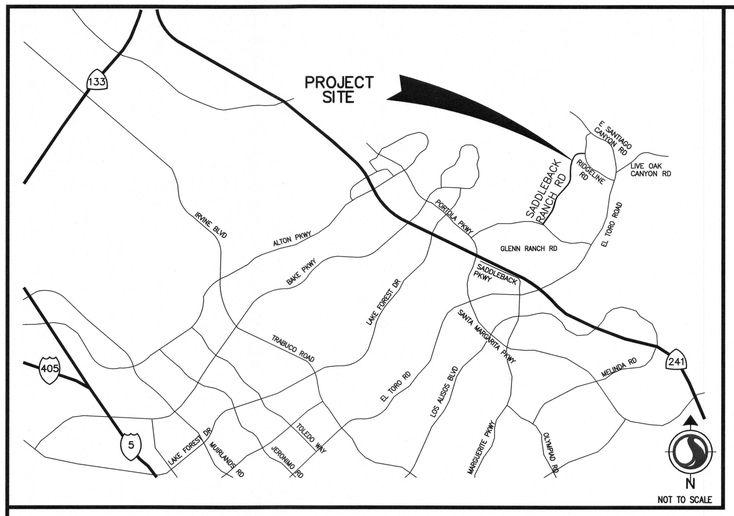

VICINITY MAP

NO SCALE

SHEET INDEX

SHEET NO.		DESCRIPTIONS
1		TITLE SHEET
2–5		TYPICAL SECTIONS AND DETAILS
6		DEMOLITION PLAN
7		CURB RAMP DETAIL
8–13		STREET IMPROVEMENT PLANS
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17–18		SIGNING AND STRIPING PLANS
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23	PD	PLANTING DETAILS
24	IP1	IRRIGATION MAINLINE
25–27	IP2–IP3	IRRIGATION PLANS
28–30	PP1–PP3	PLANTING PLANS

UTILITY TRENCH AGENCY INDEX

IRVINE RANCH WATER DISTRICT	DAVE CROWE	(949) 453–5769
SOUTHERN CALIFORNIA EDISON	TIM BRENNAN	(949)458–4667
AT&T	VALENTINA GIPSON	(714) 666–5467
COX COMMUNICATION AFTER HOURS – SOC (SYSTEM OPERATION CENTER)	SINA MUCKENFUSS	(949) 546–2485 (949) 546–4100
EL TORO WATER DISTRICT	BRIAN MILLER	(949)837–7050 EXT 224
THE GAS COMPANY	YVETTE VALDEZ	(714) 634–3158
TRAFFIC SGNAL MAINTENANCE (COMPUTER SERVICE CO)	JEFF TELANDER	(714) 981–7989
UNDERGROUND SERVICE ALERT	.	(800) 422–4133
CITY OF LAKE FOREST 25550 COMMERCE CENTER DRIVE, LAKE FOREST, CA 92630	MR. DOUGLAS ERDMAN	(949) 282–5233

EMERGENCY INFORMATION

THE NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF THE CONTRACTOR AND SUBCONTRACTORS, OR THEIR REPRESENTATIVES, SHALL BE FILED WITH THE ENGINEER AND THE COUNTY SHERIFF'S DEPARTMENT OR THE CITY POLICE DEPARTMENT PRIOR TO BEGINNING WORK.

EMERGENCY TELEPHONE NUMBERS

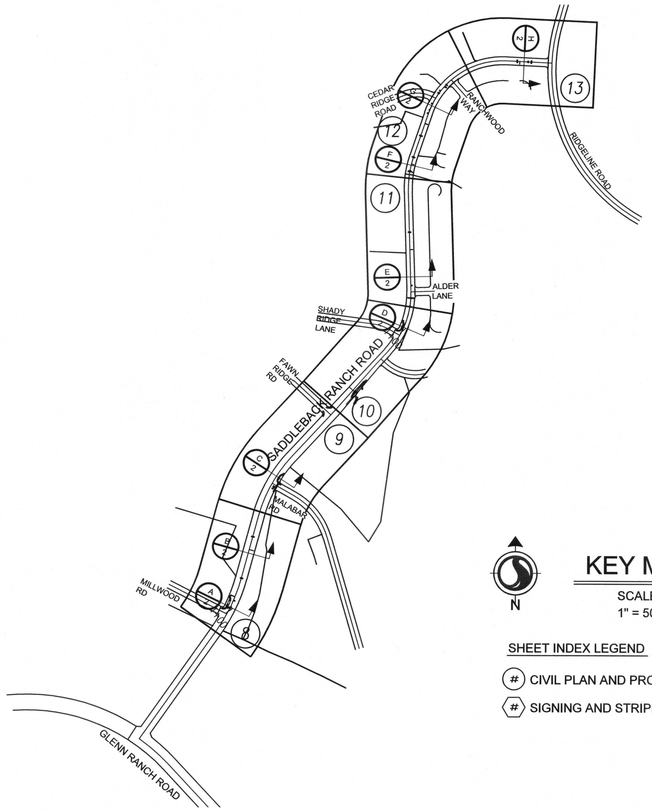
AGENCY	NUMBER
UNDERGROUND SERVICE ALERT	(800) 422–4133
SOUTHERN CALIFORNIA GAS COMPANY (DISTRIBUTION)	(714) 634–5091
SOUTHERN CALIFORNIA GAS COMPANY (REGIONAL TRANSMISSION)	(818) 701–4546
SOUTHERN CALIFORNIA EDISON CO. (SCE)	(949) 458–4676
AT & T	(714) 634–3118
COX COMMUNICATIONS	(949) 546–2812
IRVINE RANCH WATER DISTRICT	(949) 453–5311
EL TORO WATER DISTRICT	(949) 837–7050 EXT.223
MCI WORLDCOM	(800) 624–9675

CITY OF LAKE FOREST
LAKE FOREST, CALIFORNIA

CONSTRUCTION PLANS

FOR

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
(PW 2013.18)



N

KEY MAP

SCALE:
1" = 500'

SHEET INDEX LEGEND

(#) CIVIL PLAN AND PROFILE SHEETS

(#) SIGNING AND STRIPING SHEETS

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE MUNICIPAL CODE ADOPTED BY THE CITY OF LAKE FOREST AND ANY SPECIAL REQUIREMENTS OF THE PERMIT.
2. THE DEVELOPER/CONTRACTOR SHALL KEEP A COPY OF THE CURRENT ORANGE COUNTY PUBLIC WORKS DEPARTMENT STANDARD PLANS ON THE CONSTRUCTION SITE AT ALL TIMES.
3. THE DEVELOPER/CONTRACTOR SHALL NOTIFY THE CITY OF LAKE FOREST'S PUBLIC WORKS OBSERVER AT (949) 461–3494 AT LEAST TWO WORKING DAYS (MINIMUM OF 48 HOURS) PRIOR TO STARTING CONSTRUCTION WORK WHICH REQUIRES PUBLIC WORKS' INSPECTION.
4. A CITY OF LAKE FOREST ENCROACHMENT PERMIT SHALL BE REQUIRED TO PERFORM WORK WITHIN THE PUBLIC RIGHT–OF–WAY. CITY APPROVED PLANS DO NOT RELIEVE THE CONTRACTOR AND/OR DEVELOPER FROM RESPONSIBILITY TO OBTAIN AN ENCROACHMENT PERMIT. A COPY OF THE PERMIT SHALL BE KEPT ON THE CONSTRUCTION SITE AT ALL TIMES.
5. ALL CONCRETE CURB AND GUTTER FLOWLINES WITH LESS THAN 1% GRADE SHALL BE WATER TESTED PRIOR TO FINAL FINISHING TO ENSURE PROPER DRAINAGE WITHOUT UNACCEPTABLE HIGH OR LOW SPOTS.
6. ALL UTILITY TRENCH BACKFILL AND COMPACTION INSPECTION OUTSIDE THE LIMITS OF DEDICATED STREET RIGHT–OF–WAY SHALL BE PERFORMED IN ACCORDANCE WITH CITY REGULATIONS.
7. ALL DAMAGED CONCRETE SIDEWALKS OR CURBS SHALL BE SAW–CUT TO THE NEAREST TRANSVERSE SCORE MARK, OR ADJUSTABLE CONTROL JOINT, OR WEAKENED PLANE JOINT AND REPLACED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF RDMD STANDARD PLANS.
8. THE DEVELOPER/CONTRACTOR SHALL MAINTAIN ADJACENT STREETS IN A NEAT, CLEAN, DUST FREE AND SANITARY CONDITION AT ALL TIMES AND TO THE SATISFACTION OF CITY'S INSPECTOR. THE ADJACENT STREETS SHALL BE KEPT CLEAN OF DEBRIS, WITH DUST AND OTHER NUISANCE BEING CONTROLLED AT ALL TIMES. DEVELOPER SHALL BE RESPONSIBLE FOR ANY CLEAN UP ON ADJACENT STREETS AFFECTED BY HIS CONSTRUCTION. METHOD OF STREET CLEANING SHALL BE BY DRY SWEEPING OF ALL PAVED AREAS. NO STOCKPILING OF BUILDING MATERIALS WILL BE ALLOWED WITHIN THE PUBLIC RIGHT–OF–WAY WITHOUT THE PERMISSION OF CITY'S PUBLIC WORKS OBSERVER.
9. PRIOR TO FINAL ACCEPTANCE OF STREET IMPROVEMENTS, ALL STREET PAVEMENT, STRIPING AND PAVEMENT MARKINGS WITHIN THE PERIMETER OF THE CONSTRUCTION PROJECT WILL BE RESTORED TO A LIKE NEW CONDITION, AND IN A MANNER MEETING THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE. ALL STRIPING AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH RDMD STANDARD PLAN NO. 1801, NOTE 17.
10. TRAFFIC FLOWS SHALL BE MAINTAINED AT ALL TIMES AND PROTECTED WITH ADEQUATE BARRICADES, LIGHTS, SIGNS AND WARNING DEVICES IN ACCORDANCE WITH CURRENT STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, TRAFFIC MANUAL AND TO THE SATISFACTION OF THE CITY'S PUBLIC WORKS OBSERVER.
11. THE RDMD STANDARD PLANS SHALL TAKE PRECEDENCE OVER ANY STANDARDS EXCEPT FOR STANDARD PLANS AFFECTING UTILITY COMPANIES THAT ARE MORE STRINGENT, THEN THE UTILITY COMPANY STANDARD PLANS SHALL TAKE PRECEDENCE.
12. ANY UTILITIES UNDER PAVED AREAS OF PRIVATE STREETS SHALL HAVE A MINIMUM OF 30" COVER AND DEVELOPER SHALL PROVIDE PRIVATE LABORATORY COMPACTION CERTIFICATION FOR ALL UNDERGROUND UTILITIES PRIOR TO ANY PAVING. DEVELOPER SHALL SCHEDULE A MEETING WITH THE INSPECTOR AND THE PRIVATE LABORATORY PRIOR TO ANY TESTING.
13. NO CONCENTRATED FLOWS ARE PERMITTED ACROSS ASPHALT PAVEMENT WITHOUT APPROVAL FROM THE CITY'S PUBLIC WORKS OBSERVER.
14. WHEREVER EXISTING PAVEMENT JOINS ANY PROPOSED PAVEMENT, THE CONTRACTOR SHALL SAW–CUT AND REMOVE EXISTING ASPHALT CONCRETE AND COLD PLANE A MINIMUM OF 5 FEET OR AS REQUIRED TO OBTAIN A 2" MINIMUM THICKNESS AND OVERLAY WITH C2–AR4000 PAVEMENT AS NECESSARY.
15. ROADWAY STRUCTURAL SECTION SHALL BE DETERMINED BY SOILS TESTS. THE SUBDIVIDER'S SOILS ENGINEER SHALL PERFORM SUCH TESTS AFTER STREET HAS BEEN ROUGH GRADED AND SHALL SUBMIT TO THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER, THE RECOMMENDED ROADWAY STRUCTURAL SECTION, BASED ON THE TRAFFIC INDEX ESTABLISHED BY THE CITY. THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER'S APPROVAL SHALL BE OBTAINED PRIOR TO BEGINNING THE CONSTRUCTION OF THE ROADWAY STRUCTURAL SECTION. THIS PLAN MUST SHOW THE ACTUAL ROADWAY STRUCTURAL SECTION TO BE CONSTRUCTED.
16. STATE LAW SB 3019 REQUIRES THE CONTRACTOR TO OBTAIN AN IDENTIFICATION NUMBER FROM UNDERGROUND SERVICE ALERT (USA) PRIOR TO THE ISSUANCE OF A CITY ENCROACHMENT PERMIT. THE CONTRACTOR SHALL NOTIFY USA TWO FULL WORKING DAYS (48 HOURS MINIMUM) PRIOR TO ANY CONSTRUCTION ACTIVITIES, INCLUDING PAVEMENT REMOVAL, EXCAVATION AND ASPHALT CONCRETE OVERLAY, WHICH COULD AFFECT ANY UNDERGROUND UTILITY.
17. ANY CONTRACTORS PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE THEMSELVES WITH THE SITE AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY OR INDIRECTLY FROM THEIR OPERATIONS, WHETHER OR NOT SUCH FACILITIES ARE SHOWN ON THE PLANS.
18. PRIOR TO BEGINNING CONSTRUCTION WORK WHICH COULD DAMAGE OR CONFLICT WITH UNDERGROUND STRUCTURES OR UTILITIES, THE CONTRACTOR SHALL EXCAVATE INSPECTION HOLES TO DETERMINE THE LOCATION AND DEPTH OF SAID STRUCTURES AND UTILITIES.
19. IF EXISTING UTILITIES OR OTHER FACILITIES CONFLICT WITH THE PROPOSED IMPROVEMENTS, WORK SHALL STOP AND THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE SHALL BE NOTIFIED IMMEDIATELY.
20. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY DAMAGED OR ALTERED EXISTING IMPROVEMENTS WITHIN THE PUBLIC RIGHT–OF–WAY AS DIRECTED BY THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.
21. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL AT ALL TIMES.
22. SURVEY MONUMENTS SHALL BE PROTECTED AND PERPETUATED IN PLACE. DISTURBED OR COVERED MONUMENTS SHALL BE RESET BY A REGISTERED CIVIL ENGINEER, WHO IS AUTHORIZED TO PRACTICE LAND SURVEYING, OR A LICENSED LAND SURVEYOR.
23. IRRIGATION LINES SHALL BE REMOVED, RELOCATED OR RECONSTRUCTED AS SHOWN OR AS DIRECTED IN THE FIELD, BY THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.
24. NEW AND EXISTING MANHOLES AND WATER VALVES SHALL BE ADJUSTED TO GRADE.
25. UTILITIES SHALL BE INSTALLED, TESTED, AND APPROVED PRIOR TO STREET PAVING. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE SERVING UTILITY COMPANY AND VERIFY THAT THE UTILITY FACILITY IS IN PLACE BEFORE PAVING.
26. TRENCH BACKFILL SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARD PROVISIONS LISTED ON THE ENCROACHMENT PERMIT.
27. THE CONTRACTOR SHALL NOT ORDER OR PLACE ANY CONCRETE OR ASPHALT CONCRETE PAVING UNTIL THE FORMS AND SUBGRADE OR AGGREGATE BASE HAVE BEEN INSPECTED AND APPROVED BY THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE IN THE FIELD.
28. THE CONTRACTOR SHALL REMOVE AND REPLACE, IN KIND, A MINIMUM OF TWO FEET OF EXISTING ASPHALT CONCRETE AND AGGREGATE BASE ADJACENT TO NEWLY CONSTRUCTED CURB AND GUTTER.
29. THE FINAL OR SURFACE LAYER OF ASPHALT CONCRETE SHALL NOT BE PLACED UNTIL ALL ON–SITE IMPROVEMENTS, INCLUDING GRADING HAVE BEEN COMPLETED AND ALL UNACCEPTABLE WORK HAS BEEN CORRECTED UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.
30. THE CONTRACTOR IN ACCORDANCE WITH THE ADOPTED CITY STANDARD SHALL FURNISH STREET NAME SIGNS AND STOP SIGNS.
31. "AS–BUILT" RECORD DRAWINGS SHALL BE FURNISHED TO THE CITY UPON COMPLETION OF CONSTRUCTION.
32. APPROVAL OF THESE PLANS BY THE CITY OR ITS AGENTS SHALL NOT RELIEVE THE CONTRACTOR OR THE APPLICANT FROM THE RESPONSIBILITY FOR THE CORRECTION OF ERRORS OR OMISSIONS DISCOVERED DURING CONSTRUCTION. UPON REQUEST, THE APPROPRIATE REVISIONS SHALL BE SUBMITTED TO THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER FOR REVIEW AND APPROVAL.

NOTICE TO CONTRACTOR

CAUTION: THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO, OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING, AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY FACILITIES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THE LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ANY NECESSARY ADJUSTMENTS TO ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENTS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PREVENT DAMAGE TO ANY UTILITY FACILITIES SHOWN AND ANY OTHER FACILITIES NOT SHOWN ON THESE PLANS.

ALL CONTRACTORS AND SUBCONTRACTORS PERFORMING WORK SHOWN ON THESE PLANS AGREE THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THEY WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT. THIS INCLUDES PROVIDING FOR THE SAFETY OF ALL PERSONS AND PROPERTY AND SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTORS AND SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE DESIGN PROFESSIONAL FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN

THAT THE DESIGN IS CONSISTENT WITH CURRENT SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND STANDARDS.

I UNDERSTAND THAT THE CHECK OF PLANS AND SPECIFICATIONS BY THE CITY OF LAKE FOREST IS CONFINED TO REVIEW ONLY, AND DOES NOT RELIEVE ME AS ENGINEER OF WORK OF MY RESPONSIBILITIES FOR THE PROJECT.

BENCH MARK
EL TORO FRONTAGE ROAD

Underground Service Alert
CALL BEFORE YOU DIG
Call: TOLL FREE
1–800–227–2600
TWO WORKING DAYS BEFORE YOU DIG

SEAL
REGISTERED PROFESSIONAL ENGINEER RAMESH C. GUPTA No. 62873 Exp. 6/30/16 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com
UNDER THE SUPERVISION OF:
3/16/15
RAMESH C. GUPTA R.C.E. 62873 DATE

PROJ MGR:	SER	DATE 03/11/15
DESIGNER:	SER	DATE 03/11/15
DRAFTER:	AEC	DATE 03/11/15
CHECKED BY:	SCG	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY
3/21/15
DATE
THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
TITLE SHEET

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = N.T.S.
SHEET 1 OF 30

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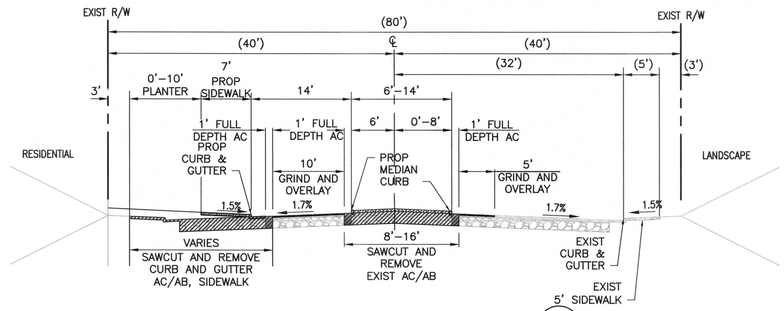
CONSTRUCTION NOTES AND QUANTITIES

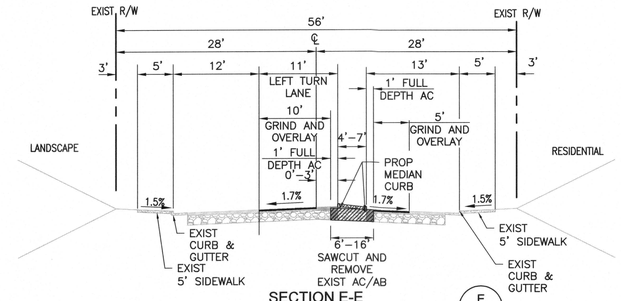
NO.	DESCRIPTION	QUANTITY	UNIT
STREET CONSTRUCTION NOTES			
1	CONSTRUCT 5" A.C. OVER 16" A.B. PER GEOTECHNICAL REPORT RECOMMENDATIONS AND AS APPROVED BY CITY ENGINEER	530	SF
2	CONSTRUCT 8" CURB AND GUTTER PER SPPWC STD 120-2	265	SF
3	CONSTRUCT 8" MEDIAN CURB PER SPPWC STD 120-2	1,210	LF
4	SAWCUT, REMOVE AND REPLACE FULL DEPTH PAVEMENT SECTION	3,855	SF
5	GRIND AND OVERLAY 2" OF AC SEE GENERAL NOTE 14, ON SHT 1 AND DETAIL ON SHT 4	55,785	SF
6	CONSTRUCT MEDIAN FLARE PER SPPWC STD NO 141-2-OC	4	EA
7	CONSTRUCT MEDIAN TAPER PER SPPWC STD NO 140-3-OC	2	EA
8	CONSTRUCT HANDICAP RAMP PER SPPWC STD 111-5 (CASE AND TYPE PER PLAN) AND DETAIL ON SHT 7	975	SF
9	CONSTRUCT CURB RAMP AND ISLAND PASSAGEWAY PER CALTRANS STD PLAN RSP A88B AND DETAIL ON SHT 7	125	SF
10	CONSTRUCT 4" PCC SIDEWALK PER OC PUBLIC WORKS STD 1205	1,950	SF
11	PLANTING AREA PER LANDSCAPE ARCHITECT'S PLAN	–	SF
12	RECONSTRUCT CROSS GUTTER PER SPPWC STD 122-2	1,820	SF
13	CONSTRUCT MONUMENT PER CITY OF LAKE FOREST	1	EA
14	CONSTRUCT FALSE CURB PER DETAIL ON SHT 3	20	LF
15	CONSTRUCT LOCAL DEPRESSION PER SPPWC STD PLAN NO 1308 AND DETAILS ON SHT 5	3	EA
16	CONSTRUCT 6" CURB AND GUTTER PER SPPWC STD 120-2	130	LF
17	CONSTRUCT 6" MEDIAN CURB PER SPPWC STD 120-2	2,105	LF
18	CONSTRUCT CURB AND GUTTER TRANSITION FROM 8" TO 6" CURB AND GUTTER	165	LF
19	INSTALL 2 – 4" IRRIGATION SLEEVES	1,125	LF
20	CONSTRUCT MEDIAN HARDSCAPE TREATMENT PER DETAILS A AND B ON SHT 5	4,905	SF
21	INSTALL 3/4" WATER METER WITH 2" SERVICE LINE CONNECTION	2	EA
22	INSTALL ELECTRICAL PEDESTAL	2	EA
23	RELOCATE FIRE HYDRANT PER IRWD STD PLAN W-8	2	EA
STORM DRAIN CONSTRUCTION NOTES			
31	INSTALL 18" RCP BEDDING AND BACKFILL PER SPPWC STD NO 1319	30	LF
32	CONSTRUCT CONCRETE COLLAR FOR RCB PER SPPWC STD PLAN NO 380-4 OC	3	EA
33	CONSTRUCT INLET TYPE II PER SPPWC STD PLAN NO 1302	3	EA
34	INSTALL 15" RCP	40	LF
35	CONSTRUCT JUNCTION STRUCTURE TYPE VI PER SPPWC 332-2-OC	1	EA
SIGNING AND STRIPING CONSTRUCTION NOTES			
51	INSTALL WHITE PAVEMENT LEGENDS AS SHOWN.		S.F.
52	INSTALL 4" SOLID WHITE RIGHT EDGELINE. (DETAIL 27B)		L.F.
53	INSTALL 4" SKIP WHITE LANE LINE. (DETAIL 9)		L.F.
54	INSTALL 8" SOLID WHITE CHANNELIZNG LINE. (DETAIL 38)		L.F.
55	INSTALL 12" WHITE DIAGONALS.		L.F.
56	INSTALL CROSSWALK (WHITE OR YELLOW AS INDICATED).		L.F.
57	INSTALL DOUBLE YELLOW. (DETAIL 22)		L.F.
58	INSTALL PAINTED MEDIAN. (DETAIL 29)		L.F.
59	INSTALL 12" SOLID WHITE STOPBAR.		L.F.
60	INSTALL SIGN PER DESIGNATION. SEE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, (CALTRANS) "UNIFORM SIGN CHART".		EA.
61	REMOVE. SANDBLAST PAINT TO BE REMOVED. ALL CONFLICTING STRIPING AND SIGNS SHALL BE REMOVED.		L.F.
62	INSTALL 50 FT. 4" WHITE LANE LINE.		L.F.

DISPOSITION NOTES

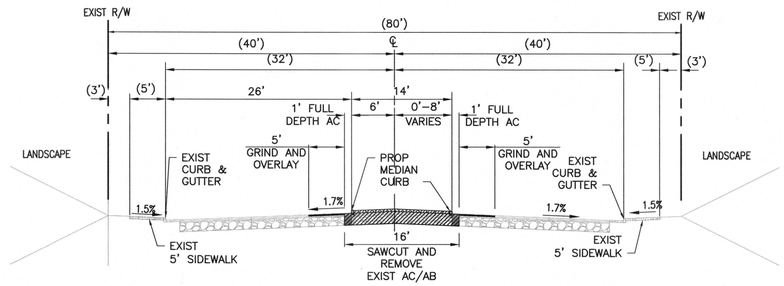
A	PROTECT IN PLACE
B	REMOVE EXIST ITEM AS NOTED
C	ADJUST TO GRADE ITEM AS NOTED
D	REMOVE AND CONSTRUCT STORM DRAIN CATCH BASIN
E	RELOCATE FIRE HYDRANT PER IRWD STANDARD PLAN W-8
F	REMOVE INTERFERRING STORM DRAIN PIPE



SECTION A-A (A)
FROM STA 50+66.50 TO STA 51+72.57
NTS
PUBLIC IMPROVEMENTS



SECTION E-E (E)
LEFT TURN LANE
STA 77+47 TO STA 78+80
NTS
PUBLIC IMPROVEMENTS



SECTION B-B (B)
FROM STA 51+72 TO STA 56+25
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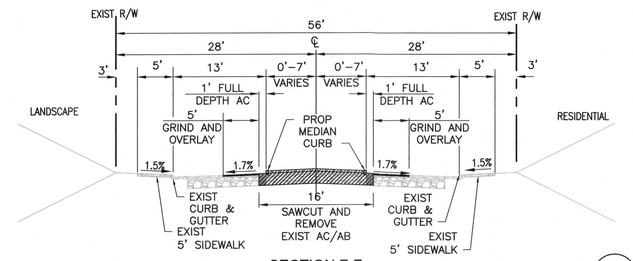
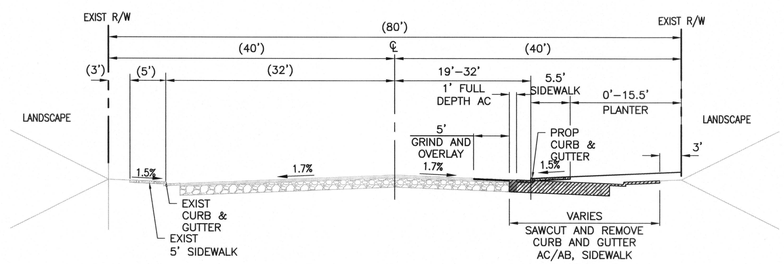
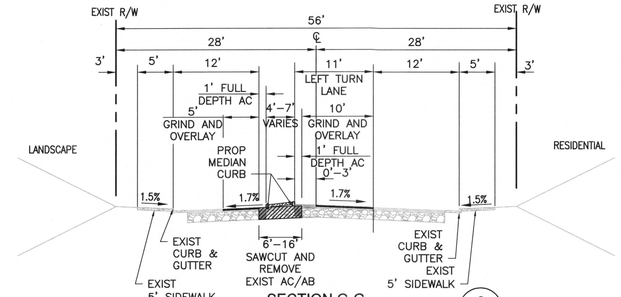
PUBLIC IMPROVEMENTS



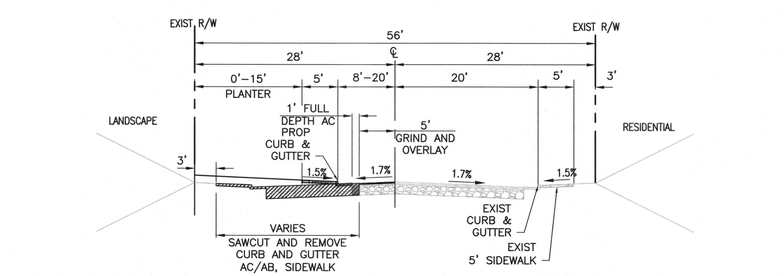
SECTION F-F (F)
STA 75+94 TO STA 76+65
STA 78+80 TO STA 81+30
STA 85+44 TO STA 86+59
STA 88+03 TO STA 89+67
STA 91+31 TO STA 92+18
STA 97+49 TO STA 98+62
NTS
PUBLIC IMPROVEMENTS



SECTION C-C (C)
STA 60+38 TO STA 61+20
NTS
PUBLIC IMPROVEMENTS



SECTION G-G (G)
LEFT TURN LANE
STA 89+67 TO STA 90+50
NTS
PUBLIC IMPROVEMENTS



SECTION D-D (D)
STA 74+08 TO STA 74+93
NTS
PUBLIC IMPROVEMENTS

SEAL

REGISTERED PROFESSIONAL ENGINEER — RAMESH C. GUPTA — No. 62873 — Exp. 6/30/16 — CIVIL — STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
RAMESH C. GUPTA R.C.E. 62873 — DATE 3/16/15

		DATE
PROJ MGR:	SER	03/11/15
DESIGNER:	SER	03/11/15
DRAFTER:	AEC	03/11/15
CHECKED BY:	SCG	03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
TYPICAL SECTIONS AND DETAILS

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = N.T.S.
SHEET 2 OF 30

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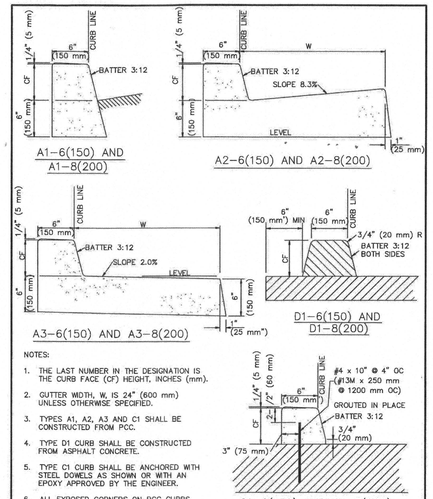


CURB AND GUTTER DETAIL

SPPWC STD PLAN 120-2

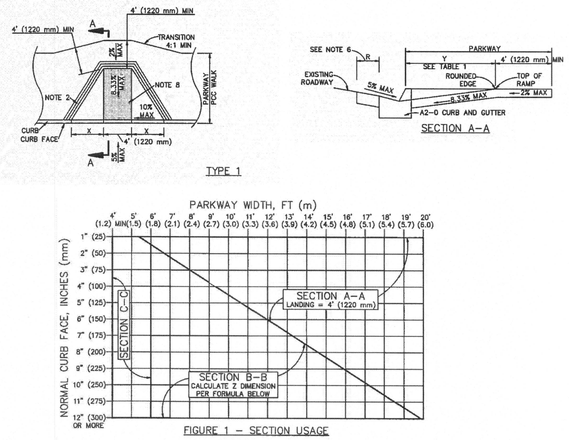


FIGURE 1 – SECTION USAGE

NORMAL CURB FACE, INCHES (mm)	X, FT (mm)	SECTION Y–Y Y, FT (mm)
2" (50)	4.00' (1220) MIN	2.63' (790)
3" (75)	4.00' (1220) MIN	3.95' (1185)
4" (100)	4.00' (1220) MIN	5.25' (1580)
5" (125)	4.17' (1275)	6.58' (1975)
6" (150)	5.00' (1525)	7.90' (2370)
7" (175)	5.83' (1775)	9.21' (2765)
8" (200)	6.67' (2035)	10.53' (3160)
9" (225)	7.50' (2285)	11.84' (3555)
10" (250)	8.33' (2540)	13.16' (3950)
11" (275)	9.17' (2795)	14.47' (4340)
12" (300)	10.00' (3050)	15.79' (4735)

SEE SHEET 9 FOR STREET SLOPE ADJUSTMENT FACTORS, ALL STREETS

TABLE 1 – X AND Y VALUES

TABLE 1 REFERENCE FORMULAS:
X = CF / 8.333%
Y = CF / (8.333% – 2% WALK CROSS SLOPE)

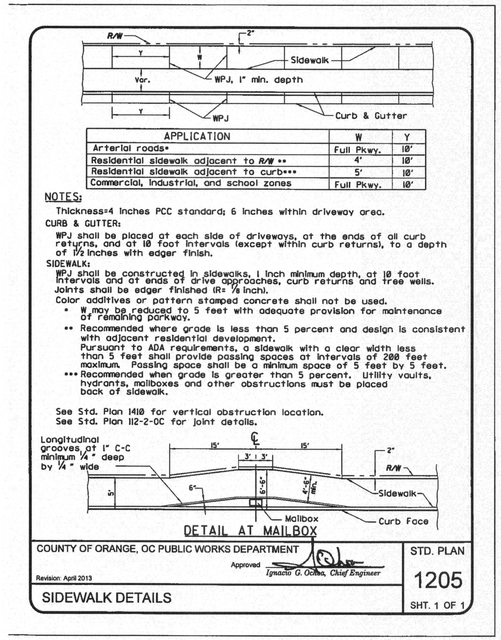
WHERE FIGURE 1 SHOWS USE OF SECTION B–B, FIGURE Z DIMENSION AS FOLLOWS:

W = PARKWAY WIDTH
L = LANDING WIDTH, 4' (1220 mm) TYP
Z = [(Y+L)–W] x 0.760

IF (Y+L) < W, THEN Z = 0

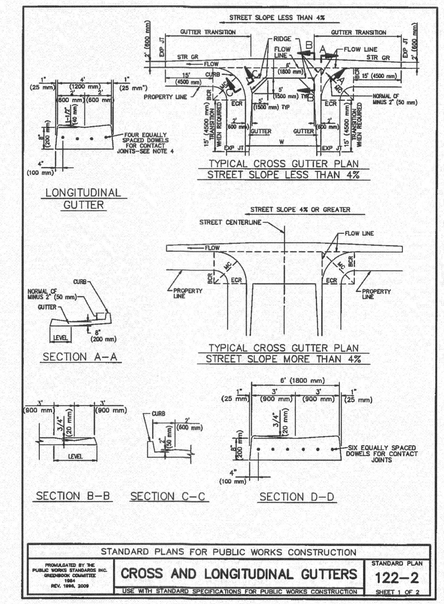
CURB RAMP

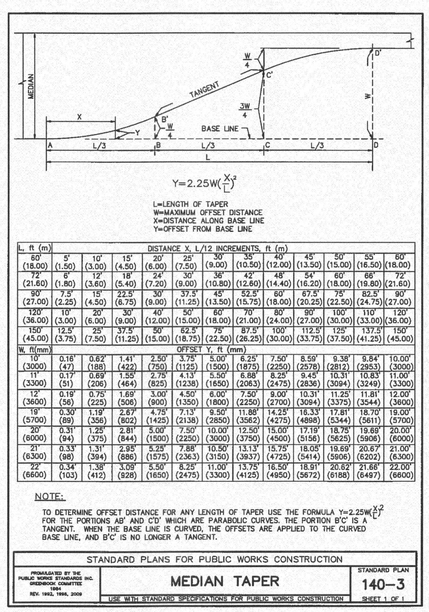
SPPWC STD PLAN 111-5



SIDEWALK DETAIL

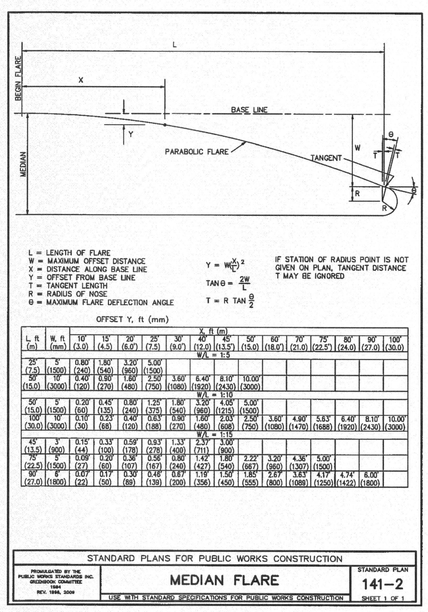
SPPWC STD PLAN 1205

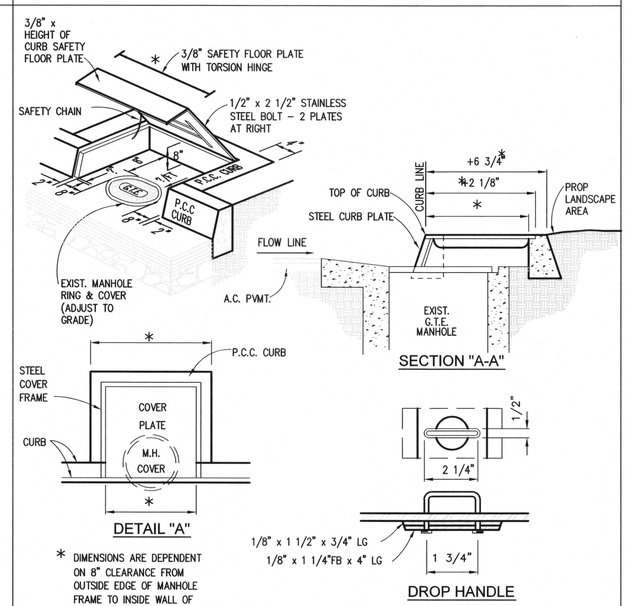




MEDIAN FLARE

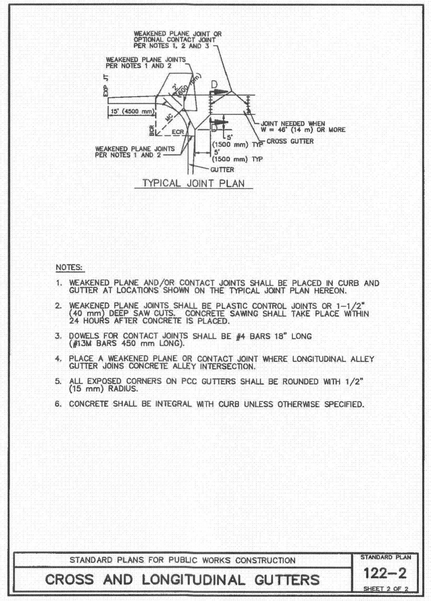
SPPWC STD PLAN 141-2





FALSE CURB

NOT TO SCALE



CROSS AND LONGITUDINAL GUTTERS

SPPWC STD PLAN 122-2

SEAL

REGISTERED PROFESSIONAL ENGINEER RAMESH C. GUPTA No. 62873 Exp. 6/30/16 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
RAMESH C. GUPTA R.C.E. 62873 DATE

		DATE
PROJ MGR:	SER	03/11/15
DESIGNER:	SER	03/11/15
DRAFTER:	AEC	03/11/15
CHECKED BY:	SCG	03/11/15

DATE	BY	DESCRIPTION	APPV
		REVISIONS	

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
DETAILS

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = N.T.S.
SHEET 3 OF 30

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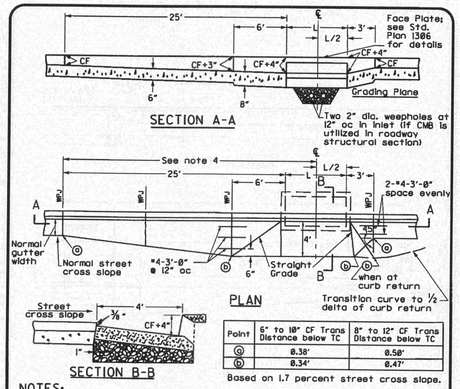


Point	6" to 18" CF Trans Distance below TC	8" to 12" CF Trans Distance below TC
ⓐ	0.38'	0.58'
ⓑ	0.34'	0.47'

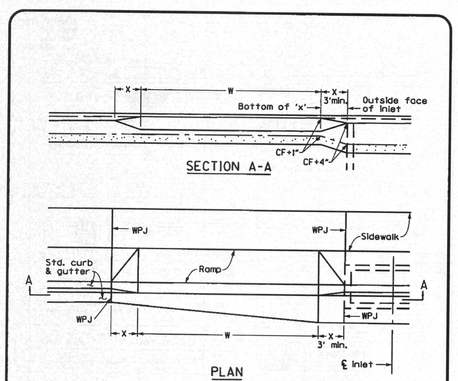
Based on 1.7 percent street cross slope.

NOTES:

1. Local depression shall not be constructed until connecting curb and gutter has been completed or shall be constructed monolithically with connecting curb and gutter, unless otherwise approved by the Engineer.
2. Local Depression shall conform to same shape whether grate inlet or curb opening, or both, are used.
3. Length of opening "L" shall be specified on plans.
4. Both ends of depression shall be symmetrical about centerline of opening in sump condition.
5. See Std. Plan 1306 for curb opening detail.
6. See Std. Plan 112-2-0C for joint details.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT — Approved: Ignacio G. Ochoa, Chief Engineer — STD. PLAN 1308

Revision: April 2013 — LOCAL DEPRESSION — SHT. 1 OF 2



TYPE "A"

NOTES:

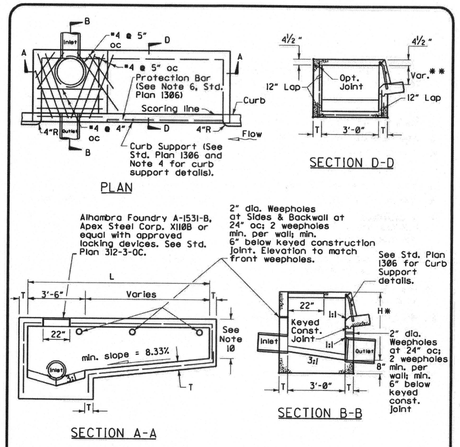
1. Type A local depression shall be used adjacent to driveway depressions only.
2. Use of Type A local depression may require lengthening of inlet to provide adequate hydraulic capacity.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT — Approved: Ignacio G. Ochoa, Chief Engineer — STD. PLAN 1308

Revision: April 2013 — LOCAL DEPRESSION — SHT. 2 OF 2

LOCAL DEPRESSION

SPPWC STD PLAN 1308



* When outlet pipe is constructed within roadway, a minimum of 30 inches (County Ord. No. 6-3-69) or the roadway structural section thickness plus 6 inches, whichever is greater, shall be maintained between the top of pipe and the roadway surface.

** To be determined by the Engineer and as indicated on plans.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT — Approved: Ignacio G. Ochoa, Chief Engineer — STD. PLAN 1302

Revision: April 2013 — INLET TYPE II — SHT. 1 OF 2

NOTES:

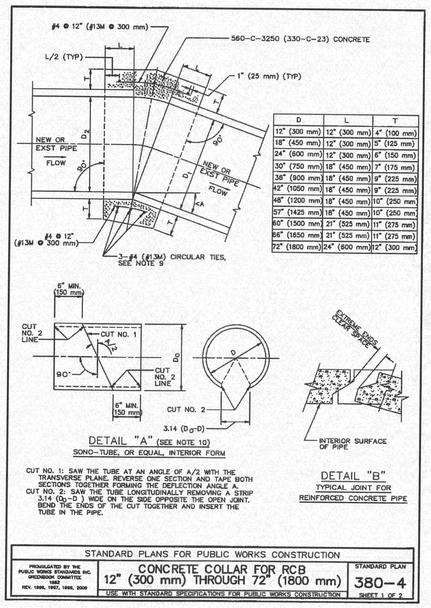
1. Standard opening lengths, "L" are 7 feet, 10 feet, 14 feet and 21 feet. Other lengths may be used, but shall not exceed 21 feet, unless otherwise specified and approved by the Engineer.
2. All reinforcing is #4 at 12 inches on-center for H < 8 feet and #5 at 12 inches on-center for H ≥ 8 feet, unless otherwise specified and approved by the Engineer.
3. Curb opening shall conform to curb alignment.
4. See Std. Plans 1306 and 1307 for details and notes.
5. See Std. Plan 1308 for Local Depression details.
6. All steel shall be 2 inches clear from interior concrete surfaces.
7. T=6 inches for H=5 feet to < 8 feet. T=8 inches for H=8 feet to 20 feet.
8. A stainless steel marker per the Special Provisions with the words "NO DUMPING DRAINS TO OCEAN" shall be mounted on the top of the inlet with Silkabond adhesive or equal.
9. Deck, including steel reinforcement, shall be constructed the same width as sidewalk (up to 6 feet wide).
10. D=3 feet for L less than or equal to 10 feet. D=4 feet for L greater than 10 feet.
11. All curved concrete surfaces shall be formed by curved forms, and shall not be shaped by plastering.
12. Basin floor shall be given a steel trowel finish. Slope floor from all directions to the outlet.
13. Concrete strength and type shall be per Std. Plan 1803.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT — Approved: Ignacio G. Ochoa, Chief Engineer — STD. PLAN 1302

Revision: April 2013 — INLET TYPE II — SHT. 2 OF 2

INLET TYPE II

SPPWC STD PLAN 1302



D	L	T	∠A
12" (300 mm)	12" (300 mm)	4" (100 mm)	01°49'35"
18" (450 mm)	12" (300 mm)	5" (125 mm)	01°16'14"
24" (600 mm)	12" (300 mm)	6" (150 mm)	00°58'27"
30" (750 mm)	18" (450 mm)	7" (175 mm)	00°47'23"
36" (900 mm)	18" (450 mm)	9" (225 mm)	00°39'51"
42" (1050 mm)	18" (450 mm)	9" (225 mm)	00°34'23"
48" (1200 mm)	18" (450 mm)	10" (250 mm)	00°30'14"
54" (1372 mm)	18" (450 mm)	10" (250 mm)	00°26'58"
60" (1500 mm)	21" (525 mm)	11" (275 mm)	00°24'21"
66" (1650 mm)	21" (525 mm)	11" (275 mm)	00°22'12"
72" (1800 mm)	24" (600 mm)	12" (300 mm)	00°20'23"

CUT NO. 1: SAW THE TUBE AT AN ANGLE OF A/2 WITH THE TRANSVERSE PLANE. REVERSE ONE SECTION AND TAPE BOTH SECTIONS TOGETHER FORMING THE DEFLECTION ANGLE A.
CUT NO. 2: SAW THE TUBE LONGITUDINALLY REMOVING A STRIP 3.14 (D-T) WIDE ON THE SIDE OPPOSITE THE OPEN JOINT. BEND THE ENDS OF THE CUT TOGETHER AND INSERT THE TUBE IN THE PIPE.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION — PROMULGATED BY THE PUBLIC WORKS STANDARDS INC. GREENBOOK COMMITTEE 1983 — REV. 1996, 1997, 1998, 2009 — CONCRETE COLLAR FOR RCB 12" (300 mm) THROUGH 72" (1800 mm) — USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION — STANDARD PLAN 380-4 — SHEET 1 OF 2

The following Standard Plans for Public Works Construction, 2009 Edition, of the Public Works Standards, Inc. have been adopted by OCPW with conditions which shall apply to OCPW use. The conditions are listed below.

SPPWC #	OCPW #	Name and Conditions
380-4	380-4-OC	Concrete Collar For RCP 12" Through 72"

1. Replace Note 1:
   "A concrete collar is required whenever D1 is unequal to D2 or the permitted deflection at a pipe joint is exceeded; that is, when angle "A" is greater than the permitted deflection angle. (See Table)"
2. Replace Note 2:
   "Concrete collars shall not be constructed on main line storm drains unless shown on the plans or ordered by the Engineer."
3. Add notes:
   11. The value for angle "A" shall be shown on the improvement plans.
   12. Where the slope of the upstream pipe is greater than the slope of the downstream pipe, join soffits. Where the slope of the upstream pipe is less than the slope of the downstream pipe, join inverts.
   13. Beveled pipe may be used in lieu of a concrete collar if approved by the Engineer.
   14. A concrete collar shall not be constructed connecting a larger diameter pipe upstream to a smaller diameter pipe downstream unless shown on the improvement plans or ordered by the Engineer.
4. Replace Table:

D	L	T	∠A
12" (300 mm)	12" (300 mm)	4" (100 mm)	01°49'35"
18" (450 mm)	12" (300 mm)	5" (125 mm)	01°16'14"
24" (600 mm)	12" (300 mm)	6" (150 mm)	00°58'27"
30" (750 mm)	18" (450 mm)	7" (175 mm)	00°47'23"
36" (900 mm)	18" (450 mm)	9" (225 mm)	00°39'51"
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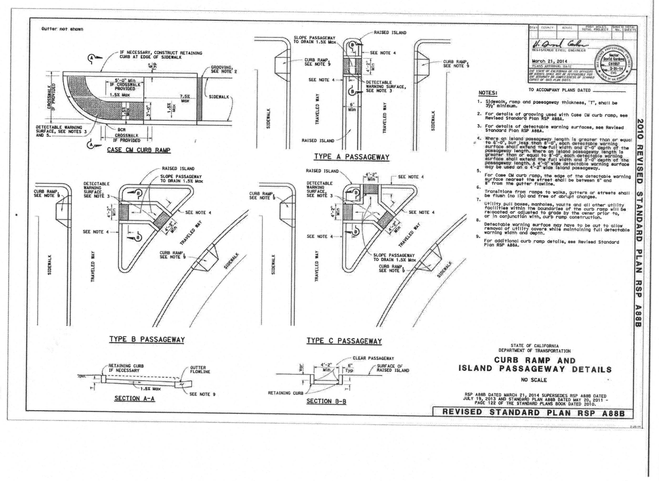
54" (1372 mm)	18" (450 mm)	10" (250 mm)	00°26'58"
60" (1500 mm)	21" (525 mm)	11" (275 mm)	00°24'21"
66" (1650 mm)	21" (525 mm)	11" (275 mm)	00°22'12"
72" (1800 mm)	24" (600 mm)	12" (300 mm)	00°20'23"

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT — Approved: Ignacio G. Ochoa, Chief Engineer — STD. PLAN 380-4-OC

Revision: April 2013 — SPPWC STANDARD PLAN - CONCRETE COLLAR FOR RCP 12" (300 mm) THROUGH 72" (1800 mm) — SHT. 1 OF 1

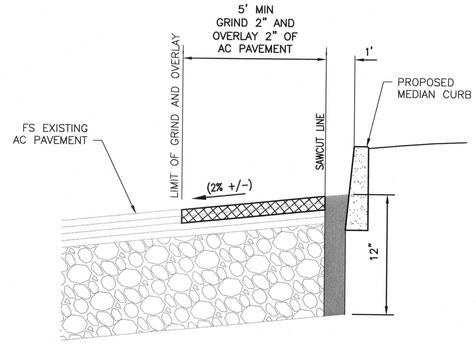
CONCRETE COLLAR FOR RCP

SPPWC STD PLAN 380-4 AND 380-4-OC



CURB RAMP AND ISLAND PASSAGEWAY DETAIL

CALTRANS STD PLAN RSP A88B



FULL DEPTH AC PAVEMENT AND GRIND AND OVERLAY

NOT TO SCALE

SEAL: REGISTERED PROFESSIONAL ENGINEER — RAMESH C. GUPTA — No. 62873 — Exp. 6/30/16 — CIVIL — STATE OF CALIFORNIA

PLANS PREPARED BY: Stantec, 38 TECHNOLOGY DRIVE, SUITE 100, IRVINE, CA 92618, 949.923.6000, stantec.com

UNDER THE SUPERVISION OF: RAMESH C. GUPTA, R.C.E. 62873 — DATE 3/16/15

PROJ MGR:	SER	DATE 03/11/15
DESIGNER:	SER	DATE 03/11/15
DRAFTER:	AEC	DATE 03/11/15
CHECKED BY:	SCG	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY — DATE — THOMAS WHEELER, P.E. PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD STREET IMPROVEMENT PROJECT DETAILS

CITY OF LAKE FOREST PUBLIC WORKS DEPARTMENT — SCALE: 1" = N.T.S. — SHEET 4 OF 30

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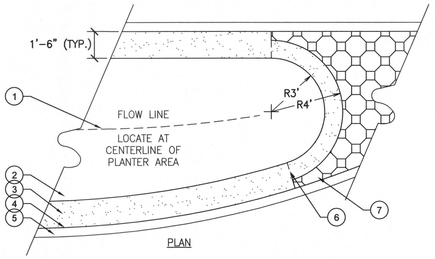
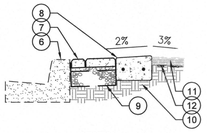


PLAN



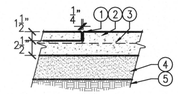
SECTION

LEGEND:
1. FLOW LINE – GRADE TO EQUAL CURB LINE GRADE
2. PLANTER AREA
3. CONCRETE MAINTENANCE/SAFETY EDGE
4. COLD JOINT
5. EXISTING CURB
6. WEAKENED PLANE JOINT (TYP.) – SEE DETAIL AND NOTE BELOW.
7. PAVERS – SEE DETAIL
8. CONCRETE HEADER – SEE DETAIL
9. PAVER BASE PREPERATION
10. COMPACTED SUBGRADE
11. 3" LAYER OF MULCH – SEE PLANTING LEGEND
12. FINISHED GRADE – 3" BELOW FINISHED SURFACE

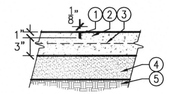
NOTES:
1. EXPANSION JOINTS AND WEAKENED PLANE JOINTS LOCATIONS SHALL MATCH THOSE AT ADJACENT CURB.

MEDIAN HARDSCAPE TREATMENT (A)

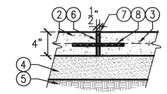
NOT TO SCALE



WEAKENED PLANE JOINT



SAW CUT JOINT



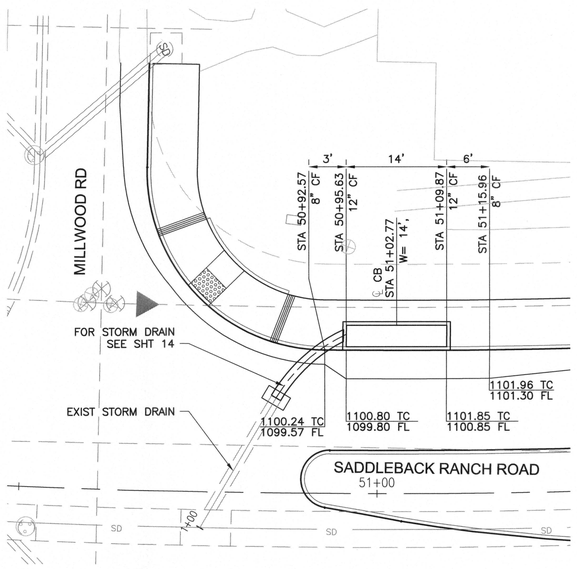
EXPANSION JOINT

1. WEAKENED PLANE JOINT
2. CONCRETE SIDEWALK – SEE CONSTRUCTION PLAN
3. REINFORCEMENT – REBAR, 4" WWM OR OTHER AS SPECIFIED
4. BASE – 4" DEEP UNLESS SUPERSEDED BY THE SOILS REPORT
5. SUB GRADE – PREPARED PER THE SOILS REPORT
6. PRE MOLDED NON-ASPHALTIC EXPANSION JOINT.
7. WATERPROOF THIOKOL SEALANT OVER CONTINUOUS ETHAFOAM ROD OR APPROVED EQUAL.
8. #3 x 24" REBAR TIE– 30" O.C. WRAP ONE END WITH KRAFT PAPER OR DUCT TAPE AS SHOWN.

NOTES:
1. ALL JOINTS SHALL ADHERE TO ANY LOCAL OR MUNICIPAL CODES OR STANDARDS.
2. ALL WEAKENED AND EXPANSION JOINTS SHALL HAVE ½" TOOLED EDGES.
3. ½" FELT EXPANSION JOINTS SHALL BE USED BETWEEN ALL FLATWORK ABUTTING FOUNDATIONS, STEM WALLS AND ENTRIES.
4. EXPANSION JOINTS SHALL BE LOCATED 10' O.C. MAX. WEAKENED PLANE JOINTS AREA TO BE LOCATED 4' O.C. MAX. ON ALL WALKWAYS UNLESS SHOWN OTHERWISE.
5. IN ALL CASES WHEN CONCRETE ABUTS FELT, IT SHALL BE FINISHED WITH A ¼" TOOLED EDGE.

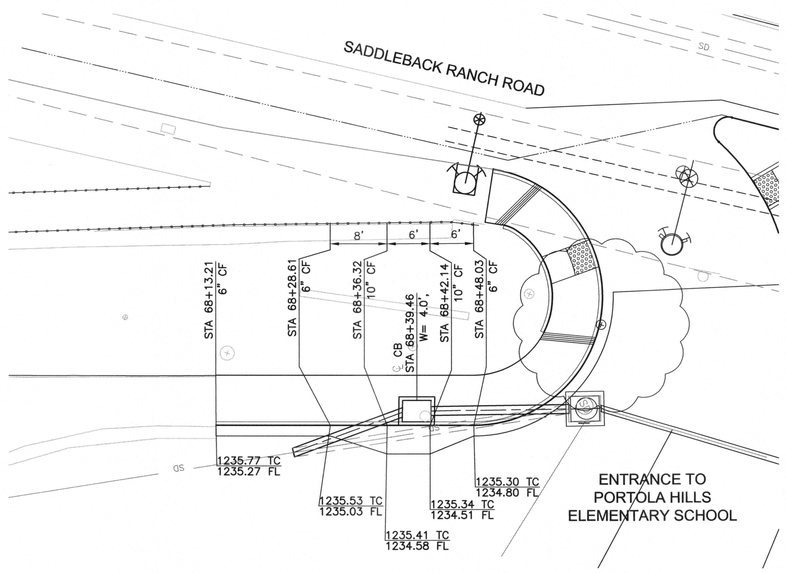
CONTROL JOINTS (B)

NOT TO SCALE



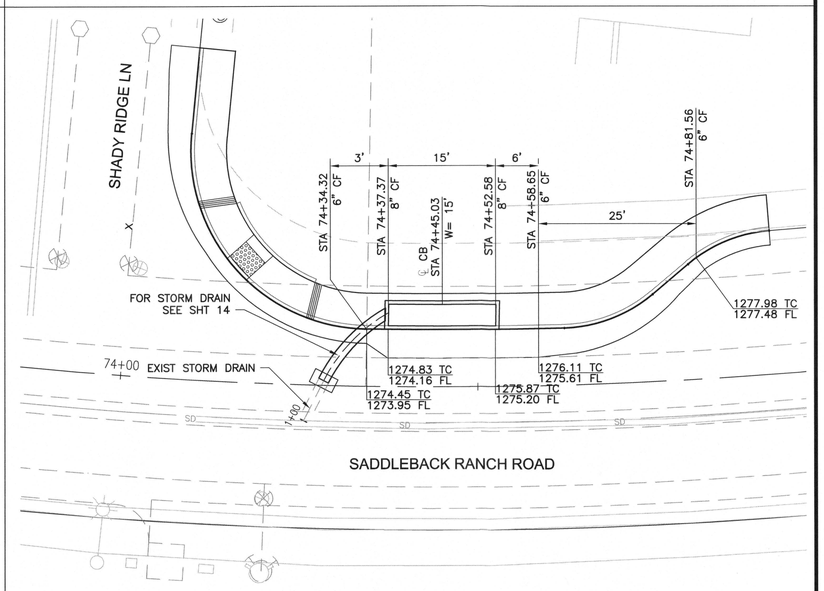
LOCAL DEPRESSION #1

SCALE: 1" = 10'



LOCAL DEPRESSION #2

SCALE: 1" = 10'



LOCAL DEPRESSION #3

SCALE: 1" = 10'

SEAL	PLANS PREPARED BY:							
REGISTERED PROFESSIONAL ENGINEER RAMESH C. GUPTA No. 62873 Exp. 6/30/16 CIVIL STATE OF CALIFORNIA	Stantec 38 TECHNOLOGY DRIVE, SUITE 100 IRVINE, CA 92618 949.923.6000 stantec.com	PROJ MGR: SER	DATE 03/11/15				APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY	SADDLEBACK RANCH ROAD STREET IMPROVEMENT PROJECT
	UNDER THE SUPERVISION OF:	DESIGNER: SER	DATE 03/11/15				DATE	DETAILS AND LOCAL DEPRESSION DETAILS
		DRAFTER: AEC	DATE 03/11/15	DATE	BY	DESCRIPTION	APPV	
	RAMESH C. GUPTA / R.C.E. 62873 DATE 3/16/15	CHECKED BY: SCG	DATE 03/11/15	REVISIONS			THOMAS WHEELER, P.E. PUBLIC WORKS DIRECTOR / CITY ENGINEER	CITY OF LAKE FOREST PUBLIC WORKS DEPARTMENT — SCALE: 1" = N.T.S. — SHEET 5 OF 30

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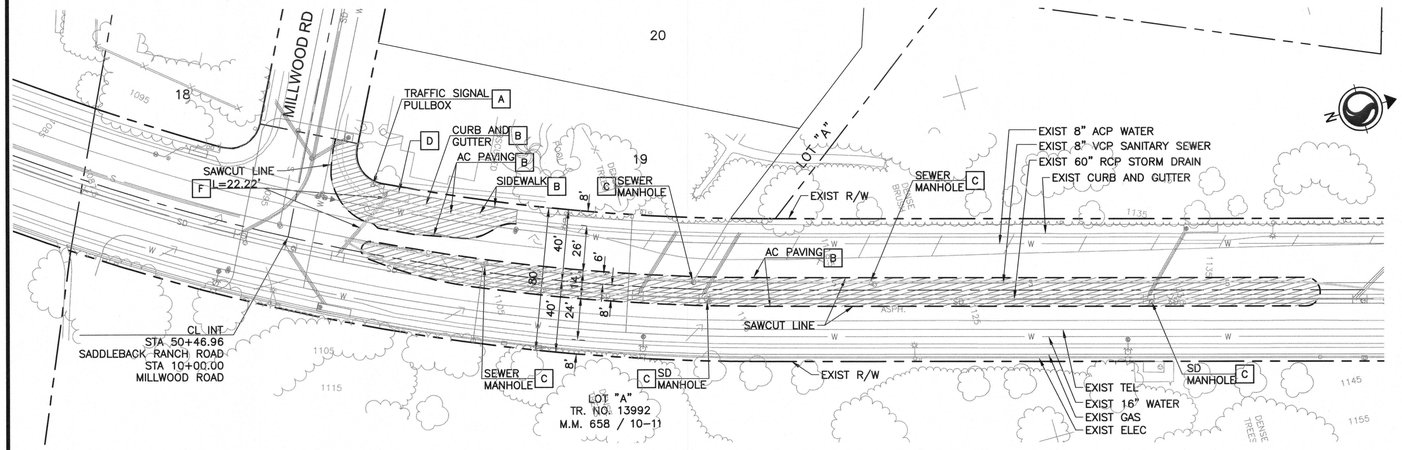
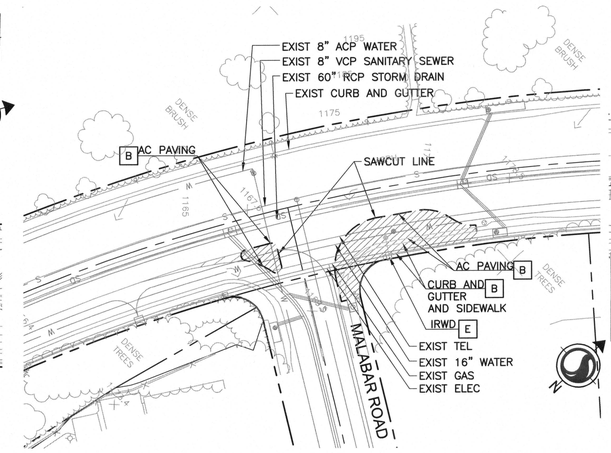


SADDLEBACK RANCH ROAD



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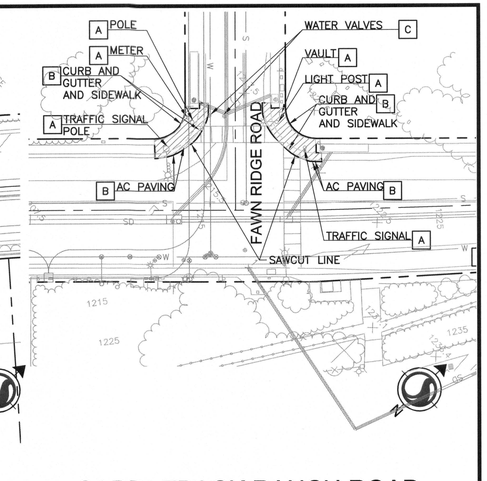

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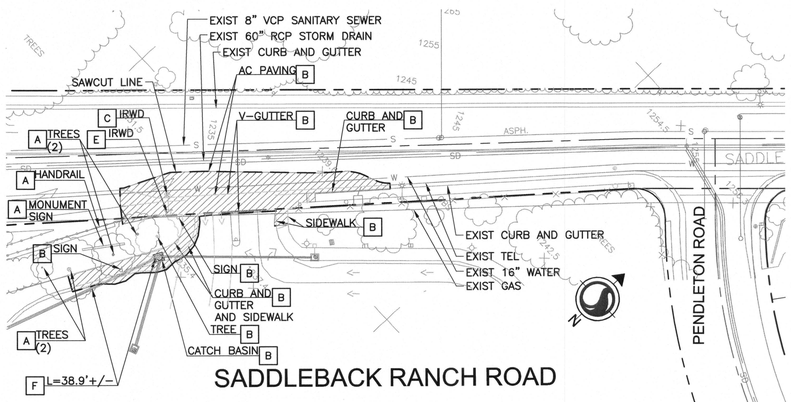

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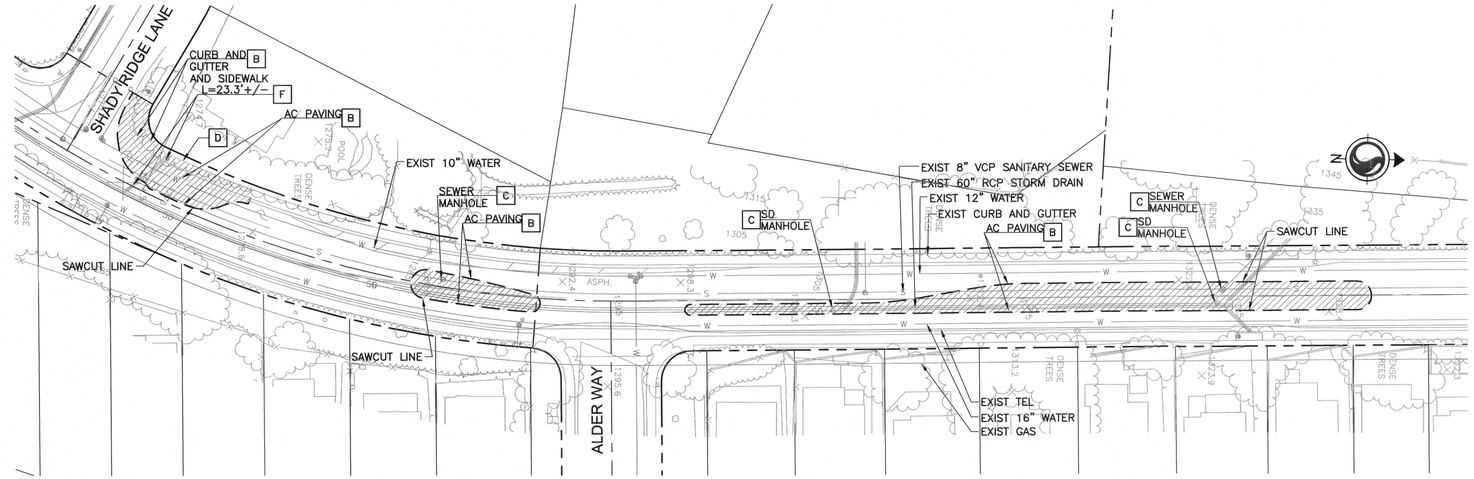

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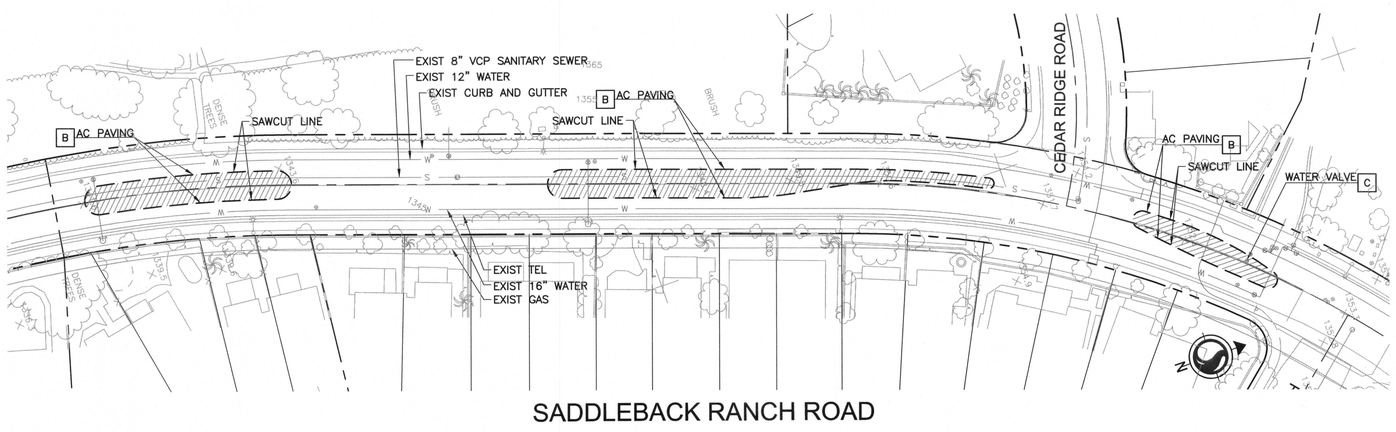
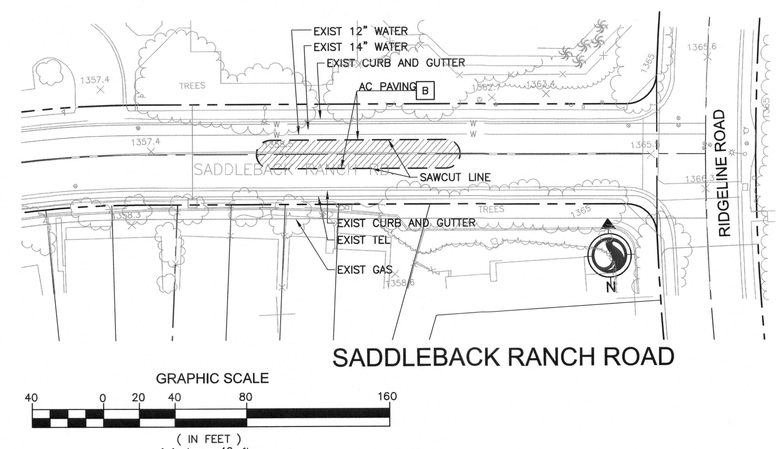


SADDLEBACK RANCH ROAD



SADDLEBACK RANCH ROAD

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

DISPOSITION NOTES

- A — PROTECT IN PLACE
- B — REMOVE EXIST ITEM AS NOTED
- C — ADJUST TO GRADE ITEM AS NOTED
- D — REMOVE AND CONSTRUCT STORM DRAIN CATCH BASIN
- E — RELOCATE FIRE HYDRANT PER IRWD STANDARD PLAN W-8
- F — REMOVE INTERFERRING STORM DRAIN PIPE

SEAL

REGISTERED PROFESSIONAL ENGINEER RAMESH C. GUPTA No. 62873 Exp. 6/30/16 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:

3/16/15

RAMESH C. GUPTA R.C.E. 62873 DATE

PROJ MGR:	SER	DATE 03/11/15
DESIGNER:	SER	DATE 03/11/15
DRAFTER:	AEC	DATE 03/11/15
CHECKED BY:	SCG	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT

DEMOLITION PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'

SHEET 6 OF 30

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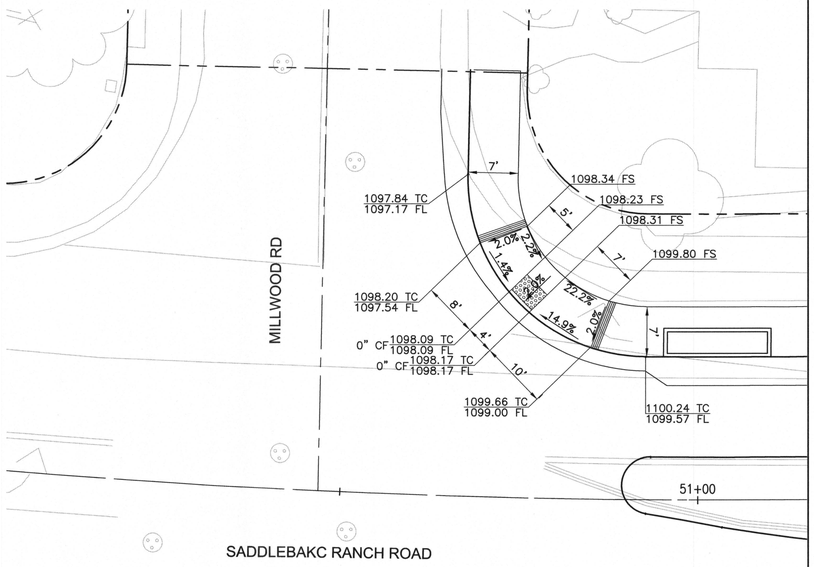
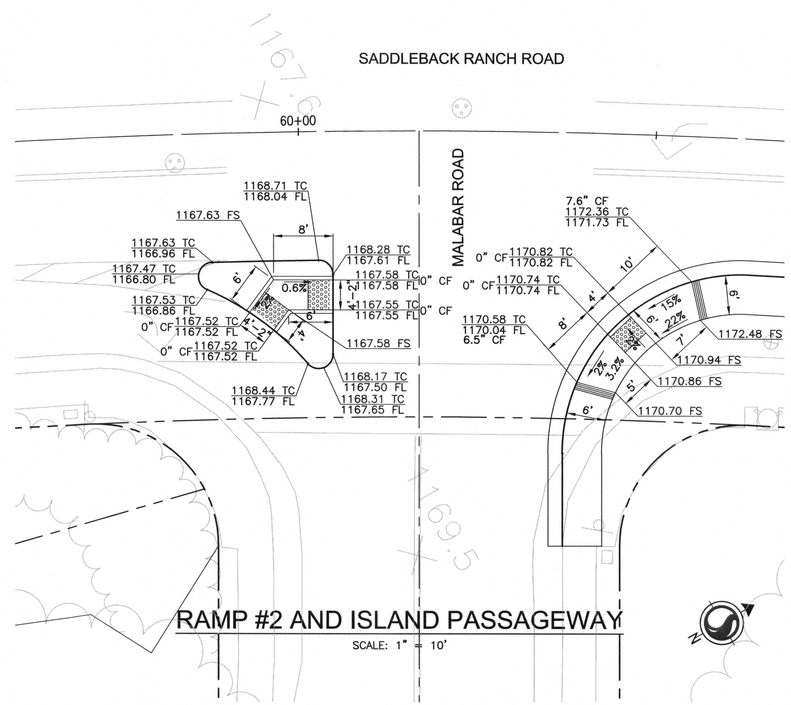


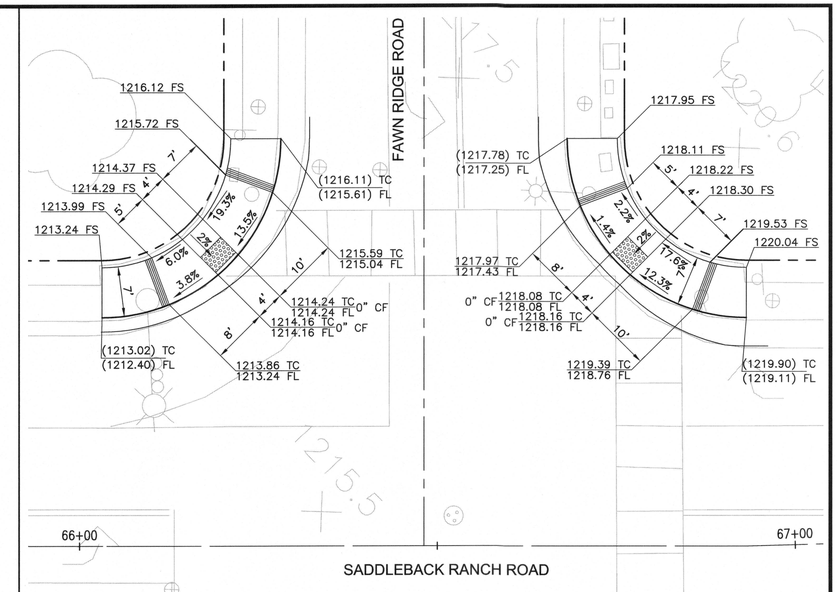
RAMP #1

SCALE: 1" = 10'



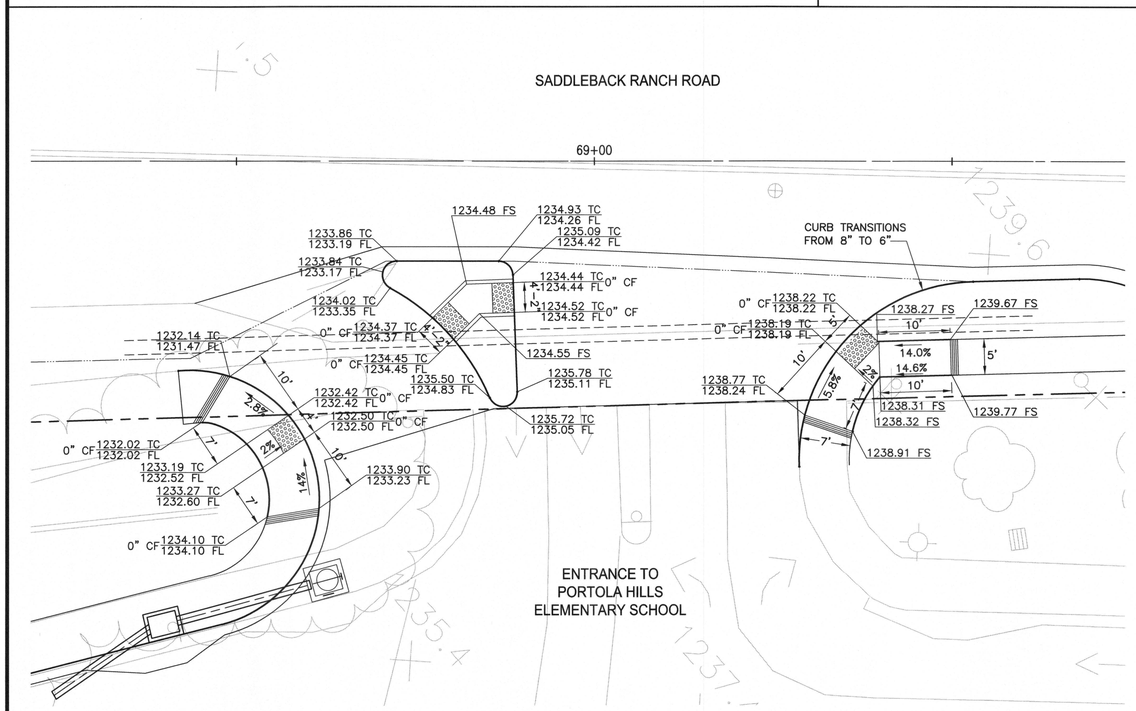
RAMP #2 AND ISLAND PASSAGEWAY

SCALE: 1" = 10'



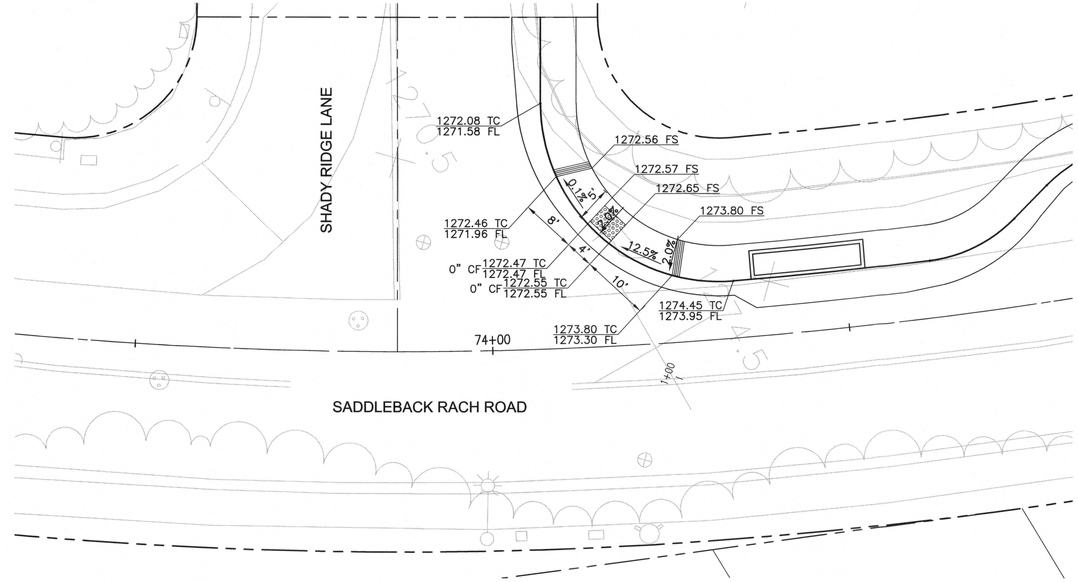
RAMP #3 AND RAMP #4

SCALE: 1" = 10'



RAMP #5 AND #6 AND ISLAND PASSAGEWAY

SCALE: 1" = 10'



RAMP #7

SCALE: 1" = 10'

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

SEAL

REGISTERED PROFESSIONAL ENGINEER RAMESH C. GUPTA No. 62873 Exp. 8/30/16 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
RAMESH C. GUPTA R.C.E. 62873 DATE 3/16/15

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DATE	BY	DESCRIPTION	APPV

REVISIONS

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DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR /
CITY ENGINEER

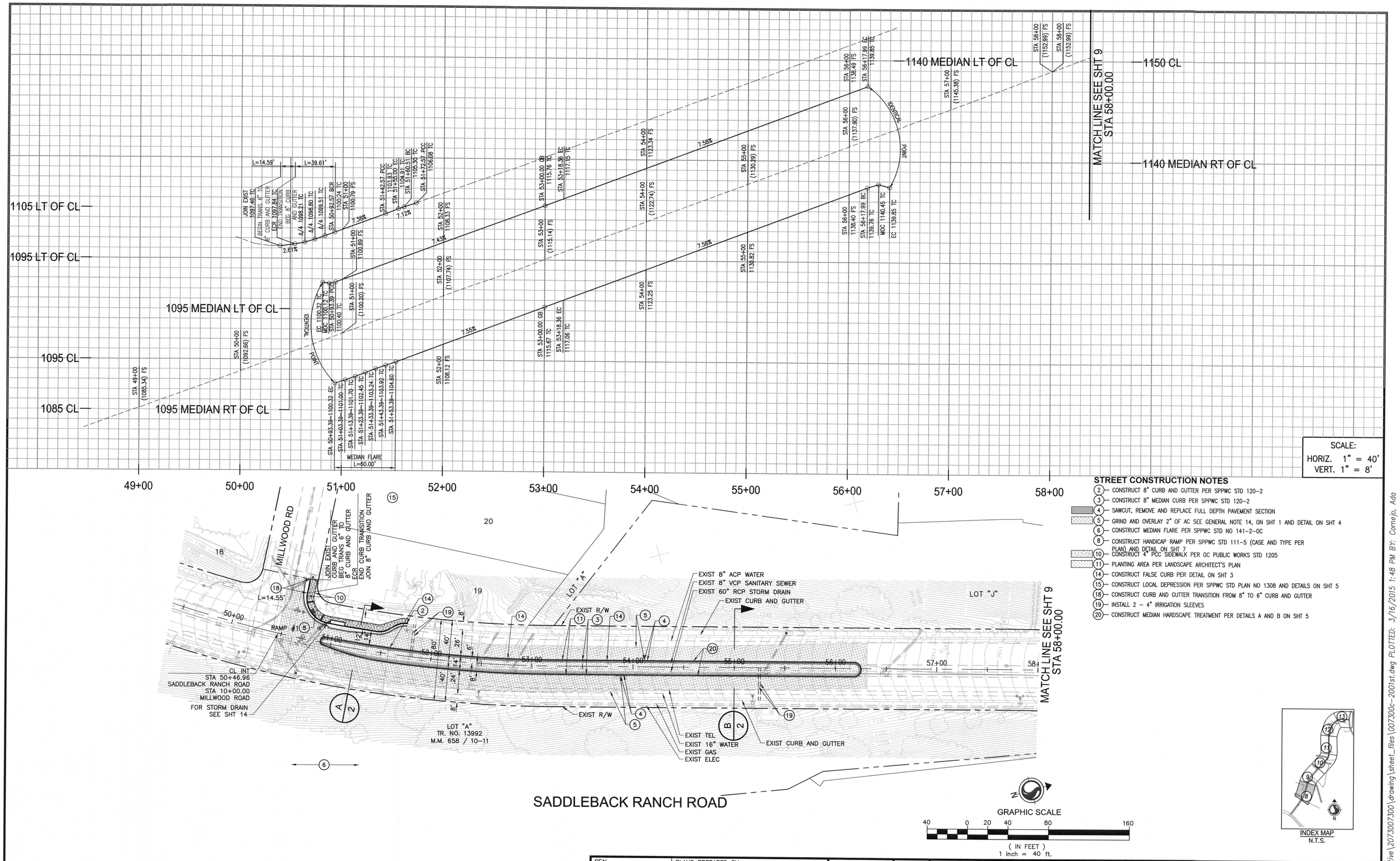
SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
CURB RAMP DETAILS

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'

SHEET 7 OF 30

DRAWING: v:\2073\active\2073007300\drawing\sheet_files\007300c-2010st.dwg PLOTTED: 3/16/2015 1:47 PM BY: Cornejo, Ada



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

STREET CONSTRUCTION NOTES

2 — CONSTRUCT 8" CURB AND GUTTER PER SPPWC STD 120-2
3 — CONSTRUCT 8" MEDIAN CURB PER SPPWC STD 120-2
4 — SAWCUT, REMOVE AND REPLACE FULL DEPTH PAVEMENT SECTION
5 — GRIND AND OVERLAY 2" OF AC SEE GENERAL NOTE 14, ON SHT 1 AND DETAIL ON SHT 4
6 — CONSTRUCT MEDIAN FLARE PER SPPWC STD NO 141-2-OC
8 — CONSTRUCT HANDICAP RAMP PER SPPWC STD 111-5 (CASE AND TYPE PER PLAN) AND DETAIL ON SHT 7
10 — CONSTRUCT 4" PCC SIDEWALK PER OC PUBLIC WORKS STD 1205
11 — PLANTING AREA PER LANDSCAPE ARCHITECT'S PLAN
14 — CONSTRUCT FALSE CURB PER DETAIL ON SHT 3
15 — CONSTRUCT LOCAL DEPRESSION PER SPPWC STD PLAN NO 1308 AND DETAILS ON SHT 5
18 — CONSTRUCT CURB AND GUTTER TRANSITION FROM 8" TO 6" CURB AND GUTTER
19 — INSTALL 2 - 4" IRRIGATION SLEEVES
20 — CONSTRUCT MEDIAN HARDSCAPE TREATMENT PER DETAILS A AND B ON SHT 5

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N.T.S.

SEAL: REGISTERED PROFESSIONAL ENGINEER — RAMESH C. GUPTA — No. 62873 — Exp. 8/30/16 — CIVIL — STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
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stantec.com

UNDER THE SUPERVISION OF:
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DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR /
CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
STA 49+00.00 TO STA 58+00.00

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'
SHEET 8 OF 30

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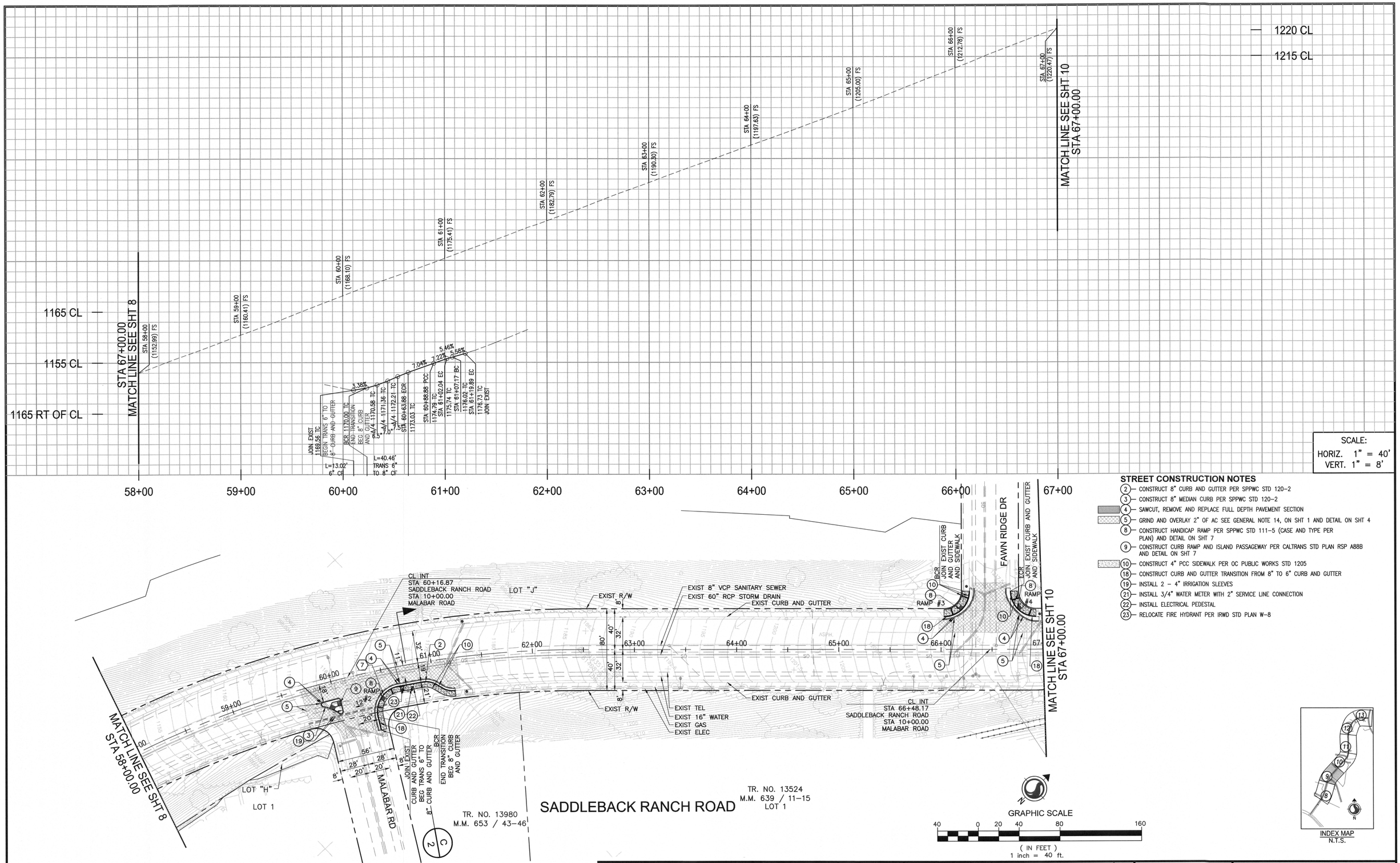

SCALE:
HORIZ. 1" = 40'
VERT. 1" = 8'

STREET CONSTRUCTION NOTES

2 — CONSTRUCT 8" CURB AND GUTTER PER SPPWC STD 120-2
3 — CONSTRUCT 8" MEDIAN CURB PER SPPWC STD 120-2
4 — SAWCUT, REMOVE AND REPLACE FULL DEPTH PAVEMENT SECTION
5 — GRIND AND OVERLAY 2" OF AC SEE GENERAL NOTE 14, ON SHT 1 AND DETAIL ON SHT 4
8 — CONSTRUCT HANDICAP RAMP PER SPPWC STD 111-5 (CASE AND TYPE PER PLAN) AND DETAIL ON SHT 7
9 — CONSTRUCT CURB RAMP AND ISLAND PASSAGEWAY PER CALTRANS STD PLAN RSP A88B AND DETAIL ON SHT 7
10 — CONSTRUCT 4" PCC SIDEWALK PER OC PUBLIC WORKS STD 1205
18 — CONSTRUCT CURB AND GUTTER TRANSITION FROM 8" TO 6" CURB AND GUTTER
19 — INSTALL 2 – 4" IRRIGATION SLEEVES
21 — INSTALL 3/4" WATER METER WITH 2" SERVICE LINE CONNECTION
22 — INSTALL ELECTRICAL PEDESTAL
23 — RELOCATE FIRE HYDRANT PER IRWD STD PLAN W-8

SEAL

REGISTERED PROFESSIONAL ENGINEER — RAMESH C. GUPTA — No. 62873 — Exp. 6/30/16 — CIVIL — STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000
stantec.com

UNDER THE SUPERVISION OF:
Ramesh C. Gupta 3/16/15
RAMESH C. GUPTA / R.C.E. 62873 DATE

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REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD STREET IMPROVEMENT PROJECT

STA 58+00.00 TO STA 67+00.00

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'
SHEET 9 OF 30

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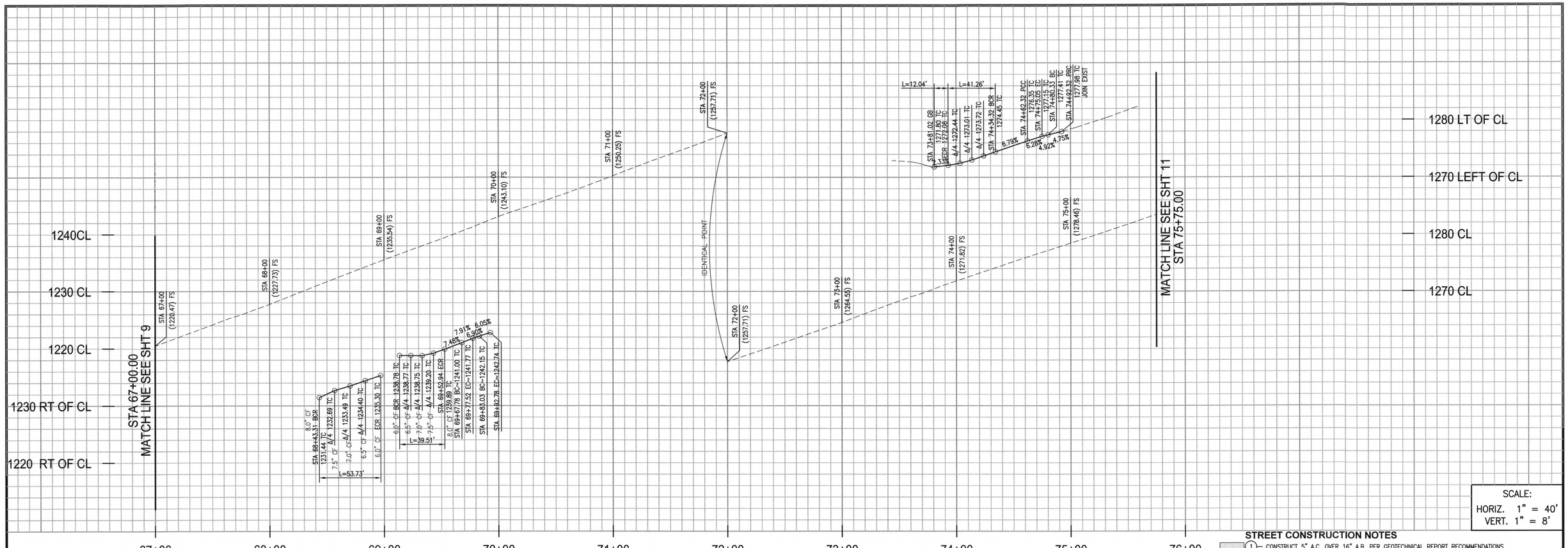
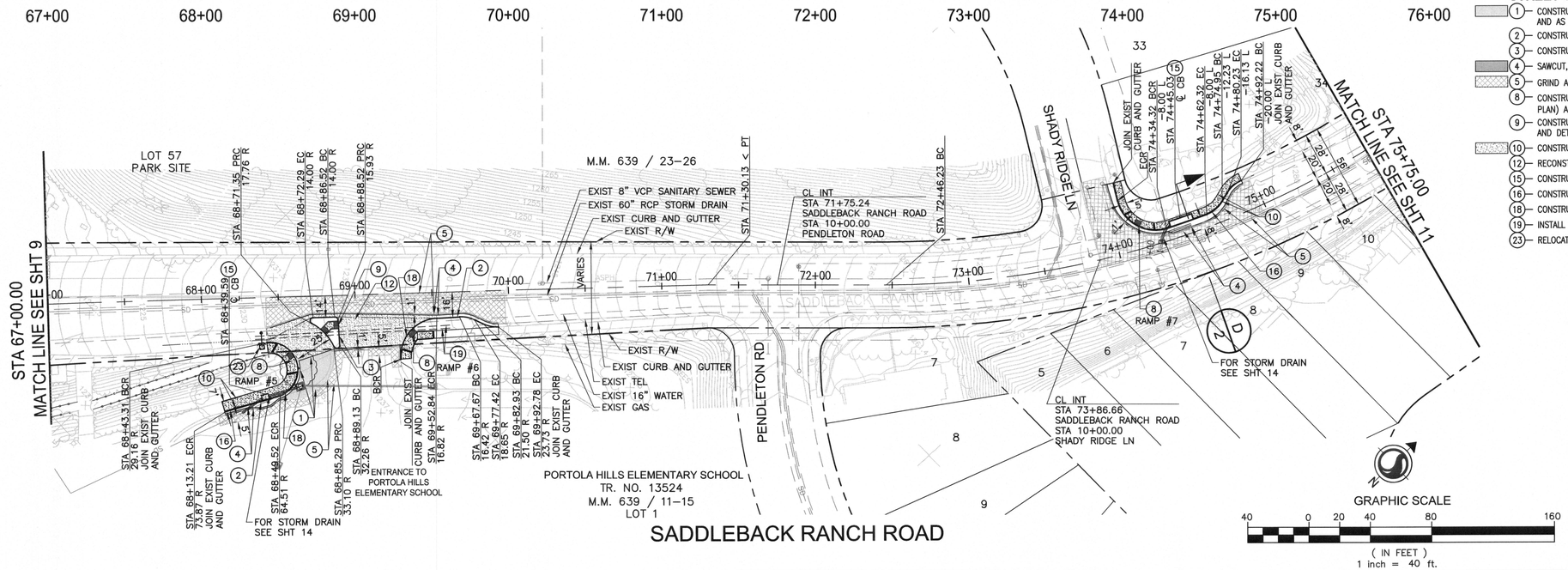
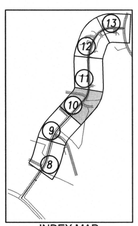


STREET CONSTRUCTION NOTES

1. CONSTRUCT 5" A.C. OVER 16" A.B. PER GEOTECHNICAL REPORT RECOMMENDATIONS AND AS APPROVED BY CITY ENGINEER
2. CONSTRUCT 8" CURB AND GUTTER PER SPPWC STD 120-2
3. CONSTRUCT 8" MEDIAN CURB PER SPPWC STD 120-2
4. SAWCUT, REMOVE AND REPLACE FULL DEPTH PAVEMENT SECTION
5. GRIND AND OVERLAY 2" OF AC SEE GENERAL NOTE 14, ON SHT 1 AND DETAIL ON SHT 4
8. CONSTRUCT HANDICAP RAMP PER SPPWC STD 111-5 (CASE AND TYPE PER PLAN) AND DETAIL ON SHT 7
9. CONSTRUCT CURB RAMP AND ISLAND PASSAGEWAY PER CALTRANS STD PLAN RSP A88B AND DETAIL ON SHT 7
10. CONSTRUCT 4" PCC SIDEWALK PER OC PUBLIC WORKS STD 1205
12. RECONSTRUCT CROSS GUTTER PER SPPWC STD 122-2
15. CONSTRUCT LOCAL DEPRESSION PER SPPWC STD PLAN NO 1308 AND DETAILS ON SHT 5
16. CONSTRUCT 6" CURB AND GUTTER PER SPPWC STD 120-2
18. CONSTRUCT CURB AND GUTTER TRANSITION FROM 8" TO 6" CURB AND GUTTER
19. INSTALL 2 - 4" IRRIGATION SLEEVES
23. RELOCATE FIRE HYDRANT PER IRWD STD PLAN W-8





SEAL

REGISTERED PROFESSIONAL ENGINEER
RAMESH C. GUPTA
No. 62873
Exp. 6/30/16
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:

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38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000
stantec.com

UNDER THE SUPERVISION OF:
3/16/15
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REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR /
CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
STA 67+00.00 TO STA 76+00.00

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'
SHEET 10 OF 30

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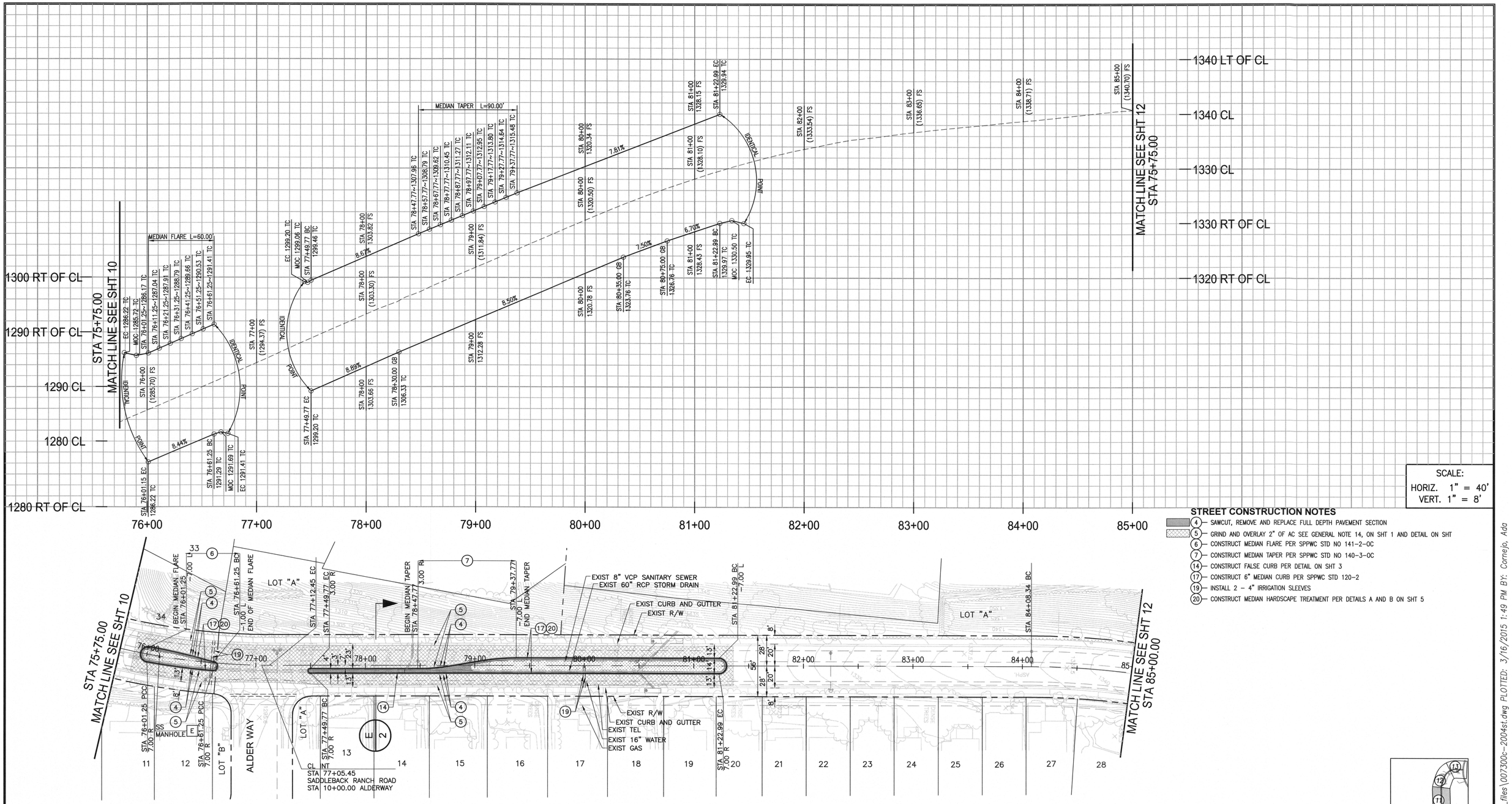
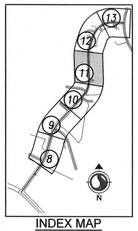


STREET CONSTRUCTION NOTES

4 — SAWCUT, REMOVE AND REPLACE FULL DEPTH PAVEMENT SECTION
5 — GRIND AND OVERLAY 2" OF AC SEE GENERAL NOTE 14, ON SHT 1 AND DETAIL ON SHT
6 — CONSTRUCT MEDIAN FLARE PER SPPWC STD NO 141-2-0C
7 — CONSTRUCT MEDIAN TAPER PER SPPWC STD NO 140-3-0C
14 — CONSTRUCT FALSE CURB PER DETAIL ON SHT 3
17 — CONSTRUCT 6" MEDIAN CURB PER SPPWC STD 120-2
19 — INSTALL 2 - 4" IRRIGATION SLEEVES
20 — CONSTRUCT MEDIAN HARDSCAPE TREATMENT PER DETAILS A AND B ON SHT 5

SADDLEBACK RANCH ROAD

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



INDEX MAP
N.T.S.

SEAL

REGISTERED PROFESSIONAL ENGINEER
RAMESH C. GUPTA
No. 62873
Exp. 6/30/16
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000
stantec.com

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REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR /
CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
STA 76+00.00 TO STA 85+00.00

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'
SHEET 11 OF 30

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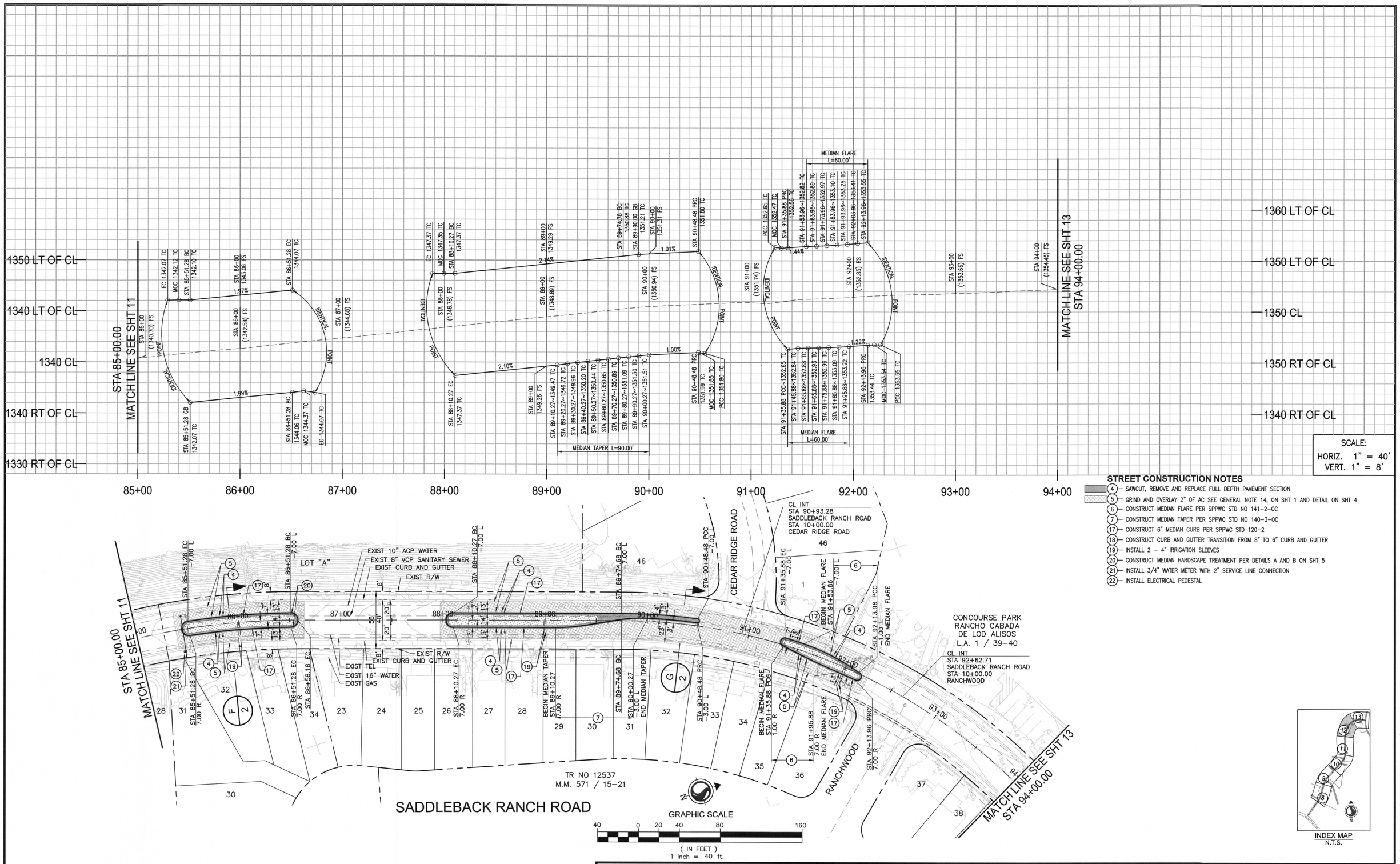

SEAL

REGISTERED PROFESSIONAL ENGINEER RAMESH C. GUPTA No. 62873 Exp. 8/30/16 CIVIL STATE OF CALIFORNIA

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CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
STA 85+00.00 TO STA 94+00.00

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'
SHEET 12 OF 30

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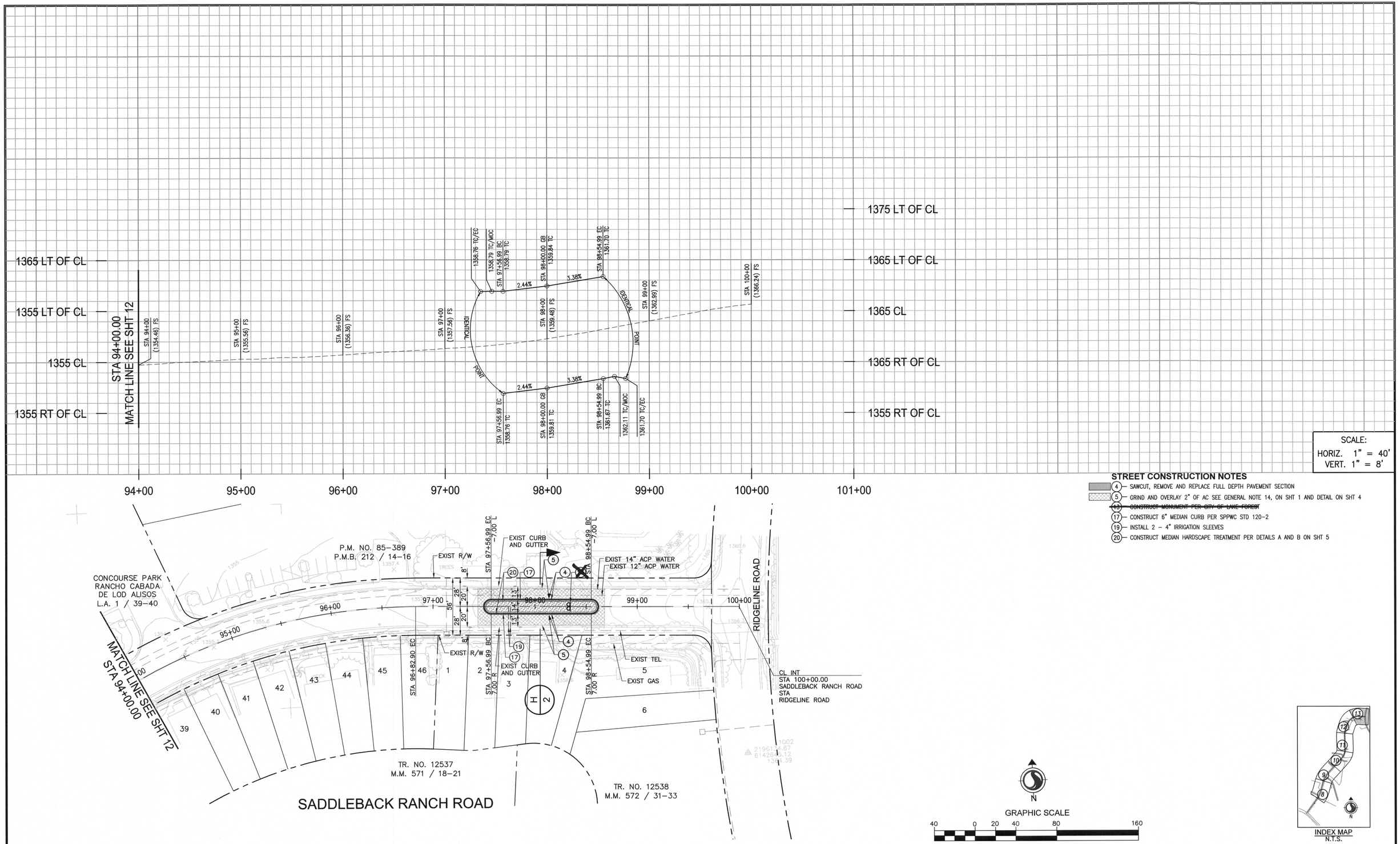

SCALE:
HORIZ. 1" = 40'
VERT. 1" = 8'

STREET CONSTRUCTION NOTES

- (4) — SAWCUT, REMOVE AND REPLACE FULL DEPTH PAVEMENT SECTION
- (5) — GRIND AND OVERLAY 2" OF AC SEE GENERAL NOTE 14, ON SHT 1 AND DETAIL ON SHT 4
- ~~(13) — CONSTRUCT MONUMENT PER CITY OF LAKE FOREST~~
- (17) — CONSTRUCT 6" MEDIAN CURB PER SPPWC STD 120-2
- (19) — INSTALL 2 – 4" IRRIGATION SLEEVES
- (20) — CONSTRUCT MEDIAN HARDSCAPE TREATMENT PER DETAILS A AND B ON SHT 5

INDEX MAP
N.T.S.

SEAL

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RAMESH C. GUPTA
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CIVIL
STATE OF CALIFORNIA

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PUBLIC WORKS DIRECTOR /
CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
STA 94+00.00 TO STA 100+00.00

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'
SHEET 13 OF 30

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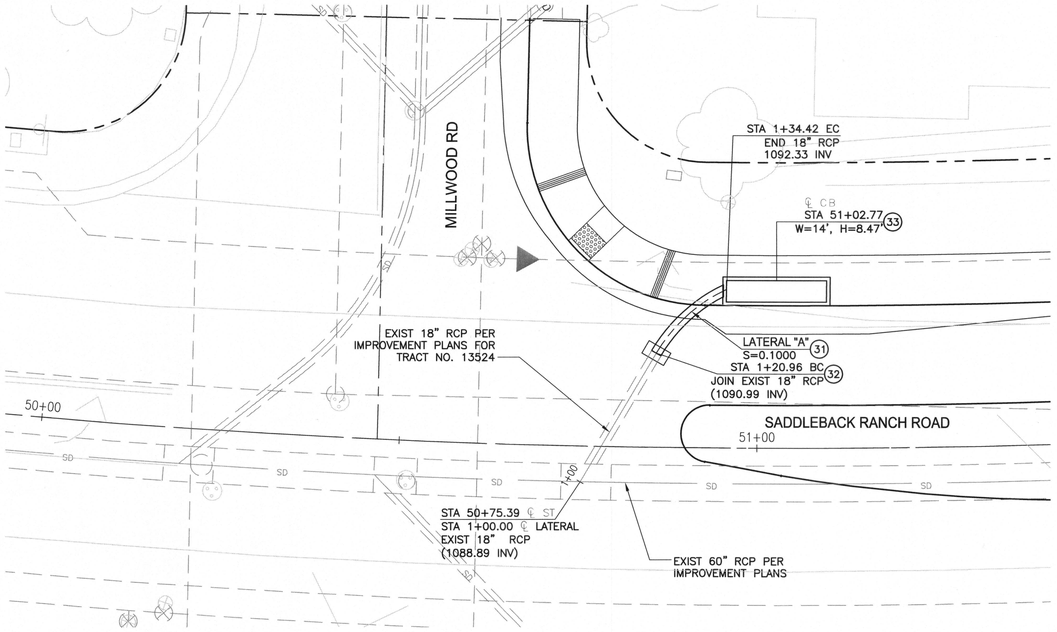
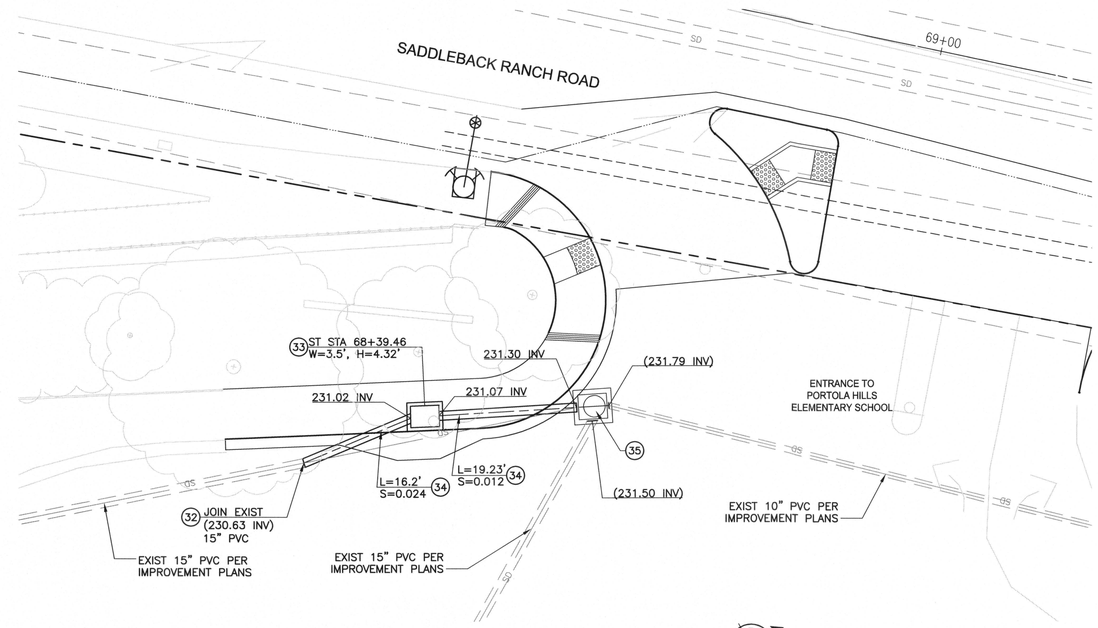


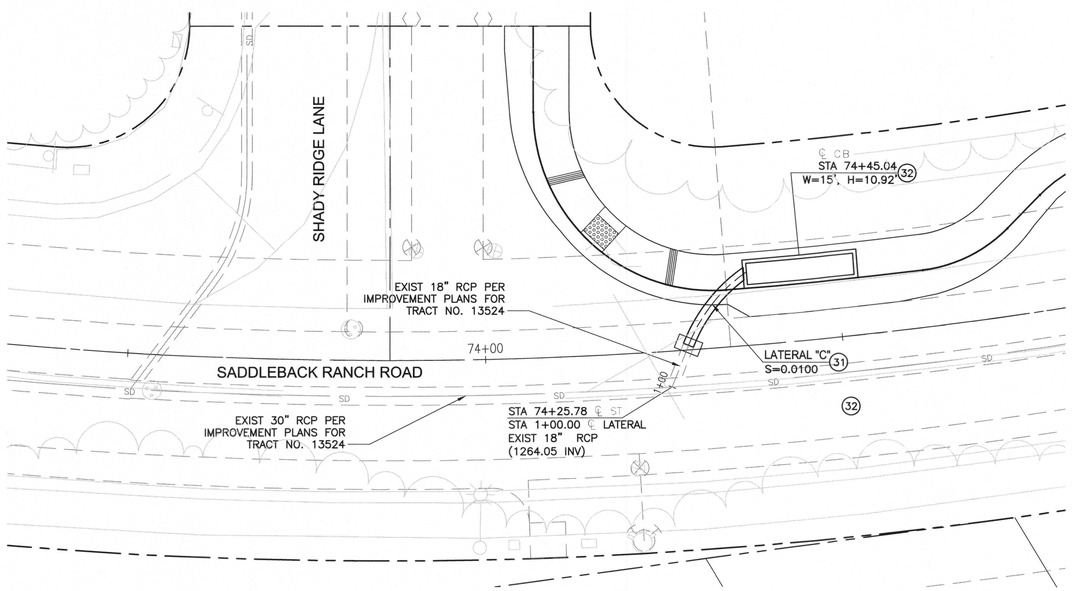
STORM DRAIN LATERAL A

SCALE: 1" = 10'



STORM DRAIN LATERAL B

SCALE: 1" = 10'



STORM DRAIN LATERAL C

SCALE: 1" = 10'

STORM DRAIN CONSTRUCTION NOTES

(31)— INSTALL 18" RCP BEDDING AND BACKFILL PER SPPWC STD NO 1319
(32)— CONSTRUCT CONCRETE COLLAR FOR RCB PER SPPWC STD PLAN NO 380-4 OC
(33)— CONSTRUCT INLET TYPE II PER SPPWC STD PLAN NO 1302
(34)— INSTALL 15" RCP
(35)— CONSTRUCT JUNCTION STRUCTURE TYPE VI PER SPPWC 332-2-OC

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

SEAL

REGISTERED PROFESSIONAL ENGINEER
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No. 62873
Exp. 6/30/16
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
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949.923.6000 stantec.com

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REVISIONS

APPROVED FOR CONSTRUCTION
IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR /
CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
STORM DRAIN PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'
SHEET 14 OF 30

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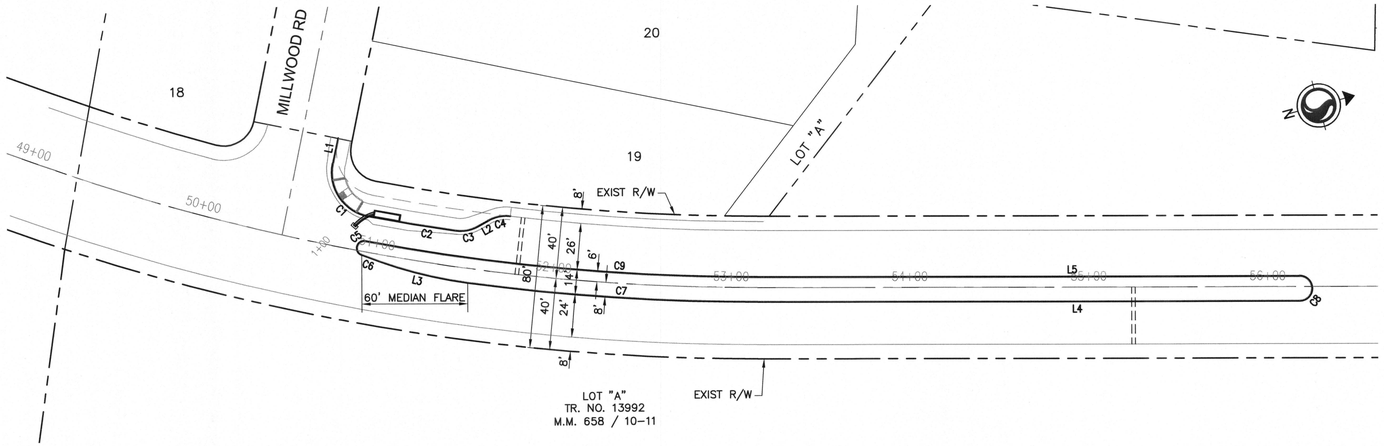
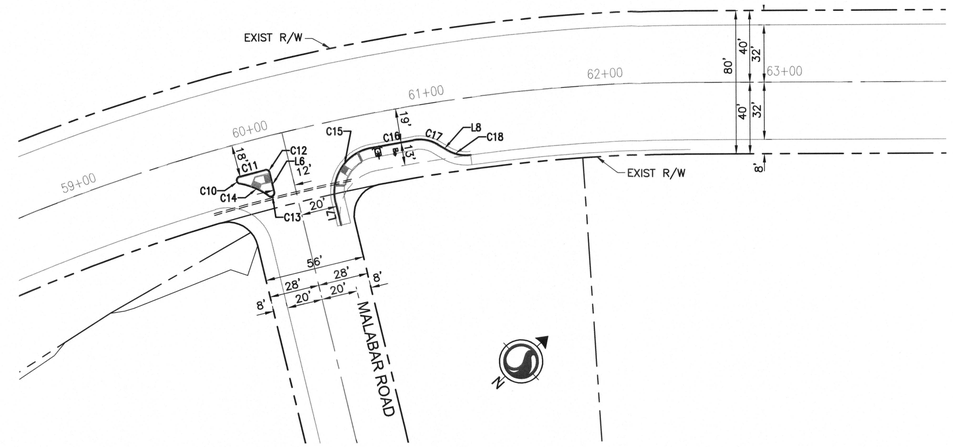
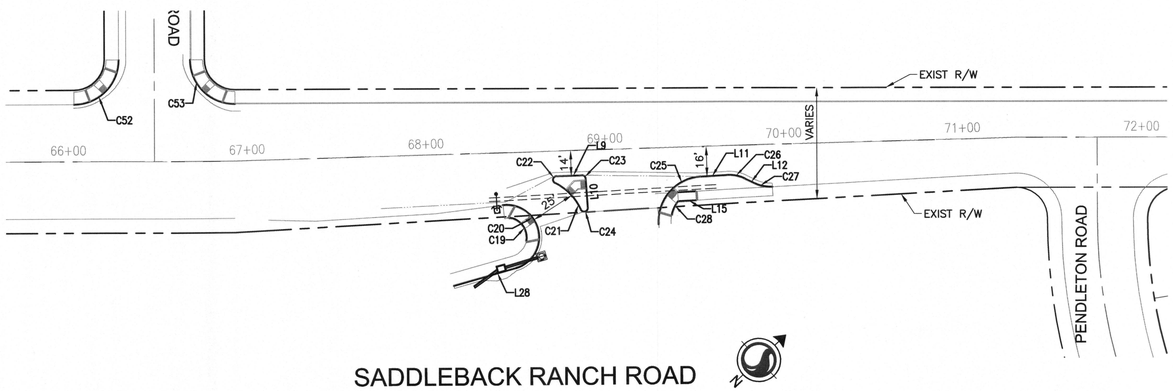


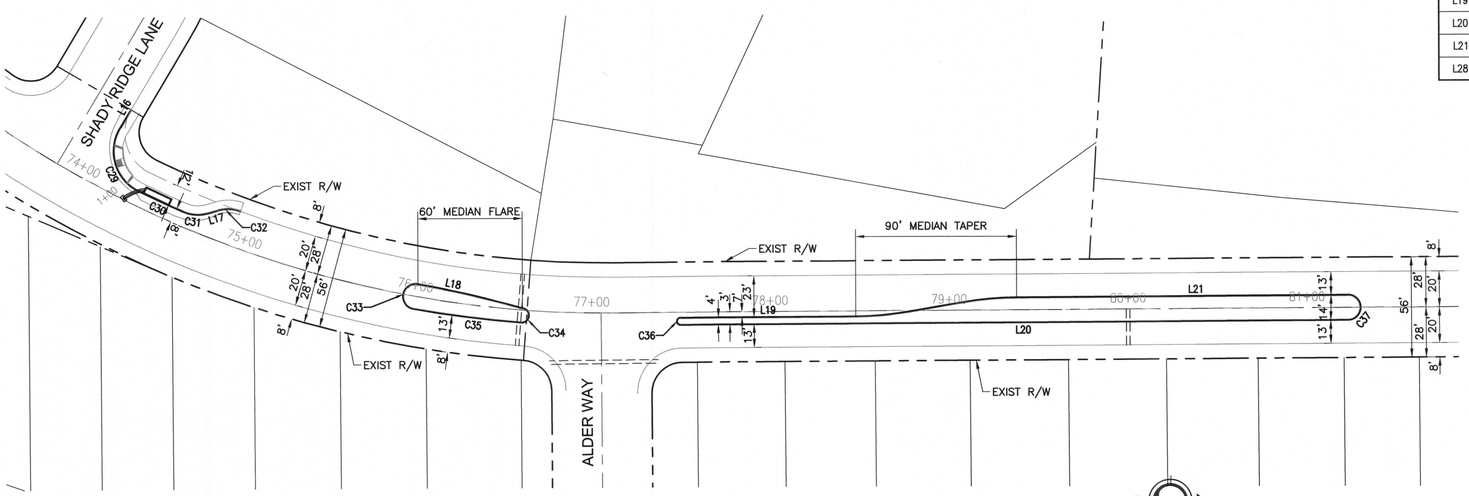
SADDLEBACK RANCH ROAD



SADDLEBACK RANCH ROAD



SADDLEBACK RANCH ROAD



SADDLEBACK RANCH ROAD

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

Line Table		
Line #	Direction	Length
L1	N63° 00' 00"W	14.55'
L2	S13° 41' 34"E	6.73'
L3	S29° 51' 02"W	5.05'
L4	S15° 26' 00"W	299.63'
L5	N15° 26' 00"E	299.63'
L6	S60° 25' 00"E	11.15'
L7	S60° 25' 00"E	13.02'
L8	S73° 44' 50"W	6.43'
L9	N41° 21' 36"E	14.23'
L10	N50° 45' 58"W	16.34'
L11	S39° 47' 21"W	14.84'
L12	S68° 43' 52"W	6.21'
L15	S39° 47' 21"W	10.00'
L16	S60° 28' 00"E	12.04'
L17	N16° 14' 49"W	6.47'
L18	S10° 43' 32"W	4.95'
L19	S01° 34' 39"E	98.00'
L20	N01° 34' 39"W	373.22'
L21	S01° 34' 39"E	185.22'
L28	S27° 06' 33"W	36.02'

Curve Table			
Curve #	Length	Radius	Delta
C1	39.613	25.000	090.7860
C2	49.167	1180.000	002.3873
C3	13.097	20.000	037.5195
C4	12.597	20.000	036.0876
C5	11.904	4.000	170.5088
C6	10.849	504.740	001.2316
C7	166.075	1208.000	007.8770
C8	21.991	7.000	180.0000
C9	223.850	1194.000	010.7418
C10	5.411	2.000	155.0084
C11	14.825	970.000	000.8757
C12	3.171	2.000	090.8287
C13	4.856	2.000	139.1214
C14	17.585	39.000	025.8341
C15	40.462	25.000	092.7323
C16	24.519	969.000	001.4498
C17	13.956	20.000	039.9819
C18	13.329	20.000	038.1839
C19	16.283	11.000	084.8160
C20	53.794	18.000	171.2310
C21	21.136	31.000	039.0643
C22	5.299	2.000	151.7920
C23	3.067	2.000	087.8740
C24	5.564	2.000	159.3984
C25	39.512	25.000	090.5551

Curve Table			
Curve #	Length	Radius	Delta
C26	10.103	20.000	028.9420
C27	10.103	20.000	028.9423
C28	8.591	18.000	027.3464
C29	41.256	25.000	094.5521
C30	27.627	592.000	002.6738
C31	13.458	20.000	038.5548
C32	12.458	20.000	035.6895
C33	21.991	7.000	180.0000
C34	12.566	4.000	180.0000
C35	60.700	607.000	005.7296
C36	6.283	2.000	180.0000
C37	21.991	7.000	180.0000
C52	39.270	25.000	090.0000
C53	39.270	25.000	090.0000

SEAL

REGISTERED PROFESSIONAL ENGINEER
RAMESH C. GUPTA
No. 62873
Exp. 6/30/16
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:

Ramesh C. Gupta 3/16/15

RAMESH C. GUPTA R.C.E. 62873 DATE

PROJ MGR:	SER	DATE 03/11/15
DESIGNER:	SER	DATE 03/11/15
DRAFTER:	AEC	DATE 03/11/15
CHECKED BY:	SCG	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR /
CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
HORIZONTAL CONTROL PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'

SHEET 15 OF 30

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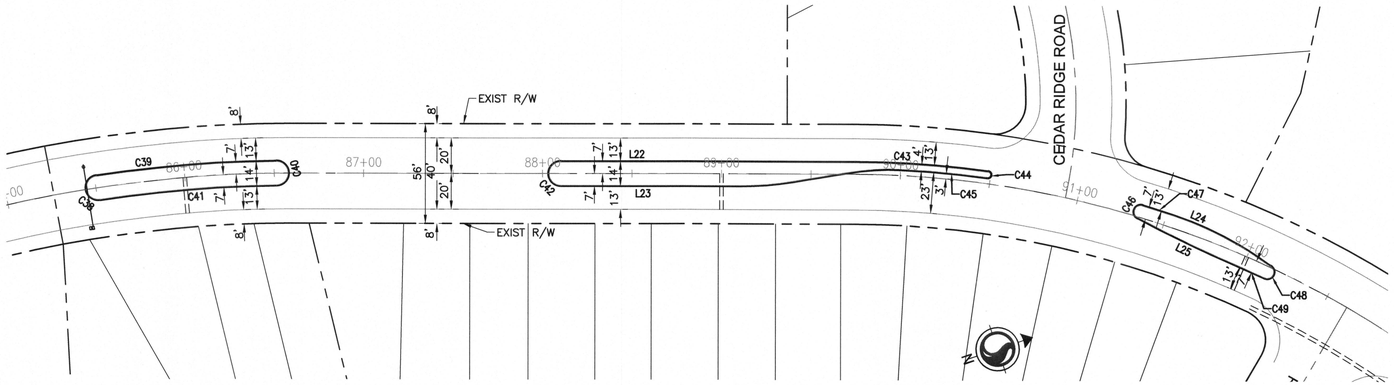
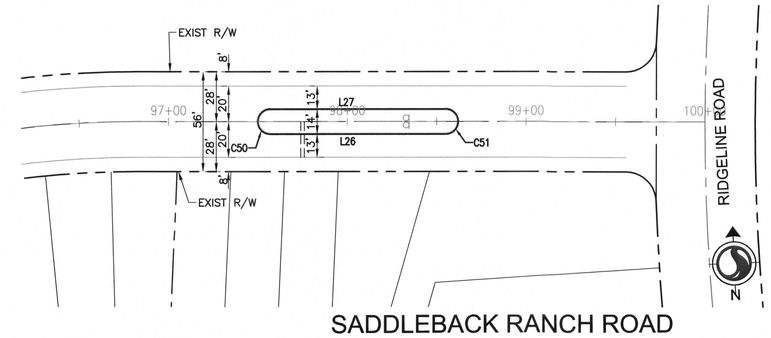


SADDLEBACK RANCH ROAD



SADDLEBACK RANCH ROAD

Line Table		
Line #	Direction	Length
L22	N18° 52' 18"E	164.51'
L23	S18° 52' 18"W	100.00'
L24	S41° 12' 59"W	5.07'
L25	N44° 59' 27"E	9.98'
L26	N87° 21' 00"W	98.00'
L27	S87° 21' 00"E	98.00'

Curve Table			
Curve #	Length	Radius	Delta
C38	21.991	7.000	180.0000
C39	101.000	707.000	008.1851
C40	21.991	7.000	180.0000
C41	99.000	693.000	008.1851
C42	21.991	7.000	180.0000
C43	74.639	557.000	007.6777
C44	6.283	2.000	180.0000
C45	48.476	553.000	005.0225
C46	12.566	4.000	180.0000
C47	18.319	557.000	001.8844
C48	12.566	4.000	180.0000
C49	17.859	542.997	001.8844
C50	21.991	7.000	180.0000
C51	21.991	7.000	180.0000

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

SEAL

REGISTERED PROFESSIONAL ENGINEER
RAMESH C. GUPTA
No. 62873
Exp. 6/30/16
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
3/16/15
RAMESH C. GUPTA, R.C.E. 62873 DATE

PROJ MGR:	SER	DATE 03/11/15
DESIGNER:	SER	DATE 03/11/15
DRAFTER:	AEC	DATE 03/11/15
CHECKED BY:	SCG	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

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APPROVED FOR CONSTRUCTION
IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR /
CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
HORIZONTAL CONTROL PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 40'

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SIGNING & STRIPING GENERAL NOTES

1) CONTRACTOR SHALL INSTALL SIGNING AND STRIPING IN ACCORDANCE WITH THE APPROVED PLAN.

2) TRAFFIC STRIPES, PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS SHALL BE MANUFACTURED AND INSTALLED PER CALTRANS PUBLICATION CA-MUTCD LATEST REVISION, CALTRANS STANDARD PLANS AND CALTRANS STANDARD SPECIFICATIONS, LATEST EDITIONS ADOPTED BY THE ORANGE COUNTY BOARD OF SUPERVISORS.

3) ALL SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE NOTED ON PLANS. SIGNS SHALL BE INSTALLED ON SQUARE PERFORATED STEEL TUBE POSTS WITH BREAKAWAY BASES PER SP 1417, UNLESS OTHERWISE NOTED ON THE PLAN.

4) ALL STRIPES, SIGNS AND PAVEMENT MARKINGS SHALL BE REFLECTORIZED.

5) STENCILS FOR PAVEMENT MARKINGS SHALL MATCH ORANGE COUNTY STANDARD STENCILS EXACTLY. ALL STRIPING AND MARKING DETAILS SHALL MATCH CALTRANS STANDARD PLAN DETAILS.

6) ALL CONFLICTING STRIPES AND PAVEMENT MARKINGS SHALL BE REMOVED BY SANDBLASTING. CONFLICTING SIGNS AND RAISED PAVEMENT MARKERS SHALL BE REMOVED. ALL REMOVALS OF SIGNS AND MARKINGS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER OR APPLICANT.

7) NEW APPLICATIONS OF PAINT SHALL BE APPLIED IN TWO (2) EQUAL THICKNESS TOTALING THE MINIMUM WET THICKNESS INDICATED IN STANDARD SPECIFICATION SECTION 310-5.6.5, "TRAFFIC STRIPES AND MARKINGS", AND SHALL INCLUDE 50% OF THE REQUIRED BEADS WITH EACH APPLICATION WHEN APPLIED TO NEW ASPHALT PAVEMENT, PAINT SHALL HAVE A MINIMUM SEVEN DAY PERIOD BETWEEN APPLICATIONS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

8) ALL REMOVED SIGNS SHALL BE SALVAGED AND DELIVERED TO THE COUNTY YARD AS DIRECTED BY THE COUNTY INSPECTOR ON THE JOB SITE.

9) RAISED PAVEMENT MARKERS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE STRIPING DETAILS SHOWN ON THE SIGNING AND STRIPING PLAN. INSTALLATION SHALL BE COMPLETED WITHIN SEVEN WORKING DAYS OF ROADWAY STRIPING.

10) ALL WORK SHALL BE IN ACCORDANCE WITH THE MUNICIPAL CODE ADOPTED BY THE CITY OF LAKE FOREST AND ANY SPECIAL REQUIREMENTS OF THE PERMIT.

11) THE DEVELOPER/CONTRACTOR SHALL KEEP A COPY OF THE CURRENT ORANGE COUNTY PUBLIC FACILITY & RESOURCES DEPARTMENT (PF&RD) STANDARD PLANS ON THE CONSTRUCTION SITE AT ALL TIMES.

12) THE DEVELOPER/CONTRACTOR SHALL NOTIFY THE CITY OF LAKE FOREST'S PUBLIC WORKS OBSERVER AT (949) 461-3494 AT LEAST TWO WORKING DAYS (MINIMUM OF 48 HOURS) PRIOR TO STARTING CONSTRUCTION WORK WHICH REQUIRES PUBLIC WORKS INSPECTION.

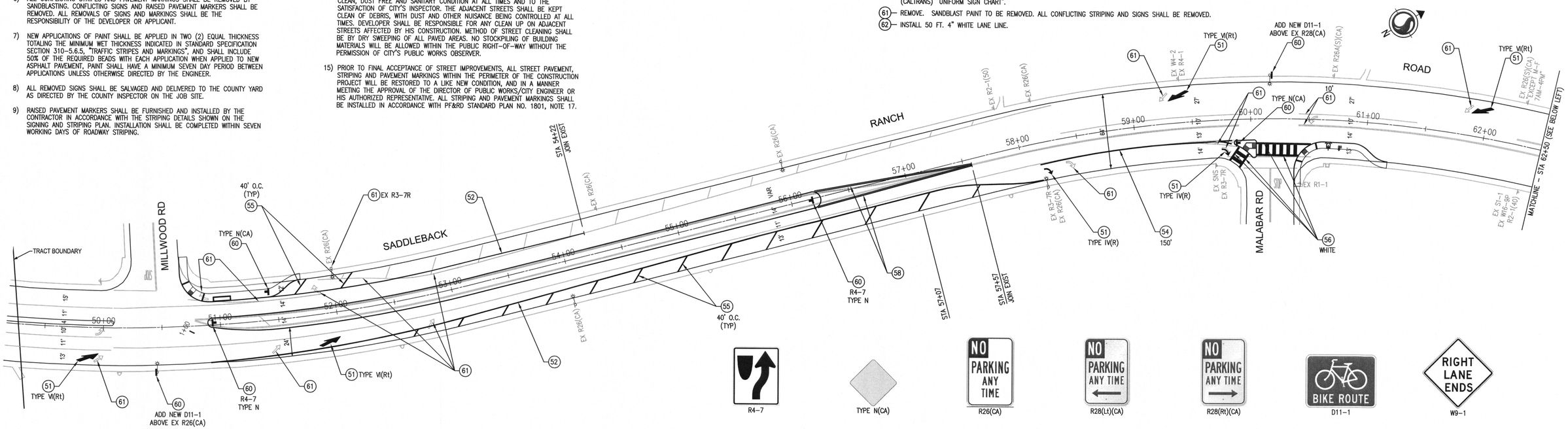
13) A CITY OF LAKE FOREST ENCROACHMENT PERMIT SHALL BE REQUIRED TO PERFORM WORK WITHIN THE PUBLIC RIGHT-OF-WAY. CITY APPROVED PLANS DO NOT RELIEVE THE CONTRACTOR AND/OR DEVELOPER FROM RESPONSIBILITY TO TO OBTAIN AN ENCROACHMENT PERMIT. A COPY OF THE PERMIT SHALL BE KEPT ON THE CONSTRUCTION SITE AT ALL TIMES.

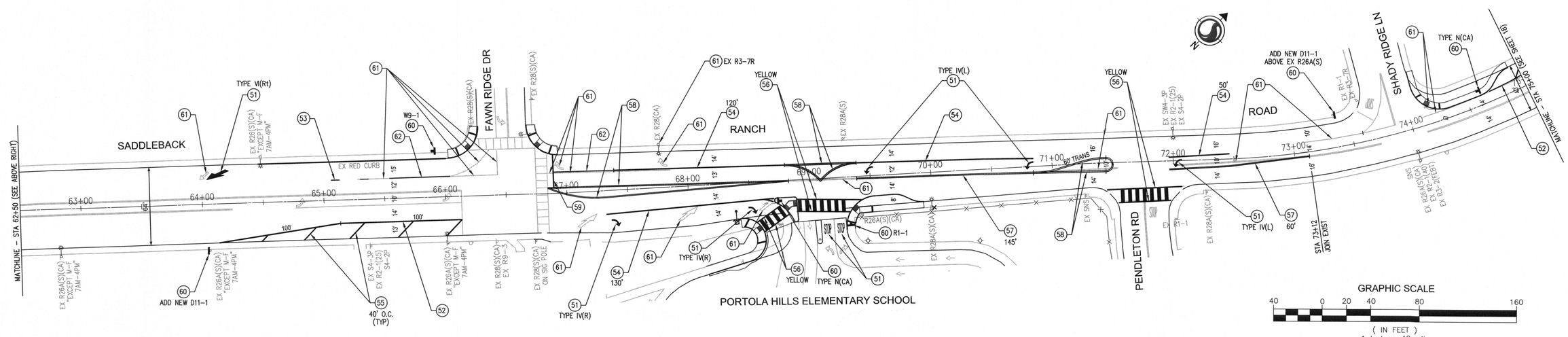
14) THE DEVELOPER/CONTRACTOR SHALL MAINTAIN ADJACENT STREETS IN A NEAT, CLEAN, DUST FREE AND SANITARY CONDITION AT ALL TIMES AND TO THE SATISFACTION OF CITY'S INSPECTOR. THE ADJACENT STREETS SHALL BE KEPT CLEAN OF DEBRIS, WITH DUST AND OTHER NUISANCE BEING CONTROLLED AT ALL TIMES. DEVELOPER SHALL BE RESPONSIBLE FOR ANY CLEAN UP ON ADJACENT STREETS AFFECTED BY HIS CONSTRUCTION. METHOD OF STREET CLEANING SHALL BE BY DRY SWEEPING OF ALL PAVED AREAS. NO STOCKPILING OF BUILDING MATERIALS WILL BE ALLOWED WITHIN THE PUBLIC RIGHT-OF-WAY WITHOUT THE PERMISSION OF CITY'S PUBLIC WORKS OBSERVER.

15) PRIOR TO FINAL ACCEPTANCE OF STREET IMPROVEMENTS, ALL STREET PAVEMENT, STRIPING AND PAVEMENT MARKINGS WITHIN THE PERIMETER OF THE CONSTRUCTION PROJECT WILL BE RESTORED TO A LIKE NEW CONDITION, AND IN A MANNER MEETING THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS/CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE. ALL STRIPING AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH PF&RD STANDARD PLAN NO. 1801, NOTE 17.

SIGNING AND STRIPING CONSTRUCTION NOTES

(51)– INSTALL WHITE PAVEMENT LEGENDS AS SHOWN.
(52)– INSTALL 4" SOLID WHITE RIGHT EDGELINE. (DETAIL 27B)
(53)– INSTALL 4" SKIP WHITE LANE LINE. (DETAIL 9)
(54)– INSTALL 8" SOLID WHITE CHANNELIZNG LINE. (DETAIL 38)
(55)– INSTALL 12" WHITE DIAGONALS.
(56)– INSTALL CROSSWALK (WHITE OR YELLOW AS INDICATED).
(57)– INSTALL DOUBLE YELLOW. (DETAIL 22)
(58)– INSTALL PAINTED MEDIAN. (DETAIL 29)
(59)– INSTALL 12" SOLID WHITE STOPBAR.
(60)– INSTALL SIGN PER DESIGNATION. SEE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, (CALTRANS) "UNIFORM SIGN CHART".
(61)– REMOVE. SANDBLAST PAINT TO BE REMOVED. ALL CONFLICTING STRIPING AND SIGNS SHALL BE REMOVED.
(62)– INSTALL 50 FT. 4" WHITE LANE LINE.





SEAL

REGISTERED PROFESSIONAL ENGINEER FENG XU No. 80744 Exp. 3/31/17 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
FENG XU RCE 80744 3/16/2015 DATE

PROJ MGR:	RG	DATE 03/11/15
DESIGNER:	RS	DATE 03/11/15
DRAFTER:	RS	DATE 03/11/15
CHECKED BY:	JX	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
SIGNING AND STRIPING PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SHEET 17 OF 30

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SIGNING & STRIPING GENERAL NOTES

1) CONTRACTOR SHALL INSTALL SIGNING AND STRIPING IN ACCORDANCE WITH THE APPROVED PLAN.

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3) ALL SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE NOTED ON PLANS. SIGNS SHALL BE INSTALLED ON SQUARE PERFORATED STEEL TUBE POSTS WITH BREAKAWAY BASES PER SP 1417, UNLESS OTHERWISE NOTED ON THE PLAN.

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8) ALL REMOVED SIGNS SHALL BE SALVAGED AND DELIVERED TO THE COUNTY YARD AS DIRECTED BY THE COUNTY INSPECTOR ON THE JOB SITE.

9) RAISED PAVEMENT MARKERS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE STRIPING DETAILS SHOWN ON THE SIGNING AND STRIPING PLAN. INSTALLATION SHALL BE COMPLETED WITHIN SEVEN WORKING DAYS OF ROADWAY STRIPING.

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12) THE DEVELOPER/CONTRACTOR SHALL NOTIFY THE CITY OF LAKE FOREST'S PUBLIC WORKS OBSERVER AT (949) 461-3494 AT LEAST TWO WORKING DAYS (MINIMUM OF 48 HOURS) PRIOR TO STARTING CONSTRUCTION WORK WHICH REQUIRES PUBLIC WORKS INSPECTION.

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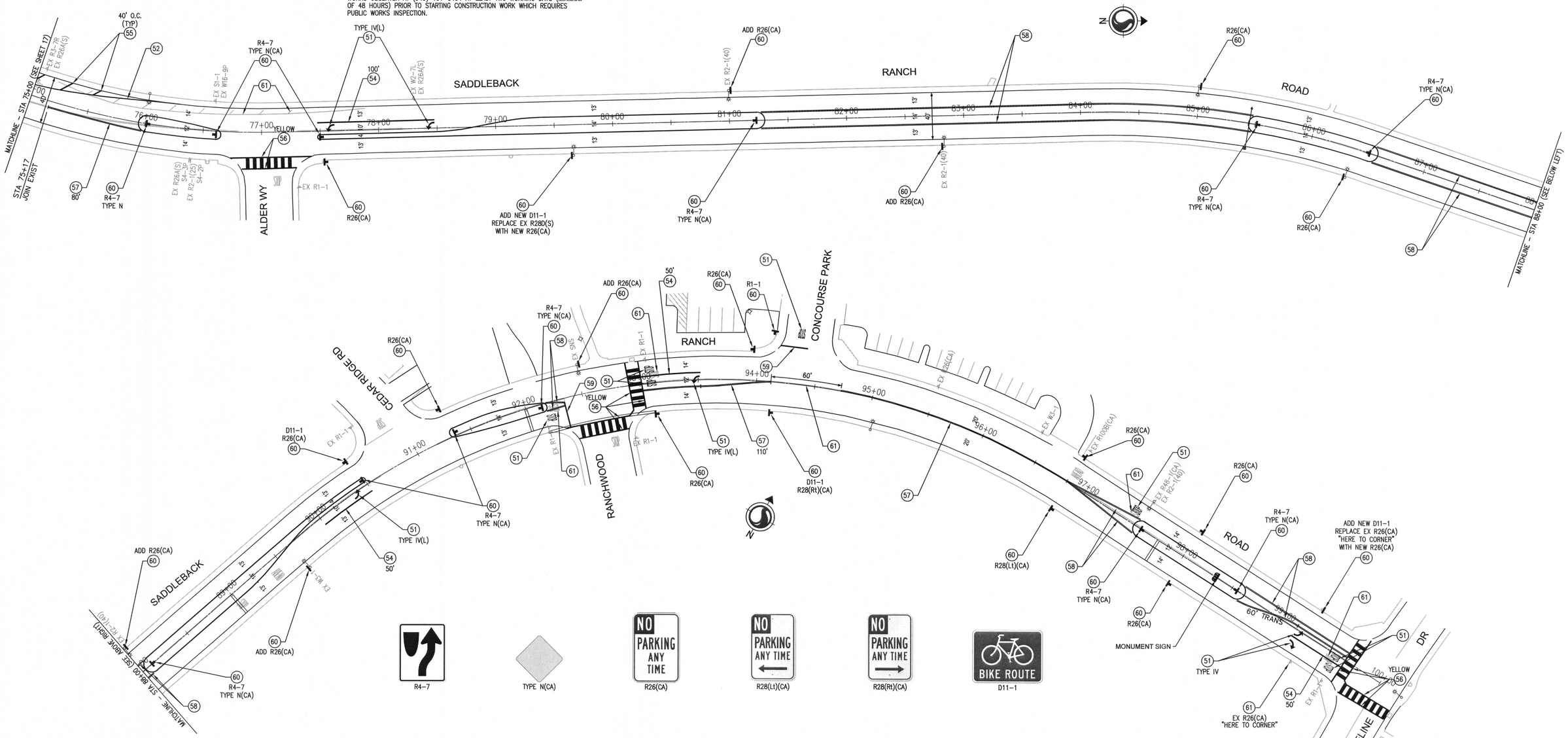
SIGNING AND STRIPING CONSTRUCTION NOTES

(51)— INSTALL WHITE PAVEMENT LEGENDS AS SHOWN.
(52)— INSTALL 4" SOLID WHITE RIGHT EDGELINE. (DETAIL 27B)
(53)— INSTALL 4" SKIP WHITE LANE LINE. (DETAIL 9)
(54)— INSTALL 8" SOLID WHITE CHANNELIZNG LINE. (DETAIL 38)
(55)— INSTALL 12" WHITE DIAGONALS.
(56)— INSTALL CROSSWALK (WHITE OR YELLOW AS INDICATED).
(57)— INSTALL DOUBLE YELLOW. (DETAIL 22)
(58)— INSTALL PAINTED MEDIAN. (DETAIL 29)
(59)— INSTALL 12" SOLID WHITE STOPBAR.
(60)— INSTALL SIGN PER DESIGNATION. SEE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, (CALTRANS) "UNIFORM SIGN CHART".
(61)— REMOVE. SANDBLAST PAINT TO BE REMOVED. ALL CONFLICTING STRIPING AND SIGNS SHALL BE REMOVED.
(62)— INSTALL 50 FT. 4" WHITE LANE LINE.



GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

SEAL: REGISTERED PROFESSIONAL ENGINEER — FENG XU — No. 80744 — Exp. 3/31/17 — CIVIL — STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com
UNDER THE SUPERVISION OF:
3/16/2015
FENG XU RCE 80744 DATE

		DATE
PROJ MGR:	RG	03/11/15
DESIGNER:	RS	03/11/15
DRAFTER:	RS	03/11/15
CHECKED BY:	JX	03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY
DATE
THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
SIGNING AND STRIPING PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SHEET 18 OF 30

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NOTES THIS SHEET

1. TRAFFIC SIGNAL AND HIGHWAY LIGHTING CONSTRUCTION SHALL CONFORM TO THE LATEST REVISION OF THE STATE OF CALIFORNIA STANDARD PLANS AND SPECIFICATIONS AND THE CURRENT EDITION OF THE CALIFORNIA M.U.T.C.D., TO BE CONFIRMED BY CONTRACTOR.
2. UTILITIES SHOWN ON THESE PLANS ARE CORRECT AND ACCURATE TO THE EXTENT OF AVAILABLE RECORDS AND KNOWLEDGE. THE CONTRACTOR, HOWEVER, IS REQUIRED TO VERIFY THE EXACT LOCATION OF UNDERGROUND FACILITIES PRIOR TO DOING WORK THAT MAY DAMAGE OR INTERFERE WITH THEIR SERVICES. THE CONTRACTOR SHALL EXERCISE EXTREME CARE TO AVOID DAMAGING EXISTING UTILITIES.
3. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND NOTIFY ALL UTILITY COMPANIES A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL PHASES OF CONSTRUCTION WOTH THE VARIOUS UTILITY COMPANIES INVOLVED. ALSO NOTIFY CITY OF LAKE FOREST PUBLIC WORKS 48 HOURS PRIOR TO CONSTRUCTION AT 949-461-3491.
4. ALL TRAFFIC SIGNAL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.
5. ALL NEW CONDUITS BETWEEN PULL BOXES SHALL BE 2.5" UNLESS OTHERWISE SPECIFIED. ALL CONDUITS CROSSING THE INTERSECTION SHALL BE 4" MINIMUM.
6. THE CONTRACTOR MAY PLACE CONDUIT BY JACKING OR BORING.
7. ALL NEW PULL BOXES SHALL BE NO. 6 UNLESS OTHERWISE SPECIFIED. ALL INTERCONNECT/COMMUNICATION PULL BOXES SHALL BE NO. 6 WITH 45 DEGREE ELBOWS AT FAR ENDS OF THE PULL BOX. ALL NO. 6 PULL BOX COVERS SHALL BE FIBRELYTE. ALL PULL BOX LIDS SHALL READ "TRAFFIC SIGNAL".
8. THE CONTRACTOR SHALL GROUT ALL NEW PULL BOXES AND INCLUDE A 1" DRAIN.
9. ALL NEW VEHICLE INDICATIONS SHALL BE 12" RED, YELLOW, AND GREEN L.E.D. WITH METAL HOUSING AND BACK PLATES.
10. NEW PEDESTRIAN INDICATORS SHALL BE L.E.D. MODULE TYPE WITH AUDIBLE COUNTDOWN TIMER FUNCTION.
11. THE ENGINEER SHALL APPROVE THE EXACT LOCATION OF ALL PULL BOXES, CONDUITS, LOOP DETECTORS, CONTROLLER, AND POLES IN THE FIELD.
12. NEW LOOPS SHALL BE 6' DIA., TYPE E. LOOPS SHALL HAVE 4 TURNS.
13. THE CONDUCTOR SCHEDULE IS FURNISHED AS AN INSTALLATION GUIDELINE ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE THE CORRECT CONDUCTORS REQUIRED FOR THE INTENDED OPERATION.
14. ALL WIRING AND EQUIPMENT SHALL BE MARKED (TAGGED) WITHIN THE CONTROLLER CABINET FOR PHASE IDENTIFICATION.
15. UNGROUNDED SIGNAL LIGHT CONDUCTORS SHALL NOT BE SPLICED.

POLE SCHEDULE

POLE DATA			SIGNAL ARM	LUMINAIRE HPSV		SIGNAL HEADS AND MOUNTINGS			PED PUSH BUTTON		POLE LOCATION			I.I.S.N.S. (DOUBLE FACE)
NO.	TYPE	HEIGHT	MAST ARM	M.A.	WATTS	VEHICULAR	M.A.	PEDESTRIAN	PHASE	ARROW	"B"	"E"	"C"	
1	15(R)	30'	–	12'(R)	200(R)	–	–	SP-1-CS(R)	6P(R)	←	–	4.5'	2.5'	–
2	1-A(R)	10'	–	–	–	TV-1-T(N)■	–	SP-1-CS(R)	4P(R)	→	4'	–	2.5'	–
3	24-4-80	30'	35'	12'(R)	200(R)	SV-1-T* SV-2-TA	MAS(N) MAS	–	4P	→	EXISTING			Saddleback Ranch** Fawn Ridge
4	1-A	10'	–	–	–	TV-1-T	–	–	–	–	EXISTING			–
5	19-4-100(N)	30'(N)	25'(N)	12'(N)	200(N)	SV-1-T(N)	MAS(N)	SP-1-CS(N)	–	–	–	1'	6'	Fawn Ridge(R)●
6	PPB POST(R)	4'	–	–	–	–	–	–	6P(R)	→	4'	–	2.5'	–

(N) – NEW (R) – RELOCATED
ALL OTHER EQUIPMENT IS EXISTING.
POTHOLE NEW MAST ARM POLE LOCATIONS PRIOR TO ORDERING POLES

* – INSTALLED AT 17' HEIGHT
■ – REPLACE EX VEHICLE HEAD WITH NEW LEFT TURN HEAD

** – SINGLE FACE. EX. CANTILEVERED SIGN AT 17' WITH MAST ARM
● – FURNISH AND INSTALL NEW I.I.S.N.S. MOUNTING HARDWARE

DETECTOR SCHEDULE

SENSOR		LOOP DETECTORS	
UNIT	CHANNEL		
1	1	1-ø5	1
	2 (1)	1-ø2	2
2	1 (2)	2-ø2	3
	2	3-ø2	4
3	1 (3)	1-ø6	5
	2 (4)	2-ø6	6
4	1	3-ø6	
	2	SPARE	
5	1	1-ø4	7
	2	2-ø4	8
6	1	EVP-1	
	2	EVP-2	

DETECTOR LOOP LOCATIONS SHALL BE APPROVED BY ENGINEER IN FIELD PRIOR TO INSTALLATION. ALL DETECTOR UNITS SHALL BE RACK MOUNTED, DUAL CHANNEL, DUAL OUTPUT PER CHANNEL WITH INTEGRAL COLORGATED EXTENSION AND DELAY CAPABILITY. OUTPUT "A" SHALL BE TIMED. OUTPUT "B" SHALL BE PRESENCE MODE FOR SYSTEM SAMPLING ONLY.

(3) = SYSTEM SAMPLER NUMBER.
5 = VEHICLE COUNTING SYSTEM INPUT NUMBER.

CONSTRUCTION NOTES

41 – EXISTING 8 PHASE SYSTEM CONTROLLER ASSEMBLY WITH 10 LOOP DETECTOR CHANNELS AND TELEMETRY IN EXISTING TYPE "P" CABINET TO REMAIN.

42 – EXISTING 120/240V METERED SERVICE IN EXISTING TYPE III-BF CABINET WITH FOLLOWING BREAKERS TO REMAIN.
100A – MAIN
50A 120V – TRAFFIC SIGNAL (METERED)
15A 120V – I.I.S.N.S. (METERED)
30A 240V – LIGHTING (UNMETERED)

43 – RELOCATE EXISTING TYPE 15 POLE AND MOUNTED EQUIPMENT COMPLETE TO NEW LOCATION 1.

44 – RELOCATE EXISTING TYPE 1-A POLE AND MOUNTED EQUIPMENT COMPLTE TO NEW LOCATION 2. REPLACE EXISTING ø2 VEHICLE HEAD WITH NEW LEFT TURN VEHICLE HEAD FOR ø5.

45 – FURNISH AND INSTALL NEW LEFT TURN VEHICLE HEAD FOR ø5 ON POLE 3 MAST ARM.

46 – FURNISH AND INSTALL NEW 19-4-100 POLE AND MOUNTED EQUIPMENT AT NEW LOCATION 5. RELOCATE EXISTING I.I.S.N.S. TO NEW POLE. REMOVE AND SALVAGE EXISTING TYPE 17-3-80 POLE AND MOUNTED EQUIPMENT COMPLETE. REMOVE EXISTING FOUNDATION.

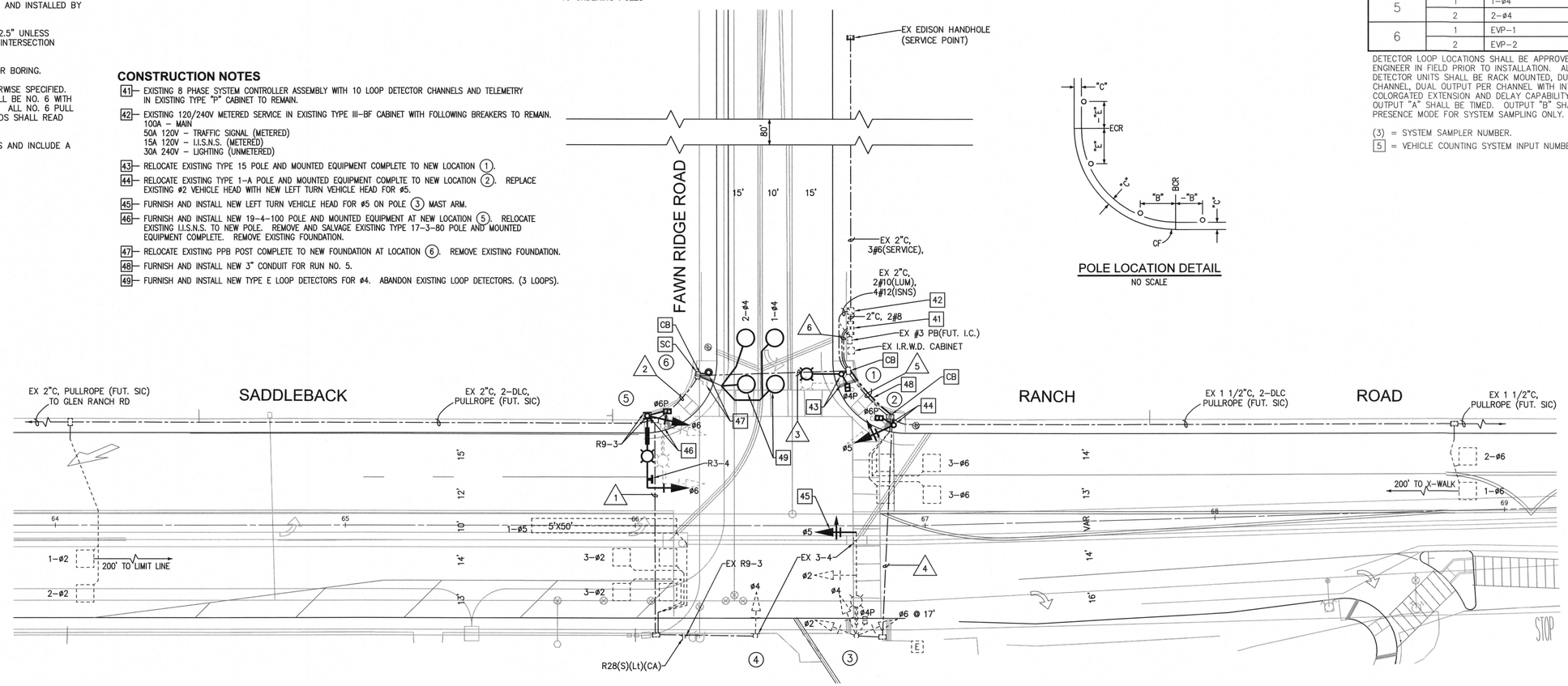
47 – RELOCATE EXISTING PPB POST COMPLETE TO NEW FOUNDATION AT LOCATION 6. REMOVE EXISTING FOUNDATION.

48 – FURNISH AND INSTALL NEW 3" CONDUIT FOR RUN NO. 5.

49 – FURNISH AND INSTALL NEW TYPE E LOOP DETECTORS FOR ø4. ABANDON EXISTING LOOP DETECTORS. (3 LOOPS).

STANDARD ELECTRICAL NOTES
(PER CALTRANS STD PLAN RSP ES-1A)

CB – INSTALL CONDUIT INTO EXISTING PULL BOX
SC – SPLICE NEW TO EXISTING CONDUCTORS



POLE LOCATION DETAIL
NO SCALE

CONDUCTOR SCHEDULE

AWG OR CABLE TYPE	POLE	PHASES	RUN NUMBER 1	2	3	4	5	6
12 WIRE CONDUCTOR CABLE (12CSC)	1	ø4P /ø6PPB	– / –	– / –	– / –	– / –	– / –	1 / 1
	2	ø5, ø6P /ø4PPB	– / –	– / –	– / –	– / –	1 / 1	1 / 1
	3	ø2, ø4, ø5, ø6, ø4P/ø4PPB	– /	– / –	– / –	2 / 1	2 / 1	2 / 1
	4	ø4	1 / –	1 / –	1 / –	– / –	– / –	1 / –
	5	ø6, ø6P	– / –	1 / –	1 / –	– / –	– / –	1 / –
3 WIRE CONDUCTOR CABLE (3CSC)	6	– /ø6PPB	– / –	– / –	– / 1	– / –	– / –	– / 1
		TOTAL	1 / –	2 / –	2 / 1	2 / 1	3 / 2	6 / 4
#12		IISNS	–	2	2	2	2	–
#10		LUMINAIRES	–	2	2	2	2	–
DETECTOR LEAD-IN CABLE		ø2	3	3	3	–	–	3
		ø4	–	–	2	–	–	2
		ø5	1	1	1	–	–	1
		ø6	–	–	–	–	3	3
		TOTAL	4	4	6	–	3	9
CONDUIT SIZE (EXISITNG)			2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2-3"
							3"(N)	INSTALL ADDITIONAL 3"C FOR RUN NO. 5 AS SHOWN

FURNISH AND INSTALL NEW CONDUCTORS THROUGHOUT (N) – NEW
ALL CONDUITS AND CONDUCTORS SHALL BE CONTINUOUS FROM THE TERMINAL COMPARTMENT TO THE CONTROLLER CABINET. CONDUCTOR SCHEDULE IS FURNISHED AS AN INSTALLATION GUIDE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE CORRECT CONDUCTORS REQUIRED FOR THE INTENDED OPERATION.

PHASE DIAGRAM

ø1	ø2	ø3	ø4
–	→	–	↓
↑	←→	–	–
ø5	ø6	ø7	ø8

Underground Service Alert
CALL BEFORE YOU DIG
Call: TOLL FREE
1-800
422-4133
TWO WORKING DAYS BEFORE YOU DIG

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

SEAL
REGISTERED PROFESSIONAL ENGINEER FENG XU No. 80744 Exp. 3/31/17 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com
UNDER THE SUPERVISION OF:
3/16/15
FENG XU RCE 80744 DATE

PROJ MGR:	RG	DATE 03/11/15
DESIGNER:	RS	DATE 03/11/15
DRAFTER:	RS	DATE 03/11/15
CHECKED BY:	JX	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY
DATE
THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
SIGNAL MODIFICATION PLAN
SADDLEBACK RANCH ROAD
AND FAWN RIDGE ROAD

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

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MAXIMUM APPLIED WATER ALLOWANCE

PROJECT #: Saddleback Ranch Rd.

MAWA = (ETo) x (0.62) x [(0.7 x LA)+(0.3 x SLA)]

ETo**	49.60	ETo (inches /year)
Enter total project Landscaped Area	15,400.00	LA (square feet)
Enter Special Landscaped Area	0.00	SLA (square feet)
RESULTS:		
	331,507	MAWA (gallons /year)
	443.19	MAWA (100 CF/year)

** Eto Values derived from Appendix A of the CA Model Water Efficient Landscape Ordinance, CA Dept. of Water

MAWA Maximum applied water allowance (gallons per year)
Eto Reference Evapotranspiration (inches per year)
0.7 ET Adjustment Factor (ETAF) per AB1881
LA Planted landscaped area including SLA and not including hardscapes. Also include surface area of water features not
0.62 Conversion Factor (to gallons per square foot)
SLA Portion of the Landscaped Area identified as Special Landscaped Area. Also include surface area of water features using recycled
0.3 The additional ET Adjustment Factor for SLA (1.0 - 0.7 = 0.3)

ESTIMATED TOTAL WATER USE

PROJECT #: Saddleback Ranch Rd.

ETWU = (ETo) x (0.62) x [(PF x HA)/IE + SLA]

Irrigation Efficiency Value =	
Bubblers	0.8
Laser Tube (Drip)	0.8
Spray	0.7

Plant Water Use Type	Plant Factor
Low	0 - 0.3
Moderate	0.4 - 0.6
High	0.7 - 1.0
SLA	1.00

MAWA=	331,507.00	Maximum Allowable Water Use (gallons per year)
ETWU =	125,888	year)
ETo =	49.60	Reference Evapotranspiration (inches per year)
PF =	See Tabel at Left	Plant Factor from WUCOLS* or equivalent reference subject to
HA =	See Tabel Below	Hydrozone Area (square feet)
SLA =	0	Special Landscaped Area (square feet)
0.62 =		Conversion Factor (to gallons per square foot)
IE =	See Table at Left	Irrigation Efficiency (minimum 0.7)

HYDROZONE TABLE

Hydrozone	Plant Water Use Type(s) (low, moderate, high)	Plant Factor (PF)	Irrigation Type	Hydrozone Area (HA) (sq ft)	PF x HA (sq ft)	100 CF/ Year	Gallons / Year
1	Moderate	0.50	Stream Bubbler	650	325	16.70	12,493
2	Low	0.20	Laser Tube Drip	14,750	2,950	151.60	113,398
	SLA	1			0		
		Sum		15,400		168.30	125,891

RESULTS						
		ETWU =	(ETo) x (0.62) x [(PF x HA)/IE + SLA]	Gal./year	100 CF/Year	Gal./year
MAWA =	331,507	**ETWU =**		125,888	168	125,891

ETWU must be less than or equal to MAWA

ETWU complies with MAWA

CRITICAL ANALYSIS

Generated: 2014-10-30
17:09

P.O.C. NUMBER:01
Water Source Information: Data per IRWD records that our Hydraulics department provided us with.

FLOW AVAILABLE
Water Meter Size: 3/4"
Flow Available: 22.50 gpm

PRESSURE AVAILABLE
Static Pressure at POC: 96.00 psi
Elevation Change: 5.00 ft
Service Line Size: 1 1/4"
Length of Service Line: 20.00 ft
Pressure Available: 93.00 psi

DESIGN ANALYSIS
Maximum Station Flow: 14.12 gpm
Flow Available at POC: 22.50 gpm
Residual Flow Available: 8.38 gpm

Critical Station: A1
Design Pressure: 20.00 psi
Elevation Loss: 0.00 psi
Friction Loss: 0.22 psi
Fittings Loss: 0.02 psi
Loss through Valve: 13.73 psi
Pressure Req. at Critical Station: 33.96 psi
Loss for Fittings: 0.55 psi
Loss for Main Line: 5.46 psi
Loss for POC to Valve Elevation: 30.09 psi
Loss for Backflow: 9.60 psi
Loss for Master Valve: 1.50 psi
Loss for Water Meter: 1.22 psi
Critical Station Pressure at POC: 82.38 psi
Pressure Available: 93.00 psi
Residual Pressure Available: 10.62 psi

P.O.C. NUMBER:02
Water Source Information: Data per IRWD records that our Hydraulics department provided us with.

FLOW AVAILABLE
Water Meter Size: 3/4"
Flow Available: 22.50 gpm

PRESSURE AVAILABLE
Static Pressure at POC: 74.00 psi
Elevation Change: 5.00 ft
Service Line Size: 1 1/4"
Length of Service Line: 20.00 ft
Pressure Available: 71.00 psi

DESIGN ANALYSIS
Maximum Station Flow: 17.85 gpm
Flow Available at POC: 22.50 gpm
Residual Flow Available: 4.65 gpm

Critical Station: B4
Design Pressure: 20.00 psi
Elevation Loss: 0.00 psi
Friction Loss: 2.26 psi
Fittings Loss: 0.23 psi
Loss through Valve: 30.41 psi
Pressure Req. at Critical Station: 52.89 psi
Loss for Fittings: 0.60 psi
Loss for Main Line: 5.99 psi
Loss for POC to Valve Elevation: -8.49 psi
Loss for Backflow: 8.81 psi
Loss for Master Valve: 1.50 psi
Loss for Water Meter: 5.21 psi
Critical Station Pressure at POC: 66.51 psi
Pressure Available: 71.00 psi
Residual Pressure Available: 4.49 psi

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	DETAIL
CST Q H F	STREAM BUBBLER RAIN BIRD 1804-SAM-PRS-5 SERIES STREAM BUBBLER 4.0" POPUP WITH CHECK VALVE AND PRESSURE REGULATOR.	26	30	1/ID2
1401 1402 1404 1408	ROOT WATERING SYSTEM RAIN BIRD RWS-B-C-SOCK WITH 4.0" DIAMETER X 36.0" LONG WITH LOCKING GRATE, SEMI-RIGID MESH TUBE. CHECK VALVE AND SAND SOCK. RAIN BIRD BUBBLER OPTION AS INDICATED: 1401 0.25 GPM, 1402 0.5 GPM, 1404 1.0 GPM, 1408 2.0 GPM.	26	30	2/ID2

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	DRIP CONTROL ZONE ASSEMBLY - 2 GPM TO 20 GPM HUNTER REMOTE CONTROL VALVE (IBV-101G), HUNTER ACCU-SYNC (AS-30), NETAFIM DISC FILTER (DF-100-140)	13	3/ID2
	PIPE TRANSITION POINT ABOVE GRADE PIPE TRANSITION POINT FROM PVC LATERAL TO DRIP TUBING WITH RISER TO ABOVE GRADE INSTALLATION.	14	6/ID2
	AUTOMATIC FLUSH VALVE NETAFIM TL050MFV-1. 1/2" MALE PIPE THREAD.	18	4/ID2
	AIR/VACUUM RELIEF VALVE NETAFIM TLAVRV 1/2" MALE PIPE THREAD.	14	5/ID2
	AREA TO RECEIVE DRIPLINE PRESSURE COMPENSATING LANDSCAPE DRIPLINE RAIN BIRD XFS-06-12 (16) - XFS SUB-SURFACE PRESSURE COMPENSATING LANDSCAPE DRIPLINE W/COPPER SHIELD TECHNOLOGY. 0.6GPH EMITTERS AT 12.0" O.C. DRIPLINE LATERALS SPACED AT 16.0" APART, WITH EMITTERS OFFSET FOR TRIANGULAR PATTERN. UV RESISTANT.	15,313 S.F.	6/ID2

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	BRASS REMOTE CONTROL VALVE HUNTER (IVB-101G) W/ ACCU-SYNC (AS-30) - 1"	7	11/ID1
	QUICK COUPLER VALVE HUNTER HQ-33DLRC, YELLOW LOCKING RUBBER COVER, RED BRASS AND STAINLESS STEEL, WITH 3/4" NPT INLET, 2-PIECE BODY.	13	10/ID1
	BALL VALVE DURA S1-0XXW, SOCKET SCH. 80, LINE SIZE	26	9/ID1
	GATE VALVE NIBCO T-113 - CLASS 125 BRONZE GATE SHUT OFF VALVE WITH WHEEL HANDLE, SAME SIZE AS PIPE DIAMETER	14	8/ID1
MV	MASTER VALVE 2" BUCKNER-SUPERIOR 3000- NORMALLY CLOSED BRASS, DIRTY WATER PROTECTION.	2	6/ID1
	PRESSURE REDUCER/ WYE STRAINE PRESSURE LIMITED TO 62.32 PSI RWILKINS 500-HR YSBR	2	5/ID1
BF	REDUCED PRESSURE BACKFLOW PREVENTER 1-1/4" FEBCO 825Y	2	1/ID1
CA	IRRIGATION CONTROLLER " " CLASENSE ET 2000E-XX-GR-RRE-SSE-R/GR-STUBBY/COMM-5YR/FM 1B. CONTROL WIRE BETWEEN THE CONTROLLER AND FLOW SENSOR SHALL BE #14 AWG INSTALLED IN THE PVC ELECTRICAL CONDUIT. CA	1	4/ID1
CB	IRRIGATION CONTROLLER " " CLASENSE ET 2000E-XX-GR-RRE-SSE-R/GR-STUBBY/COMM-5YR/FM 1B. CONTROL WIRE BETWEEN THE CONTROLLER AND FLOW SENSOR SHALL BE #14 AWG INSTALLED IN THE PVC ELECTRICAL CONDUIT. CB	1	4/ID1
ETG	ET GAGE CALSENSE ET GAGE IN VANDAL RESISTANT GAGE (ETGE)	2	2/ID1
FS	FLOW SENSOR CALSENSE FM-1B - 1" (25MM) PVC TEE TYPE FLOW SENSOR W/SOCKET ENDS. FLOW RANGE: .2-50 GPM. CONTROL WIRE BETWEEN THE CONTROLLER AND FLOW SENSOR SHALL BE #14 AWG INSTALLED IN THE PVC ELECTRICAL CONDUIT.	2	3/ID1
	IRRIGATION LATERAL LINE:	1,713 L.F.	7/ID1
	IRRIGATION MAINLINE: PVC SCHEDULE 40	5,092 L.F.	7/ID1
	PIPE SLEEVE: BLU-LOCK AND PVC CLASS 200 TYPICAL PIPE SLEEVE FOR IRRIGATION PIPE. PIPE SLEEVE SIZE SHALL ALLOW FOR IRRIGATION PIPING AND THEIR RELATED COUPLINGS TO EASILY SLIDE THROUGH SLEEVING MATERIAL. EXTEND SLEEVES 18 INCHES BEYOND EDGES OF PAVING OR CONSTRUCTION.	380.5 L.F.	7/ID1

Valve Callout
Valve Number
Valve Flow
Valve Size

IC

SEAL: REGISTERED LANDSCAPE ARCHITECT, No. 4053, A. Stevens Cook II, EXP. 10-31-15, STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
A. STEVENS COOK II R.L.A. 4053 DATE 3-16-15

PROJ MGR:	RG	DATE 03/11/15
DESIGNER:	SC	DATE 03/11/15
DRAFTER:	JG	DATE 03/11/15
CHECKED BY:	RG	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
IRRIGATION CALCULATIONS AND SCHEDULE

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = N.T.S.
SHEET 20 OF 30

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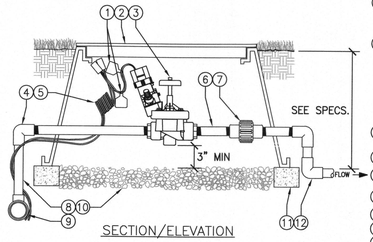


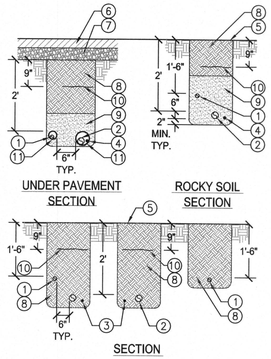
1. VALVE ID TAG & RECYCLED WATER TAG (ENGLISH & SPANISH) – IF USING RECYCLED WATER
2. RECTANGULAR VALVE BOX WITH BOLT-DOWN COVER – PURPLE IN COLOR WITH "RECYCLE WATER" INTEGRAL LETTERING IF USING RECYCLED WATER, GREEN IN COLOR IF USING POTABLE WATER – HEAT BRAND VALVE & CONTROLLER ASSIGNMENT IN 2" TALL CHARACTERS ON COVER.
3. REMOTE CONTROL VALVE SEE LEGEND FOR TYPE & SIZE
4. (2) PVC ST ELBOW (TYP.)
5. 18" SERVICE COIL WITH PENTITE OR EQUAL WIRE CONNECTORS.
6. (3) PVC SCH. 80 NIPPLE (TYP.)
7. SCH. 80 PVC UNION
8. PVC PIPE – CUT TO FIT (TYP.)
9. PVC PRESSURE LINE
10. 3/8" PEA GRAVEL 1 CU.FT.
11. BRICK SUPPORTS (CONTINUOUS)
12. PVC SS ELBOW

NOTES:
1. INSTALL ONE VALVE PER BOX.
2. TEFLON TAPE SHALL BE USED AT ALL THREADED CONNECTIONS.

11 REMOTE CONTROL VALVE IN PLASTIC BOX

N.T.S.

POTABLE OR RECYCLED WATER
PROP-IRR-VAL-06



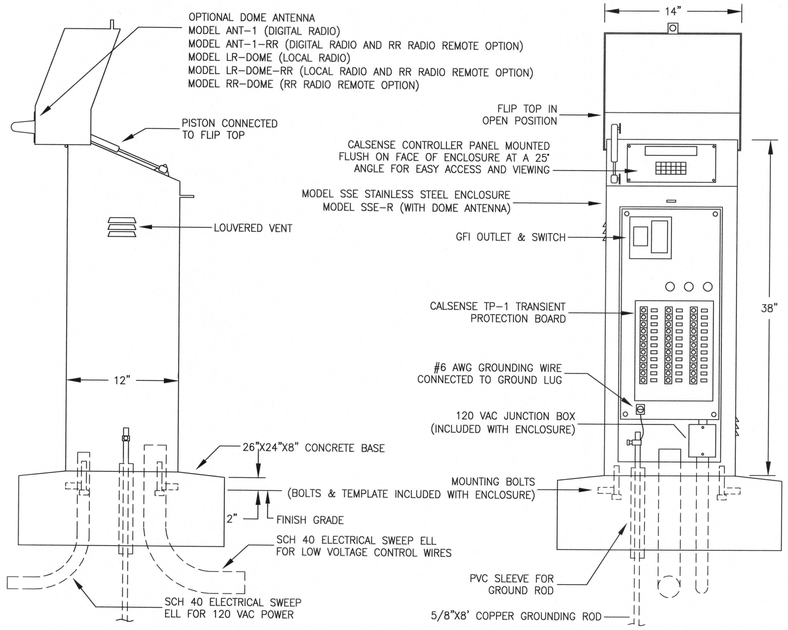
1. LATERAL (TYP.)
2. MAINLINE (TYP.)
3. LV. WIRING
4. LV. WIRING IN CONDUIT
5. FINISH GRADE
6. A.C. PAVING
7. BASE MATERIAL
8. SALVAGED EXCAVATED FILL COMPACTED TO ORIGINAL DENSITY
9. INITIAL SAND BACKFILL REQUIRED IN TRENCHES WITH ROCKY TERRAIN AND UNDER PAVEMENT (TYPICAL ALL SITUATIONS). LAY PIPE ON 2" SAND BED. SAND TO EXTEND 6" ABOVE SHALLOWEST PIPE
10. 'ALARM TAPE' – BLUE (CHRISTY'S OR APPROVED EQUAL)
11. PIPE SLEEVE 2X LINE SIZE 1 PIPE PER SLEEVE, WIRE CAN SHARE SLEEVE

NOTES:
1. 6" MIN. BETWEEN ALL PIPES
2. SAND ENCASEMENT SHALL BE PLASTER OR MORTAR SAND
3. SEE SPECIFICATIONS AND LEGEND FOR ADDITIONAL INFORMATION.
4. SNAKE ALL PIPE AND WIRING IN TRENCH

7 PIPE TRENCH FOR LATERAL AND MAINLINE

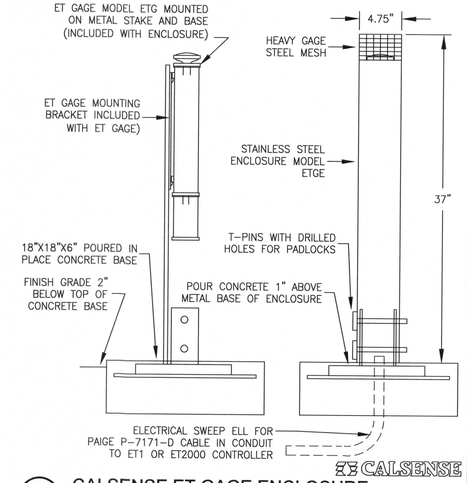
N.T.S.

PROP-IRR-PIP-01



4 CALSENSE PRE-ASSEMBLED ENCLOSURE

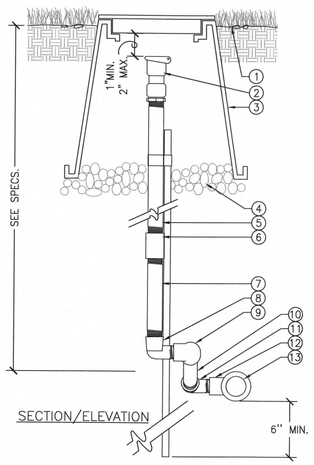
N.T.S.



2 CALSENSE ET GAGE ENCLOSURE

N.T.S.

PROP-IRR-CACC-08



1. FINISHED GRADE
2. QUICK COUPLER VALVE SET FLUSH IN LAWN AREAS, SET 2" ABOVE FINISHED GRADE IN PLANTER AREAS; SEE LEGEND FOR MODEL AND SIZE
3. 10" ROUND VALVE BOX WITH GREEN BOLT-DOWN COVER – HEAT BRAND "QCV" ON VALVE BOX COVER IN 2" HIGH LETTERS. SET TOP AT 2" ABOVE FINISHED GRADE IN PLANTER AREAS, 1" ABOVE IN LAWN AREAS; INSTALL VALVE BOX EXTENSION IF NECESSARY
4. 3/8" DIA. PEA GRAVEL; 1 CU.FT.
5. BRASS NIPPLE, LENGTH AS REQ'D.
6. BRASS COUPLING
7. 4" BRASS NIPPLE
8. MARLEX FITTINGS
9. PVC ELBOW (FPTxFPT)
10. 6" SCH 80 NIPPLE
11. MARLEX FITTING
12. PVC TEE OR ELBOW
13. PVC LATERAL

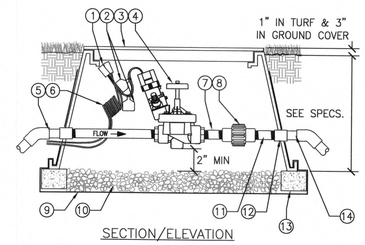
NOTES:
1. ALL PVC NIPPLES SHALL BE SCH. 80.
2. ALL THREADED JOINTS TO RECIEVE TEFLON TAPE.
3. LOCATE VALVE BETWEEN 6" AND 12" FROM PAVEMENT NLESS NOTED OTHERWISE.

10 QUICK COUPLING VALVE - POTABLE

IN PLASTIC VALVE BOX

N.T.S.

PROP-IRR-VAL-04



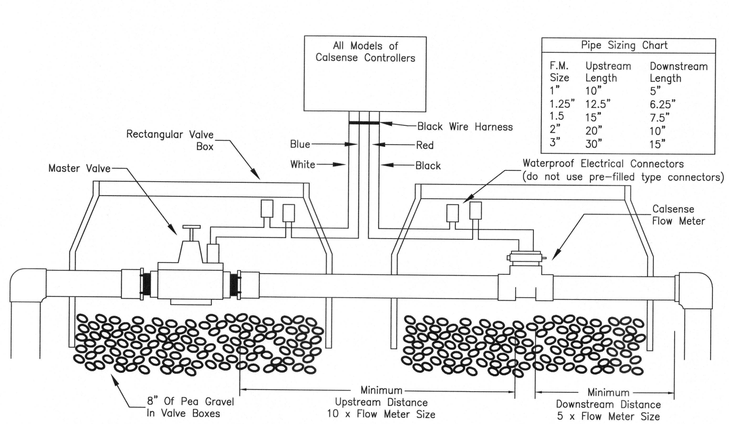
1. WIRE CONNECTOR – 2 REQUIRED
2. VALVE ID TAG & RECYCLED WATER TAG (IF USING RECYCLED WATER)
3. RECTANGULAR VALVE BOX, WITH BOLT-DOWN COVER – PURPLE IN COLOR WITH 'RECYCLED WATER' INTEGRAL LETTERING IF USING RECYCLED WATER, GREEN IN COLOR IF USING POTABLE WATER – HEAT BRAND CONTROLLER ASSIGNMENT & THE LETTERS 'MV' IN 2" TALL CHARACTERS ON COVER
4. MASTER CONTROL VALVE
5. MAIN LINE PIPING FROM PRESSURE REGULATOR, ANGLE TO SPECIFIED DEPTH WITH 45 ELLS
6. CONTROL/COMMON WIRES FROM CONTROLLER – 36-INCH MINIMUM LENGTH OF WIRE IN BOX
7. PVC SCH. 80 NIPPLE
8. SCH. 80 PVC UNION
9. LANDSCAPE FABRIC BELOW GRAVEL – WRAP SIDES, BOX BOTTOM AND COVER ALL OPENINGS
10. 3/4" CRUSHED GRAVEL BASE – 8" DEEP
11. SCHEDULE 80 PVC NIPPLE (TYP)
12. FEMALE ADAPTER (TYP)
13. COMMON BRICK (4 REQUIRED)
14. PVC PIPING TO FLOW SENSOR – ANGLE PIPING TO SPECIFIED DEPTH WITH 45 DEGREE ELBOWS AS REQUIRED

NOTES:
1. INSTALL ONE VALVE PER BOX.
2. TEFLON TAPE SHALL BE USED AT ALL THREADED CONNECTIONS.

6 MASTER VALVE IN PLASTIC BOX

N.T.S.

POTABLE OR RECYCLED WATER
PROP-IRR-VAL-02

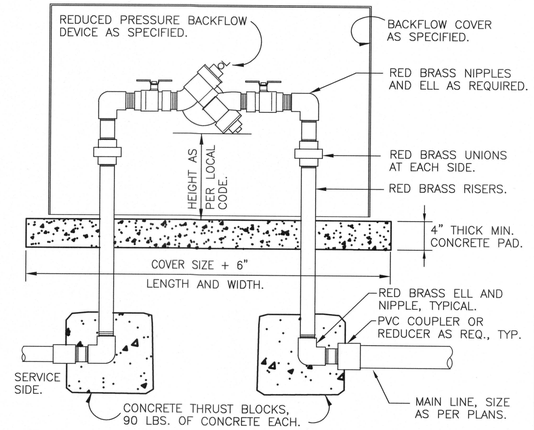


Pipe Sizing Chart		
F.M. Size	Upstream Length	Downstream Length
1"	10"	5"
1.25"	12.5"	6.25"
1.5	15"	7.5"
2"	20"	10"
3"	30"	15"

3 CALSENSE FLOW METER INSTALLATION

N.T.S.

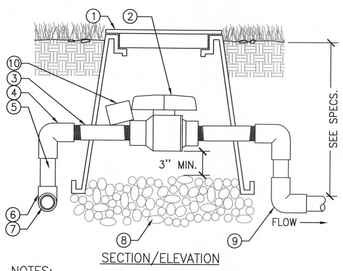
PROP-IRR-AUE-08



1 RP BACKFLOW W/ ENCLOSURE (RED BRASS)

N.T.S.

PROP-IRR-POC-01



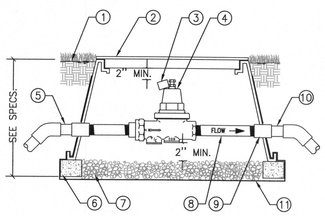
1. BOLT-DOWN VALVE BOX WITH STAINLESS STEEL HARDWARE, PURPLE IN COLOR WITH "RECYCLED WATER" INTEGRAL LETTERING IF USING RECYCLED WATER, GREEN IN COLOR IS USING POTABLE WATER – HEAT BRAND "BV" IN 2" TALL CHARACTERS ON COVOR.
2. PLASTIC BALL VALVE – SEE LEGEND FOR TYPE AND SIZE
3. (2) PVC SCH. 80 NIPPLE (TYP.)
4. (2) PVC ST ELBOW (TYP.)
5. PVC PIPE – CUT TO FIT (TYP.)
6. PVC TEE OR ELBOW
7. PVC PRESSURE LINE
8. 3/8" PEA GRAVEL; 1 CU.FT.
9. PVC SS ELBOW
10. RECYCLED WATER WARNING IDENTIFICATION TAG (ENGLISH & SPANISH) – IF USING RECYCLED WATER

NOTES:
1. TEFLON TAPE SHALL BE USED AT ALL THREADED CONNECTIONS.
2. SET VALVE BOX TOP AT 3" ABOVE FINISHED GRADE IN PLANTER AREAS, 1" ABOVE GRADE IN LAWN AREAS, INSTALL BOX EXTENSIONS IF NECESSARY.

9 BALL VALVE IN PLASTIC BOX

N.T.S.

POTABLE OR RECYCLED WATER
PROP-IRR-VAL-14



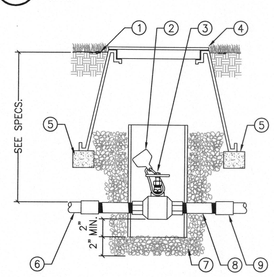
1. FINISH GRADE – 1" IN TURF & 3" IN GROUND COVER
2. RECTANGULAR VALVE BOX, WITH BOLT DOWN COVER – PURPLE IN COLOR WITH 'RECYCLED WATER' INTEGRAL LETTERING IF USING RECYCLED WATER, GREEN IN COLOR IF USING POTABLE WATER – HEAT BRAND 'CONTROLLER-POC' IN 2" TALL CHARACTERS ON COVER.
3. RECYCLED WATER WARNING IDENTIFICATION TAG (ENGLISH & SPANISH) – IF USING RECYCLED WATER
4. PRESSURE REGULATOR SEE LEGEND FOR TYPE & SIZE
5. PVC PRESSURE MAIN LINE FROM BASKET STRAINER ANGLE TO SPECIFIED DEPTH WITH 45 DEGREE ELLS
6. COMMON RED BRICK (4 REQUIRED)
7. 3/4" CRUSHED GRAVEL BASE – 6" DEEP
8. SCHEDULE 80 PVC NIPPLE (TYP)
9. FEMALE ADAPTER
10. PVC PRESSURE MAIN LINE TO MASTER VALVE. ANGLE TO SPECIFIED DEPTH WITH 45 DEGREE ELLS
11. LANDSCAPE FABRIC BELOW GRAVEL – WRAP SIDES, BOX BOTTOM AND COVER ALL OPENINGS

NOTES:
1. TEFLON TAPE SHALL BE USED AT ALL THREADED CONNECTIONS.

5 PRESSURE REGULATOR IN PLASTIC BOX

N.T.S.

POTABLE OR RECYCLED WATER
PROP-IRR-AUE-02



1. RECYCLED WATER WARNING IDENTIFICATION TAG (IF USING RECYCLED WATER)
2. FINISH GRADE – 1" IN TURF & 3" IN GROUND COVER
3. GATE VALVE – THREADED SEE LEGEND FOR TYPE & SIZE
4. 10" ROUND VALVE BOX WITH BOLT-DOWN COVER – PURPLE IN COLOR WITH "RECYCLE WATER" AND "GV" INTEGRAL LETTERING IF USING RECYCLED WATER, GREEN IN COLOR IF USING POTABLE WATER – HEAT BRAND IN 2" TALL CHARACTERS ON COVER.
5. COMMON RED BRICK (3 REQUIRED)
6. PVC PRESSURE MAIN LINE – ANGLE TO SPECIFIED DEPTH WITH 45 DEGREE ELLS
7. 3/4" CRUSHED GRAVEL BASE – 8" DEEP
8. SCHEDULE 80 PVC NIPPLE (2 TYP.)
9. FEMALE ADAPTER (2 TYP.)

NOTES:
1. TEFLON TAPE SHALL BE USED AT ALL THREADED CONNECTIONS.

8 GATE VALVE 3" & SMALLER

IN PLASTIC VALVE BOX

N.T.S.

POTABLE OR RECYCLED WATER
PROP-IRR-VAL-07

ID1

SEAL: REGISTERED LANDSCAPE ARCHITECT, No. 4053, A. Stevens Cook II, EXP. 10-31-15, STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
A. STEVENS COOK II R.L.A. 4053 DATE 5-16-15

		DATE
PROJ MGR:	RG	03/11/15
DESIGNER:	SC	03/11/15
DRAFTER:	JG	03/11/15
CHECKED BY:	RG	03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD STREET IMPROVEMENT PROJECT

IRRIGATION DETAILS

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = N.T.S.
SHEET 21 OF 30

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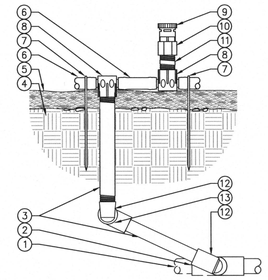


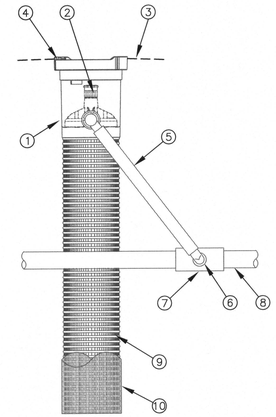
SECTION / ELEVATION

1. PVC PIPE (SEE PLAN AND SPECIFICATIONS)
2. PVC TEE OR ELBOW (SEE PLAN AND SPECIFICATIONS)
3. PVC SCH. 80 NIPPLE. SIZE AS NECESSARY.
4. PLANTER BACKFILL OR NATIVE SOIL
5. MULCH (SEE PLAN AND SPECIFICATIONS)
6. DRIP TUBING (SEE LEGEND)
7. 9" GALVANIZED JUTE STAPLE – LOCATE ADJACENT TO EVERY JOINT AND 2' MAX. O.C.
8. BARB TEE FEMALE ADAPTER
9. AIR VACUUM RELIEF VALVE (SEE LEGEND)
10. SHRUB ADAPTER
11. 1/2"x 2-1/2" PVC SCH 80 NIPPLE
12. MARLEX FITTINGS
13. PVC ELBOW (FPTxFPT)

NOTES:
1. ALL FITTINGS SHALL BE SCH. 40 PVC.
2. ALL NIPPLES SHALL BE SCH. 80.
3. CLOSE NIPPLES (1") SHALL NOT BE USED.
4. INSTALL PVC ELBOWS SO AS TO TIGHTEN WITH DOWNWARD THRUST.
5. TEFLON TAPE SHALL BE USED AT ALL THREADED CONNECTIONS FROM THE PVC LATERAL TO THE BASE OF THE HEAD.

5 AIR VACUUM RELIEF VALVE — ABOVE GRADE APPLICATION

N.T.S. PROP-IRR-DRI-02

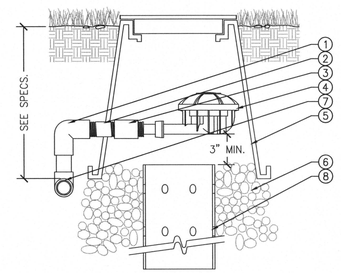


1. ROOT WATERING SYSTEM: RAIN BIRD RWS-B-X-1401 (INCLUDES RETAINER, 36"(91,4 CM) TUBE, 0.25 GPM (0,95 L/M) BUBBLER, 4"(10,2 CM) GRATE, 18"(45,7 CM) OPEN SWING ASSEMBLY WITH 1/2"(1,3 CM) M NPT INLET)
2. BUBBLER: RAIN BIRD 1401 0.25 GPM (0,95 L/M) (INCLUDED)
3. FINISH GRADE/TOP OF MULCH
4. 4" (10,2 CM) LOCKING GRATE (INCLUDED)
5. 18" (45,7 CM) SWING ASSEMBLY (INCLUDED)
6. 1/2" (1,3 CM) MALE NPT INLET (INCLUDED)
7. PVC SCH 40 TEE OR EL
8. PVC OR POLYETHYLENE LATERAL PIPE
9. 4" (10,2 CM) WIDE X 36" (91,4 CM) LONG RIGID BASKET WEAVE CANISTER (INCLUDED)
10. SOCK (RWS-SOCK) FOR SANDY SOILS

NOTES:
1. 4" (10,2 CM) GRATE IS ALSO AVAILABLE IN PURPLE (RWS-GRATE-P).
2. INSTALL PRODUCT SO THAT THE GRATE IS EVEN WITH FINISH GRADE OR TOP OF MULCH.
3. OPTIONAL SAND SOCK (RWS-SOCK) IS 34" (86,4 CM) IN LENGTH TO COVER MESH BASKET AREA.
4. WHEN INSTALLING IN EXTREMELY HARD OR CLAY SOILS, ADD 3/4" (1,9 CM) GRAVEL UNDER AND AROUND THE UNIT TO ALLOW FASTER WATER INFILTRATION AND ROOT PENETRATION.
5. ONCE RWS HAS BEEN INSTALLED FILL THE BASKET WITH PEA GRAVEL BEFORE LOCKING LID.

2 ROOT WATERING SYSTEM - RAINBIRD RWS

N.T.S. PROP-IRR-HEA-06



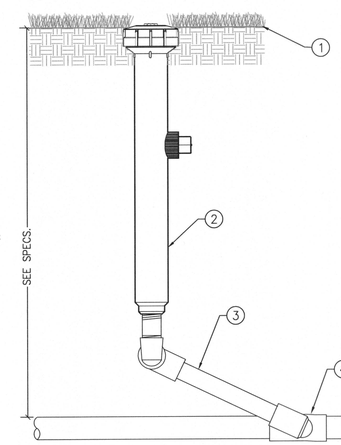
SECTION / ELEVATION

1. PVC SxT ELBOW
2. (2) PVC SCH. 80 NIPPLE (TYP.)
3. SCH. 80 THREADED COUPLING
4. PLASTIC FLUSH VALVE SEE LEGEND FOR TYPE & SIZE
5. PLASTIC 7" ROUND VALVE BOX SET TOP AT 2" ABOVE FINISHED GRADE IN PLATED AREAS, 1" ABOVE IN LAWN AREAS. INSTALL VALVE BOX EXTENSION IF NECSSARY.
6. 3/8ø PEA GAVEL, 1 CU.FT.
7. PVC LATERAL LINE
8. RIGID PERFORATED DRAIN PIPE 4"ø x 2' LONG

NOTE:
DRAIN PIPE SHALL NOT BE FILLED WITH GRAVEL.

4 DRIP ZONE FLUSH VALVE - POTABLE — IN PLASTIC VALVE BOX

N.T.S. PROP-IRR-DRI-03



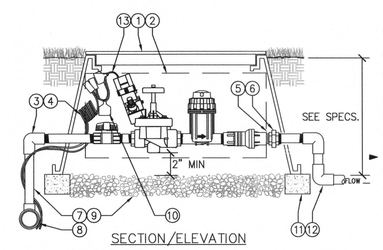
1. FINISHED GRADE
2. POP-UP SPRINKLER BODY SEE LEGEND FOR MODEL
3. MANUFACTURED SWING JOINT ASSEMBLY – SEE LEGEND FOR MODEL
4. PVC TEE (FPTxSLIP)
5. PVC LATERAL PIPE

SECTION / ELEVATION

NOTES:
1. ALL FITTINGS SHALL BE SCH. 40 PVC. ALL NIPPLES SHALL BE SCH. 80.
2. CLOSE NIPPLES (1") SHALL NOT BE USED.
3. INSTALL PVC ELLS SO AS TO TIGHTEN WITH DOWNWARD THRUST.
4. HEADS SHALL BE INSTALLED 3" MINIMUM DISTANCE FROM ALL HARDSCAPE.
5. TEFLON TAPE SHALL BE USED AT ALL THREADED CONNECTIONS FROM THE PVC LATERAL TO THE BASE OF THE HEAD.
6. WHEN SHOWN ADJACENT TO PAVEMENT, LOCATE 3" FROM EDGE OF PAVEMENT IN TURF AREAS, 6" IN PLANTER BEDS.

1 IRRIGATION HEAD - POP UP — SPRAY STREAM SPRAY ROTATOR OR BUBBLER

N.T.S. PROP-IRR-HEA-03



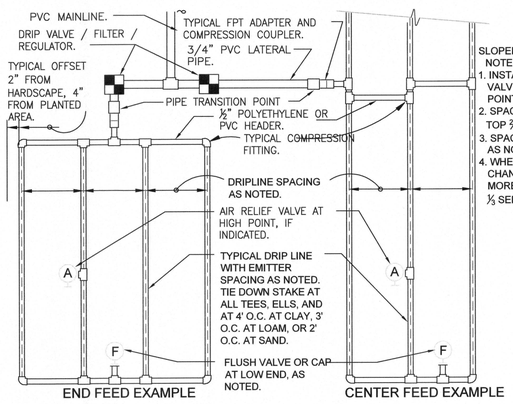
SECTION/ELEVATION

1. RECTANGULAR VALVE BOX WITH BOLT-DOWN COVER – PURPLE IN COLOR WITH "RECYCLE WATER" INTEGRAL LETTERING IF USING RECYCLED WATER, GREEN IN COLOR IF USING POTABLE WATER – HEAT BRAND VALVE & CONTROLLER ASSIGNMENT IN 2" TALL CHARACTERS ON COVER.
2. CONTROL ZONE KIT SEE LEGEND FOR TYPE & SIZE
3. (2) PVC ST ELBOW (TYP.)
4. 18" SERVICE COIL WITH PENTITE OR EQUAL WIRE CONNECTORS.
5. PVC SCH. 80 NIPPLE (TYP.)
6. SCH. 80 PVC UNION
7. PVC PIPE – CUT TO FIT (TYP.)
8. PVC PRESSURE LINE
9. 3/8" PEA GRAVEL 1 CU.FT.
10. CHRIST'S I.D. TAG IDENTIFY CONTROLLER ASSIGNMENT (PURPLE IN COLOR IF USING RECYCLED WATER, YELLOW IN COLOR IF USING POTABLE WATER)
11. BRICK SUPPORTS (CONTINUOUS)
12. PVC SS ELBOW
13. WATERPROOF WIRE CONNECTERS, WIRE SPLICES SHALL BE MADE USING "SCOTCH-PAC", "PEN-TITE","DBY", "SPEERS", DS-400 OR APPROVED EQUAL.

NOTES:
1. INSTALL ONE VALVE PER BOX.
2. TEFLON TAPE SHALL BE USED AT ALL THREADED CONNECTIONS.
3. SET TOP OF BOX AT 3" ABOVE FINISHED GRADE IN PLANTER AREAS. 1" ABOVE IN LAWN AREAS. INSTALL VALVE BOX EXTENSION IF NECESSARY.

3 REMOTE CONTROL VALVE DRIP ZONE ASSEMBLY — IN PLASTIC VALVE BOX

N.T.S. PROP-IRR-VAL-08



SLOPED CONDITION NOTE:
1. INSTALL AIR RELIEF VALVE AT HIGHEST POINT.
2. SPACING AS NOTED ON TOP ⅔ OF SLOPE.
3. SPACING AT BOTTOM ⅓ AS NOTED PLUS 25%.
4. WHEN ELEVATION CHANGE IS 10 FT OR MORE, ZONE BOTTOM ⅓ SEPARATELY.

MAXIMUM LATERAL LENGTH (FEET)

	EMITTER FLOW RATE GPH					
	12" SPACING		18" SPACING		24" SPACING	
PSI	0.6	0.9	0.6	0.9	0.6	0.9
10	125	96	175	135	218	171
20	249	191	350	171	442	340
30	307	236	434	333	550	422
40	350	268	495	380	627	171
50	125	96	175	135	218	171
60	125	96	175	135	218	171

GRID PRECIPITATION RATES (IN/HR)

EMITTER SPACING	LATERAL SPACING	EMITTER FLOW RATE	
		0.6	0.9
12	12	0.96	1.44
18	18	0.69	1.03
24	24	0.28	0.41

LATERAL FLOW PER 100 FT (GPM)

EMITTER FLOW	12" SPACING	18" SPACING	24" SPACING
0.6 GPH	1.0 GPM	0.67 GPM	0.50 GPM
0.9 GPH	1.5 GPM	1.0 GPM	0.75 GPM

MAXIMUM FLOW PER ZONE

	MAX GPM	PSI LOSS
SCHEDULE 40 PVC HEADER SIZE		
1/2"	4.7 GPM	7.7 PSI
3/4"	8.3 GPM	5.6 PSI
1"	13.5 GPM	4.2 PSI
1-1/2"	33.9 GPM	2.9 PSI
2"	52.4 GPM	1.9 PSI
POLY PIPE HEADER SIZE		
1/2"	4.7 GPM	8.8 PSI
3/4"	8.3 GPM	6.3 PSI
1"	13.5 GPM	4.8 PSI
1-1/2"	31.8 GPM	2.9 PSI
2"	52.4 GPM	2.2 PSI

6 TYPICAL DRIPLINE LAYOUT REQUIREMENTS

N.T.S. PROP-IRR-DRI-06

ID2

SEAL: REGISTERED LANDSCAPE ARCHITECT No. 4053 A. Stevens Cook II EXP. 10-31-15 STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
A. STEVENS COOK II R.L.A. 4053 DATE 5-16-15

		DATE
PROJ MGR:	RG	03/11/15
DESIGNER:	SC	03/11/15
DRAFTER:	JG	03/11/15
CHECKED BY:	RG	03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD STREET IMPROVEMENT PROJECT

IRRIGATION DETAILS

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = N.T.S.

SHEET 22 OF 30

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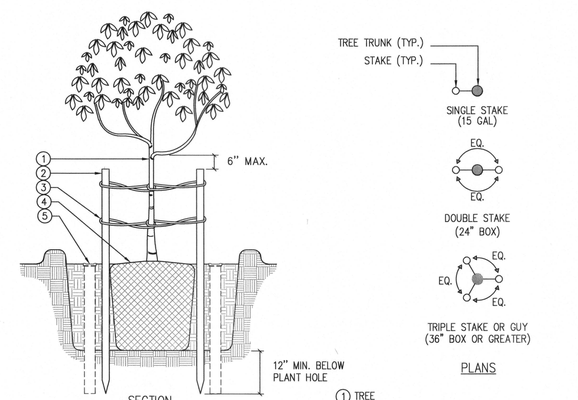


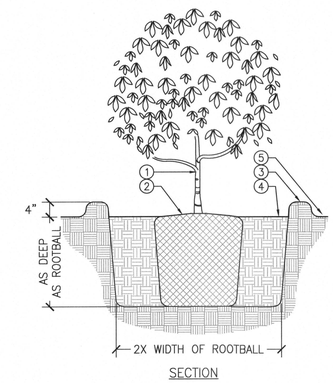
NOTES:

1. TIE SHOULD PROVIDE FLEXIBILITY OF TRUNK BUT NOT ALLOW RUBBING AGAINST THE STAKE.
2. REMOVE ALL NURSERY TRAINING STAKES.
3. CUT LODGEPOLES 6" BELOW CANOPY.
4. INSTALL 4" MIN. THICK MULCH LAYER WITHIN BASIN.
5. FOR PLANT INSTALLATION, SEE DETAIL 2/PD

1. TREE
2. LODGEPOLE PINE STAKE – LENGTH AS REQUIRED
3. MIN. (2) 18" TO 24" 'CINCH' TIES OR EQUAL PER STAKE – ATTACHED WITH WITH GALVANIZED NAILS TO STAKE
4. ROOTBALL
5. ROOT WATERING SYSTEM (IF SHOWN OR SPECIFIED) 2/ID2

3 TREE STAKING

N.T.S. PROP-PLNT-TRE-02



1. SHRUB OR TREE
2. SET ROOTBALL 1" ABOVE BACKFILL
3. COMPACTED EARTH BERM; OMIT IN TURF AREAS
4. PREPARED BACKFILL MIX
5. FINISHED GRADE

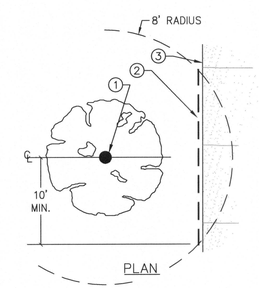
NOTES:

1. SEE SPECIFICATIONS FOR BACKFILL MIX.
2. COMPACTED EARTH BERM SHALL BE RAKED SMOOTH AFTER INITIAL DEEP IRRIGATION.
3. INSTALL 4" MIN. THINK MULCH LAYER WITHIN BASIN FOR TREES.

2 TREE OR SHRUB PLANTING

STANDARD INSTALLATION

N.T.S. PROP-PLNT-TRE-12



1. TREE TRUNK
2. ROOT BARRIER
3. HARDSCAPE– INCLUDES, BUT IS NOT LIMITED TO: SIDEWALKS, DRIVEWAYS, WALLS, MOW STRIPS, DG. PATHS, ETC. ...

NOTES:

1. IF THE TREE IS SPECIFIED TO BE PLANTED WIHTIN 8' OF HARDSCAPE A ROOD BARRIER SHALL BE USED.
2. THE ROOT BARRIER SHALL IN NO CASE COMPLETELY SURROUND THE ROOTBALL.
3. SEE SPECIFICATIONS OR PLAN FOR MFG. AND MODEL.

1 ROOT BARRIER

N.T.S. PROP-PLNT-TRE-07

PD

SEAL: REGISTERED LANDSCAPE ARCHITECT No. 4053 A. Stevens Cook II EXP. 10-31-15 STATE OF CALIFORNIA

PLANS PREPARED BY:
Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:
A. STEVENS COOK II R.L.A. 4053 DATE 3-16-15

		DATE
PROJ MGR:	RG	03/11/15
DESIGNER:	SC	03/11/15
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DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD STREET IMPROVEMENT PROJECT

PLANTING DETAILS

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = N.T.S.
SHEET 23 OF 30

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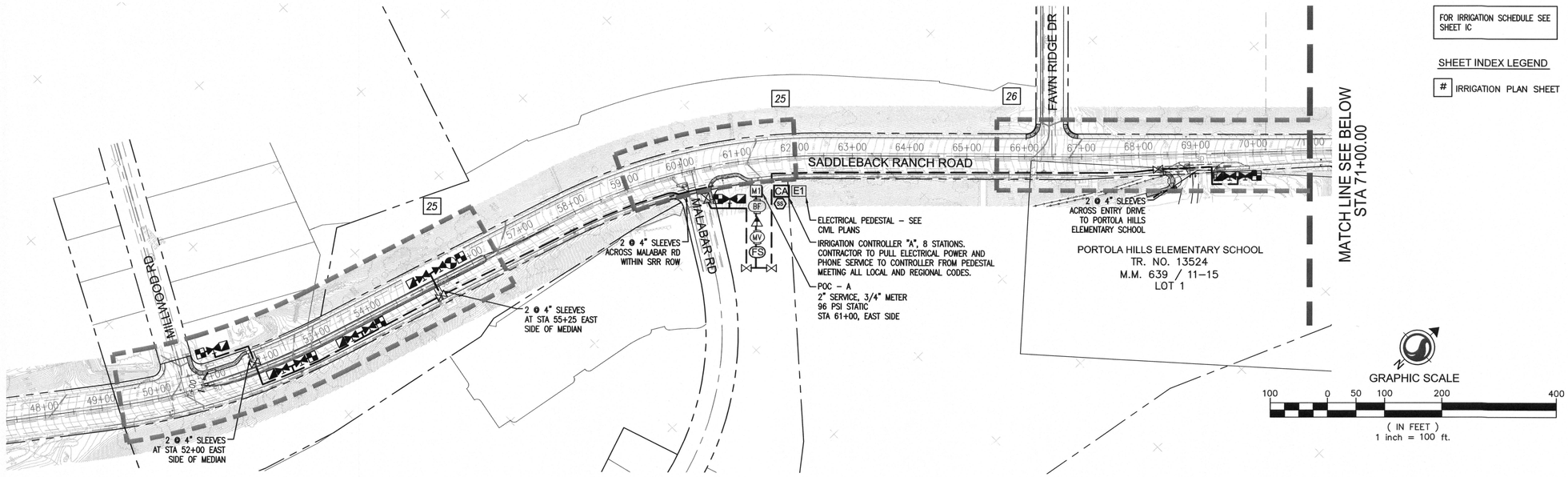
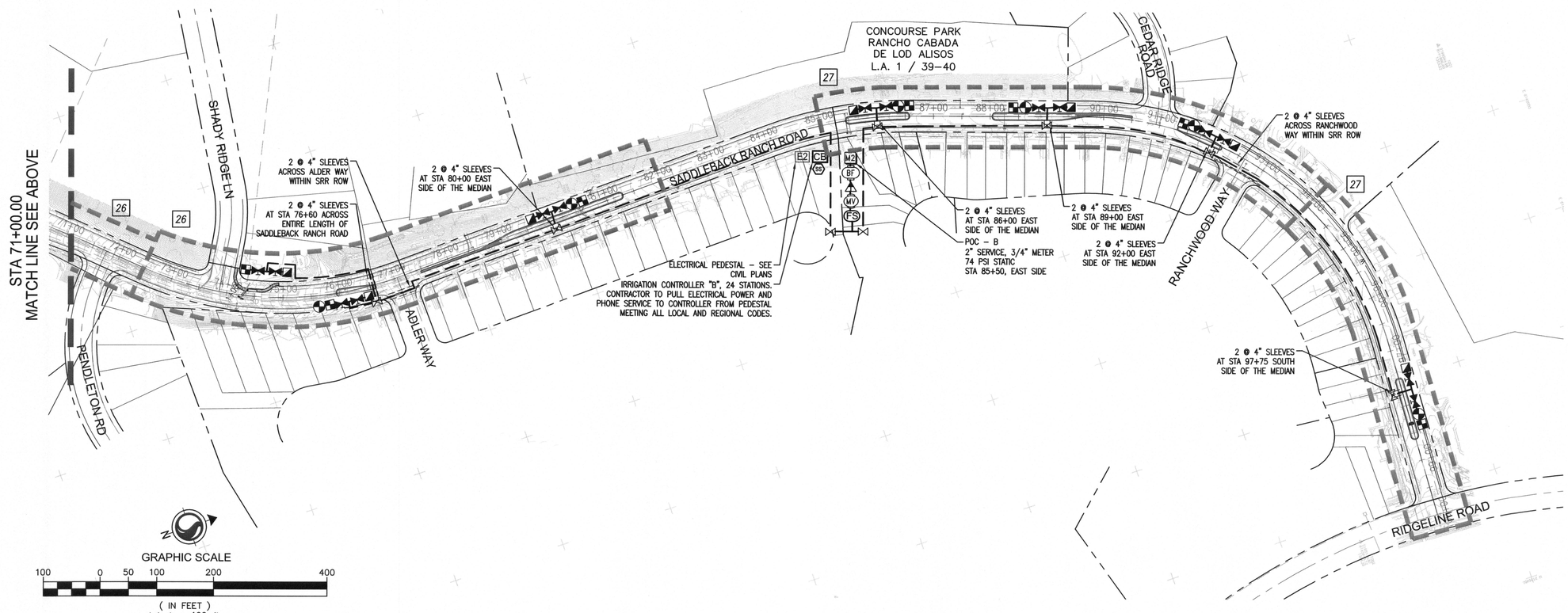
FOR IRRIGATION SCHEDULE SEE SHEET IC

SHEET INDEX LEGEND

IRRIGATION PLAN SHEET





IP1

SEAL

REGISTERED LANDSCAPE ARCHITECT
No. 4053
A. Stevens Cook II
EXP. 10-31-15
STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

UNDER THE SUPERVISION OF:

3-16-15

A. STEVENS COOK II R.L.A. 4053 DATE

PROJ MGR:	RG	DATE 03/11/15
DESIGNER:	SC	DATE 03/11/15
DRAFTER:	JG	DATE 03/11/15
CHECKED BY:	RG	DATE 03/11/15

DATE	BY	DESCRIPTION	APPV

REVISIONS

APPROVED FOR CONSTRUCTION IN PUBLIC RIGHT-OF-WAY ONLY

DATE

THOMAS WHEELER, P.E.
PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
IRRIGATION MAINLINE AND KEY MAP

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 100'

SHEET 24 OF 30

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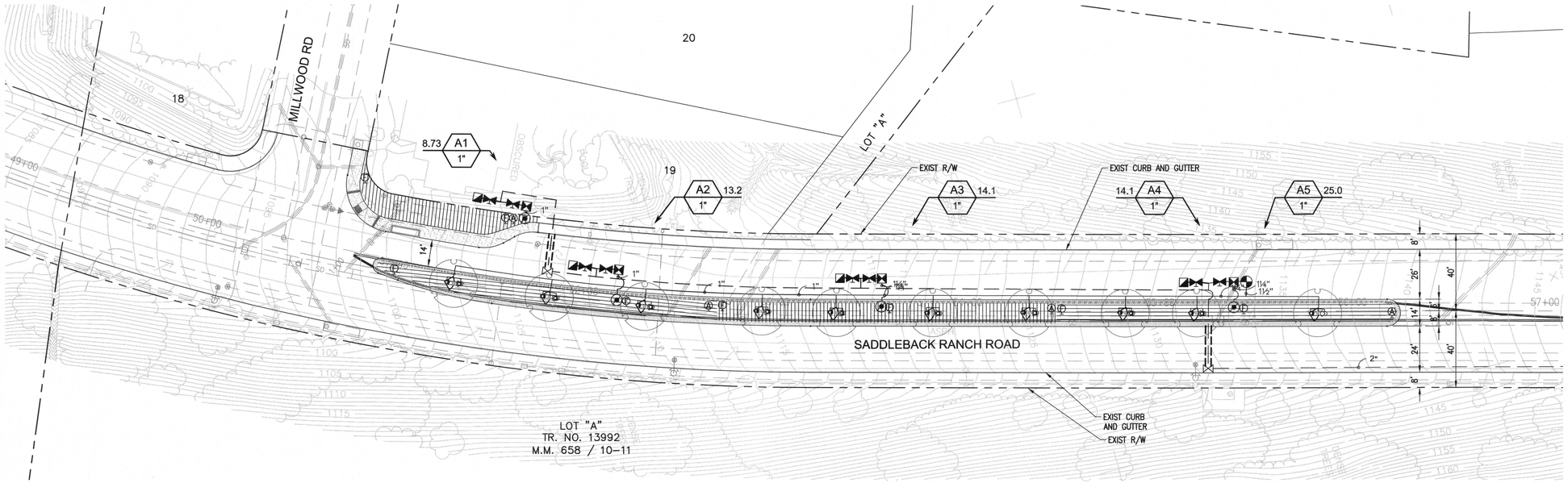

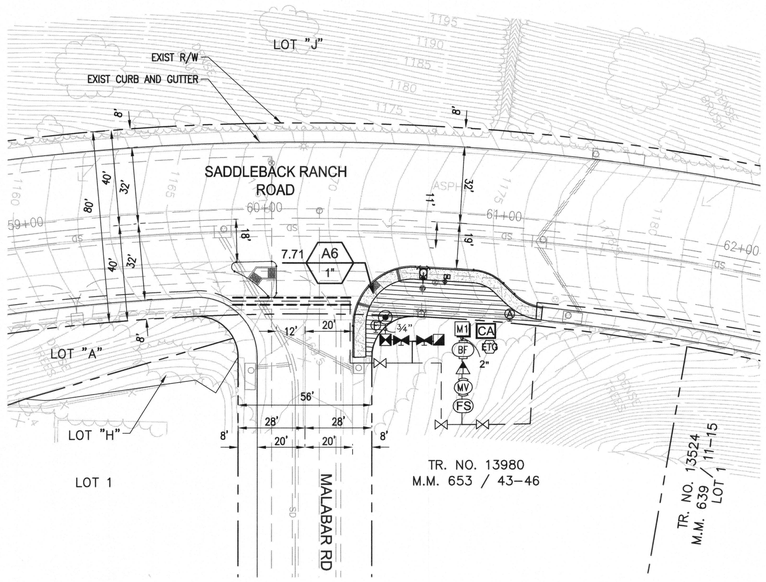

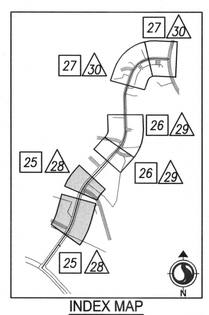

INDEX MAP
N.T.S.

FOR IRRIGATION SCHEDULE SEE SHEET IC

SHEET INDEX LEGEND

IRRIGATION PLAN SHEET

PLANTING PLAN SHEET

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

IP2

SEAL

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No. 4053
A. Stevens Cook II
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STATE OF CALIFORNIA

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SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
IRRIGATION PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 30'

SHEET 25 OF 30

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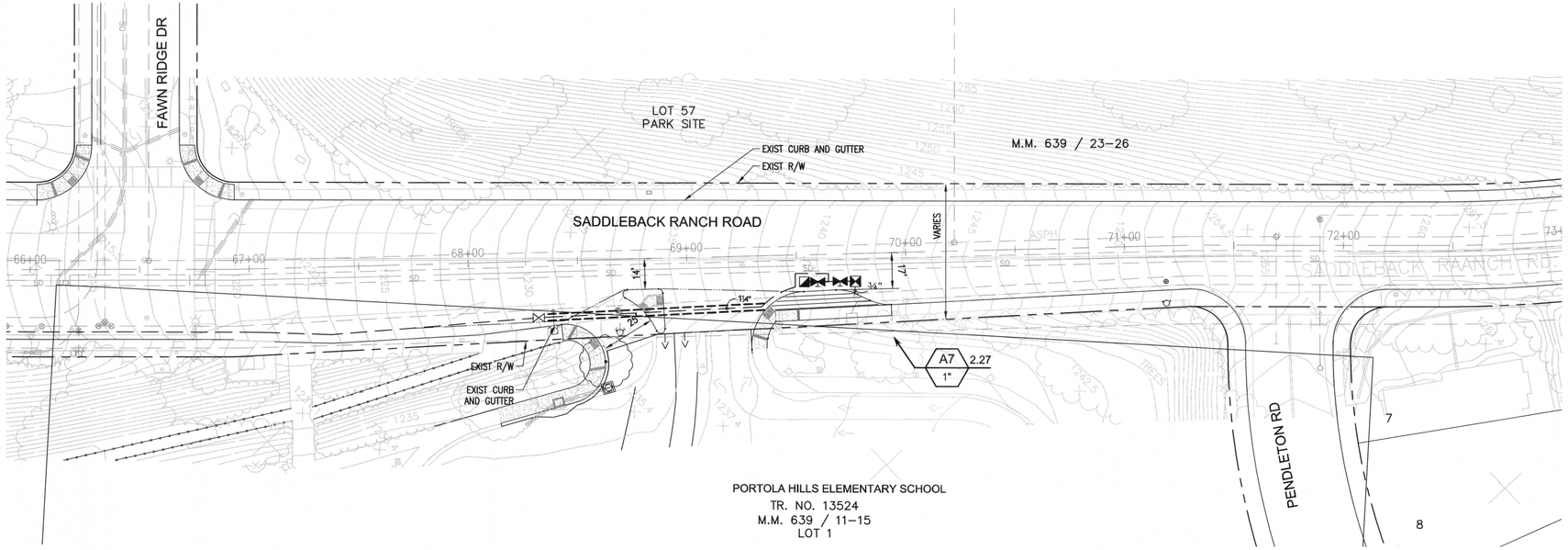
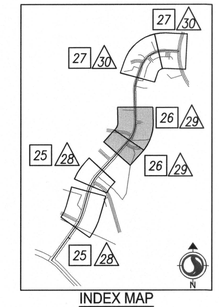




INDEX MAP
N.T.S.

FOR IRRIGATION SCHEDULE SEE SHEET IC

SHEET INDEX LEGEND

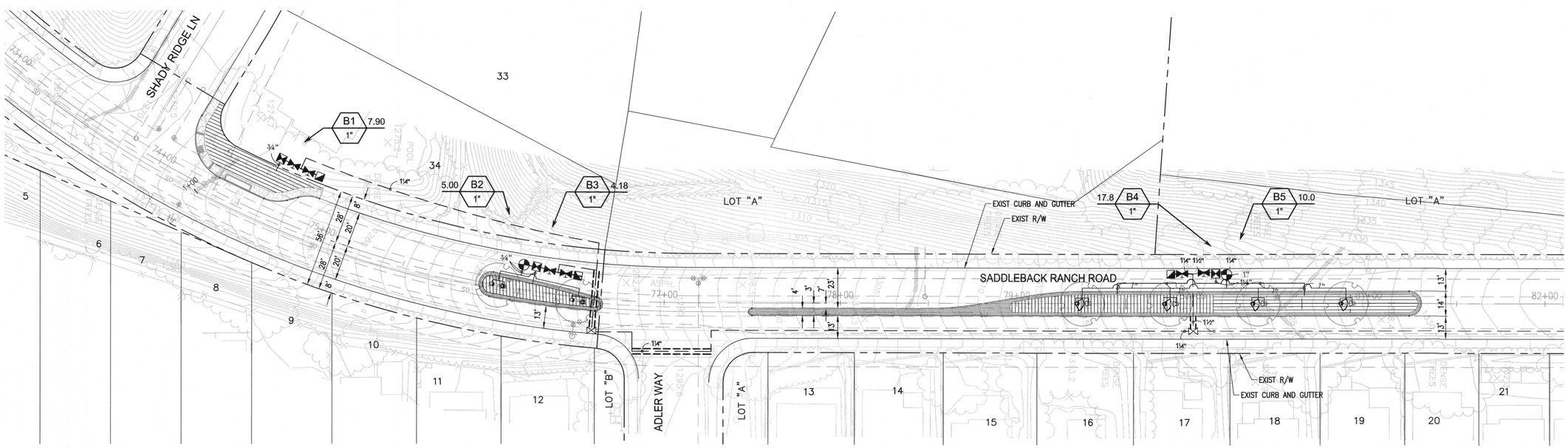
IRRIGATION PLAN SHEET

PLANTING PLAN SHEET

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.



IP3

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

SEAL

REGISTERED LANDSCAPE ARCHITECT
No. 4053
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PUBLIC WORKS DIRECTOR /
CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
IRRIGATION PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 30'

SHEET 26 OF 30

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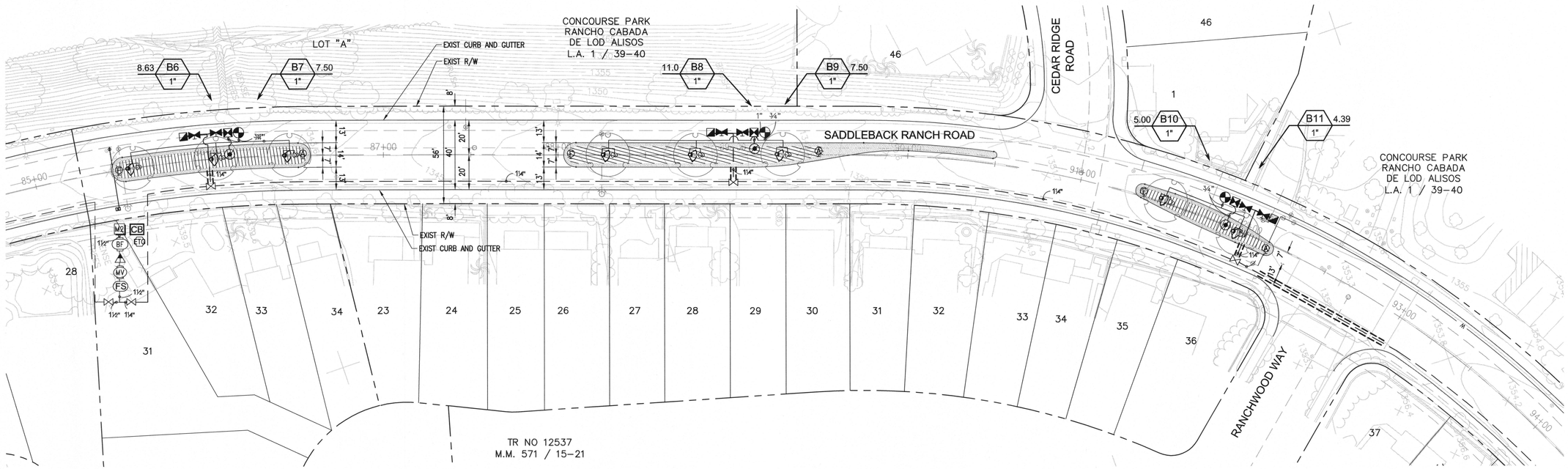
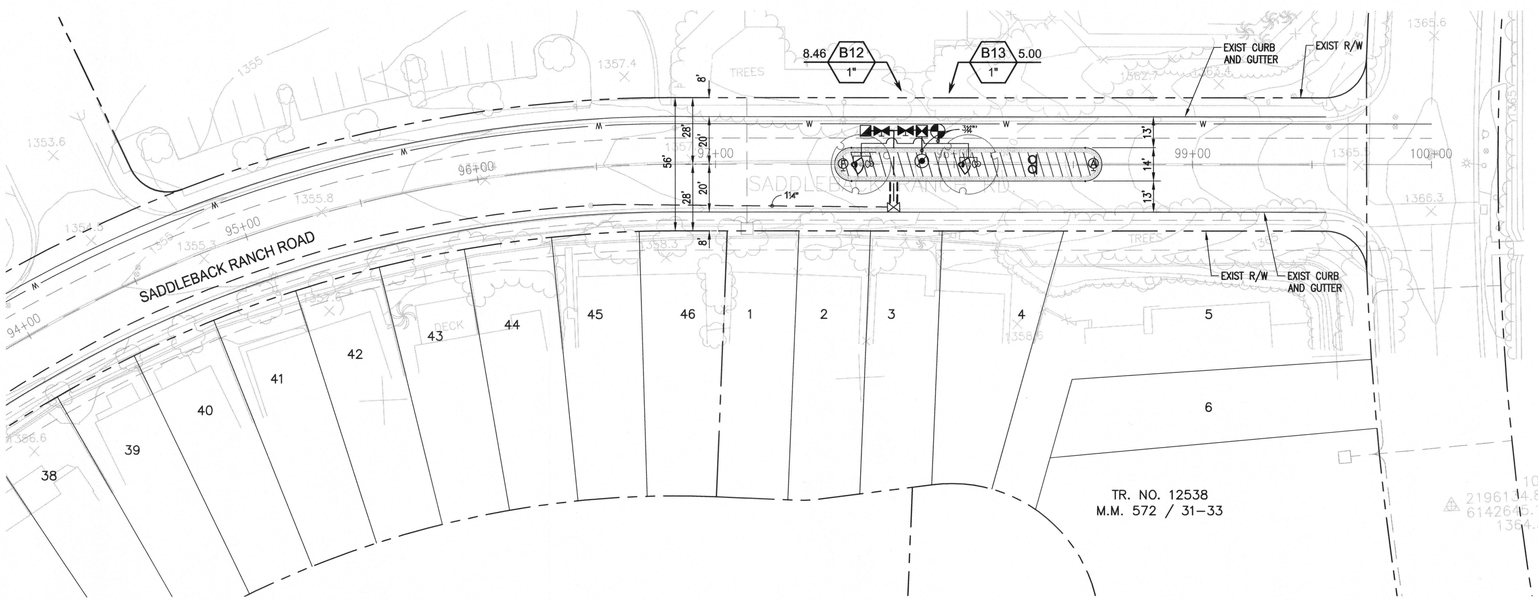




GRAPHIC SCALE

40 0 20 40 80 160

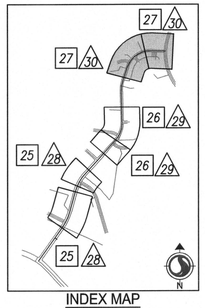
(IN FEET)
1 inch = 40 ft.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

FOR IRRIGATION SCHEDULE SEE SHEET IC



INDEX MAP
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SHEET INDEX LEGEND

IRRIGATION PLAN SHEET

PLANTING PLAN SHEET

IP4

SEAL

REGISTERED LANDSCAPE ARCHITECT
No. 4053
A. Stevens Cook II
EXP. 10-31-15
STATE OF CALIFORNIA

PLANS PREPARED BY:

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
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949.923.6000 stantec.com

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CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT

IRRIGATION PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 30'

SHEET 27 OF 30

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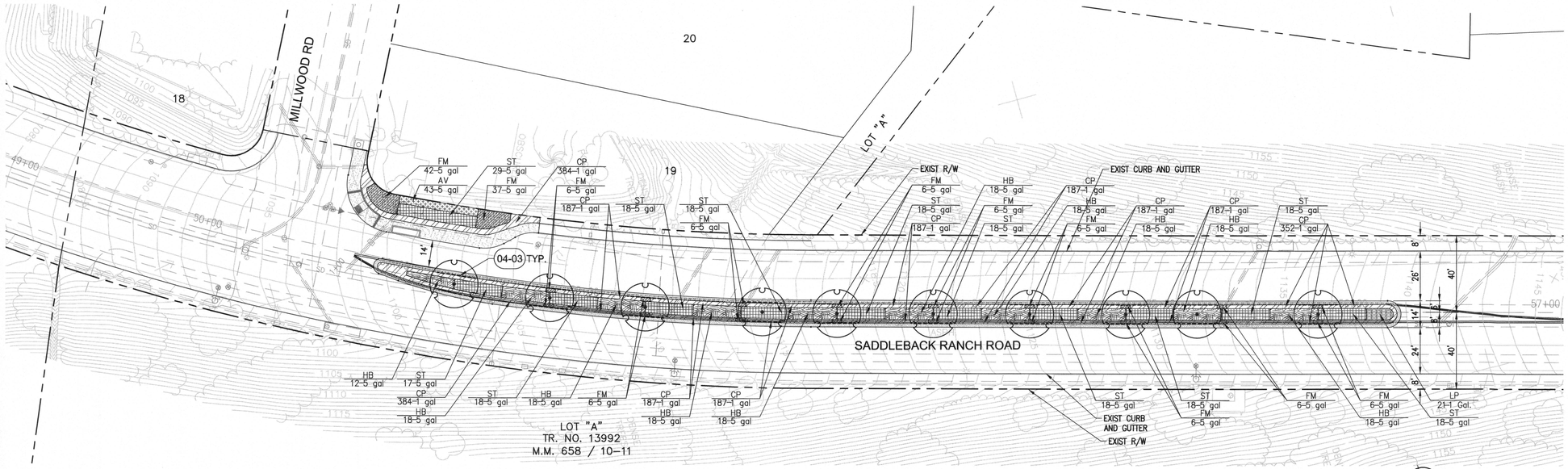

GRAPHIC SCALE

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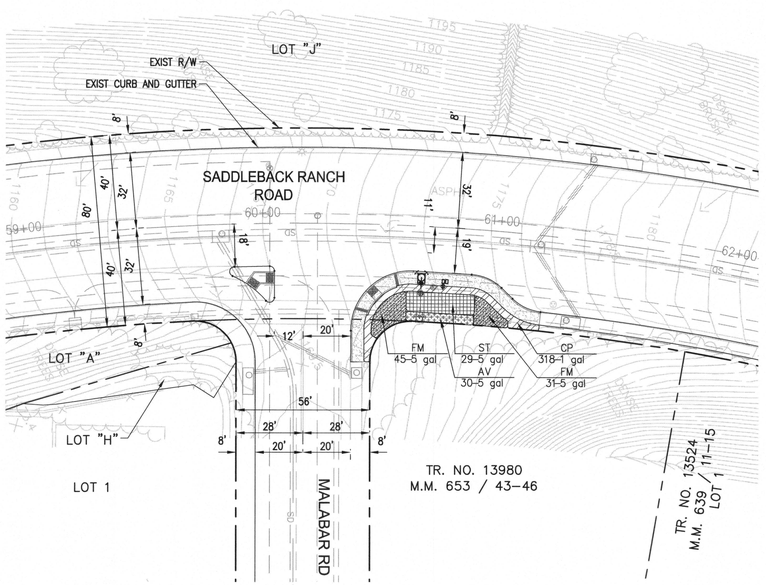
(IN FEET)
1 inch = 40 ft.



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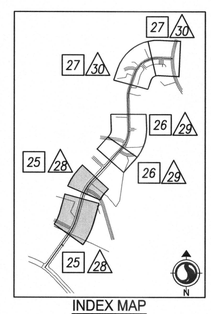

INDEX MAP
N.T.S.

SHEET INDEX LEGEND

IRRIGATION PLAN SHEET

PLANTING PLAN SHEET

PLANT SCHEDULE

TREES	CODE	BOTANICAL NAME / COMMON NAME	CONT	SPACE	ZONE*	QTY	DETAIL
	LC	LOPHOSTEMON CONFERTUS / BRISBANE BOX	24"BOX	50' O.C.	L/0.2	26	3/PD

SHRUB AREAS	CODE	BOTANICAL NAME / COMMON NAME	CONT	SPACE	ZONE*	QTY	DETAIL
	AV	ALOE VERA / MEDICINAL ALOE	5 GAL	2' O.C.	L/0.2	125	2/PD
	CP	CAREX PANSA / SANDDUNE SEDGE	1 GAL	1' O.C.	L/0.2	6,199	2/PD
	FM	FESTUCA MAIREI / ATLAS FESCUE	5 GAL	2' O.C.	L/0.2	366	2/PD
	HB	HESPERALOE PARVIFLORA 'BRAKELIGHTS' TM / BRAKELIGHTS RED YUCCA	5 GAL	3' O.C.	L/0.2	381	2/PD
	LP	LIMONIUM PEREZII / STATICE	1 GAL.	2' O.C.	L/0.2	135	2/PD
	ST	SALVIA MELLIFERA 'TERRA SECA' / BLACK SAGE	5 GAL	3' O.C.	L/0.2	479	2/PD

GROUND COVERS	CODE	BOTANICAL NAME / COMMON NAME	CONT	SPACE	ZONE*	QTY	DETAIL
NOT SHOWN	MU	MULCH / 3" THICK – AVAIL THROUG AGUINA FERTILIZER CO. 3" THICK – AVAIL THROUG AGUINA FERTILIZER CO	MULCH	NA	NA	15,324 SF	

REFERENCE NOTES SCHEDULE

SYMBOL	04 PLANTING ELEMENTS DESCRIPTION	QTY	DETAIL	COMMENTS
04-03	ROOT BARRIER (TYP.)	1,059 LF	1/PD	DEEP ROOT UB-24-2 BY DEEP ROOT (650-344-1464)

PP1

SEAL

REGISTERED LANDSCAPE ARCHITECT
No. 4053
A. Stevens Cook II
EXP. 10-31-15
STATE OF CALIFORNIA

PLANS PREPARED BY:

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38 TECHNOLOGY DRIVE, SUITE 100
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949.923.6000 stantec.com

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3-16-15
A. STEVENS COOK II R.L.A. 4053 DATE

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PUBLIC WORKS DIRECTOR / CITY ENGINEER

SADDLEBACK RANCH ROAD
STREET IMPROVEMENT PROJECT
PLANTING PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 30'
SHEET 28 OF 30

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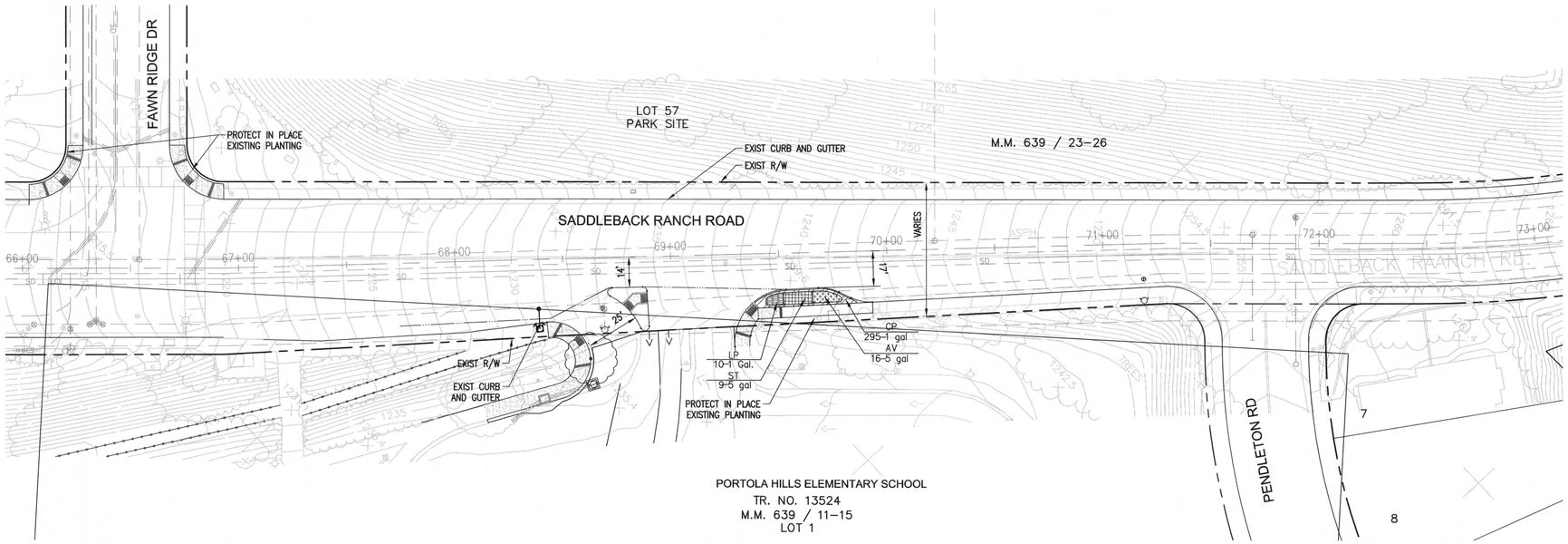
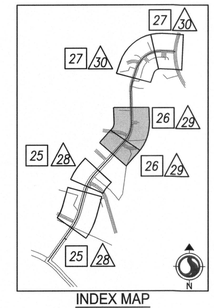




INDEX MAP
N.T.S.

FOR PLANT SCHEDULE SEE SHEET PP1

SHEET INDEX LEGEND

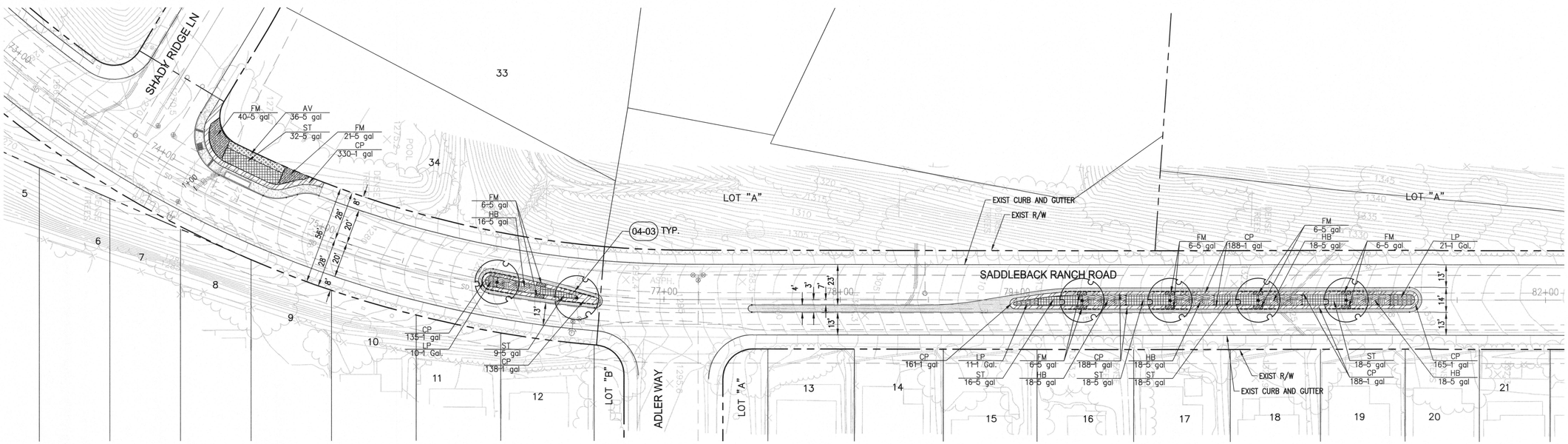
IRRIGATION PLAN SHEET

PLANTING PLAN SHEET

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.



PP2

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

SEAL

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No. 4053
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PLANTING PLAN

CITY OF LAKE FOREST
PUBLIC WORKS DEPARTMENT

SCALE: 1" = 30'

SHEET 29 OF 30

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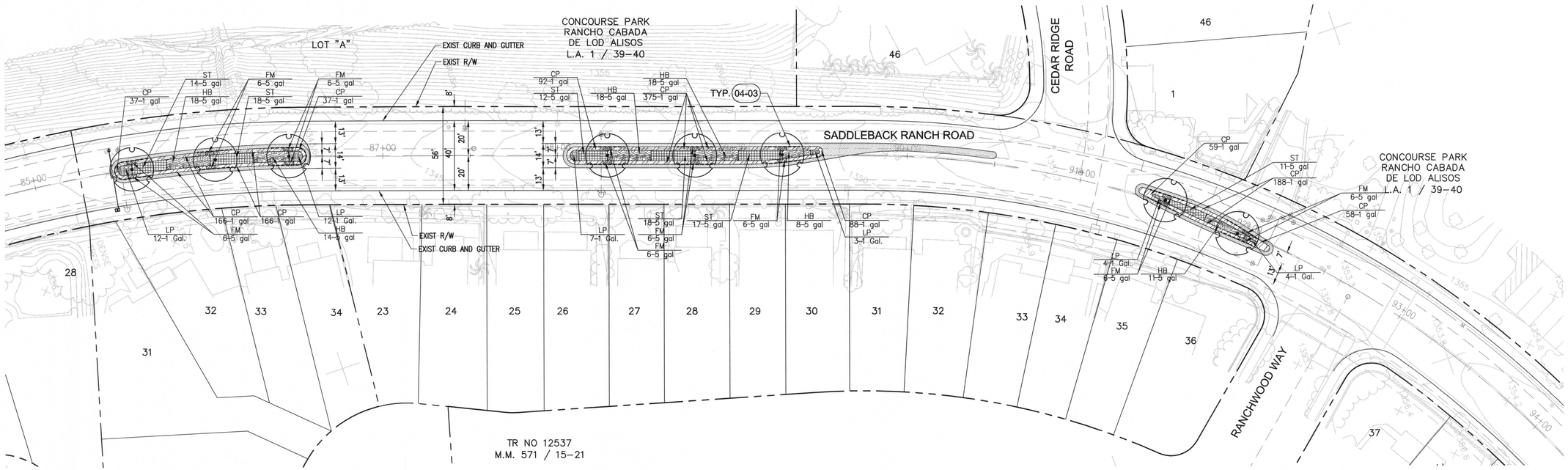

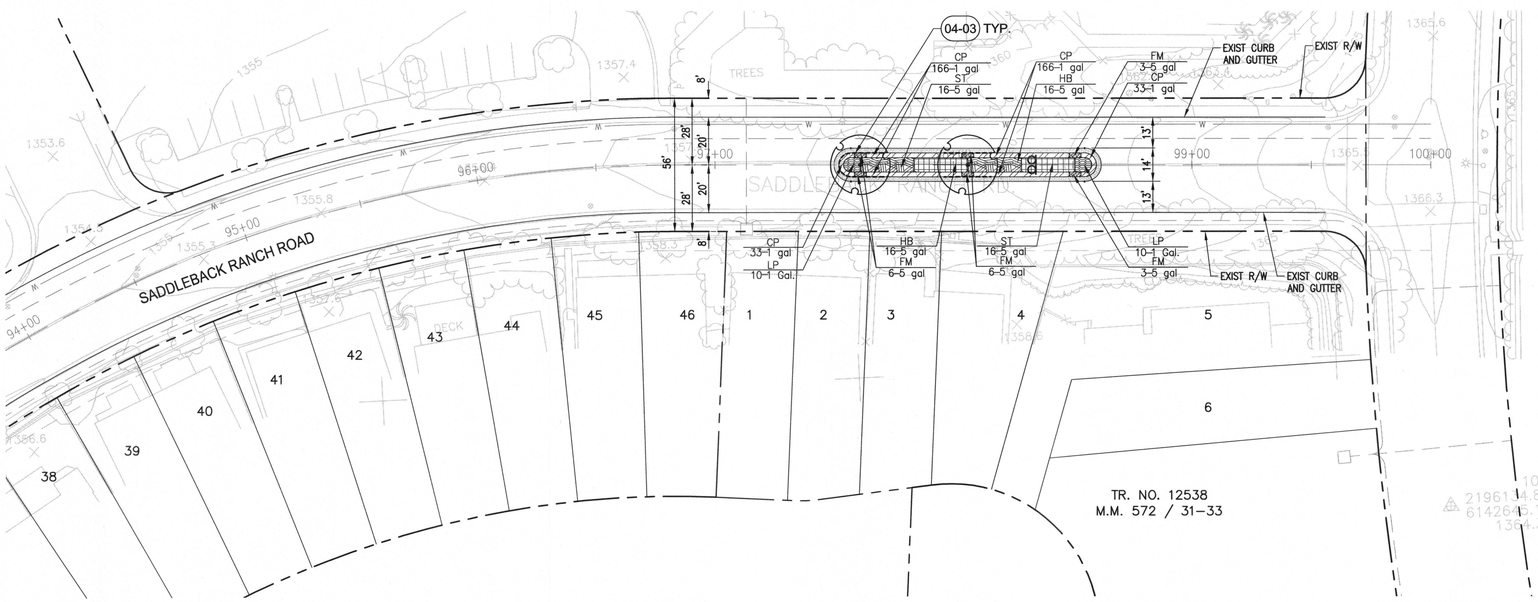

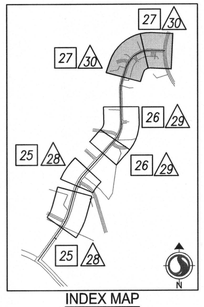

INDEX MAP
N.T.S.

FOR PLANT SCHEDULE SEE SHEET PP1

SHEET INDEX LEGEND

IRRIGATION PLAN SHEET

PLANTING PLAN SHEET

PP3

SEAL

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SCALE: 1" = 30'

SHEET 30 OF 30

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