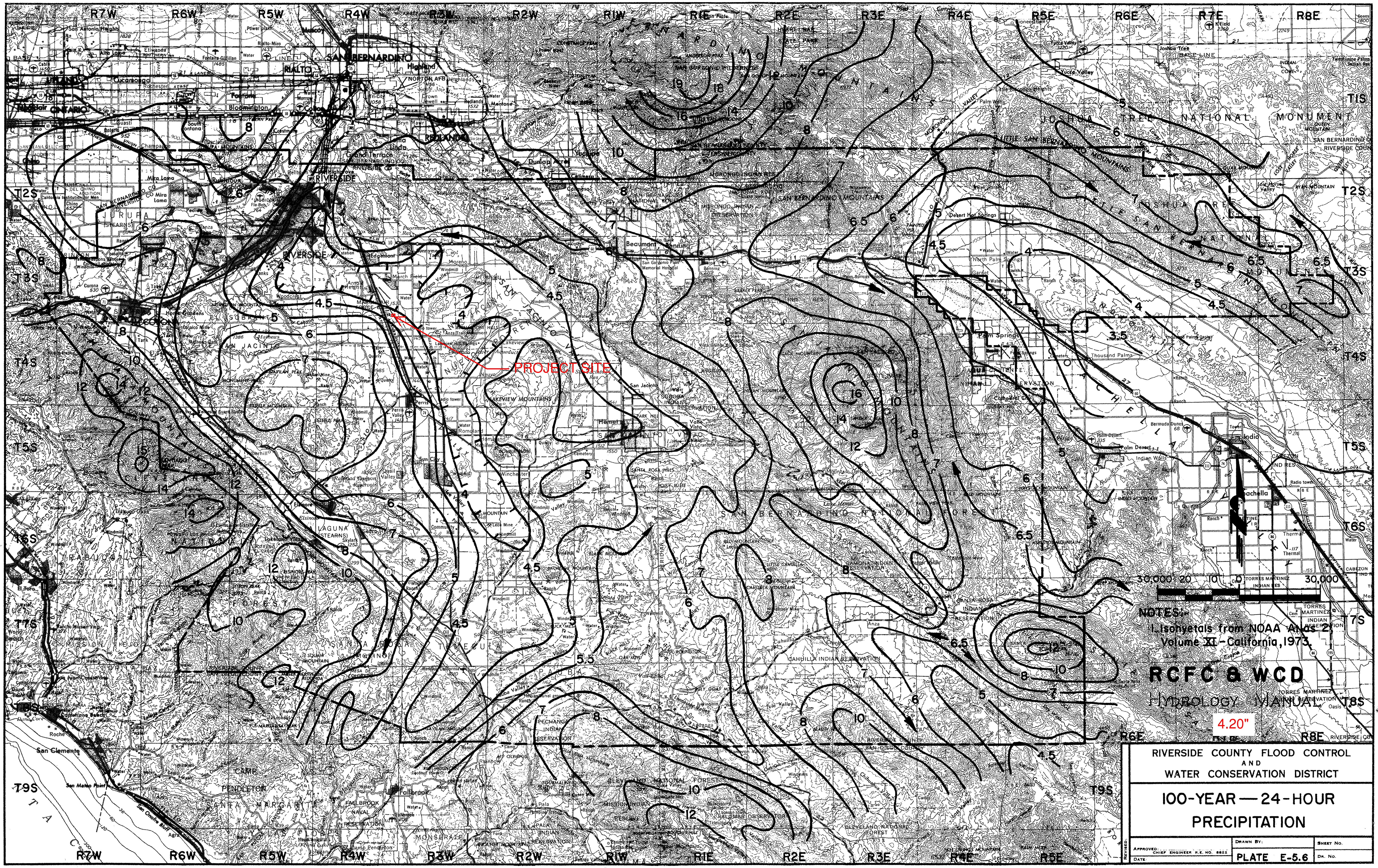
2-YEAR — 24-HOUR PRECIPITATION

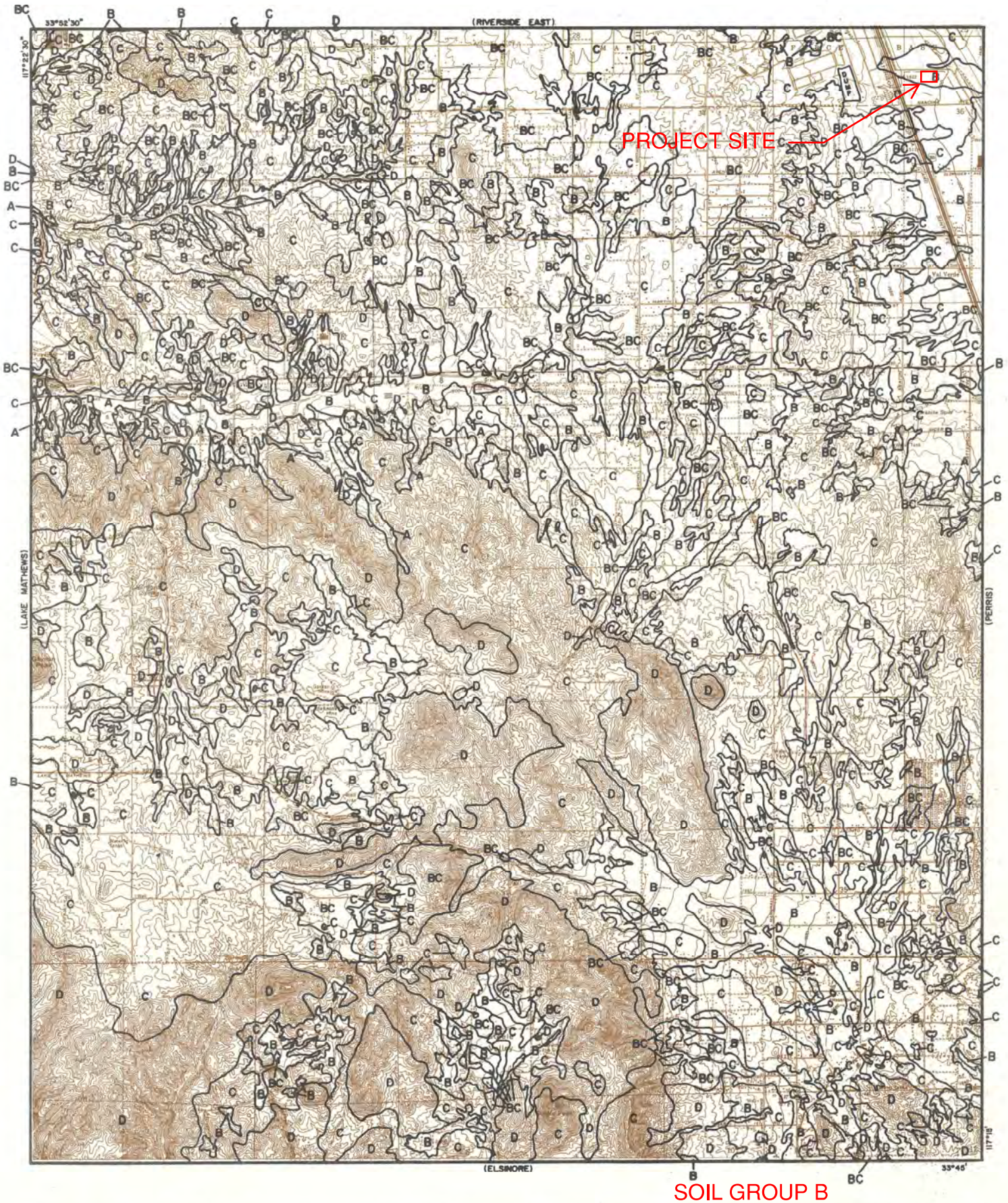
APPROVED CHIEF ENGINEER R.E. NO. 6822	DRAWN BY: R.A.S.	SHEET NO.
DATE	PLATE E-5.5	DR. NO.
REVISED		


PROJECT SITE
1.22"
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 1-HOUR PRECIPITATION
PLATE D-4.4
DRAWN BY: A.A.S.
APPROVED: CHIEF ENGINEER R.E. NO. 6822
DATE
REVISED
SHEET NO.
DR. NO.


PROJECT SITE
1.89"
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR PRECIPITATION
PLATE E-5.2
SHEET NO.
DRAWN BY:
APPROVED, CHIEF ENGINEER R.E. NO. 8822
DATE
REVISED
30,000 20 10 0 30,000


PROJECT SITE
2.50"
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR PRECIPITATION
PLATE E-5.4
RIVERSIDE
SAN BERNARDINO
Palm Springs
Hemet
Lake Elsinore
San Clemente
Fallbrook
Beaumont
Banning
Indio
Coachella
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E
T2S T3S T4S T5S T6S T7S T8S T9S


PROJECT SITE
4.20"
NOTES:
1. Isoyetals from NOAA Atlas 2
Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR
PRECIPITATION
PLATE E-5.6
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
SAN BERNARDINO
RIVERSIDE
CORONA
PERRIS
HEMET
BEAUMONT
PALM SPRINGS
REDLANDS
ONTARIO
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
CAMP PENDLETON
San Clemente
Fallbrook



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

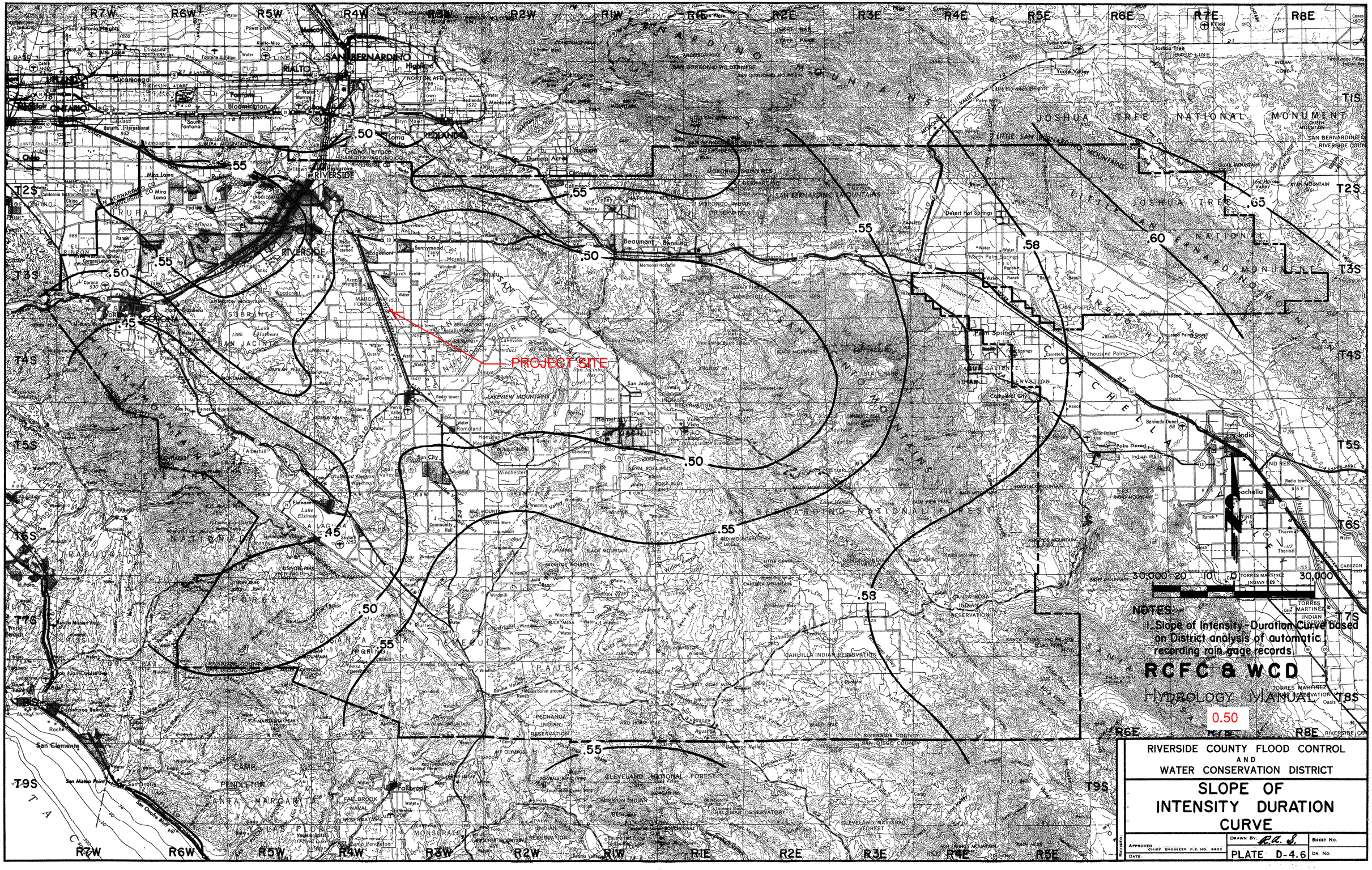
HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR STEELE PEAK

PLATE C-1.29


.50
.55
.45
.58
.60
.65
PROJECT SITE
NOTES
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records
RCFC & WCD
HYDROLOGY MANUAL
0.50
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
SLOPE OF INTENSITY DURATION CURVE
PLATE D-4.6

PERRIS VALLEY AREA MASTER DRAINAGE PLAN
REFERENCE MATERIAL

PROJECT SITE

LEGEND

- MASTER PLAN BOUNDARY
- EXISTING FACILITY
- OPEN CHANNEL -(CONC. TRAPEZOIDAL CHANNEL, SS = 1.5 : 1 ; UNLESS OTHERWISE NOTED)
- STORM DRAIN (RCP UNLESS OTHERWISE NOTED)
- 250 or 250 — FLOW RATE - IN CUBIC FEET PER SECOND, 250 = DESIGN Q, 250 = 100 YR. Q

1"=1200'

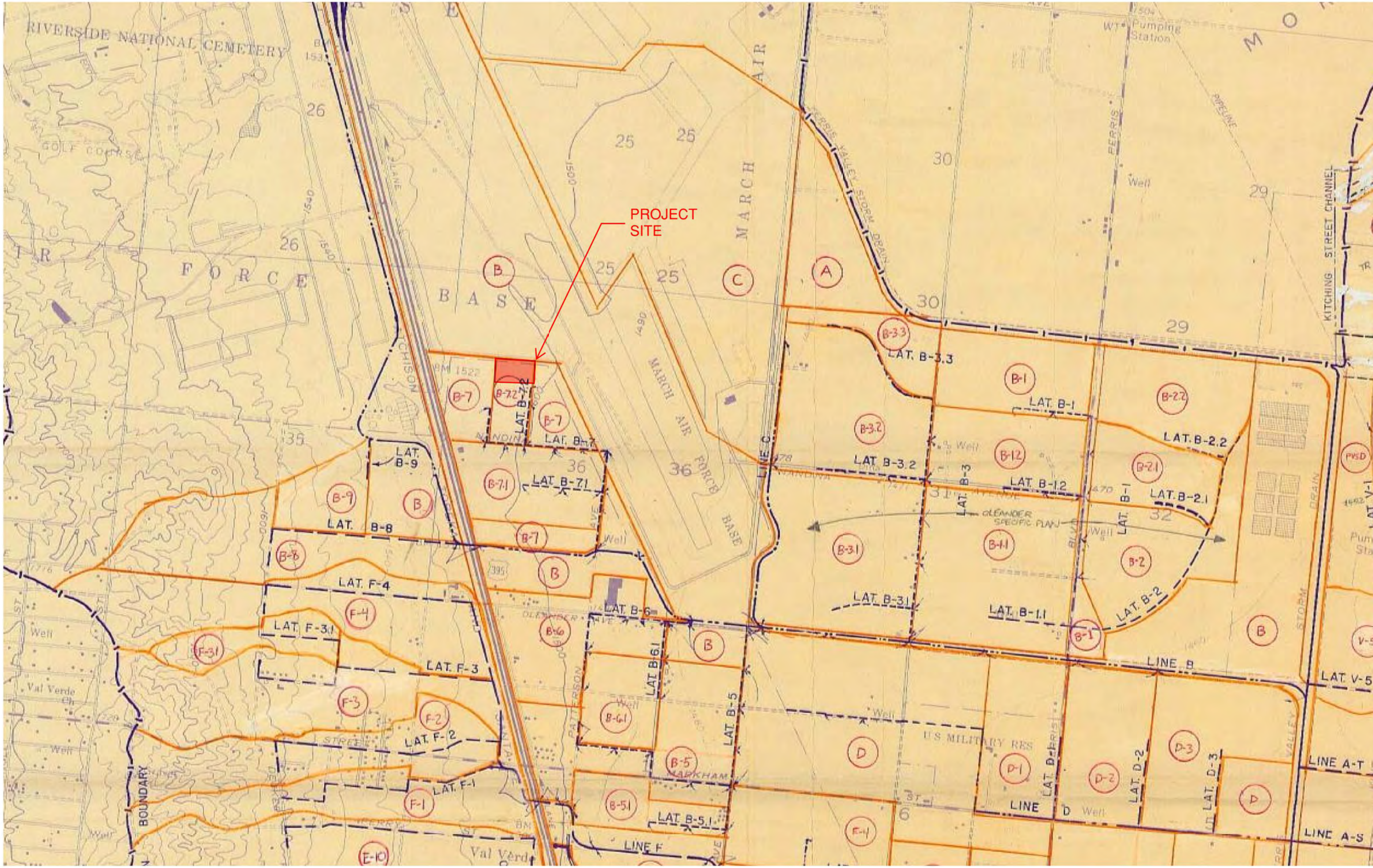
MASTER PLAN COST $ 142,832,000

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

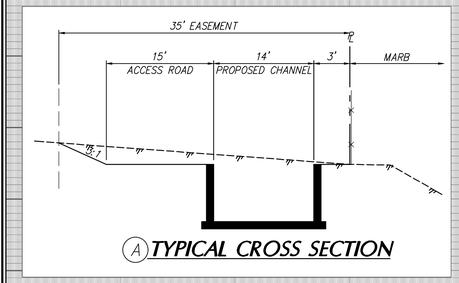
MASTER DRAINAGE PLAN FOR THE PERRIS VALLEY AREA

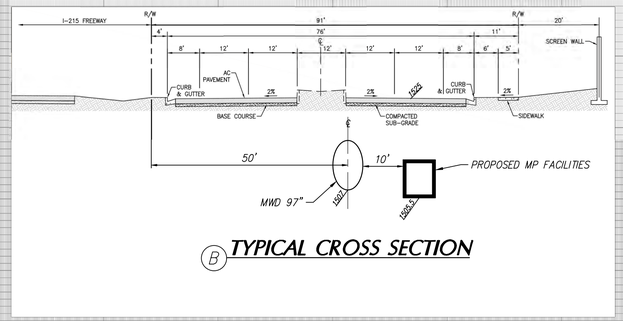
JULY 1987 (REVISED JUNE 1991)

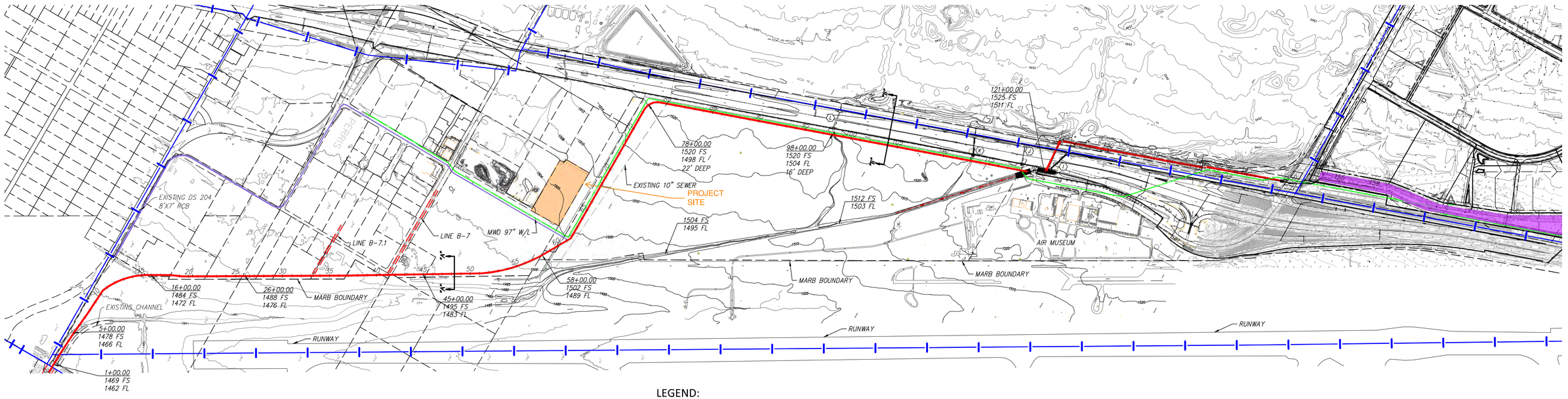
J. F. DAVIDSON ASSOCIATES
CIVIL ENGINEERS • PLANNERS • SURVEYORS
3426 TENTH STREET • RIVERSIDE, CALIFORNIA 92501 • (714) 686-0644
11300 S. MT. VERNON AVE., SUITE "D" • COLTON, CALIF. 92324 • (714) 825-1062


PROJECT
SITE
RIVERSIDE NATIONAL CEMETERY
GOLF COURSE
FORCE
BASE
MARCH
AIR
MARCH AIR FORCE BASE
Pumping Station
KITCHING STREET CHANNEL
FERRIS VALLEY STORM DRAIN
LAT. B-3.3
LAT. B-1
LAT. B-2.2
LAT. B-3.2
LAT. B-1.2
LAT. B-2.1
LAT. B-7
LAT. B-7.1
LAT. B-7.2
LAT. B-9
LAT. B-8
LAT. F-4
LAT. F-3.1
LAT. F-3
LAT. F-2
LAT. F-1
LAT. B-6
LAT. B-6.1
LAT. B-5
LAT. B-5.1
LAT. B-3.1
LAT. B-1.1
LAT. B-2
LAT. B-3
LAT. D-1
LAT. D-2
LAT. D-3
LAT. V-1
LAT. V-5
LINE B
LINE C
LINE D
LINE F
LINE A-T
LINE A-S
OLEANDER SPECIFIC PLAN
U S MILITARY RES
MARKHAM
PATTERSON
BOUNDARY
Val Verde
Well

K & A ENGINEERING MASTER PLAN FACILITY EXHIBIT







LEGEND:

PROPOSED MP FACILITIES	
EXISTING MWD 97" WATER MAIN	
SEGMENT	(X)
BASIN 08	- SUB AREA PER MARB - RDP
NODES	3.1
CULVERTS	F
WATERSHED BOUNDARY	
SUB AREA BOUNDARY	
FL	
PL - MARB - LOTS	

K&A Engineering, Inc.
ENGINEERING
LAND PLANNING
SURVEYING
357 N. SHERIDAN STREET
SUITE 117
CORONA, CALIFORNIA 92880
TEL. (951) 279-1800
FAX (951) 279-4380

SCALE: 1"=500'
0 500 1,000 1,500 2,000

MJPA - WEST SIDE PROPOSED MASTER PLAN FACILITIES

JULY 2019

Drawing: R:\25476\Exhibit\Offsite Channel Profile\632 - EXH - Offsite Channel Profile.dwg Layout: 24x36 L Saved: 7/31/2019 11:31 AM Plotted: 7/31/2019 11:32 AM By: Matthew Moreno

ALBERT A. WEBB ASSOCIATES (WEBB) REFERENCE MATERIAL

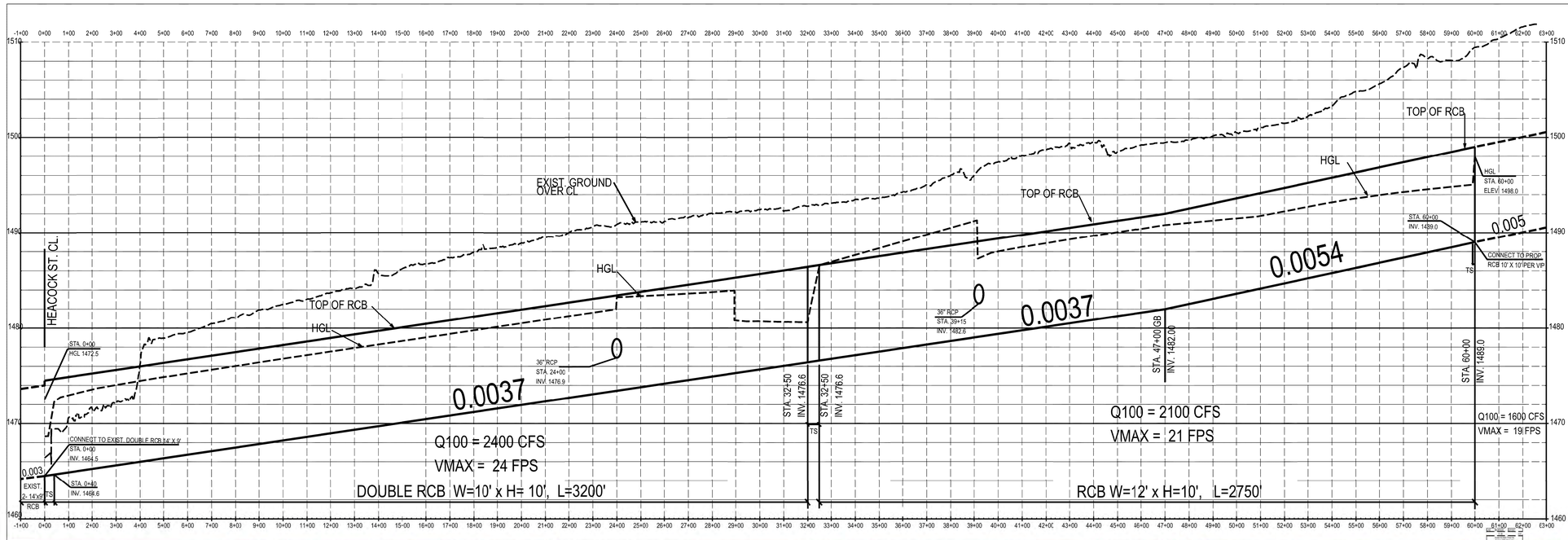
ALTERNATIVE 2

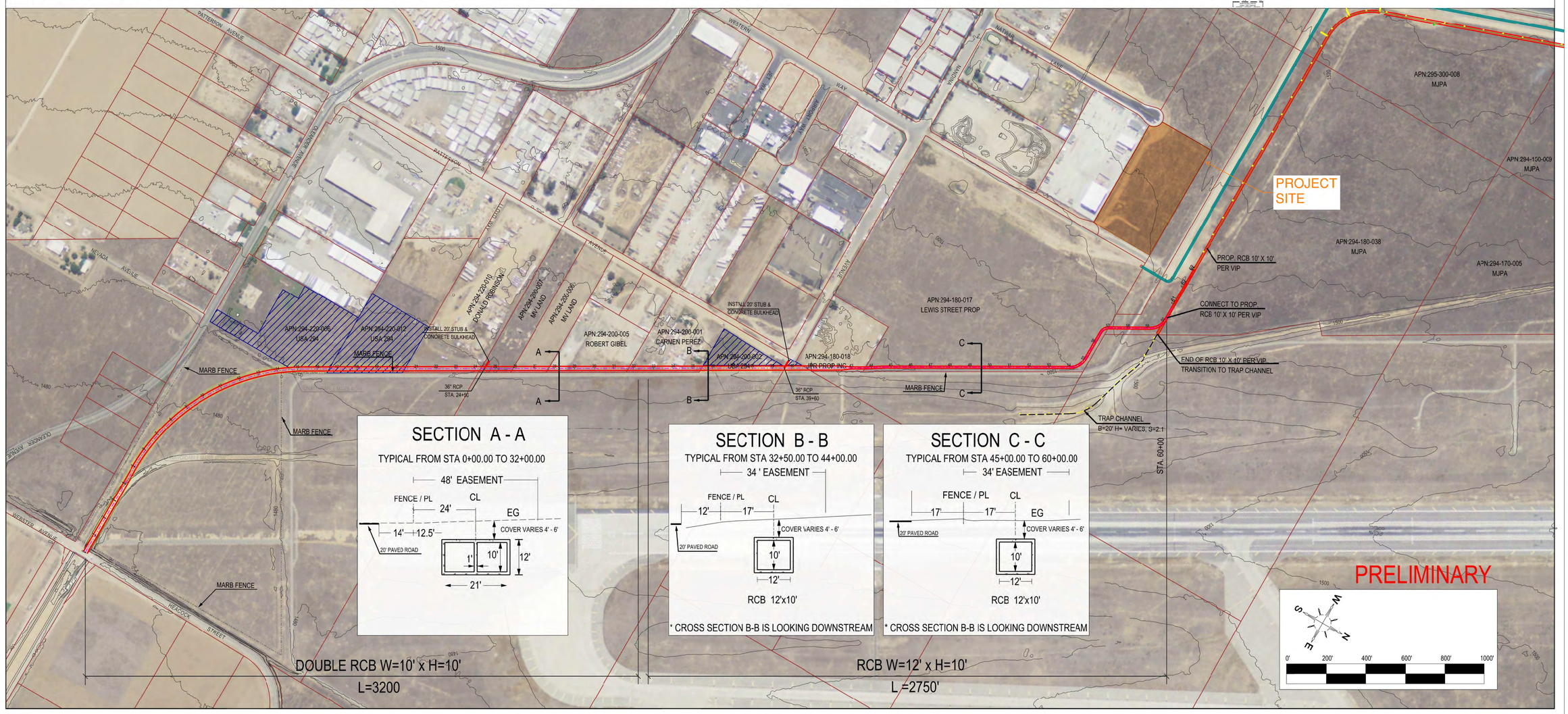
ALIGNMENT WITHIN MJPA

CONSTRUCTION COST = $ 12.0 M

RIGHT OF WAY COST = $ 500,000

TOTAL PROJECT COST = $12.5 M





RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

GENERAL NOTES:

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S M.O.U. STANDARD SPECIFICATIONS DATED JUNE 24, 2008, AND RCFC&WCD STANDARD MANUAL. FOR THE LATEST DRAWINGS OF THE STANDARD MANUAL, PLEASE REFER TO THE "PUBLICATIONS AND RECORDS" PAGE FOUND ON THE DISTRICT'S WEBSITE.
2. CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955.1266 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM RIVERSIDE COUNTY FLOOD CONTROL. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR TO CONSTRUCTION.
3. CONTACT CONTRACT ADMINISTRATION AT 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL. THE DISTRICT MUST BE NOTIFIED TWENTY DAYS (20) PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE INTERSECTION STATIONS.
6. FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1.800.422.4133
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE VERTICAL DATUM IS DERIVED FROM THE NATIONAL GEODETIC VERTICAL DATUM (NGVD 29).
8. ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON THE NORTH AMERICAN DATUM (NAD 83), CALIFORNIA COORDINATE SYSTEM (CCS), ZONE 6 AND EPOCH 2011.00.
9. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
10. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
11. UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "B" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
12. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS"B" CONCRETE.
13. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO.4 (JS229) UNLESS OTHERWISE NOTED.
14. PIPE BEDDING SHALL CONFORM TO RCFC&WCD STD. DWG. NO. M815 EXCEPT FOR COVER <2 FEET. FOR COVER <2 FEET, CONCRETE SLURRY (2000 PSI-2 SACK) SHALL BE USED. THE ENTIRE TRENCH SHALL BE SLURRY EXTENDING 4 INCHES MINIMUM AND 12 INCHES MAXIMUM ABOVE THE TOP OF THE PIPE.
15. ⊕ BH-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED DECEMBER 12, 2015 BY SOUTHERN CALIFORNIA GEOTECHNICAL. LOCATIONS SHOWN ARE APPROXIMATE.
16. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
17. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSIONS SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
18. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
19. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
20. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
21. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
22. APPROVAL OF THESE PLANS BY THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
23. THE CONTRACTOR OR DEVELOPER SHALL SECURE ALL REQUIRED ENCROACHMENT AND OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
24. THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2 INCHES OVER THE REINFORCING AND INCREASED TO A MINIMUM OF 3-1/2 INCHES OVER REINFORCING OF BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'C=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.
25. CONSTRUCTION JOINTS FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE PLACED ACCORDING TO RCFC&WCD STANDARD DRAWING NO. BOX 401.

BENCHMARK

THE BENCHMARK FOR THIS PROJECT IS BASED ON THE NATIONAL GEODETIC SURVEY (NGS) VERTICAL CONTROL NETWORK. BENCHMARK NUMBER PID DX2725 DESIGNATION Z1143, ELEVATION 1532.70' (NAVD29). DESCRIBED AS FOLLOWS, "MORENO VALLEY, NEAR THE INTERSECTION OF INTERSTATE 215 AND VAN BUREN BLVD. PROCEED WEST ALONG VAN BUREN BLVD TO AVE A, (WEST FRONTAGE RD) THEN 0.1 MILE (0.16 KM) SOUTH ALONG DIRT PATROL ON THE EAST SIDE OF ATSF RAILROAD TRACKS. FOUND A USCGS 3-1/4 INCH BRASS DISK STAMPED Z 1143 1961 SET FLUSH ON TOP OF A CONCRETE MONUMENT (ROUND), 15 FEET (4.6 M) SOUTHEAST OF MILEPOST 11, 183 FEET (55.8 M) SOUTHEAST OF A SWITCH STAND, 25 FEET (7.6 M) EAST OF TRACKS, 5.4 FEET (1.6 M) WEST OF 215 FWY RIGHT OF WAY FENCE AND 5 INCHES ABOVE GROUND."

GRID COORDINATE VALUES (EPOCH 2011.00 U.S. FEET)

EWPP	N 2347786.8482	E 6175507.1253
PPBF	N 2248987.1186	E 6278618.5712

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE 6, NAD 83 (EPOCH 2011.00) AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS) AND/OR CONTINUOUS OPERATING REFERENCE STATIONS (CORS) EWPP AND PPBF BEING S46°13'24.03"E AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC) AND/OR NATIONAL GEODETIC SURVEY (NGS), RESPECTIVELY. ALL DISTANCES ARE U.S. FEET (GRID). GROUND DISTANCES CAN BE OBTAINED BY DIVIDING THE GRID DISTANCES BY A COMBINATION FACTOR OF 0.99993097.

R.C.F.C. & W.C.D. STANDARD DRAWINGS

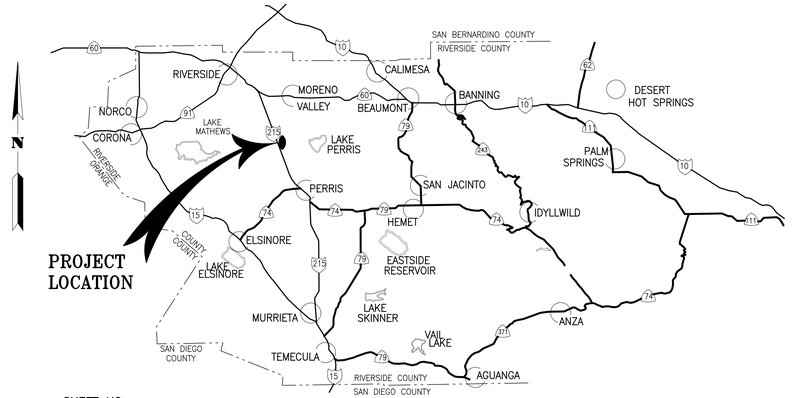
JS	226	JUNCTION STRUCTURE NO.1
JS	230	JUNCTION STRUCTURE NO.5
MH	253	MANHOLE NO.3
MH	255	MANHOLE FRAME & COVER NON-ROCKING
MH	257	MANHOLE SHAFT FOR CAST PIPE
MH	259	STANDARD DROP STEP
MH	260	24" MANHOLE FRAME AND COVER
TS	301	TRANSITION STRUCTURE NO. 2
M	814	ABBREVIATIONS AND SYMBOLS
M	816	CONCRETE BULKHEAD

SPPWC STANDARD DRAWINGS

STD 225-2	BLANKET PROTECTION FOR PIPES
STD 380-4	CONCRETE COLLAR FOR RCP
STD 390-0	PRECAST RCB

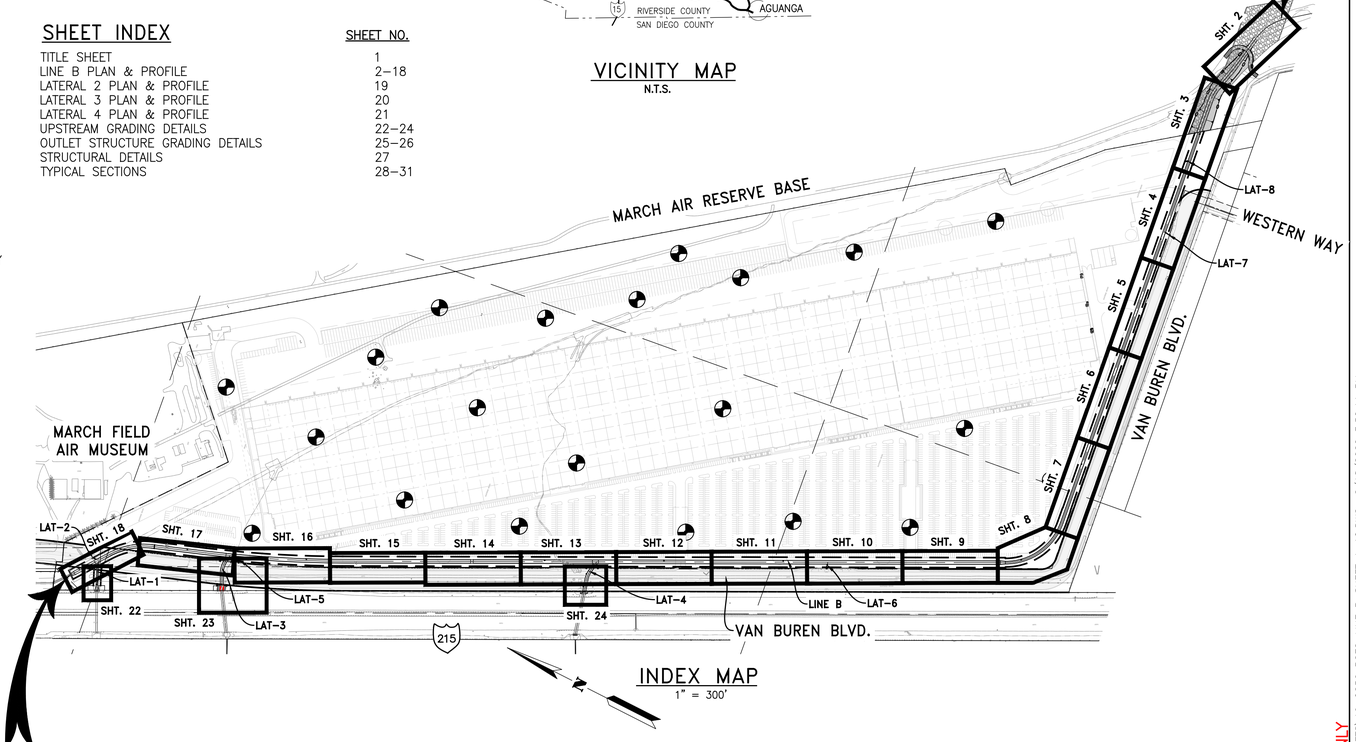
CALTRANS STANDARD

D80	CAST-IN-PLACE RCB
A85	CHAIN LINK FENCE
D89	PIPE CULVERT HEADWALLS STRAIGHT & "L"



VICINITY MAP
N.T.S.

SHEET INDEX



INDEX MAP
1" = 300'

MARB APPROVAL OF OUTLET STRUCTURE	MJPA
DOUGLAS WATERS, P.E. – DEPUTY BASE ENGINEER 452ND MSG/CIVIL ENGINEERS — DATE:	MJPA PUBLIC WORKS ENGINEER — DATE:

FOR REVIEW ONLY

REGISTERED PROFESSIONAL ENGINEER — JOSEPH C. CALDWELL — NO. C67239 — CIVIL — STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

ENGINEER, RCE C67239 — DATE:

DESIGNED BY:	JCC
DRAWN BY:	MJS
CONSTR. SET:	2/18/20
CHECKED BY:	RFS

Don't Dig...Until You Call:
U.S.A. Toll Free: 1-800-422-4133
for the location of buried utility lines.
Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
NO. PID DX275
SEE SHEET 1 FOR DESCRIPTION

ELEV. =1532.7 (NGVD29)
NAVD88 = NGVD29 + 2.46'

REF.	REVISIONS	APPR.	DATE

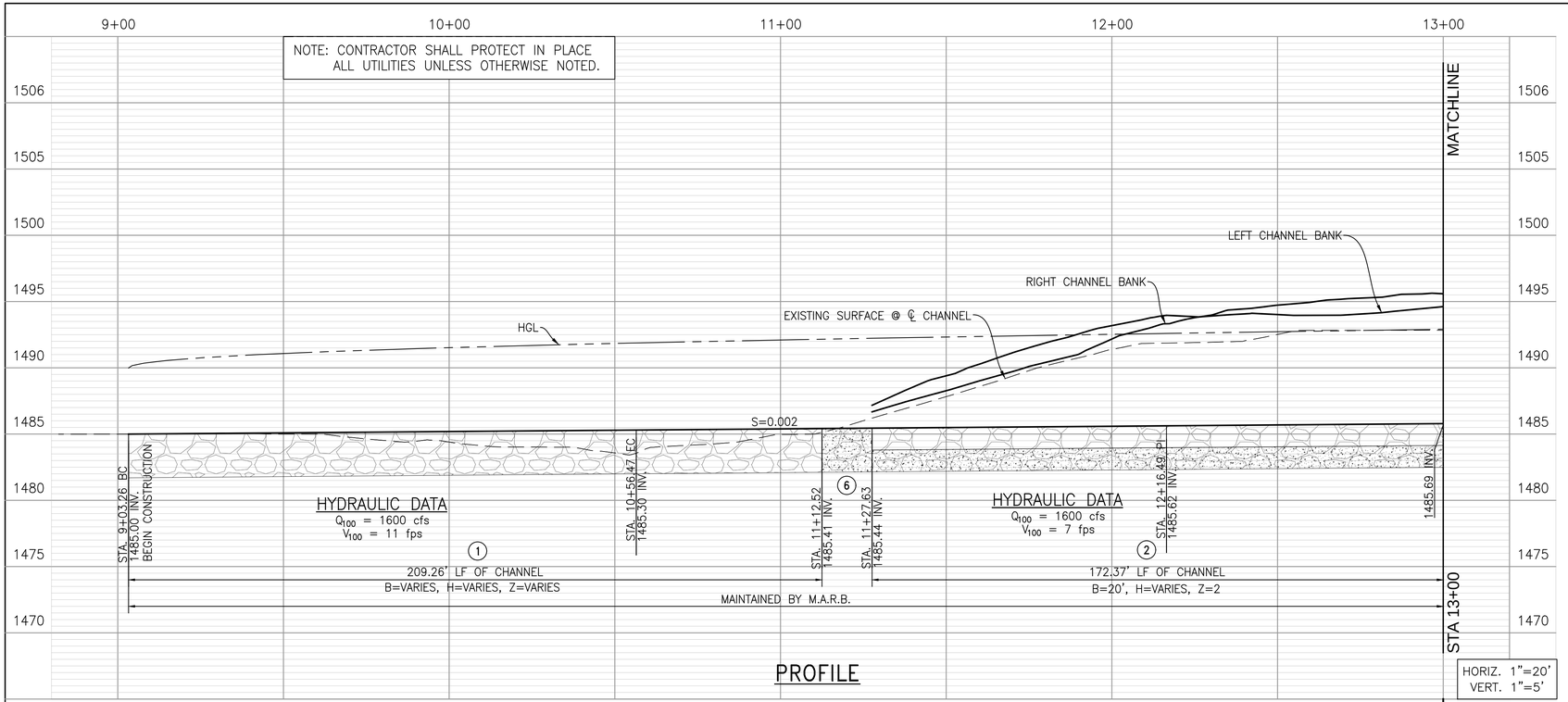
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

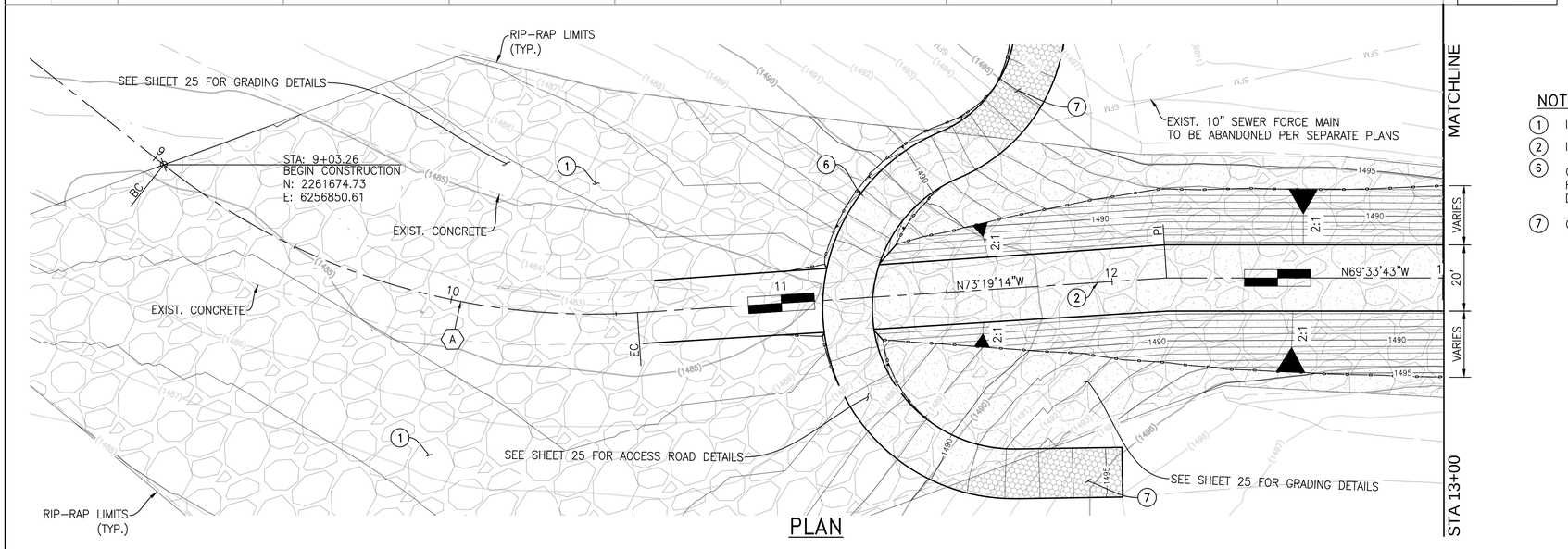
RECOMMENDED FOR APPROVAL: DESIGN ENGINEER — DATE:
APPROVED BY: CHIEF ENGINEER — DATE:

PERRIS VALLEY MDP
LINE B
TITLE SHEET

PROJECT NO.	XX
DRAWING NO.	XX
SHEET NO.	1 OF 31

H:\2019\19-0256\DRAWINGS\PLAN SHEETS\19-0256 RCFC-LINE B-SHEET 1-10.DWG 2/18/2020 3:50:11 PM





NOTE: SEE TYPICAL SECTION ON SHEET 28

NOTES:

1. INSTALL 1/4 TON LOOSE RIP RAP, T=3.3' LIMITS PER PLAN
2. INSTALL 1/4 TON HALF DEPTH GROUTED RIP RAP, T=3.3' LIMITS PER PLAN
6. CONSTRUCT 15' WIDE 1/4 TON FULL DEPTH GROUTED RIP RAP MAINTENANCE ROAD, T=3.3' GROUT FLUSH WITH TOP OF RIP RAP TO PROVIDE A DRIVABLE SURFACE. BROOM FINISH PERPENDICULAR TO DRIVING DIRECTION. SEE DETAIL ON SHEET 24
7. CONSTRUCT 3" THICK CLASS II BASE ACCESS ROAD

CURVE DATA	Ⓐ
R	207.91'
Δ	42°13'16"
L	153.21'
T	80.27'
BC	STA. 9+03.26
EC	STA. 10+56.47
PI NORTHING	2261743.471
PI EASTING	6256809.156

20' 0 20'

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

REGISTERED PROFESSIONAL ENGINEER JOSEPH C. CALDWELL NO. C67239 CIVIL STATE OF CALIFORNIA

ENGINEER, RCE C67239 DATE:

DESIGNED BY: JCC
DRAWN BY: MJS
CONSTR. SET: 2/18/20
CHECKED BY: RSF
P8 NUMBER:

Don't Dig...Until You Call:
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SEE SHEET 1 FOR DESCRIPTION

ELEV. =1532.7 (NGVD29)
NAVD88 = NGVD29 + 2.46'

REF.	DESCRIPTION	APPR.	DATE
	REVISIONS		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

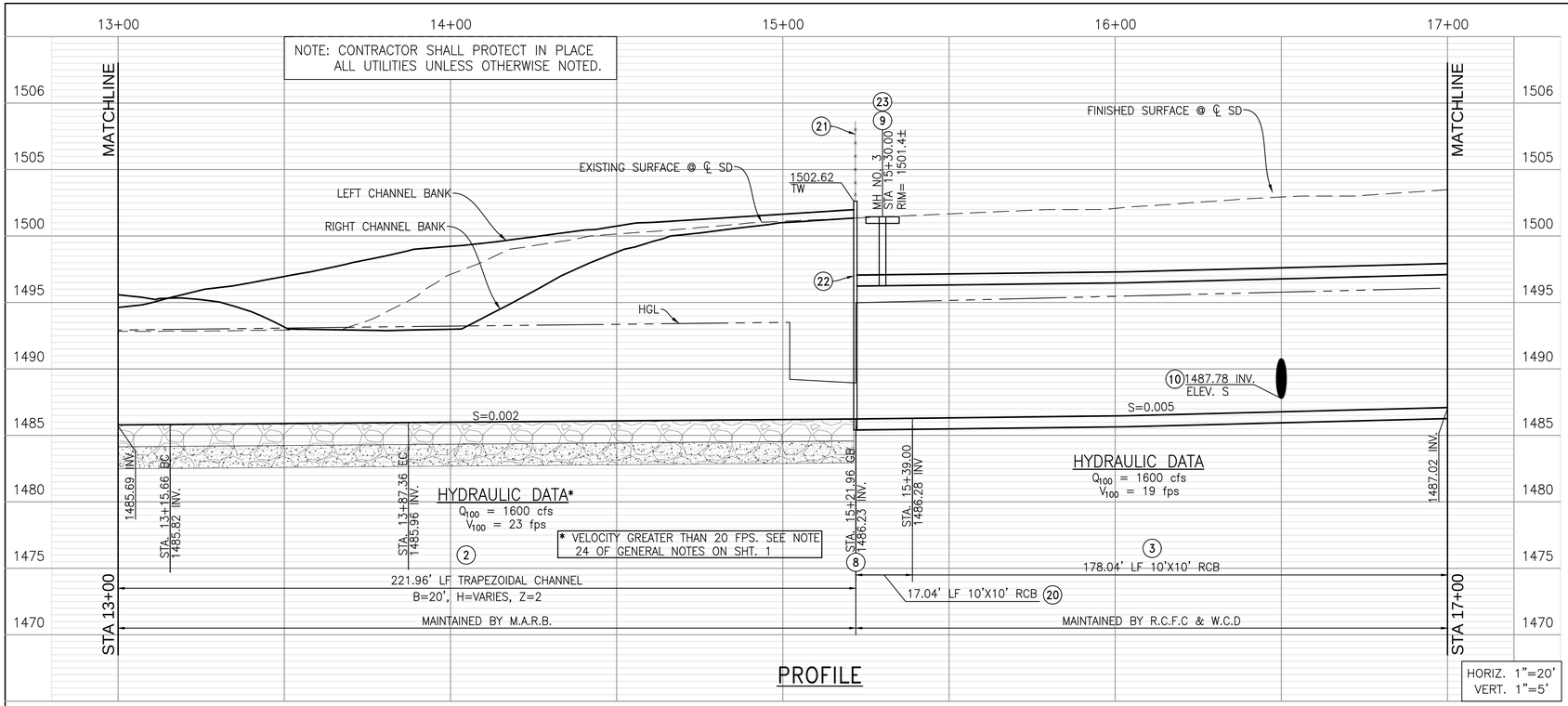
RECOMMENDED FOR APPROVAL BY: DATE:

APPROVED BY: DATE:

PERRIS VALLEY MDP
LINE B
PLAN & PROFILE
STA. 9+03.26 TO STA. 13+00

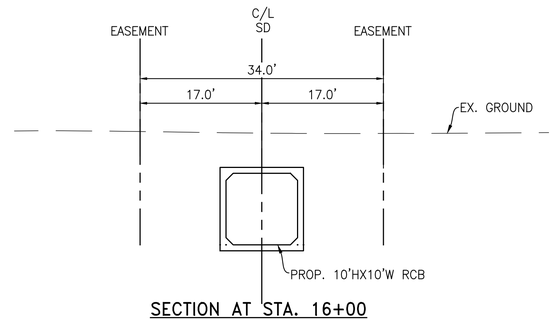
PROJECT NO. XX
DRAWING NO. XX
SHEET NO. 2 OF 31

H:\2019\19-0256\DRAWINGS\PLAN SHEETS\19-0256 RCFC-LINE B-SHEET 1-10.DWG 2/18/2020 3:50:11 PM



STA. 14+50 NOTE: SEE TYPICAL SECTION ON SHEET 28

TYPICAL FROM 13+00 TO STA 15+21.96

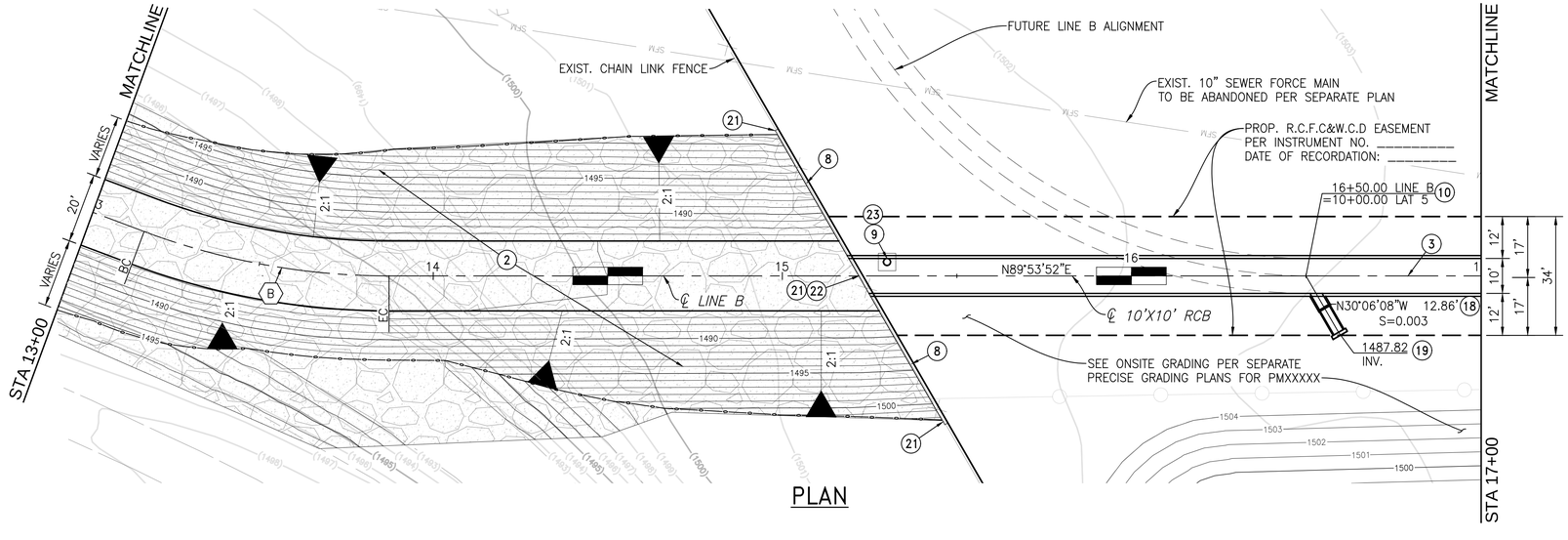


SECTION AT STA. 16+00

TYPICAL FROM STA 15+21.96 TO STA 1700

10' 0 10'

MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
LAT. 5	16+50	10+05.80	JS NO. 1	60°	10.8'



NOTES:

2. INSTALL 1/4 TON HALF DEPTH GROUTED RIP RAP, T=3.3' LIMITS PER PLAN
3. INSTALL 10' H X 10' W PRECAST RCB PER STRUCTURAL DETAILS ON SHEET 26
8. CONSTRUCT HEADWALL PER CALTRANS STD. PLANS NO. D89 & MODIFIED PER SHEET XX
9. CONSTRUCT MANHOLE NO. 3 PER RCFC&WCD STD. DWG. NO. MH252
10. CONSTRUCT JUNCTION STRUCTURE NO. 1 PER RCFC&WCD STD. DWG. NO. JS 226
18. CONSTRUCT 24" DIA. RCP, CLASS IV
19. CONSTRUCT CONCRETE BULKHEAD PER RCFC&WCD STD. DWG. NO. M816
20. CONSTRUCT 10' H X10' W CAST-IN-PLACE RCB PER CALTRANS STD. PLAN D-80
21. REMOVE EXISTING FENCE & REPLACE WITH 6' HIGH (MATCH EXISTING) AIRFORCE SECURITY FENCE WITH SINGLE 45 DEGREE BARBED WIRE ARM (BARBS TOWARD THE CHANNEL) PER UFC 4-022-03 SECURITY FENCE & GATE SPECIFICATIONS & DWG. NO. UFC-702
22. CONSTRUCT PARAPET PER DETAIL ON SHEET 26
23. INSTALL 5' X 5' X 0.5' THICK CONCRETE PAD REINFORCED WITH NO. 4 BARS AT 18" EACH WAY.

CURVE DATA	B
R	200.00'
Δ	20°32'25"
L	71.70'
T	36.24'
BC	STA. 13+15.66
EC	STA. 13+87.36
PI NORTHING	2261859.723
PI EASTING	6256452.091

N

20' 0 20'

REGISTERED PROFESSIONAL ENGINEER JOSEPH C. CALDWELL NO. C67239 CIVIL STATE OF CALIFORNIA

APPROVED BY:
ALBERT A. WEBB ASSOCIATES
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3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
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ENGINEER, RCE C67239 DATE:

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SEE SHEET 1 FOR DESCRIPTION

ELEV. =1532.7 (NGVD29)
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REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: DATE:

APPROVED BY: DATE:

PERRIS VALLEY MDP
LINE B
PLAN & PROFILE
STA. 13+00 TO STA. 17+00

PROJECT NO. XX
DRAWING NO. XX
SHEET NO. 3 OF 31

H:\2019\19-0256\DRAWINGS\PLAN SHEETS\19-0256 RCFC-LINE B-SHEET 1-10.DWG 2/18/2020 3:50:11 PM

THIENES ENGINEERING, INC. PUBLIC STORM DRAIN PLAN

PREPARED FOR:

FIRST INDUSTRY REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
EL SEGUNDO, CA 90245
PHONE: (310) 321-3813
EMAIL: MPIOLI@FIRSTINDUSTRIAL.COM

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

Designed by ______
Date ______
Checked by ______
Date ______
Designed by ______
Date ______
Checked by ______
Date ______

Approved by ______ Date ______

Public Works Director R.C.E. XXXXX

Sheet 1 of 2 Sheets

CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

PUBLIC STORM DRAIN PLAN

FREEWAY 215 AND NATWAR LANE

NATWAR LANE

3788/1 OF 2 SHEET

APPENDIX B

HYDROLOGY CALCULATIONS

EXISTING CONDITION

```
_____
*************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY ************************
* FIRST MARCH BUILDING 2                                                 *
* EXISTING CONDITION 100-YEAR                                            *
* NODES 200-201                                                          *
 *************************************************************************

  FILE NAME: W:\3933\E200.DAT
  TIME/DATE OF STUDY: 16:26 03/02/2021
-------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.470
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.220
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.220
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
-------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   791.74
  UPSTREAM ELEVATION(FEET) =   1510.42
  DOWNSTREAM ELEVATION(FEET) =   1501.89
  ELEVATION DIFFERENCE(FEET) =      8.53
  TC = 0.533*[(  791.74**3)/(     8.53)]**.2 =   19.027
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.166
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6066
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      8.41
  TOTAL AREA(ACRES) =      6.40   TOTAL RUNOFF(CFS) =      8.41
=========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        6.4  TC(MIN.) =     19.03
  PEAK FLOW RATE(CFS)   =       8.41
=========================================================================
=========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* FIRST MARCH BUILDING 2                                                 *
* EXISTING CONDITION 100-YEAR                                            *
* NODES 210-211                                                          *
 ************************************************************************

  FILE NAME: W:\3933\E210.DAT
  TIME/DATE OF STUDY: 08:49 03/03/2021
------------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.470
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.220
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.220
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

******************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    211.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH FAIR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1026.40
  UPSTREAM ELEVATION(FEET) =   1520.99
  DOWNSTREAM ELEVATION(FEET) =   1508.27
  ELEVATION DIFFERENCE(FEET) =     12.72
  TC = 0.709*[( 1026.40**3)/(    12.72)]**.2 =   27.339
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.807
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5697
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      9.32
  TOTAL AREA(ACRES) =      9.05   TOTAL RUNOFF(CFS) =      9.32
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        9.1  TC(MIN.) =     27.34
  PEAK FLOW RATE(CFS)   =       9.32
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

PROPOSED CONDITION

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
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         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* FIRST MARCH BUILDING 2                                                 *
* PROPOSED CONDITION 100-YEAR                                            *
* NODES 100-173                                                          *
 ************************************************************************

  FILE NAME: W:\3933\P100.DAT
  TIME/DATE OF STUDY: 15:35 03/02/2021
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  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.470
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.220
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.220
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ======  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

******************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   275.70
  UPSTREAM ELEVATION(FEET) =   1509.93
  DOWNSTREAM ELEVATION(FEET) =   1503.88
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.303*[(  275.70**3)/(     6.05)]**.2 =    6.159
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.808
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8806
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      2.01
  TOTAL AREA(ACRES) =      0.60   TOTAL RUNOFF(CFS) =      2.01

******************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    112.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1499.88  DOWNSTREAM(FEET) =  1498.12
  FLOW LENGTH(FEET) =   497.59   MANNING'S N =  0.012
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.21
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      2.01
  PIPE TRAVEL TIME(MIN.) =   2.58    Tc(MIN.) =    8.74
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    112.00 =     773.29 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.74
  RAINFALL INTENSITY(INCH/HR) =   3.20
  TOTAL STREAM AREA(ACRES) =     0.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.01

******************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
```

```
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   255.58
  UPSTREAM ELEVATION(FEET) =   1509.93
  DOWNSTREAM ELEVATION(FEET) =   1501.21
  ELEVATION DIFFERENCE(FEET) =      8.72
  TC = 0.303*[(  255.58**3)/(     8.72)]**.2 =    5.470
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.041
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8815
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      8.90
  TOTAL AREA(ACRES) =      2.50   TOTAL RUNOFF(CFS) =      8.90

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1498.21  DOWNSTREAM(FEET) =  1498.12
  FLOW LENGTH(FEET) =    36.92   MANNING'S N =  0.012
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.12
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.90
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =    5.62
  LONGEST FLOWPATH FROM NODE    110.00 TO NODE    112.00 =     292.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.62
  RAINFALL INTENSITY(INCH/HR) =   3.99
  TOTAL STREAM AREA(ACRES) =     2.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.90

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.01     8.74        3.197          0.60
      2        8.90     5.62        3.987          2.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       10.20     5.62       3.987
      2        9.15     8.74       3.197

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.20   Tc(MIN.) =    5.62
  TOTAL AREA(ACRES) =        3.1
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    112.00 =     773.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    122.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1498.11  DOWNSTREAM(FEET) =  1497.83
  FLOW LENGTH(FEET) =   113.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.25
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.20
  PIPE TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =    6.06
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    122.00 =     886.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.06
  RAINFALL INTENSITY(INCH/HR) =   3.84
  TOTAL STREAM AREA(ACRES) =     3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.20

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   299.78
  UPSTREAM ELEVATION(FEET) =   1505.02
  DOWNSTREAM ELEVATION(FEET) =   1501.21
  ELEVATION DIFFERENCE(FEET) =      3.81
  TC = 0.303*[(  299.78**3)/(     3.81)]**.2 =    7.104
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.546
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8795
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      7.02
  TOTAL AREA(ACRES) =      2.25   TOTAL RUNOFF(CFS) =      7.02

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1498.21  DOWNSTREAM(FEET) =  1497.85
  FLOW LENGTH(FEET) =    36.92   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.58
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.02
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    7.20
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =     336.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.20
  RAINFALL INTENSITY(INCH/HR) =   3.52
  TOTAL STREAM AREA(ACRES) =     2.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.02

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       10.20     6.06        3.838          3.10
      1        9.15     9.19        3.117          3.10
      2        7.02     7.20        3.523          2.25

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       16.11     6.06       3.838
      2       16.38     7.20       3.523
      3       15.36     9.19       3.117

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.38   Tc(MIN.) =    7.20
  TOTAL AREA(ACRES) =        5.3
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    122.00 =     886.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    132.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1497.82  DOWNSTREAM(FEET) =  1496.88
  FLOW LENGTH(FEET) =   378.01   MANNING'S N =  0.012
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.84
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.38
  PIPE TRAVEL TIME(MIN.) =   1.30    Tc(MIN.) =    8.50
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    132.00 =    1264.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    132.00 TO NODE    132.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.50
  RAINFALL INTENSITY(INCH/HR) =   3.24
  TOTAL STREAM AREA(ACRES) =     5.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.38

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    131.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   172.64
  UPSTREAM ELEVATION(FEET) =   1505.74
  DOWNSTREAM ELEVATION(FEET) =   1503.64
  ELEVATION DIFFERENCE(FEET) =      2.10
```

```
  TC = 0.303*[(  172.64**3)/(     2.10)]**.2 =    5.747
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.942
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8811
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.39
  TOTAL AREA(ACRES) =      0.40   TOTAL RUNOFF(CFS) =      1.39

****************************************************************************
  FLOW PROCESS FROM NODE    131.00 TO NODE    132.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1500.31  DOWNSTREAM(FEET) =  1497.54
  FLOW LENGTH(FEET) =    16.37   MANNING'S N =  0.012
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   2.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.22
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.39
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    5.77
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE    132.00 =     189.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    132.00 TO NODE    132.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.77
  RAINFALL INTENSITY(INCH/HR) =   3.93
  TOTAL STREAM AREA(ACRES) =     0.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.39

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.11     7.41        3.471          5.35
      1       16.38     8.50        3.241          5.35
      1       15.36    10.54        2.911          5.35
      2        1.39     5.77        3.934          0.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       13.93     5.77       3.934
      2       17.33     7.41       3.471
      3       17.52     8.50       3.241
      4       16.39    10.54       2.911

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.52   Tc(MIN.) =    8.50
  TOTAL AREA(ACRES) =        5.8
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    132.00 =    1264.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    132.00 TO NODE    172.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1496.87  DOWNSTREAM(FEET) =  1496.59
  FLOW LENGTH(FEET) =   110.73   MANNING'S N =  0.012
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.93
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.52
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =    8.87
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    172.00 =    1375.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    172.00 TO NODE    172.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    141.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    84.50
  UPSTREAM ELEVATION(FEET) =   1505.46
  DOWNSTREAM ELEVATION(FEET) =   1504.33
  ELEVATION DIFFERENCE(FEET) =      1.13
  TC = 0.303*[(   84.50**3)/(     1.13)]**.2 =    4.237
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.226
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8821
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    141.00 TO NODE    151.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1502.00  DOWNSTREAM(FEET) =  1501.51
  FLOW LENGTH(FEET) =   114.83   MANNING'S N =  0.012
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   3.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.25
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.37
  PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =    5.85
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    151.00 =     199.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    151.00 TO NODE    151.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.85
  RAINFALL INTENSITY(INCH/HR) =   3.91
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.37

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    151.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    84.50
  UPSTREAM ELEVATION(FEET) =   1505.46
  DOWNSTREAM ELEVATION(FEET) =   1504.33
  ELEVATION DIFFERENCE(FEET) =      1.13
  TC = 0.303*[(   84.50**3)/(     1.13)]**.2 =    4.237
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.226
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8821
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37

****************************************************************************
  FLOW PROCESS FROM NODE    151.00 TO NODE    151.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.00
  RAINFALL INTENSITY(INCH/HR) =   4.23
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.37

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.37     5.85        3.907          0.10
      2        0.37     5.00        4.226          0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        0.69     5.00       4.226
      2        0.72     5.85       3.907

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       0.72   Tc(MIN.) =    5.85
  TOTAL AREA(ACRES) =        0.2
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    151.00 =     199.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    151.00 TO NODE    161.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1501.50  DOWNSTREAM(FEET) =  1501.00
  FLOW LENGTH(FEET) =   114.83   MANNING'S N =  0.012
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.73
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.72
  PIPE TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =    6.55
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    161.00 =     314.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    161.00 TO NODE    161.00 IS CODE =   1
```

```
--------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.55
  RAINFALL INTENSITY(INCH/HR) =   3.69
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.72

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    161.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    84.32
  UPSTREAM ELEVATION(FEET) =   1505.46
  DOWNSTREAM ELEVATION(FEET) =   1504.32
  ELEVATION DIFFERENCE(FEET) =      1.14
  TC = 0.303*[(   84.32**3)/(     1.14)]**.2 =    4.224
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.226
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8821
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37

****************************************************************************
  FLOW PROCESS FROM NODE    161.00 TO NODE    161.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.00
  RAINFALL INTENSITY(INCH/HR) =   4.23
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.37

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.69     5.71        3.955          0.20
      1        0.72     6.55        3.692          0.20
      2        0.37     5.00        4.226          0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        0.98     5.00       4.226
      2        1.04     5.71       3.955
      3        1.04     6.55       3.692

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.04   Tc(MIN.) =    6.55
  TOTAL AREA(ACRES) =        0.3
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    161.00 =     314.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    161.00 TO NODE    171.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1500.98  DOWNSTREAM(FEET) =  1500.51
  FLOW LENGTH(FEET) =   114.83   MANNING'S N =  0.012
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.96
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.04
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =    7.20
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    171.00 =     428.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    171.00 TO NODE    171.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.20
  RAINFALL INTENSITY(INCH/HR) =   3.52
  TOTAL STREAM AREA(ACRES) =     0.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.04

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    171.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
```

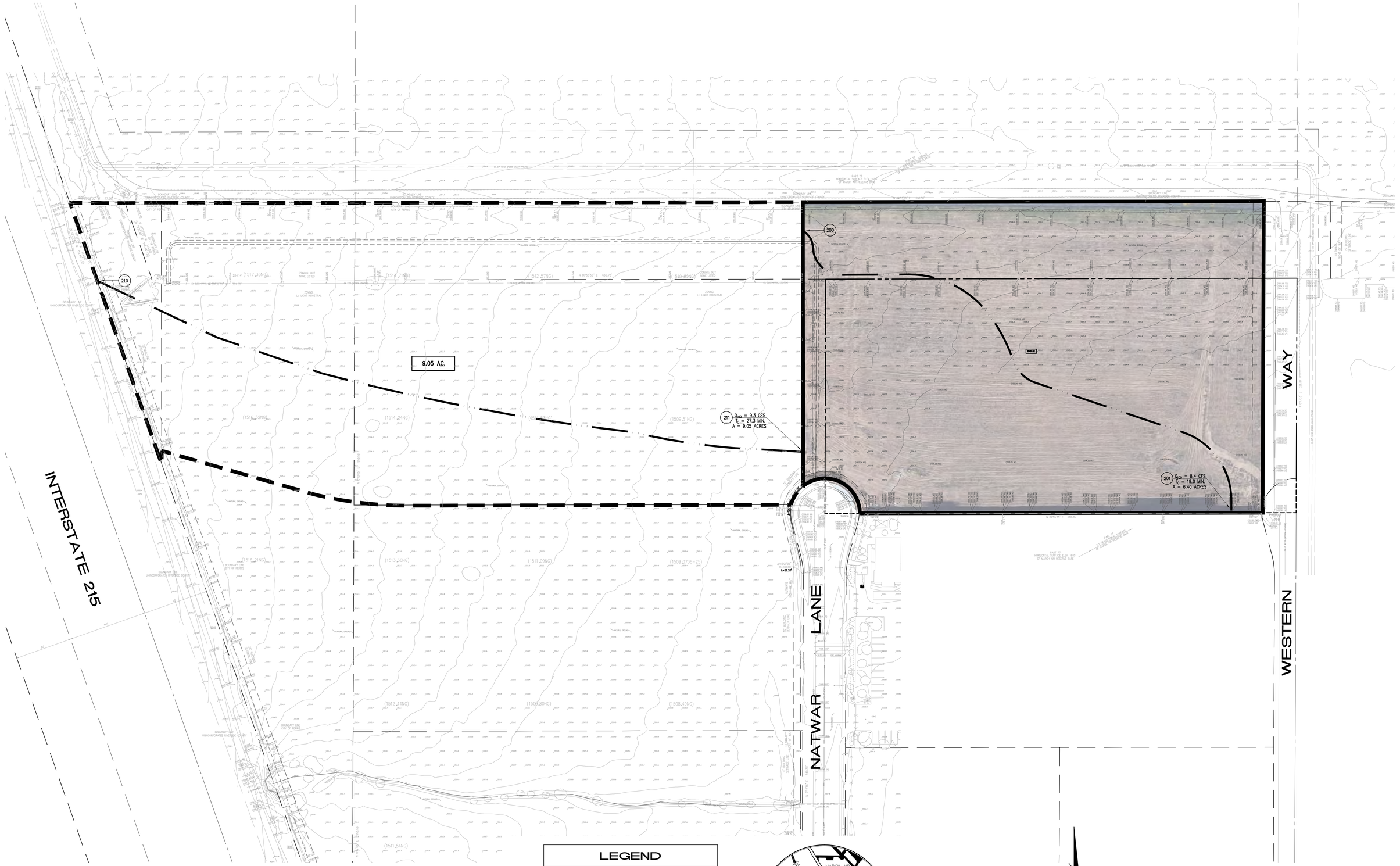
```
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    84.50
  UPSTREAM ELEVATION(FEET) =   1505.46
  DOWNSTREAM ELEVATION(FEET) =   1504.33
  ELEVATION DIFFERENCE(FEET) =      1.13
  TC = 0.303*[(   84.50**3)/(     1.13)]**.2 =    4.237
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.226
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8821
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.37

****************************************************************************
  FLOW PROCESS FROM NODE    171.00 TO NODE    171.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.00
  RAINFALL INTENSITY(INCH/HR) =   4.23
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.37

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.98     5.66        3.972          0.30
      1        1.04     6.36        3.748          0.30
      1        1.04     7.20        3.522          0.30
      2        0.37     5.00        4.226          0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        1.24     5.00       4.226
      2        1.33     5.66       3.972
      3        1.37     6.36       3.748
      4        1.35     7.20       3.522

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.37   Tc(MIN.) =    6.36
  TOTAL AREA(ACRES) =        0.4
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    171.00 =     428.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    171.00 TO NODE    172.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1500.50  DOWNSTREAM(FEET) =  1496.68
  FLOW LENGTH(FEET) =    88.01   MANNING'S N =  0.012
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   3.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.48
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.37
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    6.56
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    172.00 =     517.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    172.00 TO NODE    172.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        1.24     5.20       4.143        0.40
      2        1.33     5.86       3.905        0.40
      3        1.37     6.56       3.691        0.40
      4        1.35     7.40       3.475        0.40
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    172.00 =     517.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       13.93     6.17       3.805        5.75
      2       17.33     7.79       3.387        5.75
      3       17.52     8.87       3.172        5.75
      4       16.39    10.93       2.858        5.75
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    172.00 =    1375.03 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      12.99       5.20       4.143
      2      14.56       5.86       3.905
      3      15.22       6.17       3.805
      4      15.97       6.56       3.691
      5      17.82       7.40       3.475
      6      18.65       7.79       3.387
      7      18.76       8.87       3.172
```

```
      8      17.50      10.93        2.858

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.76   Tc(MIN.) =    8.87
  TOTAL AREA(ACRES) =        6.2

****************************************************************************
  FLOW PROCESS FROM NODE    172.00 TO NODE    172.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    172.00 TO NODE    173.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1496.58  DOWNSTREAM(FEET) =  1496.55
  FLOW LENGTH(FEET) =    12.35   MANNING'S N =  0.012
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.76
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    8.92
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    173.00 =    1387.38 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        6.2  TC(MIN.) =      8.92
  PEAK FLOW RATE(CFS)   =      18.76
  *** PEAK FLOW RATE TABLE ***
         Q(CFS)   Tc(MIN.)
  1       12.99       5.25
  2       14.56       5.90
  3       15.22       6.21
  4       15.97       6.60
  5       17.82       7.44
  6       18.65       7.83
  7       18.76       8.92
  8       17.50      10.98
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* FIRST MARCH BUILDING 2                                                 *
* PROPOSED CONDITION 100-YEAR                                            *
* NODES 180-181                                                          *
 ************************************************************************

  FILE NAME: W:\3933\P180.DAT
  TIME/DATE OF STUDY: 15:38 03/02/2021
------------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.470
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.220
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.220
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

******************************************************************************
  FLOW PROCESS FROM NODE    180.00 TO NODE    181.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    34.31
  UPSTREAM ELEVATION(FEET) =   1503.92
  DOWNSTREAM ELEVATION(FEET) =   1503.54
  ELEVATION DIFFERENCE(FEET) =      0.38
  TC = 0.303*[(   34.31**3)/(     0.38)]**.2 =    3.068
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.226
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8821
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.93
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.93
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.2  TC(MIN.) =      5.00
  PEAK FLOW RATE(CFS)   =       0.93
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

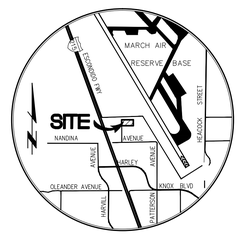
APPENDIX C

HYDROLOGY MAPS



LEGEND

———	PROJECT BOUNDARY
– – –	SUBAREA BOUNDARY
— · · —	FLOW PATH
1.00 AC.	SUBAREA AREA
(101)	NODE NUMBER
T_C	TIME OF CONCENTRATION
Q_{100}	DISCHARGE (CUBIC FEET PER SECOND) NUMBER DESIGNATE YEAR OF FREQUENCY



VICINITY MAP
N.T.S.

Last Update: 3/3/21
O:\3900-3999\3933\3933HYD-EX.dwg

CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

EXISTING CONDITION HYDROLOGY MAP
FIRST MARCH NATWAR LANE

3933/1 OF 1 SHEET

PREPARED FOR:
FIRST INDUSTRY REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
EL SEGUNDO, CA 90245
PHONE: (310) 321-3813
EMAIL: MPIOLI@FIRSTINDUSTRIAL.COM

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____
Public Works Director _____ R.C.E. XXXXX

Sheet 1 of 1 Sheets

PROPOSED PUBLIC STORM DRAIN
SEE PLAN NO. XXXX

PROPOSED PUBLIC STORM DRAIN
SEE PLAN NO. XXXX

Q_{100} = 18.8 CFS
T_C = 8.9 MIN.
A = 6.15 ACRES

0.10 AC.

0.10 AC.

0.10 AC.

0.10 AC.

0.40 AC.

0.60 AC.

2.50 AC.

2.25 AC.

0.25 AC.

LINE A

LINE B

LINE B

LINE A

BUILDING 2
139,971 S.F.

16 DOCK DOORS

NATURAL GROUND

32.00'

47.00'

WESTERN WAY

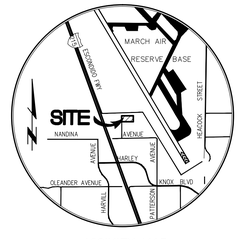
NATWAR LANE

Q_{100} = 0.9 CFS
T_C = 5.0 MIN.
A = 0.25 ACRES

101 100 110 111 112 120 121 122 130 131 132 140 141 150 151 160 161 170 171 172 173 180 181

LEGEND

- PROJECT BOUNDARY
- SUBAREA BOUNDARY
- FLOW PATH
- 1.00 AC. — SUBAREA AREA
- 101 — NODE NUMBER
- T_C — TIME OF CONCENTRATION
- Q_{100} — DISCHARGE (CUBIC FEET PER SECOND) NUMBER DESIGNATE YEAR OF FREQUENCY



VICINITY MAP
N.T.S.

0 10 20 40 60
SCALE: 1"=20'

Last Update: 3/2/21
G:\3900-3999\3933\3933HYD.dwg

CITY OF PERRIS
PUBLIC WORKS DEPARTMENT

PROPOSED CONDITION HYDROLOGY MAP
FIRST MARCH
NATWAR LANE

3933/1 OF 1 SHEET

PREPARED FOR:
FIRST INDUSTRY REALTY TRUST, INC.
898 N. PACIFIC COAST HIGHWAY STE. 175
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Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____
Public Works Director R.C.E. XXXXX

Sheet 1 of 1 Sheets