FOR REVIEW ONLY

First Harley Knox
DPR 20-00014
City of Perris, Riverside County, California

Preliminary Drainage Study

Prepared for:
First Industrial Realty Trust
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Original Date Prepared: August 2021
Revision Date(s):

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SECTION 1 - SUMMARY

PURPOSE

The purpose of this report is to document the hydrologic and hydraulic analyses performed in support of the First Harley Knox logistics project located in the City of Perris, County of Riverside, California. The project site is located at the northwest corner of Harley Knox Boulevard and Redlands Ave. The project is bounded by Oleander Ave to the north, existing light industrial complex to the west, Harley Knox Boulevard to the south, and the Redlands Avenue to the east. The project proposes to build an industrial warehouse on approximately 9.5 acres. This report will summarize the hydrologic and hydraulic analyses that were conducted in order to determine the necessary drainage improvements required to provide flood protection for the proposed building and safely convey the runoff through the site.

The scope of this report will include the following:

- Determine the peak 100-year and 10-year flow rates for the developed condition using the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Rational Method.
- Determine the required storm drain facilities, alignment, and sizes required to flood protect the project site.
- Determine the necessary underground storage area and volume required for water quality treatment and to mitigate for increases in runoff.
- Preparation of a preliminary report summarizing the hydrology and hydraulic results.

DESCRIPTION OF WATERSHED

The project is proposing an industrial warehouse (approximately 158,550square feet) on approximately 9.5 acres of vacant land. Existing elevations across the site vary from 1459 at the northwest corner to 1458 at the southeast corner (NAVD88 Datum). The site currently slopes down at approximately 0.3% to the southeast corner. The existing drainage pattern for the site and the general area is characterized by sheet flow that currently flows to Harley Knox Boulevard. Flows are captured by an existing catch basin located on the north side of Harley Knox Boulevard and then conveyed within the existing Lat D-3A-4 towards the Perris Valley Storm Drain Channel.

PROPOSED CONDITIONS

The project site is not impacted by off-site flows as there are existing streets around the perimeter of the project that convey any offsite flow away from the site. The balanced earthwork does not allow for conventional gravity storm drains due to lack of drop across the site from the south to the north. In order to convey on-site flows, the project will utilize subsurface storm drain to discharge into underground storage chambers. The chambers are located at the east side of the auto parking stalls along Redlands Avenue and they are sized to hold only the water quality design capture volume for the project. Large flows will be forced out of the chambers at an outlet above the chamber soffit and gravity flow to the existing 48″ storm drain line (Lat D-3A) at Harley Knox Boulevard. Water quality runoff will be pumped from the chambers into a Contech Filterra unit.

METHODOLOGY

HYDROLOGY

Hydrologic calculations were performed in accordance with the RCFC&WCD Hydrology Manual, dated April 1978. The Rational Method was utilized in determining peak flow rates.

The hydrological parameters, including rainfall values and soil types were derived from the RCFC&WCD Hydrology Manual. The isohyetal maps and soil map have been included in Section 2.

Rational Method calculations were performed using a computer program developed by CivilDesign Corporation and Joseph E. Bonadiman and Associates Inc. The computer program is commonly referred to as CivilD which incorporates the hydrological parameters outlined in the RCFC&WCD Hydrology Manual.

The Rational Method was used to determine the peak flow rates to size and design the drainage facilities need to convey onsite flows through the site to the proposed basin. The flow rates were computed by generating a hydrologic "link-node" model in which the overall area is divided into separate drainage sub-areas, each tributary to a concentration point (node) determined by the proposed layout and grading.

The Unit Hydrograph Method was used to determine the peak flow rates and volumes associated with the 100-year storm events for the site. Calculations were performed for both the existing condition and developed condition to be used in the analysis of the proposed basin. See Section 2 for additional information and results regarding the hydrologic analyses performed for this project.

HYDRAULICS

Water quality basin calculations were performed using spreadsheets that were created by RCFC&WCD. preliminary calculations and additional details can be found in the preliminary-WQMP.

Basin routing calculations were performed using the CivilD computer program. The CivilD program utilizes the Modified-Puls methodology to routes unit hydrographs through a basin using the stage-storage and stage-discharge curves determined from the proposed basin design. See Section 3 for additional discussion and results.

Hydraulic calculations to determine the required pipe sizes of the proposed onsite storm drain facilities will be provided in the Final Drainage Study.

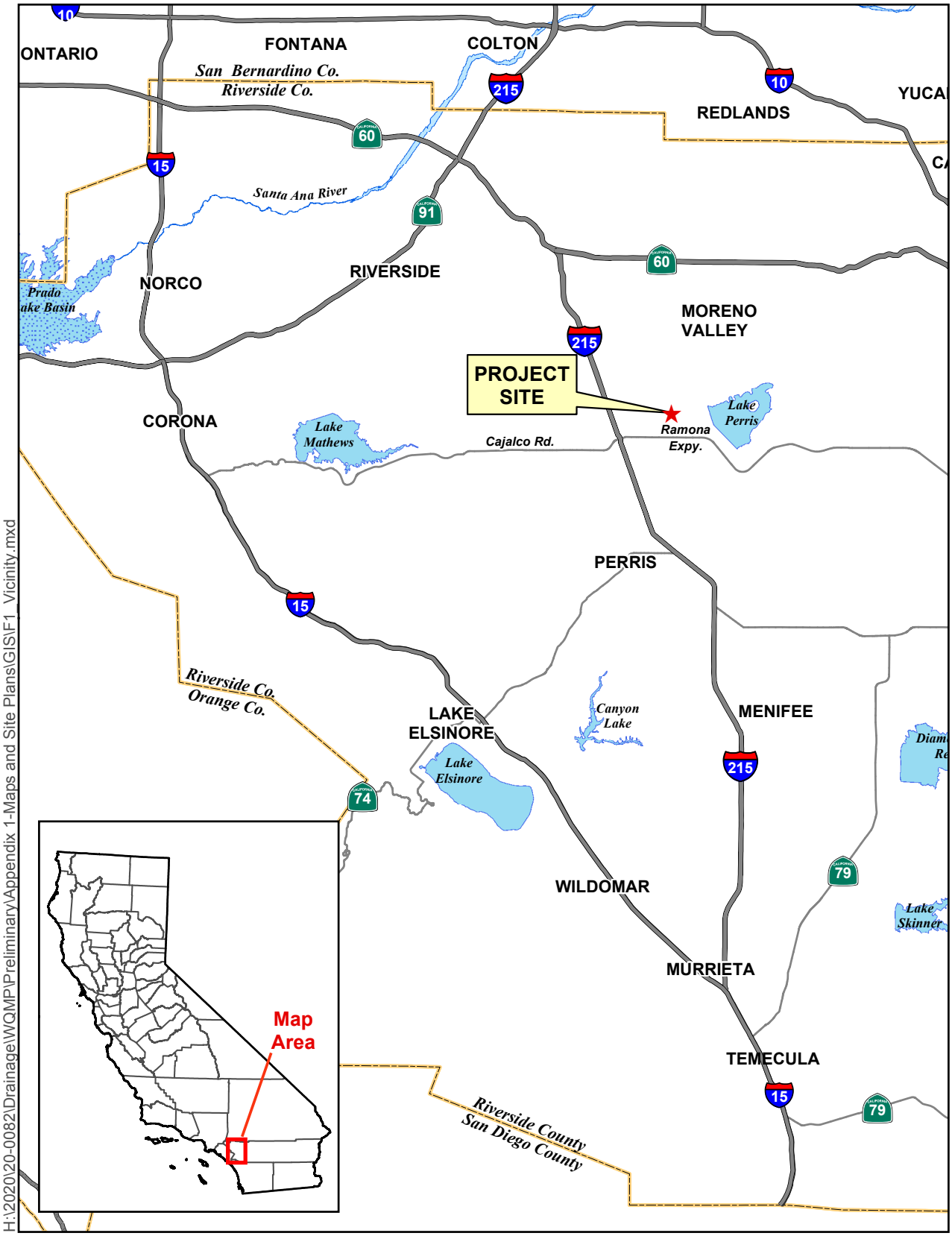

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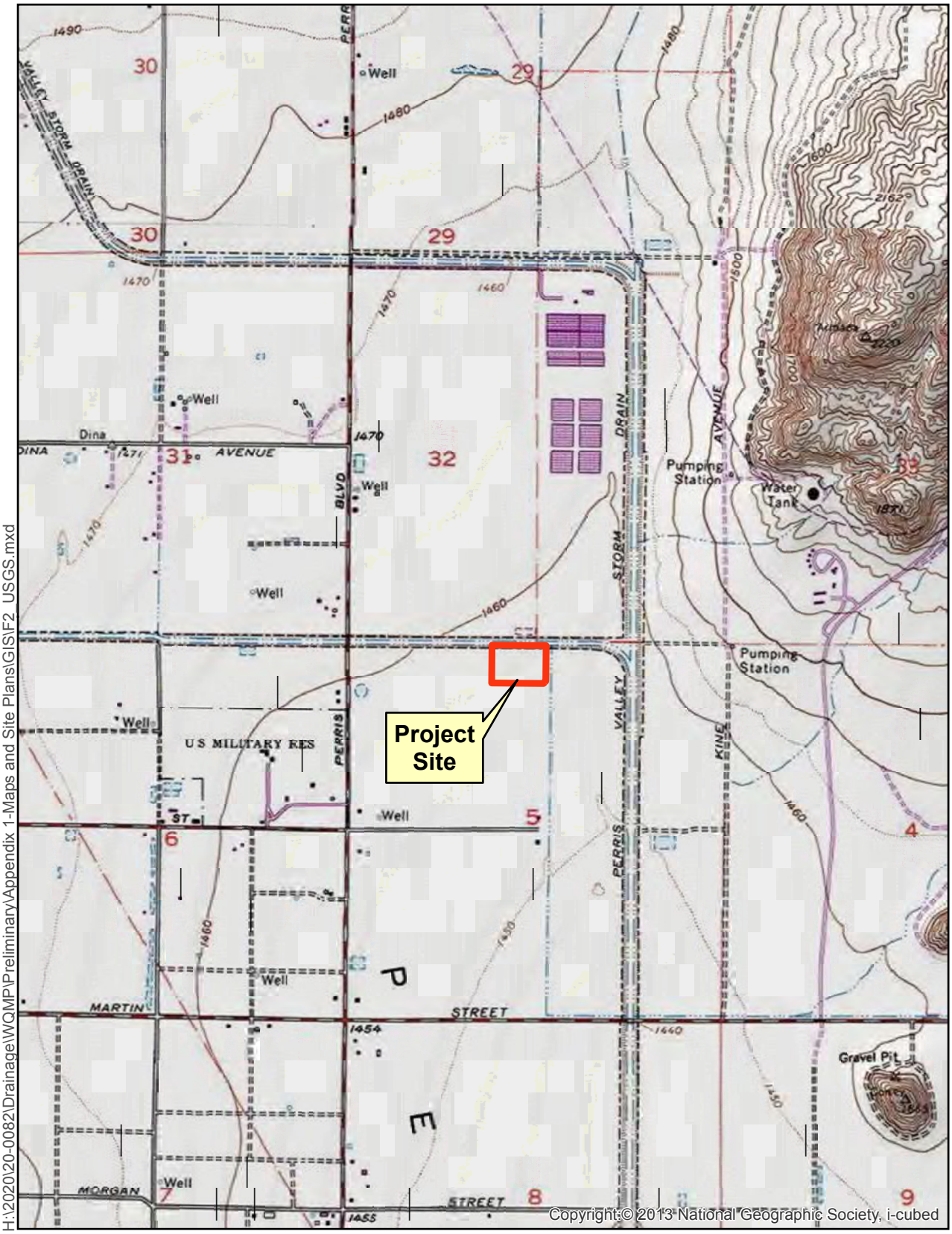
Figure 1. Vicinity Map



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Sources: ESRI / USGS 7.5min Quad
DRGs: PERRIS

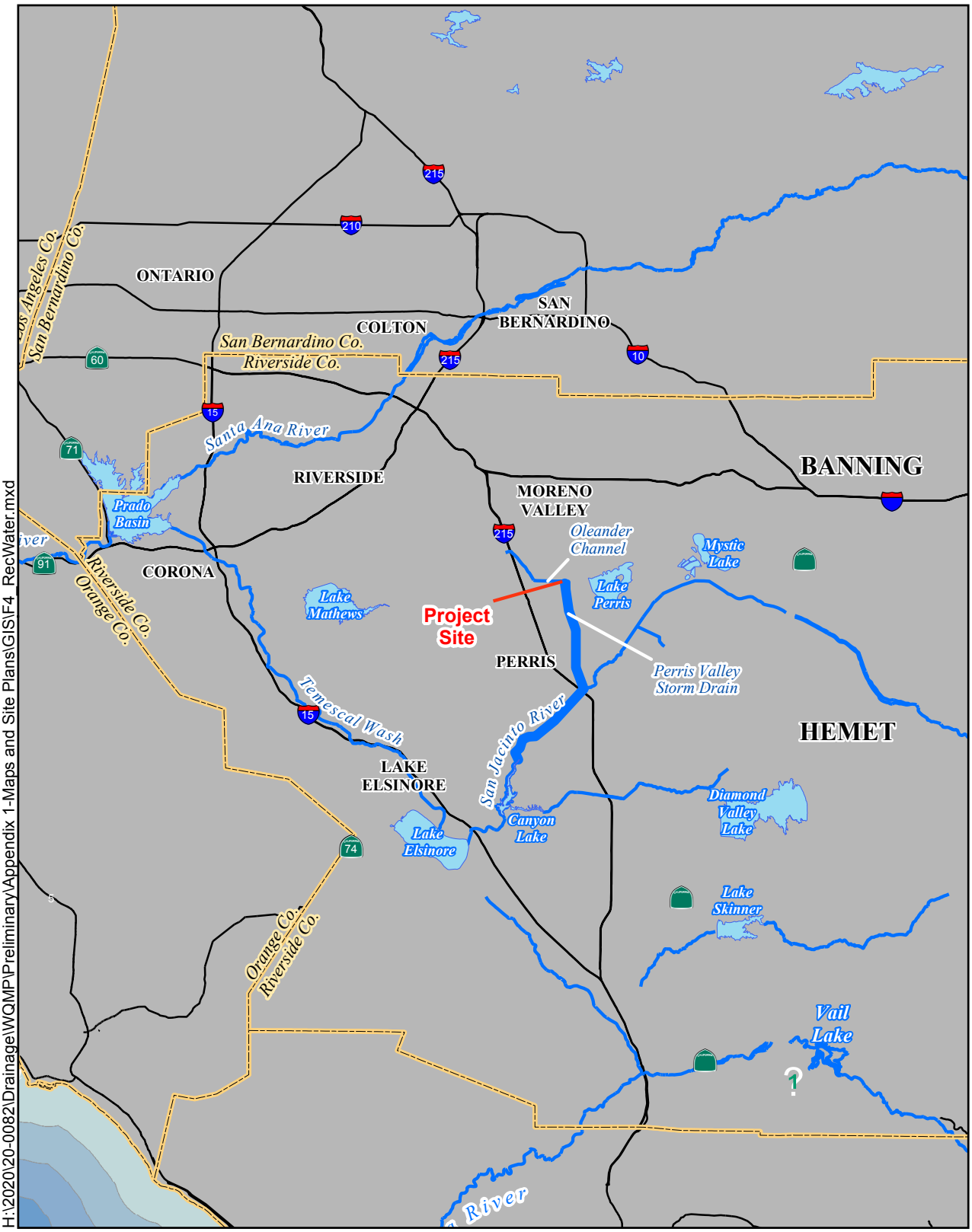
Figure 2. USGS Topography Map

0 1,000 2,000
Feet

Sources: County of Riverside GIS, 2016

Figure 3. Aerial Photograph

0 400 800
Feet



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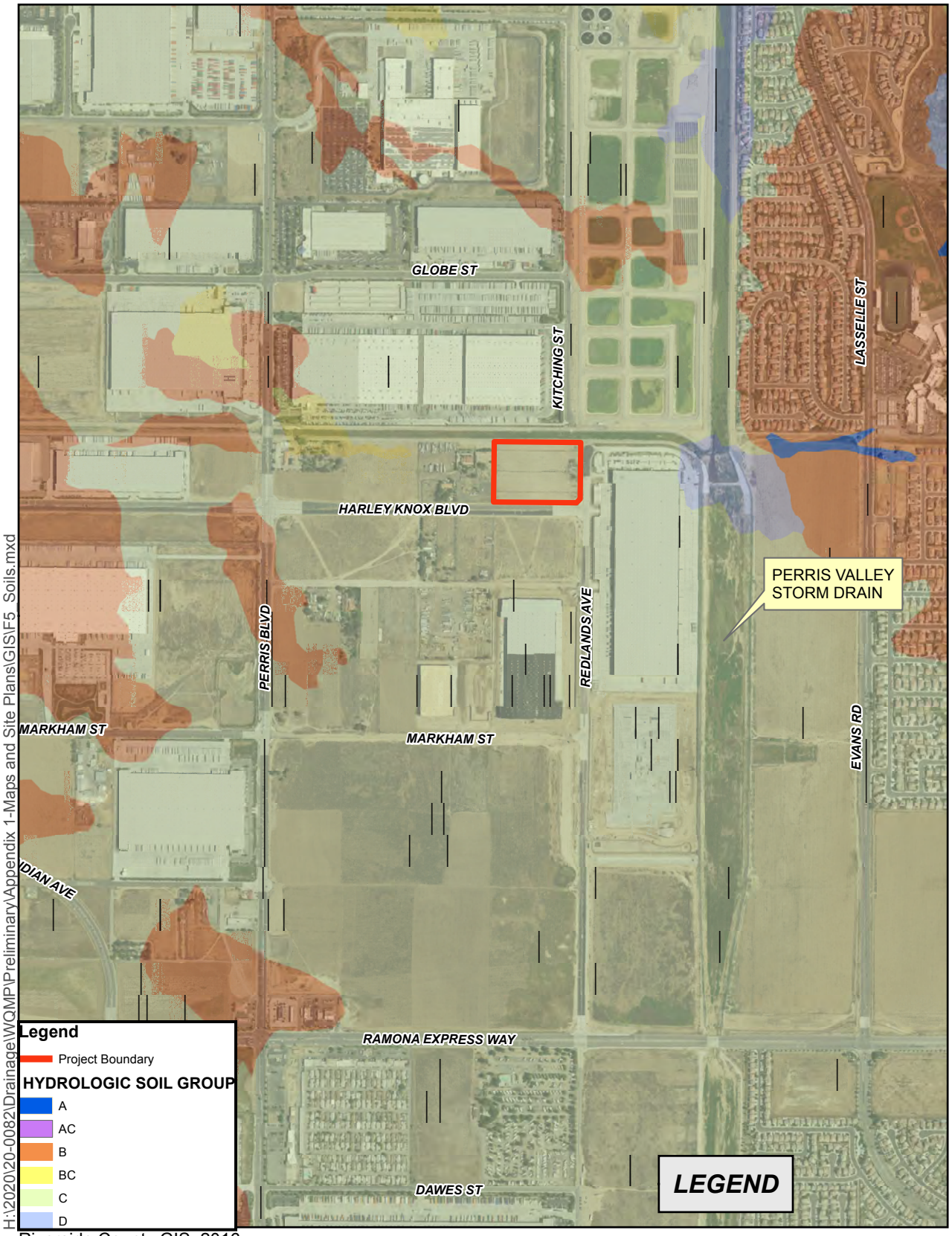
Sources: USGS 30 Meter DEM;
USGS Digital Line Graph

Figure 4. Receiving Waterbodies

0 2 4 6
Miles

Flowpath



Riverside County GIS, 2016
RCFC&WCD Hydology Manual Plate C-1.30

N
W E
S

0 500 1,000
Feet

Figure 5. Soils Map

SECTION 2 - HYDROLOGY ANALYSIS

HYDROLOGY PARAMETERS

The RCFC&WCD Hydrology Manual was used to determine several of the hydrological parameters. The following rainfall depths were utilized in the hydrology analyses, which were obtained from the isohyetal maps provided in the RCFC&WCD Hydrology Manual:

Table 1 – Precipitation Values

	Duration
Storm Event	1-Hour (inches)
10-Year	0.78
100-Year	1.12

The value for slope of intensity was determined to be 0.49. The isohyetal maps have been included in Appendix A.

Based on the Plate C-1.30 (Perris) in the RCFC&WCD Hydrology Manual, the project site is classified as soil type C. The soils map is included in Appendix A.

The residential\commercial landscaping cover type was used to represent the developed condition. Table 2 below summarizes the runoff index values and the recommended values for percentage of impervious cover for each category:

Table 2 – Cover Type

Cover Type	Soil Group A	Soil Group B	Soil Group C	Soil Group D	Percentage of Impervious Cover
Commercial Landscaping	32	56	69	75	90%

ON-SITE RATIONAL METHOD HYDROLOGY

The rational method was used to determine peak flow rates in order to adequately size the proposed subsurface storm drains and associated inlets used to convey on-site flows to the proposed underground storage chambers. The project site was separated into four subareas. Subarea 1 (5.6 acres) is essentially the northerly half of the site and is tributary to inlet 102. Subarea 2 (0.9 acres) is the northernly half of the eastern parking area and is tributary to inlet 202. Subarea 3 (0.3 acres) is the southernly half of the eastern parking area and is tributary to inlet 302. Subarea 4 (2.4 acres) is the southerly half of the site and is tributary to inlet 402. The project is comprised of approximately 15% pervious cover (landscaping). The project was modeled as commercial land use which assumes a 10% pervious cover which is slightly more conservative than what is proposed. As previously described, the underground storage chambers will utilize an outlet structure where high flow will gravity feed to the existing Lat D-3A line located in

Harley Knox Boulevard. Low flows from the underground storage chambers will discharge to a Contech Filterra unit for water quality treatment.

The rational method was used to determine peak flow rates in order to adequately size the proposed subsurface storm drains and associated inlets used to convey on-site flows through the site and into the existing Lat D-3A storm drain. The project site area was divided into 4 subareas.

Area-1 (approximately 5.6 acres) surface flows into a trench drain along the truck docking stalls. A 100-year peak flow of 14.3 cfs is generated by this subarea. The runoff will be conveyed around the building towards Area-2 using Line-A.

Area-2 (approximately 0.9 acres) surface flows into 1 low point on the east side of the project. A 100-year peak flow of 2.3 cfs is generated by this subarea. The runoff will be conveyed towards the underground storage chambers using Lat A-1.

Area-3 (approximately 0.3 acres) surface flows into 1 low point on the east side of the project. A 100-year peak flow of 1.0 cfs is generated by this subarea. The runoff will be conveyed towards the underground storage chambers using Lat A-2.

Area-4 (approximately 2.4 acres) surface flows into several low points on the south side of the project. A 100-year peak flow of 8.0 cfs is generated by this subarea. The runoff will be conveyed towards the underground storage chambers using Line-B.

A peak 100 year flow rate of 23.7 cfs is generated by the site, including the off-site areas and underground storage area. An emergency escape route will be provided capable of bypassing the peak 100 year flow rate.

The following table summarizes the rational method results at key points:

Table 3 – Rational Method Results

Point of Interest	10-Year Peak Flow Rate (cfs)	100-Year Peak Flow Rate (cfs)
Node 102 – Flow tributary to proposed inlet and Line A	9.9	14.3
Node 103 – Total Flow tributary to line A	16.4	23.7
Node 202 – Flow tributary to proposed inlet and Lat A-1	1.6	2.3
Node 203 – Total Flow tributary to Lat A-1	16.4	23.7
Node 302 – Flow tributary to proposed inlet and Lat A-2	0.7	1.0
Node 303 – Total Flow tributary to Lat A-2	16.4	23.7
Node 402 – Flow tributary to proposed inlet and Line B	5.8	8.0
Node 403 – Total Flow tributary to Line B	16.4	23.7

The rational method output files and hydrology map have been included in Appendix A.

SECTION 3 - HYDRAULIC ANALYSIS

ON-SITE STORM DRAIN FACILITIES

The project proposes minimal subsurface storm drain and will utilize curb and gutter and ribbon gutters to convey onsite high flows to the proposed underground storage chamber. The proposed underground storage chambers will receive the runoff generated by 9.5 acres of the site primarily on the easterly side of the site for water quality treatment.

The project proposes one subsurface storm drain system to convey on-site flows. The runoff will discharge into the underground storage chambers. The discharge from the underground storage chambers will be conveyed to a pump facility where it will outflow for water quality purposes. High flows discharged from the underground storage chambers will gravity flow to the existing Line D-3A located in Harley Knox Boulevard.

A brief summary of each system has been provided and the results of the hydraulic analyses are included at the end of the section. The peak flow rates determined during the 100-year rational method on-site hydrology analysis were utilized to evaluate the proposed storm drain systems.

Line-A (Onsite)

The north portion of the project site will surface flow to a trench drain along the truck docking stalls and be collected by Line A-1, a 24" HDPE pipe. Line-A proposes to convey the 100-year peak flow rate to the underground storage chamber. A hydraulic model for Line A-1 will be provided during final engineering to further assess the storm drain design.

Line-B (Onsite)

The south portion of the project site will surface flow to several low points in the south side landscaping area and be collected by Line B-1, a 24" HDPE pipe. Line-B proposes to convey the 100-year peak flow rate to the underground storage chamber. A hydraulic model for Line B-1 will be provided during final engineering to further assess the storm drain design.

OFF-SITE STORM DRAIN FACILITIES

As part of this project, the only offsite improvements proposed for Harley Knox Blvd include the construction of a driveway and sidewalk along the project frontage. There is an existing low point (Lat D-3A-4), within Harley Knox Boulevard. A 30" RCP offsite storm drain connection is proposed to convey all collected, onsite flows towards the existing 48" RCP lateral D-3A located along Harley Knox Boulevard. A peak flow rate of 21.1 cfs is expected per the rational method analysis (See Section 2 and Appendix A for more detail).

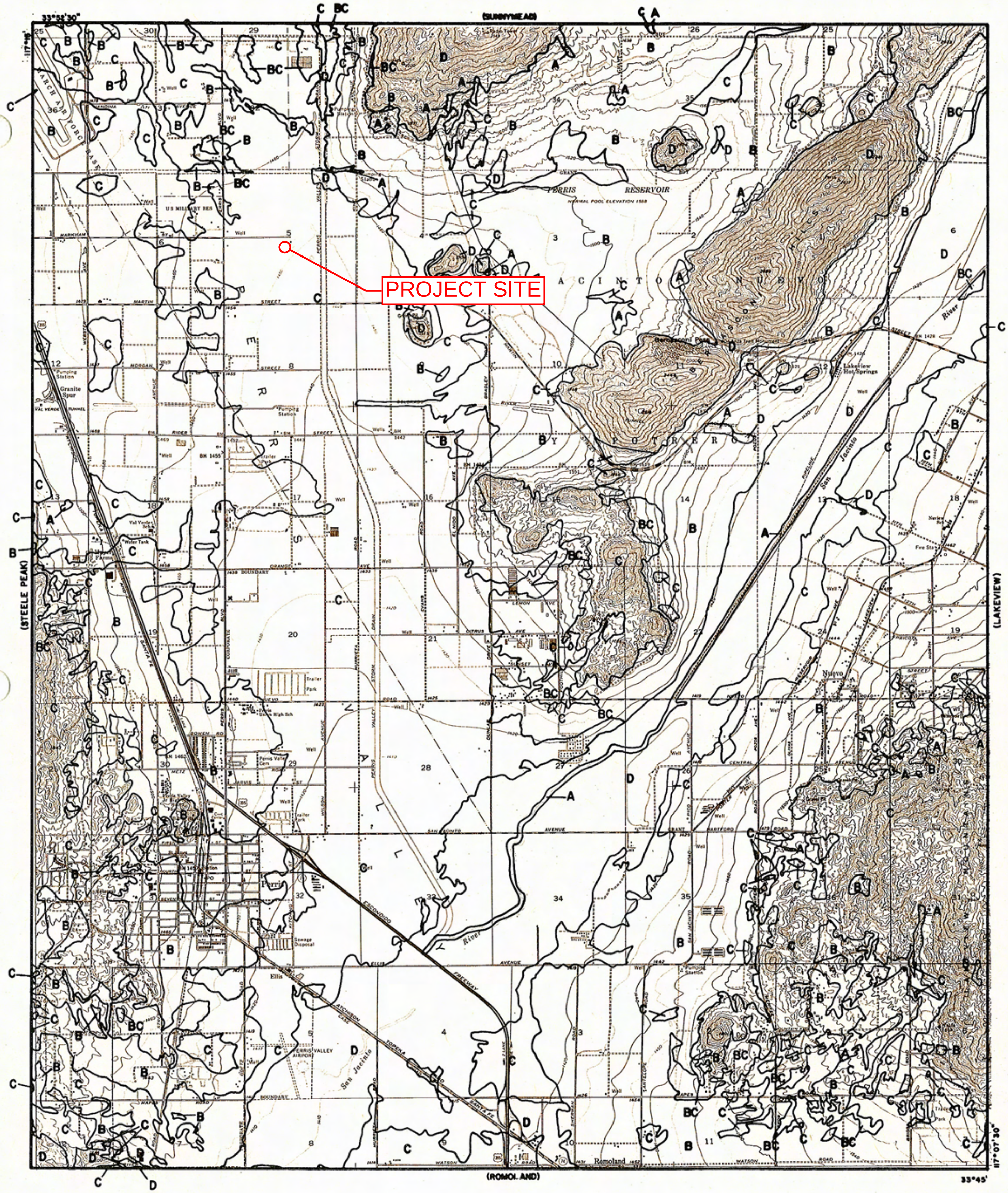
SECTION 4 - CONCLUSION

Based on the analyses and results of this report, the following conclusions were derived from the hydrology and hydraulic results:

- The proposed drainage improvements will adequately convey flows to the underground storage chambers and provide flood protection for the 100-year storm event.
- The proposed Contech Filterra unit will provide adequate water quality treatment.
- The proposed project will not impact flooding condition to upstream or downstream properties.

APPENDIX A – HYDROLOGY

HYDROLOGIC SOILS GROUP MAP (PLATE C-1.30)



LEGEND

— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR PERRIS

PLATE C-1.30

ISOHYETAL MAPS

RAINFALL INTENSITY–INCHES PER HOUR

MIRA LOMA			MURRIETA - TEMECULA & RANCHO CALIFORNIA			NORCO			PALM SPRINGS			PERRIS VALLEY		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.84	4.48	5	3.45	5.10	5	2.77	4.16	5	4.23	6.76	5	2.64	3.78
6	2.58	4.07	6	3.12	4.61	6	2.53	3.79	6	3.80	6.08	6	2.41	3.46
7	2.37	3.75	7	2.87	4.24	7	2.34	3.51	7	3.48	5.56	7	2.24	3.21
8	2.21	3.49	8	2.67	3.94	8	2.19	3.29	8	3.22	5.15	8	2.09	3.01
9	2.08	3.28	9	2.50	3.69	9	2.07	3.10	9	3.01	4.81	9	1.98	2.84
10	1.96	3.10	10	2.36	3.48	10	1.96	2.94	10	2.83	4.52	10	1.88	2.69
11	1.87	2.95	11	2.24	3.30	11	1.87	2.80	11	2.67	4.28	11	1.79	2.57
12	1.78	2.82	12	2.13	3.15	12	1.79	2.68	12	2.54	4.07	12	1.72	2.46
13	1.71	2.70	13	2.04	3.01	13	1.72	2.58	13	2.43	3.88	13	1.65	2.37
14	1.64	2.60	14	1.96	2.89	14	1.66	2.48	14	2.33	3.72	14	1.59	2.29
15	1.58	2.50	15	1.89	2.79	15	1.60	2.40	15	2.23	3.58	15	1.54	2.21
16	1.53	2.42	16	1.82	2.69	16	1.55	2.32	16	2.15	3.44	16	1.49	2.14
17	1.48	2.34	17	1.76	2.60	17	1.50	2.25	17	2.08	3.32	17	1.45	2.08
18	1.44	2.27	18	1.71	2.52	18	1.46	2.19	18	2.01	3.22	18	1.41	2.02
19	1.40	2.21	19	1.66	2.45	19	1.42	2.13	19	1.95	3.12	19	1.37	1.97
20	1.36	2.15	20	1.61	2.38	20	1.39	2.08	20	1.89	3.03	20	1.34	1.92
22	1.29	2.04	22	1.53	2.26	22	1.32	1.98	22	1.79	2.86	22	1.28	1.83
24	1.24	1.95	24	1.46	2.15	24	1.26	1.90	24	1.70	2.72	24	1.22	1.75
26	1.18	1.87	26	1.39	2.06	26	1.22	1.82	26	1.62	2.60	26	1.18	1.69
28	1.14	1.80	28	1.34	1.98	28	1.17	1.76	28	1.56	2.49	28	1.13	1.63
30	1.10	1.73	30	1.29	1.90	30	1.13	1.70	30	1.49	2.39	30	1.10	1.57
32	1.06	1.67	32	1.24	1.84	32	1.10	1.64	32	1.44	2.30	32	1.06	1.52
34	1.03	1.62	34	1.20	1.78	34	1.06	1.59	34	1.39	2.22	34	1.03	1.48
36	1.00	1.57	36	1.17	1.72	36	1.03	1.55	36	1.34	2.15	36	1.00	1.44
38	.97	1.53	38	1.13	1.67	38	1.01	1.51	38	1.30	2.09	38	.98	1.40
40	.94	1.49	40	1.10	1.62	40	.98	1.47	40	1.27	2.02	40	.95	1.37
45	.89	1.40	45	1.03	1.52	45	.92	1.39	45	1.18	1.89	45	.90	1.29
50	.84	1.32	50	.97	1.44	50	.88	1.31	50	1.11	1.78	50	.85	1.22
55	.80	1.26	55	.92	1.36	55	.84	1.25	55	1.05	1.68	55	.81	1.17
60	.76	1.20	60	.88	1.30	60	.80	1.20	60	1.00	1.60	60	.78	1.12
65	.73	1.15	65	.84	1.24	65	.77	1.15	65	.95	1.53	65	.75	1.08
70	.70	1.11	70	.81	1.19	70	.74	1.11	70	.91	1.46	70	.72	1.04
75	.68	1.07	75	.78	1.15	75	.72	1.07	75	.88	1.41	75	.70	1.00
80	.65	1.03	80	.75	1.11	80	.69	1.04	80	.85	1.35	80	.68	.97
85	.63	1.00	85	.73	1.07	85	.67	1.01	85	.82	1.31	85	.66	.94
SLOPE = .530			SLOPE = .550			SLOPE = .500			SLOPE = .580			SLOPE = .490		

RCFC & WCD

HYDROLOGY MANUAL

STANDARD INTENSITY–DURATION CURVES DATA

PLATE D-4.1 (4 of 6)

10-YEAR ONSITE HYDROLOGY (RATIONAL METHOD)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 08/12/21 File:prop10.out

20-0082 - FIR HK
ONSITE RATIONAL METHOD HYDROLOGY
10 YEAR STORM EVENT
FN: PROP10.OUT RC

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 363.000(Ft.)
Top (of initial area) elevation = 1459.100(Ft.)
Bottom (of initial area) elevation = 1456.800(Ft.)

```
Difference in elevation =     2.300(Ft.)
Slope =    0.00634  s(percent)=       0.63
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.724 min.
Rainfall intensity =      2.006(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      9.880(CFS)
Total initial stream area =        5.600(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1451.900(Ft.)
Downstream point/station elevation =  1450.300(Ft.)
Pipe length  =   512.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     9.880(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     9.880(CFS)
Normal flow depth in pipe =   17.81(In.)
Flow top width inside pipe =   15.07(In.)
Critical Depth =   14.04(In.)
Pipe flow velocity =      4.54(Ft/s)
Travel time through pipe =    1.88 min.
Time of concentration (TC) =    10.60 min.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Process from Point/Station      102.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.600(Ac.)
Runoff from this stream =      9.880(CFS)
Time of concentration =   10.60 min.
Rainfall intensity =     1.823(In/Hr)


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Process from Point/Station      201.000 to Point/Station      202.000
**** INITIAL AREA EVALUATION ****
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Initial area flow distance =   395.000(Ft.)
Top (of initial area) elevation =  1460.100(Ft.)
Bottom (of initial area) elevation =  1457.400(Ft.)
Difference in elevation =     2.700(Ft.)
Slope =    0.00684  s(percent)=       0.68
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.888 min.
Rainfall intensity =      1.988(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.573(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1451.800(Ft.)
Downstream point/station elevation =  1451.500(Ft.)
Pipe length  =    29.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     1.573(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.573(CFS)
Normal flow depth in pipe =    6.45(In.)
Flow top width inside pipe =    8.11(In.)
Critical Depth =    6.93(In.)
Pipe flow velocity =      4.64(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     8.99 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.900(Ac.)
Runoff from this stream =      1.573(CFS)
Time of concentration =    8.99 min.
Rainfall intensity =     1.977(In/Hr)
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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   120.000(Ft.)
Top (of initial area) elevation =  1461.000(Ft.)
Bottom (of initial area) elevation =  1458.600(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.02000  s(percent)=       2.00
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.636(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.698(CFS)
Total initial stream area =        0.300(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1451.800(Ft.)
Downstream point/station elevation =  1451.500(Ft.)
Pipe length  =    41.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     0.698(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.698(CFS)
Normal flow depth in pipe =    4.27(In.)
Flow top width inside pipe =    8.99(In.)
Critical Depth =    4.56(In.)
Pipe flow velocity =      3.39(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =     5.20 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
```

```
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.300(Ac.)
Runoff from this stream =      0.698(CFS)
Time of concentration =    5.20 min.
Rainfall intensity =     2.585(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   171.000(Ft.)
Top (of initial area) elevation =  1462.100(Ft.)
Bottom (of initial area) elevation =  1458.300(Ft.)
Difference in elevation =     3.800(Ft.)
Slope =    0.02222  s(percent)=       2.22
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.023 min.
Rainfall intensity =      2.630(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      5.575(CFS)
Total initial stream area =        2.400(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1454.200(Ft.)
Downstream point/station elevation =  1451.300(Ft.)
Pipe length  =   597.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     5.575(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     5.575(CFS)
Normal flow depth in pipe =   11.13(In.)
Flow top width inside pipe =   17.49(In.)
Critical Depth =   10.93(In.)
Pipe flow velocity =      4.86(Ft/s)
Travel time through pipe =    2.05 min.
Time of concentration (TC) =     7.07 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      2.400(Ac.)
Runoff from this stream =      5.575(CFS)
Time of concentration =    7.07 min.
Rainfall intensity =     2.224(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        9.880     10.60                 1.823
2        1.573      8.99                 1.977
3        0.698      5.20                 2.585
4        5.575      7.07                 2.224
Largest stream flow has longer time of concentration
Qp =      9.880 + sum of
          Qb         Ia/Ib
           1.573 *    0.922 =      1.451
          Qb         Ia/Ib
           0.698 *    0.705 =      0.493
          Qb         Ia/Ib
           5.575 *    0.820 =      4.571
Qp =     16.394

Total of 4 streams to confluence:
Flow rates before confluence point:
       9.880       1.573       0.698       5.575
Area of streams before confluence:
        5.600        0.900        0.300        2.400
Results of confluence:
Total flow rate =     16.394(CFS)
Time of concentration =    10.604 min.
Effective stream area after confluence =      9.200(Ac.)
End of computations, total study area =            9.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

100-YEAR ONSITE HYDROLOGY (RATIONAL METHOD)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 08/12/21 File:prop100.out

20-0082 - FIR HK
ONSITE RATIONAL METHOD HYDROLOGY
100 YEAR STORM EVENT
FN: PROP100.OUT RC

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 363.000(Ft.)
Top (of initial area) elevation = 1459.100(Ft.)
Bottom (of initial area) elevation = 1456.800(Ft.)

```
Difference in elevation =     2.300(Ft.)
Slope =    0.00634  s(percent)=       0.63
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.724 min.
Rainfall intensity =      2.881(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     14.271(CFS)
Total initial stream area =        5.600(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1451.900(Ft.)
Downstream point/station elevation =  1450.300(Ft.)
Pipe length  =   512.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    14.271(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    14.271(CFS)
Normal flow depth in pipe =   20.72(In.)
Flow top width inside pipe =   16.49(In.)
Critical Depth =   16.33(In.)
Pipe flow velocity =      4.95(Ft/s)
Travel time through pipe =    1.72 min.
Time of concentration (TC) =    10.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.600(Ac.)
Runoff from this stream =     14.271(CFS)
Time of concentration =   10.45 min.
Rainfall intensity =     2.637(In/Hr)


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Process from Point/Station      201.000 to Point/Station      202.000
**** INITIAL AREA EVALUATION ****
```

```
Initial area flow distance =   395.000(Ft.)
Top (of initial area) elevation =  1460.100(Ft.)
Bottom (of initial area) elevation =  1457.400(Ft.)
Difference in elevation =     2.700(Ft.)
Slope =    0.00684  s(percent)=       0.68
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.888 min.
Rainfall intensity =      2.855(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.272(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1451.800(Ft.)
Downstream point/station elevation =  1451.500(Ft.)
Pipe length  =    29.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     2.272(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.272(CFS)
Normal flow depth in pipe =    6.55(In.)
Flow top width inside pipe =   11.95(In.)
Critical Depth =    7.73(In.)
Pipe flow velocity =      5.18(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     8.98 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.900(Ac.)
Runoff from this stream =      2.272(CFS)
Time of concentration =    8.98 min.
Rainfall intensity =     2.840(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   120.000(Ft.)
Top (of initial area) elevation =  1461.000(Ft.)
Bottom (of initial area) elevation =  1458.600(Ft.)
Difference in elevation =     2.400(Ft.)
Slope =    0.02000  s(percent)=       2.00
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      3.785(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.888
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.008(CFS)
Total initial stream area =        0.300(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1451.800(Ft.)
Downstream point/station elevation =  1451.500(Ft.)
Pipe length  =    41.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     1.008(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.008(CFS)
Normal flow depth in pipe =    5.33(In.)
Flow top width inside pipe =    8.85(In.)
Critical Depth =    5.53(In.)
Pipe flow velocity =      3.70(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =     5.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
```

```
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.300(Ac.)
Runoff from this stream =      1.008(CFS)
Time of concentration =    5.18 min.
Rainfall intensity =     3.718(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   171.000(Ft.)
Top (of initial area) elevation =  1462.100(Ft.)
Bottom (of initial area) elevation =  1458.300(Ft.)
Difference in elevation =     3.800(Ft.)
Slope =    0.02222  s(percent)=       2.22
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.023 min.
Rainfall intensity =      3.776(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.888
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      8.045(CFS)
Total initial stream area =        2.400(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1454.200(Ft.)
Downstream point/station elevation =  1451.300(Ft.)
Pipe length  =   597.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     8.045(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     8.045(CFS)
Normal flow depth in pipe =   15.00(In.)
Flow top width inside pipe =   13.42(In.)
Critical Depth =   13.18(In.)
Pipe flow velocity =      5.11(Ft/s)
Travel time through pipe =    1.95 min.
Time of concentration (TC) =     6.97 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      2.400(Ac.)
Runoff from this stream =      8.045(CFS)
Time of concentration =    6.97 min.
Rainfall intensity =     3.216(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.271     10.45                 2.637
2        2.272      8.98                 2.840
3        1.008      5.18                 3.718
4        8.045      6.97                 3.216
Largest stream flow has longer time of concentration
Qp =     14.271 + sum of
          Qb         Ia/Ib
           2.272 *    0.929 =      2.110
          Qb         Ia/Ib
           1.008 *    0.709 =      0.715
          Qb         Ia/Ib
           8.045 *    0.820 =      6.597
Qp =     23.693

Total of 4 streams to confluence:
Flow rates before confluence point:
      14.271       2.272       1.008       8.045
Area of streams before confluence:
        5.600        0.900        0.300        2.400
Results of confluence:
Total flow rate =     23.693(CFS)
Time of concentration =    10.448 min.
Effective stream area after confluence =      9.200(Ac.)
End of computations, total study area =            9.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

HYDROLOGY MAPS

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- 101 / 14xx — NODE DESIGNATION / NODE ELEVATION
- *14XX — *INVERT ELEVATION
- 5.0 / 1000 — WATERSHED AREA (ACRES) / LONGEST WATER PATH (FT)
- LANDSCAPING
- CONCRETE OR ASPHALT
- BMP (FILTERRA UNIT/ UNDERGROUND CHAMBERS)

CITY OF MORENO VALLEY

CITY OF PERRIS

201
1460.1

102
1456.8
*1451.9

SUB AREA 2

0.9
395'

SUB AREA
Q_{10}=1.6 CFS
Q_{100}=2.3 CFS

103
*1450.3

203
*1451.5

202
1457.4
*1451.8

SUB AREA 1

5.6
363'

SUB AREA
Q_{10}=9.9 CFS
Q_{100}=14.3 CFS

401
1462.1

SUB AREA 4

2.4
171'

SUB AREA
Q_{10}=5.8 CFS
Q_{100}=8.0 CFS

TOTAL
Q_{10}=16.4 CFS
Q_{100}=23.7 CFS

SUB AREA 3

0.3
120'

403
*1451.3

302
1458.6
*1451.8

303
*1451.5

SUB AREA
Q_{10}=0.7 CFS
Q_{100}=1.0 CFS

402
1458.3
*1454.2

301
1461.0

101
1459.1

EX. 48" RCP

HARLEY KNOX BOULEVARD

REDLANDS AVENUE

Water

Dirt

Asph.

Conc.

N
W WEBB E
S

1" = 40'
20 0 40 80 120

CITY OF PERRIS

DEVELOPED CONDITION
PRELIMINARY RATIONAL METHOD HYDROLOGY MAP
FIRST INDUSTRIAL - HARLEY KNOX
DPR NO. XX-XXXX

SCALE:	1"=40'
DATE:	8/12/21
DESIGNED:	RC
CHECKED:	SRH
PLN CK REF:	
F.B.	

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

W.O.	WO
SHEET	1
OF	1 SHEETS
DWG. NO.	

H:\2020\20-0082\DRAINAGE\HYDROLOGY\HYD\DWG FOLDER\20-0082-PHYD-RATIONAL.DWG 8/12/2021 2:24:47 PM

JACKSON

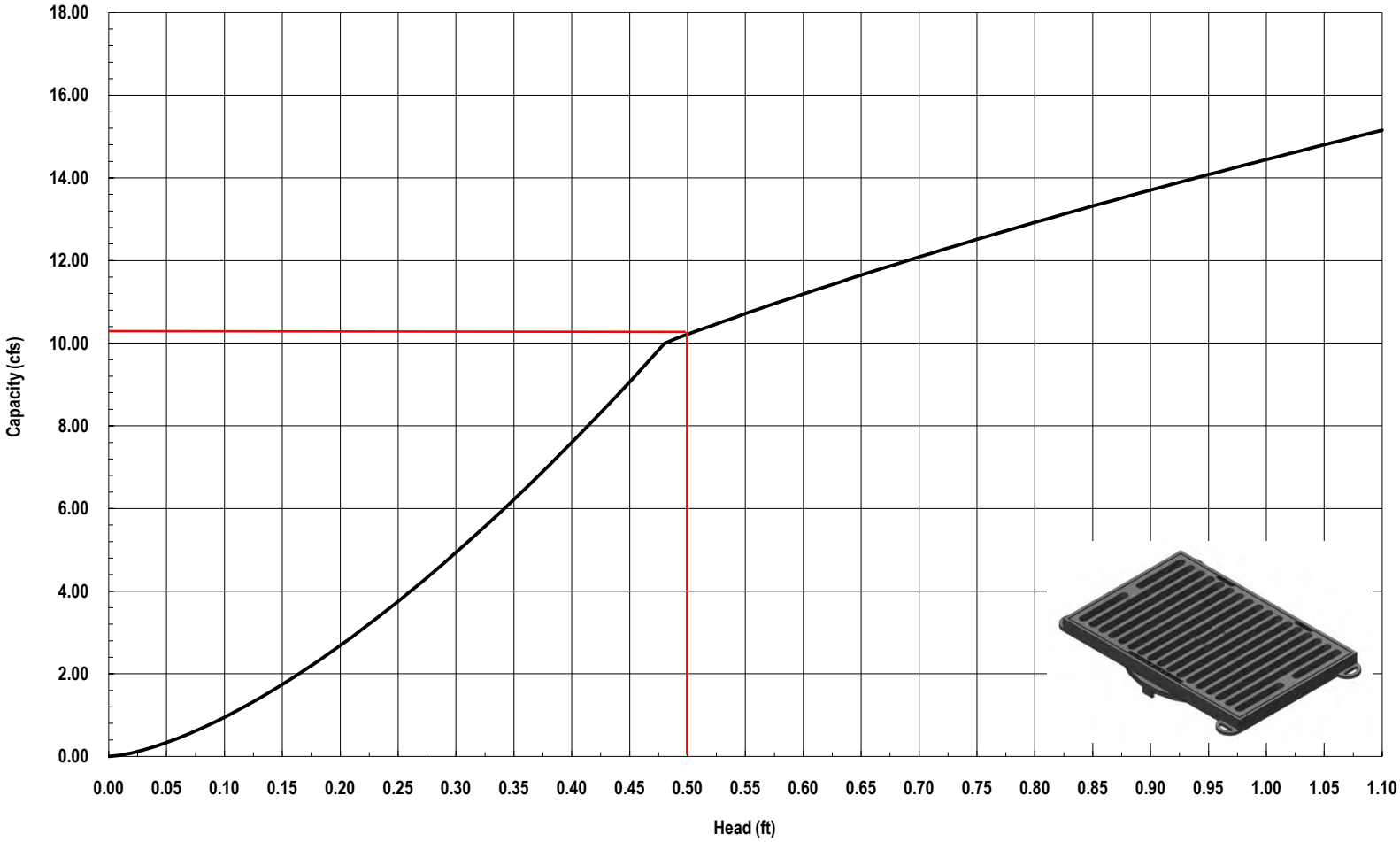
APPENDIX B – HYDRAULICS

HYDRAULIC CALCULATIONS

Hydraulic calculations to be provided in Final Engineering.

INLET AND CATCH BASIN CALCULATIONS

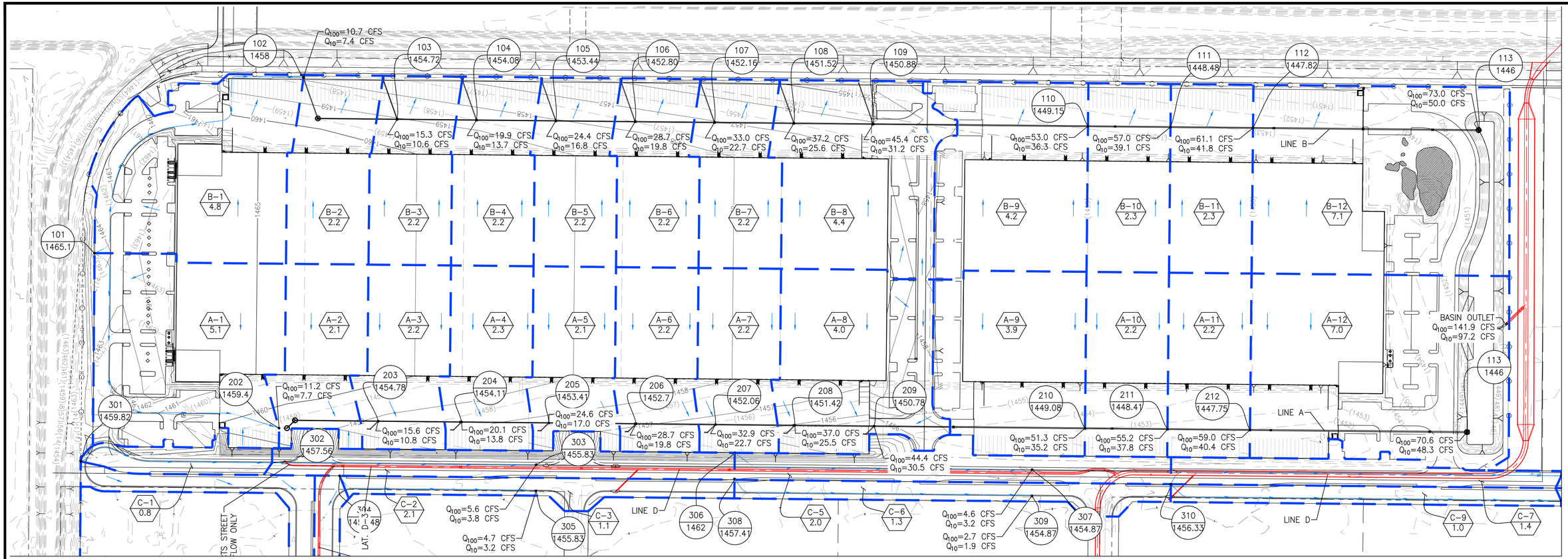
Nyloplast 2' x 3' Road & Highway Grate Inlet Capacity Chart



Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490

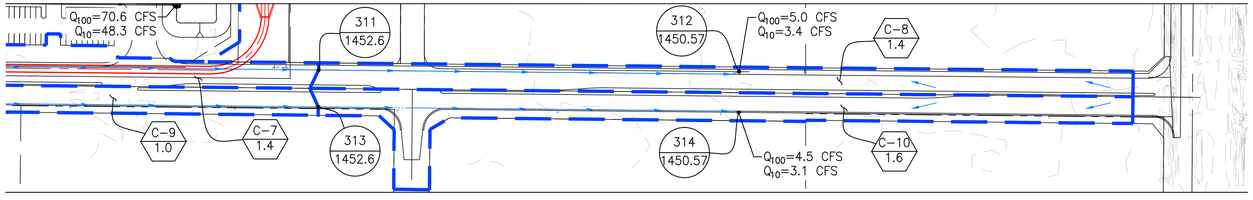
APPENDIX C – REFERENCES

PERRIS VALLEY MDP LAT D-3A PLANS



REDLANDS AVE. HYDROLOGY (CONT.)

SEE ABOVE



HARLEY KNOX BLVD. HYDROLOGY

LEGEND

- WATERSHED BOUNDARY
- WATER COURSE
- FLOW DIRECTION
- ### / XXXX.X — NODE ELEVATION
- X-X / XXX.X — SUBAREA DESIGNATION ACREAGE – ACRES

PROPOSED CONDITION HYDROLOGY MAP

STRATFORD RANCH INDUSTRIAL SITE ON-SITE & STREET HYDROLOGY

SCALE:	1"=120'	W.O.	13-0239
DATE:	12/6/2013	SHEET	1
DESIGNED:	CRC	OF	1 SHEETS
CHECKED:	EA	DWG. NO.	
PLN CK REF:			
F.B.			

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3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

STREET IMPROVEMENT PLANS FOR
STRATFORD RANCH–PARCEL MAP 36469
AMENDED DPR NO. 11–12–0004
CITY OF PERRIS, CALIFORNIA

GENERAL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/OWNER CONTRACTOR TO APPLY TO THE CITY OF PERRIS ENGINEERING DEPARTMENT, PERMIT SECTION, FOR AN ENCROACHMENT PERMIT FOR ALL WORK PERFORMED WITHIN PUBLIC RIGHT–OF–WAY, DEDICATED AND ACCEPTED FOR PUBLIC USE; AND TO BE RESPONSIBLE FOR SATISFACTORY COMPLIANCE FOR ALL CURRENT ENVIRONMENTAL REGULATIONS DURING THE LIFE OF CONSTRUCTION ACTIVITIES FOR THIS PROJECT, ADDITIONAL STUDIES AND/OR PERMITS MAY BE REQUIRED.
2. THE CONTRACTOR/DEVELOPER SHALL BE RESPONSIBLE FOR THE CLEARING OF THE WORK AREA, AND RELOCATION COSTS OF ALL EXISTING UTILITIES. THIS INCLUDES UNDERGROUNDING OF EXISTING OVERHEAD LINES ALONG THE PROJECT FRONTAGE AS REQUIRED BY THE CONDITIONS OF APPROVAL. PERMITEE MUST INFORM CITY OF CONSTRUCTION SCHEDULE AT LEAST 48 HOURS PRIOR TO BEGINNING OF CONSTRUCTION. PHONE: (951) 943–6504.
3. THE DEVELOPER WILL INSTALL STREET NAME SIGNS CONFORMING TO COUNTY STANDARD NO. 816 OR AS APPROVED BY THE CITY ENGINEER.
4. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT IMPROVEMENT STANDARDS AND SPECIFICATIONS, LATEST EDITION, COUNTY ORDINANCE NO. 461 AND SUBSEQUENT AMENDMENTS.
5. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO NOTIFY THE ENGINEER TO INSTALL STREET CENTERLINE MONUMENTS AS REQUIRED BY RIVERSIDE COUNTY ORDINANCE NO. 461 (TRACTS AND PARCEL MAPS ONLY). ALL EXISTING SURVEY MONUMENTS SHALL BE PROTECTED IN PLACE OR RELOCATED BY A LICENSED PROFESSIONAL PRIOR TO CONSTRUCTION.
6. ALL UNDERGROUND FACILITIES, WITH LATERALS, SHALL BE IN PLACE PRIOR TO PAVING THE STREET, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING: SEWER, WATER, ELECTRIC, GAS, STORM DRAINS.
7. CURB DEPRESSIONS AND DRIVEWAY APPROACHES WILL BE INSTALLED AND CONSTRUCTED ACCORDING TO COUNTY STANDARD NO. 207A, AS DIRECTED IN THE FIELD AND AS APPROVED BY THE CITY ENGINEER.
8. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER OR CONTRACTOR TO INSTALL AND MAINTAIN ALL CONSTRUCTION, REGULATORY, GUIDE AND WARNING SIGNS WITHIN THE PROJECT LIMITS AND ITS SURROUNDINGS TO PROVIDE SAFE PASSAGE FOR THE TRAVELING PUBLIC AND WORKERS UNTIL THE FINAL COMPLETION AND ACCEPTANCE OF THE PROJECT BY THE CITY. A TRAFFIC CONTROL PLAN MUST BE SUBMITTED FOR REVIEW TO THE PERMITS SECTION OR INSPECTION SECTION PRIOR TO OBTAINING AN ENCROACHMENT PERMIT.
9. ALL STREET SECTIONS ARE MINIMUM REQUIREMENTS. ADDITIONAL SOIL TESTS SHALL BE TAKEN AFTER ROUGH GRADING TO DETERMINE THE RECOMMENDED STREET SECTION REQUIREMENTS. USE COUNTY STD. NO. 401 IF EXPANSIVE SOILS ARE ENCOUNTERED.
10. ASPHALTIC EMULSION (FOG SEAL) SHALL BE APPLIED NOT LESS THAN FOURTEEN DAYS FOLLOWING PLACEMENT OF THE ASPHALT SURFACING. FOG SEAL AND PAINT BINDER SHALL BE APPLIED AT A RATE OF 0.05 AND 0.03 GALLON PER SQUARE YARD RESPECTIVELY. ASPHALTIC EMULSION SHALL CONFORM TO SECTION 37, 39 AND 94 OF THE STATE STANDARD SPECIFICATIONS.
11. INSTALL STREET TREES IN ACCORDANCE WITH ORDINANCE NO. 461 AND THE COMPREHENSIVE LANDSCAPING GUIDELINES.
12. STREET LIGHTS SHALL BE INSTALLED PER RIVERSIDE COUNTY STANDRADS AND IN ACCORDANCE WITH THE APPROVED STREET LIGHTING PLAN.
13. AS DETERMINED BY THE CITY ENGINEER, THE DEVELOPER IS RESPONSIBLE AT A MINIMUM FOR ROAD IMPROVEMENTS TO CENTERLINE, AND MAY BE REQUIRED TO RECONSTRUCT EXISTING PAVEMENT, INCLUDING BASE, AND MATCHING OVERLAY REQUIRED TO MEET THE STRUCTURAL STANDARDS FOR THE CURRENT ASSIGNED TRAFFIC INDEX PER ENGINEERING CONDITION OF APPROVAL.
14. ANY PRIVATE DRAINAGE FACILITIES SHOWN ON THESE PLANS ARE FOR INFORMATION ONLY. BY SIGNING THESE IMPROVEMENT PLANS, NO REVIEW OR APPROVAL OF THOSE PRIVATE FACILITIES IS IMPLIED OR INTENDED BY THE CITY OF PERRIS ENGINEERING DEPARTMENT.
15. CONSTRUCTION PROJECTS MUST OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT. OWNERS/DEVELOPERS ARE REQUIRED TO FILE A NOTICE OF INTENT (NOI) WITH THE STATE WATER RESOURCES CONTROL BOARD (SWRCB), PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND MONITORING PLAN FOR THE SITE.

    PRIOR TO ANY CONSTRUCTION, THE DEVELOPER SHALL PROVIDE THE CITY A COPY OF THE NOI WITH A VALID WDID NUMBER.
16. THE DEVELOPER SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ADDITIONAL SIGNS AND MARKINGS NOT INCLUDED IN THE SIGNING AND STRIPING PLAN WITHIN THE PROJECT AREAS, OR ON ROADWAYS ADJACENT TO THE PROJECT BOUNDARIES, UPON THE REQUEST OF THE CITY ENGINEER OR HIS DESIGNEE TO IMPROVE TRAFFIC SAFETY ON THE ROADS UNDER THE JURISDICTION OF THE DEVELOPER.
17. EXISTING STORM DRAIN PIPES / CULVERTS (WHETHER TO BE CONNECTED TO, EXTENDED, ADJUSTED, DRAINED TO, OR JUST IN THE PROJECT VICINITY) MUST BE REPAIRED, AND/OR CLEANED TO MAKE THEM FUNCTIONAL AND ACCEPTABLE APPROVED BY THE CITY ENGINEER.
18. FOR ALL DRIVEWAY RECONSTRUCTION BEYOND RIGHT–OF–WAY, PROOF OF DRIVEWAY OWNER NOTIFICATION IS REQUIRED PRIOR TO CONSTRUCTION.
19. IN THE EVENT OF ANY DAMAGE TO ADJACENT STREETS CAUSED BY THE CONSTRUCTION, CONTRACTOR SHALL REMOVE AND REPLACE DAMAGES AS DIRECTED BY CITY ENGINEER.

NOTICE TO CONTRACTORS

CONTRACTOR AGREES THAT HE SHALL ASSUME COMPLETE AND SOLE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

UNDERGROUND STRUCTURES

ALL UNDERGROUND STRUCTURES OR UTILITIES REPORTED BY THE OWNER OR OTHERS AND THOSE SHOWN ON THE RECORDS EXAMINED ARE INDICATED WITH THEIR APPROXIMATE LOCATION AND EXTENT.

THE OWNER, BY ACCEPTING THESE PLANS OR PROCEEDING WITH THE IMPROVEMENTS PURSUANT THERETO AGREES TO ASSUME LIABILITY AND TO HOLD THE UNDERSIGNED HARMLESS FOR ANY DAMAGES RESULTING FROM THE EXISTENCE OF UNDERGROUND UTILITIES OR STRUCTURES NOT REPORTED TO THE UNDERSIGNED, NOT INDICATED ON THE PUBLIC RECORDS EXAMINED, OR LOCATED AT VARIANCE WITH THAT REPORTED OR SHOWN ON THE RECORDS EXAMINED.

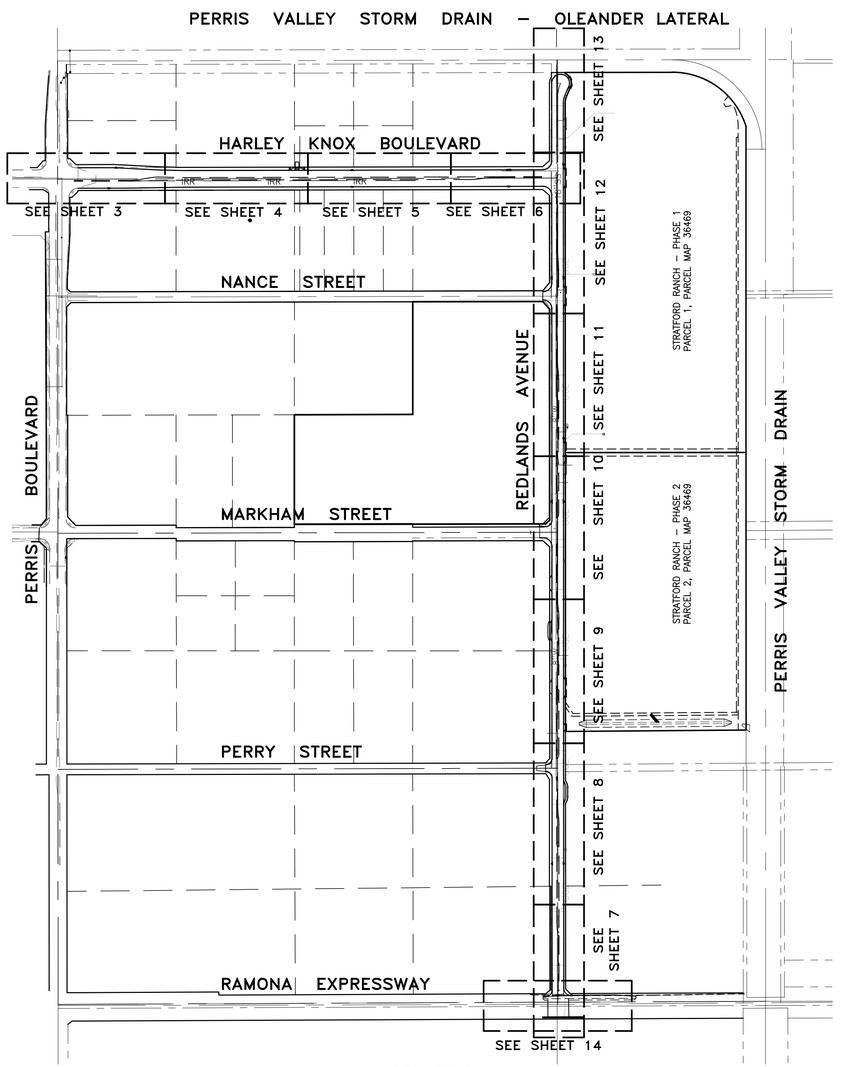
THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES SHOWN AND ANY OTHER UTILITIES OR STRUCTURES FOUND AT THE SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNERS OF THE UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK.

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE **CALIFORNIA COORDINATE SYSTEM ZONE 6, NAD 83, 1991.35 EPOCH** AS DETERMINED LOCALLY BY A LINE BETWEEN 40 Y (PID DX2103) AND SANTA FE (PID DX3719) BEING NORTH 80°43'18" WEST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY NATIONAL GEODETIC SURVEY(NGS)

DISTANCES SHOWN HEREON ARE GROUND DISTANCES UNLESS OTHERWISE NOTED. TO OBTAIN GRID DISTANCES MULTIPLY GROUND DISTANCES BY 0.99999207.

CALCULATIONS FROM GRID TO GROUND VALUES AND CONVERGANCE ANGLE FOR THIS SURVEY WERE MADE AT POINT #653 WITH COORDINATES OF N–2,252,331.06, E–6,265,288.22, USING AN ELEVATION OF 1454.22(NAVD88)



INDEX MAP

1" = 400'

200 0 400

BENCHMARK

USC & GS BENCHMARKS:

40Y (PID #DX2103) – 3" BRASS DISK, SET IN BOULDER.

STATION IS ABOUT 4–1/2 MILES W OF LAKEVIEW, ABOUT ONE MILE W OF THE PASS THROUGH THE BERNASCONI MOUNTAINS, ABOUT 200 FEET SW OF THE INTERSECTION OF BRADLEY ROAD AND WALNUT AVENUE, 70 FEET S OF CENTER LINE OF WALNUT AVENUE, IN A LARGE BOULDER, AND MARKED WITH A TEE. MARK IS A METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA STANDARD DISK STAMPED 40 Y 1931.

ELEV. = 1496.35, (NAVD 88) NGVD88 – 2.58 = NAVD29

N W WEBB E S

AS BUILT

THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

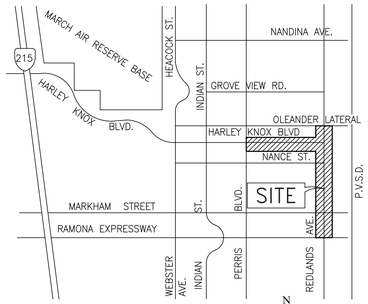
SIGNATURE DATE 05/19/2016

UTILITIES:

WATER:	EASTERN MUNICIPAL WATER DISTRICT	PHONE: (909) 820–3713
SEWER	EASTERN MUNICIPAL WATER DISTRICT	PHONE: (909) 820–2525
ELECTRIC:	SOUTHERN CALIFORNIA EDISON COMPANY	PHONE: (800) 655–4555
TELEPHONE:	GENERAL TELEPHONE COMPANY	PHONE: (800) 834–4966
GAS:	SOUTHERN CALIFORNIA GAS COMPANY	PHONE: (800) 427–2200

LEGEND:

**	CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
	REMOVE EXISTING AC PAVING
**	INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE
(XX.XX)	EXISTING ELEVATION
1475	EXISTING CONTOURS
FG	FINISHED GRADE
FL	FLOW LINE
FS	FINISH SURFACE
GB	GRADE BREAK
HP	HIGH POINT
INV	INVERT
LP	LOW POINT
PL	PROPERTY LINE
PI	POINT OF INTERSECTION
R/W	RIGHT OF WAY
STA	STATION
TC	TOP OF CURB
TYP	TYPICAL
VC	VERTICAL CURVE
AP	ANGLE POINT
BCR	BEGIN CURB RETURN
ECR	END CURB RETURN
PVI	POINT OF VERTICAL INTERSECTION
MH	MANHOLE
UGE	UNDERGROUND ELECTRIC



VICINITY MAP

T4S R3W SEC 5

NOT TO SCALE

N W WEBB E S

SHEET INDEX

CONSTRUCTION NOTES AND QUANTITY ESTIMATE

(1)	CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II (401,625 SF)	19,370 TONS AC 22,310 CY BASE	**
(2)	CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.) 122,134 SF	3,020 CY CONC. 6,020 CY BASE	**
(3)	CONSTRUCT TYPE "A–8" CURB & GUTTER PER RIV. CO. STD. NO. 201	15,120	LF
(4)	CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204	13,325	SF
(5)	CONSTRUCT COMMERCIAL DRIVE PER RIV. CO. STD. NO. 207A	4,550	LF
(6)	CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401	30,700	LF
(7)	CONSTRUCT CURB RAMP PER RIV. CO. STD. NO. 403, CASE A	18	EA
(8)	COORD UNDERGROUNDING/RELOCATION OF PP & GUY WIRE – BY UTILITY COMPANY	5	EA
(9)	RELOCATE EX. UTILITY RISER – BY UTILITY COMPANY	16	EA
(10)	REMOVE AC PAVEMENT AND DISPOSE OF LEGALLY	1,150	SF
(11)	SAWCUT & JOIN EX. A.C. PAVEMENT PER DETAIL ON SHEET 2	700	LF
(12)	RELOCATE	4	EA
(13)	ADJUST TO GRADE	19	EA
(14)	PROTECT IN PLACE	–	–
(15)	INSTALL 3" AC OVER 95% COMPACTED NATIVE	1,455	SF
(16)	REMOVE EX. FENCE	1,900	LF
(17)	CONSTRUCT CROSS GUTTER PER RIV. CO. STD. NO. 209	1,425	SF
(18)	CONSTRUCT 6" TYPE "D–1" CURB PER RIV. CO. STD. NO. 203	–	LF
(19)	0.15' GRIND AND OVERLAY	3,550	SF
(20)	INSTALL 48" RCP (D–LOAD PER PLAN)	280	LF
(21)	INSTALL 36" RCP (D–LOAD PER PLAN)	860	LF
(22)	INSTALL 24" RCP (D–LOAD PER PLAN)	2,110	LF
(23)	INSTALL 18" RCP (D–LOAD PER PLAN)	560	LF
(24)	CONSTRUCT JUNCTION STRUCTURE NO 2 PER RCFC&WCD STD. JS227	6	EA
(25)	CONSTRUCT JUNCTION STRUCTURE NO 3 PER RCFC&WCD STD. JS228	1	EA
(26)	CONSTRUCT JUNCTION STRUCTURE NO 4 PER RCFC&WCD STD. JS229	1	EA
(27)	CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300	17	EA
(28)	CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311	17	EA
(29)	CONSTRUCT MANHOLE NO.1 PER RFC&WCD STD. MH251	5	EA
(30)	CONSTRUCT MANHOLE NO.2 PER RFC&WCD STD. MH252	2	EA
(31)	CONSTRUCT MANHOLE NO.4 PER RFC&WCD STD. MH254	4	EA
(32)	CONSTRUCT DRAINAGE INLET TYPE G3 PER CALTRANS PLAN D73, AND DETAIL ON SHEET 2	1	EA
(33)	REMOVE CONCRETE BULKHEAD	1	EA
(34)	INSTALL 12" DIA. HDPE N–12 STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)	190	LF
(35)	INSTALL 18" DRAIN BASIN ("NYLOPLAST" OR EQUAL) WITH DOME GRATE	6	EA
(36)	REMOVE BACKFLOW AND SERVICE. COORDINATE WITH EMWD	1	EA
(37)	CONSTRUCT 8" THICK CONCRETE CLASS 560–C–3250; "B" AGGREGATE GRADATION	4	EA
(38)	CONSTRUCT BUS TURNOUT PER RIV. CO. STD. NO. 814	2	EA
(39)	INSTALL 48" CIPCD PER MANUFACTURES SPECS	280	LF
(40)	INSTALL 36" CIPCD PER MANUFACTURES SPECS	860	LF
(41)	INSTALL 24" CIPCD PER MANUFACTURES SPECS	1,300	LF
(42)	INSTALL 6" SLURRY BACKFILL (2 SACK)	395	LF
(43)	INSTALL CONCRETE COLLAR PER RFC&WCD STD. M803	1	EA
(44)	INSTALL 24" CMP HEL–COR PIPE ("CONTECH" OR APPROVED EQUAL)	100	LF
(45)	INSTALL 24" FLARED END SECTION ("CONTECH" OR APPROVED EQUAL)	2	EA
(46)	CONSTRUCT CONCRETE BULKHEAD	1	EA
(47)	CONSTRUCT MODIFIED GRATING CATCH BASIN PER SPPWC STD 303–3 AND DETAIL ON SHEET 16	1	EA
(48)	CONSTRUCT LOCAL DEPRESSION PER SSPWC STD 313–3 CASE C	1	EA

THE QUANTITY ESTIMATE SHOWN HEREON IS FOR THE USE OF GOVERNING AGENCIES IN DETERMINING BOND AMOUNT AND/OR FEES AND IS NOT TO BE USED FOR BID PURPOSES.

** SEE GENERAL NOTE NO. 9

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1–800–227–2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE: WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

THE PRIVATE ENGINEER SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY AND ACCEPTABILITY OF THE DESIGN HEREON. IN THE EVENT OF DISCREPANCIES ARISING AFTER CITY APPROVAL OR DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY.

MARK	BY	DATE	REVISIONS	APPR.	DATE
2	DJ	5/29/15	CATCH BASIN REVISED PER FIELD CONDITIONS		
1	DJ	3/5/15	ADDED CONSTRUCTION NOTE		
			ENGINEER		CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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

UNDER THE SUPERVISION OF:
D.J. ARELLANO R.C.E. #C81988 1/12/2015 DATE

BENCHMARK: SEE HEREON

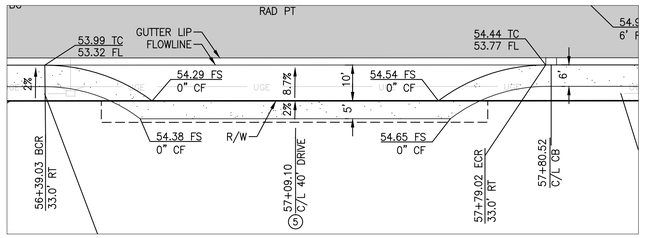
SCALE: H: AS SHOWN V: AS SHOWN

CITY OF PERRIS
AMENDED DPR NO. 11–12–0004
STRATFORD RANCH–PARCEL MAP 36469
STREET IMPROVEMENT PLAN
TITLE SHEET

FOR: IDI W.O. 2013–0239 CITY FILE NO. P8–1189

SHEET NO. 1 OF 23 SHEETS

G:\2013\13–0239\DRAWINGS\AS–BUILT\13–0239–C–ST–AB.DWG 5/18/2016 10:46 AM



DETAIL 1
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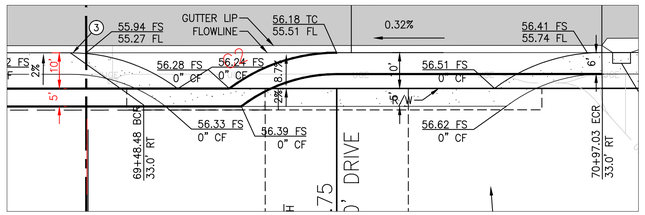

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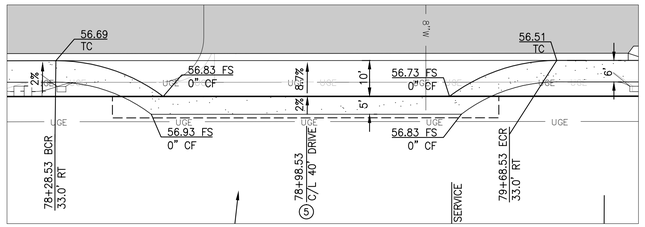

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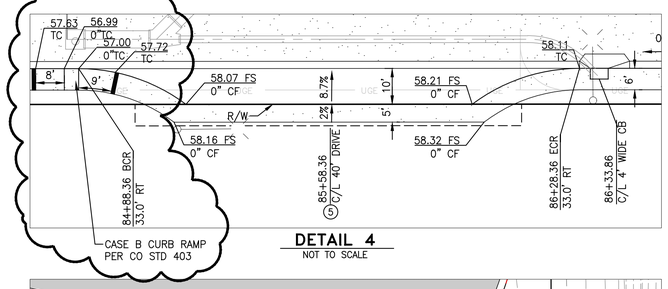

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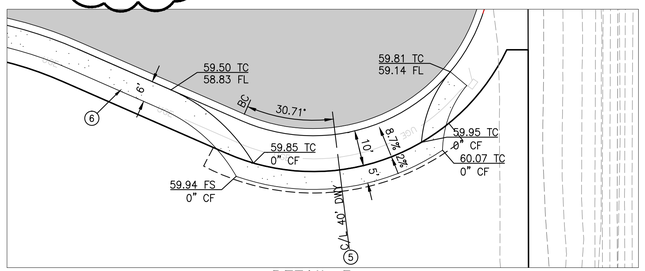

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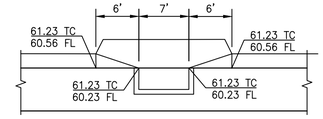

LOCAL DEPRESSION DETAIL
AT STA 94+90 HARLEY KNOX BLVD
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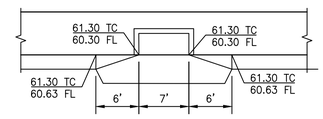

LOCAL DEPRESSION DETAIL
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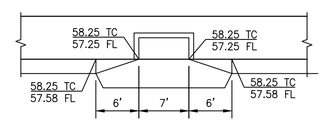

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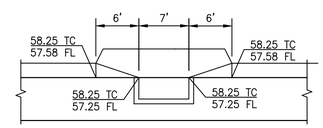

LOCAL DEPRESSION DETAIL
AT STA 108+50 HARLEY KNOX BLVD
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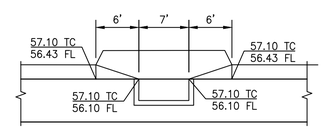

LOCAL DEPRESSION DETAIL
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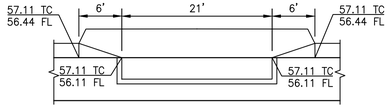

LOCAL DEPRESSION DETAIL
AT STA 117+25 HARLEY KNOX BLVD
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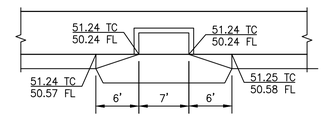

LOCAL DEPRESSION DETAIL
AT STA 47+25 REDLANDS AVE
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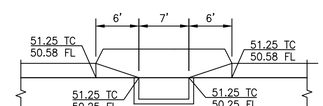

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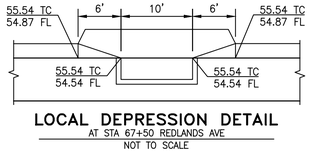

LOCAL DEPRESSION DETAIL
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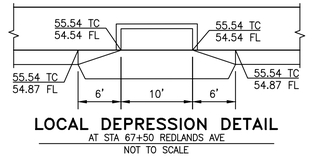

LOCAL DEPRESSION DETAIL
AT STA 67+50 REDLANDS AVE
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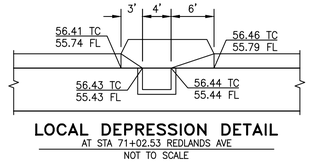

LOCAL DEPRESSION DETAIL
AT STA 71+02.53 REDLANDS AVE
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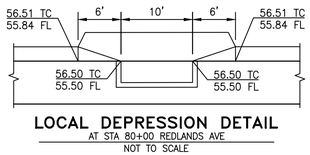

LOCAL DEPRESSION DETAIL
AT STA 80+00 REDLANDS AVE
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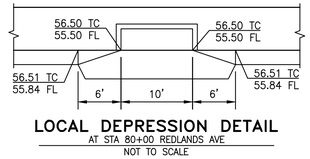

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AT STA 80+00 REDLANDS AVE
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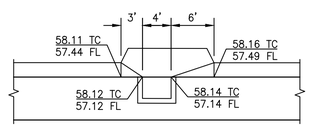

LOCAL DEPRESSION DETAIL
AT STA 86+33.86 REDLANDS AVE
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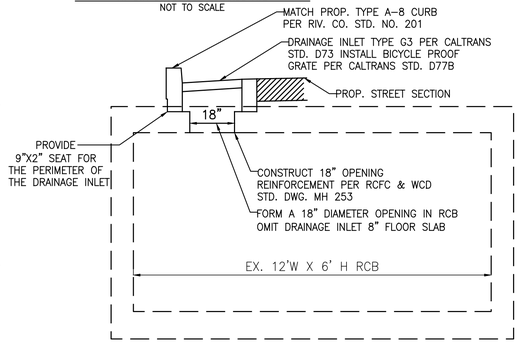

32 DROP INLET DETAIL
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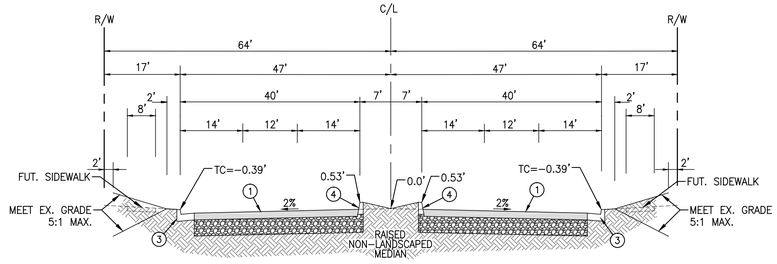
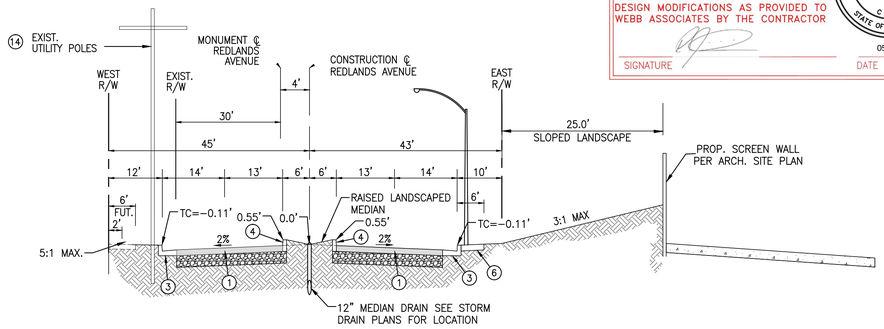
REDLANDS AVE. STA. 57+80.52

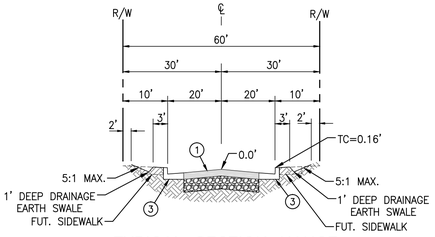


TYPICAL SECTION HARLEY KNOX BLVD.
NOT TO SCALE
T.I. = 11

AS BUILT
THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR
SIGNATURE
DATE 05/19/2016
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA



TYPICAL SECTION REDLANDS AVENUE



TYPICAL SECTION NANCE STREET & PERRY STREET
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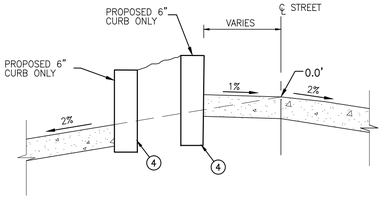
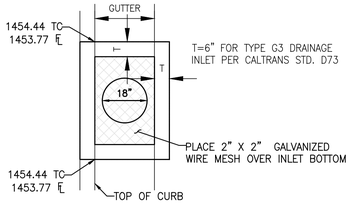
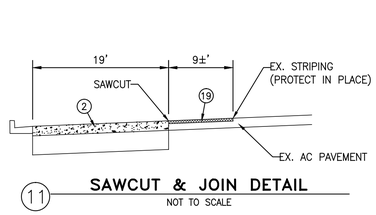


LEFT TURN POCKET PAVING DETAIL
NOT TO SCALE





11 SAWCUT & JOIN DETAIL
NOT TO SCALE

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
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MARK	BY	DATE	REVISIONS	APPR.	DATE
3	DJ	5/4/15	REVISE CURB RAMP TO CO STD. 403		
	ENGINEER			CITY	

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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

UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

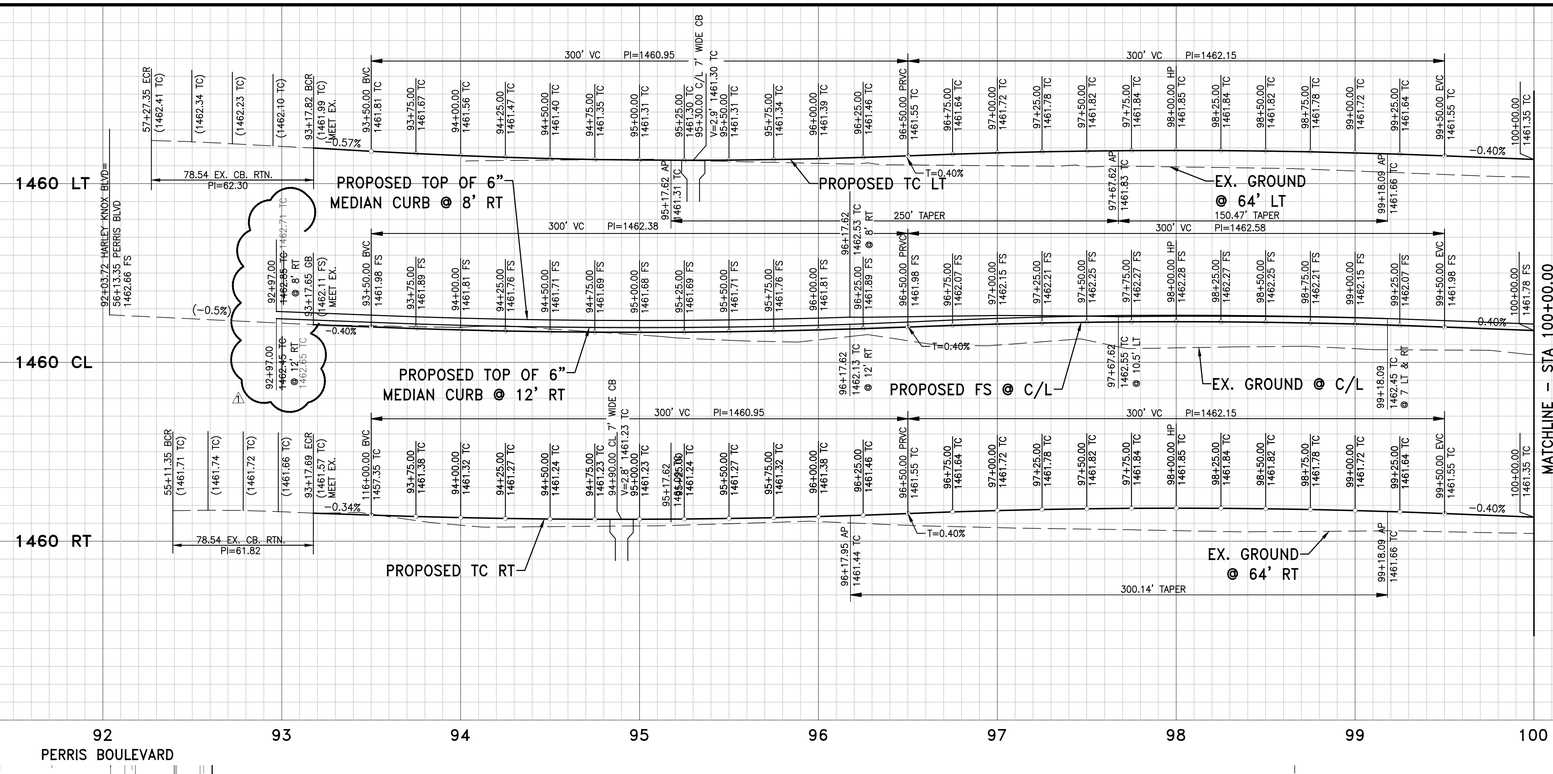
SCALE: H: AS SHOWN V: AS SHOWN

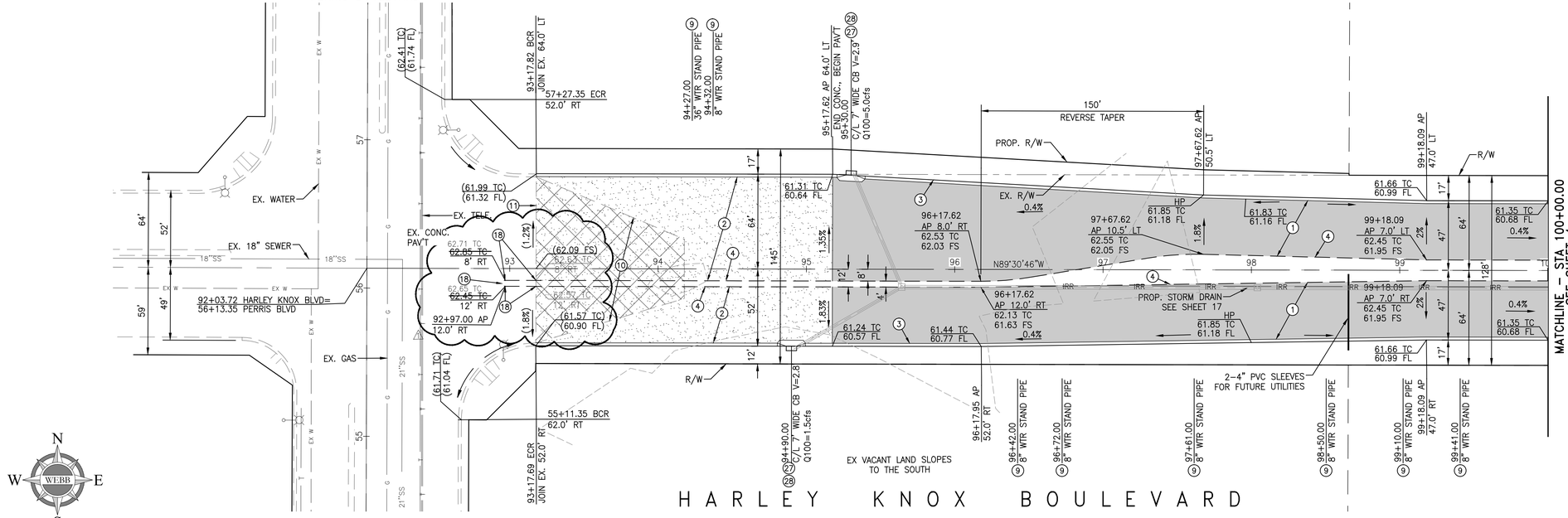
CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
SECTIONS AND DETAILS

FOR: IDI
W.O. 2013-0239
CITY FILE NO. P8-1189

SHEET NO. 2 OF 23 SHEETS

G:\2013\13-0239\DRAWINGS\AS-BUILT\13-0239-C-ST-AB.DWG 5/18/2016 8:29 AM





CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
2. CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
3. CONSTRUCT TYPE "A–8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
9. RELOCATE EX. UTILITY RISER – BY UTILITY COMPANY
10. REMOVE AC PAVEMENT AND DISPOSE OF LEGALLY
11. SAWCUT & JOIN EX. A.C. PAVEMENT PER DETAIL ON SHEET 2
18. CONSTRUCT 6" TYPE "D–1" CURB PER RIV. CO. STD. NO. 203
27. CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
28. CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311

AS BUILT

THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR

SIGNATURE

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

05/19/2016

DATE

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

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

DIGALERT
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TOLL FREE 1–800–227–2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
2	DJ	3/25/15	REVISE 8" D–1 CURB TO 6" D–1 CURB		
1	DJ	3/25/15	REVISE MEDIAN GRADES		

ENGINEER — CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
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FAX (951) 788–1256

UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

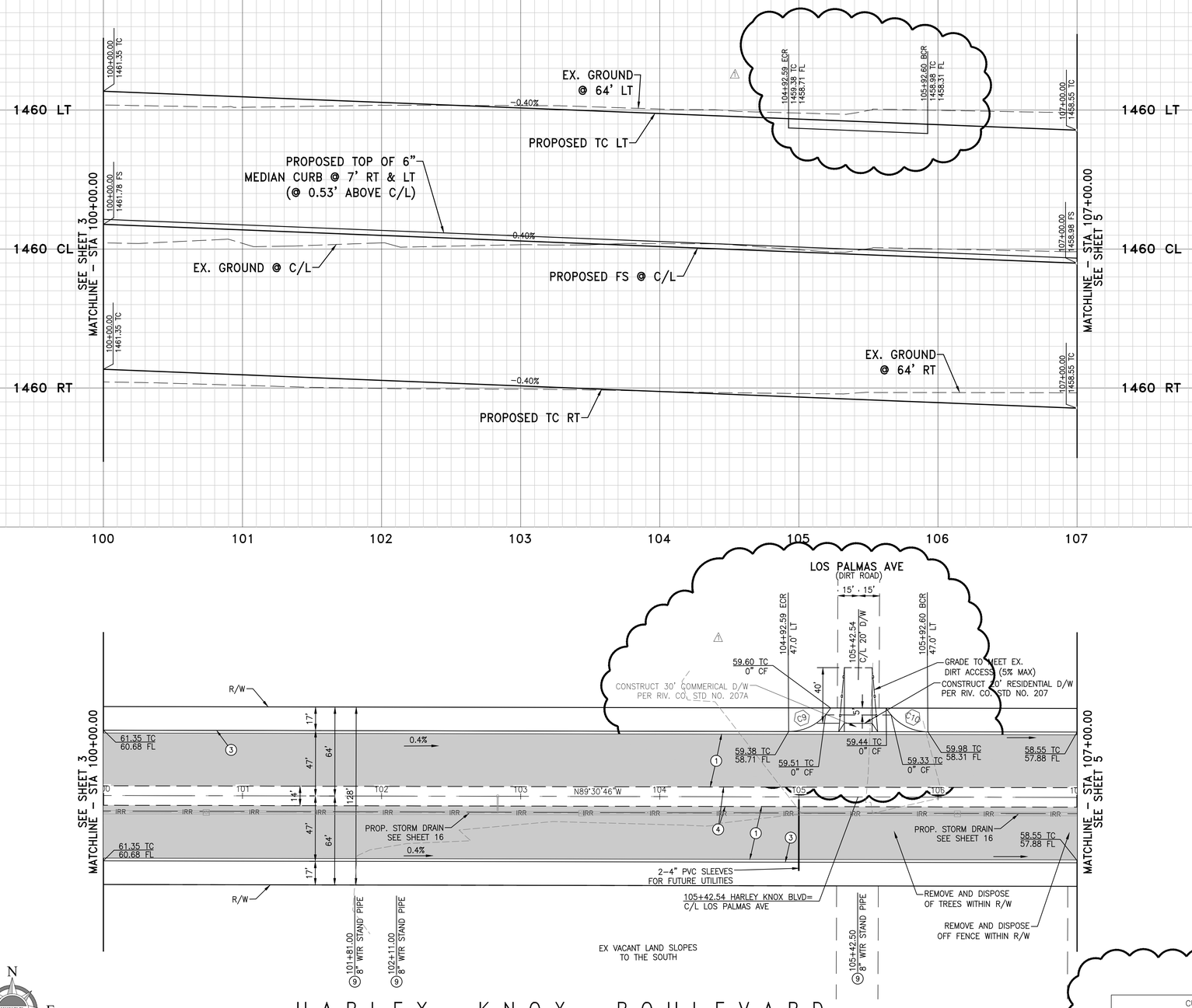
SCALE: H: AS SHOWN V: AS SHOWN

CITY OF PERRIS
AMENDED DPR NO. 11–12–0004
STRATFORD RANCH–PARCEL MAP 36469
HARLEY KNOX BOULEVARD
STA 92+03.72 TO STA 100+00.00

FOR: IDI
W.O. 2013–0239
CITY FILE NO. P8–1189

SHEET NO. 3 OF 23 SHEETS

G:\2013\13–0239\DRAWINGS\AS–BUILT\13–0239–C–ST–AB.DWG 5/18/2016 8:29 AM



H A R L E Y K N O X B O U L E V A R D

CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
3. CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
9. RELOCATE EX. UTILITY RISER – BY UTILITY COMPANY

CURVE TABLE				
#	LENGTH	RADIUS	DELTA	TANGENT
C9	36.07	35.00	059°03'01"	19.82
C10	36.07	35.00	059°03'01"	19.82

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

AS BUILT

THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE

05/19/2016
DATE

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

N W WEBB E S

1" = 40'
20 0 40

NOTE: CONTRACTOR TO BE FAMILIAR WITH SITE PRIOR TO CONSTRUCTION. ALL TREES, FENCES, BUILDINGS AND OTHER APPURTENANCES WITHIN THE PUBLIC RIGHT OF WAY TO BE REMOVED AND DISPOSED OF LEGALLY.

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
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MARK	BY	DATE	REVISIONS	APPR.	DATE
1	DJM	5/19/15	REVISE DRIVEWAY FROM STD 207 TO STD 207A		

ENGINEER — CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
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UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE: H: AS SHOWN V: AS SHOWN.

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
HARLEY KNOX BOULEVARD
STA 100+00.00 TO STA 107+00.00

FOR: IDI
W.O. 2013-0239
CITY FILE NO. P8-1189

SHEET NO. 4 OF 23 SHEETS

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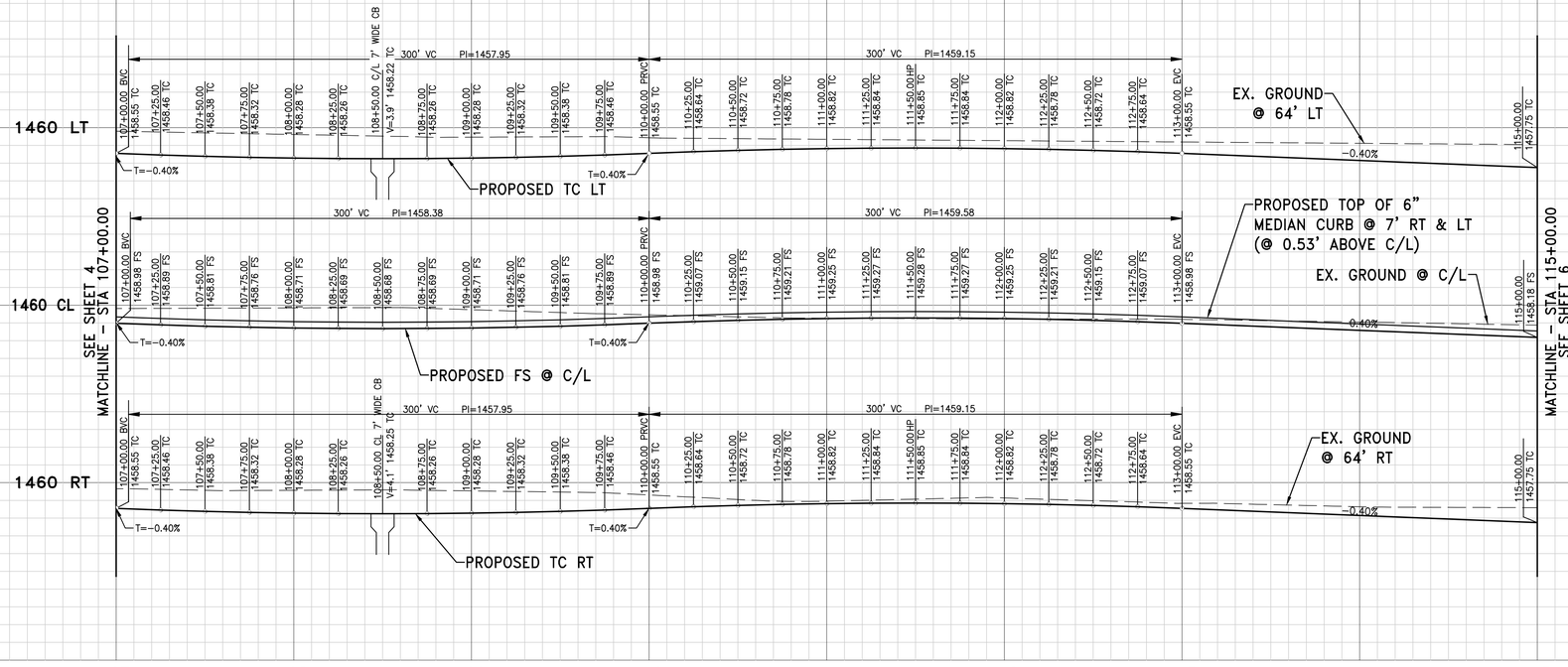

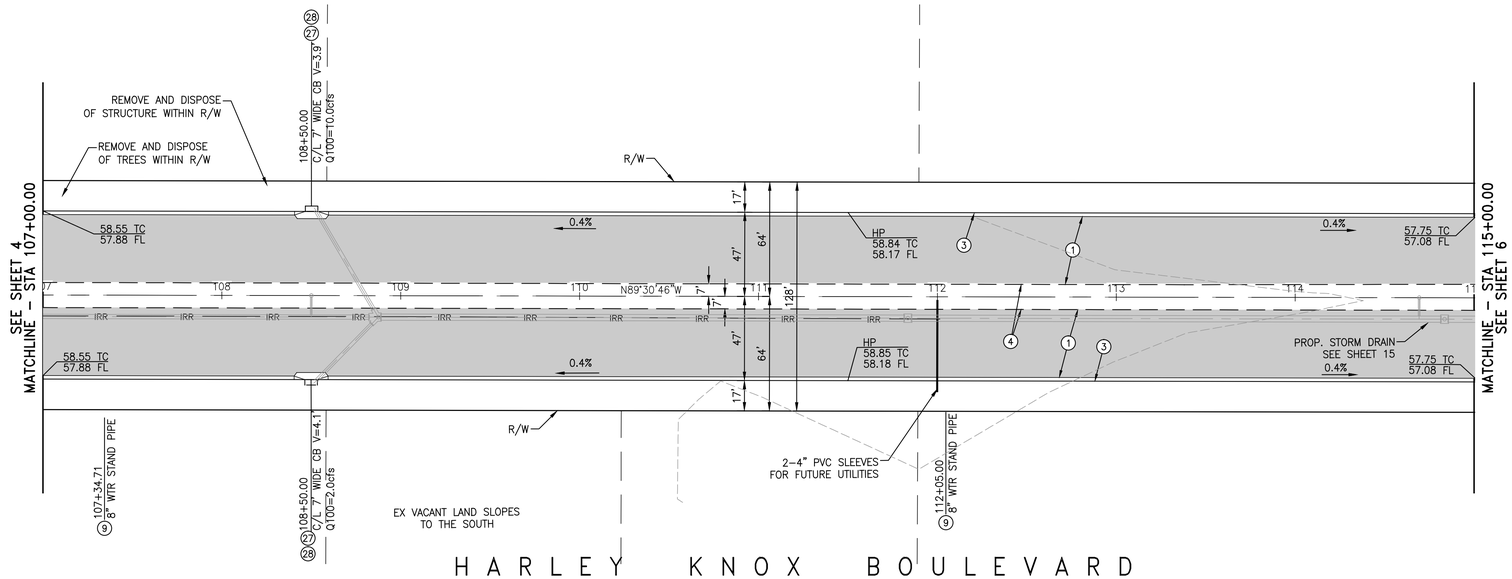

CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
3. CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
9. RELOCATE EX. UTILITY RISER – BY UTILITY COMPANY
27. CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
28. CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311

AS BUILT

THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE

05/19/2016
DATE

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

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

N W WEBB E S

1" = 40'
20 0 40

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER			CITY	

CITY OF PERRIS
APPROVED BY:

CITY ENGINEER

DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
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UNDER THE SUPERVISION OF:

D.J. ARELLANO R.C.E. #C81988 1/12/2015 DATE

BENCHMARK: SEE SHEET 1

SCALE: H: AS SHOWN V: AS SHOWN

FOR: IDI

W.O. 2013-0239

CITY FILE NO. P8-1189

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
HARLEY KNOX BOULEVARD
STA 107+00.00 TO STA 115+00.00

SHEET NO. 5 OF 23 SHEETS

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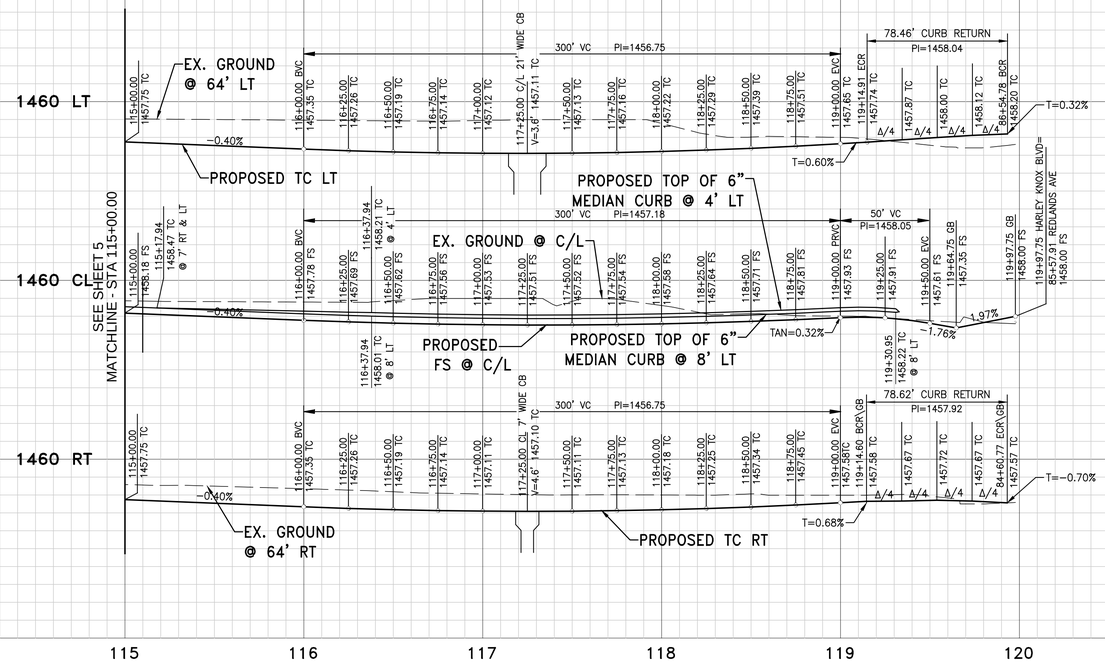

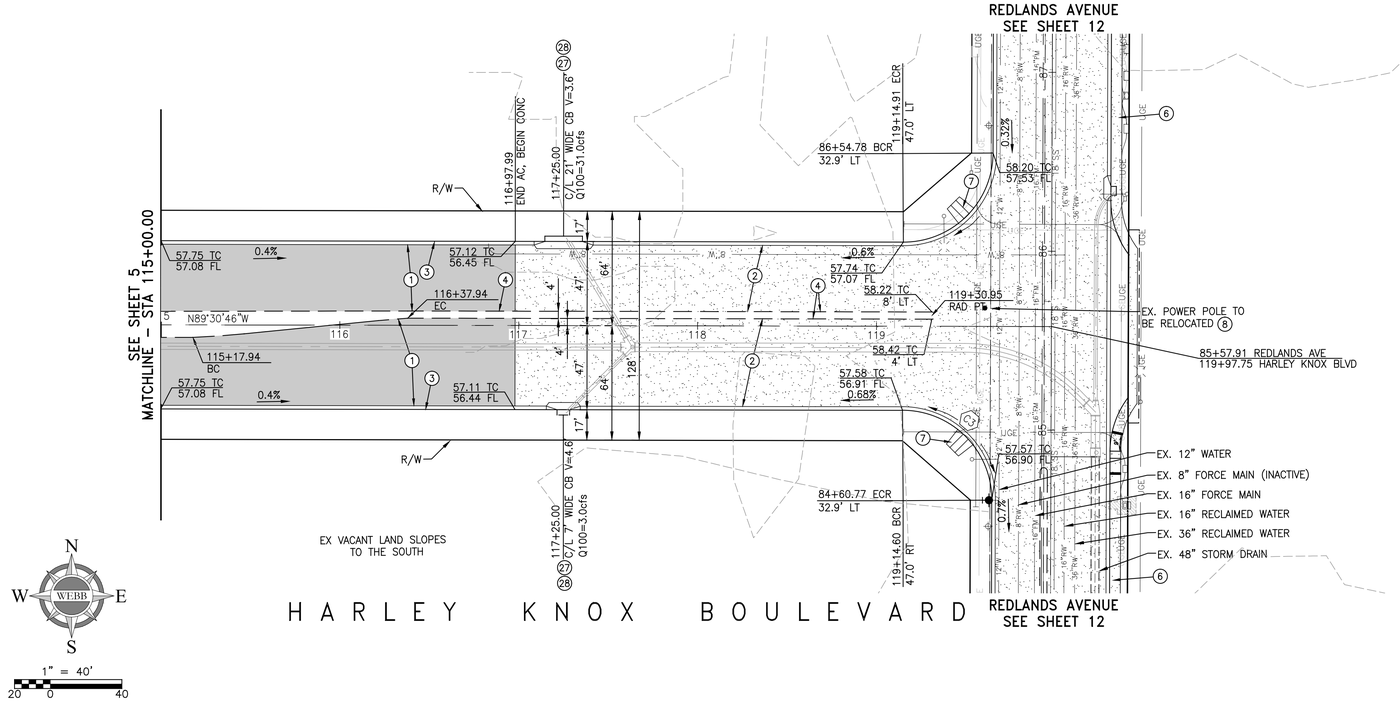

CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
2. CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
3. CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
6. CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401
7. CONSTRUCT CURB RAMP PER RIV. CO. STD. NO. 403, CASE A
8. COORD UNDERGROUNDING/RELOCATION OF PP & GUY WIRE - BY UTILITY COMPANY
27. CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
28. CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311

CURVE TABLE				
#	LENGTH	RADIUS	DELTA	TANGENT
C1	78.62	50.00	090°05'38"	50.08
C2	78.46	50.00	089°54'22"	49.92
C3	78.62	50.00	090°05'24"	50.08

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

AS BUILT

THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE DATE 05/19/2016

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

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL - ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK: SEE SHEET 1

SCALE: H: AS SHOWN V: AS SHOWN

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
HARLEY KNOX BOULEVARD
STA 115+00.00 TO STA 119+93.75

FOR: IDI | W.O. 2013-0239 | CITY FILE NO. P8-1189

SHEET NO. 6 OF 23 SHEETS

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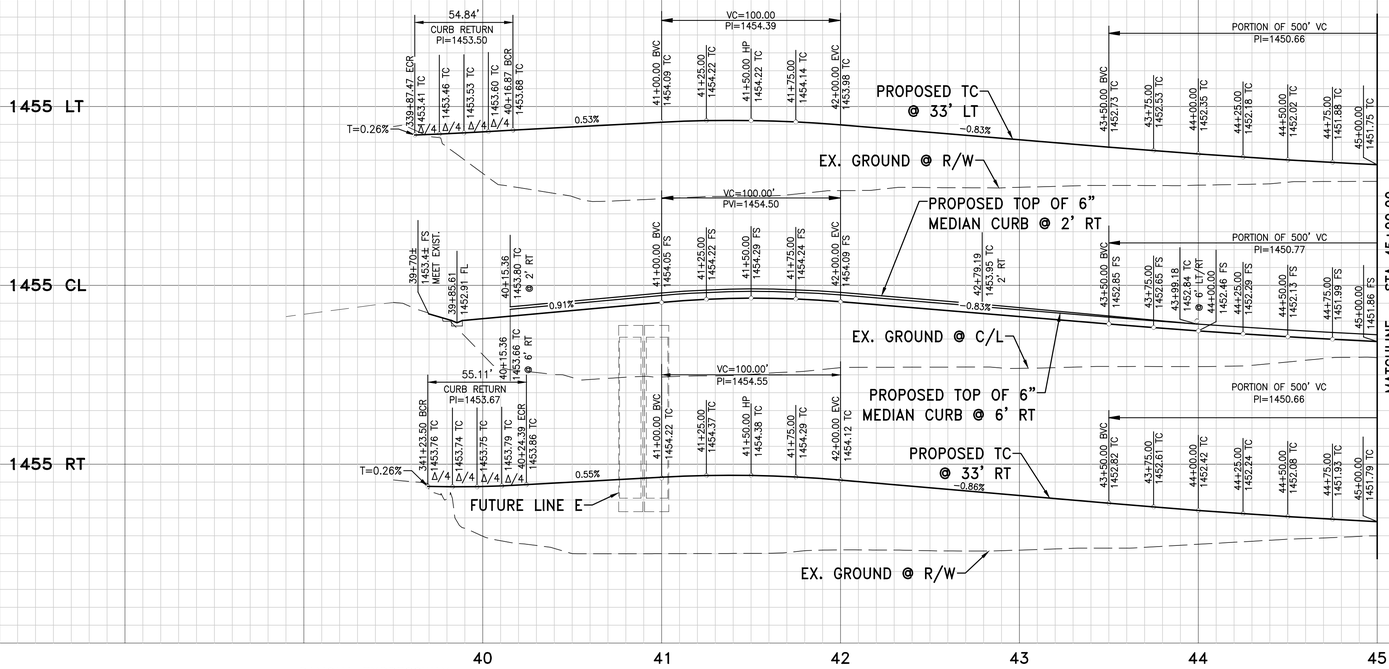
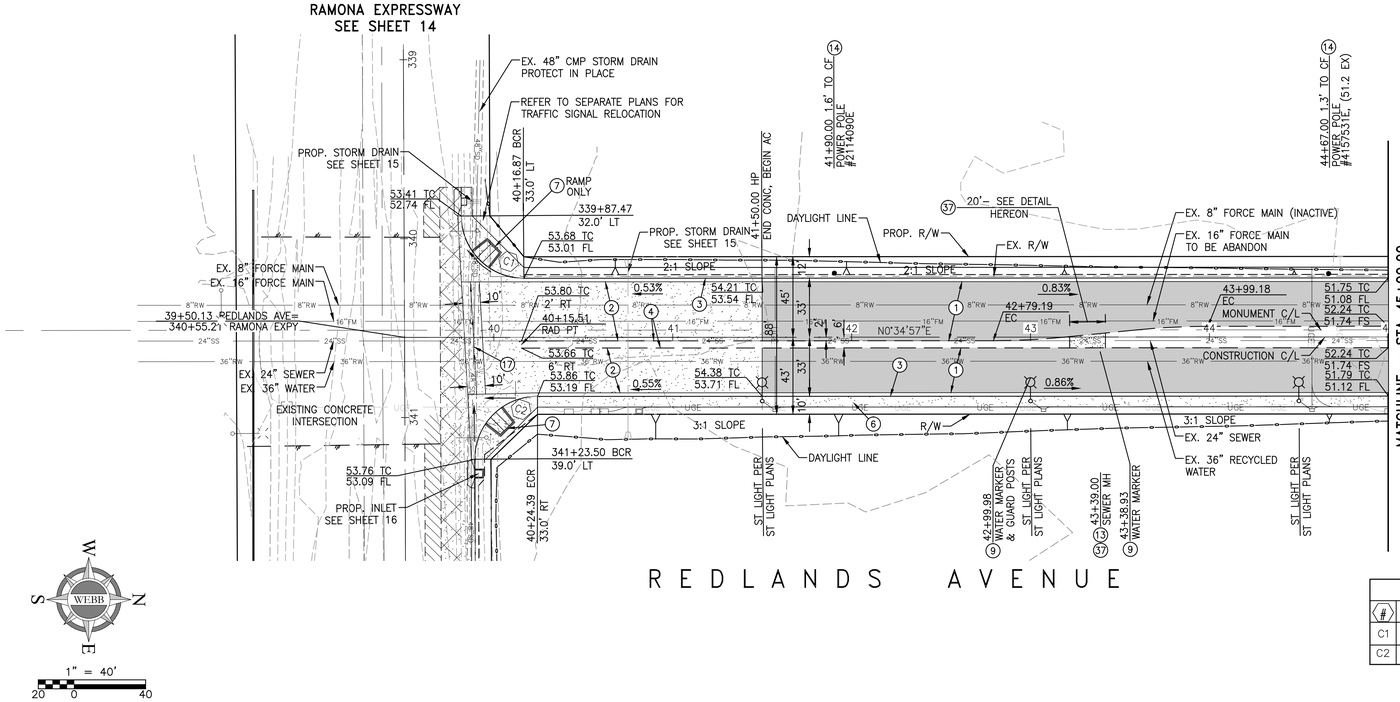
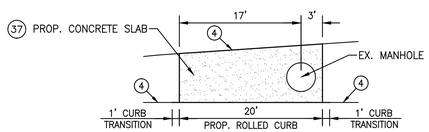




CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
2. CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
3. CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
6. CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401
7. CONSTRUCT CURB RAMP PER RIV. CO. STD. NO. 403, CASE A
9. RELOCATE EX. UTILITY RISER - BY UTILITY COMPANY
11. SAWCUT & JOIN EX. A.C. PAVEMENT PER DETAIL ON SHEET 2
13. ADJUST TO GRADE
14. PROTECT IN PLACE
17. CONSTRUCT CROSS GUTTER PER RIV. CO. STD. NO. 209
37. CONSTRUCT 8" THICK CONCRETE CLASS 560-C-3250; "B" AGGREGATE GRADATION



SEWER MANHOLE MEDIAN DETAIL

STATION 43+39.00
NOT TO SCALE

CURVE TABLE				
#	LENGTH	RADIUS	DELTA	TANGENT
C1	54.84	35.00	89°46'36"	34.86
C2	55.11	35.00	90°13'21"	35.14

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

AS BUILT

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REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE

05/19/2016
DATE

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

1" = 40'
20 0 40

DIGALERT
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MARK	BY	DATE	REVISIONS	APPR.	DATE

ENGINEER | CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL - ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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UNDER THE SUPERVISION OF:
D.J. ARELLANO R.C.E. #C81988 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE:
H: AS SHOWN V: AS SHOWN

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
REDLANDS AVENUE
STA 39+50.13 TO STA 45+00.00

FOR: IDI
W.O. 2013-0239
CITY FILE NO. P8-1189

SHEET NO. 7 OF 23 SHEETS

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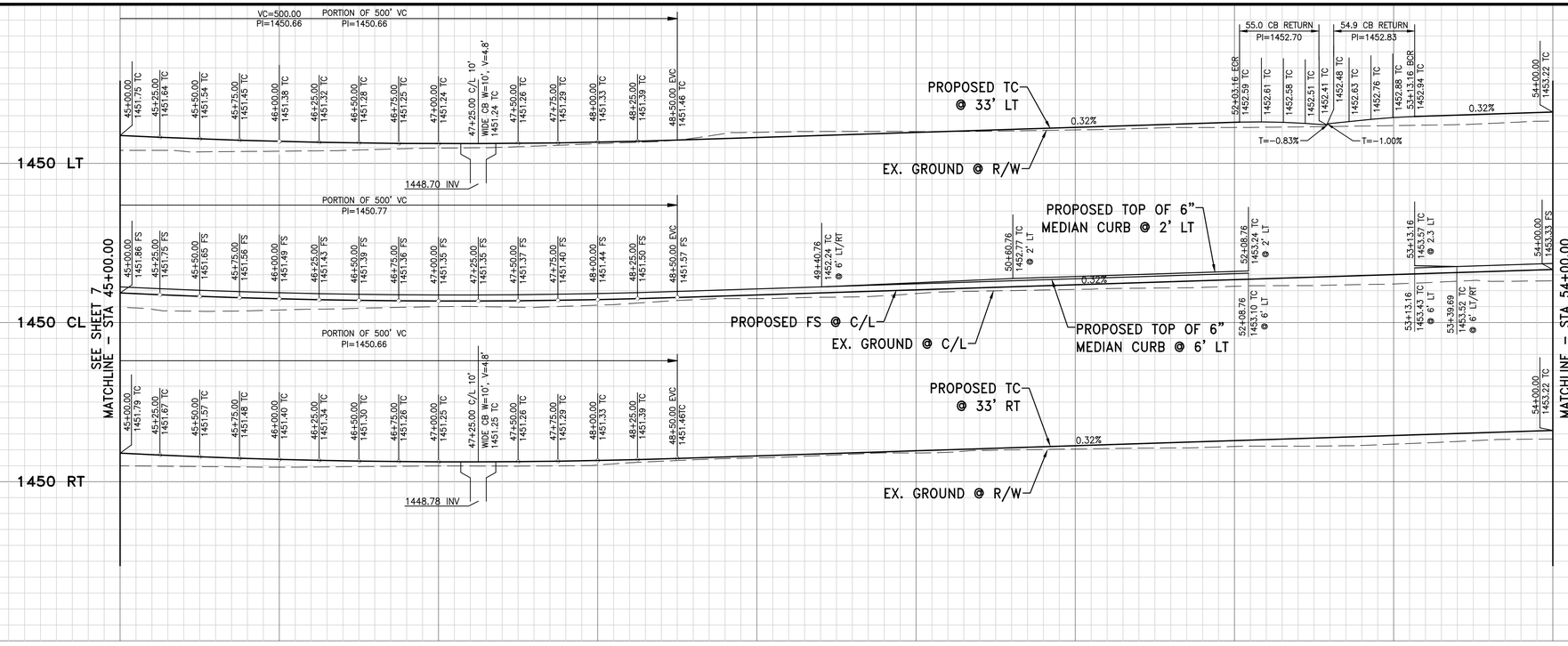
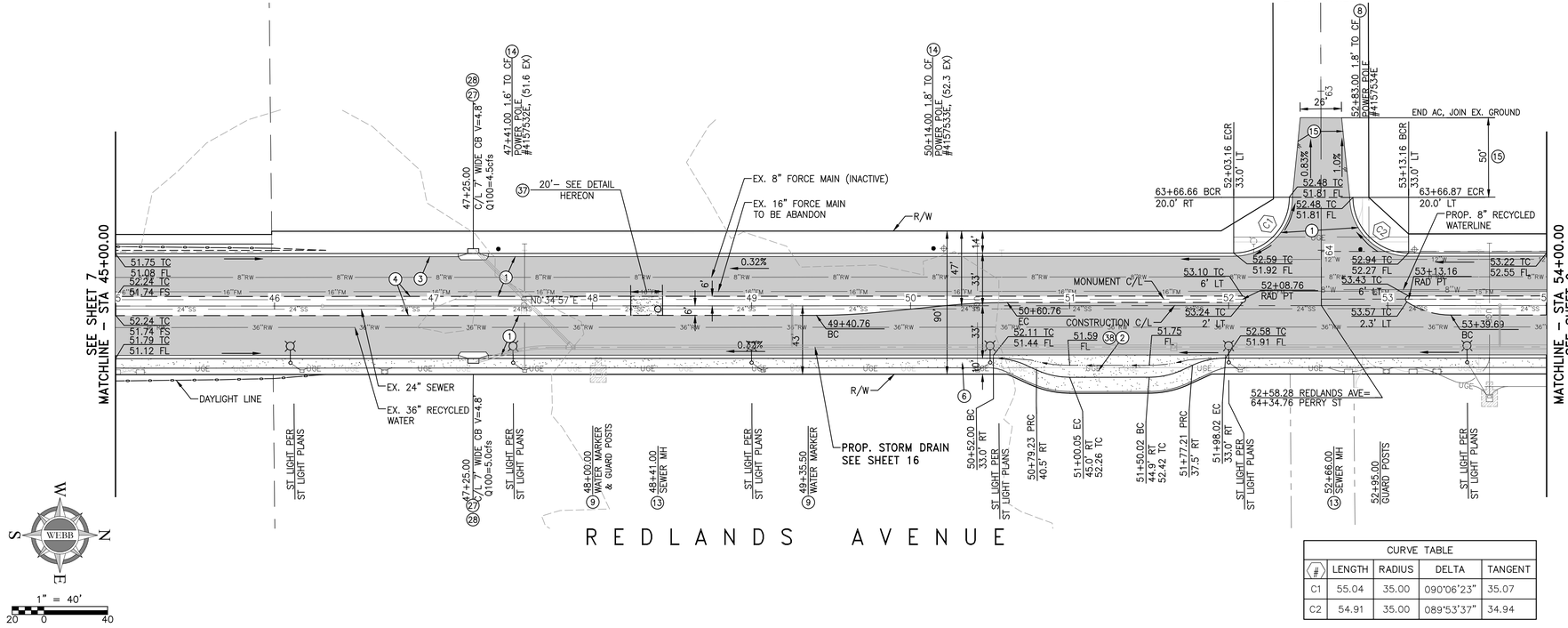
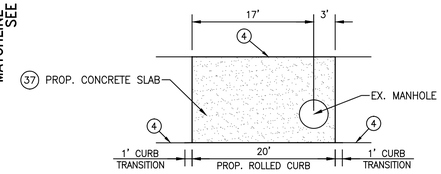




CURVE TABLE				
#	LENGTH	RADIUS	DELTA	TANGENT
C1	55.04	35.00	090°06'23"	35.07
C2	54.91	35.00	089°53'37"	34.94

CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
2. CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
3. CONSTRUCT TYPE "A–8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
6. CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401
8. COORD UNDERGROUNDING/RELOCATION OF PP & GUY WIRE – BY UTILITY COMPANY
9. RELOCATE EX. UTILITY RISER – BY UTILITY COMPANY
13. ADJUST TO GRADE
14. PROTECT IN PLACE
15. INSTALL 3" AC OVER 95% COMPACTED NATIVE
27. CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
28. CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311
37. CONSTRUCT 8" THICK CONCRETE CLASS 560–C–3250; "B" AGGREGATE GRADATION
38. CONSTRUCT BUS TURNOUT PER RIV. CO. STD. NO. 814



SEWER MANHOLE MEDIAN DETAIL

STATION 48+41.00
NOT TO SCALE

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

AS BUILT

THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE DATE 05/19/2016

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

1" = 40'
20 0 40

DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1–800–227–2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
				ENGINEER	CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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

UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

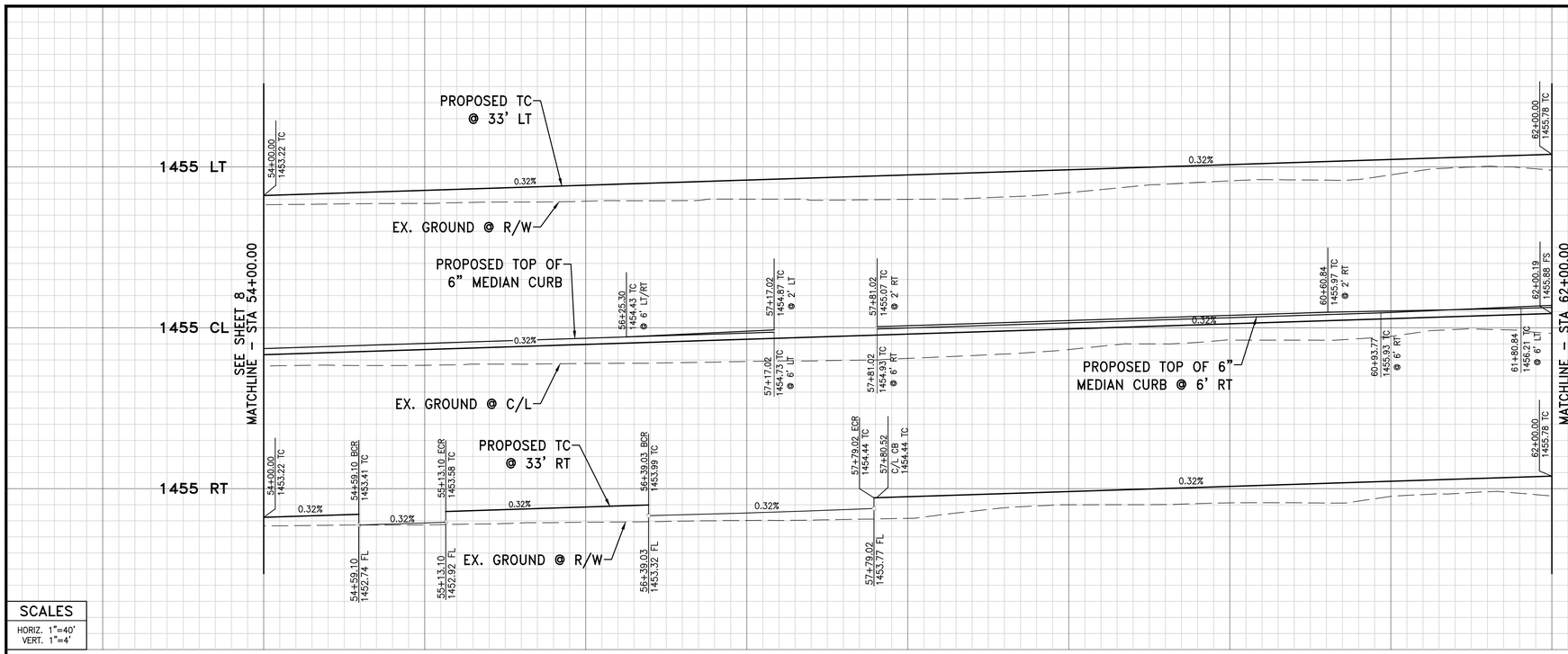
SCALE: H: AS SHOWN V: AS SHOWN

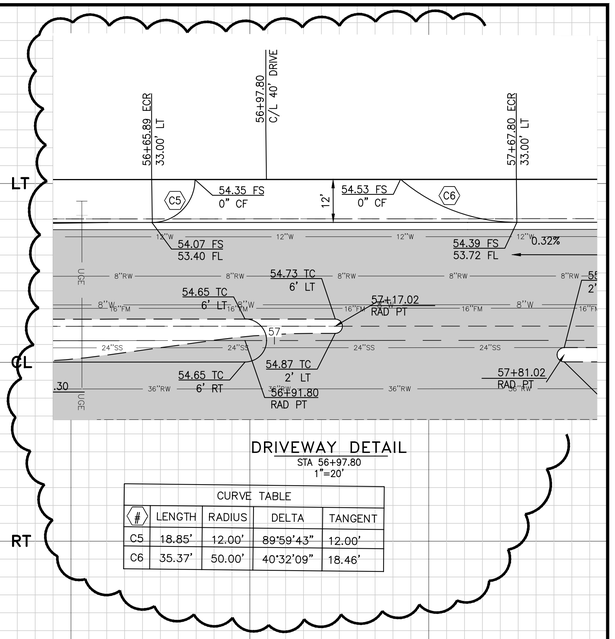
CITY OF PERRIS
AMENDED DPR NO. 11–12–0004
STRATFORD RANCH–PARCEL MAP 36469
REDLANDS AVENUE
STA 45+00.00 TO STA 54+00.00

FOR: IDI
W.O. 2013–0239
CITY FILE NO. P8–1189

SHEET NO. 8 OF 23 SHEETS

G:\2013\13–0239\DRAWINGS\AS–BUILT\13–0239–C–ST–AB.DWG 5/18/2016 8:30 AM





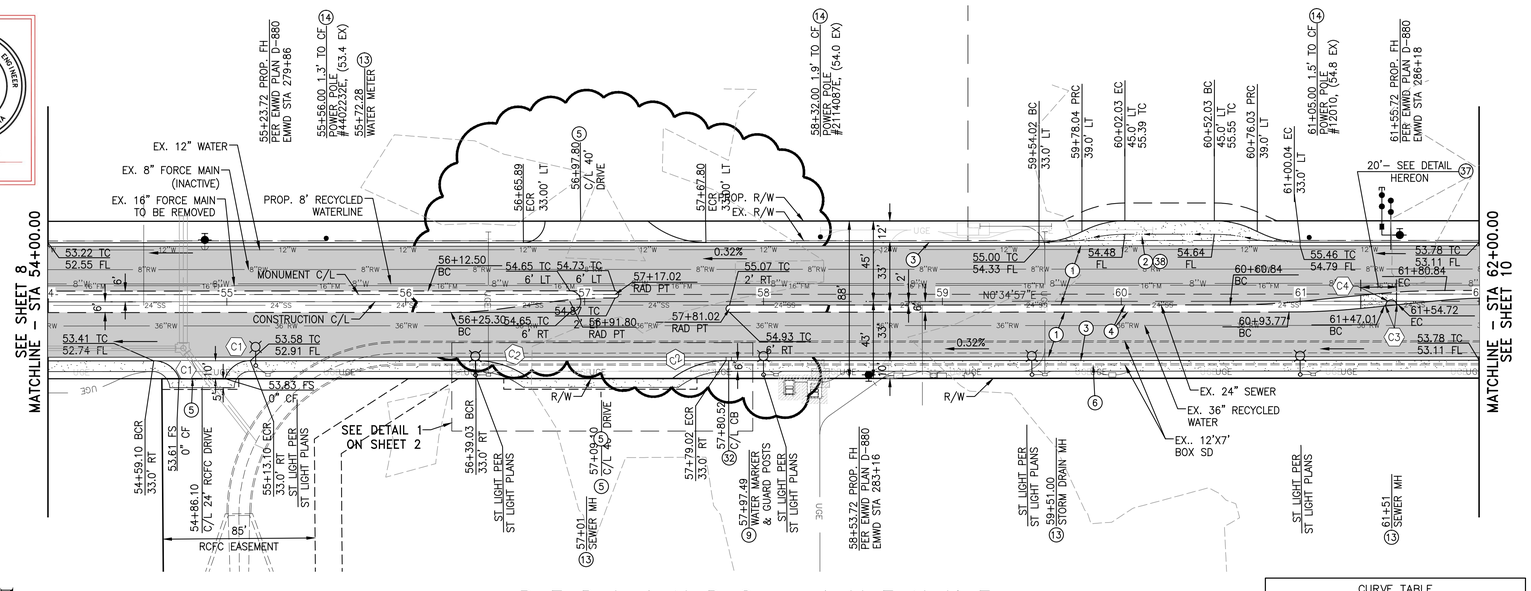
DRIVEWAY DETAIL

STA 56+97.80
1"=20'

CURVE TABLE				
#	LENGTH	RADIUS	DELTA	TANGENT
C5	18.85'	12.00'	89°59'43"	12.00'
C6	35.37'	50.00'	40°32'09"	18.46'

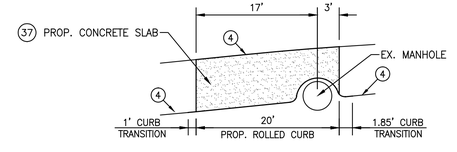
SCALES

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



CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
2. CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
3. CONSTRUCT TYPE "A–8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
5. CONSTRUCT COMMERCIAL DRIVE PER RIV. CO. STD. NO. 207A
6. CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401
9. RELOCATE EX. UTILITY RISER – BY UTILITY COMPANY
13. ADJUST TO GRADE
14. PROTECT IN PLACE
32. CONSTRUCT DRAINAGE INLET TYPE G3 PER CALTRANS PLAN D73, AND DETAIL ON SHEET 2
37. CONSTRUCT 8" THICK CONCRETE CLASS 560–C–3250; "B" AGGREGATE GRADATION
38. CONSTRUCT BUS TURNOUT PER RIV. CO. STD. NO. 814



SEWER MANHOLE MEDIAN DETAIL

STATION 61+51.00
NOT TO SCALE

CURVE TABLE				
#	LENGTH	RADIUS	DELTA	TANGENT
C1	23.56	15.00	090°00'00"	15.00
C2	32.18	50.00	036°52'12"	16.67
C3	1.32	1.00	075°31'21"	0.77
C4	7.91	3.00	151°02'42"	11.62

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

AS BUILT

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REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE — DATE 05/19/2016

N
W WEBB E
S

1" = 40'
20 0 40

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MARK	BY	DATE	REVISIONS	APPR.	DATE
1	DJ	10/12/15	SHEET 9A SUPERCEDES SHEET 9		

ENGINEER — CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
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UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

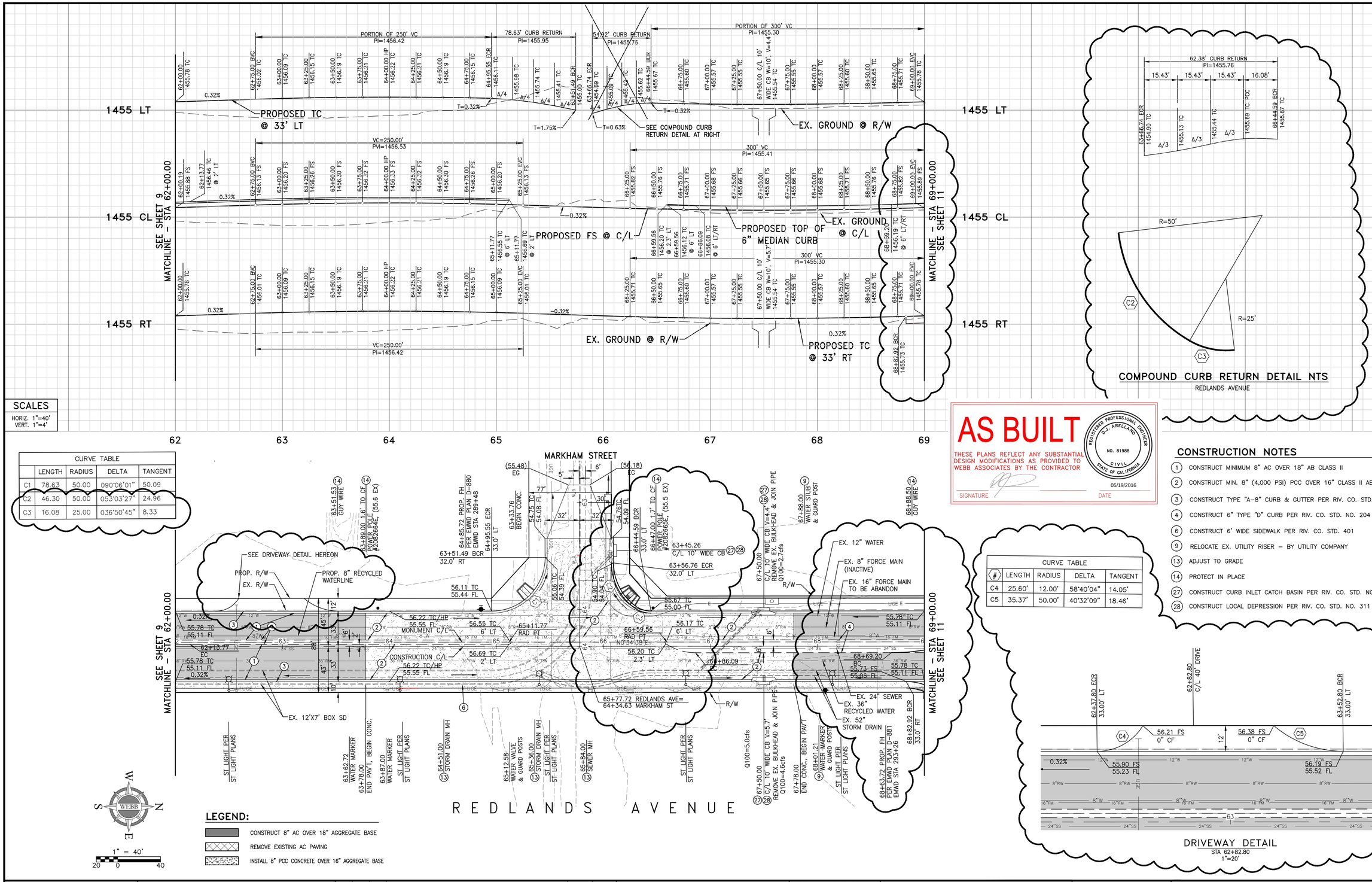
BENCHMARK:
SEE SHEET 1

SCALE: H: AS SHOWN V: AS SHOWN
FOR: IDI
W.O. 2013–0239
CITY FILE NO. P8–1189

CITY OF PERRIS
AMENDED DPR NO. 11–12–0004
STRATFORD RANCH–PARCEL MAP 36469
REDLANDS AVENUE
STA 54+00.00 TO STA 62+00.00

SHEET NO. 9A OF 23 SHEETS

G:\2013\13–0239\DRAWINGS\AS–BUILT\13–0239–C–ST–AB.DWG 5/18/2016 8:30 AM



COMPOUND CURB RETURN DETAIL NTS

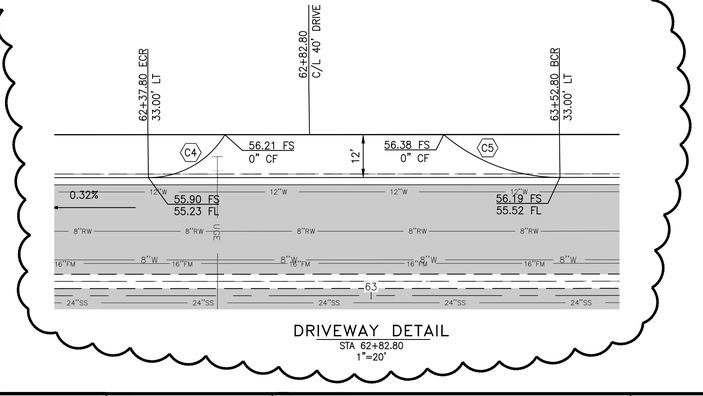
REDLANDS AVENUE

SCALES

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

CURVE TABLE				
	LENGTH	RADIUS	DELTA	TANGENT
C1	78.63	50.00	090°06'01"	50.09
C2	46.30	50.00	053°03'27"	24.96
C3	16.08	25.00	036°50'45"	8.33

CURVE TABLE				
(#)	LENGTH	RADIUS	DELTA	TANGENT
C4	25.60'	12.00'	58°40'04"	14.05'
C5	35.37'	50.00'	40°32'09"	18.46'



DRIVEWAY DETAIL
STA 62+82.80
1"=20'

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

1" = 40'
20 0 40

AS BUILT

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SIGNATURE — DATE 05/19/2016

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
2. CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
3. CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
6. CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401
9. RELOCATE EX. UTILITY RISER – BY UTILITY COMPANY
13. ADJUST TO GRADE
14. PROTECT IN PLACE
27. CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
28. CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
1	DJ	10/12/15	SHEET 10A SUPERCEDES SHEET 10		
	ENGINEER			CITY	

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER

ALBERT A. WEBB ASSOCIATES
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FAX (951) 788-1256

UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK: SEE SHEET 1

SCALE: H: AS SHOWN V: AS SHOWN

FOR: IDI

W.O. 2013-0239

CITY FILE NO. P8-1189

CITY OF PERRIS

AMENDED DPR NO. 11-12-0004

STRATFORD RANCH-PARCEL MAP 36469

REDLANDS AVENUE

STA 62+00.00 TO STA 70+00.00

SHEET NO. 10A OF 23 SHEETS

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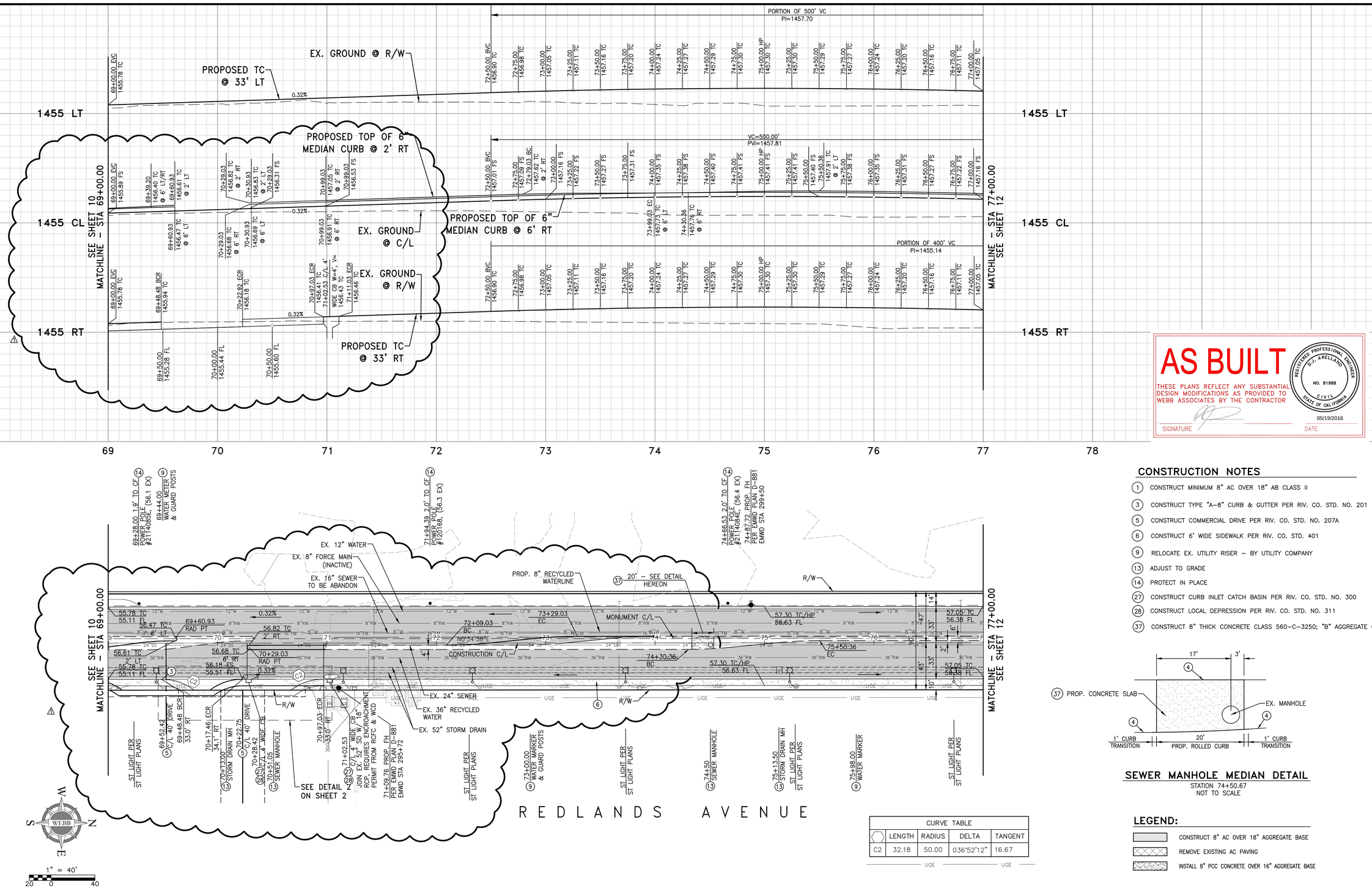

CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
3. CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
5. CONSTRUCT COMMERCIAL DRIVE PER RIV. CO. STD. NO. 207A
6. CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401
9. RELOCATE EX. UTILITY RISER - BY UTILITY COMPANY
13. ADJUST TO GRADE
14. PROTECT IN PLACE
27. CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
28. CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311
37. CONSTRUCT 8" THICK CONCRETE CLASS 560-C-3250; "B" AGGREGATE GRADATION

SEWER MANHOLE MEDIAN DETAIL

STATION 74+50.67
NOT TO SCALE

CURVE TABLE				
	LENGTH	RADIUS	DELTA	TANGENT
C2	32.18	50.00	036°52'12"	16.67

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

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

AS BUILT
THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR
SIGNATURE
DATE 05/19/2016

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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MARK	BY	DATE	REVISIONS	APPR.	DATE
1	DJM	7/1/15	REVISE DRIVEWAY AND CATCH BASIN LOCATIONS		

ENGINEER / CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL - ENGINEER

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
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PH. (951) 686-1070
FAX (951) 788-1256

UNDER THE SUPERVISION OF:
D.J. ARELLANO R.C.E. #C81988 1/12/2015 DATE

BENCHMARK: SEE SHEET 1

SCALE: H: AS SHOWN V: AS SHOWN

CITY OF PERRIS

AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
REDLANDS AVENUE
STA 70+00.00 TO STA 78+00.00

FOR: IDI | W.O. 2013-0239 | CITY FILE NO. P8-1189

SHEET NO. 11 OF 23 SHEETS

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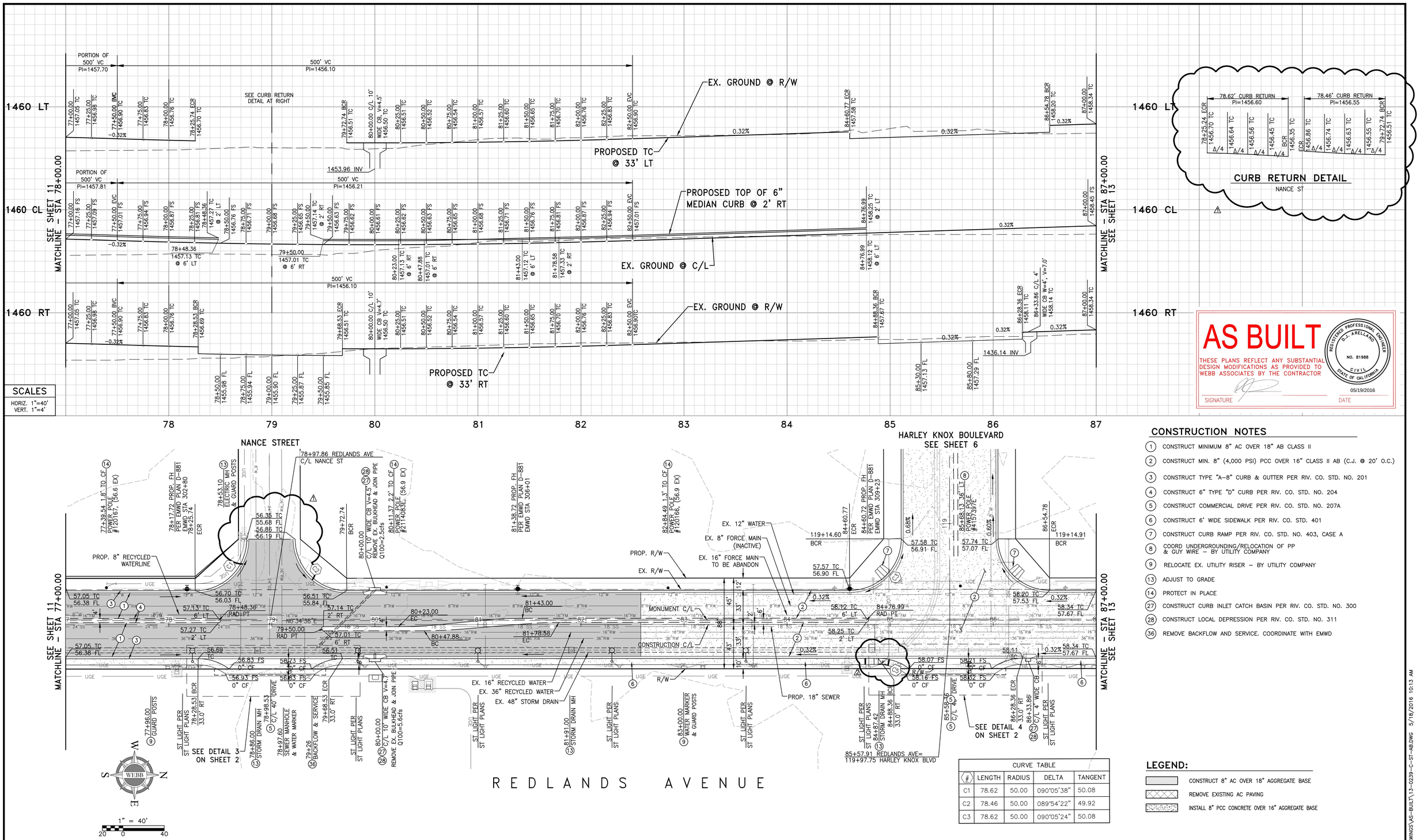

CURB RETURN DETAIL

NANCE ST

AS BUILT

THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE

05/19/2016
DATE

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

CURVE TABLE				
#	LENGTH	RADIUS	DELTA	TANGENT
C1	78.62	50.00	090°05'38"	50.08
C2	78.46	50.00	089°54'22"	49.92
C3	78.62	50.00	090°05'24"	50.08

CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
2. CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
3. CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
4. CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
5. CONSTRUCT COMMERCIAL DRIVE PER RIV. CO. STD. NO. 207A
6. CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. NO. 401
7. CONSTRUCT CURB RAMP PER RIV. CO. STD. NO. 403, CASE A
8. COORD UNDERGROUNDING/RELOCATION OF PP & GUY WIRE – BY UTILITY COMPANY
9. RELOCATE EX. UTILITY RISER – BY UTILITY COMPANY
13. ADJUST TO GRADE
14. PROTECT IN PLACE
27. CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
28. CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311
36. REMOVE BACKFLOW AND SERVICE. COORDINATE WITH EMWD

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

1" = 40'
20 0 40

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MARK	BY	DATE	REVISIONS	APPR.	DATE
				ENGINEER	CITY
2	DJ	5/4/15	REVISE CURB RAMP TO CO STD. 403		
1	DJ	4/7/15	REVISE CURB RETURN GRADES		

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE: H: AS SHOWN V: AS SHOWN

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
REDLANDS AVENUE
STA 78+00.00 TO STA 87+00.00

FOR: IDI
W.O. 2013-0239
CITY FILE NO. P8-1189

SHEET NO. 12 OF 23 SHEETS

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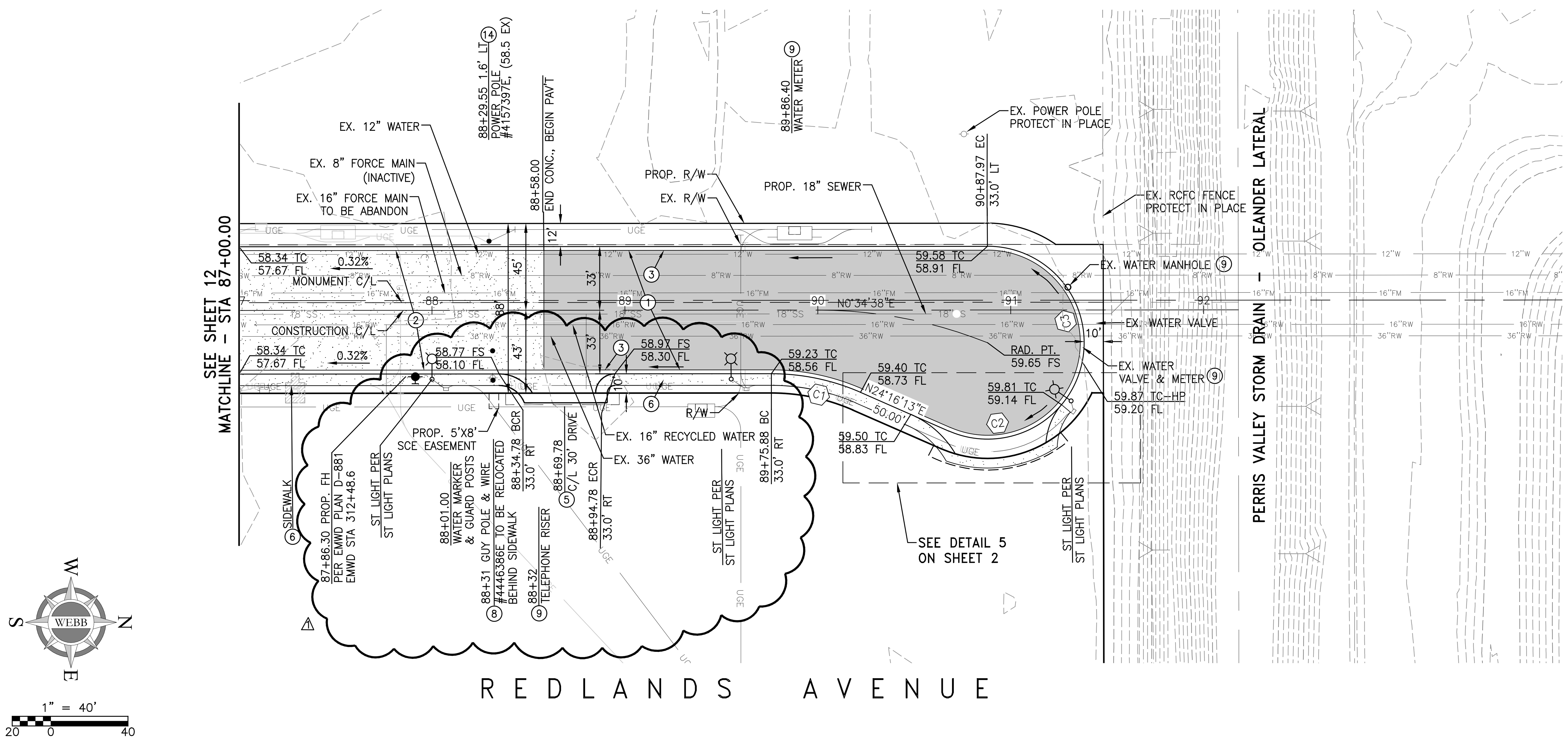

CONSTRUCTION NOTES

1. CONSTRUCT MINIMUM 8" AC OVER 18" AB CLASS II
2. CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
3. CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
6. CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401
8. COORD UNDERGROUNDING/RELOCATION OF PP & GUY WIRE - BY UTILITY COMPANY
9. RELOCATE EX. UTILITY RISER - BY UTILITY COMPANY
14. PROTECT IN PLACE

AS BUILT

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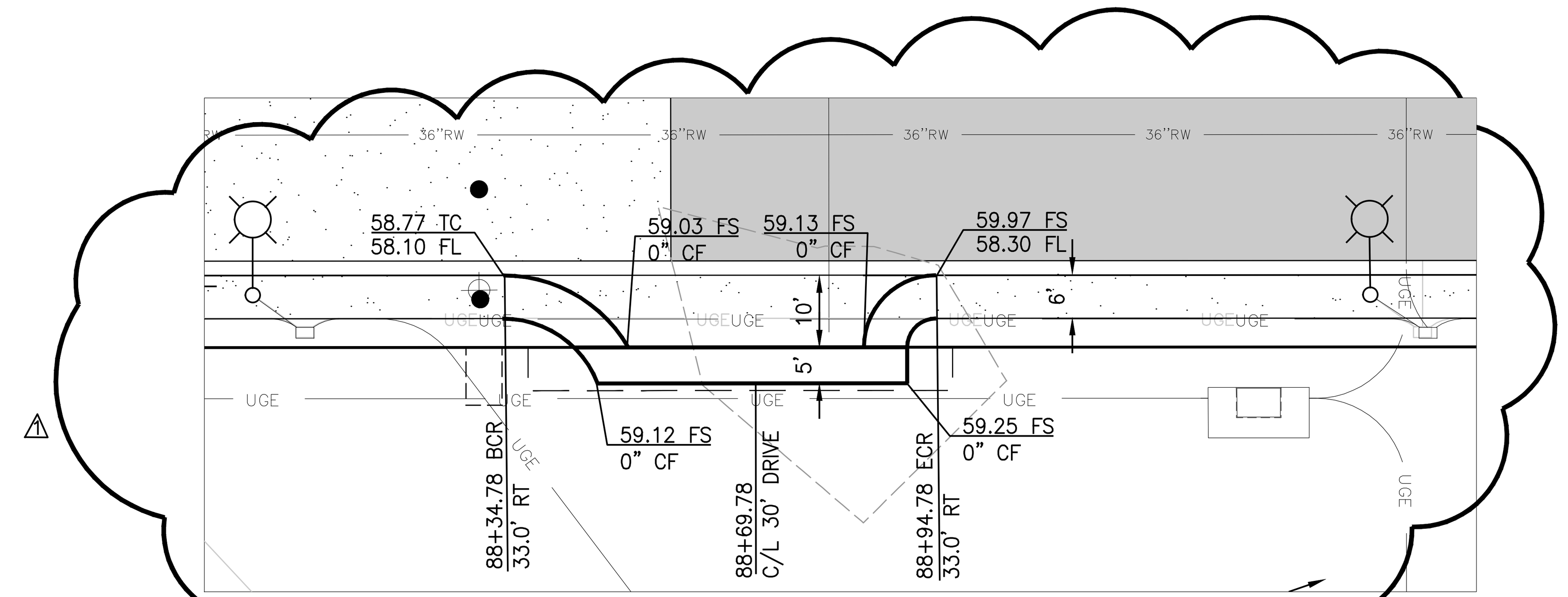
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE 05/19/2016 DATE



DETAIL 6

NOT TO SCALE

CURVE TABLE

	LENGTH	RADIUS	DELTA	TANGENT
C1	47.55	115.00	023°41'34"	24.12
C2	64.31	50.00	073°41'37"	37.47
C3	113.45	50.00	129°59'58"	107.22

LEGEND:

- CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
- REMOVE EXISTING AC PAVING
- INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

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MARK	BY	DATE	REVISIONS	APPR.	DATE
1	DJ	9/15/15	NEW DRIVEWAY		

ENGINEER — CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL - ENGINEER
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BENCHMARK:
SEE SHEET 1

SCALE:
H: AS SHOWN V: AS SHOWN

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
REDLANDS AVENUE
STA 87+00.00 TO STA 91+58.00

FOR: IDI
W.O. 2013-0239
CITY FILE NO. P8-1189

SHEET NO. 13 OF 23 SHEETS

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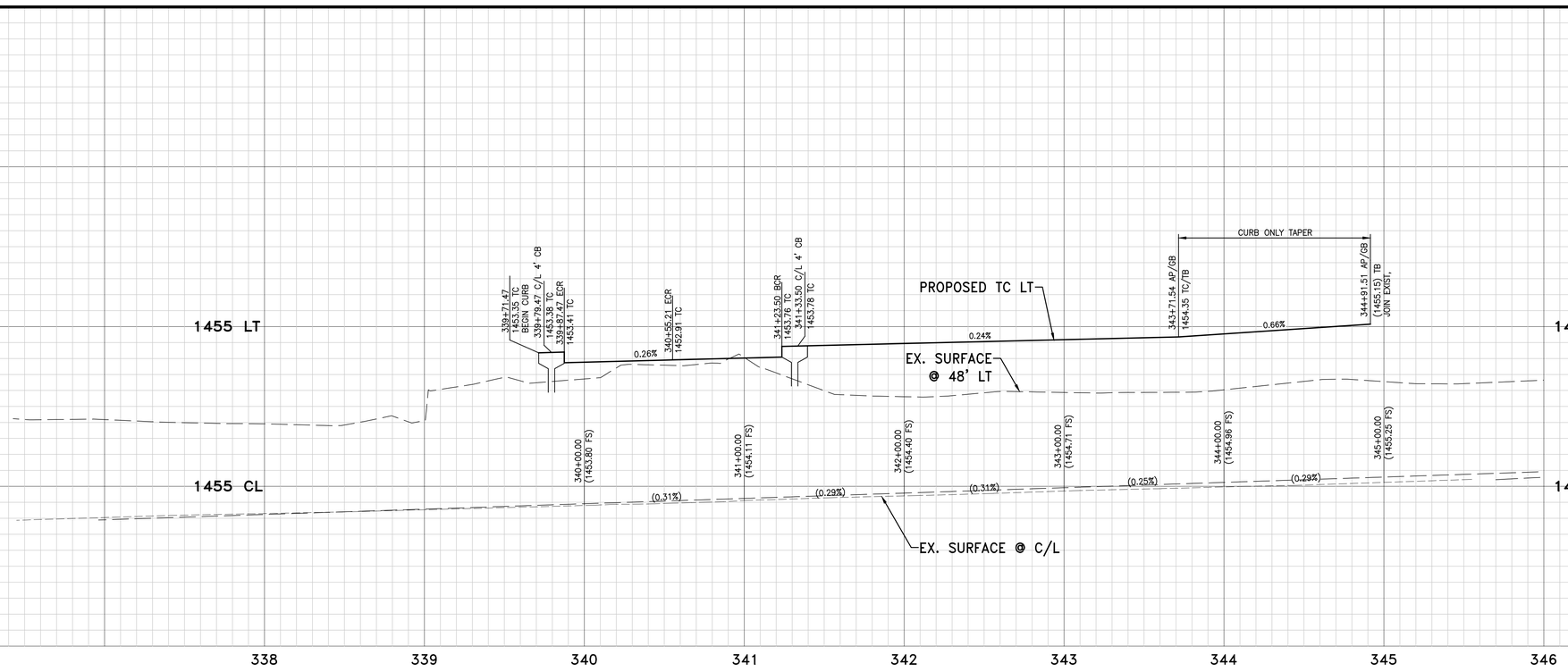
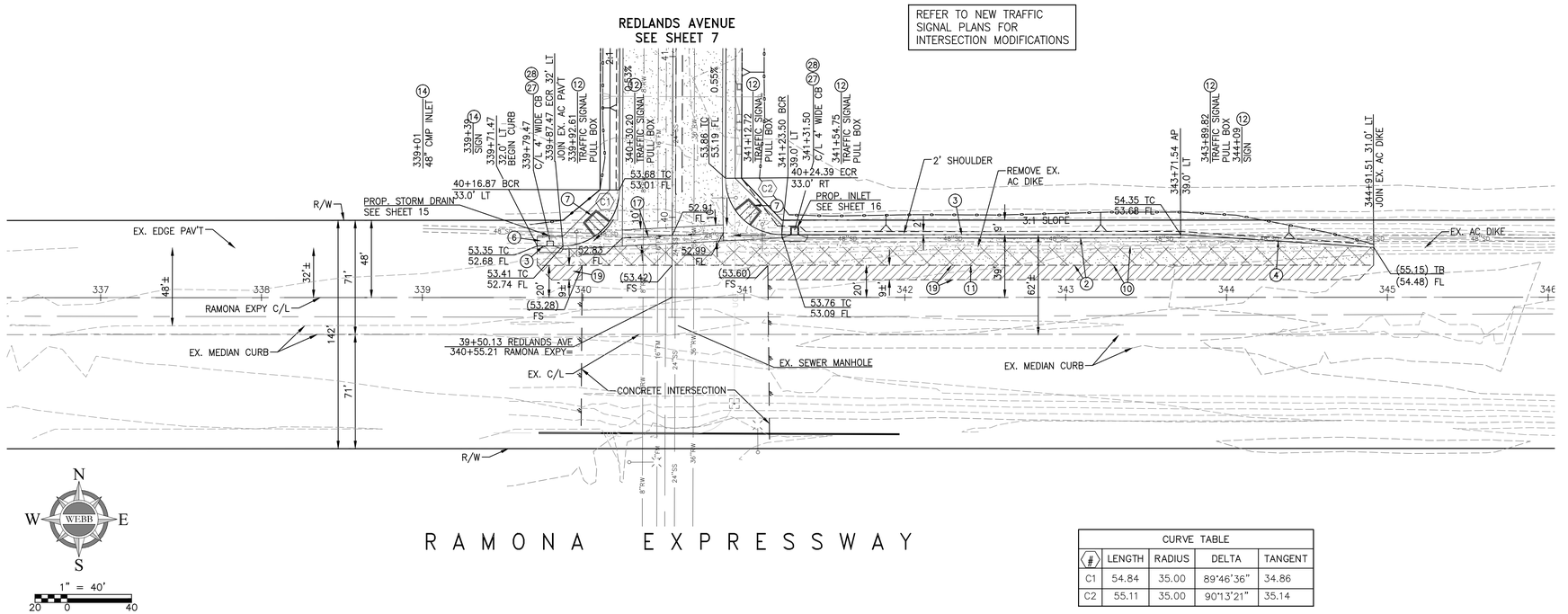


SCALES
HORIZ. 1"=40'
VERT. 1"=4'



N
W WEBB E
S
1" = 40'
20 0 40

CURVE TABLE				
#	LENGTH	RADIUS	DELTA	TANGENT
C1	54.84	35.00	89°46'36"	34.86
C2	55.11	35.00	90°13'21"	35.14

CONSTRUCTION NOTES

(2) CONSTRUCT MIN. 8" (4,000 PSI) PCC OVER 16" CLASS II AB (C.J. @ 20' O.C.)
(3) CONSTRUCT TYPE "A-8" CURB & GUTTER PER RIV. CO. STD. NO. 201
(4) CONSTRUCT 6" TYPE "D" CURB PER RIV. CO. STD. NO. 204
(6) CONSTRUCT 6' WIDE SIDEWALK PER RIV. CO. STD. 401
(7) CONSTRUCT CURB RAMP PER RIV. CO. STD. NO. 403, CASE A
(10) REMOVE AC PAVEMENT AND DISPOSE OF LEGALLY
(11) SAWCUT & JOIN EX. A.C. PAVEMENT PER DETAIL ON SHEET 2
(12) RELOCATE
(14) PROTECT IN PLACE
(17) CONSTRUCT CROSS GUTTER PER RIV. CO. STD. NO. 209
(19) 0.15' GRIND AND OVERLAY
(27) CONSTRUCT CURB INLET CATCH BASIN PER RIV. CO. STD. NO. 300
(28) CONSTRUCT LOCAL DEPRESSION PER RIV. CO. STD. NO. 311

AS BUILT
THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR
SIGNATURE
DATE 05/19/2016
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

LEGEND:

CONSTRUCT 8" AC OVER 18" AGGREGATE BASE
REMOVE EXISTING AC PAVING
INSTALL 8" PCC CONCRETE OVER 16" AGGREGATE BASE

DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
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MARK	BY	DATE	REVISIONS	APPR.	DATE
				ENGINEER	CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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

UNDER THE SUPERVISION OF:
D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE: H: AS SHOWN V: AS SHOWN

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STRATFORD RANCH-PARCEL MAP 36469
RAMONA EXPRESSWAY
STA 114+00.00 TO STA 119+93.75

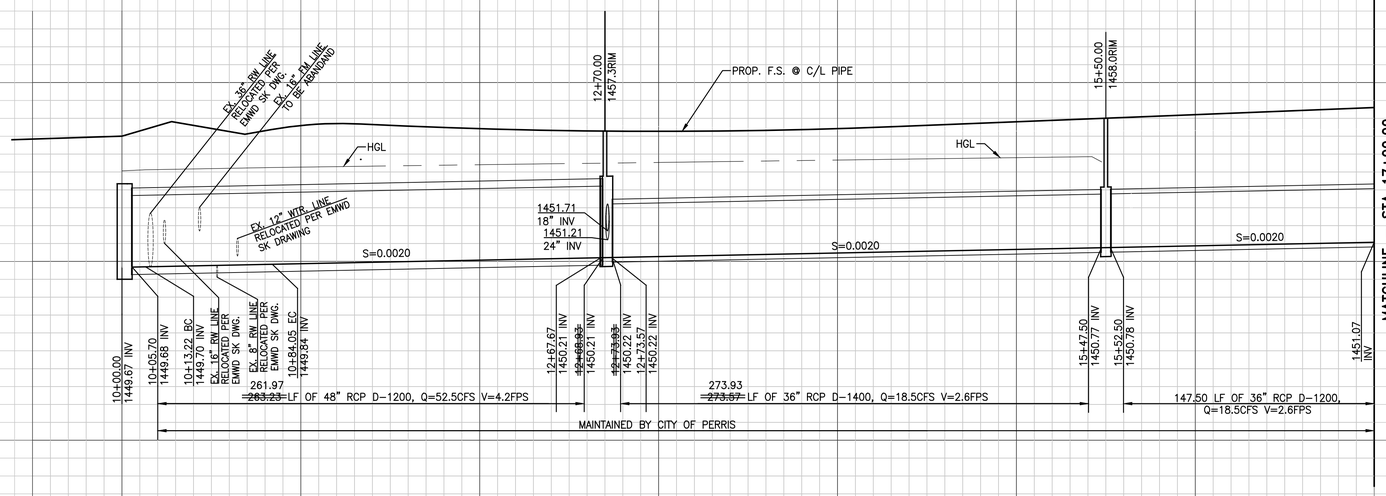
FOR: IDI
W.O. 2013-0239
CITY FILE NO. P8-1189

SHEET NO. 14 OF 23 SHEETS

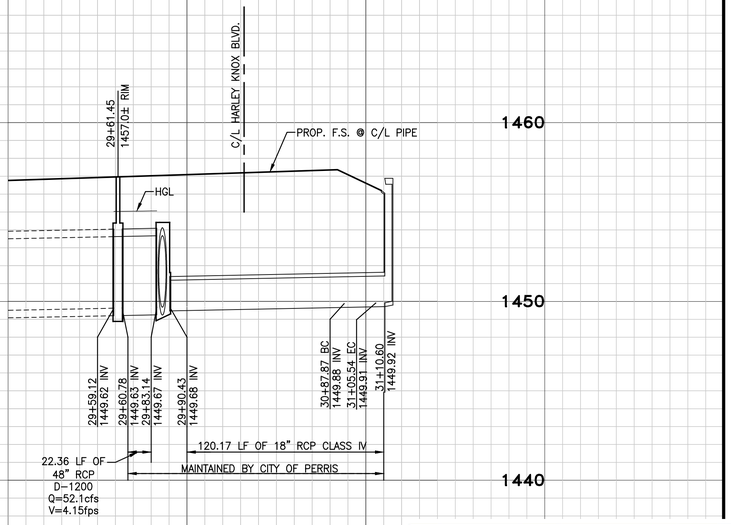
G:\2013\13-0239\DRAWINGS\AS-BUILT\13-0239-C-ST-AB.DWG 5/18/2016 8:30 AM

NOTE TO CONTRACTOR

1. CONTRACTOR TO VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION



LATERAL D3A



LATERAL D3

AS BUILT

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REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE

05/19/2016
DATE

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

CURVE DATA

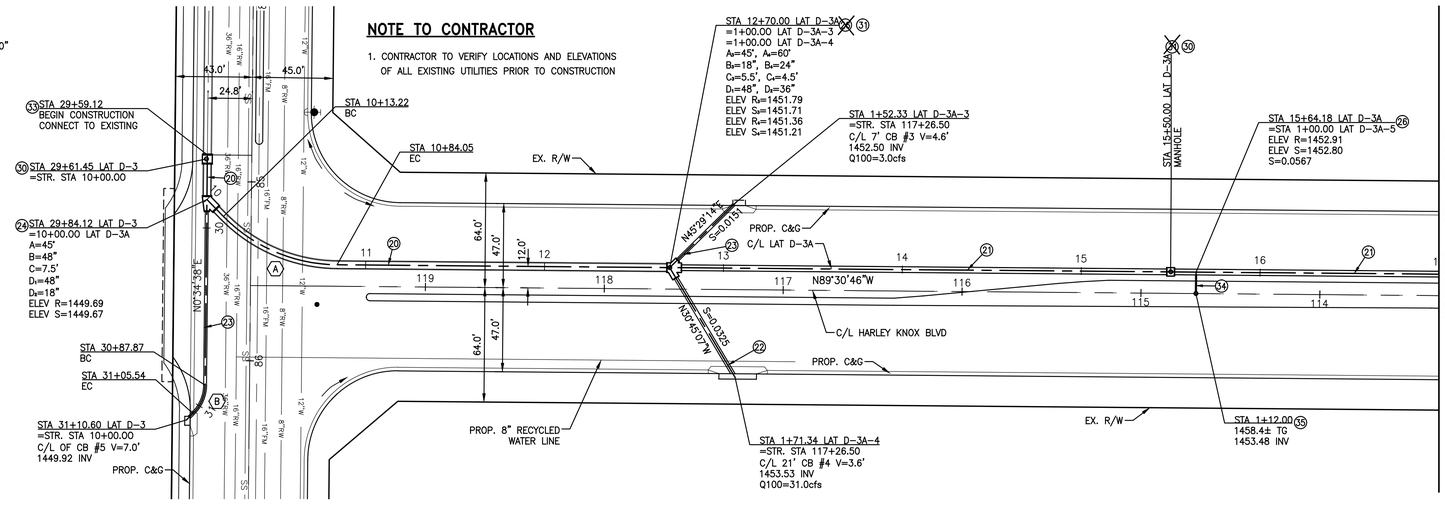
(A) Δ=45°05'24"
R=90.0'
L=70.83'
T=37.36'

(B) Δ=45°00'00"
R=22.5'
L=17.67'
T=9.32'

REDLANDS AVE

NOTE TO CONTRACTOR

1. CONTRACTOR TO VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION

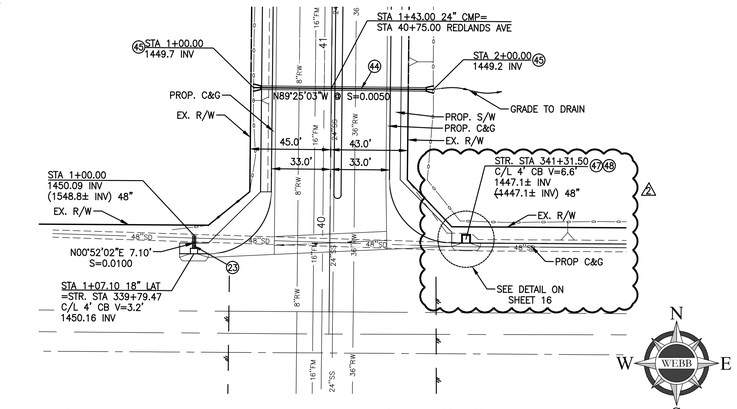


HARLEY KNOX BLVD

NOTE TO CONTRACTOR

1. CONTRACTOR TO VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION

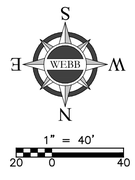
REDLANDS AVE



RAMONA EXPRESSWAY

CONSTRUCTION NOTES

(20)	INSTALL 48" RCP (D-LOAD PER PLAN)
(21)	INSTALL 36" RCP (D-LOAD PER PLAN)
(22)	INSTALL 24" RCP (D-LOAD PER PLAN)
(23)	INSTALL 18" RCP (D-LOAD PER PLAN)
(24)	CONSTRUCT JUNCTION STRUCTURE NO 2 PER RCFC&WCD STD. JS227
(26)	CONSTRUCT JUNCTION STRUCTURE NO. 4 PER RCFC&WCD STD JS229
(30)	CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. MH252
(31)	CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. MH254
(33)	REMOVE CONCRETE BULKHEAD
(34)	INSTALL 12" DIA. HDPE N-12 STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(36)	INSTALL 18" DRAIN BASIN ("NYLOPLAST" OR EQUAL) WITH DOME GRATE
(44)	INSTALL 24" CMP HEL-COR PIPE ("CONTECH" OR APPROVED EQUAL)
(45)	INSTALL 24" FLARED END SECTION ("CONTECH" OR APPROVED EQUAL)
(47)	CONSTRUCT MODIFIED GRATING CATCH BASIN PER SPPWC STD 303-3 AND DETAIL ON SHEET 16
(48)	CONSTRUCT LOCAL DEPRESSION PER SPPWC STD 313-3 CASE C



DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
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MARK	BY	DATE	REVISIONS	APPR.	DATE
1	DJ	5/29/15	CATCH BASIN REVISED PER FIELD CONDITIONS		
	ENGINEER			CITY	

CITY OF PERRIS
APPROVED BY:

CITY ENGINEER

DATE

SEAL – ENGINEER

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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

UNDER THE SUPERVISION OF:

D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE:
H: AS SHOWN V: N/A

FOR:

CITY OF PERRIS

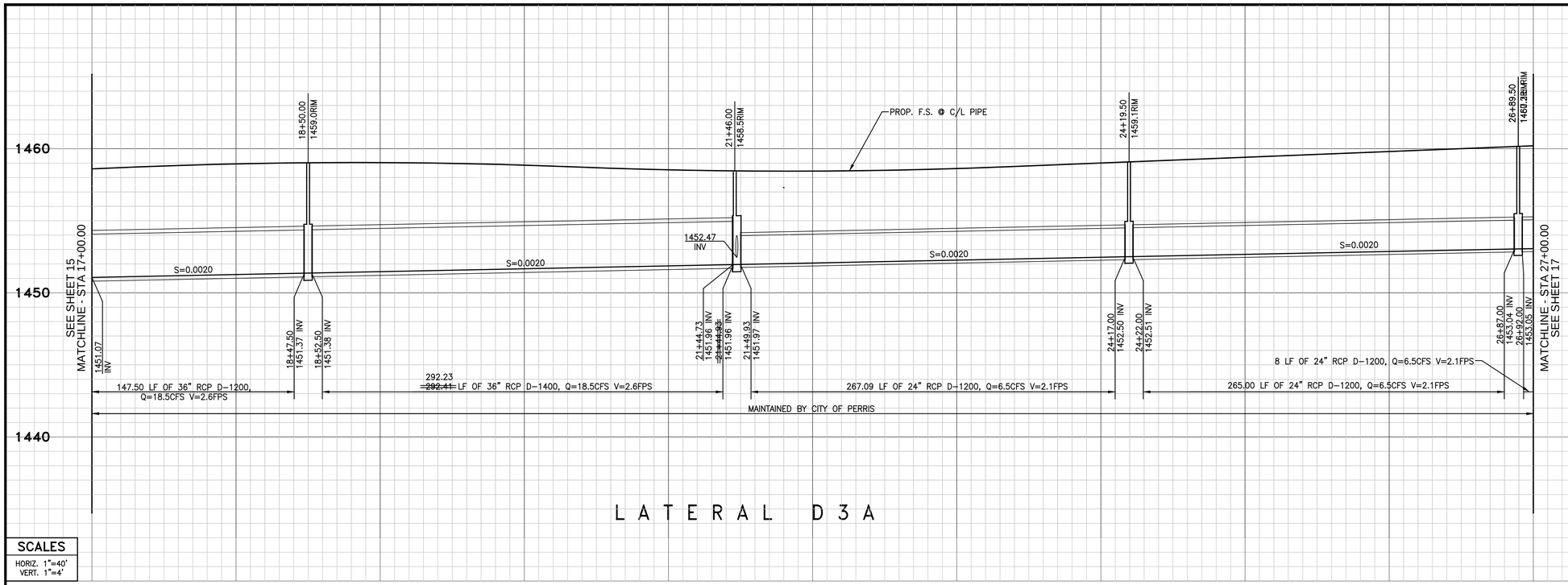
AMENDED DPR NO. 11-12-0004
STORM DRAIN IMPROVEMENT PLANS
LATERAL D-3, D-3A
STA 29+84.12-STA 31+10.60/STA 10+00-STA 17+00

W.O. 2013-0239

CITY FILE NO. P8-1189

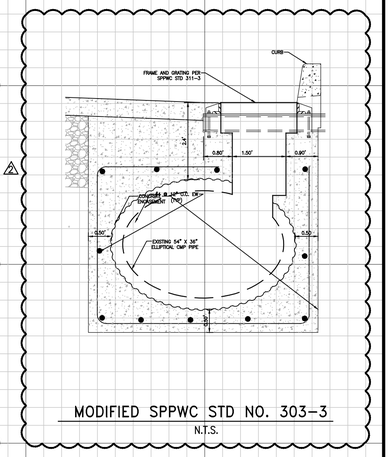
SHEET NO. 15 OF 23 SHEETS

G:\2013\13-0239\DRAWINGS\DESIGN\13-0239-C-SD.DWG 5/17/2016 2:42 PM

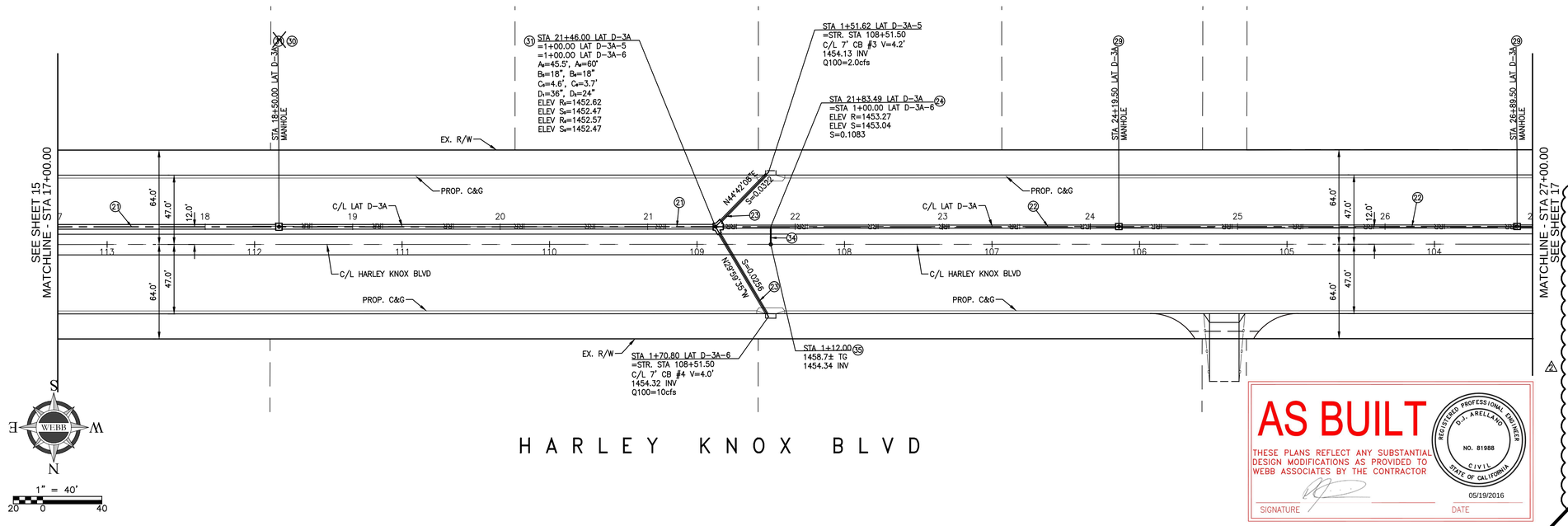


L A T E R A L D 3 A

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



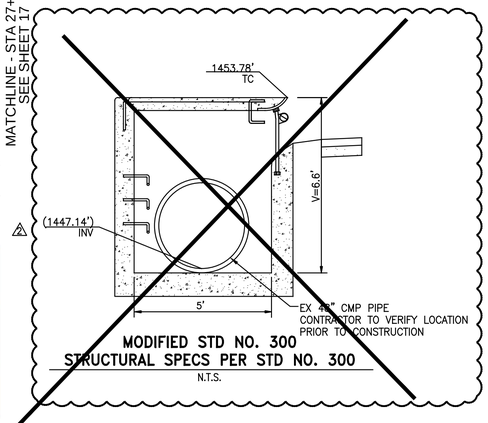
MODIFIED SPPWC STD NO. 303-3
N.T.S.



H A R L E Y K N O X B L V D

CONSTRUCTION NOTES

(21) INSTALL 36" RCP (D-LOAD PER PLAN)
(22) INSTALL 24" RCP (D-LOAD PER PLAN)
(23) INSTALL 18" RCP (D-LOAD PER PLAN)
(24) CONSTRUCT JUNCTION STRUCTURE NO 2 PER RCFC&WCD STD. JS227
(29) CONSTRUCT MANHOLE NO. 1 PER RCFC&WCD STD. MH251
(31) CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. MH254
(34) INSTALL 12" DIA. HDPE N-12 STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(35) INSTALL 18" DRAIN BASIN ("NYLOPLAST" OR EQUAL) WITH DOME GRATE



MODIFIED STD NO. 300
STRUCTURAL SPECS PER STD NO. 300
N.T.S.

AS BUILT
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REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA
SIGNATURE
05/19/2016
DATE

N
W
E
S
WEBB
1" = 40'
20 0 40

DIGALERT
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TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
2	DJ	5/29/15	CATCH BASIN REVISED PER FIELD CONDITIONS		
ENGINEER				CITY	

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL – ENGINEER
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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

UNDER THE SUPERVISION OF:
D.J. ARELLANO R.C.E. #C81988 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE:
H: AS SHOWN V: N/A

FOR:

W.O. 2013-0239

CITY FILE NO. P8-1189

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STORM DRAIN IMPROVEMENT PLANS
LATERAL D-3A
STA 17+00-STA 27+00

SHEET NO. 16 OF 23 SHEETS

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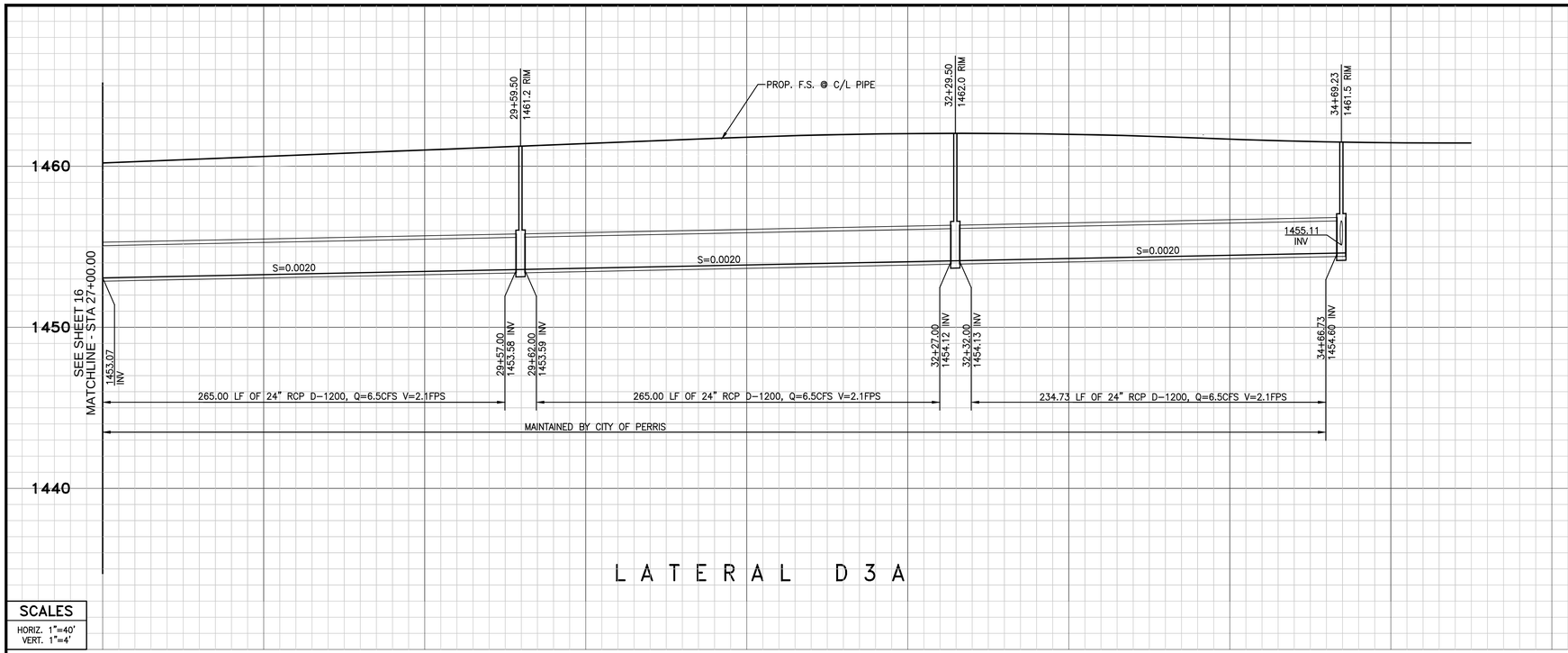
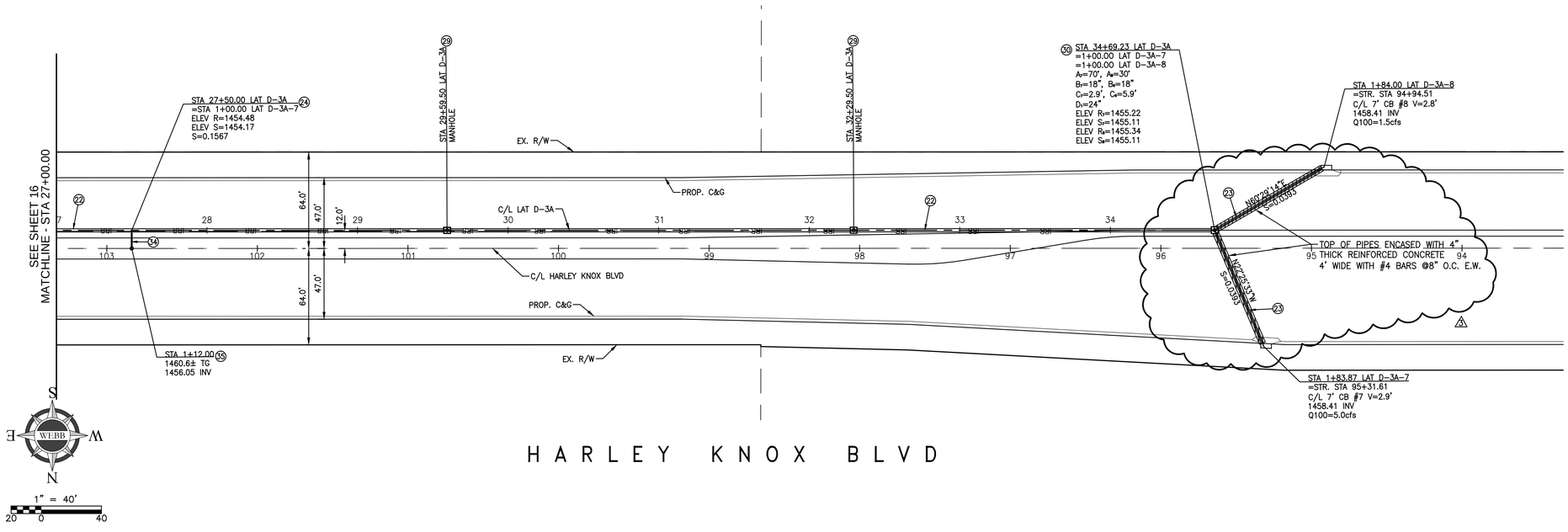


LATERAL D3A

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



HARLEY KNOX BLVD

CONSTRUCTION NOTES

22. INSTALL 24" RCP (D-LOAD PER PLAN)
23. INSTALL 18" RCP (D-LOAD PER PLAN)
24. CONSTRUCT JUNCTION STRUCTURE NO 2 PER RCFC&WCD STD. JS227
29. CONSTRUCT MANHOLE NO. 1 PER RCFC&WCD STD. MH251
31. CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. MH254
34. INSTALL 12" DIA. HDPE N-12 STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
35. INSTALL 18" DRAIN BASIN ("NYLOPLAST" OR EQUAL) WITH DOME GRATE

AS BUILT

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SIGNATURE

05/19/2016
DATE

REGISTERED PROFESSIONAL ENGINEER
D.J. ARELLANO
NO. 81988
CIVIL
STATE OF CALIFORNIA

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
3	DJ	5/29/15	CONCRETE ENCASEMENT OF SD PIPES		

ENGINEER — CITY

CITY OF PERRIS
APPROVED BY:

CITY ENGINEER

DATE

SEAL – ENGINEER

REGISTERED PROFESSIONAL ENGINEER
D.J. ARELLANO
NO. 81988
CIVIL
STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
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FAX (951) 788-1256

UNDER THE SUPERVISION OF:

D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE:
H: AS SHOWN V: N/A

FOR:

W.O. 2013-0239

CITY FILE NO. P8-1189

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STORM DRAIN IMPROVEMENT PLANS
LATERAL D-3A
STA 27+00-STA 34+69.23

SHEET NO. 17 OF 23 SHEETS

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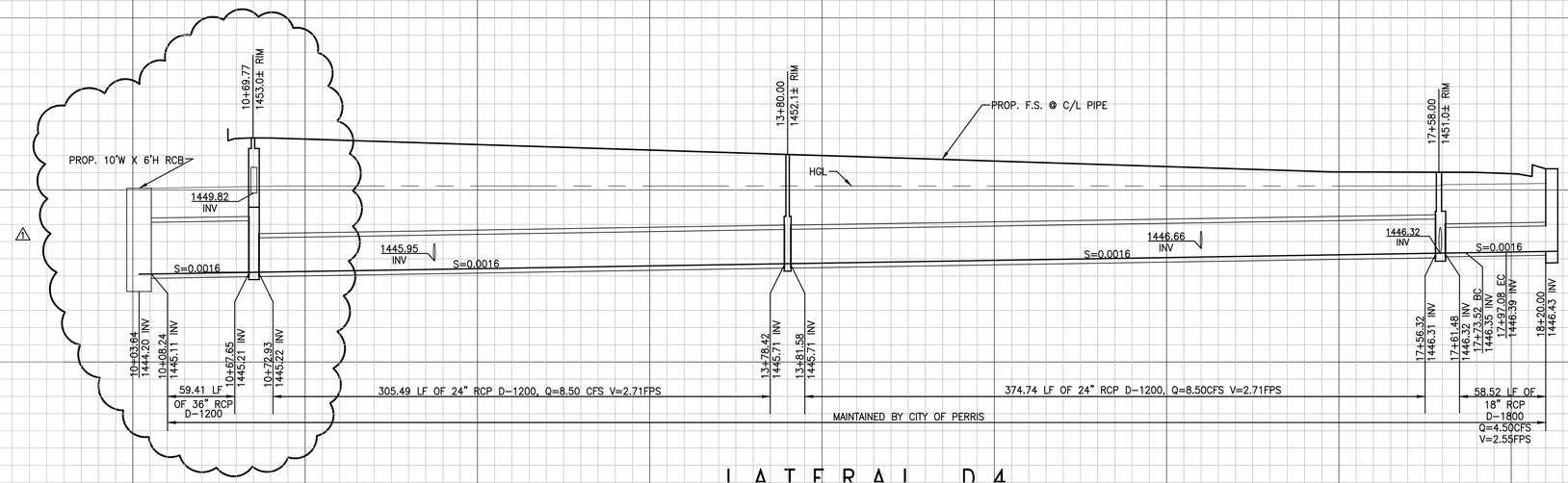
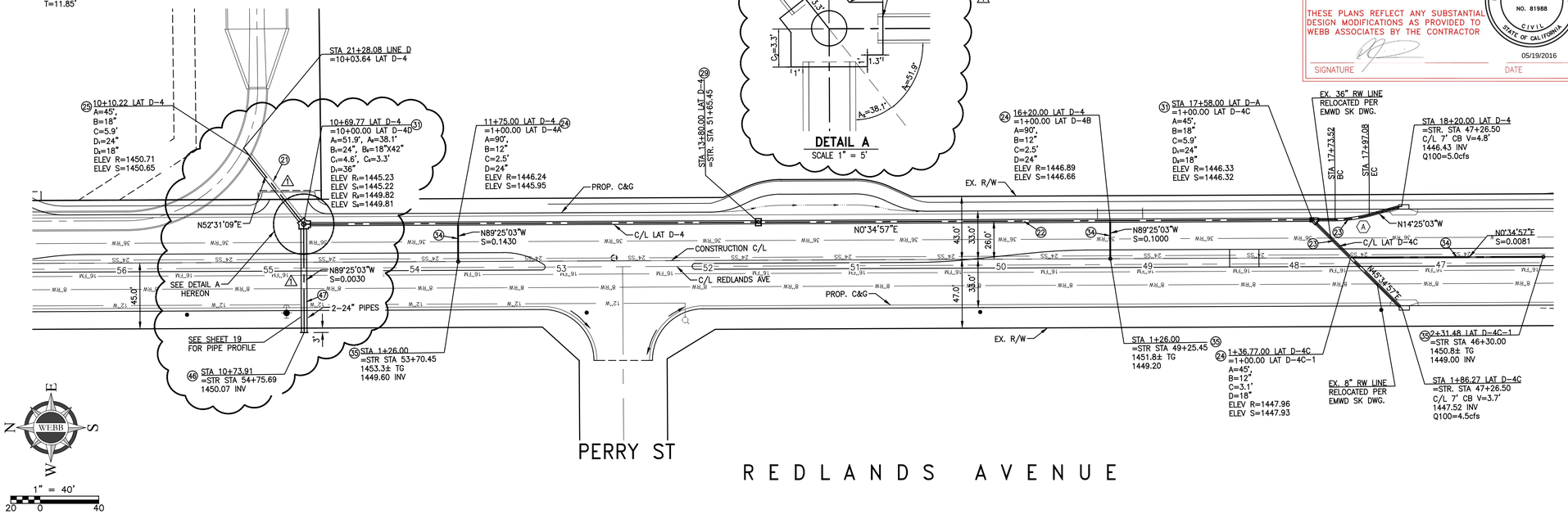


SCALES
HORIZ. 1"=40'
VERT. 1"=4'

CURVE DATA

(A) Δ=15°00'00"
R=90.0'
L=23.56'
T=11.85'



AS BUILT

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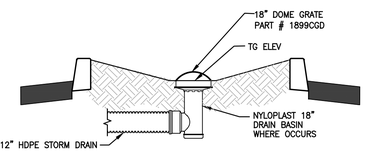
REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE

05/19/2016
DATE

CONSTRUCTION NOTES

(21) INSTALL 36" RCP (D-LOAD PER PLAN)
(22) INSTALL 24" RCP (D-LOAD PER PLAN)
(23) INSTALL 18" RCP (D-LOAD PER PLAN)
(24) CONSTRUCT JUNCTION STRUCTURE NO 2 PER RCFC&WCD STD. JS227
(25) CONSTRUCT JUNCTION STRUCTURE NO 3 PER RCFC&WCD STD. JS228
(29) CONSTRUCT MANHOLE NO. 1 PER RCFC&WCD STD. MH251
(31) CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. MH254
(34) INSTALL 12" DIA. HDPE N-12 STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(35) INSTALL 18" DRAIN BASIN ("NYLOPLAST" OR EQUAL) WITH DOME GRATE
(43) INSTALL CONCRETE COLLAR PER RCFC&WCD STD. M803
(46) CONSTRUCT CONCRETE BULKHEAD
(47) CONSTRUCT 18"x42" RCB PER CALTRANS STD. D80



MEDIAN DRAIN DETAIL
N.T.S.

N
W
E
S
WEBB
1" = 40'
20 0 40

REDLANDS AVENUE

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
1	DJM	3/5/15	ADDED 18"x42" RCB LATERAL, 36" PIPE, AND JUNCTION STRUCTURE		
	ENGINEER			CITY	

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

SEAL — ENGINEER

ALBERT A. WEBB ASSOCIATES
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UNDER THE SUPERVISION OF:
D.J. ARELLANO R.C.E. #C81988 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE: H: AS SHOWN V: N/A

FOR:

W.O. 2013-0239

CITY FILE NO. P8-1189

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STORM DRAIN IMPROVEMENT PLANS
LATERAL D-4, D-4A

SHEET NO. 18 OF 23 SHEETS

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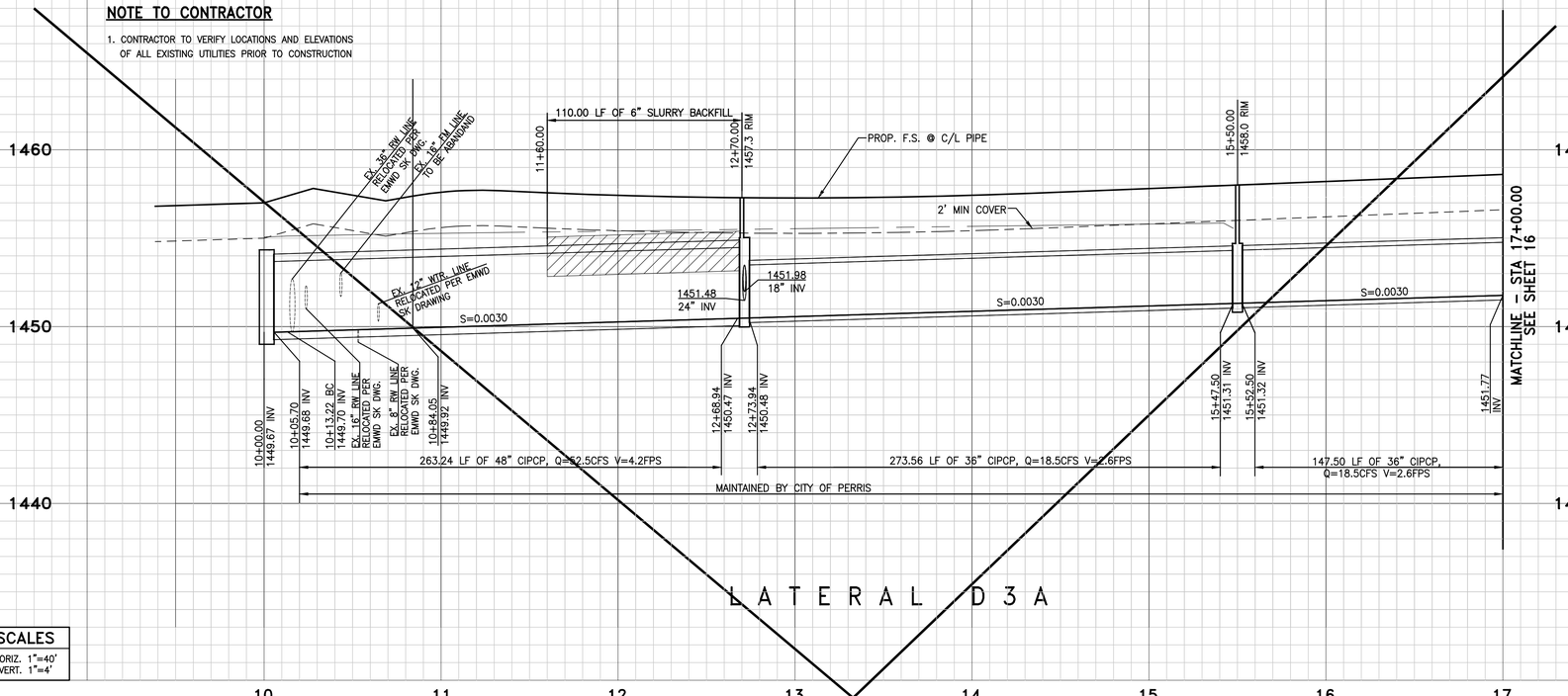
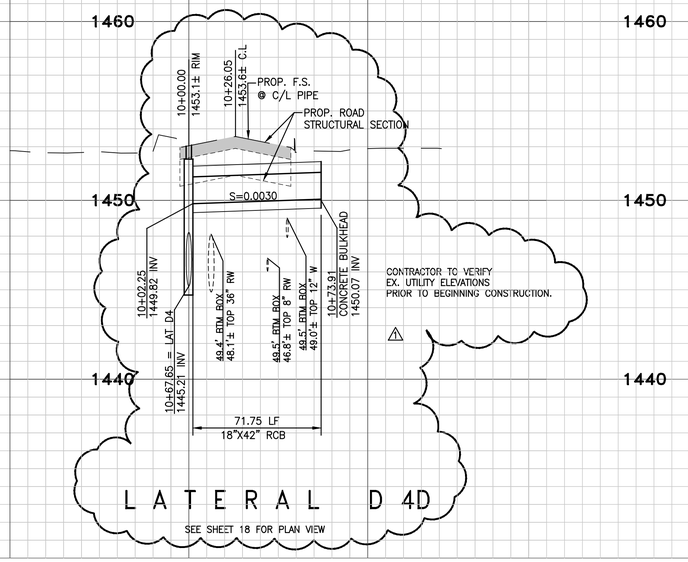
NOTE TO CONTRACTOR

1. CONTRACTOR TO VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION



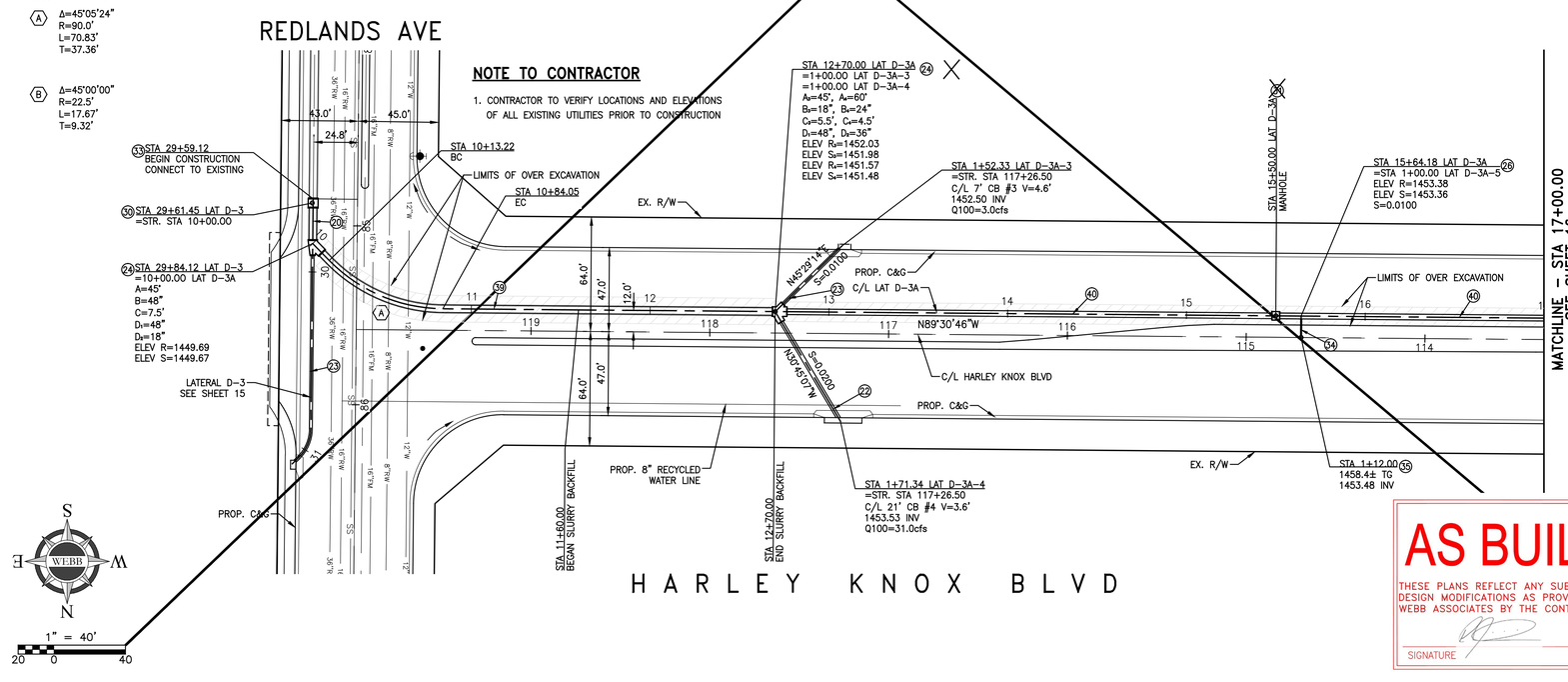


SCALES
HORIZ. 1"=40'
VERT. 1"=4'

CURVE DATA

(A) Δ=45°05'24"
R=90.0'
L=70.83'
T=37.36'

(B) Δ=45°00'00"
R=22.5'
L=17.67'
T=9.32'



CONSTRUCTION NOTES

22. INSTALL 24" RCP (D-LOAD PER PLAN)
23. INSTALL 18" RCP (D-LOAD PER PLAN)
24. CONSTRUCT JUNCTION STRUCTURE NO 2 PER RCFC&WCD STD. JS227
26. CONSTRUCT JUNCTION STRUCTURE NO. 4 PER RCFC&WCD STD JS2229
30. CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. MH252
31. CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. MH254
33. REMOVE CONCRETE BULKHEAD
34. INSTALL 12" DIA. HDPE N-12 STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
35. INSTALL 18" DRAIN BASIN ("NYLOPLAST" OR EQUAL) WITH DOME GRATE
39. INSTALL 48" CIPCP PER MANUFACTURES SPECS
40. INSTALL 36" CIPCP PER MANUFACTURES SPECS
42. INSTALL 6" SLURRY BACKFILL (2 SACK)

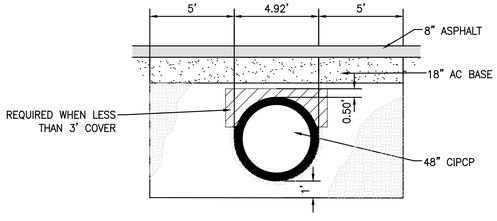
AS BUILT

THESE PLANS REFLECT ANY SUBSTANTIAL DESIGN MODIFICATIONS AS PROVIDED TO WEBB ASSOCIATES BY THE CONTRACTOR

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

SIGNATURE

05/19/2016
DATE



CAST-IN-PLACE DETAIL
N.T.S.

DIGALERT
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A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
2	DJM	5/17/16	RCP USED IN LIEU OF CIP SD PIPES		
1	DJM	5/5/15	ADDED PROFILE FOR 18"x42" RCB		
	ENGINEER			CITY	

CITY OF PERRIS
APPROVED BY:

CITY ENGINEER

DATE

SEAL – ENGINEER

REGISTERED PROFESSIONAL ENGINEER D.J. ARELLANO NO. 81988 CIVIL STATE OF CALIFORNIA

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

UNDER THE SUPERVISION OF:

D.J. ARELLANO — R.C.E. #C81988 — 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE:
H: AS SHOWN V: N/A

FOR:

W.O. 2013-0239

CITY FILE NO. P8-1189

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STORM DRAIN IMPROVEMENT PLANS
CIPCP - ALTERNATE BID ITEM LATERAL D-3A
STA 10+00-STA 17+00

SHEET NO. 19 OF 23 SHEETS

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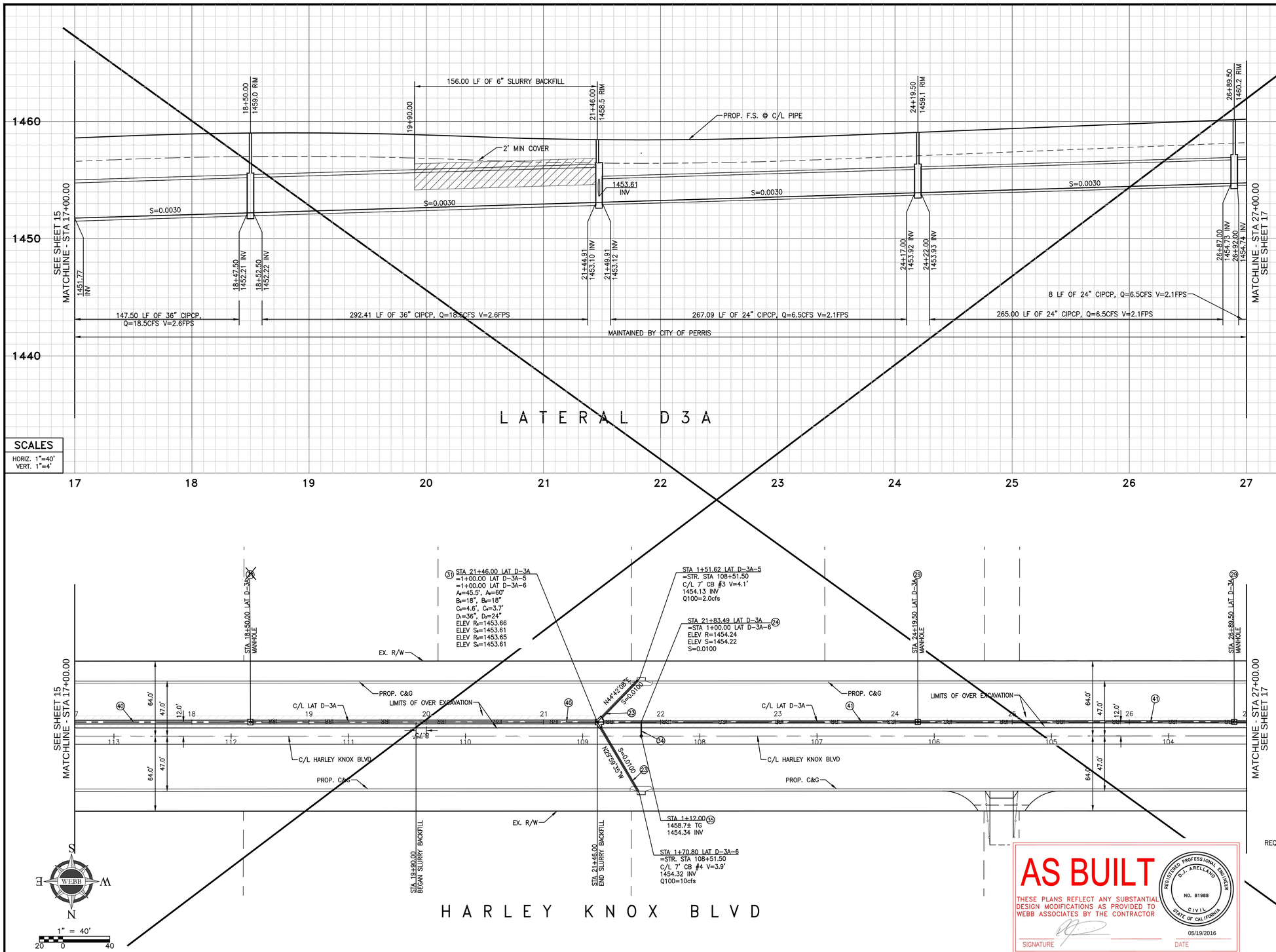
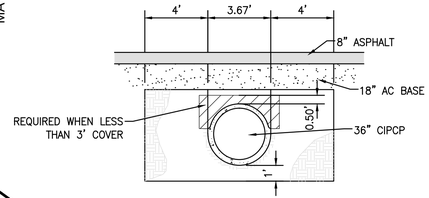


SCALES
HORIZ. 1"=40'
VERT. 1"=4'

CONSTRUCTION NOTES

(21) INSTALL 36" RCP (D-LOAD PER PLAN)
(22) INSTALL 24" RCP (D-LOAD PER PLAN)
(23) INSTALL 18" RCP (D-LOAD PER PLAN)
(24) CONSTRUCT JUNCTION STRUCTURE NO 2 PER RCFC&WCD STD. JS227
(29) CONSTRUCT MANHOLE NO. 1 PER RCFC&WCD STD. MH251
(31) CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. MH254
(34) INSTALL 12" DIA. HDPE N-12 STORM DRAIN PIPE ("ADS" OR APPROVED EQUAL)
(35) INSTALL 18" DRAIN BASIN ("NYLOPLAST" OR EQUAL) WITH DOME GRATE
(39) INSTALL 48" CIPCP PER MANUFACTURES SPECS
(40) INSTALL 36" CIPCP PER MANUFACTURES SPECS
(41) INSTALL 24" CIPCP PER MANUFACTURES SPECS
(42) INSTALL 6" SLURRY BACKFILL (2 SACK)



CAST-IN-PLACE DETAIL
N.T.S.

AS BUILT
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1	DJM	5/17/16	RCP USED IN LIEU OF CIP SD PIPES		

ENGINEER CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

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D.J. ARELLANO R.C.E. #C81988 1/12/2015 DATE

BENCHMARK:
SEE SHEET 1

SCALE: H: AS SHOWN V: N/A

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STORM DRAIN IMPROVEMENT PLANS
CIPCP – ALTERNATE BID ITEM LATERAL D-3A
STA 17+00-STA 27+00

FOR:
W.O. 2013-0239
CITY FILE NO. P8-1189

SHEET NO. 20 OF 23 SHEETS

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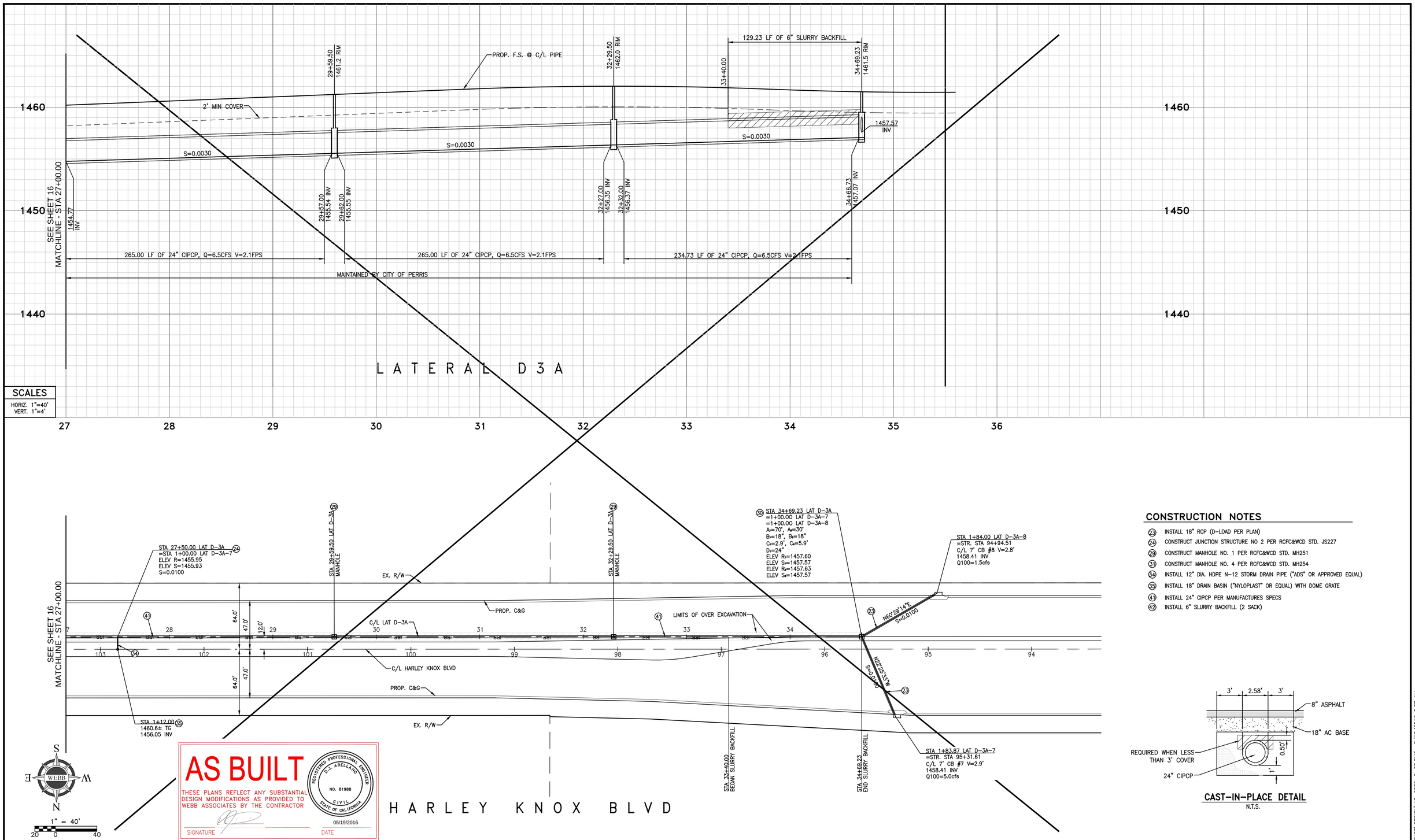

CONSTRUCTION NOTES

(23) INSTALL 18" RCP (D-LOAD PER PLAN)
(24) CONSTRUCT JUNCTION STRUCTURE NO 2 PER RCFC&WCD STD. JS227
(29) CONSTRUCT MANHOLE NO. 1 PER RCFC&WCD STD. MH251
(31) CONSTRUCT MANHOLE NO. 4 PER RCFC&WCD STD. MH254
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(42) INSTALL 6" SLURRY BACKFILL (2 SACK)

CAST-IN-PLACE DETAIL
N.T.S.

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SIGNATURE
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ENGINEER — CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER
DATE

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BENCHMARK:
SEE SHEET 1

SCALE: H: AS SHOWN V: N/A

CITY OF PERRIS
AMENDED DPR NO. 11-12-0004
STORM DRAIN IMPROVEMENT PLANS
CIPCP – ALTERNATE BID ITEM LATERAL D-3A
STA 27+00-STA 34+69.23

FOR:
W.O. 2013-0239
CITY FILE NO. P8-1189

SHEET NO. 21 OF 23 SHEETS

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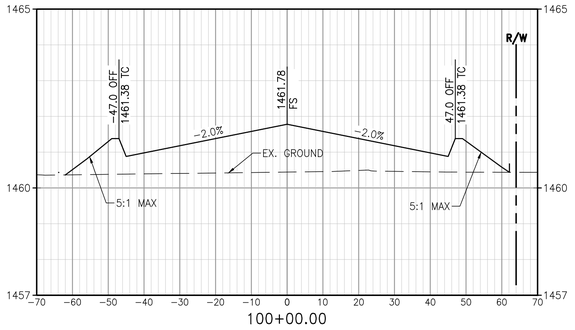

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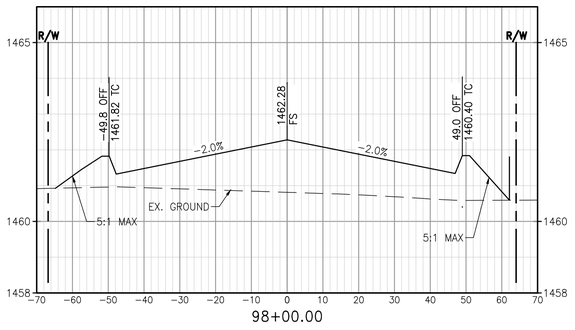

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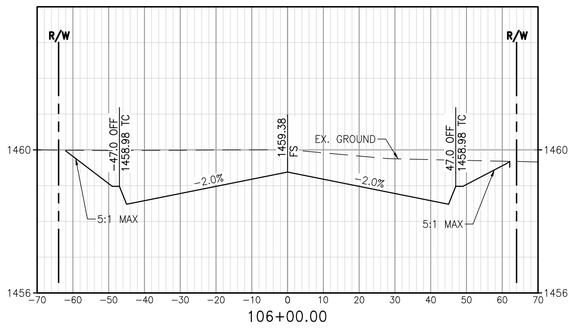

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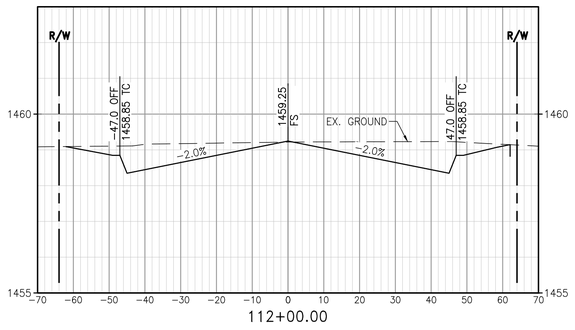

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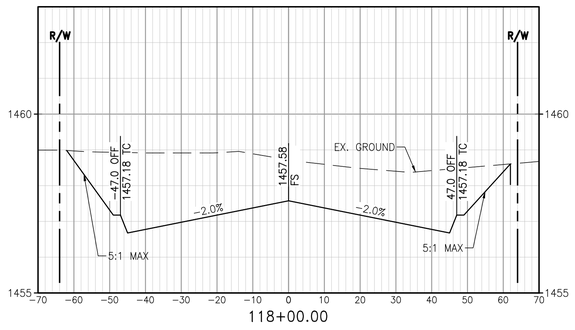

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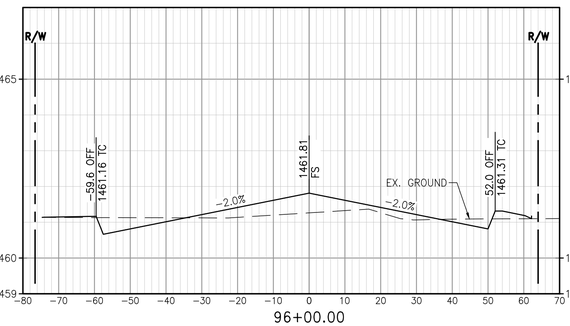

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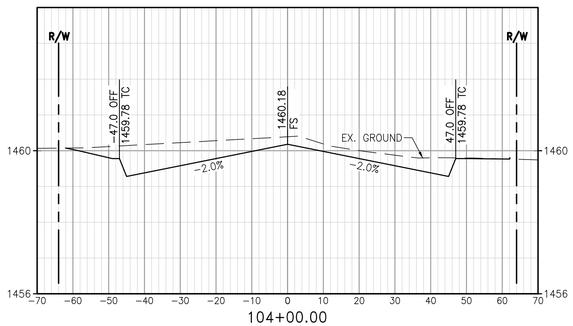

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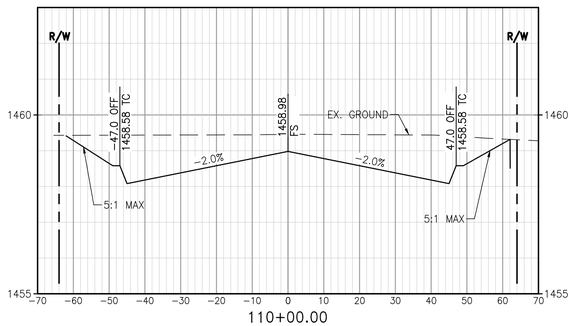

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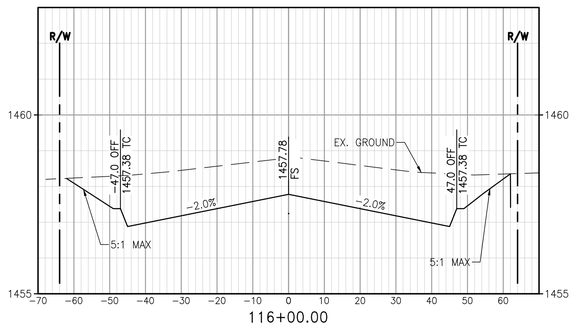

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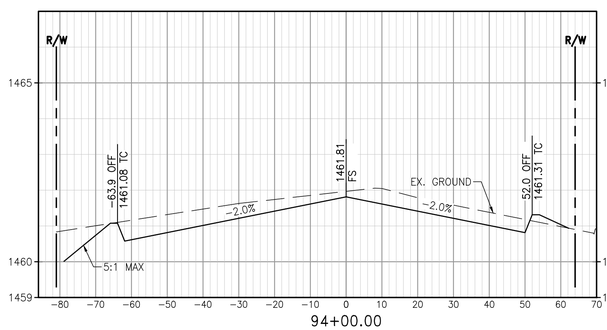

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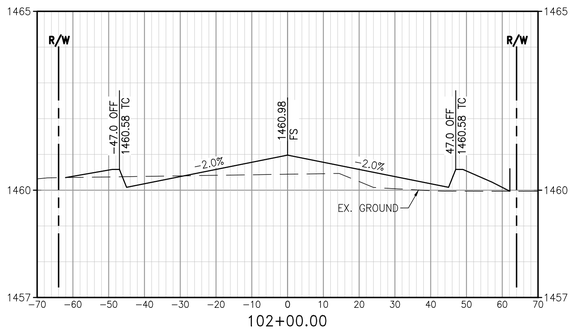

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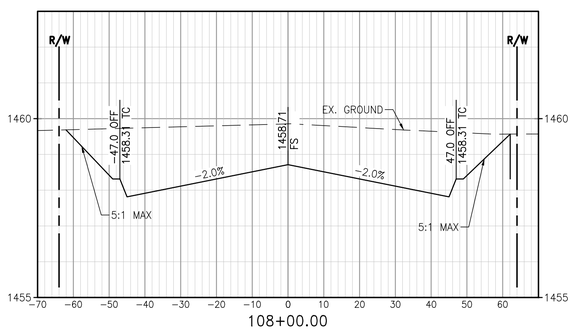

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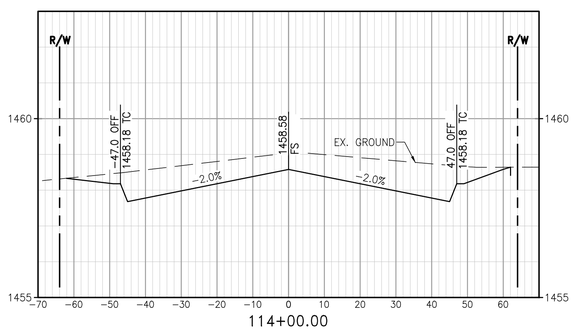

114+00.00

NOTE: MEDIANS OMITTED FROM SECTIONS

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ENGINEER				CITY	

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UNDER THE SUPERVISION OF:

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BENCHMARK: SEE HEREON

SCALE: H: 1"=20' V: 1"=2'

CITY OF PERRIS

AMENDED DPR NO. 11-12-0004

STRATFORD RANCH-PARCEL MAP 36469

STREET IMPROVEMENT PLAN

HARLEY KNOX BLVD CROSS SECTIONS

SHEET NO. 22 OF 23 SHEETS

FOR: IDI

W.O. 2013-0239

CITY FILE NO. PA-1189

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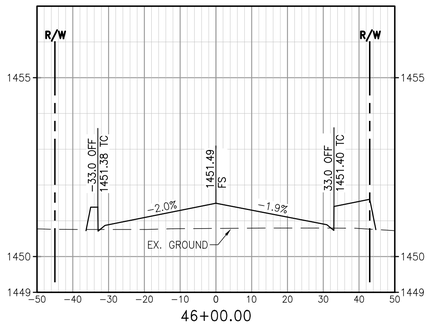

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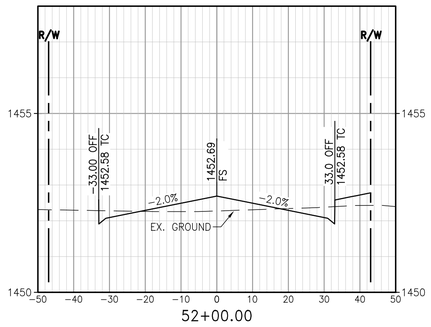

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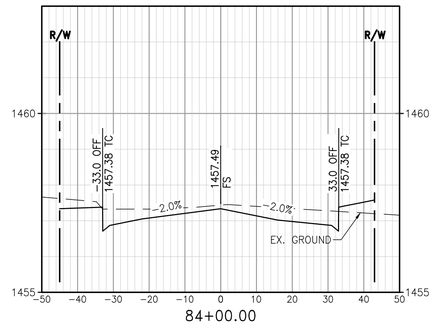

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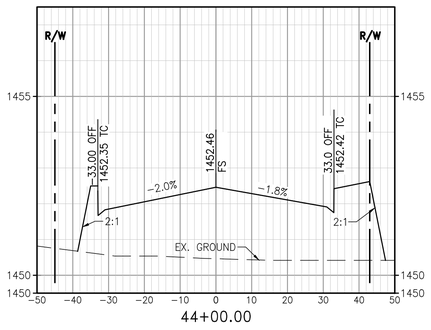

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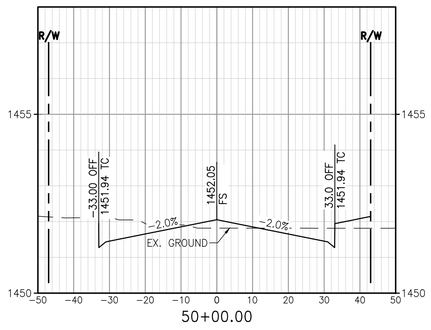

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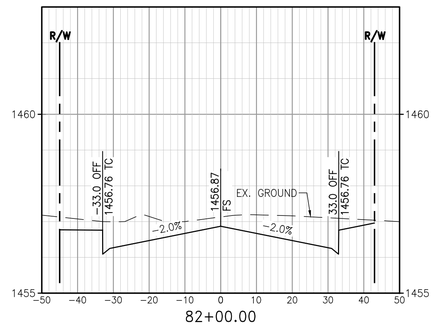

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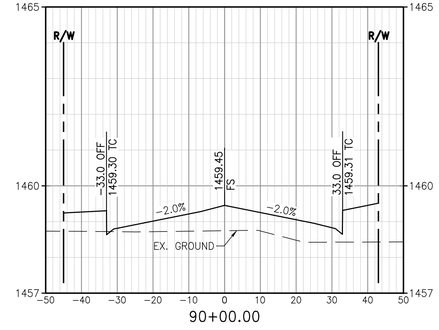

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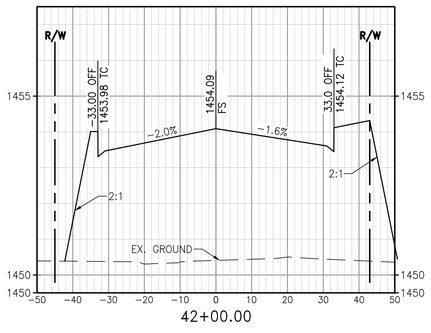

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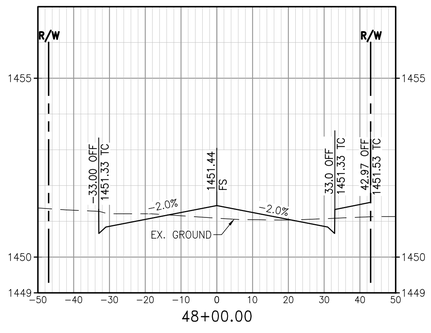

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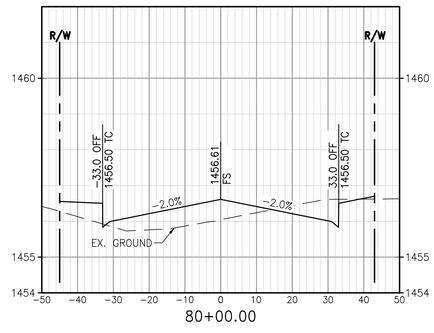

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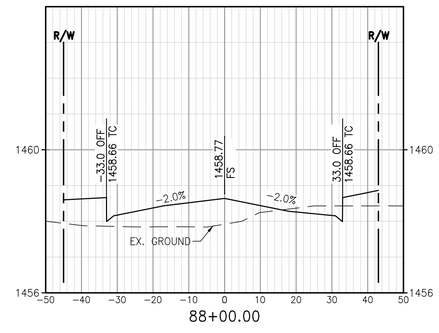

88+00.00

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BENCHMARK: SEE SHEET 1

SCALE: H: 1"=20' V: 1"=2'

CITY OF PERRIS

AMENDED DPR NO. 11-12-0004

STRATFORD RANCH-PARCEL MAP 36469

SECTIONS AND DETAILS

REDLANDS AVE CROSS SECTIONS

FOR: IDI

W.O. 2013-0239

CITY FILE NO. P8-1189

SHEET NO. 23 OF 23 SHEETS

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