Appendix H

Detailed Grading Plans, Huitt-Zoliars, Inc., June 2019

SMITH BASIN REHABILITATION PLAN
ORANGE COUNTY WATER DISTRICT (OCWD)

GRADING NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE GRADING CODE OF THE COUNTY OF ORANGE, AND ANY SPECIAL REQUIREMENTS OF THE PERMIT. A COPY OF THE OC GRADING CODE AND OC GRADING MANUAL SHALL BE RETAINED ON THE JOB SITE WHILE WORK IS IN PROGRESS. WHEN REFERENCED ON THE GRADING PLANS, A COPY OF OC PUBLIC WORKS STANDARD PLANS SHALL ALSO BE RETAINED ON THE SITE.
2. GRADING SHALL NOT BE STARTED WITHOUT FIRST NOTIFYING THE ASSIGNED OC GRADING INSPECTOR. A PREGRADING MEETING ON THE SITE IS REQUIRED BEFORE START OF GRADING WITH THE FOLLOWING PEOPLE PRESENT: OWNER, GRADING CONTRACTOR, CIVIL ENGINEER, SOIL ENGINEER, ENGINEERING GEOLOGIST, GRADING INSPECTOR, AND WHEN REQUIRED, THE ARCHAEOLOGIST, PALEONTOLOGIST, AND SURVEYOR. THE REQUIRED INSPECTIONS FOR GRADING WILL BE EXPLAINED AT THE MEETING.
3. ISSUANCE OF A GRADING PERMIT DOES NOT ELIMINATE THE NEED FOR PERMITS FROM OTHER AGENCIES WITH REGULATORY RESPONSIBILITIES FOR CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE WORK AUTHORIZED ON THIS PLAN.
4. THE GRADING PERMIT AND AN APPROVED COPY OF THE APPROVED GRADING PLAN SHALL BE ON THE PERMITTED SITE WHILE GRADING WORK IS IN PROGRESS.
5. PRELIMINARY SOIL AND GEOLOGY REPORTS, AND ALL SUBSEQUENT REPORTS AS APPROVED ARE CONSIDERED A PART OF THE APPROVED GRADING PLAN.
6. THE SOIL ENGINEER AND ENGINEERING GEOLOGIST SHALL PERFORM SUFFICIENT INSPECTIONS AND BE AVAILABLE DURING GRADING AND CONSTRUCTION TO VERIFY COMPLIANCE WITH THE PLANS, SPECIFICATIONS AND THE GRADING CODE WITHIN THEIR PURVIEW.
7. THE CIVIL ENGINEER SHALL BE AVAILABLE DURING GRADING TO VERIFY COMPLIANCE WITH THE PLANS, SPECIFICATIONS, GRADING CODE, AND ANY SPECIAL CONDITIONS OF THE PERMIT WITHIN THEIR PURVIEW.
8. THE SOIL ENGINEER AND ENGINEERING GEOLOGIST SHALL, AFTER CLEARING AND PRIOR TO PLACEMENT OF FILL, INSPECT EACH AREA OF ADVERSE STABILITY, AND TO DETERMINE THE PRESENCE OR ABSENCE OF SUBSURFACE WATER OR SPRING FLOW. IF NEEDED, SUBDRAINS WILL BE DESIGNED AND CONSTRUCTED PRIOR TO THE PLACEMENT OF FILL.
9. SUBDRAIN OUTLETS SHALL BE COMPLETED PRIOR TO PLACING FILL.
10. THE EXACT LOCATION OF THE SUBDRAINS SHALL BE SURVEYED IN THE FIELD FOR LINE/GRADE AND SHOWN ON AS-GRADED OR REVISED PLANS.
11. AREAS TO RECEIVE FILL SHALL BE PROPERLY PREPARED AND APPROVED IN WRITING BY THE SOIL ENGINEER AND THE BUILDING OFFICIAL PRIOR TO PLACING FILL.
12. FILLS SHALL BE BENCHED INTO COMPETENT MATERIAL PER GEOTECHNICAL RECOMMENDATIONS.
13. ALL EXISTING FILLS SHALL BE APPROVED BY THE BUILDING OFFICIAL OR REMOVED PRIOR TO PLACING ADDITIONAL FILLS.
14. FILLS SHALL BE COMPACTED THROUGHOUT PER GEOTECHNICAL RECOMMENDATIONS. MAXIMUM DENSITY SHALL BE DETERMINED BY ASTM D1557 OR APPROVED EQUIVALENT AND FILED DENSITY BY ASTM D1556 (SAND-CONE) AND ASTM D6938 (NUCLEAR GAUGE METHOD) OR AN APPROVED EQUIVALENT.
15. SLOPES SHALL BE NO STEEPER THAN 2-FEET HORIZONTAL TO 1-FOOT VERTICAL (2:1) EXCEPT WHERE SPECIFICALLY APPROVED.
16. ALL CUT SLOPES SHALL BE INVESTIGATED BOTH DURING AND AFTER GRADING BY THE ENGINEERING GEOLOGIST TO DETERMINE IF ANY SLOPE STABILITY PROBLEMS EXIST. SHOULD EXCAVATION DISCLOSE ANY GEOLOGICAL HAZARDS OR POTENTIAL GEOLOGICAL HAZARDS, THE ENGINEERING GEOLOGIST SHALL SUBMIT RECOMMENDED TREATMENT TO THE BUILDING OFFICIAL FOR APPROVAL.
17. WHERE SUPPORT OF BUTTRESSING OF CUT AND NATURAL SLOPES IS DETERMINED NECESSARY BY THE ENGINEERING GEOLOGIST AND SOIL ENGINEER, THE SOIL ENGINEER SHALL SUBMIT DESIGN, LOCATIONS AND CALCULATIONS TO THE BUILDING OFFICIAL PRIOR TO CONSTRUCTION. THE ENGINEERING GEOLOGIST AND SOIL ENGINEER SHALL INSPECT AND CONTROL THE CONSTRUCTION OF THE BUTTRESSING AND CERTIFY TO THE STABILITY OF THE SLOPE AND ADJACENT STRUCTURES UPON COMPLETION.
18. WHEN CUTS ARE BROUGHT TO NEAR GRADE, THE ENGINEERING GEOLOGIST SHALL DETERMINE IF THE BEDROCK IS EXTENSIVELY FRACTURED OR FAULTED, AND WILL READILY TRANSMIT WATER. IF CONSIDERED NECESSARY BY THE ENGINEERING GEOLOGIST AND SOIL ENGINEER, A COMPACTED FILL BLANKET WILL BE PLACED.
19. BACKFILL SHALL BE TESTED AND APPROVED BY THE SOIL ENGINEER PER THE GRADING CODE.
20. ACTIVE UTILITIES SHALL BE PROTECTED AND REPORTED TO THE CIVIL ENGINEER. INACTIVE UTILITIES SHALL BE REMOVED WITHIN THE LIMITS OF WORK.
21. EXISTING WATER WELLS SHALL BE CLEARLY MARKED AND PROTECTED IN PLACE DURING CONSTRUCTION.
22. EXISTING CESSPOOLS AND SEPTIC TANKS SHALL BE REMOVED IN COMPLIANCE WITH THE CALIFORNIA PLUMBING CODE TO THE APPROVAL OF BUILDING OFFICIAL.
23. THE STOCKPILING OF EXCESS MATERIAL SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO EXCAVATION.
24. EXPORT SOIL MUST BE TRANSPORTED TO A LEGAL DUMP OR TO A PERMITTED SITE APPROVED BY THE BUILDING OFFICIAL.
25. THE PERMITTEE SHALL COMPLY WITH THE OC GRADING CODE REQUIREMENTS FOR HAUL ROUTES WHEN AN EXCESS OF 5,000 CUBIC YARDS OF EARTH IS TRANSPORTED TO OR FROM A PERMITTED SITE ON PUBLIC ROADWAYS.
26. THE PERMITTEE IS RESPONSIBLE FOR DUST CONTROL MEASURES.
27. THE PERMITTEE SHALL GIVE REASONABLE NOTICE TO THE OWNER OF ADJOINING LANDS AND BUILDING PRIOR TO BEGINNING EXCAVATIONS WHICH MAY AFFECT THE LATERAL AND SUBJACENT SUPPORT OF THE ADJOINING PROPERTY. THE NOTICE SHALL STATE THE INTENDED DEPTH OF THE EXCAVATION AND WHEN THE EXCAVATION WILL COMMENCE. THE ADJOINING OWNER SHALL BE ALLOWED AT LEAST 30 DAYS AND REASONABLE ACCESS ON THE PERMITTED PROPERTY TO PROTECT HIS STRUCTURE, IF HE SO DESIRES, UNLESS OTHERWISE PROTECTED BY LAW.
28. ALL CONCRETE STRUCTURES THAT ARE EXPOSED TO THE ON-SITE SOILS SHALL BE CONSTRUCTED WITH TYPE V CEMENT, UNLESS DEEMED UNNECESSARY BY SOLUBLE SULFATE-CONTENT TESTS CONDUCTED BY THE SOIL ENGINEER.
29. SLOPES EXCEEDING 5 FEET IN HEIGHT SHALL BE PLANTED WITH AN APPROVED PLANT MATERIAL.
30. ALL EXISTING DRAINAGE COURSES THROUGH THIS SITE SHALL REMAIN OPEN UNTIL FACILITIES TO HANDLE STORM WATER ARE APPROVED AND FUNCTIONAL, HOWEVER, IN ANY CASE, THE PERMITTEE SHALL BE HELD LIABLE FOR ANY DAMAGE DUE TO OBSTRUCTING NATURAL DRAINAGE PATTERNS.
31. SANITARY FACILITIES SHALL BE PROVIDED BY THE CONTRACTOR AND MAINTAINED ON SITE.
32. LOCATING AND PROTECTING UTILITIES IS THE RESPONSIBILITY OF THE PERMITTEE.
33. APPROVED PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS SHALL BE USED TO PROTECT ADJOINING PROPERTIES DURING GRADING.
34. GRADING OPERATIONS INCLUDING MAINTENANCE OF EQUIPMENT WITHIN ONE-MILE OF A HUMAN OCCUPANCY SHALL NOT BE CONDUCTED BETWEEN THE HOURS OF 8:00 P.M. AND 7:00 A.M. DAILY, ON SUNDAYS, OR ON A FEDERAL HOLIDAY.
    A. ALL CONSTRUCTION VEHICLES OR EQUIPMENT, FIXED OR MOBILE, OPERATED WITHIN 1000 FEET OF A DWELLING SHALL BE EQUIPPED WITH PROPERLY OPERATIONAL AND MAINTAINED MUFFLERS.
    B. ALL OPERATIONS SHALL COMPLY WITH ORANGE COUNTY ORDINANCE DIVISION 6 (NOISE CONTROL).
    C. STOCKPILING AND/OR VEHICLE STAGING AREAS SHALL BE LOCATED AS FAR AS PRACTICAL FROM DWELLINGS AND WITHIN THE LIMITS OF THE GRADING PERMIT.
35. GRADING AND EXCAVATION SHALL BE HALTED DURING PERIODS OF HIGH WINDS. ACCORDING TO AQMD RULE 403, HIGH WIND CONDITIONS MEANS INSTANTANEOUS WIND SPEEDS EXCEED 25 MPH. THIS LEVEL OCCURS ONLY UNDER EXTREME CONDITIONS SUCH AS SANTA ANA WIND CONDITIONS.
36. THE ENGINEERING GEOLOGIST SHALL PERFORM PERIODIC INSPECTIONS AND SUBMIT A COMPLETE REPORT AND MAP UPON COMPLETION OF GRADING.
37. THE GRADING CONTRACTOR SHALL SUBMIT A STATEMENT OF COMPLIANCE TO THE ASSIGNED GRADING INSPECTOR THAT THE GRADING IS IN ACCORDANCE WITH THE APPROVED GRADING PLAN.
38. THE COMPACTION REPORT AND APPROVAL FROM THE SOIL ENGINEER SHALL INDICATE THE TYPE OF FIELD TESTING PERFORMED. THE METHOD OF OBTAINING THE IN-PLACE DENSITY SHALL BE IDENTIFIED WHETHER SAND CONE, DRIVE RING OR NUCLEAR, AND SHALL BE NOTED FOR EACH TEST. SUFFICIENT MAXIMUM DENSITY DETERMINATIONS SHALL BE PERFORMED TO VERIFY ACCURACY OF THE MAXIMUM DENSITY CURVES USED BY THE FIELD TECHNICIAN.
39. IN THE EVENT THAT SOIL CONTAMINATION IS DISCOVERED DURING EXCAVATION AND REMOVAL OF AN EXISTING TANK, WORK SHALL BE STOPPED UNTIL A SITE ASSESSMENT AND MITIGATION PLAN HAS BEEN PREPARED, SUBMITTED AND APPROVED BY THE OC HEALTH CARE AGENCY/ENVIRONMENTAL HEALTH AND OC DEVELOPMENT SERVICES.

NPDES NOTES:

1. IN THE CASE OF EMERGENCY, CALL ____ AT CELL PHONE _____.
2. SEDIMENT FROM AREAS DISTURBED BY CONSTRUCTION SHALL BE RETAINED ON SITE USING STRUCTURAL CONTROLS TO THE MAXIMUM EXTENT PRACTICABLE.
3. STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO MINIMIZE SEDIMENT TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TACKING, OR WIND.
4. APPROPRIATE BMP'S FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS SHALL BE IMPLEMENTED TO MINIMIZE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTIES BY WIND OR RUNOFF.
5. RUNOFF FROM EQUIPMENT AND VEHICLE WASHING SHALL BE CONTAINED AT CONSTRUCTION SITES UNLESS TREATED TO REDUCE OR REMOVE SEDIMENT AND OTHER POLLUTANTS.
6. ALL CONSTRUCTION CONTRACTOR AND SUBCONTRACTOR PERSONNEL ARE TO BE MADE AWARE OR THE REQUIRED BEST MANAGEMENT PRACTICES AND GOOD HOUSEKEEPING MEASURES FOR THE PROJECT SITE AND ANY ASSOCIATED CONSTRUCTION STAGING AREAS.
7. AT THE END OF EACH DAY OF CONSTRUCTION ACTIVITY ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE COLLECTED AND PROPERLY DISPOSED IN TRASH OR RECYCLE BINS.
8. CONSTRUCTION SITES SHALL BE MAINTAINED IN SUCH A CONDITION THAT AN ANTICIPATED STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE. DISCHARGES OF MATERIAL OTHER THAN STORM WATER ONLY WHEN NECESSARY FOR PERFORMANCE AND COMPLETION OF CONSTRUCTION PRACTICES AND WHERE THEY DO NOT: CAUSE OR CONTRIBUTE TO A VIOLATION OF ANY WATER QUALITY STANDARD; CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR NUISANCE; OR CONTAIN A HAZARDOUS SUBSTANCE IN A QUANTITY REPORTABLE UNDER FEDERAL REGULATIONS 40 CFR PARTS 117 AND 302.
9. POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: SOLID OR LIQUID CHEMICAL SPILLS; WASTES FROM PAINTS, STAINS, SEALANTS, GLUES, LIMES, PESTICIDES, HERBICIDES, WOOD PRESERVATIVES AND SOLVENTS; ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS; FUELS, OILS, LUBRICANTS AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS; FERTILIZERS, VEHICLE/EQUIPMENT WASH WATER AND CONCRETE WASH WATER; CONCRETE, DETERGENT OR FLOATABLE WASTES; WASTES FROM ANY ENGINE/EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING AND SUPERCHLORINATED POTABLE WATER LINE FLUSHING. DURING CONSTRUCTION, PERMITTEE SHALL DISPOSE OF SUCH MATERIALS IN A SPECIFIED AND CONTROLLED TEMPORARY AREA ON-SITE, PHYSICALLY SEPARATED FROM POTENTIAL STORM WATER RUNOFF, WITH ULTIMATE DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.
10. DEWATERING OF CONTAMINATED GROUNDWATER OR DISCHARGING CONTAMINATED SOILS VIA SURFACE EROSION IS PROHIBITED. DEWATERING OF NON-CONTAMINATED GROUNDWATER REQUIRES A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FROM THE RESPECTIVE STATE REGIONAL WATER QUALITY CONTROL BOARD.
11. GRADED AREAS ON THE PERMITTED AREA PERIMETER MUST DRAIN AWAY FROM THE FACE OF SLOPES AT THE CONCLUSION OF EACH WORKING DAY. DRAINAGE IS TO BE DIRECTED TOWARD DESILTING FACILITIES.
12. THE PERMITTEE AND CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.
13. THE PERMITTEE AND CONTRACTOR SHALL INSPECT THE EROSION CONTROL WORK AND INSURE THAT THE WORK IN IN ACCORDANCE WITH THE APPROVED PLANS.
14. THE PERMITTEE SHALL NOTIFY ALL GENERAL CONTRACTORS, SUBCONTRACTORS, MATERIAL SUPPLIERS, LESSEES, AND PROPERTY OWNERS: THAT DUMPING OF CHEMICAL INTO THE STORM DRAIN SYSTEM OR THE WATERSHED IS PROHIBITED.
15. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
16. ALL REMOVABLE EROSION PROTECTIVE DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE 5-DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.
17. SEDIMENTS FROM AREAS DISTURBED BY CONSTRUCTION SHALL BE RETAINED ON SITE USING AN EFFECTIVE COMBINATION OF EROSION AND SEDIMENT CONTROLS THE MAXIMUM EXTEND PRACTICABLE, AND STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO MINIMIZE SEDIMENT TRANSPORT FROM THE SITE TO THE STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TRACKING, OR WIND.
18. APPROPRIATE BMPS FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS OR RESIDUES SHALL BE IMPLEMENTED AND RETAINED ON SITE TO MINIMIZE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTY BY WIND OR RUNOFF.

LEGEND

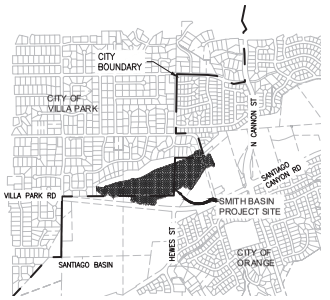
CENTERLINE	TOP OF SLOPE
PROPERTY LINE	TOE OF SLOPE
DAYLIGHT	CITY BOUNDARY LIMITS
EXISTING FLOWLINE	PONDING AREA
FLIOWLINE	
2 YEAR STORM WATER SURFACE LEVEL	
5 YEAR & 10 YEAR STORM WATER SURFACE LEVEL	
100 YEAR STORM WATER SURFACE LEVEL	

CONTACTS

ORANGE COUNTY WATER DISTRICT
18700 WARD ST
FOUNTAIN VALLEY, CA 92708
PHONE:(714)378-3200

ORANGE COUNTY PUBLIC WORKS
300 N FLOWER ST
SANTA ANA, CA 92703
PHONE: (714)667-8800

CITY OF VILLA PARK
17855 SANTIAGO BLVD,
VILLA PARK, CA 92861
PHONE: (714)998-1500



LOCATION MAP
NOT TO SCALE

SHEET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX MAP
3-5	SECTIONS
6-16	GRADING PLAN
17	DETAIL SHEET

EARTH WORK QUANTITIES

	CUT (CY)	FILL (CY)	NET
PRIORITY AREAS	-1255	117881	116627
GROIN	-2	1114	1112
RAW CHANNEL	-144921	14100	
CHANNEL WITH SHRINKAGE 10%			-117739
TOTAL			0

DIGALERT
SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIGALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIGALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE 1-800-422-4133 TWO WORKING DAYS BEFORE YOU DIG

THESE PLANS WERE PREPARED IN THE OFFICE OF:
HUITT-ZOLLARS
2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-5815 Fax (949) 988-5820
UNDER THE SUPERVISION OF:
REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
GIRUEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:

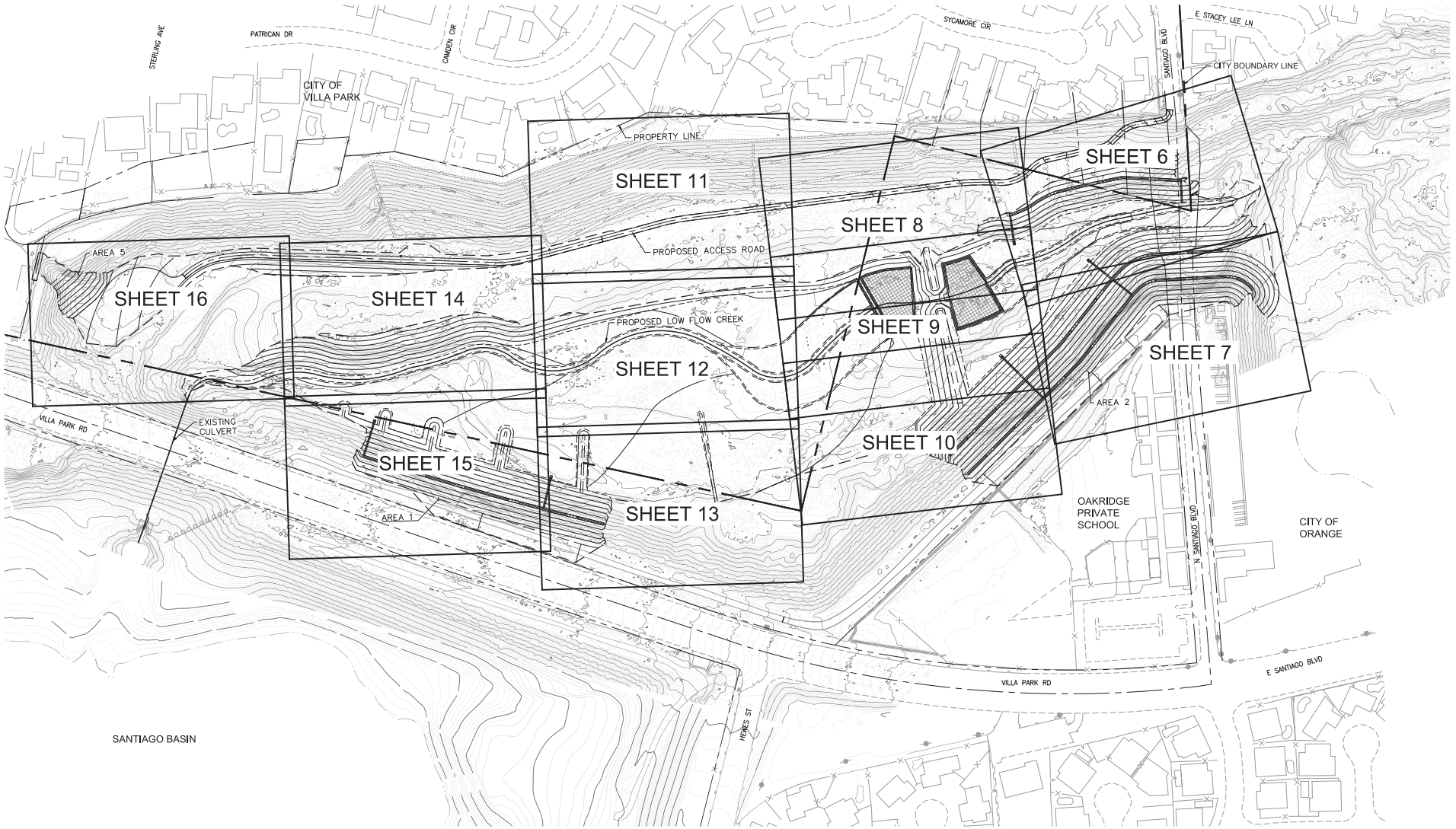
NO	DATE	DESCRIPTION	APPROVED:

ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS
TITLE SHEET

DATE: JUNE 2019
SHEET 1 OF SHEET 17

FILENAME: R:\R30897\01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\R30897101-01-GP-001.dwg Jul 03 2019 11:32pm



N

SCALE
1" = 100'

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UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
GABRIEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:			
NO	DATE	DESCRIPTION	APPROVED:

ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

INDEX MAP

DATE: JUNE 2019

SHEET 2 OF SHEET 17

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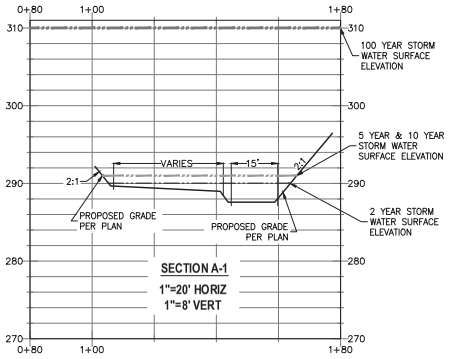

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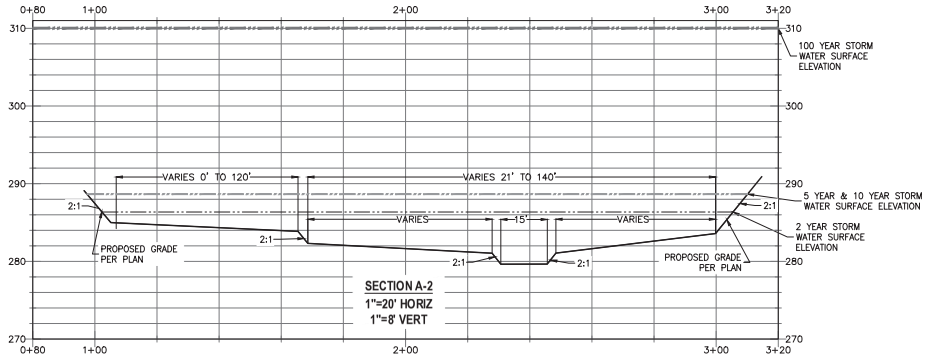
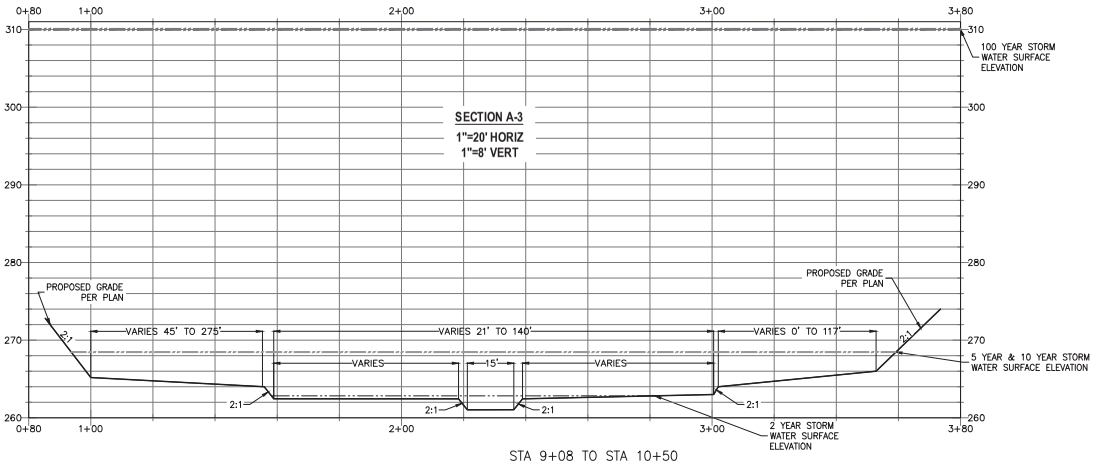
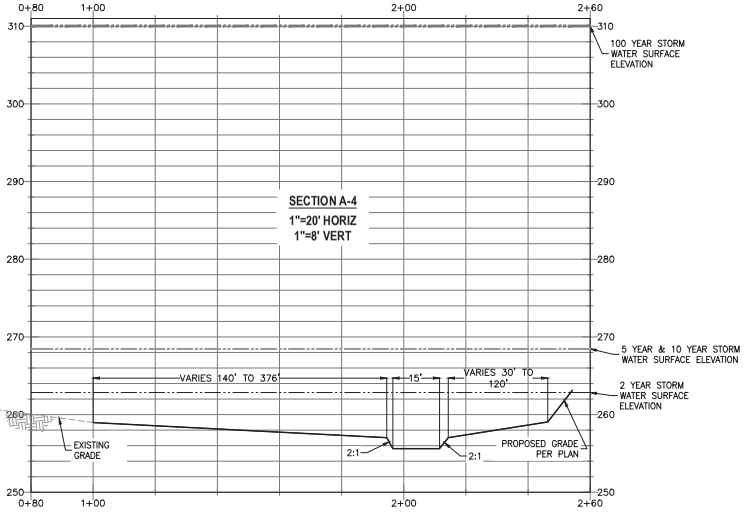


STA 3+20 TO 6+55



STA 9+08 TO STA 10+50



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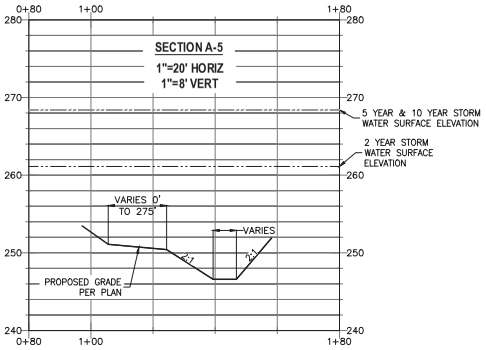

STA 16+36 TO STA 25+02

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REGISTERED PROFESSIONAL ENGINEER
MURIEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:			
NO	DATE	DESCRIPTION	APPROVED:

ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

SECTIONS

DATE: JUNE 2019

SHEET 3 OF SHEET 17

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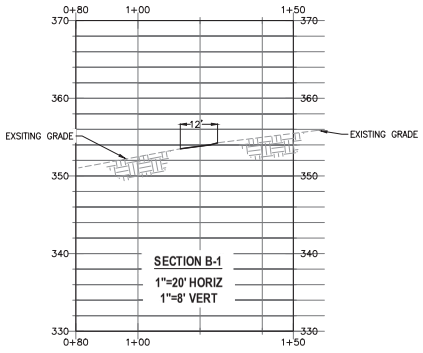
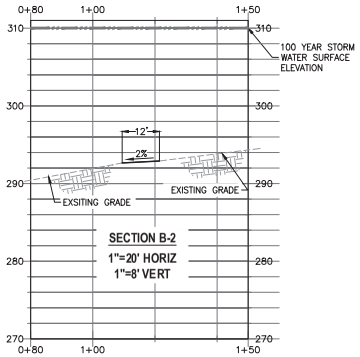
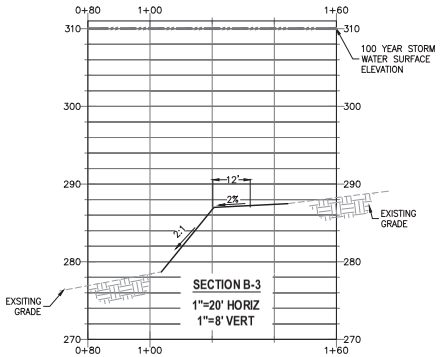


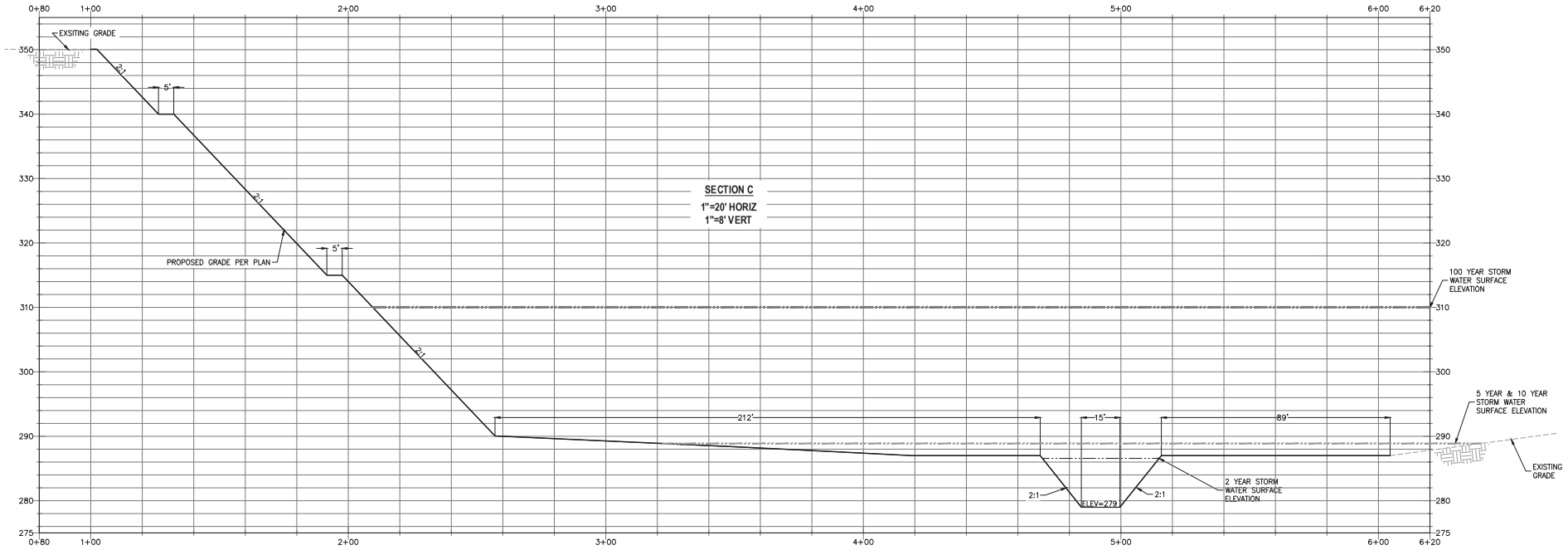
STA 1+00 TO STA 2+43



STA 2+43 TO STA 13+00



STA 13+00 TO STA 22+58



STA 7+67

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UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MANUEL ANGEL HERNANDEZ
No. 61378
Expiration
06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:			
NO	DATE	DESCRIPTION	APPROVED:

ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

SECTIONS

DATE:
JUNE
2019

SHEET 4
OF
SHEET 17

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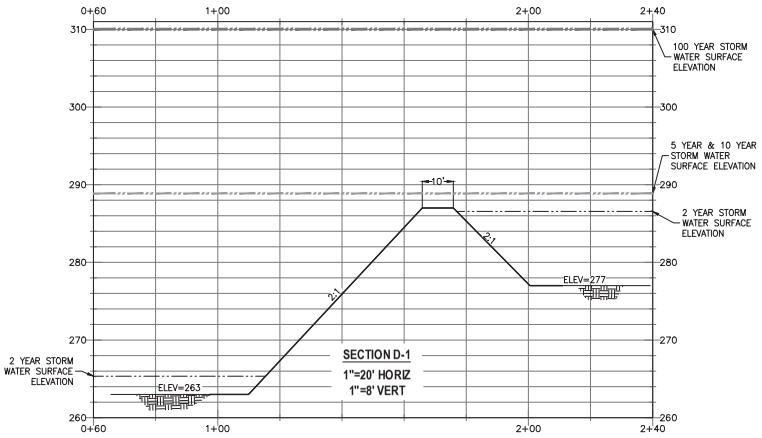
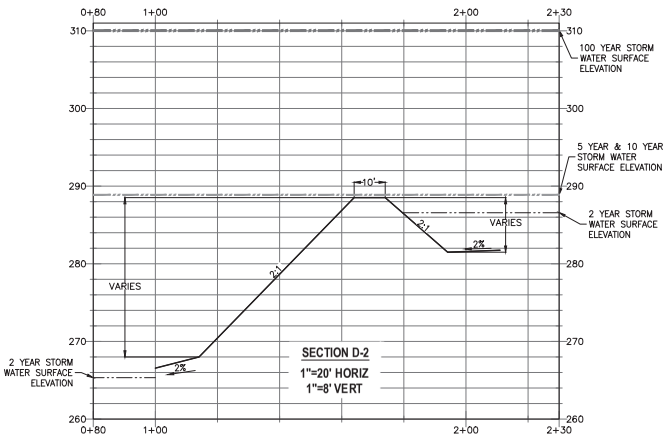
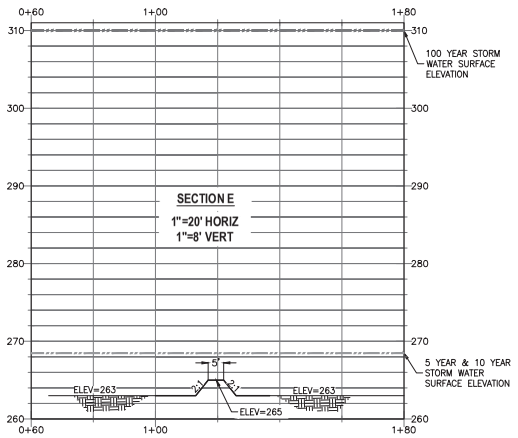
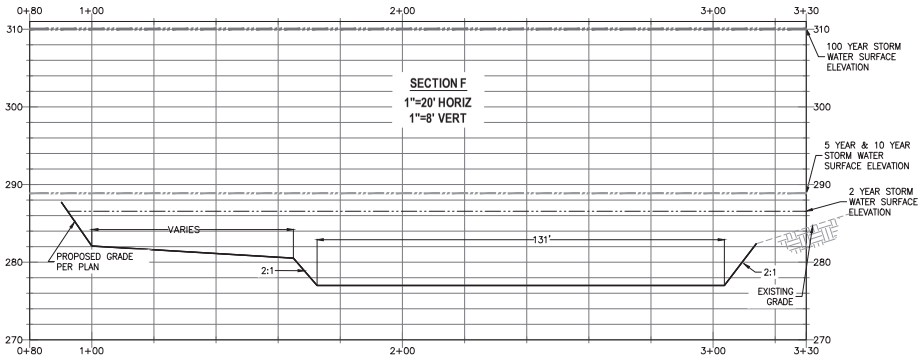
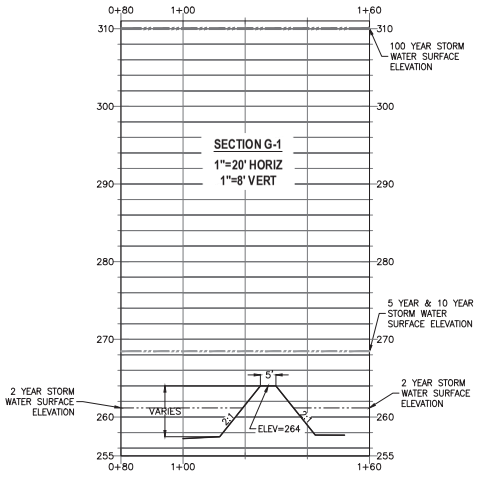
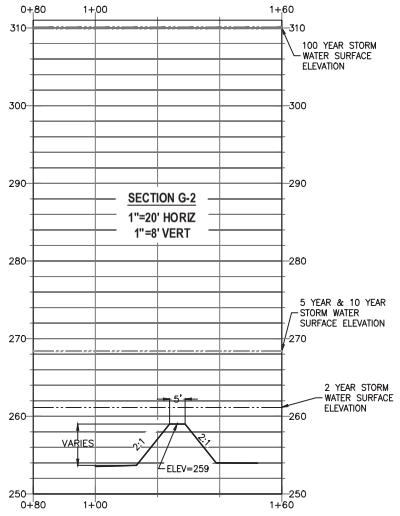












THESE PLANS WERE PREPARED IN THE OFFICE OF:

HUITT-ZOLLARS
2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-5815 - Fax (949) 988-5820

UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MURIEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:

NO	DATE	DESCRIPTION	APPROVED:

ORANGE COUNTY WATER DISTRICT

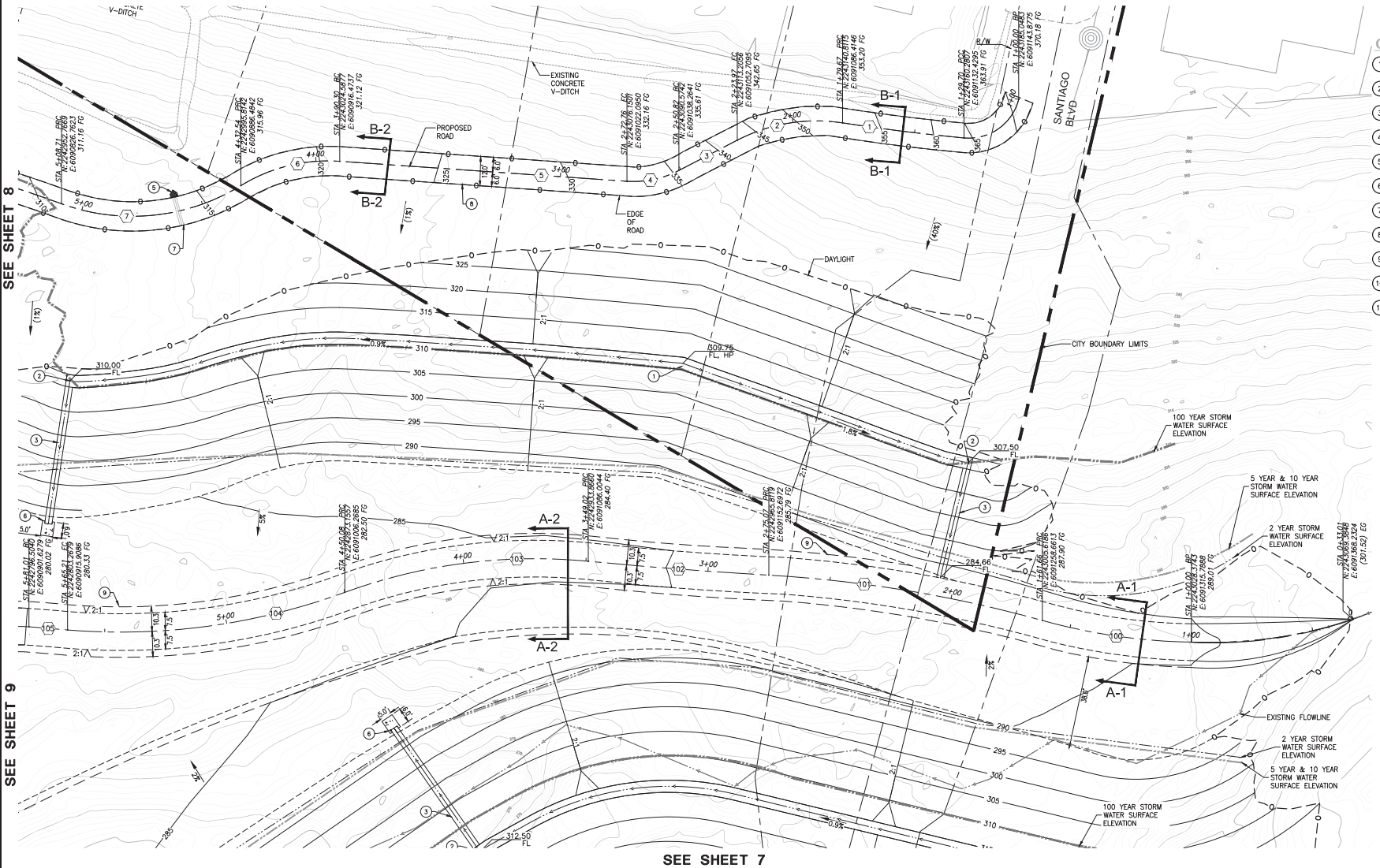
SMITH BASIN
REHABILITATION PLANS

SECTIONS

DATE: JUNE 2019

SHEET 5 OF SHEET 17

FILENAME: R:\30897\01 – Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701–03–GP–03–05.dwg Jul 03, 2019 11:32pm



CONSTRUCTION NOTES

1. CONSTRUCT TERRACE DRAIN PER DETAIL 1 ON SHEET GP 17
2. CONSTRUCT TERRACE DRAIN PER DETAIL 2 ON SHEET GP 17
3. CONSTRUCT DOWN DRAIN PER DETAIL 3 ON SHEET GP 17
4. CONSTRUCT DOWN DRAIN/TERRACE DRAIN INTERSECTION PER DETAIL 4 ON SHEET GP 17
5. CONSTRUCT DOWN DRAIN TO PIPE TRANSITION PER OCPW SP 1331 DETAIL 5 ON SHEET GP 17
6. CONSTRUCT SPLASH PAD PER DETAIL 6 ON SHEET GP17
7. INSTALL 12" RCP
8. CONSTRUCT PROPOSED ACCESS PATH PER PLAN AND SECTIONS ON SHEET GP 4
9. CONSTRUCT TWO-STAGE CHANNEL PER PLAN AND SECTIONS ON SHEET GP 3
10. CONSTRUCT SINGLE STAGE CHANNEL PER PLAN AND SECTION A-5 ON SHEET GP 3
11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION F-1 ON SHEET GP 5

ROAD LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
1	49.97'	820.00'	3°29'30"	24.99'
2	44.30'	70.00'	36°15'45"	22.92'
3	26.85'		S32°32'59"W	
4	21.94'	40.00'	31°25'46"	11.25'
5	117.54'		S63°58'45"W	
6	42.24'	68.00'	35°35'16"	21.82'
7	76.17'	84.50'	51°38'56"	40.89'

CHANNEL LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
100	61.66'	243.50'	14°30'29"	30.99'
101	113.41'	530.50'	12°14'55"	56.92'
102	73.95'	1893.00'	2°14'18"	36.98'
103	101.06'	226.00'	25°37'13"	51.39'
104	115.13'	266.50'	24°45'05"	58.48'
105	15.80'		S64°39'21"W	

THESE PLANS WERE PREPARED IN THE OFFICE OF:
HUITT-ZOLLARS
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Phone (949) 988-5815 - Fax (949) 988-5820

UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MURIEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:			
NO	DATE	DESCRIPTION	APPROVED:

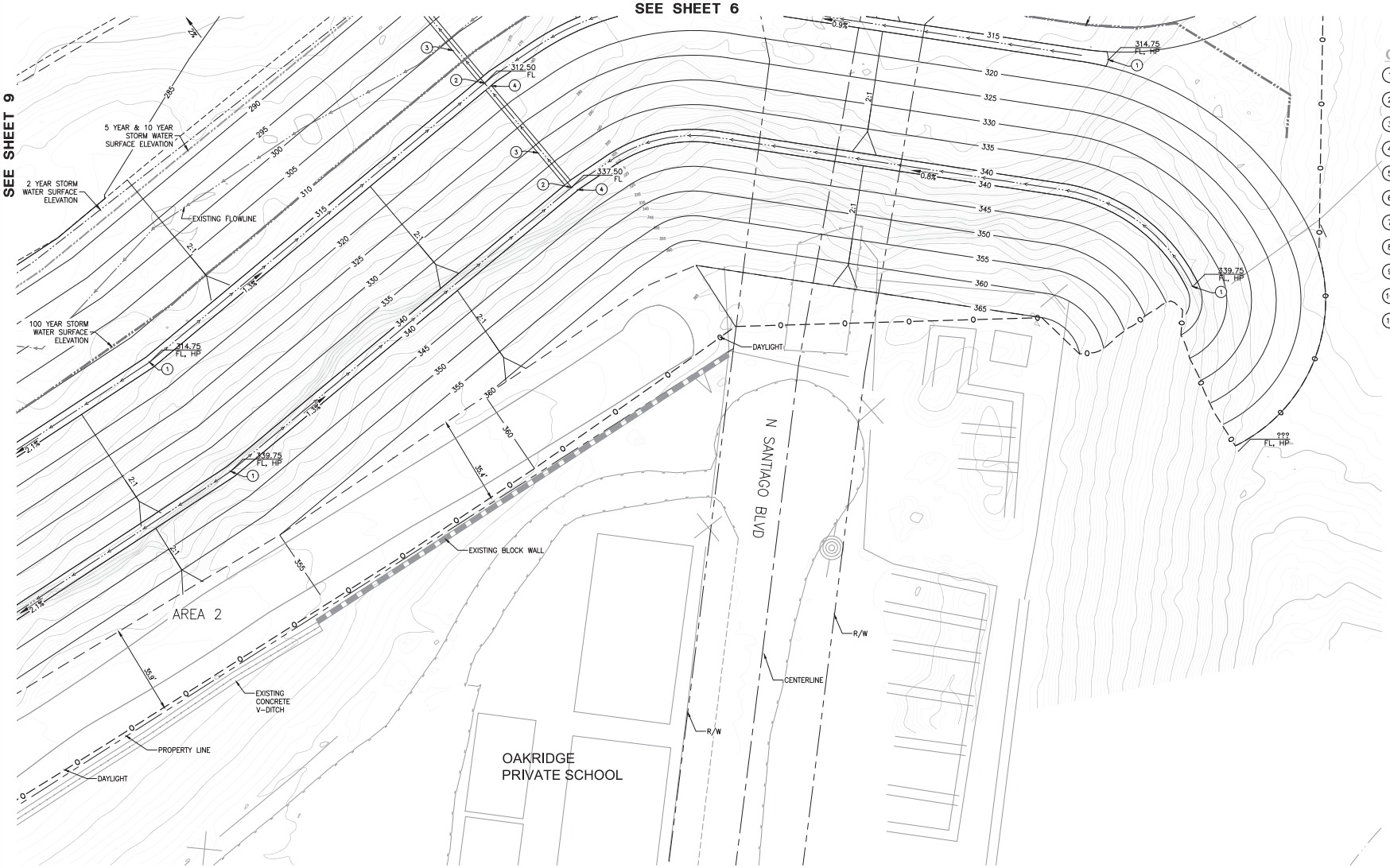
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 6 OF SHEET 17

FILENAME: R:\R30897\01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701-004-GP - 06-16.dwg Jul 03 2019 1:40pm



CONSTRUCTION NOTES

1. CONSTRUCT TERRACE DRAIN PER DETAIL 1 ON SHEET GP 17
2. CONSTRUCT TERRACE DRAIN PER DETAIL 2 ON SHEET GP 17
3. CONSTRUCT DOWN DRAIN PER DETAIL 3 ON SHEET GP 17
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6. CONSTRUCT SPLASH PAD PER DETAIL 6 ON SHEET GP17
7. INSTALL 12" RCP
8. CONSTRUCT PROPOSED ACCESS PATH PER PLAN AND SECTIONS ON SHEET GP 4
9. CONSTRUCT TWO-STAGE CHANNEL PER PLAN AND SECTIONS ON SHEET GP 3
10. CONSTRUCT SINGLE STAGE CHANNEL PER PLAN AND SECTION A-5 ON SHEET GP 3
11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION F-1 ON SHEET GP 5

SCALE
1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
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UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MURIEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:			
NO	DATE	DESCRIPTION	APPROVED:

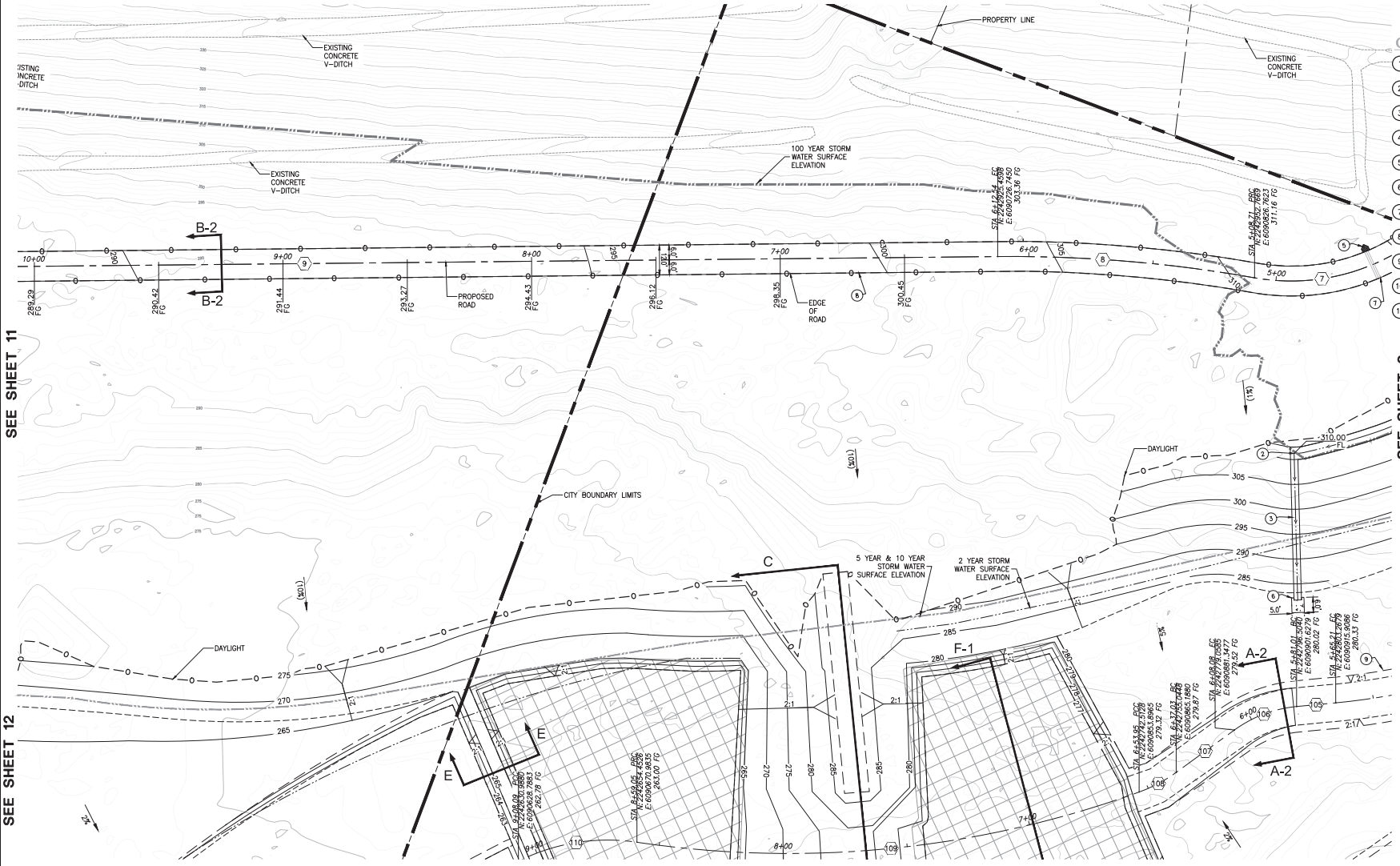
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 7 OF SHEET 17

FILENAME: R:\R30897.01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701-004-GP - 06-16.dwg Jul 03 2019 1:40pm



CONSTRUCTION NOTES

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11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION F-1 ON SHEET GP 5

ROAD LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
7	76.17'	84.50'	51°38'56"	40.89'
8	103.83'	560.00'	10°37'22"	52.06'
9	557.68'		S69°25'03"W	

CHANNEL LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
105	15.80'		S64°39'21"W	
106	27.07'	50.50'	30°43'04"	13.87'
107	28.94'		S33°56'17"W	
108	16.92'	60.00'	16°09'43"	8.52'
109	205.10'	414.00'	28°23'05"	104.70'
110	49.05'	80.00'	35°07'34"	25.32'

SCALE
1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
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2603 Main Street, Suite 400 - Irvine, California 92614-4250
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UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
SAMUEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:			
NO	DATE	DESCRIPTION	APPROVED:

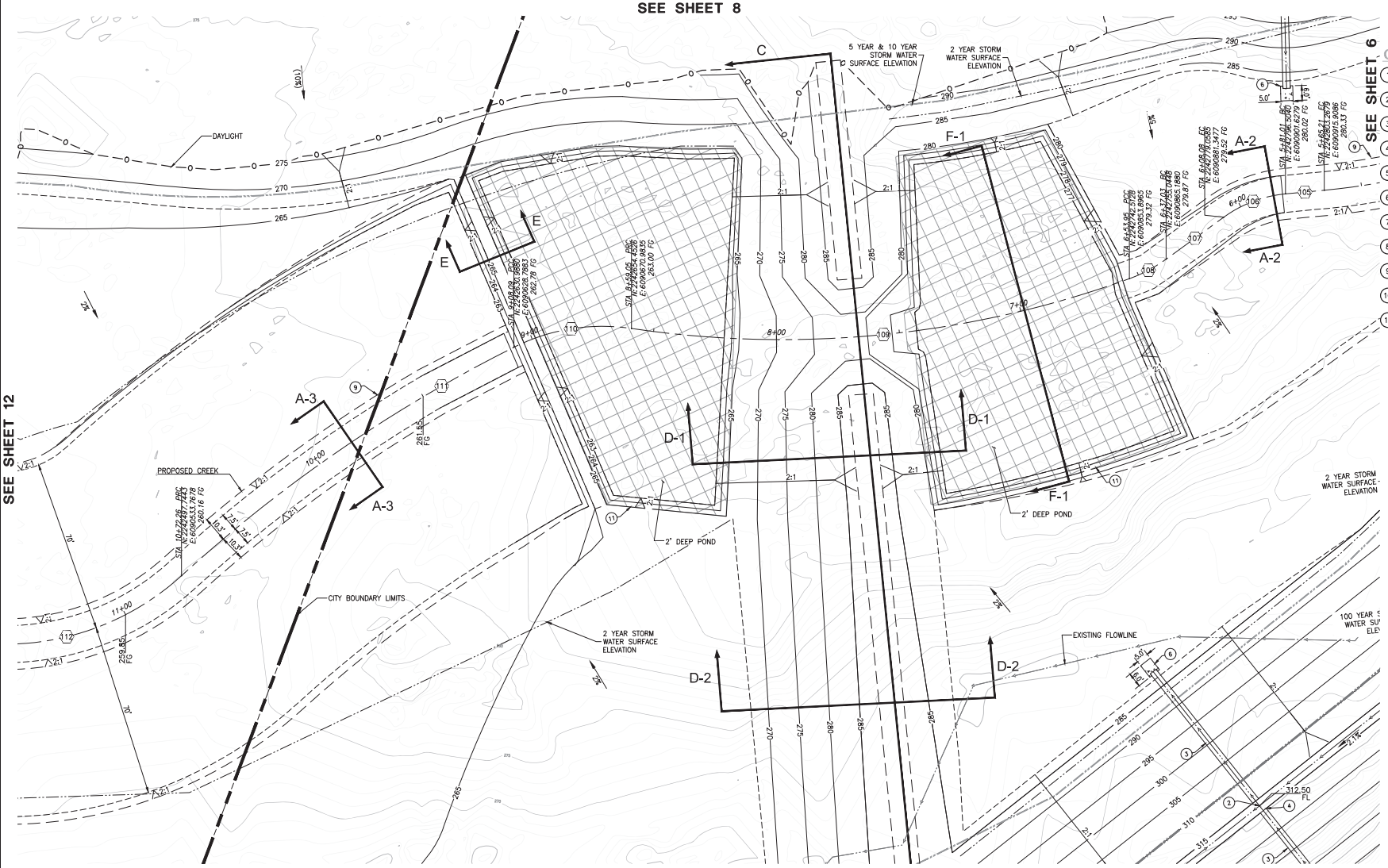
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 8 OF SHEET 17

FILENAME: R:\R30897\01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701-004-GP - 08-16.dwg Jul 03 2019 1:40pm



CONSTRUCTION NOTES

1. CONSTRUCT TERRACE DRAIN PER DETAIL 1 ON SHEET GP 17
2. CONSTRUCT TERRACE DRAIN PER DETAIL 2 ON SHEET GP 17
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9. CONSTRUCT TWO-STAGE CHANNEL PER PLAN AND SECTIONS ON SHEET GP 3
10. CONSTRUCT SINGLE STAGE CHANNEL PER PLAN AND SECTION A-5 ON SHEET GP 3
11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION F-1 ON SHEET GP 5

CHANNEL LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
105	15.80'		S64°39'21"W	
106	27.07'	50.50'	30°43'04"	13.87'
107	28.94'		S33°56'17"W	
108	16.92'	60.00'	16°09'43"	8.52'
109	205.10'	414.00'	28°23'05"	104.70'
110	49.05'	80.00'	35°07'34"	25.32'
111	164.17'	598.00'	15°43'46"	82.60'
112	92.65'	106.50'	49°50'42"	49.49'

SCALE 1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
HUITT-ZOLLARS
2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-5815 - Fax (949) 988-5820

UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
GABRIEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

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NO	DATE	DESCRIPTION	APPROVED

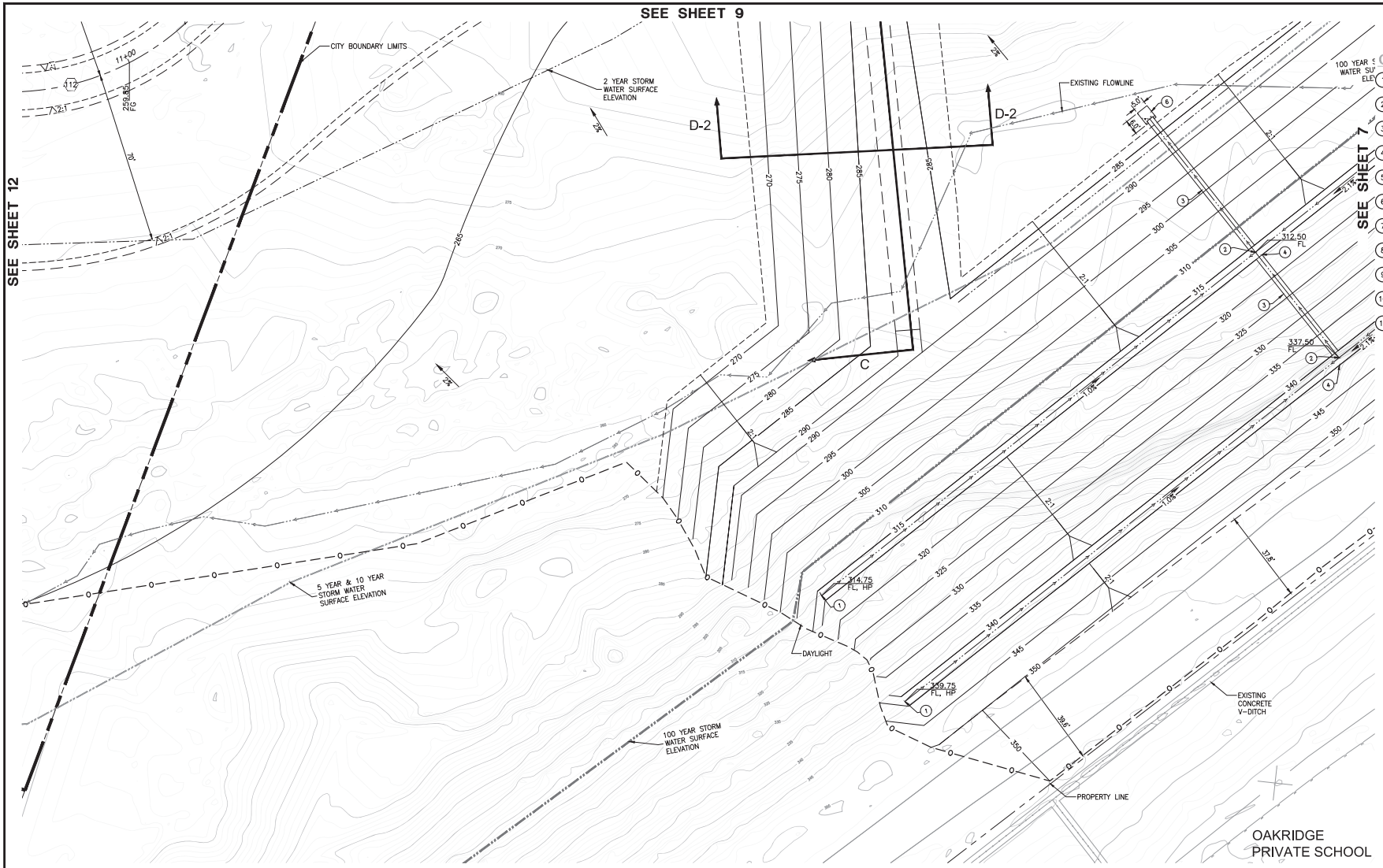
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 9 OF SHEET 17

FILENAME: R:\R30897\01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701-004-GP - 06-16.dwg Jul 03 2019 1:40pm



CONSTRUCTION NOTES

1. CONSTRUCT TERRACE DRAIN PER DETAIL 1 ON SHEET GP 17
2. CONSTRUCT TERRACE DRAIN PER DETAIL 2 ON SHEET GP 17
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10. CONSTRUCT SINGLE STAGE CHANNEL PER PLAN AND SECTION A-5 ON SHEET GP 3
11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION F-1 ON SHEET GP 5

SCALE
1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
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2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-5815 Fax (949) 988-5820
UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MIGUEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:

NO	DATE	DESCRIPTION	APPROVED:

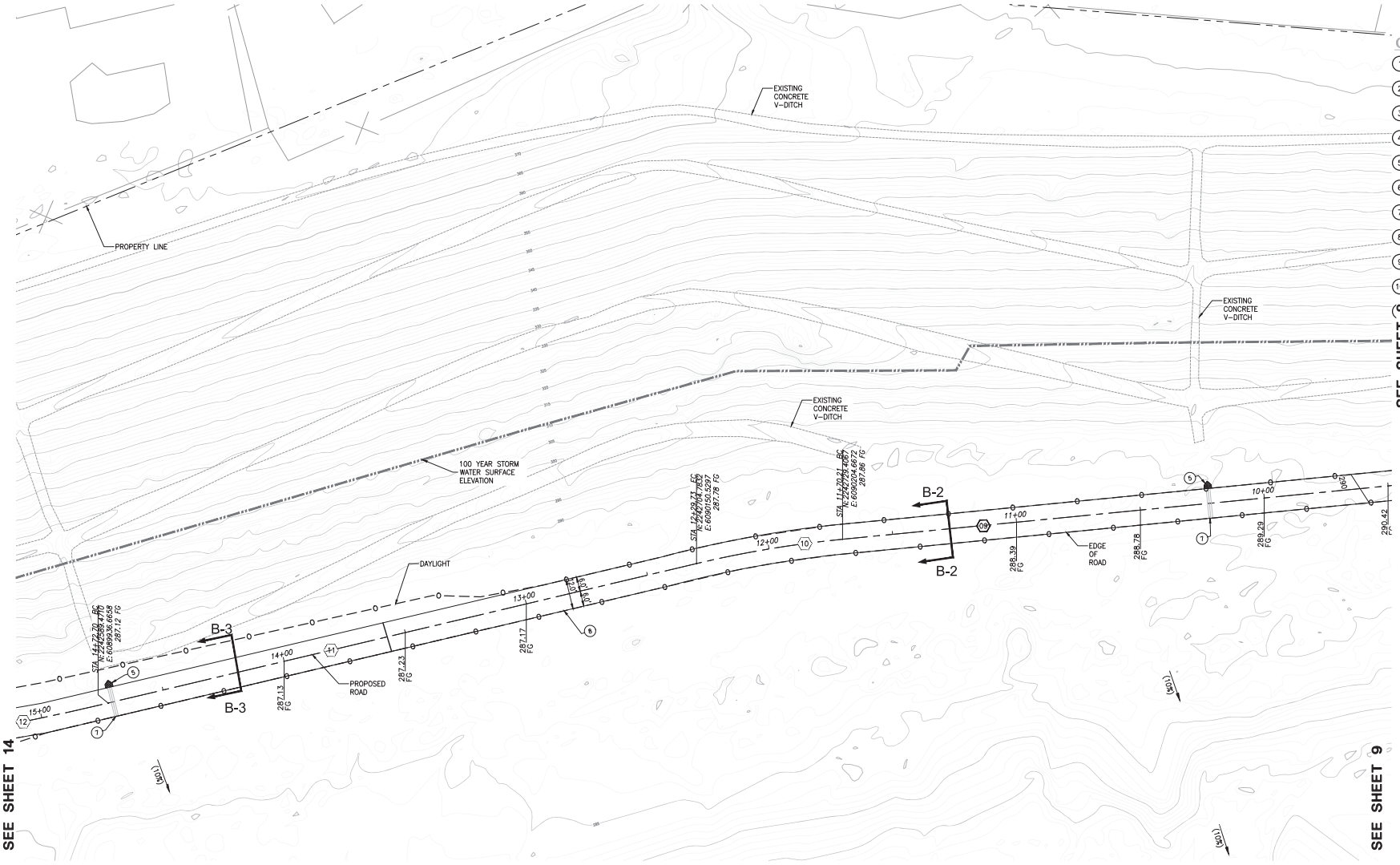
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 10 OF SHEET 17

FILENAME: R:\R308977.01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701-004-GP - 06-16.dwg Jul 03 2019 1:40pm



CONSTRUCTION NOTES

1. CONSTRUCT TERRACE DRAIN PER DETAIL 1 ON SHEET GP 17
2. CONSTRUCT TERRACE DRAIN PER DETAIL 2 ON SHEET GP 17
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10. CONSTRUCT SINGLE STAGE CHANNEL PER PLAN AND SECTION A-5 ON SHEET GP 3
11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION -1 ON SHEET GP 5

ROAD LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
9	557.68'		S69°25'03"W	
10	59.52'	440.00'	7°45'02"	29.81'
11	242.97'		S61°40'02"W	
12	66.20'	1070.00'	3°32'42"	33.11'

SCALE 1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
HUITT-ZOLLARS
2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-5815 Fax (949) 988-5820

UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MURIEL ANGEL HERALDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:

NO	DATE	DESCRIPTION	APPROVED:

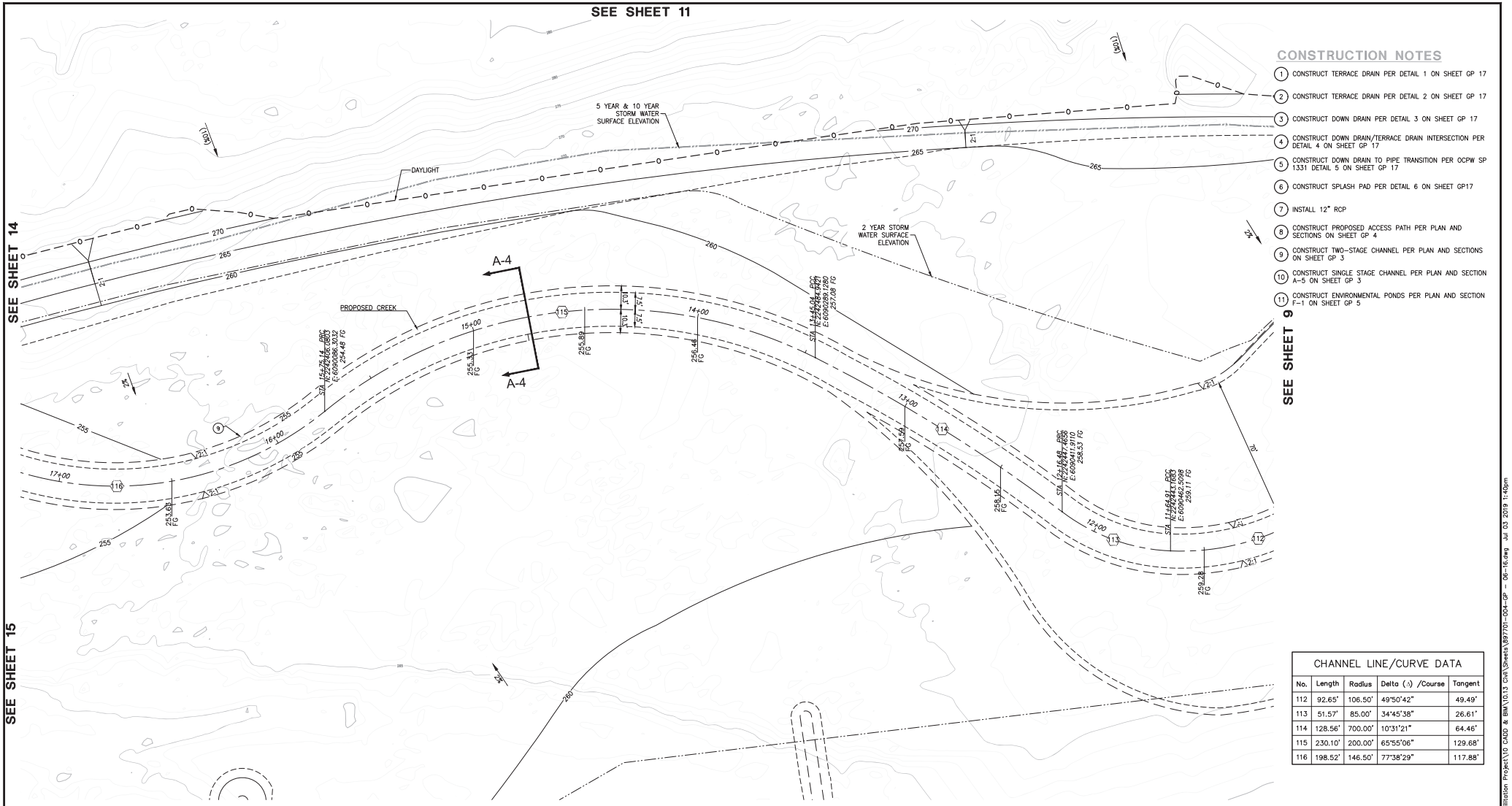
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 11 OF SHEET 17

FILENAME: R:\R30897.01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701-004-GP - 08-16.dwg Jul 03 2019 11:40pm



CHANNEL LINE/CURVE DATA				
No.	Length	Radius	Delta (Δ) /Course	Tangent
112	92.65'	106.50'	49°50'42"	49.49'
113	51.57'	85.00'	34°45'38"	26.61'
114	128.56'	700.00'	10°31'21"	64.46'
115	230.10'	200.00'	65°55'06"	129.68'
116	198.52'	146.50'	77°38'29"	117.88'

SCALE
1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
HUITT-ZOLLARS
2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-5815 - Fax (949) 988-5820
UNDER THE SUPERVISION OF:
REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MURIEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:			
NO	DATE	DESCRIPTION	APPROVED:

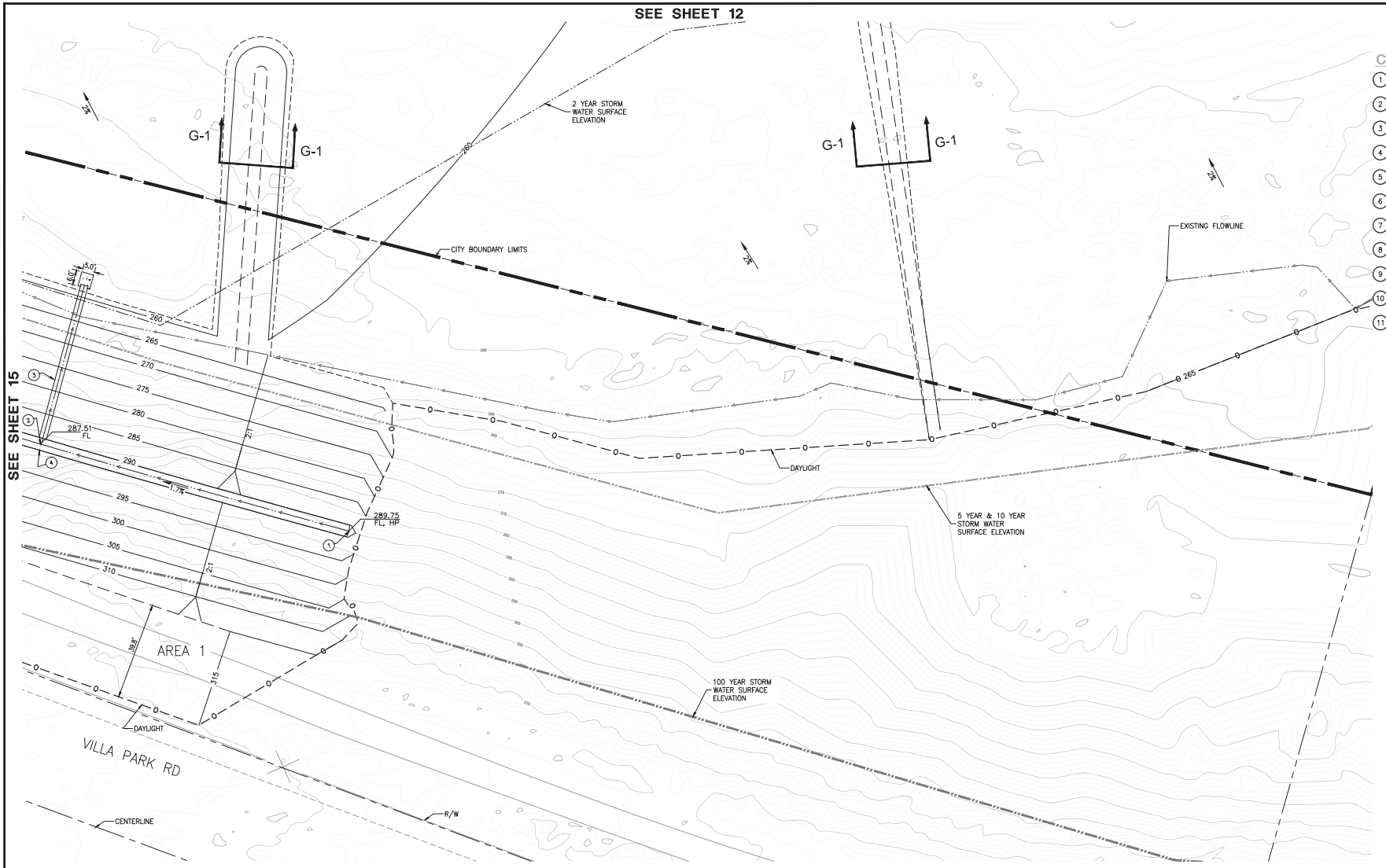
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 12 OF SHEET 17

FILENAME: R:\K30897\01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\697701-004-GP - 06-16.dwg Jul 03 2019 1:40pm



CONSTRUCTION NOTES

1. CONSTRUCT TERRACE DRAIN PER DETAIL 1 ON SHEET GP 17
2. CONSTRUCT TERRACE DRAIN PER DETAIL 2 ON SHEET GP 17
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N

SCALE
1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
HUITT-ZOLLARS
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REGISTERED CIVIL ENGINEER NO. 61378

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MURIEL ANGEL HERNANDEZ
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CIVIL
STATE OF CALIFORNIA

REVISIONS:			
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ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 13 OF SHEET 17

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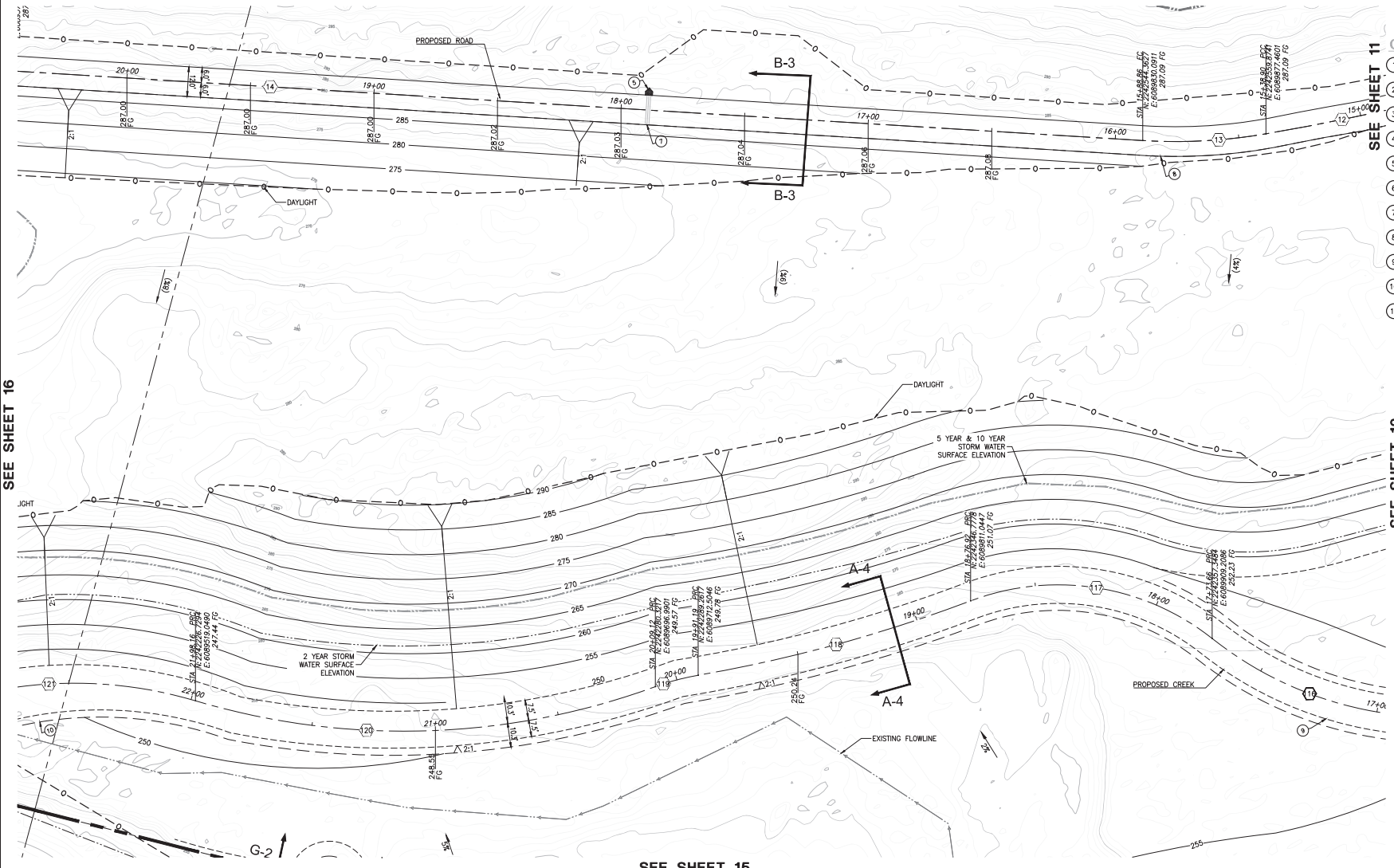

CONSTRUCTION NOTES

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11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION F-1 ON SHEET GP 5

ROAD LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
12	66.20'	1070.00'	3°32'42"	33.11'
13	49.96'	215.00'	13°18'47"	25.09'
14	460.00'		S78°31'30"W	

CHANNEL LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
116	198.52'	146.50'	77°38'29"	117.88'
117	103.26'	100.00'	59°09'45"	56.76'
118	114.27'	600.00'	10°54'43"	57.31'
119	17.93'	100.00'	10°16'23"	8.99'
120	189.04'	295.50'	36°39'16"	97.88'
121	119.89'	171.50'	40°03'08"	62.51'

SCALE
1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
HUITT-ZOLLARS
2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-5815 - Fax (949) 988-5820

UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
SHIRLEL ANGEL HERALDO
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:

NO	DATE	DESCRIPTION	APPROVED:

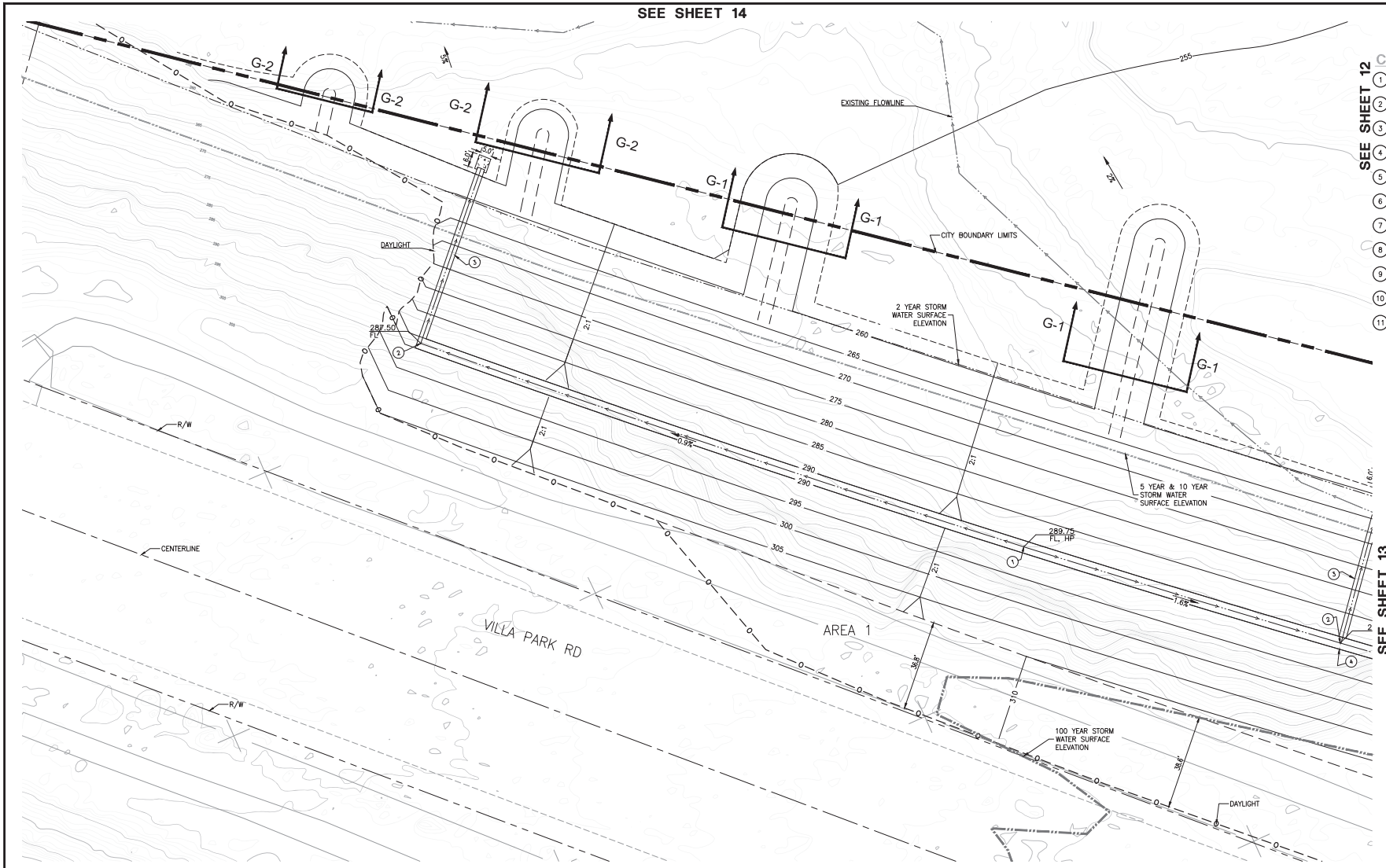
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 14 OF SHEET 17

FILENAME: R:\R30897\01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701-004-GP - 08-16.dwg Jul 03 2019 1:40pm



CONSTRUCTION NOTES

1. CONSTRUCT TERRACE DRAIN PER DETAIL 1 ON SHEET GP 17
2. CONSTRUCT TERRACE DRAIN PER DETAIL 2 ON SHEET GP 17
3. CONSTRUCT DOWN DRAIN PER DETAIL 3 ON SHEET GP 17
4. CONSTRUCT DOWN DRAIN/TERRACE DRAIN INTERSECTION PER DETAIL 4 ON SHEET GP 17
5. CONSTRUCT DOWN DRAIN TO PIPE TRANSITION PER OCPW SP 1331 DETAIL 5 ON SHEET GP 17
6. CONSTRUCT SPLASH PAD PER DETAIL 6 ON SHEET GP17
7. INSTALL 12" RCP
8. CONSTRUCT PROPOSED ACCESS PATH PER PLAN AND SECTIONS ON SHEET GP 4
9. CONSTRUCT TWO-STAGE CHANNEL PER PLAN AND SECTIONS ON SHEET GP 3
10. CONSTRUCT SINGLE STAGE CHANNEL PER PLAN AND SECTION A-5 ON SHEET GP 3
11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION F-1 ON SHEET GP 5

N

SCALE
1" = 20'

THESE PLANS WERE PREPARED IN THE OFFICE OF:
HUITT-ZOLLARS
2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-5815 - Fax (949) 988-5820

UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MURIEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:

NO	DATE	DESCRIPTION	APPROVED:

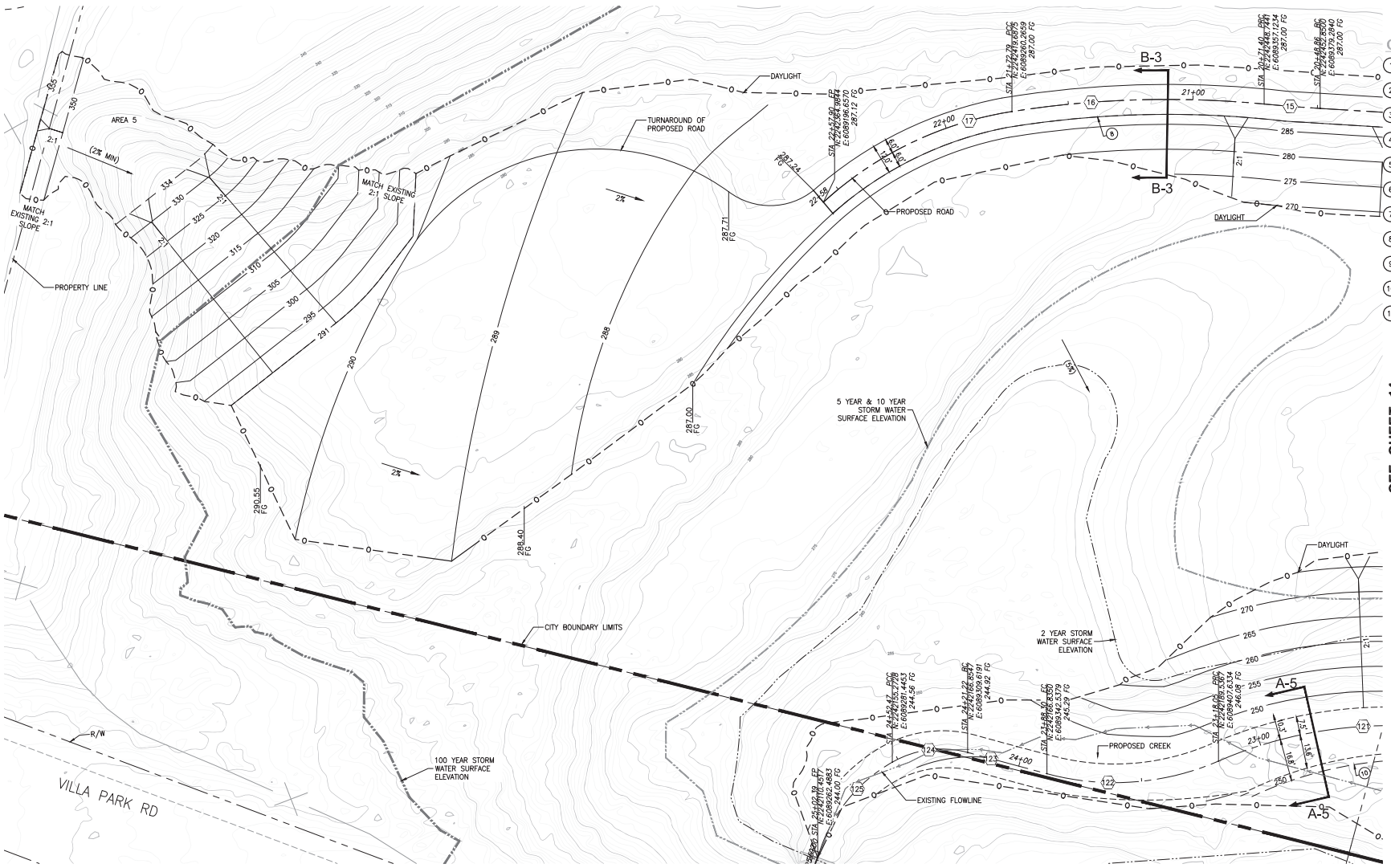
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

SHEET 15 OF SHEET 17

FILENAME: R:\R30897.01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\697701-004-GP - 08-16.dwg Jul 03 2019 1:40pm



CONSTRUCTION NOTES

1. CONSTRUCT TERRACE DRAIN PER DETAIL 1 ON SHEET GP 17
2. CONSTRUCT TERRACE DRAIN PER DETAIL 2 ON SHEET GP 17
3. CONSTRUCT DOWN DRAIN PER DETAIL 3 ON SHEET GP 17
4. CONSTRUCT DOWN DRAIN/TERRACE DRAIN INTERSECTION PER DETAIL 4 ON SHEET GP 17
5. CONSTRUCT DOWN DRAIN TO PIPE TRANSITION PER OCPW SP 1331 DETAIL 5 ON SHEET GP 17
6. CONSTRUCT SPLASH PAD PER DETAIL 6 ON SHEET GP17
7. INSTALL 12" RCP
8. CONSTRUCT PROPOSED ACCESS PATH PER PLAN AND SECTIONS ON SHEET GP 4
9. CONSTRUCT TWO-STAGE CHANNEL PER PLAN AND SECTIONS ON SHEET GP 3
10. CONSTRUCT SINGLE STAGE CHANNEL PER PLAN AND SECTION A-5 ON SHEET GP 3
11. CONSTRUCT ENVIRONMENTAL PONDS PER PLAN AND SECTION F-1 ON SHEET GP 5

ROAD LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
15	22.54'	660.00'	1°57'24"	11.27'
16	101.39'	404.50'	14°21'40"	50.96'
17	85.11'	145.00'	33°37'54"	43.82'

CHANNEL LINE/CURVE DATA

No.	Length	Radius	Delta (Δ) /Course	Tangent
121	119.89'	171.50'	40°03'08"	62.51'
122	70.26'	104.50'	38°31'13"	36.51'
123	32.92'		N89°57'57"W	
124	31.25'	40.00'	44°45'45"	16.47'
125	49.92'	64.00'	44°41'30"	26.31'

SCALE
1" = 20'

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2603 Main Street, Suite 400 - Irvine, California 92614-4250
Phone (949) 988-8815 Fax (949) 988-8820

UNDER THE SUPERVISION OF:

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REGISTERED PROFESSIONAL ENGINEER
SHIRLL ANGEL HERALDO
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CIVIL
STATE OF CALIFORNIA

REVISIONS:

NO	DATE	DESCRIPTION	APPROVED:

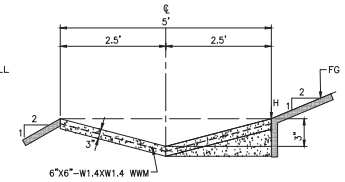
ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DATE: JUNE 2019

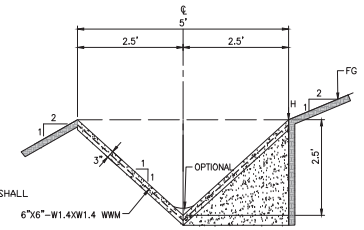
SHEET 16 OF SHEET 17

FILENAME: R:\R30897.01 - Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\897701-004-GP - 06-16.dwg Jul 03 2019 1:40pm



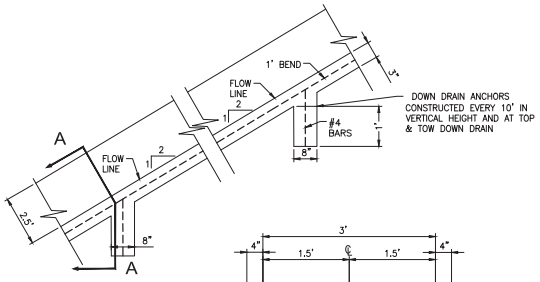
NOTE:
ALL PORTLAND CEMENT CONCRETE SHALL CONFORM TO THE GEOTECHNICAL REQUIREMENTS.

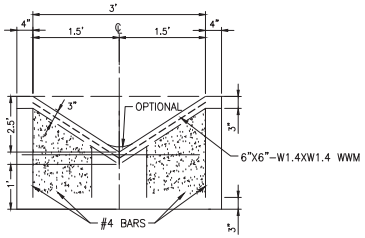
1 TERRACE DRAIN
NTS



NOTE:
ALL PORTLAND CEMENT CONCRETE SHALL CONFORM TO THE GEOTECHNICAL REQUIREMENTS.

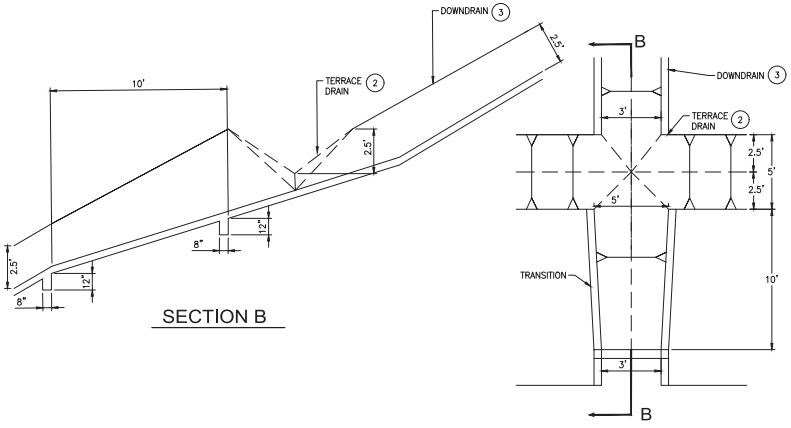
2 TERRACE DRAIN
NTS





SECTION A

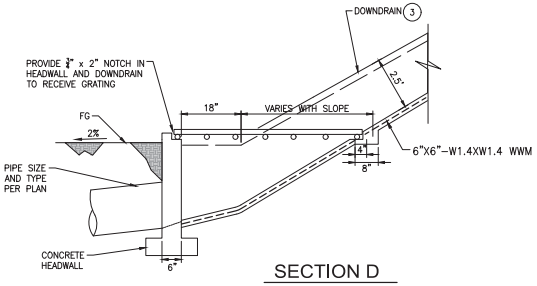
3 DOWNDRAIN
NTS



SECTION B

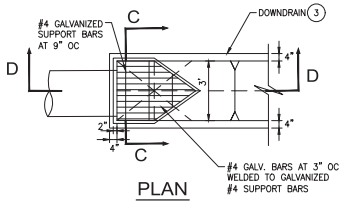
PLAN

4 DOWN DRAIN/ TERRACE DRAIN INTERSECTION
NTS



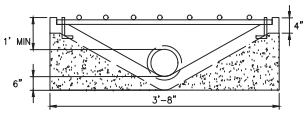
SECTION D

5 DOWN DRAIN TO PIPE TRANSITION
O.C.P.W. STD 1331
NTS

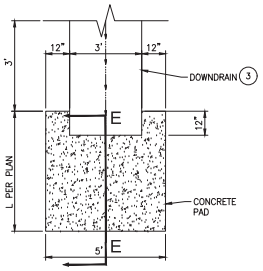


PLAN

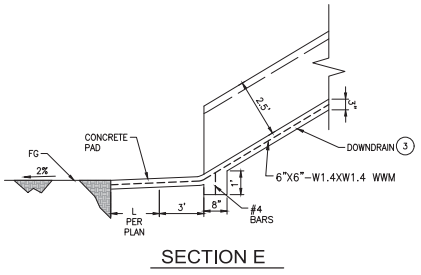
NOTE:
GRATE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.



SECTION C



PLAN



SECTION E

6 SPLASH PAD
NTS

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UNDER THE SUPERVISION OF:

REGISTERED CIVIL ENGINEER NO. 61378

REGISTERED PROFESSIONAL ENGINEER
MANUEL ANGEL HERNANDEZ
No. 61378
Expiration 06-30-21
CIVIL
STATE OF CALIFORNIA

REVISIONS:			
NO	DATE	DESCRIPTION	APPROVED:

ORANGE COUNTY WATER DISTRICT

SMITH BASIN
REHABILITATION PLANS

DETAIL SHEET

DATE: JUNE 2019

SHEET 17 OF SHEET 17

FILENAME: R:\30897\01 – Smith Basin Rehabilitation Project\10 CADD & BIM\10.13 Civil\Sheets\30701–05–GP–17.dwg Jul 02, 2019 2:43pm